

Johnsons Site Remediation, Sefton, Liverpool

Project Profile

Client: Viridian Developments

Designer: URS

Project Manager: Bailey Garner

Date: Sept 2013—August 2014

Value: £1.8m



The 1.6ha former Johnson Apparel Master Dry Cleaning factory site is located on Mildmay Road, off Stanley Road, in Bootle, Liverpool and is surrounded by both residential and commercial property. The site was previously used as an industrial laundry for over 100 years, with dry cleaning activities having taken place since the 1920's.

Site investigations had identified 9 main 'Hot Spots' that would require remediation and the remediation strategy was developed to remove dense aqueous phase liquids (DNAPL) and other breakdown products from historic Tetrachloroethane used in the dry cleaning process, treating to clean up targets that were agreed with Sefton Council's EHO to allow the proposed residential development of the site. A comprehensive Emissions Monitoring Plan (EMP) was produced for the site due to the proximity of residential housing and agreed with the EHO, vapour modelling in the EMP controlled the excavation rates for contaminated hot spot excavations

- Break out and remove 15,800 m² of remaining slabs, foundations, bases and hard standings up to 7m deep for crushing & processing as 6F2 and Class 1B materials for re-use on site
- Investigate, purge and remove several underground tanks
- Excavation of 11,000 m³ of contaminated 'Hot Spots' up to 6m deep followed by sorting, screening, testing and classifying of; materials for re-use, contaminated materials for treatment and unsuitable materials for disposal
- The deep hot spot excavations in close proximity to boundaries and structures required fully designed excavation support to be provided during excavation and filling.
- Soil Vapour Extraction (SVE) was deemed to be the most effective way of removing the solvent contamination and was carried out by specialist QDS Remediation under a Mobile Treatment License.
- Grossly contaminated soils were transferred to the prepared SVE treatment area which was constructed on an impermeable liner to prevent risk of leachate escape. Any leachate from the soils under treatment was collected in a sump and discharged to the wastewater treatment plant.
- A series of vacuum extraction lines laid within the engineered SVE piles abstracted impacted soil vapours and passed then through an activated carbon filtration system prior to discharging to air.
- The engineered piles were covered with a membrane to mitigate the risk of fugitive emissions and to control the moisture content of the soils. The progress of the soil treatment was continuously monitored and tested during treatment which took approximately 3months.



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- A 1m thick impermeable clay layer was placed across the base of each hot spot excavation (2,500m³ total) over which a thin layer of liquid Hydrogen Release Compound (HRC) was placed to in-situ treat any residual contamination.
- 2 areas of off-site contamination beneath adjacent footpaths was treated using liquid HRC injected into 6m deep boreholes angled under the footpaths, drilled by our in-house ground engineering specialists from inside the site.
- Excavations were backfilled to required formation levels using the re-engineered treated soils.
- Perched contaminated groundwater that was encountered in excavations was collected, tested and tankered off site by a specialist liquid waste contractor
- A 200mm granular no-dig layer with upper and lower geo-textile separators was installed across the site above the remediated soils at 1.0m below finished ground level.
- 800mm of clean cover was then placed across the whole site using clean site won materials which included 7,000m³ of Class 2C sub soil excavated from other areas of the site as well as recovered granular materials.
- Extensive validation chemical testing was carried out on all materials and excavations during the works.
- Continuous vapour monitoring was carried out at site boundaries and an odour suppression unit was provided for the period of excavation works.
- Monitoring of existing onsite and offsite boreholes also carried out during the works.
- The finished surface was contoured to provide a SUDS designed temporary surface water management system to be left in place until the site is developed.



Close collaboration between all members of the project team as well as Sefton Council's EHO ensured this difficult contract was delivered without receiving any complaints from the surrounding residents.