WASTE & CONTAINMENT SOLUTIONS

GEOFABRICS®

Sustainable solutions

Why use geosynthetic engineering in waste & containment?

Geosynthetic engineering is the use of synthetic materials in waste and containment projects to achieve more cost effective, safer and more environmentally sound outcomes. The design techniques bring numerous benefits to waste and containment projects, because geosynthetics can better protect the environment, through the control of hazardous leachates and liquors.

We work with our clients to develop containment systems which are backed by years of research and are designed to meet regulatory guidelines and mitigate risk.

BENEFITS

ECONOMIC

The fundamental benefit of using geosynthetics in waste and containment projects is to save costs, firstly by mitigating risk and secondly by reducing high volumes of fill material required, such as sand protection layers and gravel drainage layers.

TECHNICAL

Geosynthetic design can remove the risk of variability in traditional lining and drainage systems and gas management. The consistency of product, predictability of performance and ability to provide long term performance data in extreme conditions reduces risk.

ENVIRONMENTAL

Geosynthetic lining systems are equivalent or superior to traditional soil and clay containment of waste and contaminants. Ensuring sound containment, protects waterways, fish, animals and the surrounding environment from contaminants. By reducing volumes of fill material required, there is less need to quarry and fewer machines required in construction, reducing the carbon footprint.

SAFETY

Geosynthetics are utilised in landfill lining to contain and collect leachate which may be hazardous and well as reducing the production of leachate through capping.

LANDFILL LINING & LINING PROTECTION

- Separate waste from subgrade soils and protect ground water from contamination of leachates
- Contain, filter and collect leachate
- Maximise the performance of on-site material or fill

LEAK DETECTION

- Smart geotextiles are used to detect pinhole leaks
- More economical liner integrity surveys and management

LEACHATE DRAINAGE SYSTEMS

- Drainage system lowers hydraulic head on the liner and reduces heat in the waste body
- High flow rates are maintained under large confining pressure by resistance to crushing
- Leachates are drained efficiently to enable treatment

CAPPING SYSTEMS

- Prevent continued leachate generation and gas dispersion
- Minimise impact on the environment

GAS COLLECTION SYSTEMS

- Minimise air pollution by capturing generated gas and venting
- Efficient gas collection helps prevent breaches in capping

SEDIMENT DAMS & LEACHATE PONDS

- Detains leachate for treatment through evaporation or dewatering
- Protects ground water and waterways from contaminants

EROSION CONTROL & SITE REHABILITATION

- Prevent erosion to reduce run-off into waterways
- Encourage revegetation to protect slopes from degradation

