



**DISASTER PROTECTION  
& RECOVERY**

**GEOFABRICS®**  
Sustainable solutions



## Geosynthetics in disaster prevention and recovery

Geosynthetic engineering is the use of synthetic materials in civil engineering projects. The design techniques bring particular benefits in disaster prevention and recovery, because geosynthetics can help to minimise risk, quickly and economically.

### FOR COMMUNITIES

Climate change is believed to have increased the prevalence of extreme weather events such as storms, cyclones and intense and heavy rainfall. Such events can damage infrastructure and assets, cost communities financially and threaten livelihoods and lives.

### ECONOMIC BENEFITS

Geosynthetic design can maximise the use of site-won sand and soil, reducing the need to bring in expensive aggregates. The financial benefits of disaster prevention outweigh the cost of repair or reconstruction of infrastructure and future insurance.

### ENVIRONMENTAL BENEFITS

The environmental impact of flood, landslides and coastal erosion can include loss of wildlife and habitat, sediment and soil destruction and the impacts on water quality and marine environments. Reducing these impacts over the long term can have a considerable environmental benefit.

By using geosynthetics and geotextiles, the volumes of soil material and aggregates can be reduced so there is less need to quarry and fewer machines needed to build infrastructure, reducing the carbon footprint.

### SAFETY BENEFITS

Mitigating the risk of landslide, mass soil and sand movement, coastal degradation, rock fall, flooding and the associated damage caused to infrastructure is all about safety. Reducing the chance of injury or death is the most important consideration.

### ROADS & RAIL

- Protect against slope failure in heavy rainfall
- Maximise performance of on-site material
- Reduce ongoing maintenance costs
- Ensure adequate drainage behind retaining walls, soil walls and gabions
- Reinforcement and drainage ensures minimal disruption to transport corridors
- Improve safety through rockfall and slope protection

### SLOPES & RETAINING WALLS

- Protect areas prone to rockfall
- Increase slope stability

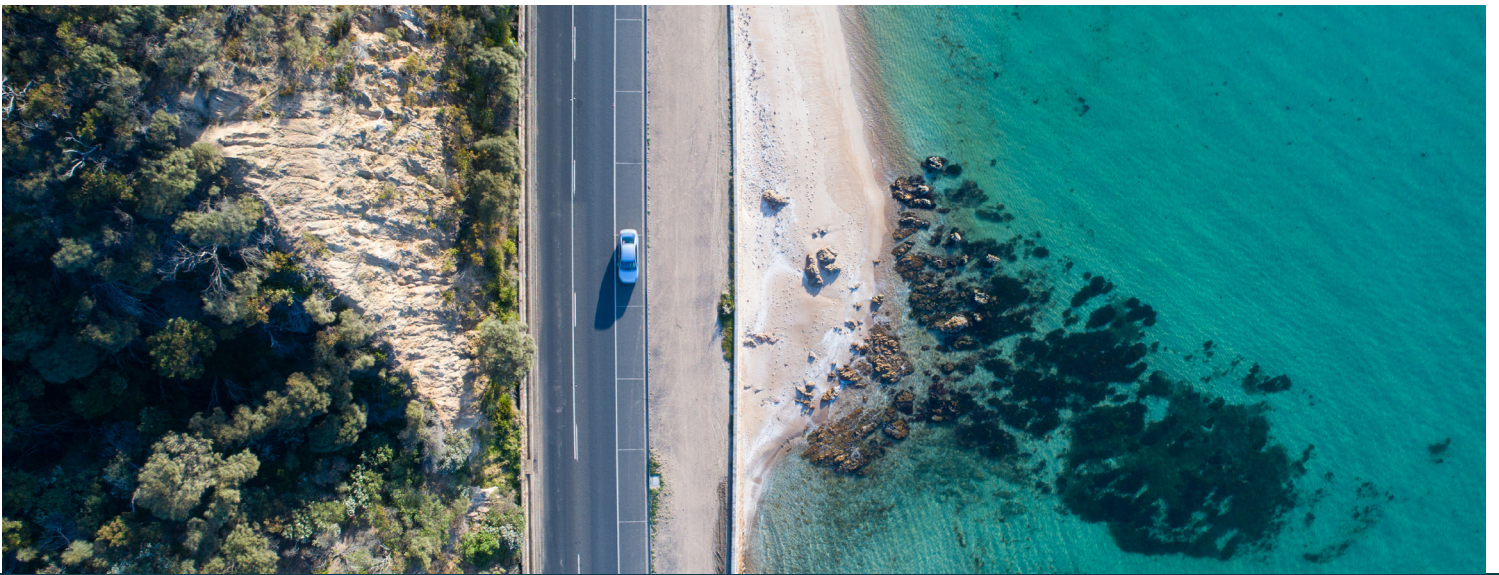
### BRIDGES & BANKS

- Scour protection shields bridge piers from damage by increased water volume and movement
- Stabilise and protect river banks
- Reduce water inundation and associated damage to homes and infrastructure
- Pre-emptive protection before flooding event
- Quick and economical flood protection

