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Department for Operations

Dave Marno
Planning Department

Dear Dave

East Lancs Paper Mill site, land between Cockclod Street/Cunliffe Street/Howard Street/Pollitt Street, Radcliffe Manchester, M26 9PG, Planning Application: 67965 – Contaminated Land

The Environment Section has received copies of the following reports:

- Phase 1 & Phase 2 Geo-environmental Desk Study & Ground Stability Risk Assessment for East Lancashire Paper Mill Island Site, Rectory Lane, Radcliffe, M26 2QU, Next Generation Engineering Consultancy Services, Reference: NX418, 16 June 2021.
- Remediation Strategy for East Lancashire Paper Mill Island Site, Rectory Lane, Radcliffe, M26 2QU, Next Generation Engineering Consultancy Services, Reference: NX418/R1 Rev 1, 13 April 2022.
- United Utilities Risk Assessment, PE Pipes.
- House Foundations, East Lancs Paper Mill, Radcliffe, Floor Plan & Founds Revised, Carley Daines and Partners Limited, Rev A, 10 June 2022.
- Specification of gas membrane, Visqueen Gas Barrier.
- Template Gas Verification Record sheet, to be completed for each property, NX Consulting.

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 formerly been in use as a Brewery in the north east of the site and terraced housing in the south. A surface watercourse ran through the western area of the site which was culverted by 1930 when the area was in use as allotment gardens. Surrounding historical uses have included East Lancashire Paper Mill and reservoirs, a cotton mill, infilled ground and residential properties. The site is currently in use as

car parks, landscaped areas with a disused public house in the south and an electricity sub-station in the north east.

The site is situated above the Middle Coal Measures Secondary Aquifer which is overlain by River Terrace Deposits of Sand and Gravel. There are no registered landfill sites within 250m of the site. A watercourse is culverted below the site. The site is within an area of previous coal mining activity.

It is understood that the proposed development comprises 27 houses and apartments.

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.

The desk study information provided has previously been found to be sufficient to assess the potential risks at the site.

2. The adequacy of the site investigation

The site investigation was carried out on 26 April and 28 April 2021 and comprised the following:

Technique	No.	Comments
Windowless Boreholes	7	WS1 to WS7 Excavated to a maximum depth of 5.0mbgl. Groundwater monitoring wells installed in WS1, WS3, WS4 and WS7.
Trial Pits	4	TP1 to TP4 to a maximum depth of 2.0mbgl.
Rotary Open Boreholes	2	RBH1 and RBH2 to a maximum depth of 40.0mbgl.
Soil sampling	13	Samples analysed for a suite of analysis that included heavy metals, speciated PAHs, TPH and asbestos screen.

Site Ground Conditions: Ground conditions at the site comprise of made ground to 2.4m bgl. Variable made ground was found across the site and included brick, coal, clinker, shale, and plastic.

The made ground is underlain by firm to stiff Glacial Clay with coal, slate and sandstone secondary constituents. Glacial clay was recorded between 1.3mbgl and 5.0mbgl. In WS5 and WS6 fine to coarse sand with fine gravel of coal, slate and sandstone was recorded as depths between 0.5mbgl and 2.3mbgl overlying glacial till.

Bedrock, comprising mudstone, siltstone, sandstone and coal seams was tentatively proven in WS6 and WS7 between depths of 3.5mbgl and 5.0mbgl and at 8.70m bgl and 5.80m bgl to proven depths of 40.00m bgl, in RB01 & RBH02 respectively.

No visual or olfactory evidence of hydrocarbon and/or solvent contamination was identified during works.

Site Water Conditions: Groundwater was recorded in WS4, WS5, WS6 & WS7 between 1.94mbgl (WS5) and 3.97mbgl (WS4). Groundwater was found to be absent in WS1, WS2, WS3, TP1, TP2, TP3, & TP4.

No significant risk to controlled water receptors was found. Total soil leachate analysis carried out in WAC testing did not establish concentrations which are likely to impact controlled water receptors. As such, leachate and groundwater analysis in this instance was considered to be unnecessary.

Site Ground Gas Conditions: A total of 9 visits have been carried out over a period of 2 and a half months with atmospheric pressure less than 1000mb on 2 occasions.

Maximum methane was found at 0.1 %v/v and maximum carbon dioxide was found at 9.0 %v/v in WS7. Maximum flow rates were recorded at 0.20 l/hr.

The site investigation has previously been found to be acceptable.

3. The adequacy of the final risk assessment

Ground Assessment: The soil analysis results have been compared to the Defra C4SLs, for residential with homegrown produce land use. Thresholds have been exceeded for Lead (max 6000mg/kg), Arsenic (max 710mg/kg), Naphthalene (max 4.6mg/kg), Benzo(a)anthracene (max 25mg/kg), Chrysene (max 22mg/kg), Benzo(a)pyrene (23mg/kg), Benzo(a)fluoranthene (23mg/kg) and Dibenzo(ah)anthracene (max. 3.8 mg/kg). The elevated contaminants were found in six locations in the upper 1.10m of made ground. No visual or olfactory evidence of hydrocarbon or solvent contamination was encountered.

