

# Designing geocellular drainage systems—a practical approach

The BPF Pipes Group is dedicated to promoting the development, acceptance and use of plastic piping systems at all levels in the building, construction, civil and utilities industries. A key aspect of the work of the group is to support best practice in the industry.

Our working group for SuDS and surface water includes in its remit pipes, fittings and ancillaries (such as chambers and manholes) for surface water drainage and geocellular stormwater systems.

A key aspect of the work of this group is the recognition of the contribution of geocellular systems to flood protection and sustainability, ensuring whole life performance in service by adopting best practice in their design and installation.

Geocellular systems have been in use for over 20 years and Pipes Group members have been instrumental in promoting high quality products supported by robust product testing and thorough system design methods.

As product design and engineering has developed, we have used our in-depth knowledge of how products perform in service to work closely with the SuDS community to build on this success and provide systems which are fit for the sometimes challenging site conditions in which they will be placed.

CIRIA Report C737 provides a risk-based approach, based on Eurocodes, for structural calculations for a geocellular system in a particular situation.

The new BPF Pipes Group publication '*Guide to Designing Geocellular Drainage Systems to CIRIA Report C737*' has been developed to support the introduction of that report. It provides practical guidance for designers and specifiers using a step-by-step theoretical example to explain how to follow through the C737 approach.



*"The collaboration between Pipes Group members and industry experts has provided a logical and practical guide"*

Dr. David Smoker (Chair, TG4 Surface Water Systems).

## Preparing for transition

### What should designers specify?

The characteristics of geocellular systems are not changing but structural calculations can now be carried out in accordance with the 'Guide to Designing Geocellular Drainage Systems to CIRIA Report C737.

BPF Pipes Group members have worked closely with BBA to define a certification process in accordance with this guide. The process provides a consistent approach for all manufacturers of geocellular systems. BBA have confirmed that certificates to the former CIRIA report C680 will remain valid to their expiry date.

### What is needed to use this design approach?

European standards for short-term testing (BS EN 17150: 2020) and long-term testing (BS EN 17151: 2020) are now available.

These standards support the geocellular design by providing the test methodologies which are not explicitly detailed in C737 or the guide. In addition, the use of these standards means that all products can be tested in a consistent manner.

### How are manufacturers preparing for transition?

Manufacturers are currently working to complete the testing required to be able to apply for certification. This takes time as the creep rupture testing covered by the European Standard requires a minimum test period of 4,380 hours (6 months) and experience is that the full test programme will take significantly longer.

### How can designers and specifiers prepare for this transition?

The Pipes Group Guide provides a practical step-by-step approach which is cross referenced to the relevant sections of C737. It can therefore be used as the basis for future training in the design of geocellular systems. Training organisations can be confident that the technical instructions provided in the guide are founded on well-established engineering principles and have been reviewed by leading experts.



For more information on the transition from C680 to C737:

[www.bfpipesgroup.com/technical-information/position-statements/](http://www.bfpipesgroup.com/technical-information/position-statements/)

How to find the guide:

The guide is free to download from:

[www.bfpipesgroup.com/technical-information/technical-guidance/](http://www.bfpipesgroup.com/technical-information/technical-guidance/)

*"This guide provides easy to follow, step-by-step instructions for designing geocellular tanks. It will be an invaluable reference for design engineers."*

Steve Wilson, The Environmental Protection Group Ltd.