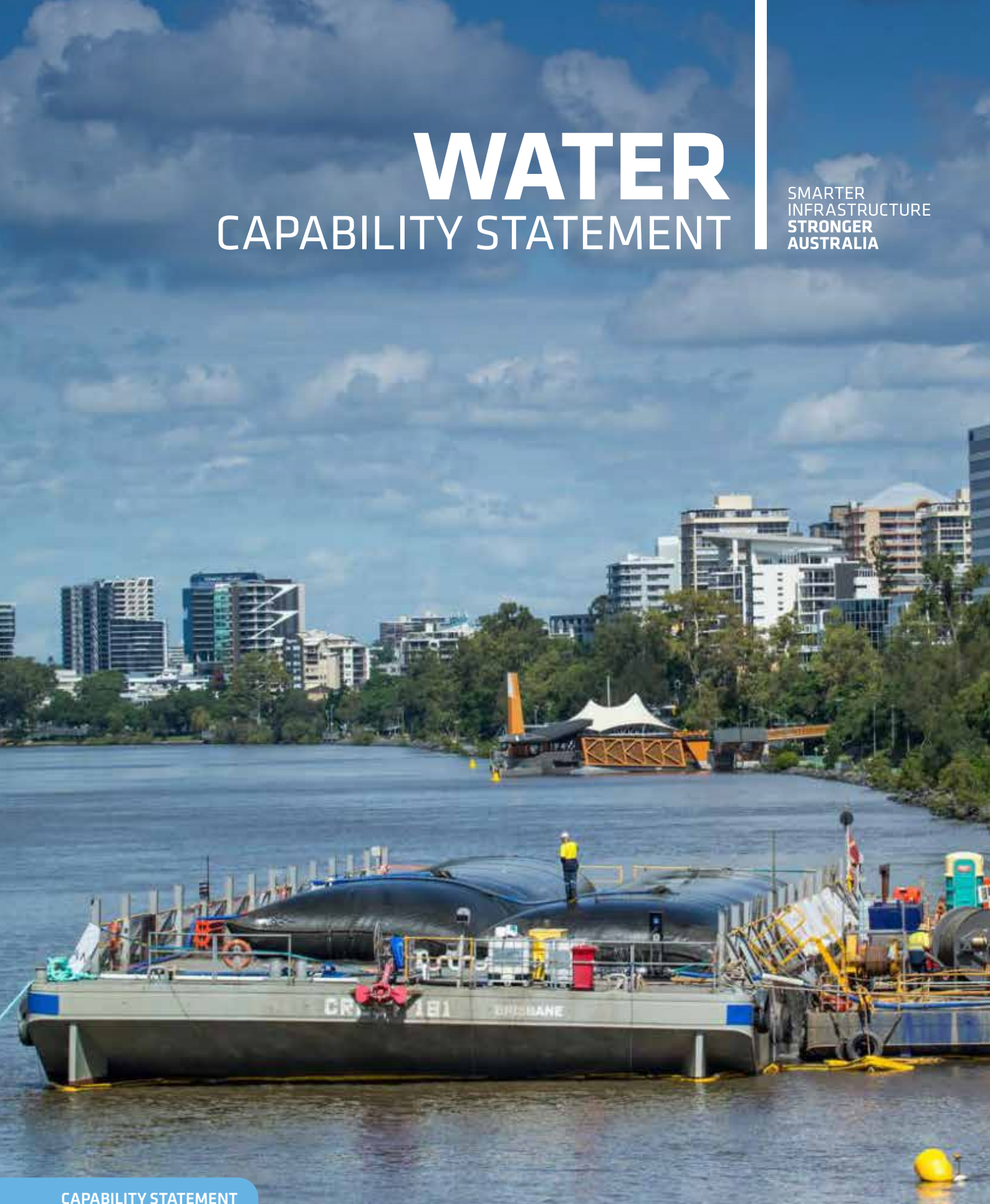


# WATER CAPABILITY STATEMENT

SMARTER  
INFRASTRUCTURE  
**STRONGER**  
AUSTRALIA



CAPABILITY STATEMENT

**GEOFABRICS®**  
Smarter Infrastructure

[www.geofabrics.co](http://www.geofabrics.co)



# YOUR WATER SOLUTIONS PARTNER

Geofabrics is Australasia's geosynthetic specialist. We help our clients deliver safe, efficient, and sustainable infrastructure through the innovative use of geosynthetic products.

On these projects and every project we undertake, we have a singular focus: to provide smarter infrastructure solutions for our clients.

For us, smarter infrastructure is about using smart products, smart solutions, and smart people to help our clients deliver their projects on time and on budget.

Our value engineering delivers countless benefits for our customers including cost reduction, faster construction, risk mitigation, longer maintenance cycles, and whole of life opportunities.

**For more than 40 years in Australia and New Zealand, we have supported the infrastructure sector on significant water projects.**





# THE GRID

## BESPOKE SOLUTIONS THROUGH OUR IN-HOUSE R&D CENTRE

Geofabrics' Centre for Geosynthetic Research, Innovation & Development (GRID) is a specialist research and development (R&D) laboratory that works with clients to develop the right geosynthetic solution for complex problems.

Based in southern Queensland, the GRID houses a selection of key geosynthetic-specific test equipment. Testing is aimed at solving the real-world problems that designers, contractors, and asset owners find on their construction site - a major step forward to ensure the right solution is adopted.

The GRID is committed to precision analysis and comprehensive reporting. Analysis is performed according to Australian, American, and international test methods. Comprehensive test reports are generated, including results, photos, graphs, test conditions, and details of the test equipment used.

Our own research is supported by the research undertaken by our industry leading suppliers in both lab and field trials across the Americas, Europe, and Asia.

At our GRID facility we develop prototypes and carry out testing in situ to provide the bespoke products and system solutions that you require.

- We actively promote new technical developments and research projects
- We provide our clients with specification reviews, and application evaluations for geosynthetic applications in both construction and maintenance



## INNOVATION

**As the Australasian leader in geotextiles and geosynthetics, we pride ourselves on being leaders in innovation and excelling at technically challenging tunnel projects.**

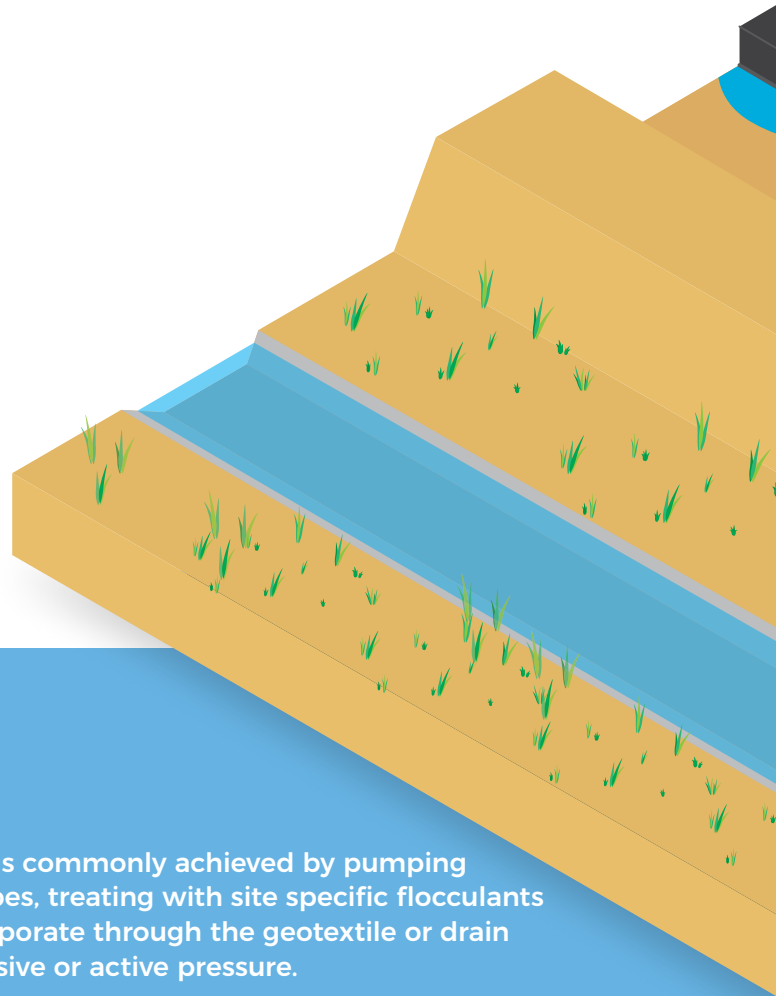
We have a reputation for supplying world-class technical leadership and engineering support through our innovation, research, industry education, design, and independent testing services.

