DEFENCE SOLUTIONS

GEOFABRICS®
Sustainable solutions

Why use geosynthetic engineering in defence?

Geosynthetic engineering is the use of synthetic materials in civil projects to achieve more cost-effective, environmentally sound and safer construction outcomes. The design techniques bring specific benefits to defence sites because geosynthetics maximise the use of site soils and avoid the need to import other construction materials.

BENEFITS

ECONOMIC

The fundamental benefit of using geosynthetics on defence sites is to save costs by replacing high volumes of soil material required to build civil engineering infrastructure. These costs can be substantial, especially in remote locations.

TECHNICAL

Using geosynthetics in defence infrastructure projects can remove the risk of variability in traditional engineering applications. By implementing geosynthetic solutions, variability in the design is not only de-risked, it also improves the long-term performance.

ENVIRONMENTAL

By reducing the volumes of soil material required, there is less need to quarry and fewer heavy machinery or transport required to build infrastructure which reduces the carbon footprint. Surface erosion systems also protect waterways from dust and sediment.

SAFETY

Geosynthetics are utilised to reduce military personnel exposure to dangerous working conditions or protect what is important – military personnel, citizens or critical assets.

ROADS AND SOFT GROUND

When installed in roads and trafficable heavy-duty working areas such as airfield runways, taxiways, army or military bases, and navy ports, the geosynthetic will:

- Optimise subgrade stabilisation by providing reinforcement, separation, drainage and filtration functions
- Allow quick and easy access to soft subgrades
- Support heavy load platforms
- Maximise the performance of on-site material or fill
- Reduce ongoing maintenance costs

ASPHALT REINFORCEMENT

- Lower lifecycle costs of the airfield, hardstand and port asphalt overlays
- Provide long-term sealing and stress-relief functions
- Extend pavement life by delaying the development of fatigue micro-cracking and absorbing traffic-induced strain

SLOPES & RETAINING

- Enable construction of retaining walls by utilising site won material
- Provide ballistic protection, blast mitigation and protection against hostile vehicle intrusions

CHANNEL LINING & EROSION CONTROL

- Halt or prevent erosion providing immediate protection against soil loss around embankments, slopes, riverbanks, canals and reservoirs
- Offer environmentally friendly options for hydraulic channels
- Wide range of products and solutions to meet site conditions

TO ACHIEVE MORE COST EFFECTIVE, ENVIRONMENTALLY SOUND AND SAFER CONSTRUCTION OUTCOMES

WORKING WITH CLIENTS TO DEVELOP THE RIGHT GEOSYNTHETIC SOLUTION FOR EACH PROJECT

Who are Geofabrics?

Geofabrics are the only Australian manufacturer of geosynthetic products, with plants in Albury, New South Wales and Ormeau, Queensland.

Our success is based on strong partnerships with clients to solve their engineering problems. Our vision is to be a solution provider, to supply products that demonstrate cost savings, superior technical performance, safer operations and better environmental outcomes.

Technical leadership

GEOFABRICS GRID LABORATORY

We supply world-class technical leadership and engineering support through our innovation, research, industry education, design and independent testing services.

Our GRID (Geosynthetic Research, Innovation & Development) laboratory is a specialist facility that works with clients to develop the right geosynthetic solution for each project.

Based in south east Queensland, the laboratory 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 site – to ensure the right solution is adopted.

- Analysis is performed according to Australian and International test methods
- Comprehensive test reports are generated, including results, photos, graphs, test conditions and details of the apparatus used
- Research is supported by industry leading suppliers in both laboratory and field trials across America, Europe and Asia

DESIGN & INNOVATION HUB

Geofabrics Design and Innovation Hub can provide our clients with specification reviews, design suggestions and certified designs for geosynthetic applications. We employ engineers who can review historic road and pavement infrastructure process and provide innovative solutions that are more cost effective and technically superior.

Our comprehensive design advice can include stability analysis, typical sections and standard details. Our team can also assist with product specifications and installation guidelines for tenders.

INNOVATION & EDUCATION

We provide technical and practical education to engineers about the use of geosynthetics in a range of infrastructure projects.

Our team conducts real-world, technical seminars for engineers and contractors to earn CPD hours through our Geofabrics Academy; we also run in-house workshops for our clients and undertake lectures at universities around Australia and in New Zealand.

We are proud to support the next generation of engineers through sponsorship of PhD candidates.

