CASE STUDY

Tank Decommissioning & Removal

Balmoral UK Limited, Halesowen

Client

Environmental Consultant / Remediation Contractor

Site Background & History

Balmoral UK is a specialist car dealership specialising in the refurbishment and resale of luxury cars (in particular Rolls Royce and Bentley vehicles).

The site is split into three comprising of a former petrol station (now a hair salon), a car showroom and workshop / offices. The site is shown in Figure 1 below.

Figure 1 – Balmoral UK Site

The petrol station had been converted to a hair salon some years previously, however the four underground fuel storage tanks had not been decommissioned since the garage ceased trading – these tanks comprised of a 8,000 gallon tank, a 4,000 gallon tank and two 500 gallon tanks.

In order to satisfy the requirements of the insurance company, the site owners were required to investigate the integrity of the tanks and ensure they were decommissioned in accordance with current legislation.

The tank locations are shown in Figure 2 below.

Figure 2 – Underground Storage Tank Locations

The site owners initially approached Envirotreat to evaluate the available options i.e., do nothing, leave in situ, decommission and fill with foam or decommission and remove from site. The latter, decommission and removal was the only realistic option that satisfied the requirements of the insurers (which were to ensure the tanks dd not contain flammable or explosive material and that they did not pose a potential pollution risk to the environment).

Envirotreat proposed the following scope of works (in line with current Environment Agency guidance):

- Initial inspection of tanks, pipework and interceptors to assess current risks using Photo Ionisation Detector (PID) and Multi Gas Analyser instruments to evaluate any residual explosive gases within the tanks and determine any required purging prior to decommissioning.
- Installation of window sampler boreholes to assess if there is an existing environmental risk - samples of soil and groundwater to be collected and analysed for environmental risk assessment purposes (to be collected before, during and after tank removal)

- Purging of tanks with water to remove any residual materials and residual explosive gases (if confirmed to be present) – the water will require appropriate disposal at a suitably licensed facility following this step
- Removal of tanks from the ground along with any associated pipework for offsite disposal at a suitably licenced facility
- Potential treatment of any hydrocarbon impacted soils using Envirotreat E-Clay stabilisation to ensure reuse within the tank void space following validation.
- Re-instatement of tank voids with clean / recycled 6F5 material / Type 1
- Reinstatement of surface with tarmac / concrete / soft landscaping as required
- Provision of a Verification Report including the required environmental risk assessment

Tank Inspection

Prior to the commencement of the removal works, the four tanks were assessed to determine the presence (or absence) of any residual product remaining in the tanks to assess the presence of any explosive / flammable gases that may be present.

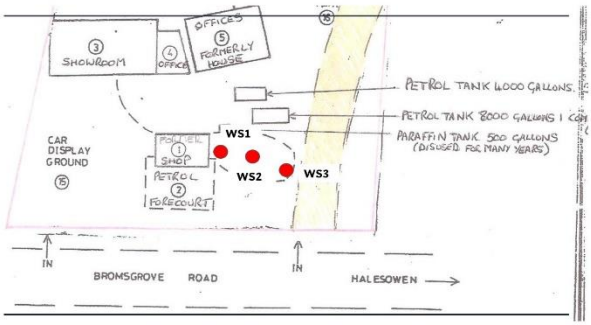
The filling points of the tanks were beneath metal covers which were removed to allow access. The filling point caps were removed, and dip sticks pulled out to confirm the presence (or not) of any liquids in the tanks. The presence of any residual gases was assessed using both a handheld photo Ionisation detector (PID) and a MSA multi gas analyser instrument. The observations confirmed that there was a significant volume of liquid remaining in the second 500-gallon tank - PID and multi gas analysis indicated that this was not fuel based but most likely water with a small amount of residual product. The three other tanks were confirmed to be clear of residual product and explosive gases.

Site Investigation

In order to assess any potential impacts to the surrounding soil and groundwater from the tank contents and their historical usage, three (3 No) windowless boreholes were advanced into the areas around the tanks.

Prior to installation, the area was scanned using a Cable Avoidance Tool (CAT) and generator. The intention was to advance to a maximum of 5 m below existing ground level or until refusal (whichever was shallowest) – one monitoring well was installed for groundwater monitoring purposes – this well was subsequently found to be dry. The locations of the boreholes are as shown in Figure 3 below.

Figure 3 – Windowless Sampler Boreholes



Subsequent analysis of soil and groundwater samples confirmed that there had not been any impact to the surrounding environment from the tank contents or from their historical usage.

Removal of Residual Tank Contents

Prior to the tank removal works, the residual liquid confirmed to be present within the second 500-gallon tank was removed by a vacuum tanker and transported to a suitably licensed facility for appropriate disposal as hazardous waste.

Tank Removal

Following removal of the residual liquid / product the areas around the tanks were excavated to allow appropriate access to the extremities of the tanks and allow safe removal. All pipework leading from the tanks was cut and the exposed pipe filled with expanding foam to ensure no product that potentially remains in the pipework could flow back into the tank area after removal.

