ENVIRONMENT
& HEALTH

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Dear Laura,

Date 16/09/2022

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RE: PLOT 10A DEVELOPMENT, FIRST STREET, MANCHESTER, GROUND CONTAMINATION RISK ASSESSMENT

Ramboll UK Limited has been appointed by First Street Development Limited to provide a range of services which include contaminated land consultancy for the proposed development of Plot 10a, First Street, Manchester ('the Site').

This letter has been prepared to accompany the planning application for the proposed development of Plot 10a, First Street, Manchester. The letter outlines the previous work completed at the site and provides a ground contamination risk assessment summary for Plot 10a based on the proposed commercial end-use.

Previously, Ramboll has prepared a Contaminated Land Desk Study and Contaminated Land Interpretative Report for a wider site area within which Plot 10a is situated. For context, Plot 10a is a part of a larger parcel of land formerly referred to as 'Plots 6 and 7', which was then renamed as 'Plots 9 and 10'. Plot 6 had become Plot 9 (which was split into development Plots 9a and 9b); and Plot 7 has become Plot 10 (which split into development Plots 10a and 10b).

Plot 10a is approximately 0.3 Ha (hectares) in area, and rectangular in shape. Plot 10a is bounded by Plot 10b to the immediate east; Plot 9 to the immediate west, River Street to the north and Hulme Street to the south.

A site location plan is provided as Figure 1 below. A site plan showing the site boundary of Plot 10a in context of the wider site area referenced in the previous reports is provided as Figure 2. The red line boundary for Plot 10a proposed development is illustrated more accurately on Figure 3 along with the proposed development layout.

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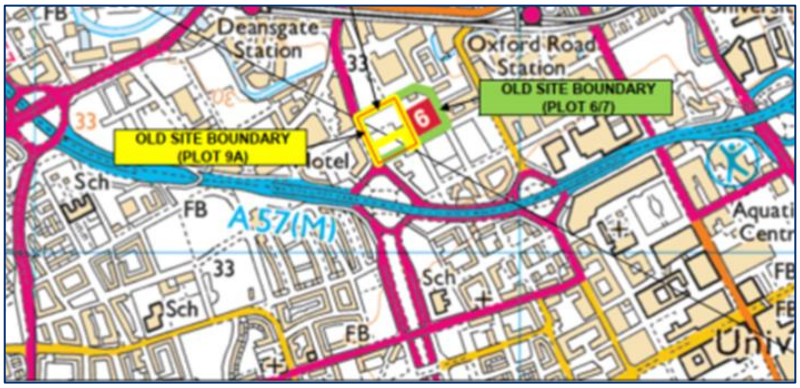

Figure 1 - Site location plan

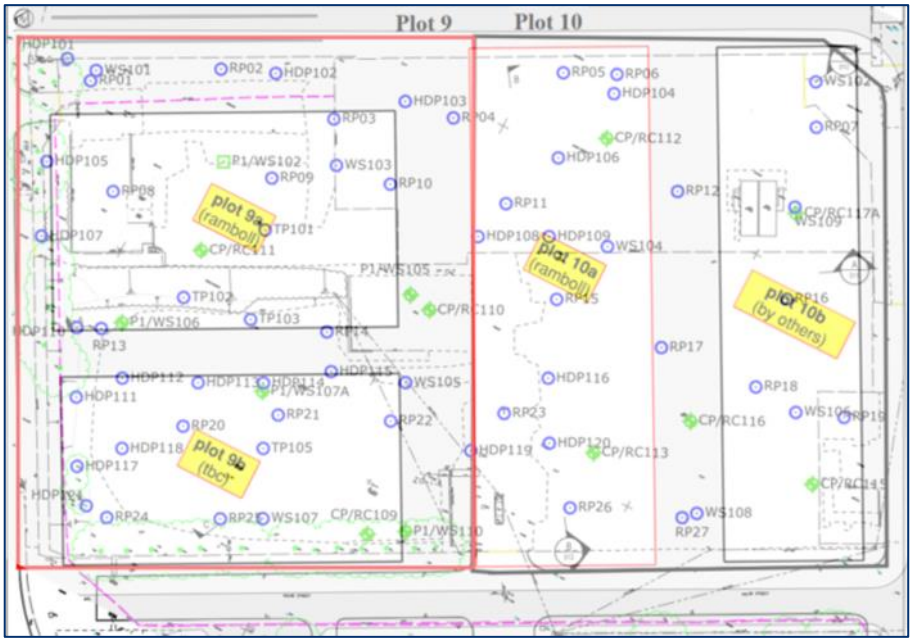

Figure 2 - Plot 10a in the context of the wider plots 9&10 investigation areas

Proposed Development

The proposed development of Plot 10a comprises construction of a 13-storey plus basement office building for use Class E (c). No car parking spaces are included within the design, however, approximately 204 cycle parking spaces are proposed. There will be limited landscaping included within the development. The internal space of the office building is 20,155 sqm (square metres).

