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Preliminary Contamination Assessment Report

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Project Revision Sheet

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0	1 November 2012	Final	n/a	S. Chara	D. M. Brenton
1	4 February 2013		Minor amendments	S. Chara	D. J. Gill

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Executive Summary

Details	Summary of Main Text
Introduction	This report has been prepared for Estate Office Shoreditch to support the planning application for mixed use development at the site. This report presents the factual information and preliminary contaminated land risk assessment for the development.
Site description and reconnaissance	It is irregular in shape and covers an area of approximately 0.06 hectares. It is bounded to the north by railway lines and sidings, to the east by commercial buildings, to the south by residential dwellings with shops on the ground floor and Gloucester Avenue beyond it, and to the west by residential dwellings with Regents Park Road beyond it. The site is currently vacant and comprises a two storey building with a courtyard. It is located at the rear of terrace houses abutting Gloucester Avenue. The access to the site is via ground floor undercroft beneath the terrace residential dwellings.
Geology	The geological map of the area shows the site to be underlain by London Clay. No drift deposits are shown to be present.
Hydrogeology	The London Clay is classified by the Environmental Agency as unproductive strata.
Hydrology	There are no water features on the site.
Site History	The site was developed prior to 1875, probably for industrial usage. From 1953, building located in the eastern part of the site was part of the *Works* located off site to the east. From 1987, the building in the eastern part of the site was reconfigured for unknown usage. Recently the building was used by firms installing radios in cars.
Environmental searches	Multiple entries exist for the site and they refer the site being used by car audio firms.
Potential contamination sources	Based on the available information potential sources of contamination that could impact on identified receptors are: 1. On site: Made ground associated with the presence of former buildings in northern part of the site; presence of factory referred to as *Works*. 2. Off site: Made ground, railway and *Works* located adjacent to the site.
Recommendations	An intrusive investigation to assess the identified potential risks has been undertaken by MLMCL and will be reported separately. A refurbishment and demolition asbestos survey should be undertaken on all buildings prior to any refurbishment or demolition taking place. This is a legal requirement.

Desk Study General Notes

1. This report provides available factual data for the site at the time of the study and as obtained from the sources described in the text. The data is related to the site on the basis of the site location information provided by the Client.

2. It should be appreciated that the desk study information is not necessarily exhaustive and that further information relevant to the proposed site usage may be available.

3. The accuracy of map extracts cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.

4. Any borehole data from the British Geological Survey sources is included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation'.

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6. The content of websites visited during the internet searches has not been validated and is accepted *de facto* and without prejudice. Anyone relying upon the information obtained from such sources does so at their own risk. Notwithstanding, MLMCL takes all reasonable care in assessing information only from reputable and professional sources.

7. This report was prepared only for our Client and was not intended to be relied on by any other party. Third parties should not rely on the facts, matters or opinions set out in this report without the express written permission of MLM Consulting Limited.

1 Introduction

1.1 General

The report has been prepared by MLM Consulting Limited (MLMCL) for Estate Office Shoreditch to support the planning application for mixed use development at the site.

This report presents the findings of a Desk Study and Site Reconnaissance, which provides available information on and addresses the following aspects:

- Historical uses of the site and surroundings
- Current use and condition of the site
- Environmental setting in terms of geology, hydrogeology, hydrology and surrounding land uses
- Consents, licenses and authorisations in respect of waste management/landfill activities, and discharges to land/water/air both on and off the site
- Contamination potential and environmental risks
- Proposals for further investigation

The Phase I study is required to identify potential risks and liabilities associated with ground conditions and the environmental setting that could impact on the future development of the site and which potentially offers liability and risk for occupiers and funders. The report will be used to assist in assessing risks associated with any contamination or pollution at the site or in surrounding areas with respect to discharging contaminated land planning conditions associated with the proposed development.

The assessment is based on a site walkover and data collection exercise including information received from statutory authorities.

1.2 Terms of Reference

The terms of reference for the work were set out in the MLMCL proposal dated 3 April 2012, reference DMB/723931/001FP/DJG.

1.3 Report Structure

This report is divided into a number of sections, which contain:

- Introduction and site description
- Presentation of factual data
- Preliminary conceptual site model
- Preliminary risk assessment using source-pathway-receptor scenarios
- Overall conclusions and recommendations
- Factual data from the desk study

1.4 Technical Approach

The process of assessment adopted in this report follows procedures provided in guidelines, which are considered to be relevant as follows.