QUALITY & TRACEABILITY

Geofabrics manufactures in compliance with the Australian and International Quality Standards and are ISO 9001 assured. We operate two QA laboratories in Australia – Albury is NATA accredited, Ormeau GRID is GAI LAP accredited and products are tested frequently and transparently.

SUSTAINABILITY

We work to protect, contain and secure the physical environment using smart geotextile and geosynthetic products. We help our clients mitigate environmental risk through world leading research and innovative product development.

Geofabrics is a proud member of the Infrastructure Sustainability Council (ISC).

SITE INSTALLATION

Geofabrics has the largest regional footprint of any geosynthetic supplier in Australasia. We have branches in key mining regions, so we can deliver product where and when you need it and provide local expertise to support your project.

Product installation is critical to project success, local representation can ensure correct procedures and minimal delays.

Geofabrics Centre for GEOSYNTHETIC RESEARCH, INNOVATION & DEVELOPMENT

GEOFABRICS ACADEMY

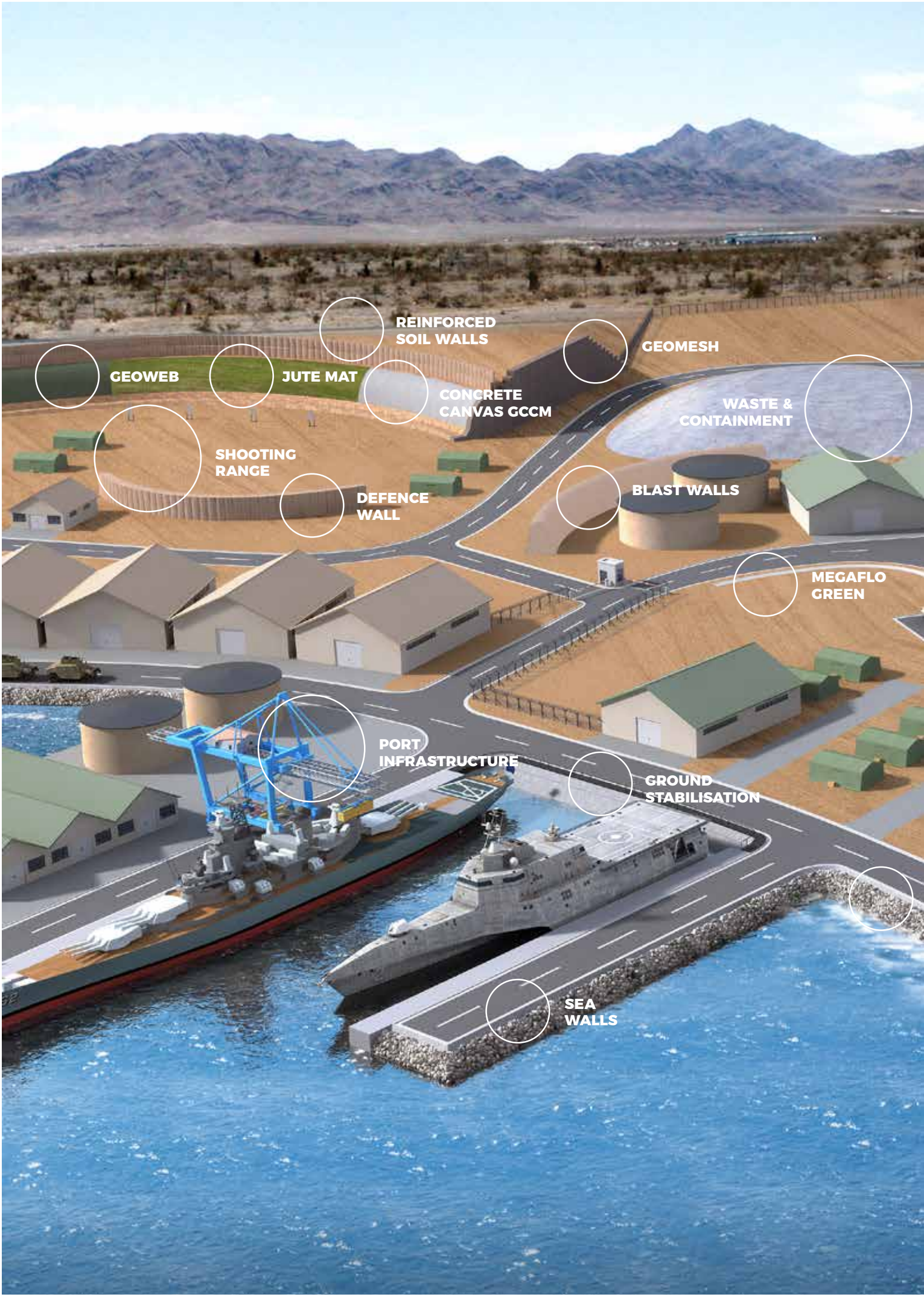
bsi. ISO 9001 Quality Management

Infrastructure Sustainability Council MEMBER

35+

years of reliable supply

GEOFABRICS


REINFORCED SOIL WALLS
GEOMESH
GEOWEB
JUTE MAT
CONCRETE CANVAS GCCM
WASTE & CONTAINMENT
SHOOTING RANGE
DEFENCE WALL
BLAST WALLS
MEGAFLO GREEN
PORT INFRASTRUCTURE
GROUND STABILISATION
SEA WALLS


SORBSEAL
AIRSTRIP INFRASTRUCTURE
CHANNEL LINING
MEGAFLO GREEN
HEAVY-DUTY PAVEMENT
BIDIM GREEN
BLAST WALLS
ROAD INFRASTRUCTURE
SEA WALLS
GRASS ROOTS
EROSION CONTROL
ROCKFALL BARRIERS
ROCKFALL SOLUTIONS
ROCKFALL NETTING
GEOFABRICS

Roads, soft ground and asphalt reinforcement

Geosynthetic and geotextile engineering allows for the construction of roads in areas deemed previously unstable, enabling access to soft sludge environments. They can also improve rehabilitation to help minimise maintenance and reduce costs by up to 30% while improving design life by up to 6 times.

Up to
30%
reduction in construction costs

6x
improved design-life

Up to
20-30%
lower lifecycle costs of asphalt

ROADS & CONSTRUCTING ON SOFT SOIL

Geofabrics geotextiles are used in roads and heavy-duty pavements bridges to ensure the best construction performance using the site resources available, to both minimise costs and prevent costly maintenance disruptions.

Geofabrics provide solutions that encompass all road types from temporary access tracks to site access road construction and port pavements. This also includes the construction of new airfield runways and taxiways.

