

Geo-Environmental Assessment Cover Letter

Land off Dyson's Road, Edmonton, N17 0RU or 175 Willoughby Lane,
London, N17 0RX

Presented to **Paloma II (Industrial IV) Trustee I Limited and Paloma II (Industrial IV) Trustee II Limited**

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Quality Assurance

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1.0 Context and Purpose

Delta-Simons Limited (Delta-Simons) was instructed by Paloma II (Industrial IV) Trustee I Limited and Paloma II (Industrial IV) Trustee II Limited (the 'Client') to prepare a cover letter for a Geo-Environmental Assessment (ref. 20-0337.01, dated 30th June 2020) previously prepared by Delta-Simons for land off Dyson's Road, Edmonton, N17 0RU (the 'Site'). The purpose of the cover letter is to introduce the Geo-Environmental Assessment in the context of the proposed development of the Site for construction of seven industrial units including office and mezzanine floors, car parking, service yard areas, landscaping and associated works, and to identify any remediation requirements in the context of the proposed development.

This cover letter presents a summary and contextualisation of the Geo-Environmental Assessment, referenced below, which should be read in full for context:

- Geo-Environmental Assessment - land off Dyson's Road, Edmonton, N17 0RU, June 2020, ref. 20-0337.01, by Delta-Simons.

1.1 Proposed Development and Planning Permission

It is understood the Client has been granted planning permission by the London Borough of Haringey for demolition of existing buildings on the Site and redevelopment of the land to the west of Willoughby Lane / Dyson's Road for the erection of modern employment premises to provide flexible employment space across use classes E (light industrial), B2 and B8 (with ancillary offices), car parking, service yard areas, landscaping and associated works (ref. HGY/2022/0664, dated 3rd October 2023).

As part of the granted planning permission, a number of conditions were imposed, including Condition 4 and Condition 5, relevant to land contamination.

'4. Land Contamination

Before development commences other than for investigative work:

- a. A desktop study shall be carried out which shall include the identification of previous uses, potential contaminants that might be expected, given those uses, and other relevant information.*
- b. Using this information, a diagrammatical representation (Conceptual Model) for the site of all potential contaminant sources, pathways and receptors shall be produced. The desktop study and Conceptual Model shall be submitted to the Local Planning Authority. If the desktop study and Conceptual Model indicate no risk of harm, development shall not commence until approved in writing by the Local Planning Authority.*
- c. If the desktop study and Conceptual Model indicate any risk of harm, a site investigation shall be designed for the site using information obtained from the desktop study and Conceptual Model. The site investigation must be comprehensive enough to enable; a risk assessment to be undertaken, refinement of the Conceptual Model, and the development of a Method Statement detailing the remediation requirements.*
- d. The risk assessment and refined Conceptual Model shall be submitted, along with the site investigation report, to the Local Planning Authority which shall be submitted to, and approved in writing by, the Local Planning Authority prior to that remediation being carried out on site.*
- e. Where remediation of contamination on the site is required, completion of the remediation detailed in the method statement shall be carried out and a report that provides verification that the required works have been carried out, shall be submitted to, and approved in writing by the Local Planning Authority before the development is occupied.*

5. Unexpected contamination

If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until a remediation strategy detailing how this contamination will be dealt with has been submitted to and approved in writing by the Local Planning Authority. The remediation strategy shall be implemented as approved.'

This cover letter, along with the Geo-Environmental Assessment (ref. 20-0337.01), are considered sufficient to discharge Condition 4a, Condition 4b, Condition 4c and Condition 4d.

2.0 Summary of Geo-Environmental Assessment (ref 20-0337.01)

The Geo-Environmental Assessment (GEA) was prepared to identify the potential for land contamination issues to be present at the Site in the context of a continued commercial end use. Delta-Simons consider the report to be sufficiently thorough to be suitable and applicable to the proposed commercial redevelopment, to facilitate preparation of a Remediation and Verification Strategy (if required).

2.1 Desktop Study

The GEA includes an initial desktop study to identify the environmental sensitivity of the Site, a review of historical uses which may present potential contamination sources and presents a preliminary

conceptual site model (CSM). Section 2.1 summarises the Site setting, including pertinent information observed during a Site walkover undertaken on 13th May 2020, and Section 2.2 summarises the environmental setting, including published geology, hydrogeology and overall environmental sensitivity. Section 2.3 comprises a review of historical maps to determine historical uses of the Site and the surrounding area and Section 2.4 comprises an environmental database review to identify pertinent features on and off-Site. Potential sources of contamination were identified to comprise on and off-Site Made Ground, on and off-Site tanks and an off-Site gas works (approximately 200 m east of the Site). Section 2.5 includes a statement received from the London Borough of Haringey which notes the Site was not on their list of prioritised sites under Part IIA of the Environmental Protection Act 1990. The Site was identified by the London Borough of Haringey as an unspecified factory works of medium risk from their contaminated land site prioritisation record. Section 2.6 presents a review of historical reports and Section 2.7 presents the preliminary CSM prior to intrusive ground investigation. At this stage, a low to moderate land contamination risk rating was attributed to the Site based on the desk-based information.

