

Our Ref CL946.051020.1
Your Ref 65844
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Please ask for Andrew Taylor
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Donna Ball
Executive Director, Operations

Helen Leach
Bury Council Planning Department

Dear Helen

Land at Holcombe Mill, Ramsbottom, Bury, BL0 OBS. Planning Application: 65844 – Contaminated Land

The Environment Section has received a copy of the following report:

- Desk Study and Ground Investigation Report, Mondi Site, Ramsbottom, Betts Geological Consulting Engineers, Reference: 19ECH016/DSGI, August 2019.

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 a paper mill with associated goit, filter beds and reservoirs and a railway line. Surrounding historical uses have included cotton mills, print works, engineering works, bleach works, a railway station and filled ground. Currently the site is vacant apart from the chimney and some small buildings.

The site is within 250m of a registered landfill site and is situated adjacent to the River Irwell. The site is situated above the Millstone Grit Mudstone and Sandstone Secondary A Aquifer which is overlain by Alluvium. There are two groundwater abstraction licenses on site. The site has previously held an IPPC Authorised Process Permit for the operation of Mondi Paper Mill.

It is understood that the proposed development comprises the construction of 72 dwellings including the retention and conversion of 2 existing buildings to residential use (5 no. units), the retention of a chimney and the demolition of a derelict building, together with engineering operations to create a development platform and

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associated parking, landscaping, drainage, the layout of internal estate roads and footways and other associated works

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 found the site to be mostly covered in hard standing with several large and small stockpiles across the site. A culverted stream is situated in the west of the site. A leaking IBC was found adjacent to the entrance, the substance was found to be brown and rubbery but was no longer migrating.

It had been noted that a closure report relating to the previous IPPC Permit will be required from the EA. Additionally Mill Lodge Landfill has been found to be located on site.

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

2. The adequacy of the site investigation

Fieldwork was carried out between 25th June and 2nd July 2019.

The site investigation comprised the following:

Technique	No.	Comments
Trial holes	18	0.6mbgl – 3.50mbgl
Window Sample Boreholes	11	0.35mbgl – 5.00mbgl
Rotary Boreholes	4	30.0mbgl – 38mbgl
Soil Samples for chemical analysis	47	Tested for general suite of determinants including asbestos screen.
Water samples	3	Taken from Window Sample Boreholes
Surface water samples	4	Taken from the River Irwell and the onsite culverted stream.

Site Ground Conditions: The area was mainly covered by a concrete slab or topsoil over made ground consisting of limestone or sandstone gravel, or a demolition type waste. Demolition wastes consisted of brick, concrete, as well as metals, textile, plastic, papers, ash and glass. Granular made ground was found to 2.85mbgl. Cohesive made ground was found to a depth of 4.5mbgl identified as either reworked clay or silt and occasionally had hydrocarbon or organic odours.

Natural cohesive strata was found from 0.6mbgl – 23.0mbgl consisted of clay and silt and were often sandy. Natural granular strata was found from 1.35mbgl to 9.50mbgl and consisted of granular deposits noted to be sand and gravel. Shale bedrock was found at 23.0mbgl to 38mbgl.

Significant visual and olfactory contamination was found at a number of locations including hydrocarbon odours, black water with sheen, and waste type odour. Potential free product was found at TP16. In addition, rotary borehole 4 encountered oily black fill in the area of the former Irwell Street Metal Co. Ltd former landfill site. Concrete slabs were noted at surface and at depth.

Site Water Conditions: Perched groundwater was found between 0.6 and 4.00mbgl. Groundwater was observed from 1.15 to 3.38 mbgl (depth to water).

Site Ground Gas Conditions: Ground gas monitoring borehole installations have been set up on 4 boreholes. A total of six ground gas monitoring visits were carried out over 4 months with atmospheric pressure below 1000mb on 4 occasions.

Maximum methane concentrations were found to be 0.1 %v/v and maximum carbon dioxide was found to be 9.7%v/v. Maximum flow was 0.1 l/hr.

It appears that the landfill area in the south of the site has not been targeted for gas or vapour monitoring. Monitoring and assessment of this area will be required.

