LMB Geosolutions Ltd

Ground Investigation
Land Contamination
Hydrogeology
Engineering Geology

09/04/2024

SUMMARY OF LAND CONTAMINATION ASSESSMENT & RISK MITIGATION ACTIONS FOR 11-12 INGESTRE ROAD, LONDON NW5 1UX

Introduction

LMB Geosolutions Ltd (LMB) was instructed by Symmetrys Ltd (Consultant Engineers) on behalf of Four Quarter Ingestre Road Ltd (the Client) in April 2024 to provide a summary of the findings of the Land Contamination Assessment and associated Risk Mitigation Actions required in relation to the proposed development at 11-12 Ingestre Road, London NW5 1UX (the Site).

Background

Proposed Development

It is understood that the development will comprise comprises, '*Erection of a six storey building plus single storey basement to provide 50 Assisted Living residential units (1 x 1 bed, 41 x 2 bed, 8 x 3 bed), following demolition of the existing building together with associated communal facilities, plant equipment, landscaping and 8 car parking spaces.*'

Planning Conditions

Planning permission has been granted for the proposed development (ref. 2018/4449/P, dated 14th September 2018) and included a number of conditions with Condition 16 requiring an assessment of potential land contamination issues as follows:

At least 28 days before the development hereby permitted commences a written detailed scheme of assessment consisting of site reconnaissance, conceptual model, risk assessment and proposed schedule of investigation must be submitted to the planning authority. The scheme of assessment must be sufficient to assess the scale and nature of potential contamination risks on the site and shall include details of the number of sample points, the sampling methodology and the type and quantity of analyses proposed. The scheme of assessment must be approved by the LPA and the documentation submitted must comply with the standards of the Environment Agency's Model Procedures for the Management of Contamination (CLR11).

Prior to commencement of the LMB ground investigation works, contact was made with Julien Diaz (Environmental Health Team Leader) at London Borough of Camden to discuss Condition 16 and agree in principle the use of the existing Preliminary Risk Assessment section within the BIA report to help inform requirements and ground investigation design.

Previous Reports

The following previous reports have been completed on behalf of the Client in relation to the proposed development:

- Create Consulting Engineers (ref. CB/CS/P17-1282/05, July 2018). 11-12 Ingestre Road, London NW5 1UX. Basement Impact Assessment.
- LMB (ref. LMB_21.07.20_REPPIL_GI_P2_Ingestre Rd_v2.0_ALL, dated 20th July 2021). Ground Investigation & Assessment 11-12 Ingestre Road, London NW5 1UX.

The LMB report (ref. LMB_21.07.20_REPPIL_GI_P2_Ingestre Rd_v2.0_ALL, dated 20th July 2021) aimed to provide information sufficient to aid the Consultant Engineers in design of the proposed new development and to aid in discharge of Condition 16 of the planning permission.

Summary of Ground Investigation Findings

Ground & Groundwater Conditions

The ground conditions at the site comprise Made Ground overlying possible Head Deposits (northern and eastern site area) which in turn overlie the London Clay Formation. Made Ground thickness was noted to increase to a maximum thickness of 4.30m in the southern and south-eastern area of the site where there is a notable increase in site levels and a large retaining wall.

During the Create Consulting ground investigation works (2017) no water strikes were encountered. During the LMB investigation water strikes were recorded in locations WS04 and TP02 to TP04 inclusive at depths of between 0.78m (47.47m AOD) and 1.20m bgl (45.49m AOD). The observations in TP02 to TP04 inclusive are in locations around the existing retaining wall in the south of the site and is likely to be reflective of water that has built up behind the retaining wall.

During return monitoring groundwater was recorded at depths of between 0.51m and 2.37m bgl. Water levels were generally observed to rise over the monitoring period. However, it is considered unlikely that this is reflective of groundwater recharge in the London Clay and is more likely to be reflective of rapid rainfall infiltration through Made Ground soils and via monitoring well covers.

In addition, groundwater within the London Clay Formation is not considered to be representative of a permanent and laterally continuous aquifer unit, but rather present as discrete and confined units within (for example) micro fissures and local mudstone horizons and the recorded groundwater level will most likely be reflective of the pore water pressures within these discrete features.

Summary of Generic Quantitative Risk Assessment (GQRA)

Soil Assessment

The GQRA completed has identified slightly elevated concentrations of Lead within a number of Made Ground samples. However, the highest concentrations have been recorded in the shallow Made Ground soils and these soils will be excavated to enable basement formation. In addition, the concentrations in the deeper Made Ground soils (WS02 at 3.35m) are lower and below the more appropriate residential (without home grown produce criteria).

Based on the information reviewed and GQRA completed no plausible pollutant linkages are considered to exist following development.