### COASTAL

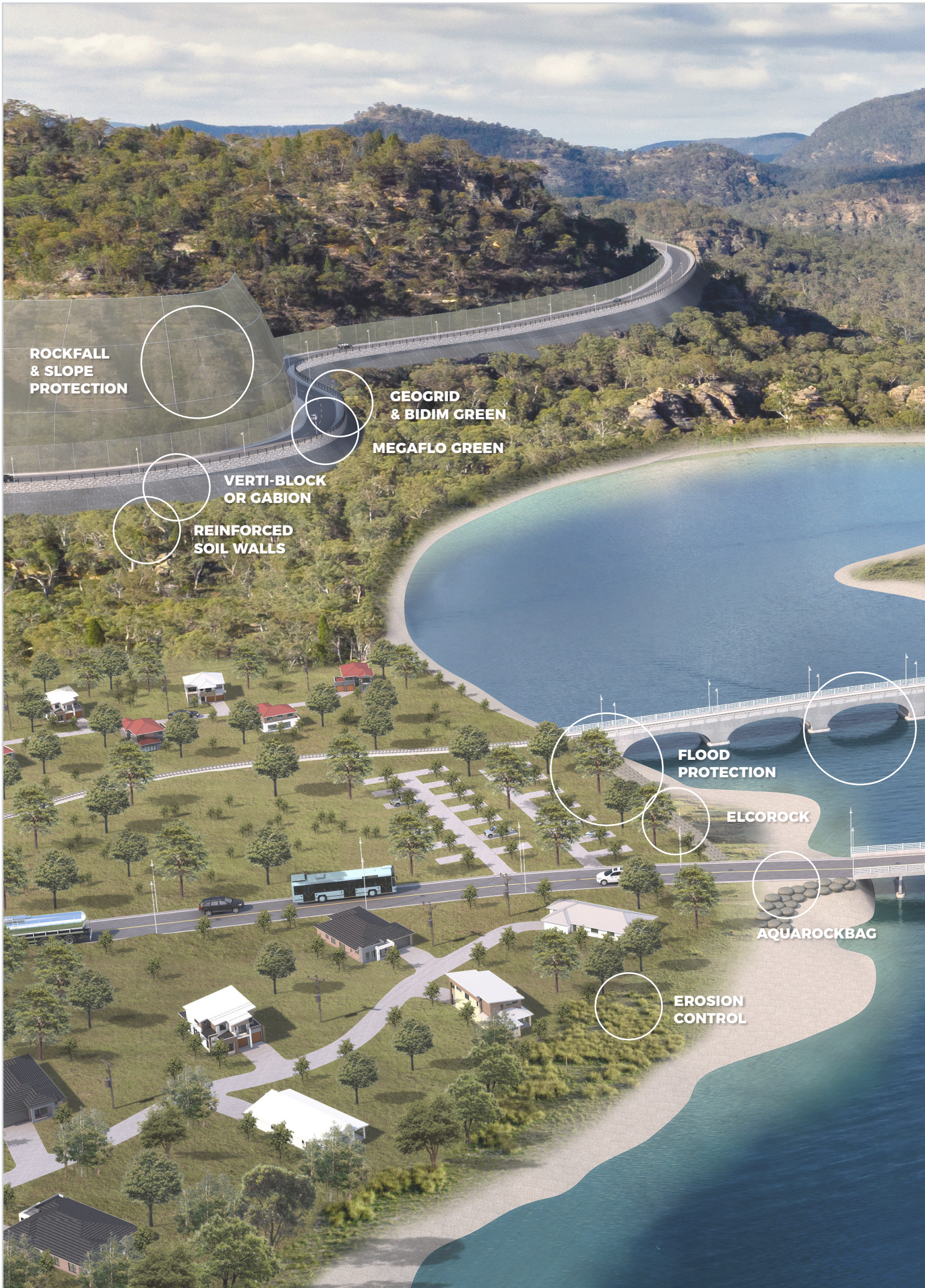
- Protect coastal environments from sea surges
- Reduce impact of rising sea level
- Reclaim eroded beach and shoreline

