

Case Study

Ex-Situ Bioremediation of Hydrocarbon Impacted Soil

Client

Halsall Construction

Remediation Value

Confidential

Site

A former industrial and commercial heating equipment factory existed on the site that has since been demolished. The site was undergoing residential development and remediation works were required to address hydrocarbon contamination associated with a former underground heating tank.

Contaminants

Petroleum hydrocarbons, Polycyclic Aromatic Hydrocarbons

Remediation Methods

- Targeted excavation of hydrocarbon impacted area and stockpiling for ex-situ treatment.
- Validation of remediation excavation.
- Ex situ biological treatment of hydrocarbon impacted soils.
- Continuous sampling and monitoring of treated material.

Challenges

- Delineation of the extents of contamination.
- High moisture content of the impacted material.
- Application of additives to the cohesive clayey impacted material and achieving sufficient distribution throughout the soil matrix.
- Residential properties adjacent to treatment area.
- Minimising excavation and treatment volumes through on site delineation.

Approach

- Targeted 'hotspot' excavation based upon site investigation data, with further delineation during excavation work.
- Construction of a 'treatment bay' using existing site won materials.
- Application of a biostimulant and bioaugmentation solution to the impacted soils to promote indigenous microbial activity to achieve the degradation of heavy chain hydrocarbons in order to shorten the treatment period.
- Ensuring optimal conditions for microbial activity.
- Application of chemical amendments to break up the soil matrix to allow aeration.
- Validation sampling to confirm the suitability of the material for reuse onsite as engineered fill by others.



Figure 1: Excavation of hydrocarbon impacted material



Figure 2: Treatment of impacted material



Figure 3: Windrows of impacted material within treatment area