



# PRE-FILLED ROCK MATTRESSES

*Product Brochure*

A robust and permanent revetment for use around reservoirs, shorelines, lake edges, streams and river banks.

[www.salixrw.com](http://www.salixrw.com)

**Salix**



## Pre-filled Rock Mattresses

Salix rock mattresses provide robust and permanent erosion protection for use around reservoirs, shorelines, lakes, streams and riverbanks. They are a cost-effective and environmentally sensitive revetment that can provide an alternative to rock armour, concrete and gabions.

A rock mattress covers an area of approximately 2 m x 1 m x 0.25 m and is created from multiple rock rolls pre-stitched together to form a rectangular, homogenous mass.

They come pre-filled and can be joined together to create a unit capable of resisting significant flow velocities in high-energy watercourses and protecting against wave action. They are commonly used below or at the water level and form part of a solution with other bioengineering materials. Rock mattresses can be lifted with the

straps provided, or chains, and placed in position. They can be installed without the need for temporary dewatering.

Because of the small stone grading, rock mattresses accrete silt and can fully vegetate where suitable. They support a greater abundance and diversity of invertebrates owing to the increased interstitial space between stones that can be colonised compared with rock armour and gabions.





Rock mattress placed on steep drainage channel



Rock Mattresses being placed under a bridge to provide riverbed scour protection

- Rapid installation compared to filling wire mattresses on site with big savings on labour costs
- Can be installed in flowing water or below water level such as headwall outlets, lake margins and river beds
- Salix rock mattresses can often replace large rock armour, concrete and rip rap, plus provide long term protection for soft/green engineering solutions, i.e Bioengineering
- Salix rock mattresses can be used in fresh or salt water
- Flexible system that contours to the surface
- UV stabilised nets are abrasion resistant and do not suffer from corrosion
- Health & Safety benefits due to no fabrication on site, reducing accident risks
- Lengths and widths can vary in multiples of 250mm or 300mm to suit specific site conditions
- Pre-filling ensures consistent quality and tightly packed stone, reducing the risk of voids and stone movement

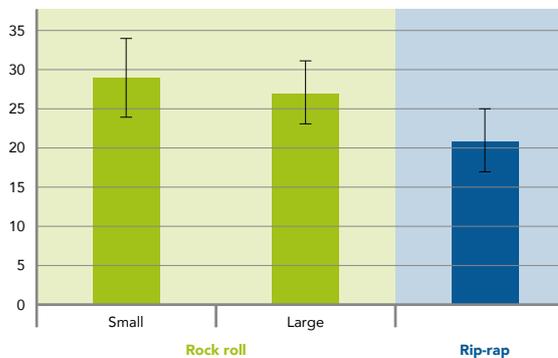
## Benefits

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## Resilient protection whilst also providing habitats for a diverse range of marine and freshwater invertebrates



### Swansea University

Rock mattress provide habitats for a diverse range of marine and freshwater invertebrates. Examples found in research from Swansea University include: *Phyllodoce maculate*, *Capitella capitata*, *Scoloplos armiger*, *Melita palmate*, *Carcinus meanus*, *Idotha pelagica*.

### Ecological Benefits

- The stone sizing and grading within the rock mattress has been developed to provide a balance between the structural interlock needed to provide a robust revetment and the optimum grading for ecosystem development and diverse biotic community habitat
- Rock mattress encourages fine accretion of sediment to enable vegetation establishment providing habitat for insects, molluscs and other invertebrates, which in turn supports fish and water bird populations
- Unvegetated Salix rock mattress blend in easily with natural freshwater and marine sediments and provide substratum for numerous faunal and invertebrate species
- Many hard revetments (e.g. concrete blocks, blockstone, rip rap, gabions) deflect and reflect water energy which can cause erosion and scour issues elsewhere. Rock mattress are absorptive rather than reflective due to the high interstitial spaces between the rocks. As such, water energy is absorbed, resulting in natural processes being retained and minimising the impacts downstream or around the rock mattress revetment





# Rock Mattresses Applications



## 1. Shorelines

**Large water bodies such as reservoirs create a difficult environment for “soft” engineering revetments due to wave action and large fluctuations in water levels.**

Rock mattresses can be used as an alternative to rock armour and concrete below and above average water levels.

