



Contaminated Land Phase Two Intrusive Investigation for proposed residential development at Land Off Chapel Street, Manchester, M19 3QB.

Prepared for

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Introduction

Martin Environmental Solutions has been commissioned, to carry out a phase two intrusive investigation for a proposed residential development on land at 7-9 Chapel Street, Manchester, M19 3QB.

The Phase II Intrusive investigation follows a phase I desk study report and initial Phase II investigation, report ref; 2492-1, produced by Martin Environmental Solutions, which identified some elevated levels of contaminants on site. The report concluded a more in-depth investigation was required following demolition of the buildings on site.

The Site:

Site Address: 7-9 Chapel Street, Manchester, M19 3QB.

Grid reference: 387486; 394216

An aerial photograph of the site is included in Figure 1.

Current Site use:

At the time of the investigation the former industrial site buildings had been demolished and concrete hard standing removed from across the site.



Phase I and Initial Phase II findings

The site was first developed between 1849-1892 with a Mission Room in the centre of the site. By 1905-11 the site had been redeveloped with a smithy to the western section. By 1956 the site is an engineering works, later redeveloped between 1968-1981. Off site a reservoir was identified ~100m to the south of the site from 1893 until 1956 when the carpet mill was redeveloped into a saw mill and later a church. A house estate was erected on the northern section opposite the site in 2018. A large electricity sub-station was located to the south 40m away on Elbow Street from 1907.

The initial phase II investigation consisted of a series of trial holes across the site. These identified elevated levels of contaminations in five areas as indicated in the report and the plan in figure 2.

The Phase II additional Intrusive Investigation

A site visit was conducted on the 8th June 2024 to undertake an intrusive investigation. The site had been cleared at the time of the visit with previous buildings demolished. A sampling program of 18 sample locations, identified in Figure 2, spread across the site at approximately 10m centres were undertaken. Some of these were located adjacent to the previously sampled locations. Both rounds of sampling are shown on the plan in Figure 3.

The samples were sent to Chemtech environmental a UKAS and MCERTs laboratory and each analysed for heavy metals, Total Petroleum Hydrocarbons (TPH) and Polyaromatic Hydrocarbons (PAH), and Asbestos.

The demolition of the buildings on site had also seen the removal of the concrete hardstanding across the site.



Results

The full sampling results are presented in Appendix 1, the sampling locations in Figure 2. The results have been compared against the LQM/CIEH S4UL's for a residential without homegrown produce scenario & the C4SL value for Lead. Soil organic matter varied across the site.

Details of each trail pits, including photographs are shown in Appendix 2.

Soil encountered in the trail pit comprised of a mixture of loamy clay with gravel and sand with gravel. Made ground was identified at a shallow depth across the site with some areas showing a stiff clay at lower depths. Stone, brick was also identified across the site.

The results of the samples identified no asbestos fibres within the site. The previous round of sampling (Phase I report) did identify some asbestos in two locations TP1b and 6a, from lagging material.

Elevated levels of Arsenic were identified from the second round of monitoring in TP4a and TP11a, and in the first round at TP5a and 8a. TP4 & 5 were in similar locations to the southeast of the site.

In addition, elevated lead levels were encountered across the centre of the site (front to back) in TP5, 7-12 15 & 16 during the second investigation which mirrored the first round with the exception of the northwest corner where elevated lead was found in the first round.

Elevated Total Petroleum Hydrocarbons (TPH) were identified in TP6 during the first round and TP11, 13 & 15 in the second.

Elevated Polyaromatic Hydrocarbons levels were identified in TP1B, 3A, 5A and 6A (i.e. surface levels) during the first phase of investigation. During the second-round elevated levels were encountered in TP 4, 8-13, 16 & 18. These correspond to the first round plus some additional areas. Predominantly the central strip of the site to form the roadway and the western corners.



Conclusions & Recommendations

Following the phase I and Phase II investigations contamination likely to pose a significant possibility of significant harm to the identified receptors, principally future occupants of the properties, has been found on site.

This contamination appears to be concentrated in a central strip (front to back) of the site, under the central building and access road previously present on site, and to a lesser extend the western section of the site under the former building.

As a result of the investigation the conceptual model has been updated.



Updated Conceptual Model

The table represents a basic conceptual model. It highlights the potential sources of pollutants identified from the gathered information, and potential pathways in which any contaminants could reach the identified receptors.

Pathway	Description	Identified sources	Receptor at risk	Probability	Consequence	Risk
1	Run off and seepage into groundwater from any spillages	Heavy metals, PAHs, TPH,	Watercourse/ Environment	likely	Mild	Moderate / Low
2	Migration of gases into the building.	Vapours from hydrocarbons	Future users	likely	Medium	Moderate
3	Inhalation of gases/ vapours outside	Vapours from hydrocarbons	Construction workers/future users	likely	Mild	Moderate
4	Inhalation of fine particles	Heavy metals, PAHs, TPH, asbestos	Construction workers/future users	likely	Medium	Moderate
5	Direct ingestion of contaminated soil	Heavy metals, PAHs, TPH,	Construction workers	likely	Medium	Moderate
6	In-direct ingestion of contaminated soil	Heavy metals, PAHs, TPH,	Future users	likely	Medium	Moderate
7	Absorption via direct dermal contact with contaminated soil	Heavy metals, PAHs, TPH,	Construction workers/future users	likely	Medium	Moderate



		CONSEQUENCE			
		Severe	Medium	Mild	Minor
PROBABILITY	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very low Risk	Very low Risk

Recommendations

As a result of the desk study and intrusive investigations undertaken, elevated levels of contaminants have been found on site which pose an unacceptable risk of harm to identified receptors.

As a result of the investigation Remediation works are required on site. The following are suggested works

1. Excavation and disposal of the contaminated soils across the central strip (TP 9-16 and hotspots at TP4 & 18, to depth of approx. 500mm or clean clay.
2. Test excavations on site with a PID to confirm no residual VOC's and take a series of soil samples for analysis to confirm to if residual contamination is present.
3. Back fill with clean imported material.
4. Ensure a minimum of 600mm clean material is provided in garden amenity areas, with a geotextile no dig layer below. 450mm clean material in other soft landscaping areas.
5. All services to be laid in trenches backfilled with clean imported material.
6. All mains water pipework to be of a Barrier pipework.

The above works will break any source-pathway-receptor pollutant linkages by first removing contamination on site while the clean cover system will prevent any contact with any remaining residual contamination.

It is further recommended that a watching brief is maintained throughout the construction of the new building and any signs of potential contamination found are fully investigated, with appropriate remedial action taken as necessary and the local planning authority informed of the findings.

Figure 1 – Aerial Photograph





Figure 2 – Phase II Sampling Locations





Figure 2 – Phase 1 Intrusive Investigation Trail Pits Locations