2.2 Ground Investigation Scope

Section 3.0 presents the ground investigation scope undertaken by Delta-Simons, which comprised the drilling of 10 shallow boreholes (DS101 to DS110) to a maximum depth of 5 m below ground level (bgl), and three deep boreholes to a maximum depth of 15 m bgl. All boreholes were installed. These works were carried out between 26th May and 3rd June 2020.

From review of the Exploratory Hole Location Plan (Figure 2), the investigation achieved an investigation density of approximately one location every 25m² which is considered suitable in the context of a commercial redevelopment at the Site.

Environmental sampling comprised collection of both soil and groundwater samples. 33 soil samples were tested for pH, Sulphates, Asbestos screen, heavy metals, speciated Polycyclic Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons, Criteria Working Group Method (TPHCWG), Benzene, Toluene, Ethylbenzene and Xylene (BTEX). 17 soil samples were tested for Volatile and Semi-Volatile Organic Compounds (VOC and SVOC) and 14 soil samples for speciated Phenols and free and total Cyanide. Ten groundwater samples were tested for pH, Sulphates, heavy metals, speciated Polycyclic Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons, Criteria Working Group Method (TPHCWG), Benzene, Toluene, Ethylbenzene and Xylene (BTEX). Eight groundwater samples were tested for Volatile and Semi-Volatile Organic Compounds (VOC and SVOC) and Ammonium, and six groundwater samples were tested for speciated Phenols and free and total Cyanide. The testing suites used are considered to be comprehensive and specific to the possible contamination sources identified at the Site/ surrounding area in the preliminary CSM. Two rounds of groundwater level and ground gas monitoring were undertaken on newly installed wells.

2.3 Ground Conditions

Ground conditions were found to comprise generally granular Made Ground to depths of up to 1 m bgl, underlain by the Enfield Silt Member (clay to depths of up to 1.9 m bgl) and Kempton Park Gravel Formation (sand and gravel to depths of up to 5.3 m bgl). The London Clay Formation, underlying the Kempton Park Gravel, was proven to depths of up to 13.4 m bgl, and was underlain by the Lambeth Group (base unproven >15 m bgl) comprising clay or sand.

Visual and olfactory evidence of contamination was encountered during the investigation, primarily as a slight to strong hydrocarbon odour in the Kempton Park Gravel Formation and local olfactory evidence of contamination in the Made Ground and Enfield Silt Member (DS104 and DS105).

Groundwater levels within the Kempton Park Gravel Formation indicate resting groundwater levels may be at approximately 2 m bgl (8.7 m AOD). The inferred flow direction within the Kempton Park Gravel Formation was towards the south. A deeper groundwater body was recorded at the base of the London Clay Formation/ Lambeth Group and was noted to be sub artesian in nature. Given the significant thickness of low permeability London Clay Formation between the Kempton Park Gravel Formation and the Lambeth Group, the two groundwater bodies were considered to be hydraulically separate and offer protection against vertical migration of contamination into the deeper more sensitive aquifer. Olfactory evidence of gross contamination was observed during the post investigation groundwater monitoring in DS104 and DS101.

2.4 Human Health Generic Quantitative Risk Assessment (GQRA)

The soil laboratory results were compared against commercial end use Generic Assessment Criteria (GAC) for 1% soil organic matter (SOM) content.

Widespread significant contamination of the soils was not identified by the Geo-Environmental Assessment for the Site. Although concentrations of heavy metals, Petroleum Hydrocarbons and PAHs were detected, they remained below relevant GAC for a commercial end use scenario.

Localised exceedances of Delta-Simons' derived GAC for Total Petroleum Hydrocarbons (TPH) (5,000 mg/kg) were identified in the shallow soils (Made Ground, Enfield Silt Member and Kempton Park Gravel) at DS103, Kempton Park Gravel at DS106 and the Made Ground at DS104. These locations are all noted to be in proximity to one another, in the centre-north of the Site, indicating a potential localised soil contaminant source in this area of the Site. The screening criteria, whilst not directly correlating to risks to human health was considered to be an indicator of potential product with the soil based on soil co-solubilities. A breakdown of TPH fractions indicated that the majority of elevated TPH concentrations were located within the longer chain aliphatic hydrocarbon range which are typically less mobile and also less volatile. A maximum concentration of total TPH (18,161mg/kg) was recorded within the deeper Kempton Park Gravels at DS103, however it is noted this sample was likely from the capillary fringe (i.e. impacted by groundwater) given the resting groundwater levels recorded. Similar total TPH concentrations were recorded within the Made Ground at DS104 (13,094mg/kg), predominantly comprising long chain aliphatic compounds.

