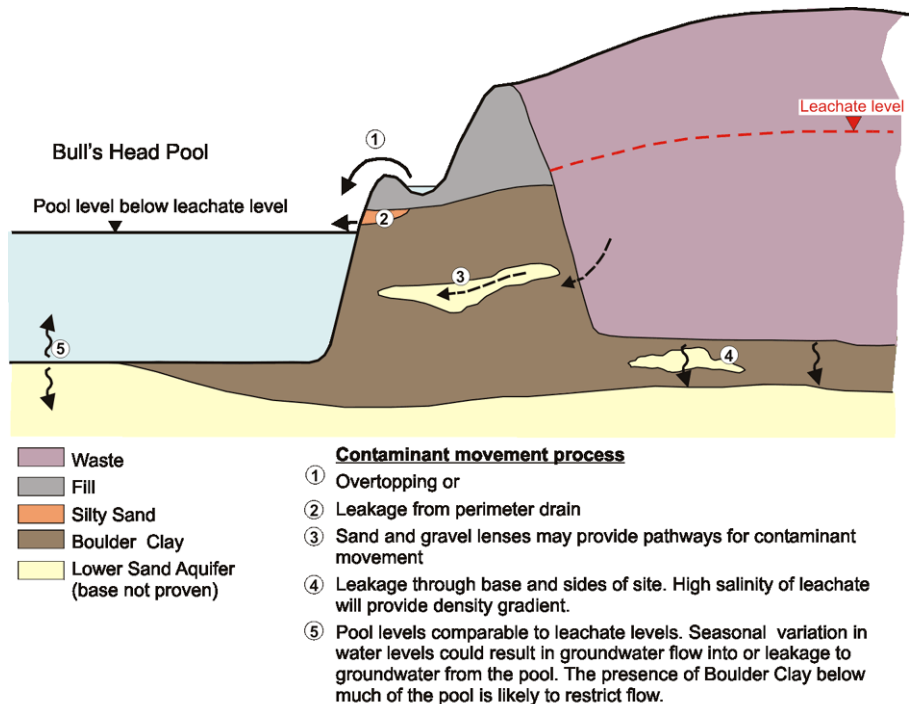


Modelling of the Wardle Landfill Site Environment Agency

The Wardle Metal site had been operating as an aluminium works since 1940 and waste materials from the process were disposed of in a flooded, clay brickpit at the site. There are two other flooded pits adjacent to the waste site: Wheatsheaf Pool and Bull's Head Pool. The aluminium waste has resulted in generation of leachate characterised by high chloride (higher than sea water) and ammonium concentrations. Monitoring of the pools, the local stream and groundwater monitoring boreholes has shown an increase in chloride and ammonia concentrations with time, which is attributed to leakage from the waste disposal site. In July 2002, the Environment Agency implemented a series of engineering measures, including reprofiling and capping of the site, to reduce the impact of the site on water quality.

Entec was commissioned to create a detailed conceptual model of the site, including the waste disposal site and its interaction with groundwater and surface water. A groundwater and surface water modelling assessment was undertaken, based on the conceptual understanding of the site, to evaluate the benefit of the engineering measures on water quality and to estimate the time for conditions to improve.



Using conceptual models to prove the value of remediation works

The models provided a good simulation of observed leachate, surface water and groundwater levels and quality. The modelling also demonstrated that the engineering measures would result in an improvement in surface water quality with time. Groundwater quality was also predicted to improve with time, though with some deterioration in quality before improvement occurs as the plume migrates away from the landfill.

Entec presented the models to the Environment Agency to enable comparison with future monitoring data and provided clear conceptual drawings, photographs, maps and text to enable the Environment Agency to publicise the value of the remedial works undertaken at the Wardle Metal site to local interest groups.