- Utilisation of site won fill material
- Improved structural performance of roads, bridges, runways and heavy-duty pavements
- Serviceability of roads to maintain vehicle speeds, reduce maintenance, ensure safer operations and reduce truck depreciation
- Improved road surface performance of working and high traffic areas
- Low to high embankments

Airport and port pavements (near the sea) are often built on very soft ground which can raise considerable problems for design/geotechnical/airport engineers. Geofabrics offers technical solutions using different materials to accelerate construction on weak subgrades and can control differential settlement by creating a mechanically stabilised layer for runways and taxiways that cope with the intense loads from aircraft and heavy machine movements by

- Reducing the aggregate required
- Extending the service or design life
- Producing the potential for a significant cost, time and environmental benefits

Geofabrics subgrade stabilisation solutions include Bidim Green non-woven geotextiles to provide separation and filtration between the subgrade and base layers.

Megaflo Green socked slotted drain pipe provides dimensional stability and field-proven structural strength for efficient and effective subsurface drainage.
Compared to a 100mm round pipe, Megaflo Green drains water up to 4.9 times faster, thanks to its intake slot distribution.

REINFORCING ASPHALT PAVEMENTS

Asphalt reinforcement is an important part of rehabilitation in road construction. Due to the constant passage of heavy military vehicles, higher strains are often imposed on asphalt pavements. These strains result in increased fatigue of the asphalt layers. As a result, the asphalt starts to crack, leading to premature failure and deterioration of the pavement due to water ingress.

Reflective cracking is one of the highest contributors to pavement deterioration. Conventional rehabilitation procedures recommend placing an asphalt overlay on top of the existing rigid or flexible pavement. Although this provides some additional service life, cracks are only often deterred. At this rate, there is a constant battle to maintain the pavement. However, when an asphalt reinforcement interlayer is installed, pavement performance is improved, significantly reducing both maintenance and life cycle costs.

Geofabrics offers a range of asphalt reinforcement product solutions that can be applied to roads, heavy-duty pavements, taxiways and runways.

