

# Landfill Capping

Steep Slopes, Pozidrain G, Tir John Landfill, Swansea, UK



CASE STUDY



## Project Description

Tir John has, since the 1960s, fulfilled landfill requirements for residents and commercial contractors in South West Wales. The facility is adjacent to the Crymlyn Bog, which is a designated Special Area of Conservation (SAC). The disposal of residual waste is managed by Swansea City Waste Disposal Company Limited (SCWDCL) who operate the Tir John landfill site. The City and County of Swansea approached Jacobs to design a final capping system for this landfill site.

## The Challenge

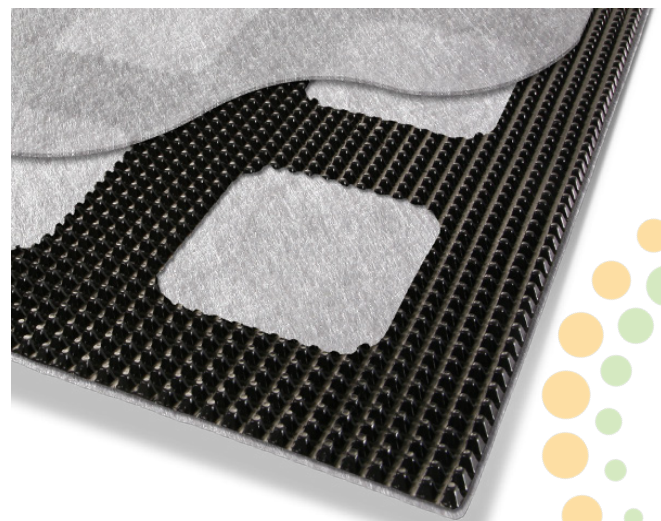
In 2012 the Tir John landfill site required capping with a permanent geosynthetic capping system and 1m of soil cover.

The requirement was to design a capping solution that would enable fast installation over this large area. The geosynthetic capping system required a high performance geocomposite drainage and protection layer, impermeable geomembrane and gas dispersal geocomposite.

A large proportion of the landfill cap was constructed on very steep slopes where it was necessary to ensure slope stability during construction. The challenge was to produce a cost effective design that resulted in adequate stability on steep slopes without the use of geogrid reinforcement.

## Project Information

<b>Client</b>	Swansea City Council
<b>Contractor</b>	Walters UK
<b>Products</b>	Pozidrain G4SD
<b>Quantity</b>	120,000m <sup>2</sup>
<b>Benefits</b>	<ul style="list-style-type: none"><li>• High flow capacity in both directions</li><li>• Excellent frictional performance removed the requirement for geogrids</li><li>• Geomembrane protection</li><li>• Wide-width rolls for fast installation</li></ul>



ABG Pozidrain G

ABG LTD

E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • [www.abgltd.com](http://www.abgltd.com)

a Bontexgeo Group company



# Landfill Capping

Steep Slopes, Pozidrain G, Tir John Landfill, Swansea, UK



## The Solution

The designer worked with ABG to develop a geosynthetic capping solution that would provide the required drainage / gas venting flow capacity and frictional performance to ensure slope stability. ABG's unique **Pozidrain G4SD** geocomposite drainage layer with enhanced frictional performance was specified and installed on top of the 1mm LLDPE textured geomembrane for drainage, and underneath for gas dispersal. Shear box test results for the Pozidrain vs cover soil interface indicated sufficient frictional performance to achieve the required factor of safety for the 50m long, 1 in 3 slope installation. This landfill cap was completed without any stability problems and drainage performance was reported to be efficient across the 6ha landfill cap.

## The ABG Service

ABG provided design assistance. This included shear box testing, slope stability and flow capacity calculations.



Wide-width rolls enabled rapid installation



High flow capacity in both directions



Superior interface friction ensured 1 in 3 slope stability

ABG LTD

E7 Meltham Mills Road, Meltham, Holmfirth, HD9 4DS • +44 (0)1484 852096 • [www.abgltd.com](http://www.abgltd.com)

a Bontexgeo Group company