Natural colonisation of the mattresses in the marginal and bank zones can happen over time or soil/dredged material can be placed over them to speed up the process.



## 2. Spillways

Rock mattresses are an ideal revetment to tie in TRM's (Turf Reinforcement Mats) such as Vmax C350 that are often used to cover spillways.

They can be used where there is concern over hydraulic jumps or very high flow rates at the toe of embankment.



**Rock mattresses  
can be used as  
an alternative to  
rock armour and  
concrete.**





# Applications

**Rock mattresses are used in all areas where vegetation alone will not provide sufficient erosion control**



### 3. Bioengineering: Streams & Rivers

Rock mattresses can be used within bioengineering projects to form a robust toe that absorbs energy from water flow and wave action.

This allows the “living” elements of the bioengineering solution to establish in areas where energy levels would otherwise be too great.

The small stone size in the rock mattress allows vegetation to establish easily, turning the entire revetment into a vegetated system.

### 4. Intertidal Zones

Rock mattresses are not adversely affected by salt water therefore they can provide long term revetment that accrete sediment rapidly, especially in high sediment load intertidal applications.





# Applications



## 5. SuDS

Rock mattresses can be used to line drainage channels to prevent erosion on steep gradients with high flows.

Rock mattresses are ideal as instant protection in scour zones around outfalls adjacent to headwalls, especially in flowing water conditions where hand filled wire gabions would be impossible to fill in-situ.



Construction times can be 95% quicker than standard hand filled options.



## 6. Asset Protection

Rock mattresses provide ideal instant protection around scour zones on assets such as bridges, retaining walls, railway lines and highways.





Rock mattresses can be combined with bioengineering solutions, to create a fully vegetated revetment

## Rock Mattress Fixing Solutions

Anchoring solutions for erosion control and soil stabilisation

### Benefits:

- **Ultimate fixing option to prevent movement**
- **Single surface layer of materials required**
- **Protect against shallow slips**

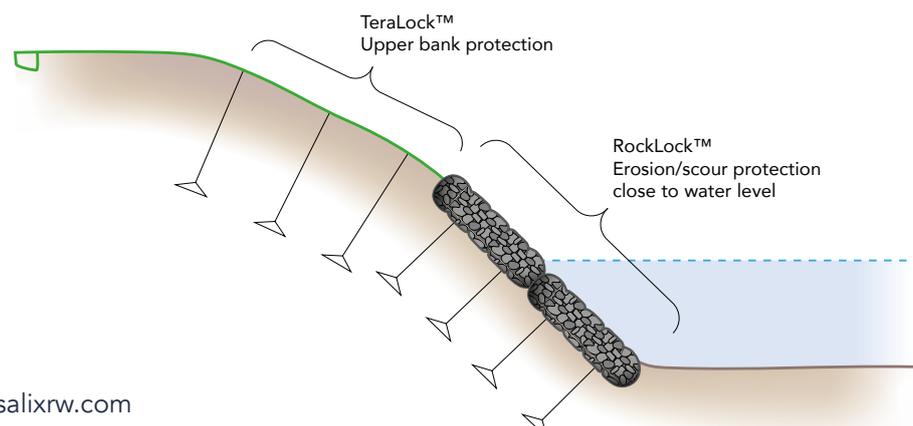


*Rock mattress placed on river bank*

Rock mattresses are typically fixed using three methods:

- Fixing twine to stitch each Rock mattress to its neighbour
- Chestnut stakes
- RockLock™ ground anchors.

We offer a variety of ground anchors and fixings. Speak with our technical team to discuss the most appropriate option.





The Stables, Blakenhall Park,  
Bar Lane, Barton-Under-Needwood,  
Staffs DE13 8AJ

0330 002 1788

[www.salixrw.com](http://www.salixrw.com)