- Model Procedures for the Management of Land Contamination. Environment Agency Contaminated Land Report 11 (CLR11)
- GPLC1 – Guiding principles for land contamination. Environment Agency 2010
- NHBC Part 4 Foundations – Chapter 4.1 Land quality: Managing ground conditions

2 The Site

2.1 Location and Description

The site is located on the northern side of Gloucester Avenue, London. It is irregular in shape and covers an area of approximately 0.06 hectares. It is bounded to the north by railway lines and sidings, to the east by commercial buildings, to the south by residential dwellings with shops on the ground floor and Gloucester Avenue beyond it, and to the west by residential dwellings and Regents Park Road beyond it.

The site is currently vacant. It comprises mainly two storey building with a courtyard and is located at the rear of terrace houses abutting Gloucester Avenue. The access to the site is via ground floor undercroft beneath the terrace residential dwellings.

The National Grid Reference for the approximate centre of the site is 528060E, 184210N.

A location plan of the site is presented as Figure 1.

2.2 Proposed Development

The proposed development is for mixed use development with planting either in planters or beds as shown on PATALAB Architects drawing: Proposed Ground Floor Plan, Drawing No A8001, dated 31-1--12.

3 Desk Study and Site Reconnaissance

3.1 General

A desk study has been carried out using information obtained from a Landmark Envirocheck report commissioned by MLME for the area, through a review of published information, information obtained from regulatory bodies and a site walkover.

The full Envirocheck report has been included as Appendix A.

A walkover survey of the site was undertaken on 29 August 2012. Conditions on the day were sunny and dry. Relevant site photographs of the site are presented in Appendix B.

3.2 Site Reconnaissance

3.2.1 Current Site Use

The site is currently vacant and was last used by a company that installed radio equipment into vehicles.

3.2.2 Surrounding Land Use

A railway line is present to the north and railway sidings to northeast. Residential dwelling and commercial shops are present to the east, south and west.

3.2.3 Site Levels, Groundcover and Structures

The site is irregular in shape and the northern part of it is covered with a two storey brick building and concrete hard standing while the southern part comprises a concrete and brick-paved courtyard. The courtyard slopes gently down to building in the north.

The building is formed of central gable ended structure with recent side extensions abutting to the east and west. The ground floor comprises a series of rooms previously used for a variety of activities including workshops and storage. The first floor was used as offices.

3.2.4 Water Features and Drainage

There are no surface water features present.

3.2.5 Fuel Storage

No above ground fuel storage tank (AST) was observed on site.

3.2.6 Evidence of Contamination or Potential Contamination

During the site visit, holes were present within the building. These had been excavated to expose the existing foundations. Stockpiled arising contained made ground with coal and metallic fragments were observed.

3.2.7 Asbestos Containing Materials (ACM)

Although not a part of the contaminated land risks assessment, it is noted that there are buildings on the site that are to be demolished. The site reconnaissance did not include an asbestos survey; however, there is a possibility, given their age, that there may be asbestos containing materials (ACMs) within these buildings.

3.3 Geology

The geological map of the area shows the site to be underlain by a solid geology of London Clay. No drift deposits are indicated to be present overlying the London Clay.

3.4 Hydrogeology

According to the Environment Agency (EA) website the London Clay is classified as unproductive strata.

Unproductive Strata are defined by the EA as *rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow*.

The site is not within a groundwater Source Protection Zone.

There are no abstractions for groundwater within 500m of the site.

3.5 Hydrology

There are no water features on the site.

The closest significant surface water feature is Regents Canal approximately 0.4km to the south east.

There are no abstractions from surface waters within 500m of the site.

3.6 Site History

Historical maps have been obtained as part of the Envirocheck Report and these are presented in Appendix A.