No asbestos was identified. However, please note that asbestos fibres were recorded in the White Young Green investigation in 2017, therefore asbestos precautions will be required during works.

Controlled Waters Assessment: No significant risk to controlled water receptors was found. Total soils, leachate analysis carried out in WAC testing did not establish concentrations which are likely to impact controlled water receptors. As such, leachate and groundwater analysis in this instance was considered unnecessary. No visual or olfactory evidence of hydrocarbon/solvent contamination was recorded during the ground investigation. Selected samples of made ground and natural drift deposits were tested for a number of general screening tests including pH and metals, cyanide, phenols, asbestos, sulphide, sulphur, TPH, CWG and speciated PAH were undertaken during the intrusive investigation to confirm, or otherwise, the site's anticipated risk status.

Based upon the total soils concentrations, lack of groundwater within the interbedded sand and gravel/clay deposits and predominantly low permeability clay and mudstone deposits the consultant found there to be a negligible risk to controlled water receptors. The nearby unnamed surface water course crossing through the site is culverted and unlikely to be in hydraulic connectivity with groundwater and site soils. As such no further groundwater or leachate testing was undertaken. The risks presented to controlled water receptors are deemed to be low post construction.

Please note that the Environment Agency is the regulator of controlled waters, and was forwarded the site investigation report, however, no assessment was made.

Ground Gas Assessment: The consultant has used the methodology set out in CIRIA 665 to assess the gas regime at the site. A worst-case Gas Screening Value has been calculated which is below 0.05 l/hr.

Consequently, as the maximum concentration of carbon dioxide exceed 5%v/v, the consultant considers that the gas regime at the site is representative of Characteristic Situation 2. Therefore, gas protection measures are recommended.

The final risk assessment appears to be acceptable.

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:

- Within areas of proposed private or communal gardens it is recommended that a minimum of 600mm of made ground (below proposed formation level), should be removed from site and replaced with clean inert materials to form a capping layer over any potential contamination. Where site levels allow, it may be possible to retain the made ground on site and provide the 600mm capping layer above. Where the made ground materials are less than 600mm thick, only the made ground materials will require removal.
- A 100mm hard dig layer or geotextile membrane are to be placed below 600mm cover in gardens of proposed plots 1 to 6. Given the nature of recorded contamination, we consider that hard to dig layers are not required in landscaped areas. However, future contractors should be notified to ensure that appropriate PPE is adopted when future excavation works are carried out within proposed landscaped areas.
- Imported subsoil/topsoil materials which will require chemical validation to demonstrate that they are suitable for a residential end use. For any imported materials required to complete the cover soils, the frequency of testing to be undertaken shall be as given in the YALPAG document Verification Requirements for Cover Systems, Version 3.4 dated November 2017.
- Cover system depth validation to be carried out by hand dug pits with photographic record and hand pit logs.
- Characteristic Situation 2 gas protection measures to include low permeability membrane and ventilated sub-floor void. Gas service entries should be sealed appropriately.

- Independent validation of the gas protection measures is required, and validation to be included in the verification report.
- A UU water supply risk assessment has been carried out and indicates PE water supply pipes required.
- Any soils exported shall be allocated an appropriate waste code and a Waste Transfer Note created for each load of waste that leaves the site.
- In order to protect the general public from dust and vapour emissions, wagons that are used for the haulage of the contaminated material from the site must be sheeted.
- Should any suspected contaminated materials be encountered during the re-development, then it should be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinants. Once the laboratory analysis of the material is available an assessment should be undertaken to determine whether it can be retained on-site or whether it should be disposed off-site. Depending on the nature of any such impact it may be necessary to undertake validation testing of the excavation in order to demonstrate that no such materials are left in-situ.
- Contingency measures for unidentified asbestos contamination, any identified ACM to be dealt with in accordance with CAR 2012, UK Waste Management Legislation and EPA 1994. Measures to include site personnel to be provided with PPE and dust suppression during movement of plant and removal of arisings.
- A Validation Report.

The remediation strategy is acceptable to this Section however please also include source details of the imported materials.

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

All parties involved with waste and soil movement at the site should be aware that materials illegally deposited or deposited at inappropriate sites may be subject to relevant landfill taxes, payable by all parties. Only robust due diligence is a defence against joint liability. Illegal deposits can include moving waste soil material on sites, or between sites, without the appropriate permits, exemptions or duty of care.

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) A copy of the Materials Management Plan, if the CL:aire Definition of Waste Protocol is to be used
- (ii) 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.

Condition 3 can be recommended for discharge. Condition 4 will require the submission of item (i) and (ii) above.

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 Environment Section 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 developer.



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