CASE STUDY

Dual Phase Vacuum Extraction and Chemical Oxidation

Introduction

The investigation of the site's groundwater and soils showed significant concentrations of **Free Phase Product (FPP)** and **dissolved petroleum hydrocarbons**, centred on an ageing collection of underground storage tanks to the rear of the forecourt. A plume of contamination was identified flowing across the site.

The contamination posed a potential risk to the neighbouring watercourse via groundwater migration whilst vapours emanating from the site threatened to affect nearby residents.

An approximate **treatment area of 750m³**, situated between two metres below ground level (mbgl) and 5mbgl. A number of further wells were drilled to monitor potential migration.

The resultant remediation project was divided into three stages:

Stage 1

Before removing all the underground fuel storage tanks and associated piping, we first applied a bentonite seal around a deep drain which intersected the contaminant plume. This was designed to prevent migration of FPP through the more permeable materials surrounding the drain.

Stage 2

This enabled us to begin product skimming and operate a **Dual Phase Vacuum Extraction (DPVE)** system to remove fuel and treat contaminated groundwater.

Stage 3

The final stage of the remediation coupled the DPVE system with a programme of **in-situ chemical oxidation**, to reduce residual hydrocarbon concentrations.

Innovation

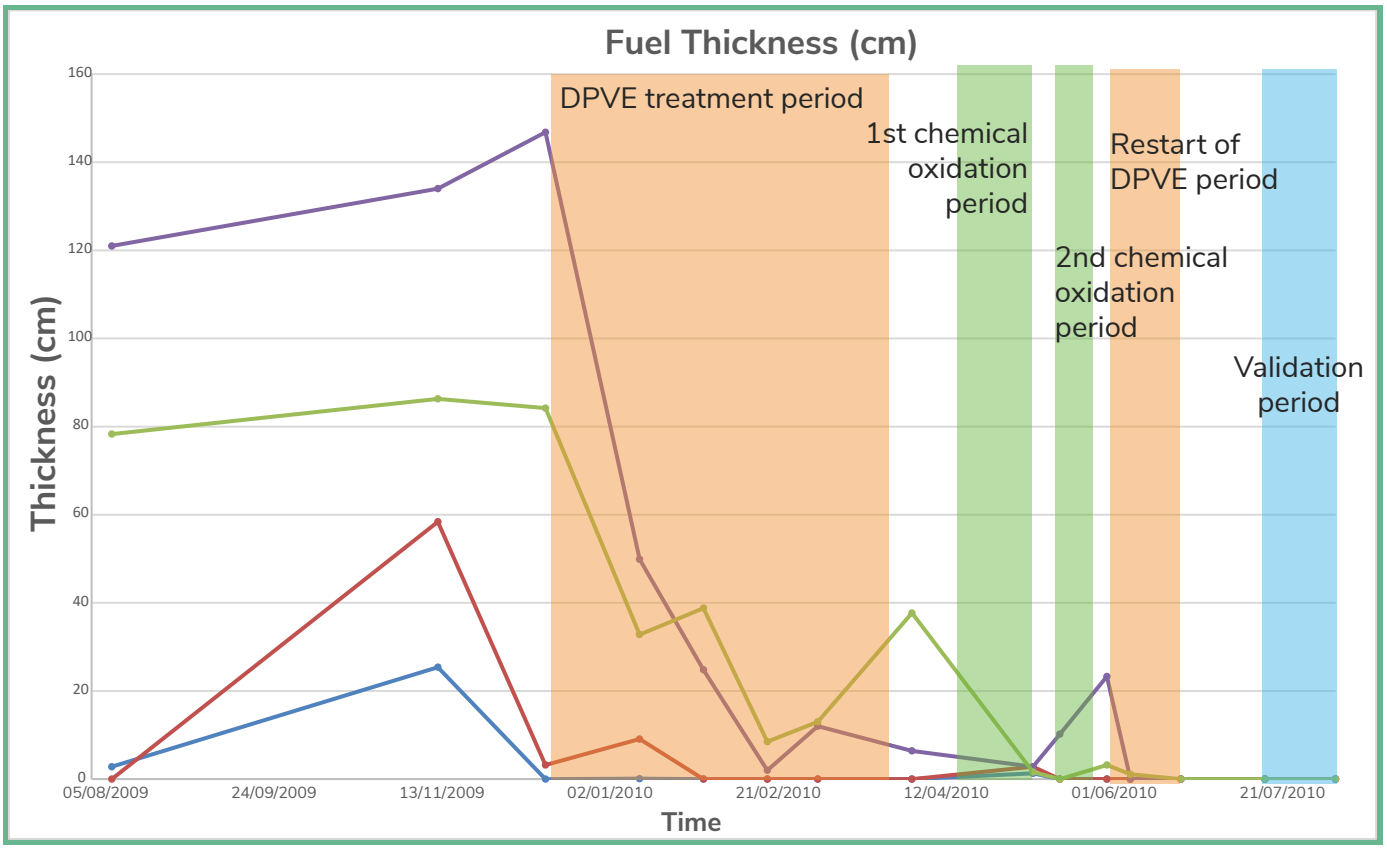
During the planning of the remediation project, Geo² uncovered an **innovative, waste-free solution for the treatment of waterborne organic pollutants** such as the hydrocarbons in the waste stream.

Developed by **Arvia Technology Ltd,** the novel water treatment method is based around a **patented adsorption material, Nyex®**, which is regenerated during the treatment process, making it a **more sustainable option** than traditional Granular Activated Carbon (GAC). This process uses electrochemical oxidation to break down organic contaminants into CO_2 + H_2O. Successfully achieving sustainable disolved phase treatment of waste water.

Arvia successfully treated contaminated water at the site alongside Geo², earning the collaborators a prestigious **Brownfield Briefing Award for 'Most Innovative Remediation Method'.**

Results

A **reduction in hydrocarbon contamination** of between **99% and 100%** in the worst affected areas of groundwater were achieved.



"Geo² offer a remediation service that suits the specialist requirements of our forecourt retail operations – plus they always deliver for us on time and on budget which is crucial in our industry."

Stephen Niven of James Hall & Co. LTD

For further information, please contact:

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