The historical information of relevance from within 250m of the site is presented as follows:

Table 3.1 Historical Map Summary

Map Date	On site	Surrounding Area
1875	A group of terrace buildings exists along the northern and eastern boundaries. The southern part of the site is an open court yard.	Railway sidings and Chalk Farm Station are shown to the north and engine shed to the north east. Large buildings are located to the east and residential buildings to the south and west with Gloucester Avenue beyond it. A timber yard is shown 100m to the south west.
1895	No significant change to previous map.	Reference to timber yard removed from the map

Table 3.1 Historical Map Summary (cont'd)

Map Date	On site	Surrounding Area
1953	The buildings in the east have been demolished and a new building housing the Engineering *Works* immediately to the east of the site has been extended into the site. It abuts the former building located at the western part of the site. The courtyard is still maintained.	The building to the east has been replaced with a new building containing Engineering *Works* and a large garage has been constructed beyond it. Glass and radio works and garage have been constructed in the area where the timber yard existed to the south east. Factories have been constructed 100m south of the site. A tank is shown next to the railway engine shed some 40m to the north east.
1963-1969	No significant change to previous map.	Glass and radio *Works* to the south east have been replaced with new *Works.*
1971	No significant change to previous map.	The garage located beyond the *Works* to the east has been replaced with a *Depot*
1987	The eastern part of the building has been reconfigured and extended in to the court yard.	No significant change to previous map

3.7 Environmental Searches

Environmental data has been obtained for the site from a Landmark Envirocheck report and from data provided by the Environment Agency and local authority or their websites.

Environmental site sensitivity data contained in the Envirocheck report indicate that there are no Contaminated Land Register Entries (under Part IIA of the EPA 1990) within 1000m of the site. There are 2 No Pollution Prevention and Control Entries within 250m of the site and these relate to re –spraying of road vehicles located 111m to the south east and dry cleaning 140m to the west.

There are four contemporary trade directory entries with potentially contaminative uses within 110m of the site. Three of these entries are for the site and relate to communication activities. The fourth is located 53m south east and is associated with stain glass designers and producers.

There are no records of currently operating discharge consents within 250m of the site.

There are no landfill sites or waste management site within 500m of the site.

There is a single pollution incident to controlled water within 250m of the site and it relates to the release of oils in the drain some 200m to the south of the site.

3.8 Summary of Findings

The site currently contains a vacant two storey building in the north with concrete hardstanding and a courtyard across the remainder of the site.

The site is underlain by a solid geology of London Clay which is classified as unproductive strata. The site does not lie within a groundwater source protection zone.

Historical data shows the site was developed prior to 1875, probably for industrial usage. From 1953, a building located in the eastern part of the site formed part of the adjacent *Works*. From 1987, the building in the eastern part of the site was reconfigured for unknown usage.

Recently the on site building was used by firms installing radios in cars.

During the history of the site, numerous 'works' and factories have been located close to the site. Railway sidings and engine sheds are located to the north east.

The nearest surface water feature is Regents Canal 0.4km to the east.

The reviews of historical records and site walkover survey indicate that the ground floor has been used as workshop and the first floor mainly as offices. The specific areas of concern have been identified as the eastern part of ground floor building formerly attached to the adjacent *Works* and migration of contamination in to the eastern part of the site from adjacent railway sidings/shed and the *Works*.

4 Conceptual Site Model and Preliminary Assessment

4.1 General Approach

In the UK, the assessment of risk from contamination follows the source-pathway-receptor approach. If one of these three elements is absent it is considered that there is no risk of harm. If, however, there is considered to be a linkage between source and receptor then a risk-based approach is used to assess the significance or impact of the potential SPR-linkage.

Source – Contamination that has the potential to impact on human health and/or the environment.

Pathway – The route by which a receptor may come into contact with the source.

Receptor – Receptors are typically humans or the environment (e.g. water resources) that could be affected by a contamination.

4.2 Conceptual Site Model

The potential risks posed to human health and the environment by contamination at this site have been evaluated using a quantitative risk assessment which incorporates the 'source-pathway-receptor' identification and assessment methodology in accordance with CLR11.

The risk assessment process involves the identification of source based on desk study findings together with identification of the exposure pathway and sensitive receptor. The potential risks to the receptor (and its relative sensitivity) are then assessed by considering the potential effect of the source on the receptor as well as the likelihood of a pathway linking the two.

4.3 Review of Potential Sources of Contamination

Based on the information obtained presented in the previous sections, potential sources of contamination that could impact on receptors have been identified and are summarized in tables 4.1 and 4.2 below.

