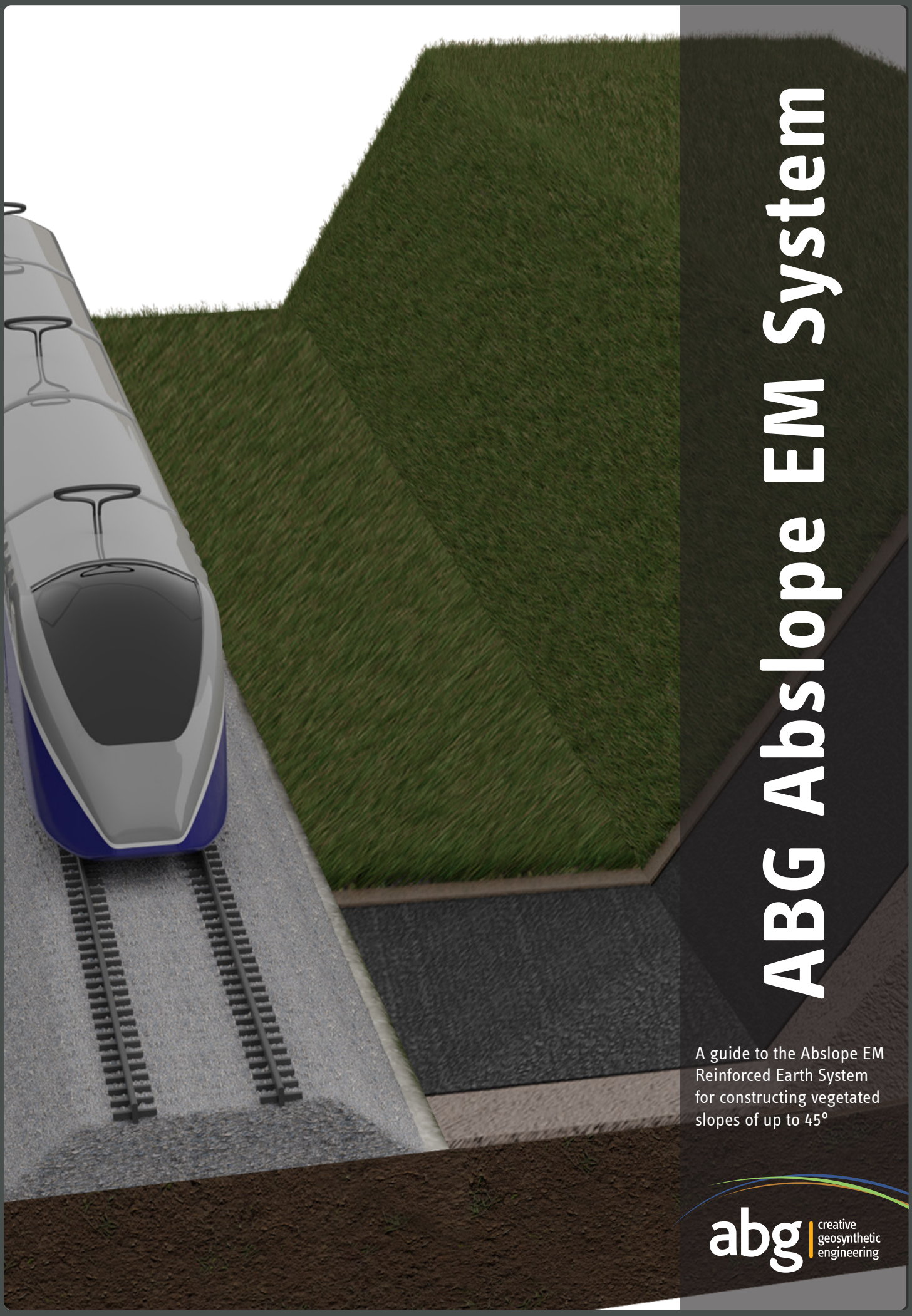


ABG Abslope EM System

A guide to the Abslope EM Reinforced Earth System for constructing vegetated slopes of up to 45°

abg creative geosynthetic engineering

Abslope EM is an economical and structurally flexible, sustainable earth retaining slope system developed for road & rail embankments, acoustic bunds, amenity slopes, flood alleviation schemes, reservoirs, land reclamation projects and housing developments to meet the demands of Engineers, Architects and Developers. The system consists of proprietary ABG Geogrids and Erosamats deployed to construct slopes to a face angle of up to 45°.

