



# IN-SITU REMEDIATION ON AN OPERATIONAL DEPOT SITE

## Case Study

**Customer:**  
Confidential  
**Contract Value:**  
~£100,000

**Executive Summary**  
In-situ remediation scheme to manage legacy diesel contamination arising from historic refueling operations, within a live operational distribution depot.





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JOHN F HUNT REMEDIATION LTD

## Challenges

John F Hunt Remediation undertook in-situ remediation to manage a plume of diesel contamination associated with a refueling island within a live mail sorting and distribution centre.

The presence of raw petroleum hydrocarbons was found to be more extensive than originally envisaged from the site investigation data. The delivery of a safe and practicable scheme of remediation demanded a change in approach from the original tender design.

Our in-house team of technical specialists developed an alternative solution based on a combination of gross product removal (active pumping and passive skimming) and below ground in-situ treatment (chemical oxidation). This enabled an effective level of remediation/risk management to be completed whilst still allowing the refueling facility to operate concurrently with the treatment operations.

Full site characterisation including in-situ field testing and laboratory testing of soils properties was completed. This enabled the Conceptual Site Model to be tested and refined. The site specific information was also used to develop an effective application and dosing strategy for the works.

To avoid any interruption to site operations, and to facilitate appropriate

targeting of resources, extensive surveys were undertaken to check on the location and condition of services and buried infrastructure.

The works were programmed to coincide with the low groundwater levels within the hydrogeological seasonal cycle to ensure the efficient recovery of gross fuel contamination (NAPL).

They were flexibly implemented to avoid any adverse impacts for on-site logistics which included hundreds of HGV and commercial vehicle movements per day. This required a high level of coordination, cooperation and effective communication with the RM management team and wider work force.

The use and recovery of hazardous substances in close proximity to live operations demanded a highly rigorous approach to health and safety. Stringent standards of housekeeping were maintained. Pipework and remediation plant and equipment was strategically located to minimise disruption to vehicle movements and the risk of slips, trips and falls. Injection operations were carefully planned and rigorously monitored to minimise the risk of uncontrolled polluting hazardous discharges and spillages .

# Solutions



The deployed remediation system incorporated a compact batching plant. This enabled the treatment area to be established with a small operational footprint with an appropriate level of security. An appropriate balance to management of on-site safety with a negligible impact on HGV and commercial vehicle on-site logistics was achieved.

The injection infrastructure selected provided a low-cost solution which did not demand any disruptive enabling works for the installation of buried manifolds and therefore consequently avoided onerous reinstatement costs.

The system of pipework and fittings selected enabled rapid assembly and dismantling of the delivery/recovery infrastructure to each of the injection and monitoring locations.

The remediation preparations utilised in the works avoided the storage and use of substantial quantities of hazardous liquid hydrogen peroxide and the associated potential fire hazards. The associated chemical reactions were more easily monitored and managed with less potential for uncontrolled potentially hazardous releases.

The treatment approach was a two-stage operation. Stage 1 involved the injection of petrocleanze product to promote the removal of gross diesel contamination from the groundwater interface (smear zone) to make it easier to pump and recover from the ground. A total of three injection and recovery campaigns were completed prior to Stage 2 implementation. Stage 2 involved the injection of chemical oxidants to destroy the high concentrations of dissolved phase contamination.

On completion, a six month programme of groundwater monitoring was maintained to check for rebound contamination to ensure the remediation objectives were met.

# Benefits

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Due to the complex ground conditions and busy live logistic environments, careful planning, coordination and sequencing was required to minimise disruption to on-site operations.

Extensive gross contamination required the development of an alternative approach; hydrogen peroxide based chemical oxidation.



Careful application, and a rigorous level of field monitoring and laboratory testing enabled risks from contamination to be accurately quantified.

The development of a robust Conceptual Site Model ensured appropriate targeting of resources and an ability to adapt and respond to changes in ground conditions.

Residual risks have been assessed in a robustly in a site specific context.



The implemented in-situ treatment avoided:

- Disruptive and less sustainable bulk excavation of contaminated soils.
- High costs associated with off-site disposal, reclamation and reinstatement.
- Shutting down the fuel island and the associated operational disruption re-routing lorries to alternative facilities for re-fuelling.



Some 6 tonnes of diesel oil and grossly contaminated groundwater were removed from around the refuelling platform.

The follow on chemical oxidation provided sustained reductions in residual contamination.

Post remediation monitoring has only recorded very localised contamination rebound in the most severely impacted areas.

# Conclusion

The careful staged approach to site characterisation and remediation enable a highly cost effective and environmentally sustainable solution to be developed for the management of the legacy fuel contamination

Through thoughtful and considered design and a co-operative and adaptive approach to implementation, the works were completed without any measurable operational impact, allowing the client to continue to deliver without delay throughout the lead-up to Christmas and during the very busy festive period.

The remediation works were successfully delivered within a potentially hazardous, busy live operational environment without any accidents, incidents or near misses.



On site at the depot