

Steep-slope Cap for Finmere Quarry Landfill

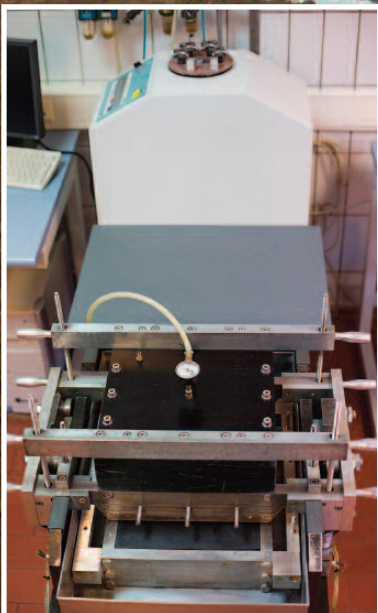
Located in north-east Oxfordshire, near Buckingham, Finmere Quarry is a non-hazardous landfill site which is operated by waste management group OPES Industries Ltd.

Formerly worked for sand and gravel extraction, the Finmere Quarry landfill site comprises a number of waste cells. The project to cap four of the cells involved constructing an impermeable barrier to waste material and providing a drainage system to ensure safe drainage of leachate from the cells.

CASE STUDY

Project Name:	Finmere Quarry Landfill Site
Date:	September 2014
Client:	OPES Industries Ltd
Main Contractor:	Michael Henry Civil Engineering
Installer:	Celtic Lining Ltd
Consultant:	JPCE Ltd
Product:	Carbofol® HDPE F/F GM13, Secudrain® 131C WD401 131C

A geomembrane landfill liner and geosynthetic drainage system from NAUE provided a cost-efficient solution for the construction of a steep-slope capping at Finmere Quarry landfill site.





Faced with the challenge of designing a capping solution which would secure stability on a 70m slope with a 1 in 3 gradient, consulting engineer John Perkins, of JPCE Ltd, worked closely with NAUE engineers to determine a product specification that would provide the required long-term performance and optimum transmission of shear forces. A full slope stability analysis was conducted by NAUE, and site specific shear box testing was carried out using cover soils. Furthermore, when considering the most advantageous geosynthetic solution, the filter stability and hydraulic stability of the selected products was also taken into account.

Thus NAUE were able to offer a complete design, supply, and testing service for all of the Geosynthetic project requirements. Specified for the project was a combination of a 1mm thick HDPE Carbofol® F/F GM13 geomembrane and Secudrain® 131C WD401 131C geosynthetic drainage system. Specially developed for the frictional requirements of demanding steep slope applications, Carbofol® F/F is a high-density polyethylene (HDPE) geomembrane with a textured surface on both sides. The embossed structured surface of Carbofol® F/F provides long-term embankment stability, in addition to a complete seal against even the most toxic substances. Secudrain® is a three-dimensional

geocomposite product, consisting of a drainage core with Secutex® non-woven geotextile filter thermally bonded on both sides; creating a drainage and filtration geocomposite which is quick and economical to install.

Installation of 46,000m² of both the Carbofol® geomembrane and the Secudrain® geosynthetic drainage system was carried out

by experienced contractors, Celtic Lining Ltd., who completed all aspects of the works to schedule. "Both the HDPE geomembrane and the geocomposite are high quality products which were easy to handle and install" says Mel Jones of Celtic Linings, "and because NAUE were supplying and delivering both products, timing of deliveries to site was always co-ordinated."

