

# Landfill Drainage

Final Capping, Pozidrain, Gypsum Landfill, Co. Cavan, Ireland



CASE STUDY



## Project Description

Gyproc, part of the Saint-Gobain Group, is Ireland's largest producer of plaster and plasterboard. Manufacturing in Kingscourt, Co. Cavan, waste from the plasterboard manufacturing process was disposed of in a landfill over a number of decades in line with the facility's Industrial Emissions Licence. Landfilling at the site ceased in 2009, and a permanent capping system was required in order to provide safe containment of this waste.

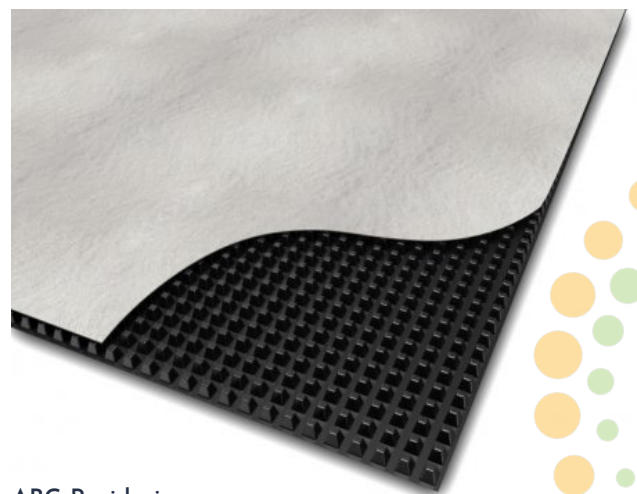
## The Challenge

The landfill closure project involved the re-profiling of the existing landfill in order to create regularised slopes of up to 1:2.5 (21.8°) and the installation of a permanent capping system over an area of approximately 6.5 hectares. At the time of cessation of filling operations, the overall composition of the waste was estimated to be 95% plasterboard and 5% gypsum residue. The waste was considered to be hazardous and would be soft in places underfoot.

The proposed capping system comprised a number of elements: a 200 mm blinding / regulation layer, a gas collection geocomposite, a geomembrane liner, a subsurface water geocomposite and finally a 1m topsoil / subsoil layer. The geocomposites needed to be carefully selected to address the build up of flammable gas underneath the liner and to ensure adequate subsurface drainage, whilst also being stable on the steep slopes.

## Project Information

<b>Client</b>	Gyproc
<b>Distributor</b>	Wills Bros / PGeoContracting
<b>Product</b>	ABG Pozidrain 7S250/NW8 ABG Pozidrain 4S250D/NW8
<b>Quantity</b>	65,000m <sup>2</sup>
<b>Benefits</b>	<ul style="list-style-type: none"><li>• Cost savings resulting from the use of Pozidrain with one geotextile</li><li>• Rapid installation</li><li>• Demonstrated drainage performance</li></ul>



ABG Pozidrain

ABG LTD

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a Bontexgeo Group company



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## The Solution

Working with consulting engineer RPS, ABG approached the selection of a suitable drainage geocomposite from first principles. This involved establishing the permeability of the cover soil in relation to the infiltration rate, and calculating the required in-plane flow of the geocomposite when tested with soft foam platens as per EN ISO 12958. Appropriate reduction factors and a global factor of safety were applied to establish that **Pozidrain 4S250D/NW8** would provide adequate drainage to ensure stability on the steep slopes. Pozidrain utilises an impermeable cusped core that brings economic savings to projects that have a combination of steep ( $>12^\circ$ ) and shallow ( $<12^\circ$ ) slopes. Where the slope is  $<12^\circ$  Pozidrain can be used with one geotextile. ABG was therefore able to offer **Pozidrain 7S250/NW8** with one geotextile as a value-engineered solution for the flatter areas of the capping. Flow capacity is dependent upon gradient, and **Pozidrain 7S250/NW8** also provided higher in-plane flow capacity to cater for the lower gradient on these flatter areas.

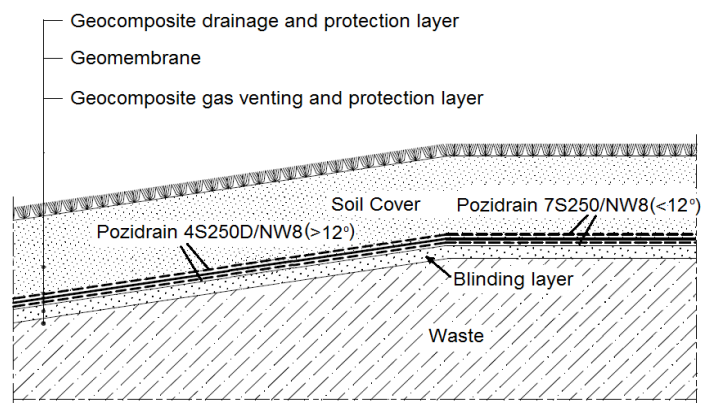
## The ABG Service

ABG assisted with subsurface drainage calculations and facilitated site-specific shear box testing to establish the suitability of the geocomposites.



Pozidrain is stable on steep slopes of up to 1:2.5 (21.8%)

## Geosynthetic capping components



The steep sloping areas ( $>12^\circ$ ) required a geotextile on each interface for stability using the 4mm thick Pozidrain 4S250D/NW8. The flatter areas ( $<12^\circ$ ) required higher in plane flow and were value engineered needing only one geotextile using the 7mm thick Pozidrain 7S250/NW8, providing significant cost savings.



Long, wide rolls enabled fast installation

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