Table 4.1 Potential Sources of Contamination – On Site

Source	Location on site	Activity	Potential Contaminants
From Historical Records/Site Reconnaissance			
Made ground	Northern part	Construction and demolition of structures	Metals, PAH, asbestos and ground gas
Works	Located at the eastern part	Unknown activity	Hydrocarbons, PAH, metals and organic vapour
Radio Supplier	Entire site	Maintenance	Metals

Table 4.2 Potential Sources of Contamination – Off Site

Source	Location off site	Activity	Potential Contaminants
From Historical Records and Site Reconnaissance			
Made ground associated with neighboring properties.	Eastern Boundary	Construction of factory	Metals, PAH, asbestos and ground gas,
Works	Located along the eastern boundary	Unknown activity	Hydrocarbons, PAH, metals, and organic vapour
Works/garage	Located to the south east	Unknown activity	Ground gas and organic vapour
Railway line/tank/ sidings	Located along the northern boundary	Maintenance	Hydrocarbons, PAH, metals and organic vapour

4.4 Review of Potential Exposure Pathways

Table 4.3 below presents a review of possible pathways identified at the site.

Table 4.3 Potential Exposure Pathways and Receptors

Receptor	Pathway	Present (Y/N)	Notes
Human Health			
Future site users	Dermal contact, ingestion or inhalation of soil and soil dust	YES	Amenity areas are proposed where exposure to contaminated soil could occur
	Migration in permeable strata and inhalation of gas	YES	Building occupants could be exposed to gas generated from degradation of organic matter in made ground,
	Migration in permeable strata, accumulation and risk of explosion	YES	Buildings are proposed in which there could be a build up of methane generated from degradation of organic matter in made ground.
	Migration in permeable strata and inhalation of organic vapour	YES	Building occupants could be exposed to organic vapour generated from hydrocarbons in soil or groundwater.
Adjacent site users	Ingestion/inhalation of windblown dust	YES	Residents in the housing to the east of the site could be affected by contaminated soil dust during the construction period.
Construction workers and services maintenance staff	Dermal contact, ingestion or inhalation of soil and soil dust	YES	Construction and services maintenance workers could be exposed to soil contamination when working in excavations etc

Table 4.3 Potential Exposure Pathways and Receptors (cont'd)

Development			
Future plant life	Plant uptake in garden or landscape area	YES	Landscaped areas where plants could be exposed to phytotoxins are proposed.
Water supply pipes	Contact with contaminated material	YES	Hydrocarbon compounds in soil could permeate plastic potable water supply pipes and affect drinking water quality.
Environment			
Surface water	Surface runoff	NO	The site will be covered with hardstanding .
	Groundwater movement	NO	The site will be covered with hardstanding.
Groundwater	Leaching from soil and downward movement	NO	The site will be covered with hardstanding and London Clay is not an aquifer.
	Deep foundation breaching permeable layer	NO	Even deep foundations are unlikely to penetrate the full thickness of the London Clay.

4.5 Potentially Complete SPR-Linkages

Based on the sources, pathways and receptors identified above, table 4.4 below summarises all potentially complete pollutant linkages for the site and identifies the level of risk from each. Risk definitions are provided in Appendix C.

Table 4.4 Potentially Complete SPR-Linkages – on-site

Source	Area Affected	Contaminants	Pathway	Receptor	Likelihood	Potential Magnitude	Overall Risk	Notes
Made ground associated with construction and demolition on site. Former *Works* and Radio Supplier on site.	Northern and eastern half of the site	Metals, PAH, asbestos	Direct contact	Site users	Possible	Moderate	Moderate	Site users could come into contact with contaminated soils in soft landscaped areas.
				Site construction/ maintenance workers	Possible	Moderate	Moderate	Construction workers are likely to come into contact with made ground during development works.
				Adjacent site users	Unlikely	Moderate	Low	Hard standing and buildings will restrict the generation of soil dust. Suitable handling of materials will be required during construction works to minimise dust generation
				Future planting	Possible	Mild	Low	Plants growing in contaminated soils could take up phytotoxic compounds.
		PAH	Direct contact	Water supply pipes	Possible	Mild	Possible	Hydrocarbon contamination within the made ground could come in to contact and permeate plastic potable water supply pipes.
		Ground gas (carbon dioxide/ methane)	Inhalation	Site users	Possible	Moderate	Moderate	Decomposition of organic matter in made ground could generate ground gas; however, significant quantities of made ground or organic material is not anticipated.
				Site construction/ maintenance workers	Possible	Moderate	Moderate	

Table 4.4 Potentially Complete SPR-Linkages – on-site (cont'd)

