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Department for Operations

Jennie Townsend
Bury Council Planning Department

Dear Jennie

Land adjacent to 34 James Street North, Radcliffe, M26 1LL. Planning application 66984 - Contaminated Land

The Environment Section has received copies of the following reports:

- Phase 1: Preliminary Risk Assessment, James Street North, LKC, Reference: 20 1984, 8 January 2021.
- Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy, James Street North, LKC, Reference: 20 1984, 8 June 2021.
- Final Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy, James Street North, LKC, Reference: 20 1984-02, November 2021.

The Environment Section has reviewed the above information in order to assess the following points:

1. The adequacy of the desk study information available for this site.
2. The adequacy of the site investigation.
3. The adequacy of the final risk assessment.
4. The acceptability of the proposed remediation strategy.
5. Whether the information submitted is sufficient to determine that the site presents a low risk to human health and the environment

The site has historically been in use as land adjacent to housing and a Reservoir associated with a Bleaching and Dyeing Works. Surrounding historical land uses included housing and Radcliffe Paper Mill to the South and a Cloth Mill to the north west. By 1972 there is an unspecified building on the site. By 1989 the building is still present and the reservoir to the north has been infilled. Currently the site appears vacant with residential properties to each side and a Depot to the North.

The site is situated above the Nob End Rock Sandstone Secondary A Aquifer above which is Glacial Till. The site is not within 250m of a registered landfill.

The proposal is for three residential houses with soft landscaping and gardens.

1. The adequacy of the desk study information available for this site

The report includes a description of the site including its past historical uses. An appraisal of the site environmental setting is presented including its geology, hydrogeology and hydrological regime, mining activities, waste management issues, and identification of additional environmental sources, pathways and receptors. This information has been used to compile a clear site conceptual model, which identifies potential sources, pathways and receptors and likely pollution linkages.

A site walkover was carried out on 5 January 2021 and hand dug trial holes were undertaken. The site was found to be vacant with dense vegetation, fly tipping of household waste present, and was generally uneven with a possible mound of material in the south eastern corner.

Two hand dug trail pits were carried out:

Technique	No.	Comments
Hand dug trail pits	2	HD101 and HD102

Ground Conditions: Made ground to maximum 0.3m bgl was found to be made up of silty gravelly sand with occasional brick and glass.

Potential sources identified include demolition rubble, made ground, asbestos containing materials, and off-site potentially infilled features.

A phase 2 investigation was been advised to be carried out in line with current guidance and with targeted investigation locations in areas of concern. Gas monitoring or precautionary gas protection measures have been recommended and groundwater monitoring subject to conditions encountered.

The desk study information provided appears to be sufficient to assess the potential risks at the site.

2. The adequacy of the site investigation

The Phase 2 site investigation was carried out on 18th March 2021 comprised the following:

Technique	No.	Comments
Windowless sample boreholes	3	To depths of 43.42m – 5.04m bgl, WS101 to WS105. Ground gas and groundwater monitoring wells were installed in all the boreholes. Response zones were in natural material to 3.00m depth.
Contamination analyses	3	Taken from 0.2m – 0.3m depth.

		Metals / metalloids, pH, water soluble sulphate, speciated PAHs, SOM and asbestos screen.
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Site Ground Conditions: The ground conditions consist of made ground to 0.30mbgl underlain by natural sandy clayey sand / slightly gravelly clay to depths of 1.40m to 2.40mbgl. At the location of WS101 this is underlain by extremely weak mudstone to the completion depth of the exploratory hole. At the locations of WS102 and WS103 the sand is underlain by very stiff slightly gravelly clay to 2.70m - 3.10mbgl over extremely weak mudstone to the depths of the exploratory holes.

Site Water Conditions: Groundwater Sampling and Leachate testing was not carried out. Groundwater strikes were recorded during the investigation and groundwater monitoring was undertaken on six occasions.

Site Ground Gas Conditions: Six gas monitoring visits have been undertaken over a 3-month period (23rd March 2021 to 21st June 2021) in all installed boreholes. The monitoring was undertaken over a range of weather conditions (including low and falling barometric pressure and heavy rain) to demonstrate worst-case conditions.