- Lower lifecycle costs of asphalt overlays by up to 20 – 30%
- Provide quick & easy installation
- Increase performance with thermal and chemical stability

RECOMMENDED ROAD PRODUCTS

Bidim Green non-woven geotextile
Megaflo Green socked slotted drain pipe
Triaxial geogrid
Mirafi RSi multifunctional woven geotextile
Geoweb cellular confinement geocell

RECOMMENDED REINFORCEMENT PRODUCTS

GlasGrid asphalt geogrid
AR-GN geocomposite

ALLOWING FOR SAFE CONSTRUCTION IN SOFT AND UNSTABLE ENVIRONMENTS

PROTECT BASES, PERSONNEL AND OTHER CRITICAL INFRASTRUCTURE FROM ATTACK WITH CONTAINMENT WALLS

Slope stability and protective barriers to keep safe

SLOPES & WALLS

Geofabrics offers a range of engineered slope, embankment and retaining wall solutions.

- Improved surface stability of mild slopes, watercourses and spillways
- Construction of large height Mechanically Stabilised Earth (MSE) retaining walls
- Provide a protective or defence barrier for bases, personnel, vehicles and other critical infrastructure from any attacks with cellular containment walls

To support the design of retaining walls, slopes, and embankments, we provide access to expert technical specialists who use advanced design software to ensure fast, accurate, and customised solutions for every project.

EROSION CONTROL

Enhancement of erosion performance of vegetated cover material on slopes can be achieved using a range of different geosynthetic solutions. This includes Grassroots, a synthetic erosion control matting designed to withstand higher-velocity water flows. Where there is insufficient soil on the slope to sustain vegetation, Presto Geoweb can be installed, filled in with soil and planted.

Win back space

and provide safe soil retention

Product solution guideline

PRODUCT	GRASS SWALE DRAIN	VEGETATED SWALE DRAIN	GRASS SLOPE	VEGETATED SLOPE	COASTAL EROSION	COASTAL DUNE VEGETATING	WIND EROSION	SHORELINE EROSION	TURF STABILISATION	UNVEGETATED SLOPES
Jute Mat Thick		✓		✓		✓	✓			
Jute Mat Fine	✓		✓				✓			
Jute Mesh	✓	✓	✓	✓		✓	✓			
Grassroots	✓		✓				✓	✓	✓	✓
Geoweb	✓	✓	✓	✓		✓	✓		✓	✓
Geobox & Geomattress	✓	✓		✓	✓	✓		✓		✓

RECOMMENDED SLOPES & WALLS PRODUCTS

Keystone TW3 concrete block retaining wall system
Geobox gabion baskets
Geomesh Natural wire mesh system
Defencell MAC welded wire gabions
Full Height concrete panel system
Wraparound geogrid

RECOMMENDED EROSION CONTROL PRODUCTS

Geosynthetic cementitious composite mat
Geoweb cellular confinement
Geomat erosion control mat
Jute biodegradable erosion control mat (Fine)
Jute biodegradable erosion control mat (Thick)
Jute Mesh biodegradable erosion control mat
Grassroots synthetic erosion control mat

GEOFABRICS®

Waste & water

Aqueous film-forming foams (AFFF) containing PFAS were used prolifically in Australia from the 1970's through to the early 2000's at both civilian and military sites to extinguish flammable liquid fuel fires for training and emergency response purposes. They were highly effective due to the inclusion of two very specific long-chain fluorinated PFAS as active ingredients, namely perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), with perfluorohexane sulfonate (PFHxS) also found as an impurity in the AFFF manufacturing process.

Used as a liner or laid over contaminated soil to
stop PFAS
leaking out

SORBSEAL® HYBRID GEOSYNTHETIC CLAY LINER

Due to their persistence in humans, animals and the environment, the Department of Defence (DoD) began phasing out AFFF's containing PFOA and PFOS in 2004, and initiated an extensive PFAS investigation and management process to identify, monitor and where necessary, remediate any of their sites around Australia which may have been impacted by these legacy chemicals. In some cases, such as open drain and source area excavations, impacted material may need to be removed from the site and disposed of at a licenced facility. This is where Sorbseal can help.