PROTECT THE ENVIRONMENT THROUGH CONTAINMENT OF CONTAMINANTS

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

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™

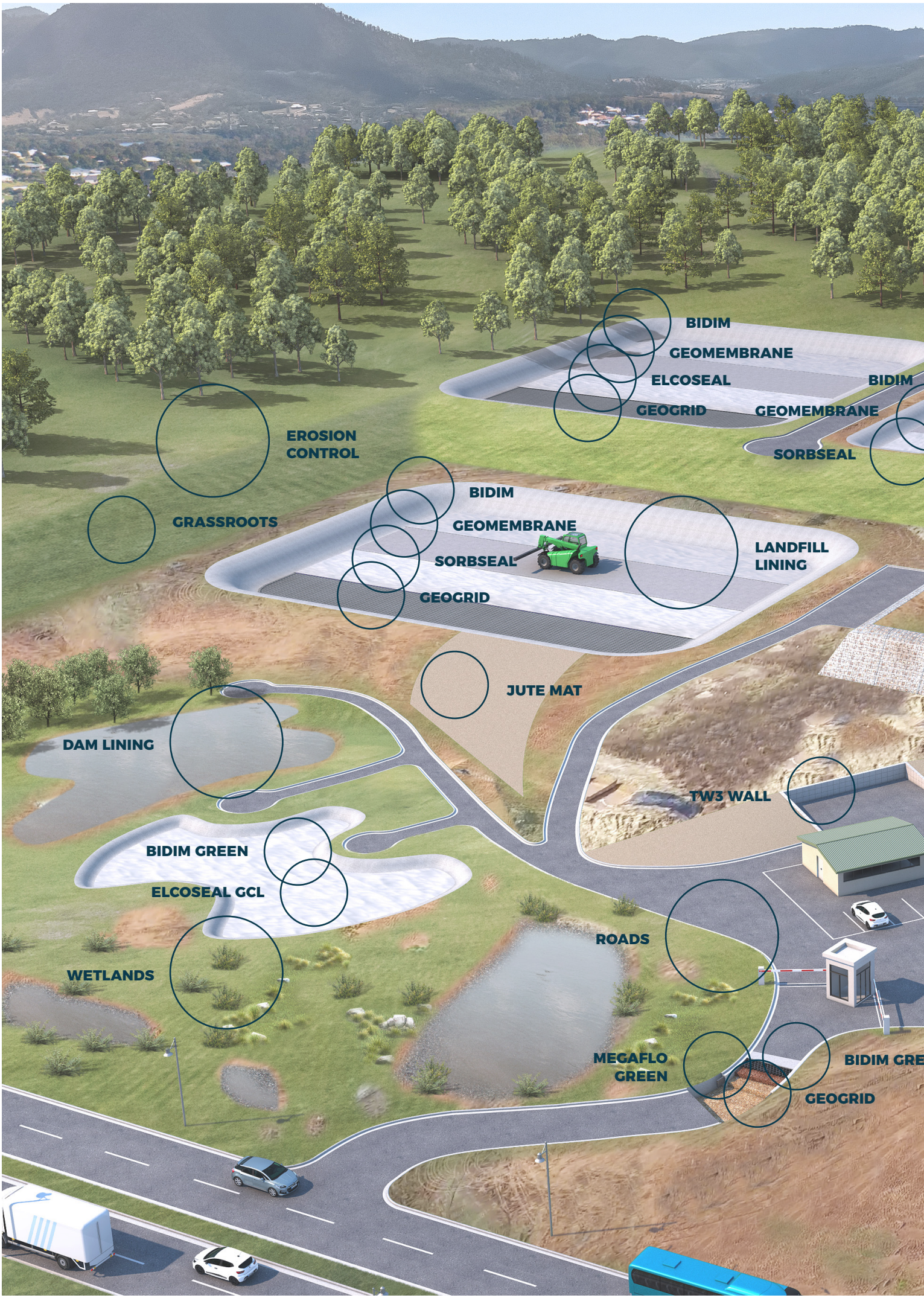
bsi. ISO 9001 Quality Management

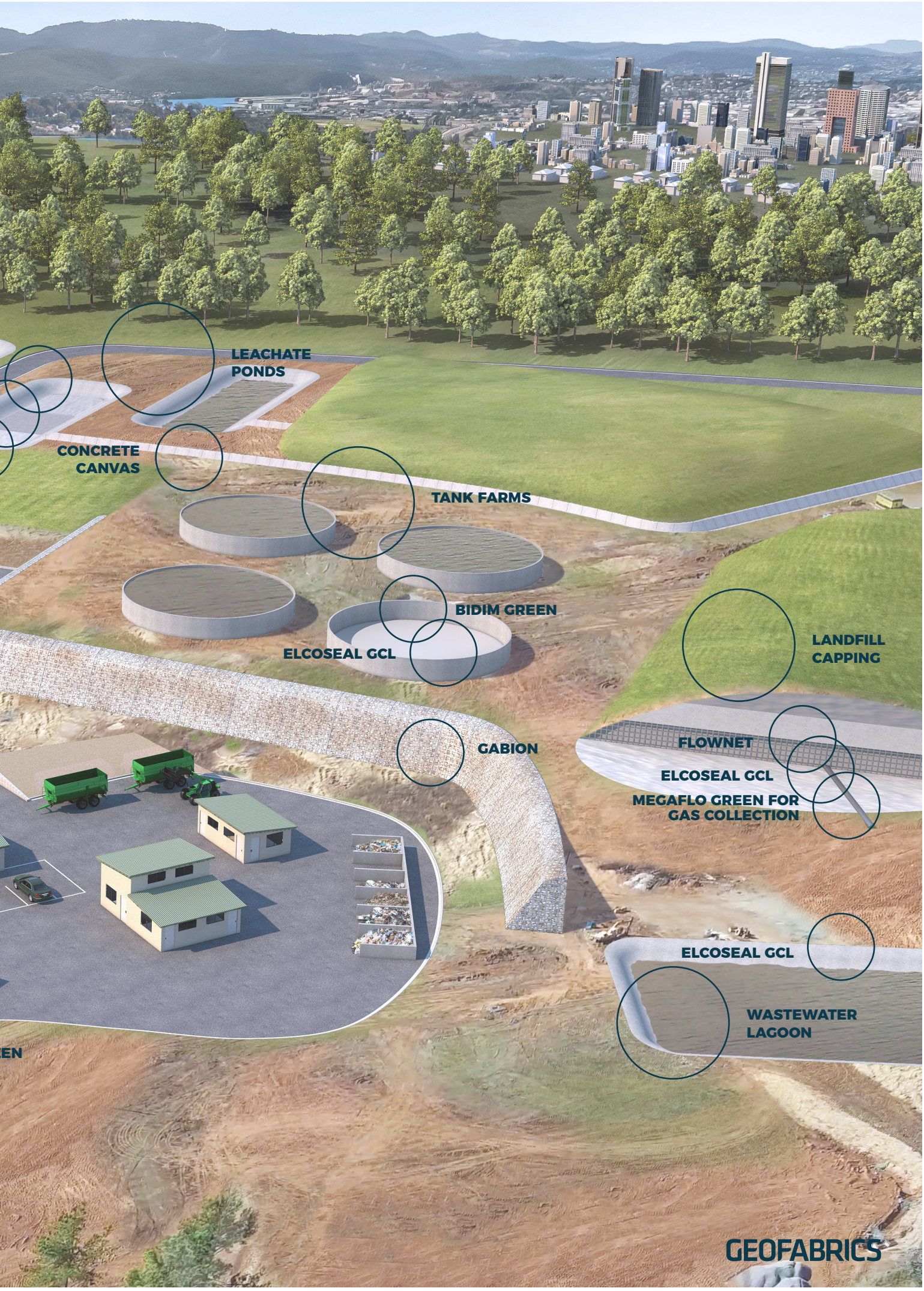
Infrastructure Sustainability Council MEMBER

35+

years of reliable supply

GEOFABRICS®


BIDIM
GEOMEMBRANE
ELCOSEAL
GEOGRID
BIDIM
GEOMEMBRANE
SORBSEAL
EROSION
CONTROL
GRASSROOTS
BIDIM
GEOMEMBRANE
SORBSEAL
GEOGRID
LANDFILL
LINING
JUTE MAT
DAM LINING
TW3 WALL
BIDIM GREEN
ELCOSEAL GCL
ROADS
WETLANDS
MEGAFLO
GREEN
BIDIM GRE
GEOGRID


LEACHATE PONDS
CONCRETE CANVAS
TANK FARMS
BIDIM GREEN
ELCOSEAL GCL
LANDFILL CAPPING
GABION
FLOWNET
ELCOSEAL GCL
MEGAFLO GREEN FOR GAS COLLECTION
ELCOSEAL GCL
WASTEWATER LAGOON
GEOFABRICS

Landfill construction

Geosynthetic engineering allows for the construction of Geosynthetic engineering in landfill where construction can achieve a cost benefit and improved environmental performance when compared to traditional engineering techniques.

Reduces
aggregate usage

GCLs allow more
landfill volume

LANDFILL LINING & LINING PROTECTION

Today's landfill sites need to withstand increasing waste volumes and more hazardous leachate chemistry. Compacted Clay Liners (CCL), the preferred lining system of the past, now have the potential to react adversely with some leachates resulting in poor performance and the possibility for leachate to contaminate groundwater.

The design aim is to contain and collect leachate through engineered geosynthetic lining systems. A polymeric primary liner (generally HDPE) is now recommended and depending on the leachate chemistry, a secondary liner is used below of either CCL or Geosynthetic Clay Liner (GCL). We offer comprehensive lining systems comprising our Australian made Geosynthetic Clay Liner (GCL), Elcoseal and hybrid GCL (hGCL) Sorbseal.