In October 2020, we were recognised as one of the 'Top 10 Most innovative Companies 2020' in Australia and New Zealand by the Australian Financial Review.

— FINANCIAL REVIEW BOSS —  
**MOST INNOVATIVE  
COMPANIES**

# APPLICATIONS

Each project has its own characteristics, requirements, and conditions, which pose designers and contractors the challenge to implement the most suitable systems for draining, waterproofing, cushioning, and reinforcing.



## KEY WATER APPLICATIONS

### A DEWATERING

Dewatering of waste water and sludge is commonly achieved by pumping the slurry into permeable geotextile tubes, treating with site specific flocculants and allowing the moisture to either evaporate through the geotextile or drain through the geotextile pores under passive or active pressure.

The run-off from the dewatering process can be reused or treated and returned to native waterways while the sediment or waste can be reprocessed or detained.

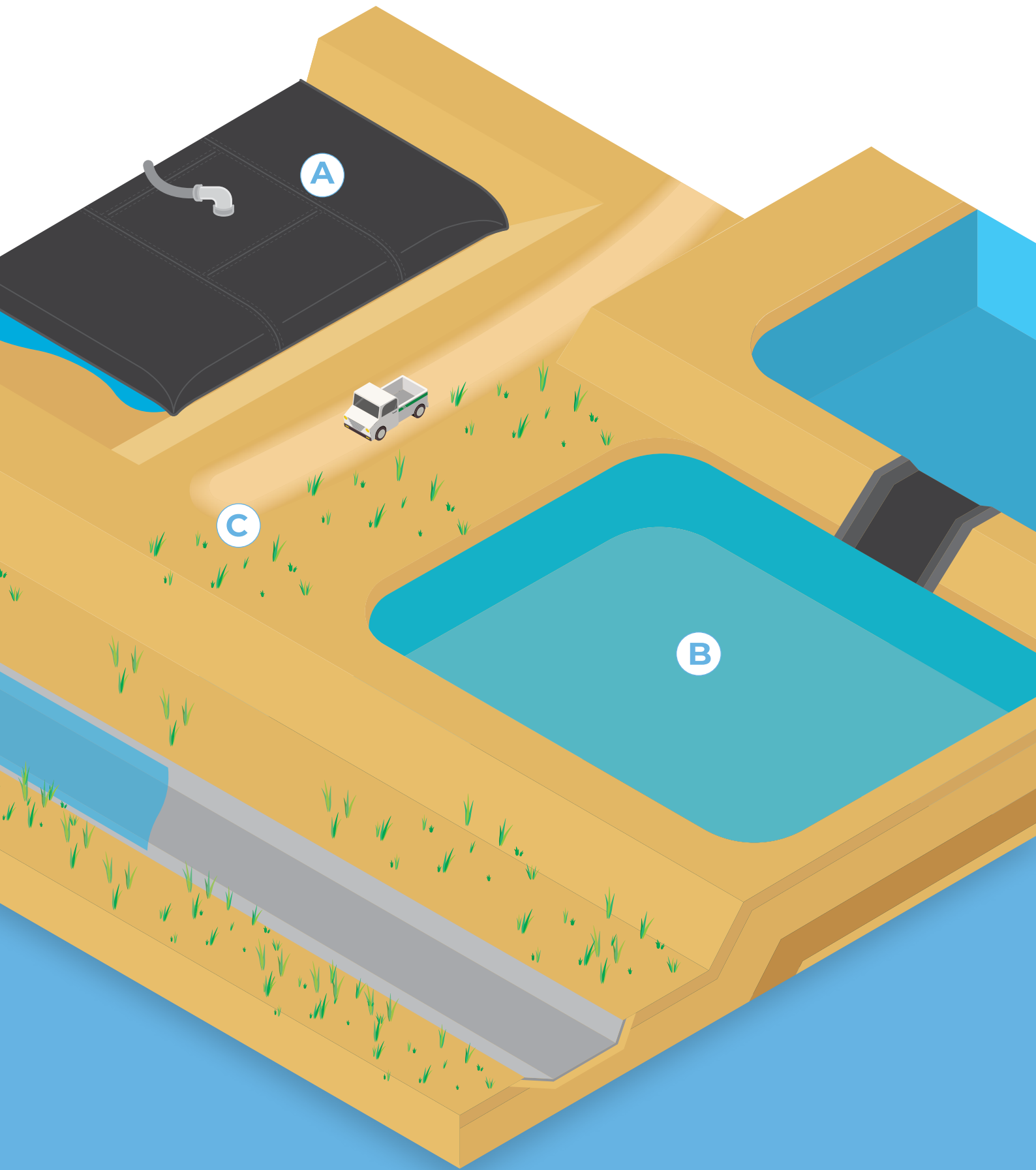
### B WATER STORAGE PONDS & STEEL TANKS

Geofabrics has a range of solutions designed specifically to safely contain the harshest of liquids in tailings dams and waterwater treatment ponds. Our lining solutions can be tailored to suit high salinity and high or low pH applications.

### C TRAFFICABLE ON-SITE DETENTION (OSD) OR RETENTION TANKS

Due to a continued increase of global temperatures, we are all constantly faced with reducing demand on potable water sources for irrigation of gardens, courses and sportsfields. ecoAID underground stormwater chambers offer an effective solution for sustainable capture and storage of stormwater for use in irrigation schemes. It can also be used to control the release of stormwater from new commercial and industrial developments, to reduce the burden on existing infrastructure.





# TENCATE GEOTUBE®

THE LOW COST, HIGH VOLUME DEWATERING SOLUTION

**TenCate Geotube® dewatering technology provides a simple and cost effective way of dewatering large and small volumes of Mining and Municipal wastes or Marine Sediments.**

This proven technology can accommodate dewatering and containment in a single cost-effective operation. **TenCate Geotube®** containers are an effective alternative to mechanical processing that captures and dewateres mine tailings, coal sludge, and any other wastewater type. **TenCate Geotube®** containers are essentially large porous geotextile tubes designed to filter excess water from solids. Volume reduction can be as high as 90%, meaning solids disposal is far cheaper. Alternatively, if the dried material has value, heavy metals can be reclaimed, or soil reused for constructions purposes. In the case of municipal waste, the dried biosolids can either be reused on site (pending EPA approvals) or disposed of at a licensed facility at a drastically reduced rate. Dewatered marine sediments are often reused unless contaminated.

The relatively clean effluent filtrate discharging through the **TenCate Geotube®** pores can range from 50ppm to 500ppm and is commonly returned to the original source or utilised for purposes such as dust suppression or for mining processes. The effluent water quality depends on a number of factors but if necessary, can be further polished using techniques that eradicate remaining contaminants.

**TenCate Geotube®** containers can be custom-sized to fit an available space and be easily removed when dewatering is complete. Alternatively, the units can be configured to remain in situ after dewatering, stacked if necessary, and eventually capped over and landscaped. Alternatively the units themselves can be utilised to form dykes and berms, or solids can be disposed of to a licensed landfill without expensive transportation.