There is also potential for maintenance and construction workers to come into contact with Made Ground soils during construction works. However, it should be noted that this relates to acute and not chronic risk and as such cannot be assessed using the approach described within the Environment Agency/Defra Contaminated Land Statutory Guidance (April 2012).

Ground Gas & Volatile Vapours

Based on the monitoring completed, recorded concentrations of bulk ground gases and volatile vapours are not considered to pose a risk to future site users and new buildings.

Planning Conditions

The information provided within this report is considered sufficient to aid in discharge of Condition 16 of the planning permission (ref. 2018/4449/P, dated 14th September 2018). No plausible pollutant linkages are considered to exist following development and as such no remedial measures are considered necessary. However, the following risk mitigation actions are provided.

Risk Mitigation Actions

Areas of 'Raised' Soft Landscaping

Based on the information provided it is understood that the basement excavation will extend over the majority of the building footprint and that any soft landscaping will effectively be 'raised' such that there will be no potential for direct contact with insitu soils.

However, it is recommended that any imported soils used within the soft landscaping areas are certified 'clean' by the supplier who should provide certificates of chemical analysis. The results of the chemical analysis should be compared to the criteria utilised within the GQRA that are reproduced and appended at the end of this report.

Radon Protection Measures

The site is not in a radon affected area as less than 1% of properties are above the Action Level. However, the Environmental Health team at London Borough of Camden have highlighted the information within guidance documents (BRE report BR211 amongst others) that suggests that developments including basements will be at an increased risk from Radon regardless of geographical location.

As such it is recommended that basement design takes into consideration the information and guidance within BR211 and that this is incorporated into the design, as appropriate.

General Recommendations

Based on the proposed development and conclusions presented above, the following recommendations are provided.

- It is recommended that this report is submitted to the Environmental Health Team at London Borough of Camden to support discharge of Condition 16 of the planning permission.
- It is recommended that the use of appropriate potable water supply pipes be agreed with the statutory undertaker.
- It is recommended that Maintenance and Construction Workers involved in any below ground works adopt appropriate management procedures to mitigate direct contact with potentially contaminated soils.

I trust the information presented above is of use, however should you have any queries then please feel free to contact me at your convenience.

Best regards,

For and on behalf of LMB Geosolutions Ltd,

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Chemical Specification – Imported Topsoil & Subsoil

Concentrations of the chemicals in imported soils should be below the criteria detailed in the Table below:

DETERMINANDS		TOPSOIL AND SUBSOIL (mg/kg)
Arsenic		40
Cadmium		85
Chromium (assumes trivalent form)		910
Copper[(1)]		7,100 (135)
Free Cyanide		49
Lead		310
Mercury		240
Nickel[(1)]		180 (75)
Selenium		430
Zinc[(1)]		40,000 (200)
Benzo(a)pyrene		5.0
Benzo(a)anthracene		5.0
Benzo(b)fluoranthene		6.0
Benzo(k)fluoranthene		10
Benzo(ghi)perylene		50
Chrysene		10
Dibenzo(ah)anthracene		0.31
Fluoranthene		250
Indeno(123-cd)pyrene		5.0
Naphthalene		2.5 (76*)
Pyrene		55
Fluorene		3.1 (31*)
Anthracene		52
Phenanthrene		22
Acenaphthylene		8.6 (86*)
Acenaphthene		5.7 (57*)
Phenol		75
Benzene		10
Toluene		8.7 (870*)
Ethylbenzene		5.2 (520*)
Xylenes (sum m, o & p)		6.3
Aliphatic	>C5-C6	30
	>C6-C8	70
	>C8-10	20
	>C10-C12	10 (102*)
	>C12-C16	7.1 (71*)
	>C16-C35	5.0 (25*)
	>C35-C44	5.0 (25*)
Aromatic	>C5-C7	60
	>C7-C8	120
	>C8-C10	25

DETERMINANDS		TOPSOIL AND SUBSOIL (mg/kg)
	>C10-C12	65
	>C12-C16	140
	>C16-C21	250
	>C21-C35	10 (30*)
	>C35-C44	10 (30*)
Asbestos Containing Materials (ACM)		No ACM identified
Sulphate (mg/l)		0.5
Topsoil Only	Nutrient Content	Reference BS 3882:2007
	pH	Reference BS 3882:2007

(1) Values in brackets are those presented in BS 3882:2007 for phytotoxic contaminants in topsoil. Application of these criteria will be dependant on the sensitivity of plant and grass species to be used in landscape areas and not potential risks to future Site users.

In addition to the above, all topsoil should meet the criteria set out in BS 3882:2007 'Specification for topsoil and requirements for testing procedures'.