Asbestos screening identified ACMs consisting of chrysotile and amosite fibres in five samples from three locations, typically within the Made Ground.

2.5 Controlled Waters GQRA

The results of groundwater laboratory analysis identified marginally elevated heavy metals and Ammonium (NH₄) to be present across the entire Site within the Kempton Park Gravels. The analysis also identified elevated TPH fractions comprising medium and long chain aliphatic and aromatic hydrocarbon fractions to be present in the north around DS101 and DS104 and also at DS108, with elevated PAH compounds predominantly recorded at DS108.

It was noted that the elevated TPH concentration recorded in DS108 may represent a separate source area, possibly associated with a historical spill.

The most significant groundwater TPH concentration was recorded in DS104, near the potential shallow soil hotspot in the vicinity of DS103, DS104 and DS106.

Whilst elevated TPH concentrations and localised product were identified in the soils, the results of laboratory chemical testing indicated that contaminants within the shallow groundwater were likely to have been derived from the overlying soils and were considered to correspond to lubricating oils which are not considered to be highly volatile. A review of the speciation of TPH concentrations also indicated

that TPH concentrations were broadly located within the longer chain aliphatic range and therefore were unlikely to be volatile.

Two groundwater samples were obtained from the deeper Lambeth Group with samples targeted to assess the nature of contaminants at the Site boundary and also in proximity to the USTs in the south east of the Site. The results of the laboratory analysis did not identify any exceedances when considered in the context of UK Drinking Water Standards and no evidence of contaminant exceedances within the shallow aquifer was identified in the deeper aquifer, indicating the aquifers to be isolated from each other.

2.6 Preliminary Ground Gas Risk Assessment

The results of the gas monitoring identified elevated levels of methane at DS103, DS104, DS105, DS106, and DS107, with response zones located within the Made Ground and Kempton Park Gravel (methane concentrations recorded up to 19.6% v/v). Elevated methane concentrations were typically encountered in areas where evidence of hydrocarbon staining had been noted. Carbon dioxide concentrations were generally noted to be low (<5% v/v) across the Site with localised areas of depleted oxygen. Based on the initial findings of the preliminary investigation, the ground gas regime at the Site was considered to correspond to a CS2 in accordance with BS:8485 guidance.

2.7 Revised CSM

A revised CSM was presented in Section 8, for a commercial end-use. The CSM is considered suitable for the Site in its previous commercial use and for the future commercial redevelopment proposed.

Potential sources were identified to comprise localised ACMs in the Made Ground, hydrocarbon impacted soils and groundwater in two potential sources areas around DS103/ DS104, and to a lesser extent DS108, and elevated methane concentrations.

Potential receptors were identified to comprise current and future Site users, maintenance/ construction workers, Secondary A Aquifer (Kempton Park Gravels) and third party land.

Plausible pathways were considered to comprise direct contact, ingestion and inhalation of contaminated soils, particulates and fibres, migration of hydrocarbons and PAHs from the soils into the groundwater, and vertical and lateral migration and accumulation of gas in enclosed spaces.

3.0 Conclusions and Recommendations

Delta-Simons consider the Geo-Environmental Assessment (ref. 20-0337.01, dated 30th June 2020) to include sufficient land contamination risk assessment and refinement of the conceptual site model to determine the requirements for remediation at the Site, in the context of the commercial redevelopment that is proposed. For this reason, the Geo-Environmental Assessment and this cover letter are considered to be sufficient to discharge Condition 4a, Condition 4b, Condition 4c and Condition 4d.

Given the potential pollutant linkages between asbestos in the Made Ground and future Site users/ construction/ maintenance workers, localised hydrocarbon impacted soils and the Kempton Park Gravel groundwater, and elevated methane concentrations and future Site users, a Remediation and Verification Strategy should be prepared to mitigate any unacceptable risks to human health and controlled waters receptors.

The strategy to be presented under separate cover is likely to include requirements for soil cover systems in areas of soft landscaping, localised soil hotspot removal and ground gas protection measures, commensurate with a CS2.

Yours sincerely,
Delta-Simons