

Case Study

Landfill Monitoring

Corus UK Ltd



Phone: 01639 775293

Website: www.geotechnology.net

Email: info@geotechnology.net



Geotechnology Limited
Ty Coed, Cefn-Yr-Allt, Aberdulais, Neath, SA10 8HE
Registered in England and Wales No. 6497727

Landfill Monitoring

Corus UK Ltd

Environmental monitoring, data management and regulatory reporting are some of the key services Geotechnology provides to a range of industrial and commercial clients. Geotechnology is currently responsible for the collection of surface water, groundwater and leachate samples and the monitoring of landfill gas, stability and settlement at several active and closed landfill sites. Some of the largest monitoring networks maintained by Geotechnology are the programmes implemented for Corus at its sites in the UK.

At the Corus facility in Port Talbot, Geotechnology is responsible for monitoring, data management and regulatory reporting for a monitoring network currently comprising 73 groundwater monitoring points, 15 surface water monitoring points, 23 gas monitoring points, 4 leachate sumps and 5 surface water level gauges.

Geotechnology was commissioned by Corus to secure an Environmental Permit for hazardous and non-hazardous landfills. The designs were developed by carrying out a series of risk assessments, including hydrogeological, landfill gas, stability and nuisance. A key output from the risk assessments and a requirement of the Permit application was the need for requisite surveillance of all environmental media. Geotechnology therefore designed a robust environmental monitoring network and programme which was described in the Permit applications

Since acceptance of the designs by the Environment Agency and issue of the Permits, Geotechnology has supervised the construction of several landfill cells and the installation of the monitoring network. The site is adjacent to a Site of Special Scientific Interest and also a Special Area of Conservation. As some of the monitoring infrastructure is located in these designated areas Geotechnology has had to ensure that the monitoring infrastructure was sensitively designed



Landfill Monitoring

Corus UK Ltd

and installed.

The geology underlying the site comprises two unconsolidated sand units separated by a discontinuous low permeability clay layer. The hydrogeological risk assessment (HRA) completed by Geotechnology demonstrated that groundwater quality in the shallow and deep sand units needed to be monitored. Following acceptance of the groundwater monitoring infrastructure design by the EA and the Countryside Council for Wales, Geotechnology supervised their installation by approved drilled contractors under full Construction Quality Assurance (CQA). In-situ permeability tests were also completed across the groundwater monitoring network to calibrate the Conceptual Site Model and improve understanding of the flow regime.

Groundwater quality monitoring positions comprise 50mm piezometers located upstream and downstream of the site. Along specific boundaries, the groundwater network is supplemented by shallow steel drive-in piezometers to enable the detailed monitoring of shallow waterlevels. This is required to address specific concerns related to the adjacent ecological areas.

At each groundwater monitoring installation Geotechnology has installed dedicated sampling systems to ensure there is no possibility of cross contamination. These comprise a combination of inertial pumps and 12V pumps depending upon the the yield achieved at each monitoring position

All equipment used by Geotechnology is company owned and independently calibrated. This includes



Landfill Monitoring

Corus UK Ltd



a gas analyser for the monitoring of landfill gas, instruments to measure water pH, electrical conductivity, temperature and dissolved oxygen and a digital GPS survey system for the annual survey of landfill void space and settlement.



All of the samples collected during the monitoring are transported to an accredited laboratory for testing within 24 hours of collection. The results from the testing are forwarded to Geotechnology for independent QA/QC checking, review and management. Corus evaluates the requirement for additional monitoring if established Control Levels are exceeded. These Control Levels were established by Geotechnology as part of the original HRA and are subject to annual review.



The monitoring programme has evolved and been significantly refined since the start of monitoring through annual reviews of the data by Geotechnology. Analysis combines time-series evaluation and also more sophisticated statistical assessments to ensure subtle changes in groundwater quality are identified. This has led to significant cost savings for Corus as the frequency and list of determinants regularly monitored has been justifiably reduced.



In addition to providing Corus with data management and annual reporting support, Geotechnology also assists with the preparation of responses to Compliance Assessment Reports (CARs) following EA audits or reviews. Geotechnology also undertakes the required four-year review of the hydrogeological risk assessment. This is a critical component of work as without successful completion of the review the EA could request the cessation of landfilling activity.