- Lining system at base of landfill cell separates waste from subgrade soils and protects ground water from contamination of leachates
- GCLs such as Elcoseal can be installed on slopes significantly steeper than the maximum allowable slope for a CCL
- The performance of a GCL must be established with the site chemistry as outlined in the Victorian EPA BPEM Guidelines
- Sorbseal works as a barrier to liquids in the same way as a regular GCL, but also helps trap a wide range of contaminants, including potentially dangerous Per- and Polyfluoroalkyl Substances (PFAS)
- Geofabrics has conducted bentonite testing regimes during project supply to establish compatibility and regulatory performance for the life of the project
- Specialty reinforced PVC geomembranes such as Coolguard is engineered for use in areas where primary and/or secondary containment of hydro-carbons, liquids, aggressive chemicals and other regulated substances is required
- Coolpro reinforced polypropylene liners, with exceptional UV resistance excel under some of the most demanding conditions to meet or exceed the critical challenges of liquid containment and pollution control
- Cushion geotextiles, including Bidim provide liner protection at a fraction of the cost of a sand protection layer

LEAK DETECTION

The technology built into the Bidim C range of geotextiles offers an effective, lower cost means for designers and installers of lining systems to undertake liner integrity surveys, in newly constructed containment cells.

- Pin holes can be detected in a membrane layer above using standard liner integrity survey equipment
- Installation does not require special skills or equipment as the geotextile does not contain any wires and there is no welding required
- Spark or arc testing can be conducted to ASTM 07953 at as low as 1kV

RECOMMENDED LINING & CAPPING PRODUCTS

Bidim C conductive non-woven geotextile
Bidim Green non-woven geotextile
Bidim non-woven geotextile
Coolguard geomembrane
Coolpro polypropylene geomembrane liner
Elcoseal geosynthetic clay liner
Flownet drainage geocomposite
Geoweb cellular confinement geocell
Megaflo Green socked slotted drain pipe
Sorbseal hybrid geosynthetic clay liner
Teranap bituminous geomembrane
Trinet drainage geocomposite

RESPONSIBLE LANDFILL MANAGEMENT STARTS WITH THE BEST CONTAINMENT

PROTECTING THE ENVIRONMENT BY COLLECTING GAS AND LEACHATE FOR TREATMENT

GAS COLLECTION SYSTEMS

Significant quantities of gas are generated from the decomposition of waste in a landfill. The most common gases produced are methane, carbon dioxide and other odorous compounds. It is essential that these gases are vented and captured by an efficient gas collection layer to minimise air pollution.

- If gas collection is not provided, breaches in the capping / closure system can occur
- Flownet biaxial geocomposite can be used in the capping layers to remove gas from below the liner and prevent 'boils', or localised areas of high gas pressure
- The gas is able to flow quickly through the two-dimensional structure to discharge points where the gasses are diverted

LEACHATE DRAINAGE SYSTEMS

While the Geofabrics team will design a leachate collection system for the potential volumes generated, the primary function is to prevent pressure heads acting directly on the lining system.

- The traditional configuration is a 300mm drainage aggregate covered by a Bidim separation geotextile
- Drainage layers need to be incorporated into base lining systems to lower the hydraulic head on the liner and reduce the heat in the waste body, both of which negatively influence the performance of the system
- With a Trinet triaxial geonet, we can provide a cost-effective alternative to traditional gravel drainage layers on steep side slopes and removes the need for liner protection geotextiles
- Heavy duty geonet provides high flow rates under large confining pressures as the 3-dimensional structure is able to maintain a stable shape which resists crushing
- Megaflo flat panel drains provide a simple alternative to trenched round pipe drainage systems which are difficult to construct and are often weak points in any lining system
- Megaflo is able to resist large vertical loading encountered in many landfill applications, properly designed systems have proven effective under fill depths of up to 70m

SEDIMENT DAMS & LEACHATE PONDS

We can assist in the removal, transfer and treatment of leachates to protect groundwater from contamination. Geofabrics lining systems contain waste water for treatment by evaporation or mechanical dewatering.

Removing fine sediments from site runoff can be a costly exercise. Sediment management should include surface erosion products and silt fences to minimise volumes entering suspension.