The reinforced fill and retained backfill typically utilise site-won materials and our design team will confirm the system build-up and the exact type and dimensions of ABG Geogrids and Erosamat required for the project.

Abslope EM Benefits

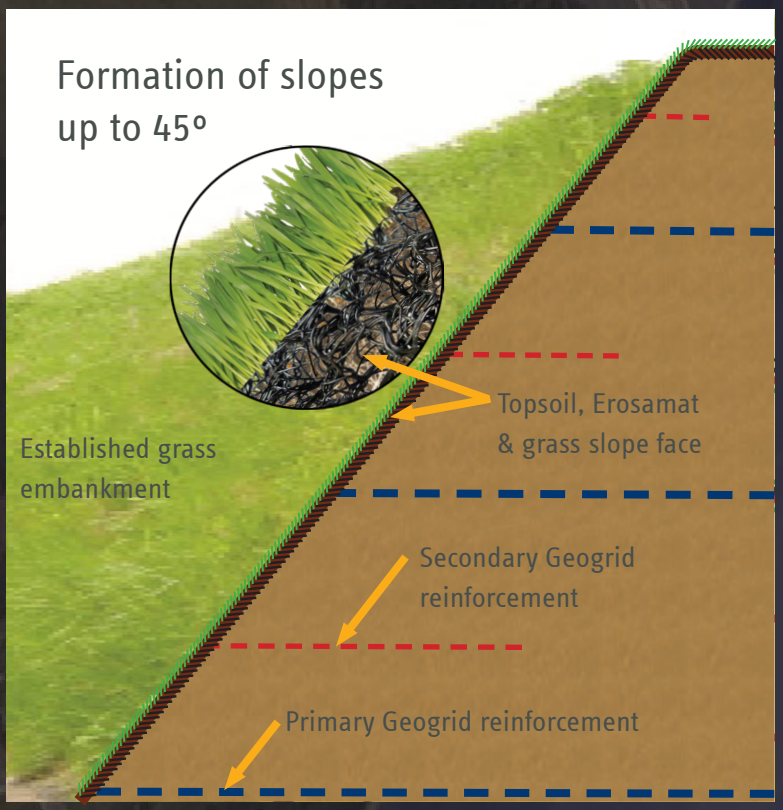
more

+ Re-use of site-won materials
+ Environmental compatibility
+ Slope stability
+ Usable land
+ Flexible construction

- Construction costs & time
- Imported fill

less

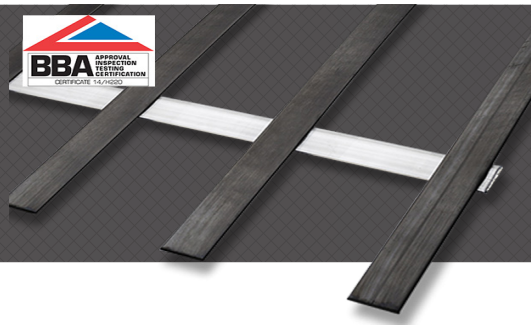
Contents



ABG Abslope EM System

Abslope EM - Introduction

System for fast and cost saving construction of reinforced slopes up to 45°.



System Overview

In order to maximise the available land on new developments and limit the impact on the surrounding landscape, it is often necessary to reinforce slopes so that they can be constructed to a steeper angle.

