

CQA SERVICES

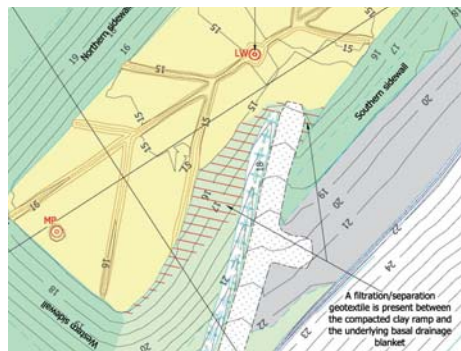
GWP has experienced CQA engineers who ensure a direct line of communication between client, contractor, consultants and surveyors. Our engineers monitor and oversee the construction process of all types of landfill cells, drainage systems and earth embankment dams.

Third party Construction Quality Assurance (CQA) monitoring is necessary to ensure that the build methods employed and final construction meet the design specification and are appropriate to the actual quality of the materials used in construction and ground conditions as encountered.

Our expertise in related disciplines, such as geotechnical engineering and hydrology, ensures that designs are stable, safe and will satisfy the demands of increasingly stringent environmental legislation in the UK, continental Europe and elsewhere in the world.

Our Services include:

- Site construction supervision
- Mineral lining quality assessments
- Level and thickness control
- Accurate Surveys using Smart Pole system
- Compliance reporting and certification
- Liaison with contractors and regulatory authorities



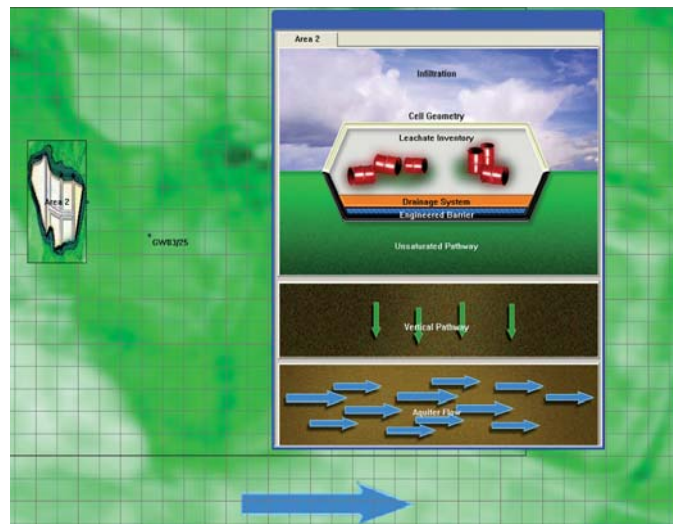
CQA Services

GWP has considerable experience in landfill design, including hydrogeological modelling (landsim), compilation of CQA Plans, CQA Specifications and CQA Construction Reports for inert, non-hazardous and hazardous landfill sites. Experienced engineers are provided to monitor the construction works, conduct *in-situ* testing and collect samples for external laboratory testing where required.

This CQA design and monitoring experience translates onto many other geotechnical engineering projects such as supervision and monitoring of dam and retaining wall construction projects and water or mineral resource drilling programmes.

Selected projects

- **PPC Permit Application:** GWP has successfully applied for PPC Permits at inert and hazardous landfill sites, including preparation of required environmental setting reports, and additional stability, gas and hydrogeological risk assessments.
- **Landfill cell and capping design:** GWP designed a cell and cap using site derived engineered clay with an additional geosynthetic capping element.
Full CQA monitoring and survey backup was provided together with CQA drawings and CQA report preparation.
- **Design of hazardous waste cells:** In consultation with the EA, GWP designed an engineered clay and HDPE lined landfill cell at a hazardous landfill site. This included obtaining all necessary risk assessments and a comprehensive CQA plan. Following approval, we provided CQA supervision and survey.
Once permitted we have implemented CQA monitoring plans and provided all necessary reports.
- **Use of reinforced soil design to enable a steep sloped capping and restoration solution for a non-hazardous landfill site.**
- **Equivalence Study using LandSim:** GWP undertook an equivalence study on a currently permitted scheme to demonstrate that a liner comprising 1.2m of compacted clay could be substituted by a 0.5m thick bentonite enriched sand alternative.
The BES solution resulted in significant savings on materials, installation costs and in waste volumes.



Key contacts

For details and to discuss your requirements, please contact the following:

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