Source	Area Affected	Contaminants	Pathway	Receptor	Likelihood	Potential Magnitude	Overall Risk	Notes
Made ground associated with construction and demolition on site. Former *Works* and Radio Supplier on site.	Northern and eastern half of the site	Ground gas (methane)	Migration in permeable strata, accumulation and risk of explosion	Site users	Possible	Severe	Moderate	Decomposition of organic matter in made ground could generate ground gas; however, significant quantities of made ground or organic material is not anticipated.
		Organic vapour	Migration and inhalation	Site users	Unlikely	Moderate	Low	Hydrocarbon contamination which could generate significant quantities of organic vapour is unlikely to be present
				Site construction/ maintenance workers	Unlikely	Moderate	Low	

Table 4.4 Potentially Complete SPR-Linkages – on-site (cont'd)

Source	Area Affected	Contaminants	Pathway	Receptor	Likelihood	Potential Magnitude	Overall Risk	Notes
Off site made ground associated with the construction of a former factory (eastern boundary). Off site railway and *Works*	Entire site	Metals, PAH and hydrocarbons	Direct contact	Site users	Very unlikely	Moderate	Very low	Hardstanding will prevent contact with any leachate. In any case, low permeability soils underlying the area will restrict contaminant migration.
				Site construction/ maintenance workers	Unlikely	Moderate	Low	As above, low permeability soils will restrict contaminant migration.
		Hydrocarbons	Direct contact	Water supply pipes	Unlikely	Moderate	Low	As above, the London Clay strata will restrict contaminant migration on to the site.
		Ground gas (carbon dioxide/ methane)	Inhalation	Site users	Unlikely	Moderate	Low	Low permeable soil will restrict gas migration. over long distance
				Site construction/ maintenance workers	Unlikely	Moderate	Low	
		Ground gas (methane)	Migration in permeable strata, accumulation and risk of explosion	Site users	Unlikely	Severe	Low	

Table 4.4 Potentially Complete SPR-Linkages – on-site (cont'd)

Source	Area Affected	Contaminants	Pathway	Receptor	Likelihood	Potential Magnitude	Overall Risk	Notes
		Organic vapour	Migration and inhalation	Site users	Unlikely	Moderate	Low	
				Site construction/ maintenance workers	Unlikely	Moderate	Low	
Works and garages to the south east	Western	Ground gas (methane)	Migration in permeable strata, accumulation and risk of explosion	Site users	Unlikely	Severe	Low	Low permeable soil will restrict contaminant migration
		Ground gas (carbon dioxide/ methane)	Inhalation	Site users	Unlikely	Moderate	Low	

Table 4.4 Potentially Complete SPR-Linkages – on-site (cont'd)

Source	Area Affected	Contaminants	Pathway	Receptor	Likelihood	Potential Magnitude	Overall Risk	Notes
				Site construction/ maintenance workers	Unlikely	Moderate	Low	
		Organic vapour	Migration and inhalation	Site users	Unlikely	Moderate	Low	
				Site construction/ maintenance workers	Unlikely	Moderate	Low	

5 Conclusions and Recommendations

5.1 Conclusions

The site is a vacant former radio services/maintenance and is underlain by London Clay (unproductive strata). The site does not lie within a groundwater source protection zone.

Identified potential on-site contamination sources include made ground from the construction and demolition of buildings in the northern part of the site and contaminants associated with former on site Works. Identified potential off-site contamination sources include a railway and *Works* located adjacent to the site.

The assessment has identified potentially complete SPR-linkages which present risks to future site users, construction workers and water supply pipes. The risks range from very low to moderate.

5.2 Recommendations

An intrusive investigation to assess the identified potential risks associated with contamination has been undertaken by MLMCL and will be reported separately.

A refurbishment and demolition asbestos survey should be undertaken on all buildings prior to any refurbishment or demolition taking place. This is a legal requirement.

6 References

1. British Standards Institution (2011) BS10175 *Investigation of Potentially Contaminated Sites - Code of Practice***.**

2. Environment Agency (2004) *Model Procedures for the Management of Land Contamination* Contaminated Land Report 11 (CLR11).

3. Environment Agency (2010) *GPLC1 – Guiding principles for land contamination.*

4. *National Planning Policy Framework* (NPPF) (2012).

5. British Geological Survey (1:50,000 scale Geology Map, Solid and Drift Edition - Sheet 256, North London.

6. Landmark Envirocheck Report – *High Street, Lydd* (Ref. 40848650_1_1) dated 16 August 2012.