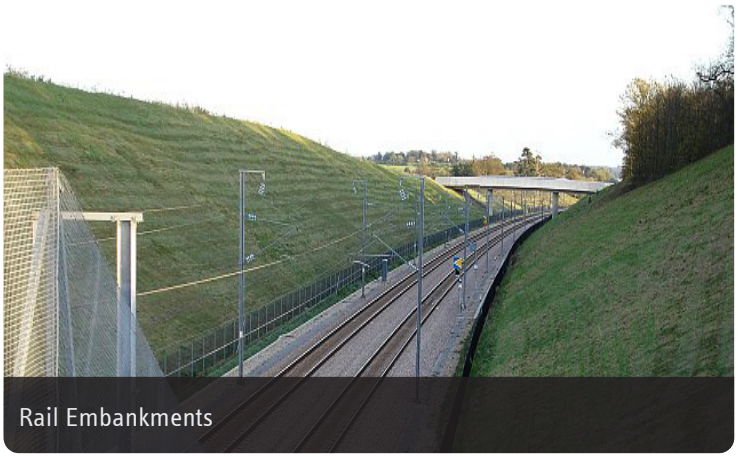
Abslope EM is a geogrid reinforced slope to enable the construction of embankments of up to 45° (or less) as required with geogrids positioned throughout the fill to reinforce the structure.

ABG's Erosamat is installed to the slope surface to enable a natural grass face to establish. Erosamat is available in biodegradable or permanent formats, with Erosamat Type 3 providing a permanent three-dimensional mat of entangled HDPE fibres. This is specified for high flow velocity applications such as flood embankments in order to prevent surface slips and wash out.

Biodegradable Erosamat Types 1 or 2 are available for lower surface water volume applications as required.

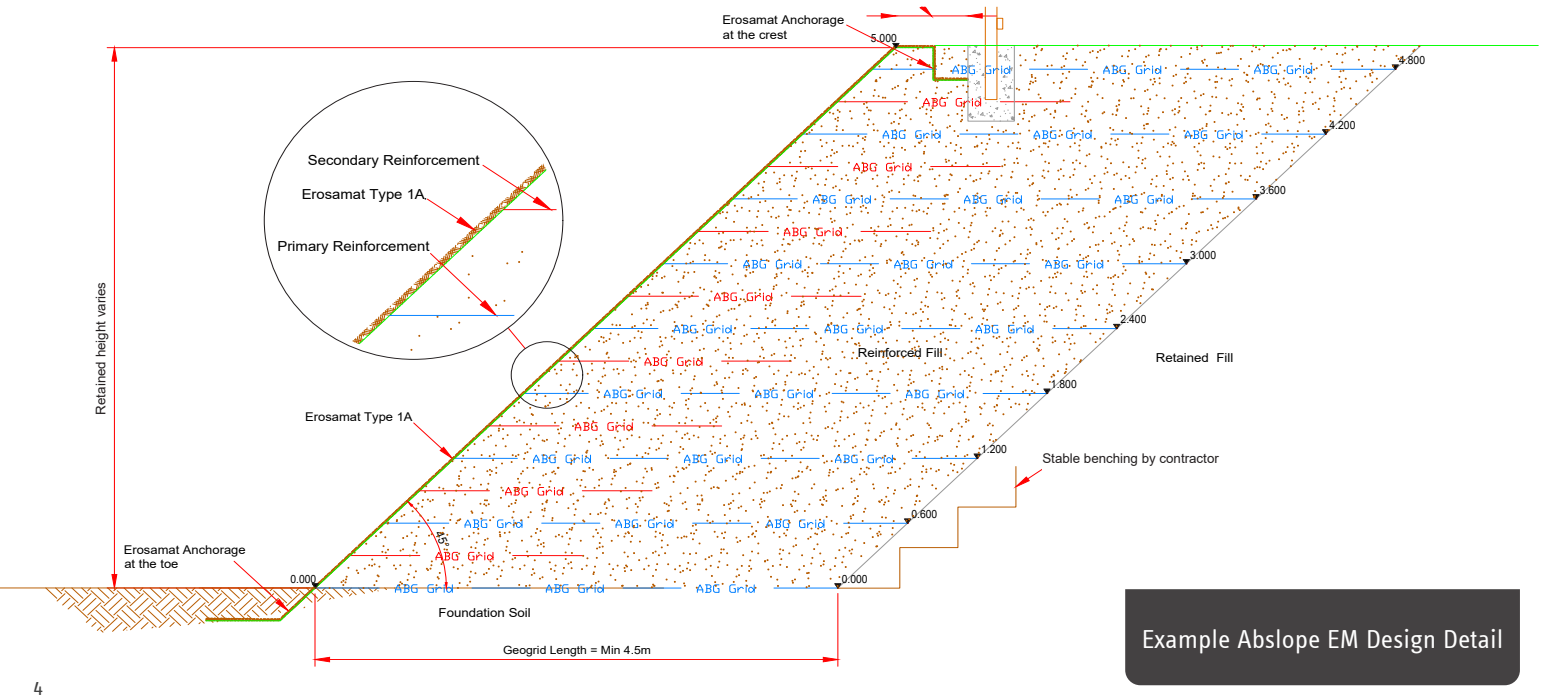
ABG offers three retained earth slope systems (including the Abslope SM system with steel mesh at the slope face and Webwall geocellular panel system with vegetated face). The Abslope EM system is an economical option that provides a structurally flexible earth retaining slopes to be constructed for:

