



Remediation of Heavily Contaminated Soil Close to Water

The Issue

Our client wished to dispose of a heavily contaminated legacy site, approximately 17 acres in area, with a canal to the north and a food processing business to the east and west. The site was a former tip containing asbestos, hydrocarbons and solvents.

The Objective

Provide a tailored remediation strategy that would discharge planning conditions and facilitate the future redevelopment of the site. Also, deliver an integrated environmental and geotechnical solution that would enable sale of the land, cost effective re-development and environmental liability transfer.

Client

Akzo Nobel Holdings

Location

Manchester, England

The EDSR Solution

Dispose the materials from the former tip to a licensed land-fill. The waste was selected, excavated and characterised to enable cost effective disposal. Replacement suitable materials imported to achieve the geotechnical performance specification.

- Source removal of CS_2 - This was carried out following soil mixing trials using cement - Bentonite grout. The soil mixing was applied to ground impacted by CS_2 under a constant cover of grout to prevent explosive ignition. The treated soil was then allowed to cure prior to being excavated and removed to a specially designed landfill cell. The solution also required the construction of significant temporary works to support the canal structure.
- This was the first application of this technology for the stabilisation of CS_2 , a solution that was developed in consultation with the EA and Akzo Nobel. The properties of CS_2 are such that even small concentrations when exposed to air will ignite and produce sulphur dioxide. The challenge was to provide a solution both in the short term to enable safe removal and in the long term to produce a soil mix that would not leach at the landfill.
- The design and installation of a Permeable Reactive Barrier (PRB) to address residual groundwater impacted with CS_2 . The barrier was the culmination of an extensive research project involving the Queens University Belfast and was accepted by Claire as a demonstration project. The concept was essentially a process design, due to the volatile characteristics of CS_2 . The PRB was the first application in the UK to use ZVI as the reagent and has been designed to have a life of at least eight years.
- Preparation and submission of a comprehensive environmental and geotechnical validation report to enable sign-off of the remediation scheme by an independent validation consultant, regulators, planners and the developer. The works were to be completed to an agreed geotechnical specification which had been designed with the final development layout in mind.

The remediation design and methodology was completely successful and has been replicated at Coventry and Wolverhampton.



For more information please contact:

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