#### **Common Applications include:**

- Tailings Management / repurposing / eradication
- Acid Mine Drainage Eradication (when combined with other methods like the Ali-Jak system)
- Water Reclamation
- Beneficial Reuse (temporary bunds / retaining walls)
- Precious Metals Recovery
- Emergency and Disaster Management (rapid deployment)
- Mine Closure - removal and treatment of tailings or waste ponds Mine Closure
- Restoring Waste Pond Capacity (by removing sediment build up)
- WWTP pond cleanout and reclamation



## 1. FILLING

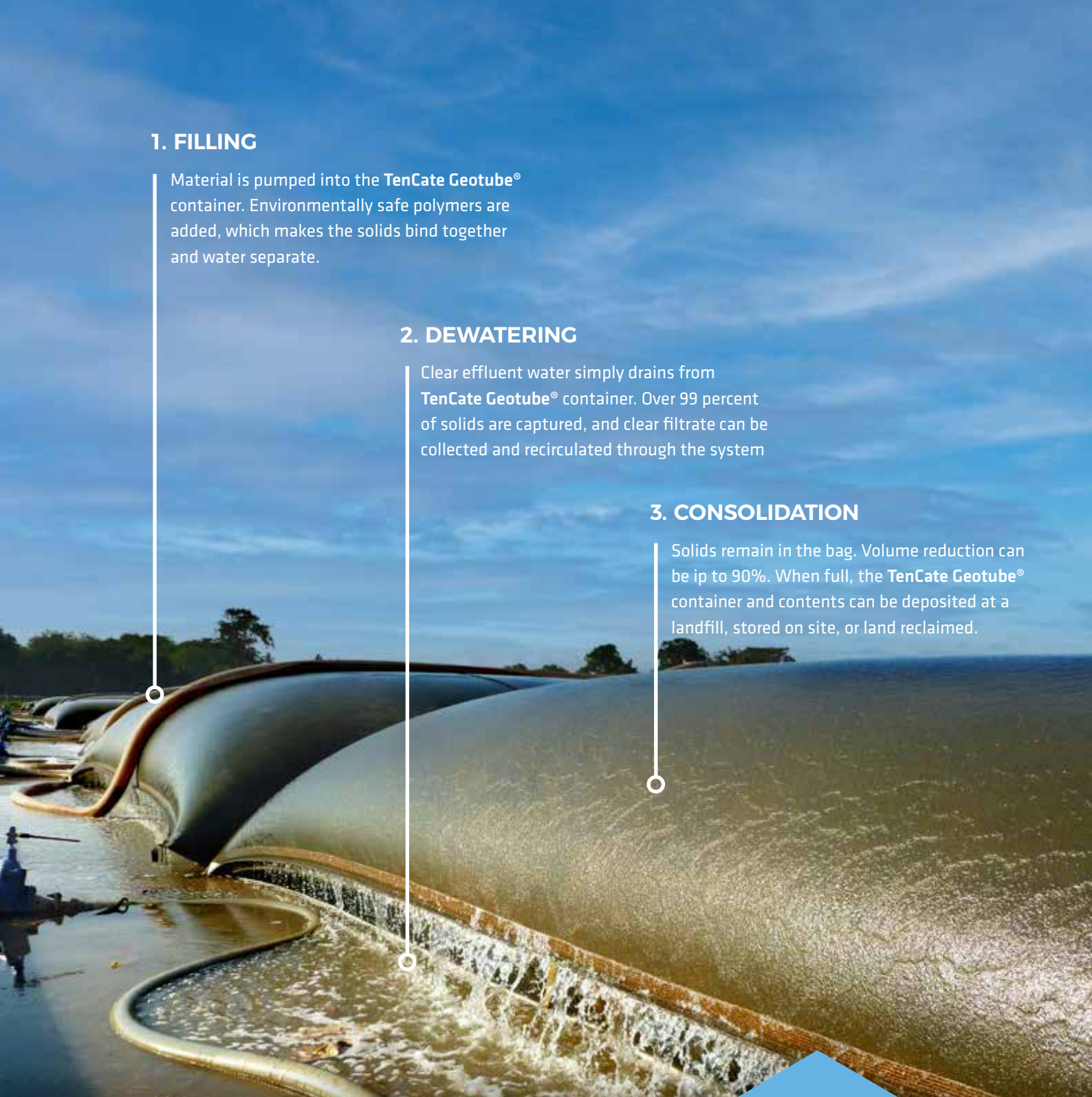
Material is pumped into the **TenCate Geotube**<sup>®</sup> container. Environmentally safe polymers are added, which makes the solids bind together and water separate.

## 2. DEWATERING

Clear effluent water simply drains from **TenCate Geotube**<sup>®</sup> container. Over 99 percent of solids are captured, and clear filtrate can be collected and recirculated through the system

## 3. CONSOLIDATION

Solids remain in the bag. Volume reduction can be up to 90%. When full, the **TenCate Geotube**<sup>®</sup> container and contents can be deposited at a landfill, stored on site, or land reclaimed.



### LOCAL SOLUTIONS BACKED BY SCIENCE

It's common for a flocculant to be added to the sludge prior to flowing into the **TenCate Geotube**<sup>®</sup> as this promotes flocculation, prevents clogging of the geotextile and speeds the dewatering process. It is why this system is unrivalled in terms of its ability to process and dewater sludges at rates in excess of 800m<sup>3</sup>/hr per unit.

Our local **Geosynthetics Research Innovation and Development (GRID)** laboratory in South Queensland can provide guidance on necessity of flocculants for a given project although we recommend flocculants on 99% of dewatering projects to ensure their success.

Contact your local sales representative for more information



Cooley's reinforced geomembranes are designed for a range of containment solutions, from potable water liners to floating covers for highly contaminated liquids to collapsible/inflatable tanks. Historically geomembranes were unreinforced, and this meant materials achieved their strength through the thickness of the polymer alone.

It also meant they were more susceptible to stress cracking and therefore leaks and durability concerns. Developments in manufacturing meant a polyester scrim could be incorporated into the process which gave the product additional strength and opened the door to more applications, particularly in dynamic environments like floating covers, baffle curtain and biogas covers.

Floating covers in particular are a vital component of a potable water reservoir design and are expected to provide long-lasting protection to the water body; they also help maintain the quality of the water, prevent water loss due to evaporation and prevent dilution of the chlorinated water. The costs incurred with a cover (materials and installation) are typically high, and a robust design with superior outdoor performance is absolutely essential. Durability and certification for contact with potable water (AS4020) are the two key performance characteristics required in potable applications.

Potable water or disinfected (chlorinated) water has caused many issues with geomembranes over the years and is why research and development has been key to finding a solution that will last the expected design life. Whether used as a floating cover or as a liner, a geomembrane must ensure it's durable enough to withstand the water chemistry that it's proposed to contain.

As a result, **Cooley** materials are considered ideal for their strength and long-term performance having carried out extensive UV and immersion testing in chlorine and other harsh water chemistries.

### SELECTING THE RIGHT COOLEY GEOMEMBRANE SOLUTION

Dependant on a number of factors, which include:

#### What is the Application Type:

- Floating cover
- Liner
- Baffle curtain
- Gas collection cover
- A collapsible tank

#### The type of Water Chemistry:

- Potable water
- Raw water
- Contaminated water

#### Desired Life Expectancy & Warranty:

- 10 years
- 20 years
- 30 years





Geofabrics Centre for  
**GEOSYNTHETIC  
RESEARCH,  
INNOVATION &  
DEVELOPMENT**

## LOOKING FOR A BESPOKE SOLUTION?

We are able to immerse a range of Cooley materials in your specific water chemistry via an accelerated test (EN14414 - 56 days at 50 degrees) and assess the performance afterwards. If retention of PFAS is the concern, we also have capability to assess performance of materials via diffusion testing. This can be done via our Geosynthetics Research Innovation and Development (GRID) laboratory in South Queensland.

