

**MYTHE WATER TREATMENT  
TEWKESBURY, GLOUCESTERSHIRE**

**FLOOD PROTECTION**

**Product:** Polymeric Coated Woven Gabions and Reno Mattresses

**Problem**

The nearby rivers, the River Severn and River Avon flooded the water works in summer 2007, which interrupted the water supply which lead to loss of water for over 150,000 homes.

In 2010/11 a flood bund was constructed to protect the Mythe Water Treatment Works near Tewkesbury, Gloucestershire. The bund was a double sided geogrid wrapped structure.

In April 2012 Tewkesbury was subject to very serious flooding. The area surrounding the bund was flooded, although the bund did perform as expected, protecting the treatment plant from being flooded. Floods lasted over six weeks and during that time the outer face of the bund suffered damage. It is believed that the damage was due to wind waves acting over the six weeks on the structure.

**Solution**

Following the event and the damaged caused, repair works were proposed.

CiM6 requested that Maccaferri carry out a design covering the stability of a gabion face covering the existing reinforced soil structure. The aim of the exercise was to provide a new, low maintenance surface to the existing bund which will be more resistant to erosion, on both faces, than the original vegetated face.

In addition a long-term solution to prevent UV degradation of the existing geogrid-made bund reinforcement material was provided.

The long-term solution proposed were a polymeric coated woven gabion walls, which are to stand on either side of the flood defence bund. The walls on either side of the bund vary in height from 2m to 3.5m (including embedment).

The gabion facing will be founded above the existing bund foundation level at levels designed/detailed to maintain a minimum 300mm approx. buried depth. The length of each wall is 312m and the gabions will terminate at each end of the bund by butting up to the existing concrete flood walls.

In addition to the gabions a 230mm thick Reno Mattress was placed over the existing crest of the bund. The presence of the Reno Mattress will therefore increase the freeboard above maximum static water level for additional security against over-topping. Maccaferri have carried out stability analysis on the proposed gabion facing, considering it as a gravity walls.

HR Wallingford was appointed by Maccaferri (and so by the client) to assess a range of realistic wave/water level combinations.

Maccaferri Construction was appointed as specialist installer for the construction of the double side faced gabion protection structure.



Flood protection bund during construction in 2010/11



April 2012 - Flood in Tewkesbury



April 2012 - The Mythe STW

Main Client:

SEVERN TRENT WATER

Main Contractor:

CiM6 (JV of Costain & MHW Global)

Specialist Installer:

MACCAFERRI CONSTRUCTION

Products used:

RENO MATTRESS 230 mm + 2x1x1m GABIONS (2,320m<sup>3</sup>)

Date of construction:

OCT 2016 - FEB 2017



View of the bund following the recession of the flood water



Existing structure before the repair works



Maccaferri Construction on initial phases - Oct 2016



External side of the structure during construction - Nov 2016



Flooding of the site during the repair works - Nov 2016



Flooding of the site during the repair works - Nov 2016



Reno mattress placed over the top of the bund



Reno mattress 230mm thick filled with local 6G stone



Internal side - Project completed Feb 2017



Internal side - Project completed Feb 2017



View of the external side of the completed repair works - Feb 2017

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