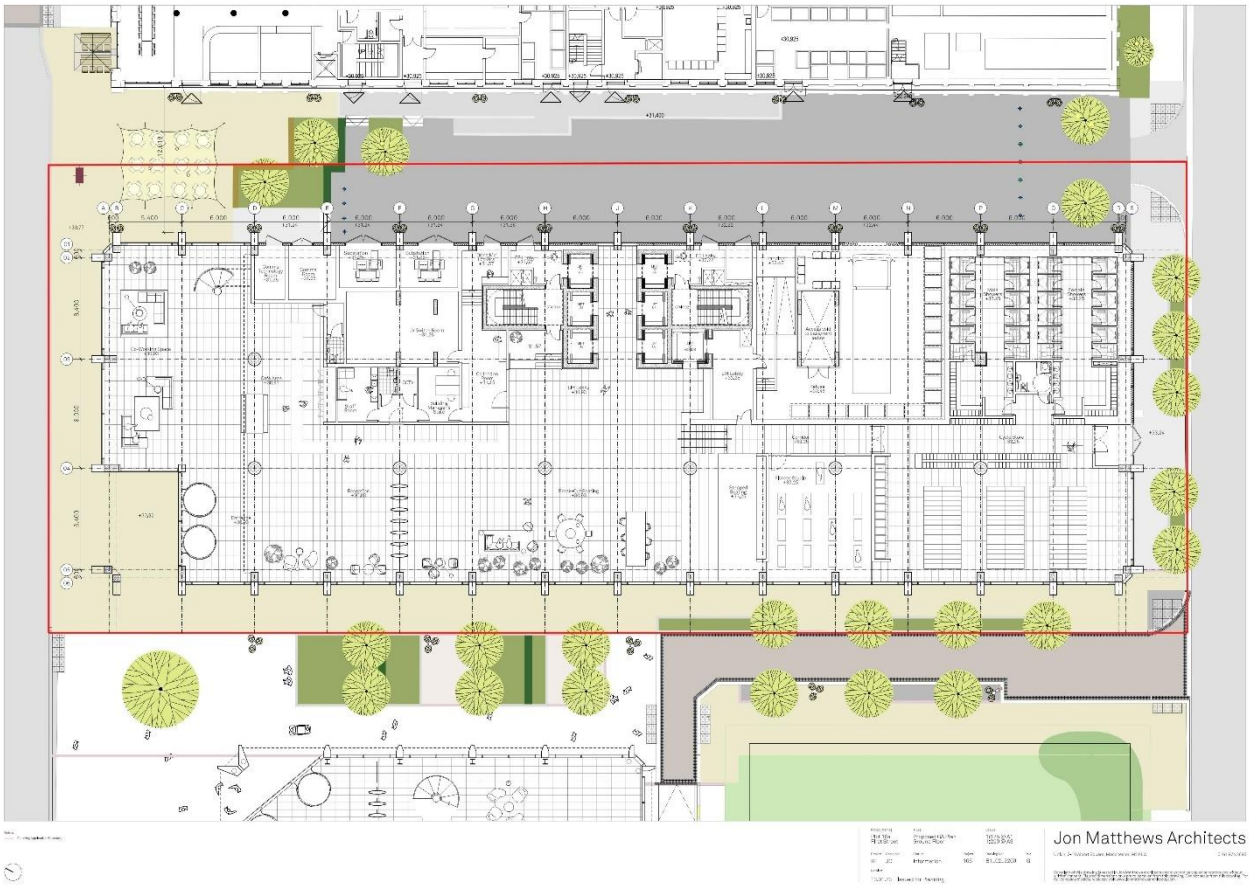

Figure 3 - Plot 10a red line boundary and proposed development layout

Previous Reports

Ramboll had prepared the following reports which pertain to Plot 10a site as listed below:

- Ramboll, 2018. Plots 6 & 7 First Street, Manchester – Geotechnical and Contaminated Land Interpretative Report. Report Reference: 1620002943-GCLIR-03, rev. 3. February 2020; and
- Ramboll March 2017. Contaminated Land Desk Study – Plot 6/7 First Street. Report Reference: 1620002943_CLDS_01. March 2017.