**Contact your local representative for more information.**

# TERANAP

## BITUMINOUS GEOMEMBRANES (BGM)

**BGMs are a different type of geomembrane. Extremely durable in harsh environments, the Teranap BGM manufactured by Siplast, combines SBS polymer and the highest quality asphalt with puncture resistant polyester reinforcements.**

This special combination dramatically increases performance in key areas such as mechanical properties, cold flexibility, elasticity, resistance to different chemistries and the elements. The result is a geomembrane that is able to consistently maintain its integrity in an ever- changing, inconsistent environment.

The heavy weight of the material makes it resistant to wind uplift, making remote installation in windy locations very easy. It also makes it ideal for design scenarios where suction is a factor such as pumped hydro energy conversion reservoirs. Its ability to withstand light construction traffic makes it unique compared to traditional polymer dominant membranes (HDPE, PVC etc).

The **Teranap** BGM also has seam control technology, with the control channel embedded in the geomembrane and located in the middle of the weld melting zone. When the overlaps and welds are completed, the channel becomes fully encapsulated between the two layers of the membrane. Leak testing can be then carried out. A tracer gas is injected at low pressure into the channel, which spreads along the welded control channel, finding all possible escape routes.

A tracer gas detector is able to easily locate the leak with high precision

alerting the operator to leaks. Not only is leak detection easy, it's fast and reliable and precise – with non-destructive control.

With respect to installation, only a simple propane torch is required for seaming with no chemicals or expensive equipment. It also has very low sensitivity to weather, dirt or dust and can be easily patched and repaired. Standard rolls are 2m or 4m wide up to 100m long. The Teranap BGM also has a uniquely smooth aesthetic finish on top but the rough underside gives it an ability to be placed on steep slopes with an extremely high interface friction angle.

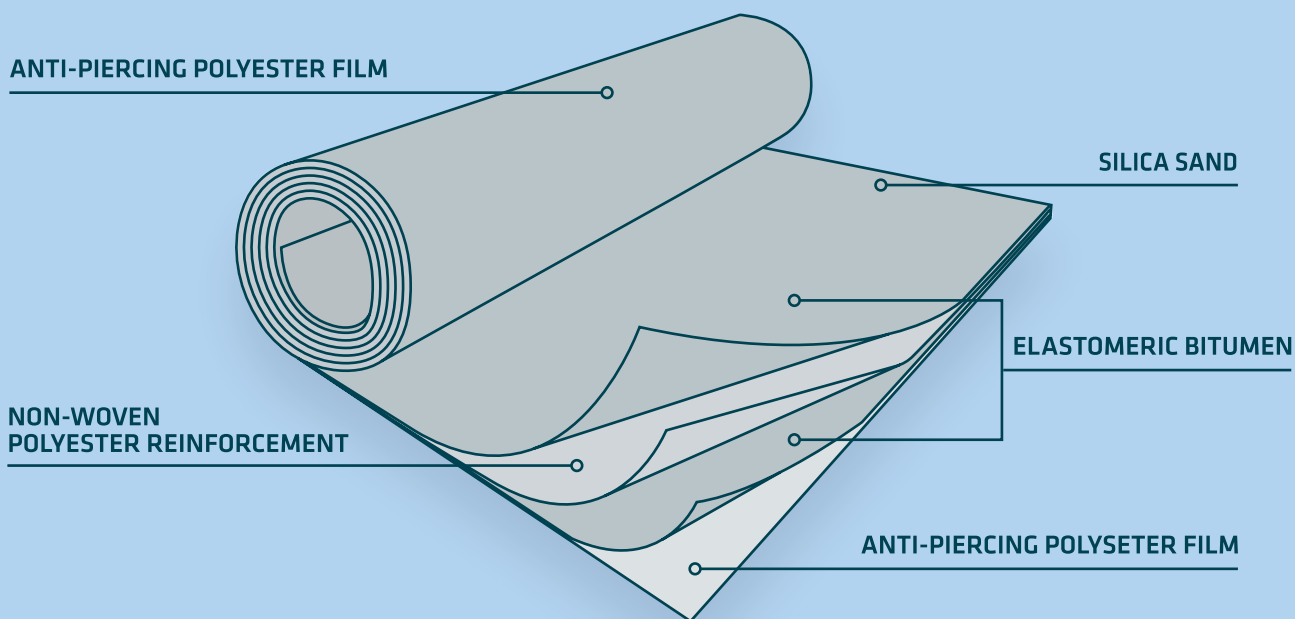
It is for all these reasons the more common applications for our **Teranap** BGMs include:

- Domestic, industrial and agricultural waste storage;
- Mining waste deposits - tailings, heap leach, leachates containment;
- Wastewater sludge containment;
- Landfill storage
- Canals & irrigation
- Concrete dams
- Tunnel water proofing





## Teranap Geomembrane Construction



### KEY FEATURES

- + **Thick polyester fabric reinforcement = high puncture resistance.** High puncture is only given by the polyester reinforcement.
- + **Excellent resistance to ageing** due to the elastomeric bitumen compound enabling the material to retain its elasticity for extensive periods.
- + **Resistant to root penetration:** Test FMPA Germany.
- + **Resistant to numerous chemical agents** depending on the concentration.
- + **ANSI/NSF potable approved**—can be used for potable water storage.
- + **Available in 2 or 4 metre wide rolls** ranging from 20 to 100 metres in length (depending on the width).

# BIDIM® C

AUSTRALIAN MADE CONDUCTIVE GEOTEXTILE

Leaking liners can cause a range of problems from ground contamination and loss of precious water to piping failures in Earthen Bank Storages (EBS). It is always best to address the potential for this issue prior to commissioning a pond rather than finding out after the fact.

A hole as small as 2mm under a 3m head pressure loses approximately 1,300 litres per day through that defect. Action Leakage Rates (ALR) is the acceptable leakage rate from a liner system before repair action must be taken. The ALR depends on the stakeholder but can be as low as 3,500 litres per hectare per day for water authority assets. This means three 2mm holes per hectare is unacceptable to the liners' integrity and must be repaired. Exposing these defects after commissioning a pond is often a very expensive process. Hence, Electrical Leak Location (ELL) surveying is an important step in the construction of lined dams and ponds.

Traditional methods of locating defects in liners involves electrical surveying methods and flooding the liner. These methods are known as the Water Puddle and the Water Lance Method. This consists of charging up a wet subgrade below the liner and flooding the liner above. Any excess water that is able to escape through a small defect (often only accurate to 1mm) completes an electrical circuit and an alarm will be sounded. These methods require considerable volumes of water and the results are questionable on slopes.

Arc or Spark testing is often more reliable than water based testing and is done by laying a dry conductive medium under the liner and sweeping the surface area with a charged test wand which forms an electrical arc in the presence of a hole. The more conductive the material below the liner, the better the results.

Graphene enhanced (coated) geotextile otherwise known as **bidim® C** can be placed directly under liners for ELL surveying and has been known to find holes down to 0.2mm even at very low voltages of 1kV. Typically, other conductive materials require much higher voltages (>20kV) to see results. The risk of higher voltages is that it can damage other components of the liner system when it sparks, such as the cushion geotextile.

**bidim® C** is entirely Australian Made and is extremely conductive. The graphene component is in fact the most conductive material on the planet, pound for pound, making it a very light and easy product to install. It can also function as a cushion geotextile, if desired, by increasing the grade of the carrier geotextile.