Sorbseal has a particular affinity for trapping PFOA and PFOS and can be used in conjunction with an overlying geomembrane to form a single or double composite liner, for effective containment and encapsulation of these materials. It works by providing very low permeability to percolating liquids through the use of a high purity, powdered sodium bentonite clay layer, combined with a powerful, high specific-surface area powdered activated carbon adsorbent. Sorbseal has been shown to be very effective in trapping a wide range of PFAS, including PFOS, PFOA and PFHxS, even within liquids containing potentially fouling co-contaminants, such as landfill leachate.

Ports & sea walls

Geofabrics geosynthetics offer reliable, cost effective and proven solutions for shoreline and marine protection.

Once in position, geosynthetic solutions and systems can provide long term performance in protecting shorelines, rebuilding beaches, or reclaiming land. Geosynthetic materials are commonly used to reinforce the construction of sea walls, dykes and levees, jetties, groynes, revetments, breakwaters and bund walls for reclamation which are often constructed over weak materials such as mud, sludge and saturated silts or clays.
The use of Geofabrics geotextile solutions were critical in expanding the Brisbane Port which is located at the mouth of the Brisbane River by reclaiming and redeveloping an additional 230 hectares of land.

RECOMMENDED WASTE & CONTAINMENT PRODUCTS

Sorbseal hybrid geosynthetic clay liner

RECOMMENDED PORTS AND SEA WALL CONSTRUCTION PRODUCTS

Geotube dewatering container
Elcorock geosynthetic sand container
Texcel R non-woven staple fibre geotextile
Triaxial geogrid
Miragrid GX geogrid
Mirafi PET high strength woven geotextile

WASTE CONTAINMENT SOLUTIONS THAT PROVIDE ADVANCED ENVIRONMENTAL PROTECTION

GEOFABRICS®

Unmatched expertise & support

We draw from our years of experience in the Australasia resource sector to tailor design and provide geosynthetic solutions to best meet our client's performance and economic requirements.

Our superior technical support includes early stage testing to validate product selection, design and construction suggestions, certified designs if required; as well as installation systems to increase safety and productivity during installation.

Our comprehensive design advice for projects can include R&D testing, stability analysis, typical sections and standard details. We can also assist with product and installation specifications for tenders.

By employing a national team of engineers, and forming strategic alliances with multi-national consulting engineering practices, our technical support for geosynthetics is unmatched throughout Australasia.

We support our design advice with a suite of design software which assists engineers in developing cost effective solutions to exacting international design standards. We offer our software suite free of charge to our clients and it offers the ability to run a range of design scenarios to cover differing ground and loading conditions to minimise the design risk for a project. Our team of engineering specialists are available to give technical advice in the use of the software as well as provide in-house or seminar training.

We can also provide on-site installation training as well as guidelines and diagrams to assist contractors or maintenance crews.

QUALITY & TRACEABILITY

Geofabrics manufactures geosynthetics under management systems that comply with the Australian and International Quality Standards and are ISO 9001 assured.

We operate two quality assured testing facilities in Australia – Albury is NATA Accredited, Ormeau GRID is GAI LAP accredited and products are tested frequently and transparently.

Our products have traceability from the test results to the roll number and production batch, providing confidence in the quality and consistency of our products in accordance with our latest published specifications.

The information on the labels can be traced via a clear audit trail to the date, name and place of manufacture and the relevant quality assurance test results. In addition, our geotextiles are clearly printed for identification once they are unwrapped and rolled out.

Our commitment to world class quality provides our clients with the confidence that the product delivered is as per their project specifications, ensuring performance and life-cycle costs are optimised.

AUSTRALIAN MANUFACTURING

Many of the products we supply are manufactured in our two production plants in Albury (NSW) and Ormeau (QLD). We employ more than 100 manufacturing staff and we return more than $10 million per annum into the regional communities in which we operate.

