CHEMICALS CASE STUDY - PETROCHEMICAL MANUFACTURER, UK

Industrial landfill investigation

ABB assist leading petrochemical manufacturing company investigate landfill site to allow development for operational use.

A leading petrochemical manufacturing company wished to investigate a closed landfill facility located within one of its major operating sites in the UK. Their objective was to explore options for the remediation and removal of the landfill to allow development of the land for operational use.

The project had to be delivered to high standards of health and safety and with minimal disruption to neighbouring operations. ABB was engaged to carry out the investigation and report on the findings and options for landfill removal.

The project was complex, with the following challenges:

- A 40 year history of waste disposal operations from a variety of site sources
- A large site area of 30,000 m² and volume of 300,000m³
- A wide range of wastes including natural soils, construction and demolition rubble, petroleum hydrocarbon residues, sludges, asbestos, catalysts, scrap metal, etc.
- Incomplete record of wastes deposited
- Client requirement for a sustainable approach to remediation and removal activities

Solution
ABB used their knowledge and expertise to develop and complete the following scope of works to determine the types and quantities of waste present in the landfill, possible treatment options and costs for removal:

- Desk study to describe the history of waste disposal, environmental setting and previous investigation and monitoring works
- Topographical survey to determine the volume of the facility and to provide a baseline for following investigations
- Phased site investigations comprising trial pitting (to a maximum depth of 9.5m) and drilling of boreholes through the waste deposits to locate, sample, and quantify waste materials geophysical surveys using electrical resistivity tomography to make general predictions regarding the type and homogeneity of materials within the landfill at locations where intrusive investigation was not carried out
- Laboratory and on-site analysis of waste materials to determine contaminant concentrations and waste classifications
Data from the investigations and surveys was used to provide a description of the waste materials, their location in the landfill and the volume and mass of the deposits.

- Development of options for remediation; these included bio-remediation, soil washing, soil stabilisation and thermal desorption. Cost estimates were produced for in-situ treatment and processing at an off-site treatment centre.

- Significant volumes of material were identified as being suitable for re-use on site as backfill or for landscaping purposes.

**Benefits**

- The investigation gave a full picture of the waste materials, their location and the volume and mass of deposits in the site.

- The client was provided with a wide range of options and associated costs for remediation.

- Once remediation of the site had taken place, the client could develop the area for operational use with significant cost savings as neighbouring land was not available for development.

ABB staff have expert knowledge of the latest remediation techniques, current legislative requirements and working within both redundant landfill and live petrochemical plant environments.