## SMART MATERIALS, SMARTER INFRASTRUCTURE

Graphene technology allows the development of sensing systems and algorithms that are able to draw data from conductive materials, making them smart. This technology will allow detection and real time reporting of changes in strain, pressure, temperature and moisture across any number of infrastructure applications. Smart materials are also spatially aware, able to locate where readings are coming from.

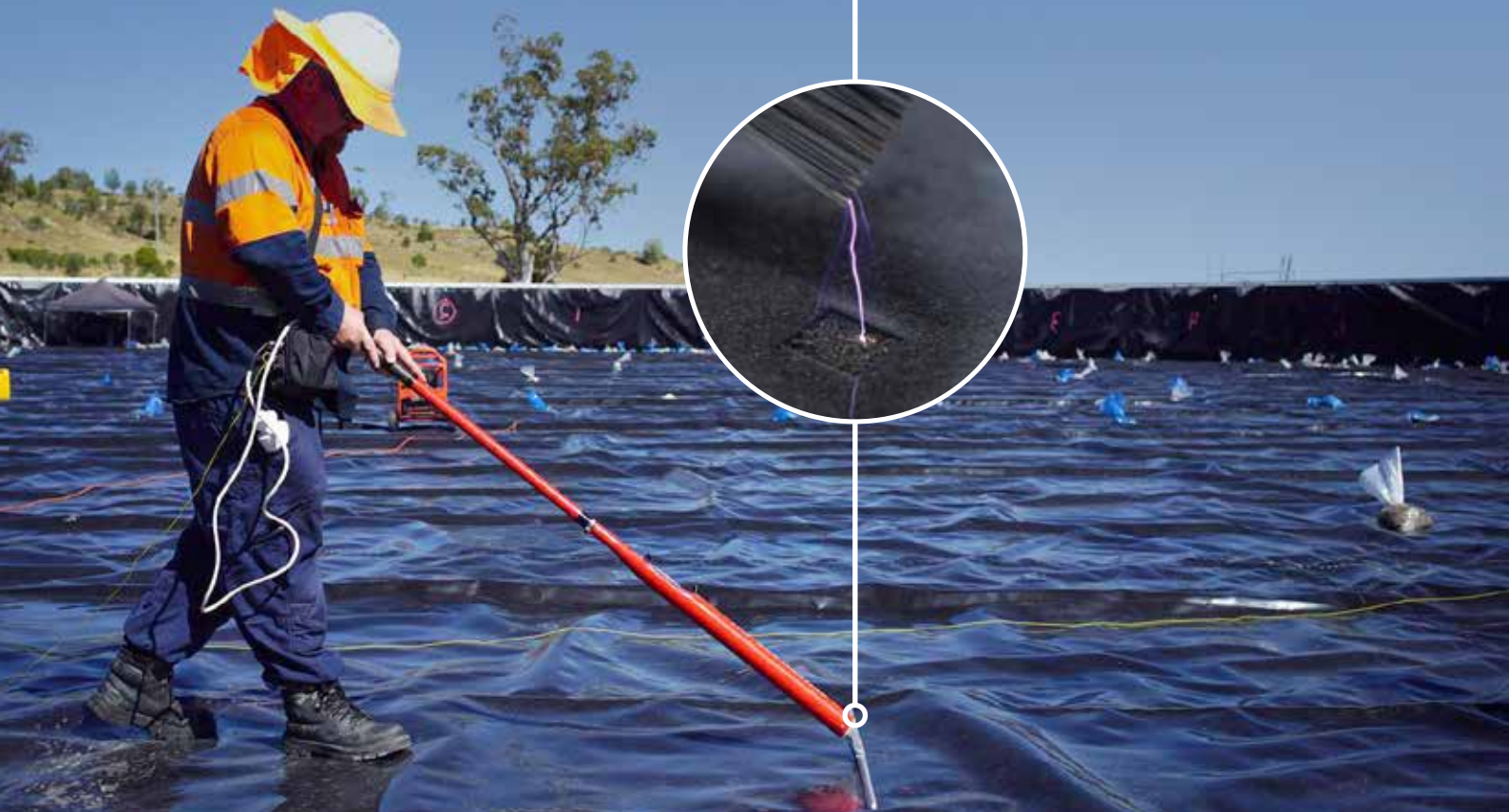






## DEPENDABLE RELIABILITY

**Arc or Spark testing** is often more reliable than water based testing and is done by laying a dry conductive medium under the liner and sweeping the surface area with a charged test wand which forms an electrical arc in the presence of a hole. The more conductive the material below the liner, the better the results.





# FLOWNET & TRINET

## GEOCOMPOSITE DRAINAGE SYSTEMS

Geocomposites are essentially 2-dimensional HDPE drainage blankets of varying thickness and flow capacity that are typically laid below or within a liner system to allow free passage of fluid.

The drainage blanket acts as a leak collection system, with the fluid resulting from liner defects, liner diffusion (resulting from head pressure), subgrade moisture or from ground water effects. Geocomposites have a high compressive strength to cater to significant head pressures and maintain flow capacity and are often combined with a geotextile (on one or both sides) to protect the flow path from ingress of fines and blockages.

If a liner system leaks excessively without the inclusion of a leak collection system, there are various risks including:

- Inability to identify leaks. This leads to uncontrolled loss of precious water or contamination of the soil below.
- Erosion of subgrade below liner which can lead to excessive strains on the liner and failures.
- Piping failures through an earth embankment.

Most mining water storage assets and their lining system will have an Action Leakage Rates (ALR) whereby there is an acceptable leakage rate from the liner before action must be taken to locate and repair the damaged liner. Leak collection systems using geocomposites allow for flows to be controlled to a point at which sub liner flows can be assessed against the ALR.





There are many aspects that should be considered when selecting the appropriate geocomposite. This includes:

#### Maximum expected flows

The product can only cope up to a certain point.

#### Slope of the embankment

The steeper the slope the higher the flows.

*Boundary conditions (hard/hard or hard/soft). Hard would be a stiff liner while soft might be soft soils below punching into the flow path*

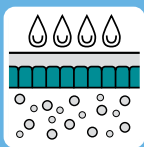
Hard boundaries produce higher flow capacities in the product.

#### Head pressure on the geocomposite

High pressures lead to lower cross-sectional area and lower flow capacity.

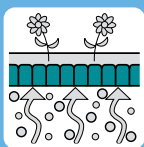
Once these are combined, we can select a suitable product. Alternatively, we can simulate site specific scenarios in our GRID Lab in South Queensland and assess if a geocomposite can handle the desired flow rates under those conditions.

## GEOCOMPOSITE DRAINAGE SYSTEM FUNCTIONS



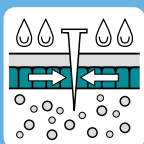
### LIQUID COLLECTION AND DRAINAGE

The high flow rate of geocomposites drainage nets allow rapid drainage and reduces the hydraulic head on the liner systems.



### GAS COLLECTION AND DISCHARGE

The open structure of the geocomposite drainage nets encourages gas flow, allowing effective, controlled discharge of the gases.



### PROTECTION

The thick, tough matrix of the geocomposite drainage nets provide a light-weight and durable protective layer around the outside of landfill drainage systems or pipelines.

Cushioning of geomembranes from the surrounding environment is critical to long term performance of an impermeable liner. Without a suitable cushion geotextile, a geomembrane can undergo strains beyond which it's capable thus inevitably causing stress cracks or elongation and eventual leaking of the hydraulic barrier.

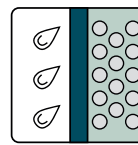
Strains typically result from rocks in the subgrade/drainage profile or from soft spots in the subgrade. With the inclusion of a suitable cushion geotextile, a liner can undergo additional pressures without the risk of strain failures.