Development plans changed following production of these reports and the site was considered in smaller portions. Plot 9 was considered first, in various iterations with slightly amended footprint and development plans. For the final iteration of the layout, Ramboll completed a detailed review of the Plots 9&10 desk study and a full reinterpretation of the ground investigation dataset, splitting out the Plot 9 area data alone to provide a Plot 9 specific contaminated land risk assessment document. This review demonstrated that the conclusions for Plot 9 individually were the same as the conclusions provided for Plot 9&10 combined.

The below sections summarise information from these reports pertinent to the Plot 10a area to provide a contaminated land risk assessment suitable to use (in conjunction with the previous reports) as the basis on which to proceed to developing a remedial strategy for the development of Plot 10a.

Contaminated Land Desk Study

Ramboll prepared a contaminated land desk study in 2018. This reviewed a number of previous documents which considered the site in relation to an open space end use and provided a reassessment in relation to the commercial development end use as proposed at the time. The contaminated land desk study considered Plots 9 and 10 (then Plots 6 and 7) as one, with Plot 9 occupying the western part of the site, and Plot 10 occupying the eastern.

Historically, the site has been developed from residential housing (which occupied the site between approximately 1848 to 1928) to become part of 'India Rubber Works' (later renamed to 'Dunlop Rubber Works'). The town plans showed the western area of the site (Plot 9) to be a scrap and material yard. The eastern area (Plot 10) of the site was a steel truss roof structure with concrete floors and asbestos cladding. The 1962 town plan showed the western area of the site was a hot water bottle factory with a steel truss roof and asbestos cladding. By 1968 there was a coal pile in the western area of the site with a hose factory in the south-east. The site remained similar until 2006 when it was reported that the site was undeveloped. Surrounding land uses included gas works, rubber works, housing and industrial facilities.

Plot 10a specifically was in the middle of many of these general industrial uses so could be assumed to have a similar industrial history generally to that described for Plots9&10 combined.

Site ground conditions were identified as Made Ground overlying Glacial Deposits (Secondary A Aquifer), and Chester Pebble Beds bedrock formation (Principal Aquifer). A buried historical watercourse channel was noted running approximately north-west to south-east through the site, which is stated to be a tributary of River Medlock. Due to this, there is the possibility of alluvium to also be present on Site, and there is potential for the historical infilled watercourse to be in hydraulic connectivity with River Medlock. River Medlock is present approximately 80 m north-west of the site, before it is culverted to the north of the site. It is not considered to be in hydraulic continuity with the groundwater at the site.

A preliminary Conceptual Site Model (CSM) was developed. The identified potentially significant pollutant linkages which required further consideration through further ground investigation across the site were as follows:

- Low to Moderate risk to future site users from presence of asbestos through inhalation within soft landscaped areas;
- High risk to adjacent site users and construction workers during construction from presence of asbestos as there is potential to disturb the ground and disperse asbestos fibres into the air;
- Moderate risk to human health (future site users and construction workers) from presence of Made Ground, organic-rich deposits and infilled watercourse channels;
- Low to Moderate risk to future site users volatiles in the subsurface; and
- Moderate risk to the underlying aquifers from mobile contaminants.

It is considered that the initial CSM is appropriate for Plot 10a development due to the similar proposed commercial end use of the site area.

Contaminated Land Interpretative Report

Following the development of the preliminary CSM, additional ground investigation was carried out across Plots 9 and 10, to address the risks discussed above.

Ramboll used the ground investigation data, in addition to the existing available data from previous phases of ground investigations (as detailed within the Contaminated Land Desk Study), to undertake a Generic Quantitative Risk Assessment (GQRA) for Plots 9 and 10 (documented in Ramboll 2020 CLIR report).

The soil data was screened against Generic Assessment Criteria (GAC) for commercial / industrial land use, which is deemed suitable for the current proposed development of Plot 10a to an office building. The groundwater and soil leachate data has been screened against relevant GAC for both groundwater and surface water receptors due to presence of sensitive aquifers beneath the site (Secondary A superficial and Principal Aquifer within bedrock), and River Medlock 80 m north-west of the site.

The assessment which was prepared for Plots 9&10 provided the following conclusions in relation to chemical contaminants in soils and water:

- Presence of asbestos fibres within the Made Ground soils may pose a risk to human health (i.e., construction workers and off-site receptors);
- Presence of elevated hydrocarbon and semi-volatile organic compounds (SVOCs) within soils above the water supply pipe guidance concentrations which would trigger the potential requirement for barrier pipe; and
- Potential for additional impacts to be present beneath the site where site access was restricted or where unexpected contamination may be encountered.