By 2050 it's estimated  
**\$35+**  
billion per annum of direct costs of extreme weather



# PROTECTING ASSETS, INFRASTRUCTURE & LIVES USING GEOSYNTHETICS





**ROCKFALL  
& SLOPE  
PROTECTION**

**GEOGRID  
& BIDIM GREEN  
MEGAFLO GREEN**

**VERTI-BLOCK  
OR GABION**

**REINFORCED  
SOIL WALLS**

**FLOOD  
PROTECTION**

**ELCOROCK**

**AQUAROCKBAG**

**EROSION  
CONTROL**

# PROTECTING INFRASTRUCTURE & COMMUNITIES FROM DISASTERS

We mitigate risk by recognising potential threats and implementing preventative measures to reduce the impact of natural disasters.



**RAIL  
INFRASTRUCTURE  
PROTECTION**

**RENO MATTRESSES**

**ELCOROCK**

**SCOUR  
PROTECTION**

**ROAD / RAIL BRIDGE  
PROTECTION**

**ELCOROCK  
COASTAL  
PROTECTION**

**GEOFABRICS**



**WITHOUT  
ROCKFALL  
& SLOPE  
PROTECTION**

**WITHOUT RAIL  
INFRASTRUCTURE  
PROTECTION**

# WITHOUT INTERVENTION - THE IMPACT OF DISASTERS

While disasters cannot be prevented, the impact they have on infrastructure and communities can be minimised.



WITHOUT FLOOD  
PROTECTION

WITHOUT  
ROAD / RAIL BRIDGE  
PROTECTION

## Floods

Our weather has evolved considerably over time. The intensity and frequency of extreme weather events has increased with climate change. Warming temperatures and atmosphere have led to severe weather conditions such as torrential rainfall and storms causing flash flooding.

### FLOOD MANAGEMENT

Floods cannot be prevented but can be managed. Planning for flood events is critical when building bridges and infrastructure along rivers and waterways.

Geofabrics recommends Elcorock sand-filled container and AquaRockBag for proactive flood protection. Elcorock units are filled with available materials such as sand and gravel, to create a longitudinal safety barrier around critical infrastructure.

AquaRockBag is a durable mesh net made from premium virgin HDPE (High-Density Polyethylene) or polyester materials. It is highly resistant to abrasion and UV, making it suitable for stabilising shorelines, river banks, bridge piers, wharf structures, as well as habitat restoration and the establishment of a robust flood defence system.

- Elcorock is faster to construct than traditional sandbags and enables quick response times and rapid deployment in emergency situations

- AquaRockBags can be used to divert floodwaters away from critical infrastructure or populated areas by creating channels
- AquaRockBags and Elcorock can be placed around critical infrastructure such as power stations and water treatment plants to protect from flood damage
- Permanent structures such as gabions can be constructed as part of flood recovery

### BRIDGE PIER & SCOUR PROTECTION

Protecting infrastructure such as bridges from water currents and destabilisation due to flood water starts underwater.

- Optimal performance can be achieved by using AquaRockBag underwater to stabilise structures on the sea or river bed
- Increases bridge stability to maintain accessibility during flood event
- Also enhances marine biodiversity

**AquaRockBag is designed to withstand velocities up to**

**6.4 m/s**

## Landslides

Slope stability and protection against landslides and rock falls has gained attention with the increase in heavy and intense rainfall. Water loading can have a significant impact on the stability of a slope.

### SLOPES & RETAINING WALLS

Geofabrics offers a range of engineered slope and retaining wall solutions to construct infrastructure projects.

For steep slopes over 70 degrees, gabions can accommodate significant differential settlement. The mesh baskets form a monolithic structure that acts as one homogeneous unit, which is permeable and suitable for use in high stress hydraulic applications.

For reinforced slope systems and mechanically stabilised earth walls Maccaferri Terramesh is a versatile, modular system that can be a more cost-effective solution than the mass gravity gabion wall because of the speed of installation and reduced rock fill requirements.

For mechanically stabilised earth slopes that require vegetation, the front face of Maccaferri Green Terramesh can be filled with soil and planted, creating a green wall.

Protection of roads, buildings and other structures located directly at the base of man-made cuttings or natural cliffs are a major challenge for engineers.

