Case Study: E345

Project: Remediation of a Former Petrol Station
Client: Property developer
Location: Grantham
Duration: 10 months

Works

- Tank excavation and removal
- Installation of an air sparging / soil vapour extraction system
- In-situ chemical oxidation to target residual hotspots
- Groundwater sampling and monitoring
- Reinstatement of boreholes on completion
- Compilation of validation report

Synopsis

Site investigations showed that soil and groundwater beneath this site were significantly contaminated with petroleum hydrocarbons resulting from previous use as a petrol filling station. The first phase of work involved excavation and removal of two redundant underground fuel storage tanks.

In-situ remediation methods were then used to address soil and groundwater contamination. A combined soil vapour extraction (SVE) and air sparging (AS) remediation system was installed comprising 18 SVE wells and 11 AS wells, connected via above ground pipework to containerised, automatically operated, remediation equipment. The aim was to promote release of dissolved phase hydrocarbons into the unsaturated zone, and then capture of the released vapour by the SVE system. Off-gases were removed from the exhaust by passing through granular activated carbon. The system operated for 8 months, after which the area was validated and approved by the Environment Agency (EA).

Further investigation works beneath a recently demolished building subsequently revealed a plume of residual hydrocarbon contamination existing beneath the footprint of the former building. In order to address the contamination quickly and effectively, Telluric Land Remediation proposed in-situ chemical oxidation (ISCO). Forty injection points were installed across the plume, each location being primed with a catalyst before injecting a predetermined volume of oxidant. In total, three applications were undertaken over an eight week period. The concentrations of all the contaminants of concern were significantly reduced, and the works were approved by the EA, with no further remediation required.

Throughout the treatment works, the site was regularly monitored and sampled to assess the progress of remediation. Parameters monitored included soil gas concentrations, groundwater level, VOC concentrations, conductivity, oxidation-reduction potential, dissolved oxygen and pH. Groundwater samples were recovered for analysis by an independent accredited laboratory.