A review of the data for Plot 10a in the context of the CSM and the above, provides that the same conclusions are relevant to the currently proposed development of Plot10a.

Ground gas risk assessment was undertaken for the site using the data obtained from six rounds of monitoring. The number of monitoring rounds for the proposed development at the time of writing was deemed appropriate based on the potential sources of ground gases present across the site, using the CIRIA C665 guidance. As such, the ground gas data is deemed sufficient to inform the risk assessment for Plot 10a alone.

The ground gas risk assessment provided a worst case assessment considering the most significant gas concentrations identified on site in association with the worst case ground gas flow rates. The ground gas screening value equated to a Characteristic Situation 1, but the elevated methane and carbon dioxide concentrations trigger a requirement to consider Characteristic Situation 2. It was concluded that the site, at worst, would be classified as Characteristic Situation 2 due to elevated methane and carbon dioxide concentrations identified in monitoring well RP20.

The findings of the ground investigation and all available data was used to refine the CSM, and recommendations for potential further action to address the remaining pollutant linkages were provided as:

- Risk management measures to implement during the construction works to address potential risks to human health (construction workers and off-site receptors) from asbestos in the Made Ground;
- Installation of a barrier pipe;
- Ground gas protection measures suitable for a Characteristic Situation 2 gas regime; and
- Risk management measures to implement during construction works if unexpected ground conditions or contamination is encountered.

These conclusions remain largely suitable for Plot 10a. However, the ground gas risk assessment was completed on a worst case basis. A more detailed, site specific consideration of risks is appropriate to provide a proportionate recommendation for ground gas remedial action in line with sustainable development principles.

Further discussion on ground gas risk

The ground gas risk assessment provided in the 2020 CLIR report comprised a worst-case assessment concluding that the site, at worst, would be classified as Characteristic Situation 2 due to elevated methane and carbon dioxide concentrations identified in monitoring well RP20.

All other data from the site was at concentrations below the trigger values for methane and carbon dioxide, and gas flow rates were all below the detection limit.

The monitoring well RP20 was installed within the sandstone aquifer between 6m and 11m bgl (below ground level) with resting water level around 8m bgl. The monitoring data provided by Terra Consult indicated methane at 1.5% and carbon dioxide at 9.3% during the first monitoring round and at 0.1% and 5.6% respectively in the second round. Unfortunately, after this, the well had been destroyed and no further monitoring could take place.

The gas concentrations provided by Terra Consult are assumed to be peak concentrations, however peak and steady state are not provided.

RP17 was installed in the same strata and the monitoring over six rounds did not identify any elevated gas concentrations. No source of ground gases (e.g. organic materials) is noted in the borehole logs for locations which extended to this strata.

It is considered likely that the initial spike in concentrations in RP20 was due to a localised pocket of gases. The concentrations decreased over the two rounds available; there is no source medium identified; low concentrations were noted in RP17 in similar strata; and the flow rate was recorded at below detection limits. All these lines of evidence suggest that there is unlikely to be a significant source of ground gas at the site and any localised small pockets of gas are unlikely to migrate to pose a risk to the development due to the lack of any recordable gas flow. It is therefore considered that it is reasonable to conclude a Characteristic Situation 1 for ground gas risk at this site and as such no mitigation measures will be required.

The ground gas monitoring data and borehole logs are available in the following report:

- Terra Consult, 2018. Plots 6&7 First street. Report no 3296R001-1

Further works

The following further works are recommended by Ramboll:

- A piling risk assessment to address any potential increase of risk to the Principal Aquifer during the construction phase;
- Development and implementation of a remedial strategy to include the identified contamination issues, a contingency plan for unexpected contamination, and a verification plan; and
- Development of a Material Management Plan (MMP) in accordance with the CL:AIRE, 2011 Waste Code of Practice.

Verification of remedial works will also be required, to be undertaken during and after earthworks are completed.

I trust that the three enclosed reports referenced and this letter with the additional discussion specific to Plot 10a provide sufficient information in relation to ground contamination investigation and risk assessment to facilitate this Planning Application at this stage.

If further information is required, please do not hesitate to contact the undersigned.

Yours sincerely

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Key Documents attached:

- Ramboll, 2018. Plots 6 & 7 First Street, Manchester – Geotechnical and Contaminated Land Interpretative Report. Report Reference: 1620002943-GCLIR-03, rev. 3. February 2020; and
- Ramboll March 2017. Contaminated Land Desk Study – Plot 6/7 First Street. Report Reference: 1620002943_CLDS_01. March 2017.
- Terra Consult, 2018. Plots 6&7 First street. Report no 3296R001-1