3. The adequacy of the final risk assessment

Ground Assessment: With regards to the soil risk assessment LKC will use the following hierarchy:

The soil analysis results have been compared to the Category 4 Screening Levels (C4SLs), LQM Suitable 4 Use Levels (S4ULs), ATRISK Soil Screening Values (SSVs) and CL:AIRE Generic Assessment Criteria (GACs) for a residential end-use category.

Elevated levels of Lead and Benzo(a)pyrene were found. The source of the contamination is expected to be coal and brick in the made ground. No asbestos was found. Due to the contamination identified remediation of all soft landscaped areas is required.

Regarding potable water supply, soil results were compared to United Utilities (UU) guidelines. The pipework will likely be laid into the underlying natural strata after levels have been reduced.

Elevated naphthalene was recorded in WS101 and WS101 between depths of 0.00-0.30m bgl respectively, however, not at typical pipework depth of 0.75-1.35m bgl. The probability of organic contaminants affecting potable water pipes is therefore unlikely. Therefore, no remediation (i.e. barrier pipe) is likely to be required.

UU may require a Potable Waters Risk Assessment to be carried out prior to the connection of any new water supply. This should be carried out once details of the pipeline location and depths are known.

Controlled Waters Assessment: No evidence of mobile contamination was identified. The risk is considered to be low therefore no remediation is required.

Ground Gas Assessment: No elevated methane was identified and maximum carbon dioxide levels were 4.2%v/v. Negligible flow rates were recorded. Gas Screening Values have been calculated for each borehole and all represent CS1 and low risk is likely. No remediation is recommended.

4. The acceptability of the proposed remediation strategy

The following measures are proposed so that the contamination identified on site no longer presents a risk:

- During development works at the site should any unusual ground conditions and / or visual or olfactory evidence of contamination (including asbestos containing material) be encountered at the site, LKC and the Local Authority should be informed, and further assessment of the material may be required.
- Should asbestos be identified during groundworks, precautions should be taken to ensure the safety of the construction workers and nearby land users. It would be advisable to introduce an asbestos management strategy in line with CIRIA C73348.
- Removal of made ground in garden areas has been indicated as the preferred option of remediation. This should comprise removal of all reworked topsoil / made ground from garden and soft landscaping and raise levels (as required) with suitably chemically validated subsoil and topsoil.
- Imported soils should be accompanied by a certificate of analysis and source details. The material should be sampled at source to prevent double handling if soil fails, with confirmatory sampling undertaken on importation to site. However, where this is not possible then material imported should be segregated based on source and soil type. Validation samples should be taken prior to placement in gardens to ensure suitability for use. Imported material to be used in gardens will be compared analysed against residential with plant uptake criteria.
- Imported soil sampling to be tested at the rate specified in Table 9.2 in the Phase 2 Report.
- Water Pipeline Assessment is undertaken once the location and depth of potable water pipes are known.
- Site Completion report to include waste transfer documents, validation of removal of made ground, validation of cover system, verification testing of cover system soils, information on the installation of protective pipes if required and details of any unexpected contamination found on site.

Additionally, if the CL:aire Definition of Waste Protocol is to be used, a copy of the Materials Management Plan will be required.

5. Whether the information submitted is sufficient to determine that site presents a low risk to human health and the environment

In order for this Section to be satisfied that this development does not pose a risk to human health or the environment, the following information needs to be submitted to the Council for approval:

- (i) After completion of site works, a verification report is required to validate that the work undertaken conforms to the remediation proposals received and agreed by this Section. The report would be expected to include the following:
- Summary of desk study, site investigation report and remediation strategy.
 - Details of who carried out the work.
 - Details and justification of any changes from original remediation strategy.
 - Substantiating validation data that should include where appropriate:
 - Laboratory and *in-situ* test results.
 - Monitoring results for groundwater and gases.
 - Summary data plots and tables relating to clean-up criteria.
 - Plans showing treatment areas and details of any differences from the original remediation strategy.
 - Photographic and other media records.
 - Waste management details and records.
 - Confirmation that remediation objectives have been met.

Please do not hesitate to contact me if you require any clarification of the above.

Yours sincerely



Judith Scott
Environmental Protection Officer

Please Note:

The Environmental Services Division has used all reasonable endeavours to determine the risk from contaminated land and ground gas based upon the information available to it. However, the comments made above should not be taken to imply that the land is safe or otherwise suitable for this or any other development. The responsibility for safe development rests with the

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