- Improved surface stability of mild slopes
- Large height retaining walls and drainage
- Protection of people and assets from instability of rock faces and rock falls

**Gabions for steep slopes over**

**70°**

### RECOMMENDED FLOOD PRODUCTS

AquaRockBag  
Gabions  
Reno Mattress  
Elcorock Geosynthetic Sand Container

### RECOMMENDED LANDSLIDE & ROCKFALL PRODUCTS

Gabions  
Maccaferri Terramesh  
Verti-Block Concrete Block  
Bidim Green

Megafluo Green Drain Pipe  
Geoweb Geocell  
Wraparound Geogrid





**THE IMPACTS OF FLOODS & LANDSLIDES CAN BE MINIMISED WITH PLANNING AND PRE-EMPTIVE MEASURES**





## **PLANNING FOR COASTAL FLOOD, SEA SURGES & INUNDATION**



## Coastal inundation

Coastal erosion is a significant problem in Australia, New Zealand and the Pacific with rising sea levels, extreme storms and climate change having a significant impact on shorelines. The challenge is to protect infrastructure and ensure people's safety, without negative environmental impact.

### COASTAL SOLUTIONS

Geofabrics coastal solutions are designed to reduce the effects of coastal and estuarine erosion whilst maintaining safety and amenity for the community.

Geofabrics offers flexible armour solutions that also provide robustness and adaptability and can be used in coastal, river and other dynamic applications where environmental impact must be minimised.

Seawalls and revetments are forever changing as a result of wave action, tides and in some instances tectonic environments. This dynamic environment is also under pressure from land development which in turn is threatened during storm events.

Geosynthetics can be used to provide a gentle batter facing the sea, fostering less severe beach erosion compared to alternative solutions.

The durability, permeability, stability and flexibility of Elcorock sand containers provide an excellent solution for construction of shoreline embankments. They can also be a more cost-effective alternative to traditional coastal erosion protection systems made from concrete, rock armour, steel or timber.

Elcorock is highly resistant to abrasion, hydrocarbon, impact damage and UV degradation, which makes it ideal for constructing breakwaters, sea walls, revetments, groynes and artificial reefs.

Protection of shoreline embankments can also be achieved with a Geoweb system using infill materials appropriate for the application.

AquaRockBag is a durable mesh net made from premium virgin HDPE (High-Density Polyethylene) or polyester materials. It is highly resistant to abrasion and UV, making it suitable for stabilising shorelines and wharf structures, as well as habitat restoration.

- Reduce the effects of coastal and estuarine erosion
- Maintain safety and amenity, while maintaining sustainable coastlines for residents and the community
- Reinforcing seawalls, revetments, groynes and breakwaters
- Temporary and emergency coastal erosion works and shoreline embankments
- Promote revegetation of mangroves, marshes and seagrasses
- Support coastal dune restoration and revegetation
- Enhance marine biodiversity

**40+**  
years of proven  
success using  
Elcorock

### RECOMMENDED COASTAL PROTECTION PRODUCTS

Elcorock Geosynthetic Mega Sand Container  
Geotube Container

AquaRockBag  
Geoweb Geocell

**GEOFABRICS®**



“

At Geofabrics, we see our responsibility beyond the projects we work on today, but also, to create a better world for today's community and the generations which follow. I am passionate about encouraging my colleagues, our suppliers and our customers to embrace a business model that respects the world we live in, its people today and the communities of the future.

”

**Dennis Grech, CEO**

Geofabrics is the only geotextile manufacturer in Australia, with plants in Albury and Ormeau. We pride ourselves on providing unrivalled service to our customers. We can recommend the best geosynthetic product to achieve the objectives of your project and ensure it's available when you need it.

Over 40 years of experience allows our technical staff to provide practical support, based on local conditions. We are proud to have been recognised in the AFR Most Innovative Company list in 2020 with Bidim Green and 2021 with Sorbseal.

With a view to the future, we are committed to improving the sustainability of our business by reducing waste to landfill, lowering our carbon emissions and investing in our people.



VISIT **GEOFABRICS.COM.AU** OR CALL 1300 60 60 20 (AU)  
OR **GEOFABRICS.CO.NZ** OR CALL 0800 60 60 20 (NZ)



**GEOFABRICS**  
Sustainable solutions

IMPORTANT NOTICE - DISCLAIMER - The information contained in this brochure is general in nature. In particular the content of this brochure does not take account of specific conditions that may be present at your site. For full disclaimer and further information regarding installation visit [geofabrics.co/disclaimer](http://geofabrics.co/disclaimer)  
© Copyright held by Geofabrics Australasia Pty Ltd. All rights are reserved and no part of this publication may be copied without prior permission. Published February 2025.

