River Thames Flood Wall & Foreshore Scour Protection

The River Thames foreshore is undergoing significant erosion and scouring caused by strong tidal currents, increased vessel traffic, and climate-induced sea level rise. These processes threaten both archaeological features and critical riverside infrastructure, often necessitating engineered protection measures such as scour-protection rock mattresses and **AquaRockBags**.

Causes of Foreshore Erosion

- **High tidal energy** and strong currents continually remove sediment from the foreshore.
- **Increased river traffic** generates additional wash and turbulence.
- **Climate change** and associated sea-level rise are accelerating natural erosion processes.

Impacts

Archaeological Damage

Intense tidal scour is progressively eroding historic structures and archaeological deposits found along the Thames foreshore.

Infrastructure Risks

Erosion lowers the riverbed in front of flood defence walls, which can undermine their stability over time and lead to structural failures.

Management & Mitigation Measures

Engineering interventions, including the installation of **Salix pre-filled rock mattresses** and **AquaRockBags**, provide durable, long-term scour protection solutions.

Impact of Foreshore Activity

Unregulated or excessive digging can accelerate natural scouring and damage the hard-packed surface layer that provides natural protection.

Project Summary

Client: Mackley, on behalf of the City of London
Products Supplied:

- 2-tonne **AquaRockBags**
- Pre-filled 2m × 1m × 300mm **rock mattresses**

Scope of Works

The project involved installing scour protection along the Thames foreshore in front of the existing flood defence wall at Oystergate Walk. The riverbed level had lowered significantly due to the partial failure of the adjacent campshed retaining wall at Riverbank House.

The objective was to construct a sloped revetment comprising granular fill, **AquaRockBags**, and **rock mattresses**.

Site Access

The site is located between London Bridge and Cannon Street Railway Bridge and is accessible only at low tide.

All materials were delivered by road to Bay Wharf, near the O2 Arena, before being transported approximately 10 miles upriver by multicat workboat. They were offloaded at low tide and positioned using 13-tonne excavators stored on a flat-top barge during high tide.

Revetment Construction

The AquaRockBags create an absorptive revetment at the front of the works, protecting against wave action and vessel wash at the toe of the flood wall.

- With a **25mm net aperture**, the bags can be filled with 40–80mm granite, allowing water exchange and creating beneficial interstitial spaces.
- Independent studies show increases in **benthic invertebrate populations** and **sediment accretion rates** within this type of structure.

Rock mattresses provide similar environmental benefits. Despite their **32mm aperture**, they also allow tightly packed 40–80mm stone fill.

Because the bags and mattresses are **pre-filled**, installation is significantly faster, more cost-effective, and ensures consistent quality—an advantage over traditional in-situ gabion mattress filling.

Finishing Works

After placement of the mattresses and bags, the surface was covered with shingle. Natural movement of this shingle is expected under tidal influence, with some material settling into the

mattresses below. However, the combined revetment structure will prevent further scour and integrate naturally with the surrounding foreshore.

This approach offers a more sustainable solution compared to using large rock armour—**Building with nature rather than against it**.