Not all geotextiles perform the same when looking at cushion performance. With the help of our GRID laboratory, we've been able to establish that, pound for pound, polyester continuous filament geotextiles (**bidim®** range) far outperform staple fibre and polypropylene geotextiles with respect to cushioning properties. Considering that geotextiles are priced largely on their weight it is a detail that should be considered when specifying geotextile for cushioning purposes. Although we supply all the aforementioned geotextiles, they each have their place in engineering applications, but unfortunately there is not a blanket rule.

It is not uncommon for other suppliers to offer an equivalent weight geotextile irrespective of an application and do not consider the geotextile manufacturing process and type. Which is why being able to trust your supplier and their technical experts is important in geosynthetics supply.

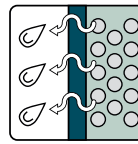
### BIDIM® FUNCTIONS

#### FILTRATION



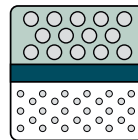
To restrict the migration of fine soil particles from a soil mass while remaining permeable to water movement at a rate at least equivalent to the permeability of the retained soil.

#### DRAINAGE



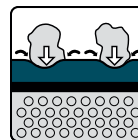
To allow water to flow through or within the plane of the geotextile, allowing the dissipation of pore water pressure which can have a detrimental effect on engineering structures.

#### SEPARATION



To separate and prevent two distinct soils or different materials from intermixing, thereby maintaining the performance of the individual materials.

#### PROTECTION

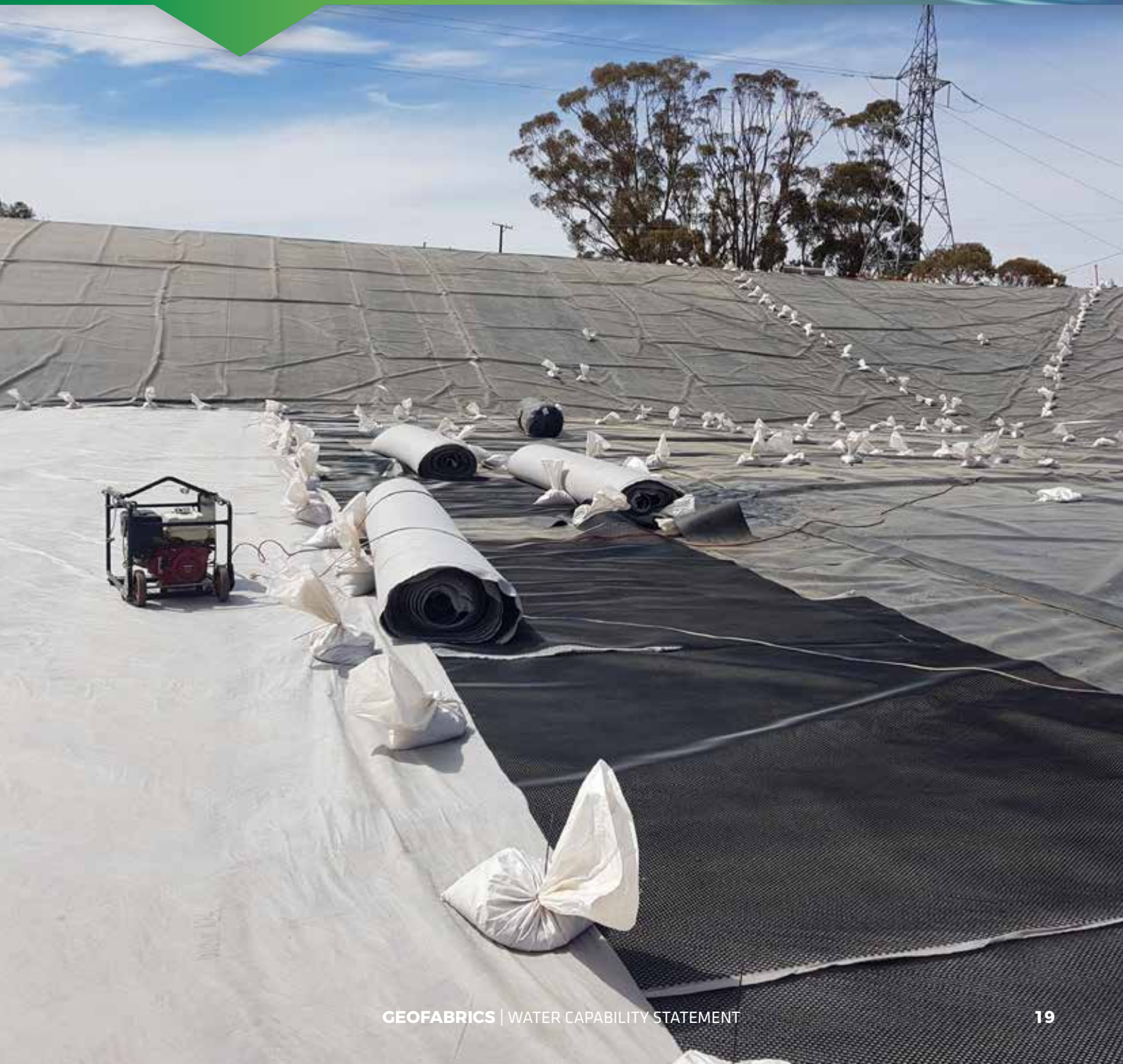


To prevent damage to thin plastic liners used in landfills, by limiting deformation and puncturing potential.

## WHY BIDIM® GREEN?

**bidim® Green** is the newest version of Australia's Number 1 geotextile – you can expect the same performance, now utilising recycled materials. **bidim® Green** is a nonwoven geotextile designed to provide effective and economic solutions to a multitude of engineering applications.

Introduced into Australia in 1978, **bidim®** geotextiles have a proven track record, which is unsurpassed. **bidim® Green** nonwoven geotextile is manufactured to the highest international standards and has ISO 9001:2015 accreditation.





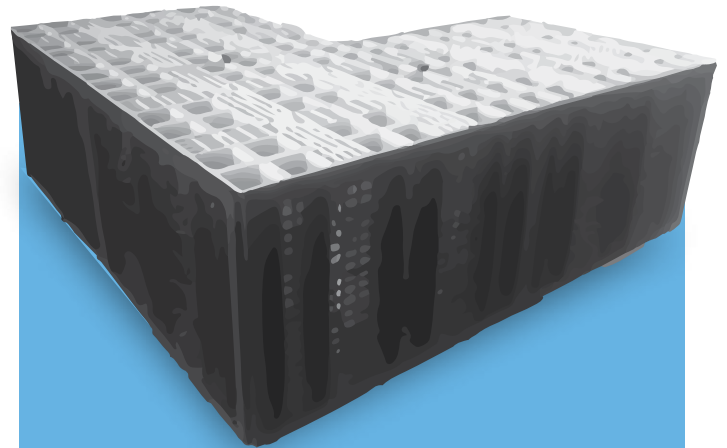
# ECO AID

## UNDERGROUND STORMWATER MANAGEMENT

**Stormwater On-Site Detention (OSD) systems and harvesting systems are commonplace in new industrial and commercial developments where stormwater flows from site must be captured or controlled and slowly released to the council infrastructure.**

Traditional methods include open basin capture which takes up significant land that is no longer useable for construction. Other common methods include subsurface concrete pipes or culverts which are highly expensive but have the ability to be installed very shallow beneath pavements. Modular plastic systems are now far more common across the world due to their economic benefits.

Our Australian Made **ecoAID** system combines virgin copolymer polypropylene arches with surrounding 20mm to 50mm drainage rock to form an extremely strong trafficable stormwater tank that can be inspected and maintained. A very economical system in terms of material costs but also very efficient in terms of installation when compared to other modular systems. When the system and drainage rock is lined with geotextile it can become an infiltration tank or when lined with an impermeable liner and cushion geotextile it becomes an OSD or retention system. The result, a trafficable stormwater tank that can handle 20T axle loads that is at least half the installed cost of traditional concrete culverts and designed and tested to the same Australian loading codes (AS5100.2 - Bridge Design Wheel Loads).



