

The single threshold trigger that was exceeded was that for total sulphate. The elevated results that were greater than the threshold trigger value did not exceed the action trigger value for the intended use.

None of the other thresholds detailed in ICRCL Table 4 were surpassed for the envisaged end use.

Hydrocarbon Fuel Pollution in Soil

Visual and olfactory evidence of hydrocarbon pollution was noted in the soils recovered from TP 2 located at the northern western end of the site on the boundary wall.

Five soil samples were tested from BH 2 and TP 1 to TP 5 at between 0.20 to 1.20m depth for the presence of total petroleum hydrocarbons (TPH) with levels recorded between <20mg/kg and 2600mg/kg.

The Department of Environment have determined a trigger level for TPH contamination in soil of 2000mg/kg, which one of the samples from TP 2 exceeds and it cannot therefore be disposed of as inert waste with respect to TPH based on the Environment Agency's 'Guidance of National Interim Waste Acceptance Procedures (version 1.2)'. The soil in TP 2 was noted to be contaminated with TPH to a depth of 1.40m, which was the base of the pit, and was within the weathered London Clay. No fuel tanks were seen on site.

Asbestos

Asbestos fragments were found in abundance within BH 1 and two samples were identified. The results of the testing indicate the only type of asbestos present to be Chrysotile.

Soil Gas Monitoring

Two visits to the site were made in August 2005 to record the concentrations of landfill type gases (methane, carbon dioxide and oxygen) in the standpipe. Comparison of the

monitoring results to the Building Research Establishment (BRE) guidance, BR 212, indicates that concentrations of methane and carbon dioxide were recorded from the boreholes below the threshold concentrations. The results of the monitoring are presented in Appendix 3.

Conclusions

On the basis of the work carried out, laboratory testing indicates that the samples of made ground tested contained elevated concentrations of arsenic, lead, mercury and nickel in excess of the CLEA Soil Guideline Values for the proposed residential end use. The thin surface layer of made ground beneath the site could therefore be considered to present the potential for significant harm to human health in the context of Part IIA of the Environmental Protection Act (1990).

Reference to the exploratory hole records indicates that the samples found to contain elevated concentrations of arsenic, lead, mercury and nickel were predominantly obtained from samples of the surface layer of made ground tested from TPs 2, 3 and 4, but also from the made ground at 0.80m depth in BH 2.

The main targets at risk are domestic gardens end users via ingestion of soil and vegetables/fruit grown within such soil and construction workers via ingestion and skin contact from soil contaminants. The presence of contamination due to these contaminants does not require any special precautions to be taken, providing standard precautions are taken during the development of the site where skin contact and possible ingestion may occur of the near surface soils during groundworks.

The following actions are recommended when the site is to be used for a residential gardens end use in areas not covered by buildings or hardstanding:

- Removal of at least 0.60m of the made ground, where present across proposed communal garden areas, will remove the source of shallow contamination on this site. Where the made ground is less than 0.60m thick it should all be removed. In the event that vegetable gardens are envisaged and the thickness of made ground is greater than 0.60m it would be prudent to

increase the thickness to be removed to 1.00m. The replacement of any made ground with clean inert imported topsoil will be necessary in order to provide a suitable growing medium. This will also avoid risk of potential soil ingestion via either plant uptake or children with a 'pica' habit.

- The contaminants encountered in the made ground should be considered in relation to proposed areas of landscaping because the phytotoxic effects of some compounds can affect the growth of some plants. A provision should therefore be given to adopting a sufficient cover of clean topsoil to ensure that proposed planting can be sustained.
- During groundworks, the potential for windblown dusts should be minimised as these could contain soil contaminants. Damping down of soils could reduce this hazard.
- As with any construction work on brownfield or potentially contaminated land it is recommended that a site-specific health and safety plan is produced and agreed with the contractor. Workers may require appropriate personal protective equipment during the construction works. The advice contained within the IISE 'Blue Book' HS(G)66 should be followed. In particular, groundworkers should wear coveralls with sleeves rolled down together with gloves and adequate wash facilities should be provided.
- The contaminated made ground, could be left in place in areas beneath proposed buildings, if suitable for engineering purposes.
- Excavated material and excess spoil should always be classified prior to removal from site as required by 'Duty of Care' (Environmental Protection Act 1990) legislation. This means that material has to be given a proper description and waste classification prior to removal. The site plans, exploratory hole logs and certificates of chemical analysis should be sent to the Environment Agency or a suitably licensed waste disposal contractor for classification of the material prior to disposal off-site during any redevelopment works. Natural ground excavated from this site should be readily identified as such, and could be disposed of accordingly. Any natural ground containing TPH should be identified and appropriately disposed of.