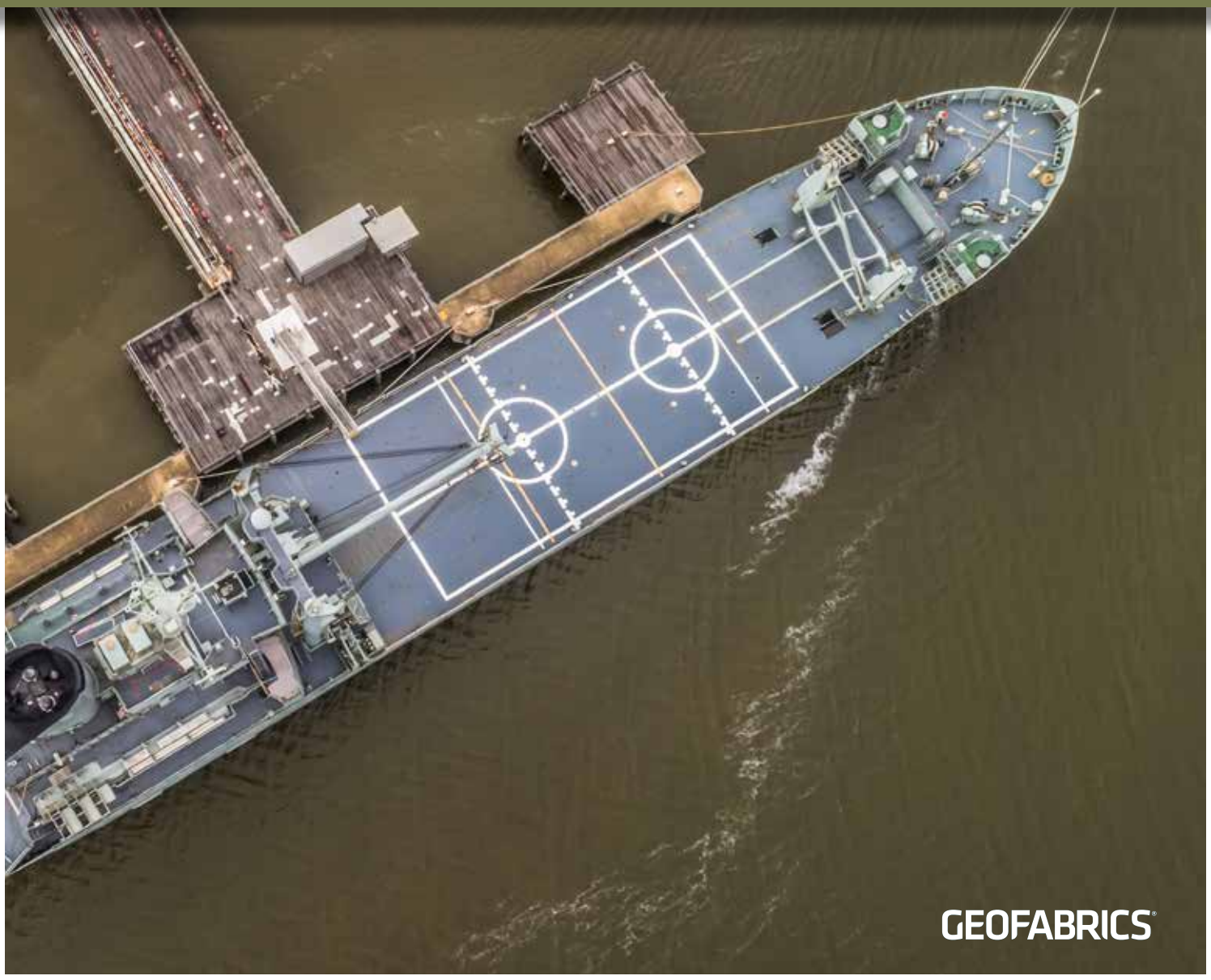
Our Megaflo Green, Elcorock and Filterwrap products carry the mark of Australian-made logo.

WHERE YOU NEED US

Geofabrics has the largest regional footprint of any geosynthetic supplier in Australasia. We have branches throughout Australia, New Zealand and the Pacific. Within Australia, we have branches in every state as well as offices in strategic regional centres along the east coast staffed by our own employees.

This means that we can deliver product where you need it, when you need it while providing local expertise to support your project.

OUR COMMITMENT TO WORLD CLASS QUALITY PROVIDES OUR CLIENTS WITH CONFIDENCE



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 Australian Financial Review (AFR) Most Innovative Company list in 2020 with Bidim Green.

In 2021, Geofabrics ranked #1 in AFR's Most Innovative Company for Manufacturing and Consumer Goods for 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.

FINANCIAL REVIEW BOSS
MOST INNOVATIVE COMPANIES

bsi. ISO 9001 Quality Management FS 673633 ISO 9001 Quality Management FS 590175

Infrastructure Sustainability Council

Visit **geofabrics.co** or call 1300 60 60 20 (AU)
or **geofabrics.co.nz** or call 0800 60 60 20 (NZ)

GEOFABRICS®
Sustainable solutions