- Geotube is a cost-effective dewatering system that uses high strength geotextiles with unique filtration and retention properties
- 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 significant 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

Protection
is a critical part of all waste projects

PFAS
detected in
35
landfill
sites across Australia

Megaflo Green
effective under fill depths of up to
70m

RECOMMENDED GAS & LEACHATE COLLECTION PRODUCTS

Bidim Green non-woven geotextile
Flownet drainage geocomposite
Trinet drainage geocomposite
Megaflo Green socked slotted drain pipe

RECOMMENDED DAMS & LEACHATE POND PRODUCTS

Bidim C conductive non-woven geotextile
Bidim Green non-woven geotextile
Geosynthetic cementitious composite mat
Elcoseal geosynthetic clay liner
Megaflo Green socked slotted drain pipe
Sorbseal hybrid geosynthetic clay liner

GEOFABRICS®

Ground Control

We can assist with effective ground control measures and systems to address slope stability issues and reinforce embankments.

Enables soil slope construction of up to 70°

SLOPE REINFORCEMENT & SUBGRADE STABILISATION

Geosynthetics can be used to reinforce embankments and steepen slopes constructed from site-won material. Products such as Tensar RE geogrids and Geofabrics' Geomesh wire mesh systems enable the construction of reinforced soil slopes at angles up to 70°, using a geotextile or mesh face, eliminating the need for a full-height structural wall.

- Geomesh Rock wire mesh systems offer long-term stability, proven durability, design simplicity, cost-effectiveness, and rapid installation, making it an ideal Mechanically Stabilised Earth (MSE) wall option for challenging slope and embankment applications
- Ground stabilisation solutions reduce volumes of imported fill and improve the engineering performance of site soils available for construction

Fully biodegradable erosion control options

ACCESS ROADS

Construction of embankments and platforms over poor quality subgrade material can be costly when importing material. Incorporating geotextiles or geogrids between poor subgrade and quality fill results in considerable savings in time and materials.

- Approximately 80% more fill is required when constructing over a subgrade of CBR 1 without a geotextile separation (USA Federal Highways Administration)
- Bidim Green geotextiles are used extensively in construction of roads and embankments over soft ground
- The high elongation characteristics (>50%) of Bidim non-woven geotextiles limits installation damage which ensures long term performance
- Light grade triaxial geogrids can be deployed where subgrade is too soft to allow access for deployment of Bidim Green geotextiles

EROSION CONTROL & SITE REHABILITATION

Geosynthetic erosion measures can be deployed rapidly to prevent loss of surface sediments and organic deterioration of soils. Long term, the fabric provides a matrix to retain seed and soil and improve the shear resistance of future revegetation.

- The selection of natural and/or synthetic materials depends on the topography, hydraulic conditions and required longevity
- Jute Mesh is an organic, loose weave cargo net mesh used for erosion control and seed establishment used in relatively low flow environments up to 12 months
- In contact with the subgrade, Jute Mesh retains sediment and improves shear properties while restricting overland flow and loss of seed and sediment
- Grassroots is a tight weave synthetic erosion control mat designed to retain maximum sediments while encouraging maximum revegetation
- Able to withstand high velocity water flows both during seeding and sediment control

HYDRAULIC STRUCTURES

In waste facilities, Geofabrics can assist in managing variable levels and slopes to ensure an efficient and economical use of the site.

- Geofabrics Geobox gabion baskets filled with rock from the site can be used to form flexible, permeable, monolithic structures used for erosion control for bank stabilisation
- Keystone and Verti-Block concrete block systems are fast and economical ways to construct retaining walls where required

RECOMMENDED SLOPE REINFORCEMENT PRODUCTS

Geomesh Natural wire mesh system
Geomesh Rock wire mesh system
Miragrid GX geogrid
Uniaxial geogrid
Biaxial geogrid

RECOMMENDED ROAD PRODUCTS (SUBGRADE STABILISATION)

Bidim Green non-woven geotextile
Mirafi PET woven geotextiles
Megaflo Green socked slotted drain pipe
Triaxial geogrid

RECOMMENDED EROSION CONTROL PRODUCTS

Grassroots synthetic erosion control mat
Jute Mesh biodegradeable erosion control mat
Jute biodegradable erosion control mat

RECOMMENDED SLOPE PRODUCTS (HYDRAULIC STRUCTURES)

Geobox gabion basket
Keystone TW3 concrete block retaining wall system
Verti-Block interlocking concrete block

GEOSYNTHETIC SOLUTIONS THAT ENSURE SAFETY AND ENABLE SITE REHABILITATION

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, 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 ISO 9001 Quality Management
FS 673633 FS 590175

Infrastructure Sustainability Council MEMBER

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

GEOFABRICS®
Sustainable solutions