### **A WATER CUBE SOLUTION, FOR TIGHT SITUATIONS WITH THE SAME GREAT PERFORMANCE**

A geocellular type system in the form of a cube. Each cell is formed of a polypropylene plate with stiff columns extending up 400mm, which when mirrored and stacked, forms 2 plates joined by columns 800mm high. The result is an economical Australian designed and made stormwater system with an exceptionally high void ratio (95%) and high compressive strength capable of withstanding 20T axle loads.

This system is ideal for installation under carparks, ovals and parklands or under heavily trafficked roads where vehicle speeds are limited. With the ability to be inspected, it is a great stormwater solution where the installed footprint is limited, heavy loads are expected and where trying to find the most economical solution.



## CORRUGATED ARCH DESIGN

Incorporating a true parabolic inner profile for optimum load-shed via soil arching, with boxed-out corrugations providing arch stiffness and rigidity ensuring structural integrity over the system's 100 year+ design life.

## MOULDED SIDE AND VERTICAL ENTRY PORTS

Integrated lateral pipe ports allowing side entry lot connections directly into the ecoAID system and also used to aid system equalisation and water distribution.

Integrated vertical pipe ports to accommodate breather pipes for system ventilation, inspection access and used for water extraction pipes on stormwater harvesting applications.

## GEOTEXTILES BENEFITS

Stormwater entering into the ecoAID® system is filtered by a woven geotextile which is laid along the base of each C-A-R and then ex-filtrates into the stone bedding. Additional filtration and exfiltration of stormwater occurs via the chamber slots which are surrounded with a bidim® non-woven geotextile along the entire length of the C-A-R.

## END CAP TO CLOSE OUT ROW

Flat end cap base design ensuring no rotation of end cap and chambers occurs when backfill material is placed. The end caps have cut out guides accommodating pipe inlets up to 625mm outside diameter.

## KEYED FEET WITH STIFFENERS

The flat keyed feet of the chambers are locked into place by the embedment aggregate preventing movement during backfill placement and compaction.



# ELCOROCK

## SHORELINE PROTECTION SYSTEM

The ELCOROCK shoreline protection system has been proven through over 20 years of use in harsh coastal environments and is a cost-effective alternative to traditional coastal erosion protection systems made from concrete, rock armour, steel or timber.

### APPLICATIONS:

#### SEAWALLS AND REVETMENTS

The use of ELCOROCK geotextile sand containers in seawalls and revetments has been an alternative to hard structures for many years. ELCOROCK is made from Texcel, an extremely robust geotextile, designed to withstand the force and abrasive nature of coastal dynamics.

ELCOROCK geotextile sand containers have several advantages over traditional sea wall methods including reduced beach contamination from loose rock. Containers can be filled with sand and other easily sourced materials, and the system improves the general amenity of the area.

#### RIVER AND ESTUARY WORKS

Damage to vegetated river banks and tidal riparian zones is predominantly caused by tidal movements, bow wash and other water movements in river and estuary areas. The ELCOROCK system has been specifically designed with the river system in mind, aimed at improving river bank stability, minimizing future erosion and improving amenity and access. ELCOROCK containers ranging from 40 kg to 0.75 m<sup>2</sup> in size are ideal for river and estuary applications.

#### GROYNES AND BREAKWATERS

The durability and stability of ELCOROCK containers provide an ideal solution for marine structures such as groynes and breakwaters. These structures extend out into the wave zone and provide marina and beach protection, sand movement control and river training. Wave climate and other conditions will dictate the size of the container to ensure stability in these dynamic zones.

#### LAND RECLAMATION

The ELCOROCK container system is a fast and economical way of constructing bunds or temporary emergency works for coastal protection used around reclamation projects. The containers are easy to remove once the structure has served its purpose or can remain in place as a permanent bund.

#### ARTIFICIAL REEFS

Artificial reefs are utilized to reduce the full force of wave action and mitigate coastal erosion problems.

ELCOROCK Mega Containers are available in lengths ranging from 6 m to 20 m and heights of up to 2.2 m when filled. Generally filled with dredge pumps the large tubes help create a diverse marine environment which has significant value both environmentally and for recreation in the forms of diving, surfing and fishing.

# PROJECTS:

## ETTALONG POINT, NSW

Ettalong Point is located approximately 50 km North of Sydney on the New South Wales Central Coast. After a major storm event in 2015, erosion threatened to undermine the beachfront road, forcing its closure.

A 100 m length of Geosynthetic Sand Container wall was constructed using 2.5 m<sup>3</sup> Elcorock units by council crews. The Water Research Laboratory of UNSW Sydney designed the wall and implemented a comprehensive monitoring program.

## SOLOMON ISLANDS

In May 2014 a major storm event battered the coast line adjacent to the capital of The Solomon Islands, Honiara.

Extreme coastal erosion occurred in and around the National Health Referral Hospital. Fears a similar storm would severely impact on the Hospital infrastructure a coastal defence revetment wall was built in early 2016 using a single layer of 2.5 m<sup>3</sup> sized Elcorock Containers. To this day the structure has provided the protection required for this valuable asset for the peoples of the Solomon Islands.

## COLLARROY BEACH, NSW

An East Coast low combined with a king tide hit Sydney's Northern Beaches leaving a number of coastal properties teetering on the brink in June 2016.

An emergency request from the local council to Geofabrics for the supply of 300 sand containers was made. The 2.5 m<sup>3</sup> Elcorock containers were on site within days and the protective barrier was installed.

## NARROWNECK REEF, QLD

The Narrowneck artificial reef was constructed in 1999 and was designed to reduce the high-level of erosion during storms along the narrow stretch of foreshore.

400 Elcorock Mega Containers were filled with sand and dropped into position using a drop bottom barge. In late 2017 a further 85 Elcorock Mega Containers were used to top up the reef's height.

## MAROOCHYDORE GROYNES, QLD

A series of Groynes were constructed in 2006 at Maroochydore, Queensland to combat the ongoing erosion affecting the Cotton Tree Caravan park.

The Groynes have been highly effective in the build up of sand creating a buffer for the Caravan Park.

Exhumation of several containers were carried out in 2016 showing the material had lost only 10% of strength over 10 years.

This project and Narrowneck Reef were designed by International Coastal Management:  
[www.coastalmanagement.com.au](http://www.coastalmanagement.com.au)

## KEY FEATURES & BENEFITS

### 1- DURABILITY

Elcorock is proven through over 20 years of insitu installation in Australia and around the World under some of the highest UV concentration levels.

### 2- FLEXIBLE STRUCTURE

The nature of Elcorock creates a durable, pliable product.

### 3- PUBLIC AMENITY

Unlike rock or concrete structures, Elcorock is a soft engineered solution suitable for public sites.

### 4- ENVIRONMENTALLY SENSITIVE

Delivery of Elcorock to site has a dramatically smaller carbon footprint than hard structure alternatives.

### 5- IN-HOUSE MANUFACTURED

Aside from prompt supply timelines Geofabrics can tailor make Elcorock containers to suit specific conditions including size and various material grades.

### 6- TESTING & TRACEABILITY

Texcel & Elcorock range of products are thoroughly tested and tracked to ensure our product exceeds our standard specifications.

### 7- INSTALLATION

We provide comprehensive installation guidance and support to ensure a high level and quality project.



# SILT CURTAIN

ASSISE® AQUATIC

The Assise® Aquatic Silt Curtain is a durable yet economic choice to control the settling of silt suspended in water and prevent these particles from spreading further, whilst allowing water to continue to flow. Suitable for use in dredging, excavation, piling operations, rock walling and other marine construction activities.