Each tank was exposed in turn and removed using the excavator; the tanks were stored adjacent to the excavated area to await transport for disposal.

This process is shown in the Figures 4 and 5 below.

Figure 4 – Exposure of Tanks

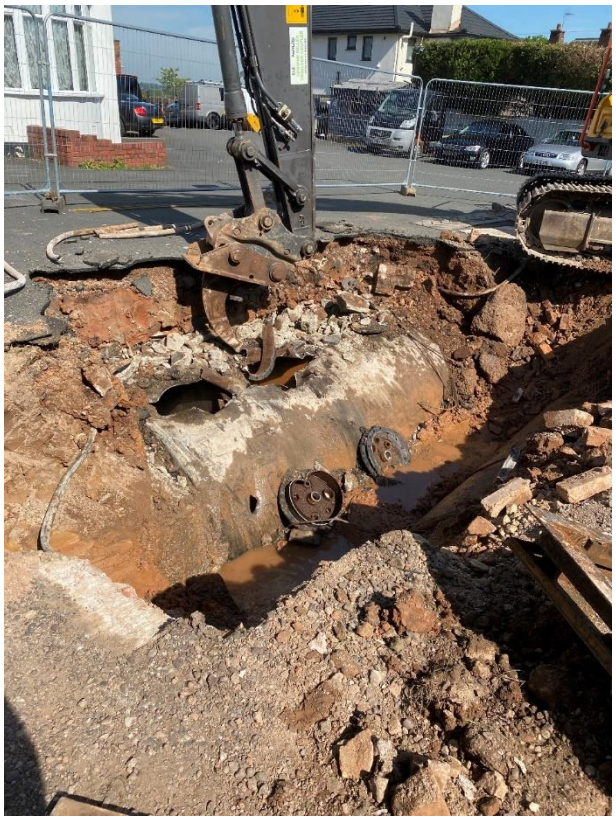


Figure 5 – Exposure of Tanks

The removal of the tanks is shown in the Figures 6, 7 and 8 below.

Figure 6 – Removal of the 8,000 Gallon Tank

Figure 7 – Removal of one of the 500 Gallon Tanks

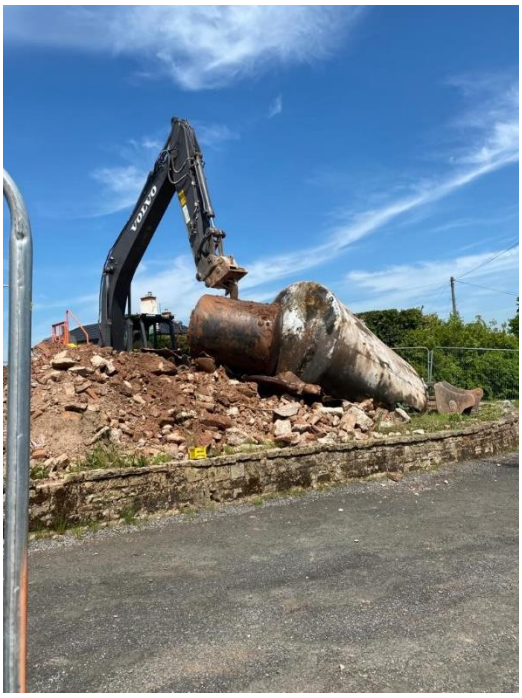


Figure 8 – Loading of the Tanks for Disposal

Soil samples were collected from the immediate surrounds of the tanks (sides and base) to verify that there has been no impact to the surrounding soils from the tank contents and their historical usage.

Analysis of the samples confirmed that there had not been any impact to the immediate soils surrounding the tanks and that no further excavation work would be necessary.

E-Clay Treatment of Sludge Material

During the removal of one of the 500-gallon tanks it was observed that there was sludge type material contained within the brick base structure of the tank housing. To ensure there was no potential for this material to impact on the local environment a dry mix E-Clay was added with the intention of immobilising any potential contamination within the E-Clay matrix thereby prevent leaching into groundwater. Samples of the treated, stabilised material were collected for validation purposes.

Reinstatement

The voids created by the tank removal were reinstated using clean, recycled type 1 material and compacted in layers using a Bomag roller. This is shown in Figure 9 below.

Figure 9 – Reinstated Tank Area

The tarmacked area was reinstated and rolled until cool (as shown in Figure 10 below).

Figure 10 – Reinstatement of Tarmac

Validation

The analysis results demonstrated successful treatment of the sludge type material from beneath the 500-gallon tank. The treatment prevented leaching of any contamination by the addition of the dry mix E-Clay Product.

Envirotreat has successfully assessed, investigated and removed 4 No underground fuel storage tanks (including the treatment of a small volume of sludge type material) and carried out appropriate validation and verification of all works in accordance with existing Environment Agency guidelines.

The works addressed any potential risks of pollution and explosion etc.

The works were approved by the insurers which also addressed potential future liabilities.

The client was very satisfied with works undertaken.