3. The adequacy of the final risk assessment

Ground Assessment: Results of the sampling and analysis were compared to relevant screening criteria for residential housing with gardens end use and found elevated levels of lead, arsenic, PAHs, TPHs and asbestos fibres. Elevated Napthalene was found at a number of locations and may pose a risk from volatisation. Elevated VOCs and SVOCs have also been detected. Potential free product was found at TP16. Four locations found asbestos at level above 0.001% (detection limits) which were all Chrysotile to a maximum concentration of 0.095%. The made ground exceedances have been recorded at varying depths between 0.10mbgl and 2.00mbgl with deeper exceedances at TP5 and WS 1 (locations of formerly existing reservoirs and likely to be backfill).

Statistical analysis was deemed appropriate however where sample numbers are low, and/or targeted each determinant results was reviewed as an individual result.

Hotspots of Debenzo(ah)anthracene and Napthalene are hotspots and statistically significant, and will require delineation.

Double ratio plots found the source of the elevated B(a)p in TP07 and TP08 to be coal derived. The remaining elevated B(a)p results are likely to be sourced from coal tar / creosote and cannot be discounted.

Elevated arsenic and lead are also to be treated as hotspots.

The elevated level of Chrysotile asbestos in the ash fill at TP12 at 0.45mbgl potentially poses a risk if this material is exposed. Given that the material used to backfill is demolition wastes the presence of further asbestos is likely.

Controlled Waters Assessment: Water samples collected from boreholes, the river and the culvert found elevated levels of cyanide, arsenic, zinc and copper above Threshold Freshwater Surface & General Quality of Groundwater values. Exceedances in the river did not vary upstream and downstream therefore the source is likely to be upstream. On site contaminated perched water does not appear to be in continuity with the river.

Please note that the Environment Agency is the regulator of controlled waters and as such need to be consulted and forwarded copies of all the relevant information for this site. This Section will require confirmation that the Environment Agency has approved the risk assessment and recommendations.

Ground Gas Assessment: The consultant has used the modified Wilson and Card methodology set out in CIRIA 665 to assess the gas regime at the site. A worst case Gas Screening Value of 0.0097 l/h has been calculated (9.7%v/v carbon dioxide and 0.1 l/h flow).

The majority of the made ground did not contain significant organic matter. Therefore the site can be classed as Amber 1/CS 2 and will require low level gas protection measures. However a hydrocarbon resistant membrane may be required and requires further assessment and possible hotspot removal.

It does not appear that any gas monitoring has been carried out in the area of the landfill. This will need to be carried out before any development is approved at this site. Former landfills can be significant sources of ground gasses and chemical vapours depending on the fill materials.

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:

- Additional trial pitting and sampling once the ground slab is removed.
- Further works and delineation into the identified hotspots.
- Further testing of the stockpiled materials left on-site from demolition works.
- UU water supply pipeline assessment to be carried out.
- Ground workers to follow CAR-SOIL Guidance in relation to the presence of asbestos.
- Movement of materials should be carried out using correct dampening down methods.
- A hydrocarbon resistant membrane may be required (to be reviewed following site strip).
- A minimum of 600mm clean cover to be imported for garden and landscaped areas. A no dig layer may also be required due to the presence of asbestos.
- Amber 1 / CS2 gas protection measures which would normally consist of 150mm passively vented subfloor void, and a taped and sealed gas resistant membrane.
- All material for off-site disposal should be classified as required by the waste regulations. Several samples across the site have been found to be hazardous.
- Piled foundations are anticipated therefore a specialist piling foundation contractor should be consulted.
- The southern spur area has been found to be heavily contaminated and underlain by a landfill. A piled solution may pose risk to groundwaters therefore another solution may be required. Additional investigation and water monitoring is required in this area.

A detailed remediation strategy and validation plan is required following further investigation and assessment.

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 the 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) Further investigation as recommend above.
- (ii) Further gas monitoring and risk assessment in the area of the landfill in the south of the site.
- (iii) Site Investigation and Risk Assessment Report for the further works.
- (iv) A detailed remediation strategy and materials management plan.
- (v) Confirmation that the Environment Agency are satisfied with the risks to controlled waters.
- (vi) 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.

The above information will be required by planning conditions if planning permission is granted for the site.

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

Yours sincerely,

A.P.Taylor

Andrew Taylor
Contract Contaminated Land 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