Available in standard design configurations, fabricated with closed cell foam floatation, 270gsm geotextile and galvanised chain ballast.

Assise® Aquatic Silt Curtains can also be manufactured with external floats and specialised engineered geotextile. The curtains are dispatched from our factory with section lengths connected and ready for immediate deployment.

## SILT CURTAIN TYPES

The Assise® Silt Curtain can be customised to suit your specific project requirements such as project longevity, operating sea states and government regulations. The range of curtains cover four different tiers to best suit project applications:

### **CLASS 1 CONTRACTORS CURTAIN:**

available in 1m and 2m skirts at 25m standard lengths. Ideal for short term use in calm water states

**CLASS 2 SILT CURTAIN:** constructed with higher grade materials than a Class 1 Curtain and with ASTM F962 connectors. The Class 2 Silt Curtain is a robust curtain for a wide variety of applications. Manufactured with skirt depths up to 12m.

**CLASS 3 SILT CURTAIN:** the top of the range Silt Curtain using internal floats. These Silt Curtains incorporate our heavy duty ASTM F962 connector and are fabricated with a range of high quality and

heavy duty materials. To assist with forces placed on the curtain, additional hardware and numerous runs of load strap webbing (5,000kg breaking strain) are built into the design. These Silt Curtains are suitable for harbour and open water sea states.

### **HEAVY DUTY PERMANENT CURTAIN:**

an engineered curtain, designed for long term deployment and custom made to our client's specifications. These curtains often used an engineered geomembrane, woven filter media and moulded HDPE floats which are attached to the Silt Curtain externally.

Assise® Aquatic Silt Curtains can be packaged to suit your needs. They can either be supplied in a ready to install package, supplied ready to install with anchor sets, ropes and rigging, or under a complete design, supply and install offering.

Chatoyer Environmental work with a range of qualified installers and marine contractors to provide a professional turn key solution where required.

## FEATURES

- Packaged ready to deploy
- Manufactured to suit specific waterway depths from 1.0m - 20m deep
- Standard geotextile skirt has a 90 micron pore size
- Supplied with handles and hardware to assist with rapid deployment
- Available in standard lengths of 10m, 15m or 25m (Class 1 only) to suit your project
- Customised design and fabrication available



## SELECTION GUIDE

Chatoyer has been manufacturing silt curtains since 2008 and have detailed a simple categorisation to assist our clients in selecting an appropriate silt curtain design. Below is a guide showing our suggestions per waterway and the fundamentals of each design class.



### CLASS 1:

Ideal for short term use in calm water states.

### CLASS 2:

Medium risk applications with moderate wind and/or water forces such as rivers and calm harbours.

### CLASS 3:

Suitable for harbour and open water sea states. Skirt depths up to 20m.

### HEAVY DUTY:

Consultation is required. This is an engineered Silt Curtain designed for long term deployment and rough conditions.

For Further Information:

<https://www.chatoyer.com.au/silt-curtain/>

SUGGESTED SILT CURTAIN		STILL WATER				RIVER / PORT			
		1-2M	2-6M	6-12M	>12M	1-2M	2-6M	6-12M	>12M
SKIRT DEPTH									
CLASS 1	50 mm Float Width	●							
	100 mm Float Width	●	●			●			
CLASS 2	150 mm Float Width			●		●	●		
	200 mm Float Width				●			●	●
CLASS 3	150 mm Float Width						●		
	200 mm Float Width				●			●	●
HEAVY DUTY	External HPDE Floats			●	●			●	●

		HARBOUR				OPEN WATER/OCEAN			
		1-2M	2-6M	6-12M	>12M	1-2M	2-6M	6-12M	>12M
SKIRT DEPTH									
CLASS 1	50 mm Float Width								
	100 mm Float Width								
CLASS 2	150 mm Float Width	●	●						
	200 mm Float Width	●	●			●	●		
CLASS 3	150 mm Float Width	●	●			●	●		
	200 mm Float Width			●	●	●	●	●	●
HEAVY DUTY	External HPDE Floats			●	●			●	●

# SERVICES

## PRODUCT & TECHNICAL SERVICE

Our team members are well-trained in design and installation processes for geosynthetic products. Our technical and laboratory teams are industry experts, providing excellent support to designers and contractors

We offer both product management and technical support through our engineers and experienced technicians:

- Testing and evaluation of tunnel drainage and reinforcing products
- Laboratory testing at our geosynthetic testing laboratories
- Design and construction advice and optimisation
- On-site services for professional installation and testing
- Support across the entire project phase

**OUR FOCUS ON QUALITY ENSURES OUR PRODUCTS COMPLY WITH OUR PUBLISHED SPECIFICATIONS AND ARE TRACEABLE FROM RAW MATERIAL THROUGH TO FINISHED PRODUCT.**

We also provide a wide range of support tools for all our products that are accredited and compliant with Australian safety regulations.





## SMARTER INFRASTRUCTURE, STRONGER AUSTRALIA

Australian manufacturers have a responsibility to source and adopt local recycled raw materials into their manufacturing process. Geofabrics will continue innovating around existing products and seeking opportunities to replace virgin material for recycled material.

We are committed to being environmentally conscious. We are challenging traditional manufacturing from non-renewable sources and achieving the same high quality with recycled materials.

Going green means we can support our customers with sustainable products that include Australian sourced recycled materials.

We are committed to contributing to a positive impact on the environment and to manufacture and supply products that reduce reliance on non-renewable resources and reduce waste to landfill.

Geofabrics is a proud member of the Infrastructure Sustainability Council of Australia (ISCA) and is the only geosynthetic manufacturer and supplier with ISCA accredited products (**bidim® Green**, **Sealmac® Green** and **Megaflo® Green**) listed on the iSupply directory.

Our Green products are made in Australia – from Australian sourced recycled materials. These products can contribute to IS credits in infrastructure and civil engineering projects.



**bidim®  
Green**

ISCA iSupply listing details



**Megaflo®  
Green**

ISCA iSupply listing details



**Sealmac®  
Green**

ISCA iSupply listing details

# SMARTER INFRASTRUCTURE STRONGER AUSTRALIA

Each project is unique and can often require custom solutions.

At Geofabrics, we work closely with our clients - whether you're the asset owner, design engineer, contractor or installer, you'll receive the best possible solution for the project at hand.



## CREATING AUSSIE JOBS

By employing over 200 people across 12 locations, we support over 1,000 Australian suppliers with many located in regional Australia.



## DEDICATED R&D LAB

The Geofabrics centre for Geosynthetic Research, Innovation and Development (GRID) has a state of the art R&D laboratory to solve complex customer problems.







### NATIONAL BACKING

With our national footprint and branch network we are able to support your project no matter how remote.

### SPECIALIST SUPPORT

We have specialists across many disciplines including Logistics, Information Technology, Research & Development, Marketing and Finance.



### LOCALLY MANUFACTURED

With factories in Albury (NSW) and Ormeau (QLD), we continue to support and invest in Australian manufacturing.

# WE DEVELOP SUSTAINABLE WATER SOLUTIONS WITH CONSIDERATION FOR COST, RISK, AND OVERALL PERFORMANCE.





FOR MORE INFORMATION

[GEOFABRICS.CO/WATER](https://www.geofabrics.co/water)

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**NZ 0800 60 60 20**

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#### **NEWCASTLE**

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#### **HOBART**

(03) 6273 0511

#### **ADELAIDE**

(08) 8219 2900

#### **DARWIN**

(08) 8219 2900

#### **PERTH**

(08) 9406 5900

#### **BRISBANE**

(07) 3713 4600

#### **BUNDABERG**

(07) 4155 9968

#### **GOLD COAST**

(07) 5594 8600

#### **TOWNSVILLE**

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### NEW ZEALAND

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#### **CHRISTCHURCH**

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#### **SILVERDALE**

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Smarter Infrastructure

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