



## Remediation of Hydrocarbon Contaminated Soil and Groundwater - Aberdeen

**The Client:** Volume House Builder

**The Challenge:** Soils and groundwater on the site comprised heterogeneous soil types with similarly heterogeneous organic contaminant concentrations ranging from 1,000mg/kg to 10,000mg/kg TPH, PAH and/or BTEX. Approximately 2,700m<sup>3</sup> of contaminated soils required treatment. The client requested an options appraisal to identify remedial solutions which were significantly more cost effective than off-site disposal, and could be started and completed within 3 months of the date of enquiry.

**The Solution:** Upon appraisal of remedial options, in-situ soil mixing using a chemical oxidant with lime (CaOH) as a combined activator and soil stabiliser was identified as the best solution for the site. We identified that FMC's Klozur Persulphate was the most economical oxidant to complete the project within the specified parameters. We worked closely with FMC Environmental Solutions to calculate the optimal treatment strategy for the site. Due to the restricted timeframes the final treatment design had to be carried out during site works. We were contracted to remediate the impacted soils under our Mobile Plant Licence.

An initial soil sampling and further delineation exercise was carried out during the licensing, planning and mobilisation period, allowing further soil analysis to be carried out for treatment design purposes. Site mobilisation including importing FMC Klozur Persulphate from mainland Europe, and sourcing a specialist soil mixing head and 30 tonne mixing machine from a supplier in England. A site laboratory was set up to carry out assessment of organic contamination and to calculate pH amendments required for each treatment area. Throughout the contract health and safety around strongly oxidising substances was carefully managed with a combination of mobile barriers, protective PPE and mobile decontamination facilities. The project was organised using a treatment grid to allow accurate dosing of soils depending upon soil type and contaminant concentration. Clean overburden was removed to expose soils for treatment, calculated doses of Klozur Persulphate and Lime were added and thoroughly mixed with the soil and groundwater using the specialist mixing head. Where required, additional water was added in order to optimise the treatment.

On-going sampling and testing was carried out throughout the project to further refine the treatment design and monitor the treatment works. Treatment monitoring involved periodic testing of treated soils to analyse the progress of the oxidant. Work progress and treatment results were regularly updated to the client and regulator, piling works were permitted to start following receipt of the first batch of treatment results.

Site works were completed on schedule and to budget.

**Duration:** Site Works: 5 weeks  
 Total Treatment: 8 weeks



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