- road & rail embankments
- bridge approach ramps
- acoustic bunds
- amenity slopes
- flood alleviation & reservoir embankments
- land reclamation projects
- housing developments & National Trust properties



Rail Embankments

Erosamat Type 3 to aid the establishment of grassed slopes



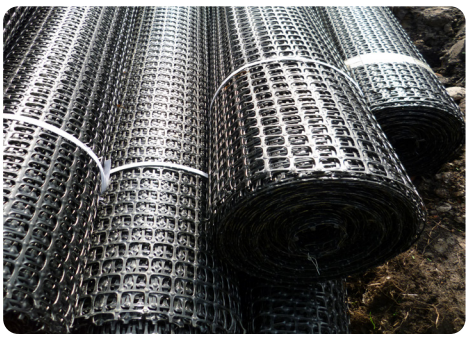
Example Abslope EM Design Detail

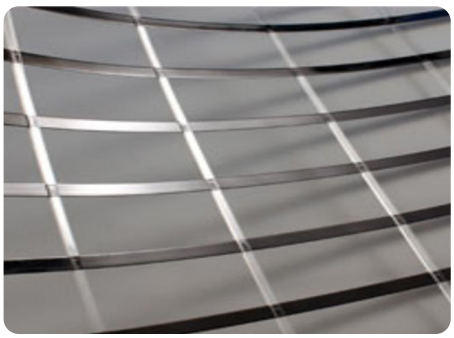
Abslope EM - System Components

The main system components include ABG Geogrids, Erosamat vegetation liners, site-won fill, topsoil and drainage geocomposites.

ABG Geogrids & Drainage Geocomposites

ABG Geogrids stabilise the reinforced earth fill and provide excellent tensile strength properties. The stiffness of the geogrid enables the backfill loads to be transferred effectively. Dependant on the type of soil fill used and the load it needs to support, different strengths of ABG geogrids are available. ABG drainage geocomposites are sometimes specified to intercept seepage water from the backfill and cut-off pore water pressure from the reinforced fill.





Vegetation liner

ABG's Erosamat biodegradable or permanent vegetation liners are placed onto the slope face once a layer of topsoil has been trimmed to the correct depth. UV stabilised liner options are available to prevent degradation of the material before planting cover has been established*.

Site-won fill & topsoil material

Generally the Abslope EM system permits the use of relatively low quality fill for slope construction projects. This provides project cost savings, reduces the environmental impact on the surrounding area and the need to transport marginal soils away from the site. Locally available soil can be used for the fill material, provided it can be compacted adequately to an approved specification (e.g. MCHW). Additionally, good quality topsoil with adequate water retention capacity should be added along the slope face (minimum 100 mm thick).

*Successful establishment of vegetation cover is the responsibility of the landscaping contractor.

