

# Embankment Drainage

Starter Layer, Fildrain, FARRRS, Doncaster, UK



CASE STUDY



## Project Description

The Finningley And Rossington Regeneration Route Scheme (FARRRS) is part of the UK government's growth initiative improving the road network to reduce congestion and encourage local economic growth near Doncaster. The new 4.5km highway connects Doncaster airport to the M18. Journey times will be reduced and 2000+ new homes created in the Rossington and airport areas.

## The Challenge

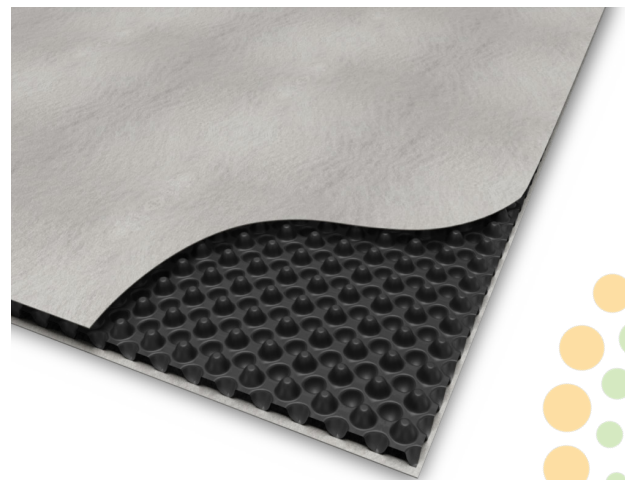
Phase one of the development required the rapid construction of an embankment on poor ground with high water table. The embankment needs a stable base layer which drains the water away, increasing the rate of consolidation. A traditional starter layer consists of a thick (up to 600mm) granular layer (6C stone) with geotextiles to either side of the stone. Sourcing of stone, transport to and across site, placement and slow installation make this a costly process, both in monetary and environmental terms.

## The Solution

Recent developments and extensive testing have shown that the specially designed drainage geocomposite **ABG Fildrain** is equivalent to a thick layer of crushed stone used in a starter layer. **ABG Fildrain** has the two essential filter geotextiles tightly bonded to a proven, compression resistant 7mm thick double cusped core. **Fildrain** removed time consuming stone sourcing and placement operations. Replacement fill is easily won from site. This resulted in significant cost and carbon savings. Supplied in 4.4m wide rolls and laid perpendicular to the line of the embankment, the **Fildrain** drainage starter layer reinforces the structure and aids stabilisation

## Project Information

<b>Client</b>	Doncaster Council
<b>Consultant</b>	Mott MacDonald
<b>Products</b>	Fildrain 7DD/ST170
<b>Quantity</b>	30,000m <sup>2</sup>
<b>Benefits</b>	<ul style="list-style-type: none"><li>• Rapid installation</li><li>• Stone cost savings of 36,000T</li><li>• Maximum use of site soils</li><li>• Prevents rehydration above and below starter layer</li><li>• Carbon saving</li></ul>



ABG Fildrain placed at the embankment base instead of traditional stone drainage layers

ABG LTD

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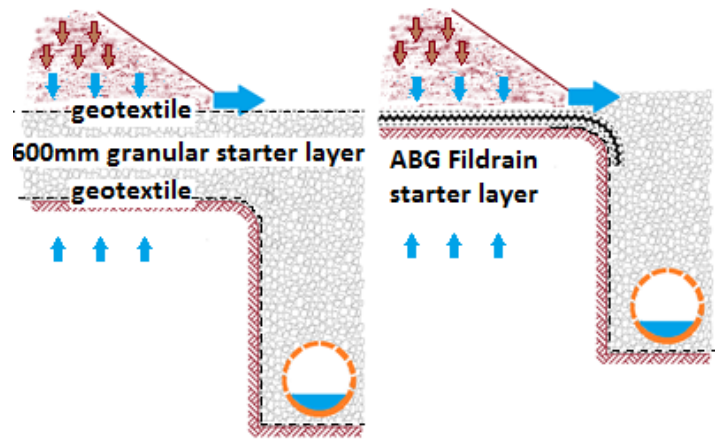


**Fildrain** is the only BBA approved geocomposite starter layer. This is an important factor for Early Contractor Involvement (ECI) project teams and designers, when value engineering similar sites for the government highways program.

This innovative solution meant that phase one of the FARRRS project was completed on time, with significant cost savings whilst being fully compliant with drainage regulations and guidelines, helping to ensure that the rest of the project ran on schedule to open in January 2016.

## The ABG Service

ABG assisted with the ECI process providing proof calculations for this specific application in line with government highways requirements. ABG provided data on: in-plane flow under load, long term creep compression, **Fildrain** / soil interface shear. Deliveries from our UK factory were scheduled to suit site requirements.



Cross-sectional drawings show the designed build up and the water flow at the shallow gradient



Finished stable, drained and consolidated embankment



Finished embankment profile with Fildrain tucked into perimeter drain

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