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PLANNING CONSULTATION RESPONSE

From Land Contamination Consultant Response **Date** 8th February 2021

To Development Management – dc@sunderland.gov.uk

Address Former Garage, Westholme Terrace

The following documents have been reviewed:

DBS Environmental Report Ref. Preliminary Phase 2 Geoenvironmental Ground Investigation, Former South Moor Service Station, Sunderland. Dated: November 2020.

Please find below a summary of the findings of the report, comments and recommendations.

Preliminary Phase 2 Geoenvironmental Ground Investigation

In line with the recommendations of the previously reviewed Desk Study, a ground investigation has been completed at the site. The works comprised five window sample boreholes to maximum depths of 5.0m below ground level (bgl), with three boreholes being installed with combined gas and groundwater monitoring provisions, and one cable percussion borehole to a depth of 10.0m bgl. Soil and groundwater samples were obtained and subject to chemical and geotechnical laboratory analysis.

Prior to ground investigation, a survey of the underground infrastructure was undertaken. The report recommends that this is permanently made safe by removing it from site ahead of redevelopment. The work should be undertaken by experienced contractors conversant with the risks of decommissioning filling stations. Fuel tanks, lines and interceptors should be removed from site and the ground reinstated to a suitable geotechnical specification.

Ground conditions were found to comprise a layer of Made Ground, approximately 2m – 3m in thickness, overlying Glacial Till. The report infers that the expected Glaciolacustrine Deposits may have been removed and replaced by engineered fill during a previous phase of development at the site.

The report includes a geotechnical assessment of the findings of the ground investigation and recommendations for the design of the proposed development.

Visual and olfactory evidence of contamination was found in two locations; a black oily residue in WS1 at 1.5m below ground level (m bgl) and a faint hydrocarbon odour was observed in WS4 at 1.9m bgl.

Headspace testing was carried out on all collected samples, as previously recommended as part of our previous review. This recorded a maximum concentration of 1.0ppm.

The chemical analysis identified elevated concentrations of lead and speciated PAHs within the Made Ground when results were compared to residential with plant uptake end-use criteria. TPH concentrations were all below the relevant GACs, however, concentrations in excess of 1,000mg/kg were recorded. We note that at such concentrations, hydrocarbons may be visually identifiable in the soils and it may be prudent to address the potential for site users to come in to contact with TPH in the soils at the same time that risks due to the elevated lead and PAH concentrations are addressed.

Significant contaminant concentrations, including metals, PAHs and TPH, have been recorded in the groundwater beneath the site, however, the DBS Environmental Risk Assessment identifies the risks to controlled waters to be low due to the large distance to the nearest groundwater abstraction borehole and the absence of a Source Protection Zone.

Elevated concentrations of carbon dioxide have been recorded during ground gas monitoring and, therefore, DBS Environmental consider the site to be classified as Characteristic Situation 2, in accordance with CIRIA C655. Significant hydrocarbon vapours have not been detected on site during monitoring, and volatiles have not been detected in the soils laboratory testing results. However, as the site comprises a former Petrol Filling Station, with concentrations of petroleum hydrocarbons in groundwater presenting a potential vapour risk, DBS Environmental recommend that the chosen ground gas protection membrane should also be resistant to hydrocarbon vapours.

We note that only one monitoring standpipe was installed in the Made Ground at the site despite there being Made Ground up to 2.7m in thickness across the site. In addition, both of the installations in natural strata consistently had groundwater levels above the top of the slotted section. No gas monitoring was undertaken during falling atmospheric pressure.

The report recommends that a Remediation Strategy is prepared for the site. An Options Appraisal is recommended to identify the most appropriate strategy; however, the report considers the most likely solution for the site is encapsulation of the site with an in-ground concrete raft below properties with gas protection, hard cover for car parking and access areas, and a capping barrier layer for gardens. Source removal of hydrocarbon contamination in WS4 may also be preferred.

Recommendations

We are broadly in agreement with the findings of the submitted report, however we recommend the following additional information is requested from the applicant's consultant:

- Confirmation that gas monitoring results are valid, and the ground gas risk assessment robust, despite only one monitoring standpipe being installed in the Made Ground, no readings being taken during falling pressure and two of the three monitoring standpipes being flooded during monitoring; and,
- Confirmation that the presence of hydrocarbons in the soils will be addressed as part of proposed remedial works.

Further information is also required to address comments that were made following our previous review of the Desk Study for the site *"DBS Environmental. Phase 1 Contaminated Land Desk Study. Former South Moor Service Station. Westholme Terrace, Sunderland. Ref.1358R001i1 FINAL. Dated October 2019"*:

- Consultation should be undertaken with the Environment Agency and Sunderland City Council Departments including Planning and Environmental Health to gain publicly available information regarding the site.
- A Coal Mining Report should be obtained from the Coal Authority.
- The risk from Unexploded Ordnance (UXO) is not detailed in the Desk Study. The UXO risk should be confirmed.
- An invasive weeds assessment is not included in the Desk Study. The presence/absence of invasive weeds should be confirmed.

At this point, it is not possible to recommend that Planning Condition 5 is discharged.