Abslope EM - Applications & Design Service

Reinforced slope system provides a flexible option for highways, rail and building developments.

Abslope for Highways & Rail applications

The cost effectiveness and adaptability of the Abslope EM system provides highway and rail engineers with a versatile and lower carbon footprint option compared to traditional stone facing methods.

The geogrids are simply placed horizontally in layers on top of the compacted fill and terminated at the slope face. Compaction plant can then operate safely close to the crest edge of the slope.

Water sector applications

Abslope EM with reinforced grass surface is suitable for flood alleviation & reservoir embankments and can provide resistance against wash out of grass for overspill applications.

Failures of slopes are a common problem, especially in areas of high water flow velocities and excess pore water pressure. Such failures can be repaired by excavating and re-using the failed soil and reinforcing this with layers of ABG geogrids.

Building Developments

Where large building and enabling works projects (including supermarkets, logistics parks and housing developments) encompass site elevation changes, the Abslope system offers a natural aesthetic. For applications where embankments are exposed to potentially higher flow rates, Erosamat Type 3 provides a three dimensional matrix of HDPE fibres to support successful vegetation growth.

Design Service

ABG's experienced civil engineers are on hand to provide initial suitability assessments and standard design details to help create an outline budget cost.

If the system is deemed to be appropriate following the initial project assessment, a more detailed design and calculation report will be prepared, with drawings issued for construction as well as specification and installation details. Indemnified designs are available where required and the system can be built using ABG's BBA certified geogrids.

The construction of Abslope EM requires no special foundations apart from a stable formation to provide the adequate bearing capacity, so construction time may be significantly reduced and the system can be built using standard construction plant.

Key Benefits

- Less imported fill & re-use of existing marginal fill
- Fast and cost effective to construct
- Reduced transportation and carbon footprint
- Erosion control and attractive grass slope face
- Plant can work close to the slope edge
- Minimises land take & reduces impact on the surrounding area
- Reduces the volume of off-site transport and disposal costs

ABG - Associated Products

Erosion Control

ABG offer a range of temporary and permanent erosion control turf reinforcement mats and geocellular components for protection against erosion and for the retention of soils on slopes.

Drainage

ABG drainage geocomposites offer very high flow capacity and provide a cost effective alternative to traditional stone groundwater drainage solutions.

Abslope SM

The ABG Abslope SM system enables the construction of steep vegetated slopes to angles of between 60° to 70° by incorporating steel mesh facing panels and geogrids to stabilise backfilled soil layers.

Webwall Retaining Walls

Webwall is a geosynthetic system designed for the construction of flexible retaining walls. It uses a geocellular mattress which is laid in layers, with each expanded and filled with site won materials in order to form a structure with a stepped vegetated face.

About ABG

ABG is a market leader in the design, development, manufacture and technical support of high performance geosynthetic systems for use in a wide range of civil engineering, environmental and construction projects.

Formed in 1988, based in Meltham, in the heart of the Pennines, ABG have developed an excellent reputation for developing quality products and delivering outstanding service. The ability for rapid product development ensures that the most innovative, up to date and cost effective solutions can be delivered for many engineering problems.

Design support is provided by our trained and experienced staff, many of whom are Chartered Civil Engineers. This extensive support extends to full design, design validation, feasibility studies, cost advice and advice on meeting regulatory requirements.

Part of this technical support includes developing and driving knowledge within our active markets, including working with both international and local regulatory bodies on developing guidance and best practice in the use of innovative geosynthetics to solve complex engineering issues.

In support of the construction industry's objectives to reduce the carbon footprint of civil engineering activities, ABG has signed up to the UK Civil Engineer's Emergency Climate Change Declaration. As part of this commitment, ABG has appointed leading carbon management consulatants Carbon Footprint Ltd to verify the exact carbon emissions for each of the products we manufacture for geotechnical and Sustainable Drainage applications. This enables precise embodied carbon data to be given for a customer's project and supply chain assessments.

To discuss your project specific requirements contact us.

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