



Case study 9:

site cleaned up after 4000 litre fuel leak

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KEY FACTS

- ▶ 4000 litre fuel leak poses risk to environment and human health
- ▶ Treatment delays allowed contaminated plume to migrate
- ▶ GRM worked closely with regulatory bodies to formulate targets and remedial strategy
- ▶ Contamination levels reduced to below detection off-site
- ▶ Site successfully achieved planning consent

The challenge

The site, a former petrol station in Wolverhampton, suffered a 4000 litre unleaded fuel leak from one of its underground tanks. Due to delays in the sale of the site, GRM were not enlisted to investigate and remediate the problem until almost two years after the leak was first reported. As the site was underlain by a major aquifer, the consequences of the leak had severely worsened with time. Following initial investigation and analysis, GRM discovered that the plume had migrated approximately 100m down gradient. Consequently, GRM and their client had to consider liabilities with regards to neighbouring properties.

GRM undertook a Detailed Quantitative Risk Assessment (DQRA) to assess the risk that the contamination posed to human health and controlled waters. The DQRA involved modelling the plume by analysing almost two years worth of data. In close consultation with the Environment Agency, remedial targets were set and further modelling was conducted at their request. Target levels for the protection of human health were also identified in consultation with Wolverhampton City Council. The risk assessments were carried out using the CLEA UK risk assessment model, the Environment Agency's R & D P20 and ConSim models.

Once target values had been agreed, GRM developed a remedial strategy to reduce the risk to controlled waters and human health to within agreed remedial targets.

structural

The solution

The complex nature of this case, and the potential hazard it posed not only to the future development of the site but also to neighbouring property, called for a great deal of thought and careful planning. The techniques used had to be cost-efficient, economical and effective. After lengthy consultation with the Local Authority and Environment Agency, an appropriate strategy was devised and approved.



GRM's strategy incorporated in-situ bioremediation of contaminated soil and groundwater. This involved the installation of a grid of boreholes across the contaminated area. This network of boreholes was first utilised to remove free product, after which the Soil Vapour Extraction (SVE) & Air Sparging System was implemented. Being able to treat the soil and groundwater 'in-situ' saved the client considerable time and money, and enabled the project to proceed as quickly as possible.

Throughout the remedial works, GRM sampled and monitored groundwater quality on and off-site, to assess the progress. Within the first three months of the six-month treatment period, concentrations in a number of boreholes had been reduced to below laboratory detection levels.

After six months treatment it was established that off-site contamination had fallen to below detection levels, and on-site concentrations had stabilised. Hydrocarbon concentrations had reduced by an order of magnitude of 1000. GRM proceeded to implement a number of post-treatment measures to prevent any further migration and produced a completion report that detailed the success of the remedial scheme.

The report's findings were accepted by the Environment Agency and Local Authority, and planning conditions were discharged to the satisfaction of the client and the NHBC.

Conclusion

Through their close involvement and communication at an early stage of the project with the relevant bodies, GRM was able to devise a remedial strategy that satisfied all legislative requirements. Even on this sensitive site, GRM's application of good science, common sense, budget control and project management ensured that the remediation was completed within the client's development schedule and satisfied the requirement to protect human health and controlled waters.

With the help of GRM's expert advice, a site which many previous buyers had rejected became a very profitable development.



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