

WASTE | SMARTER SOLUTIONS

A photograph showing four construction workers on a large white geosynthetic liner at a landfill site. One worker in the foreground is kneeling, another is standing nearby, and two others are further back. The background shows a vast, flat landscape under a clear blue sky.

GEOFABRICS®

AUSTRALASIA'S
GEOSYNTHETIC
SPECIALIST

An aerial photograph of a large-scale waste management or landfill site. The upper portion of the image shows a dark, textured surface, likely a geosynthetic liner, with several black pipes running across it. Two small figures are visible on the liner, highlighting its scale. The surrounding area is a mix of brown earth and lighter-colored material, possibly cover soil or different types of waste. In the bottom left corner, there's a red industrial building and some smaller structures. The overall scene conveys a sense of industrial activity and environmental management.

**Geofabrics are committed to exce
smart solutions for the wast**

An aerial photograph of a large landfill site. The image shows several distinct layers of materials covering the ground. On the left, there is a thick, light-colored layer with a prominent woven texture, likely a geotextile or liner. To its right is a lighter, more crumpled material, possibly a different type of liner or a cover. Further right, there is a dark, textured area that appears to be a compacted layer of material. The overall appearance is one of a managed waste disposal facility.

NEW CHUM LANDFILL, IPSWICH, QUEENSLAND, AUSTRALIA

**Elcoseal Geosynthetic Clay Liner and bidim Nonwoven Geotextile used
in a landfill lining system**

**Excellence and innovation, providing
safe and containment sectors.**





It's about working smarter

Geofabrics' team is the most experienced geosynthetic waste and containment team in Australasia. We work with our clients to develop containment systems which are backed by years of research and are designed to exceed regulatory guidelines. On each project we undertake we have a singular focus: protect the environment through the control of hazardous leachates and liquors using smart products, smart solutions and smart people to help our clients mitigate environmental risk through world leading research and design and innovative product development.

BONNY GLEN LANDFILL, RANGITIKEI DISTRICT, NEW ZEALAND

Elcoseal Geosynthetic Clay Liner used for liquid containment in landfill



LANDFILL LINING SOLUTIONS

The preferred lining system for landfill to the early 1980s was a Compacted Clay Liner (CCL) which was fundamentally designed to minimise the passage of leachate. With increasing waste volumes and more hazardous leachate chemistry, CCLs have potential to react adversely with a resultant loss of performance and potential for leachate contaminating groundwater. The design aim now is to contain and collect leachate which is achieved through Engineered Geosynthetic Lining Systems. The preferred composite lining system for MSW Cells has become a Polymeric Primary Liner (generally HDPE) and specified

according to the leachate chemistry, with a secondary liner below comprising a CCL or Geosynthetic Clay Liner.

Geofabrics offers comprehensive lining systems comprising our Australian made Geosynthetic Clay Liner (GCL), Elcoseal and Coolguard, specialty geomembranes designed for applications in extreme chemistry. Our solutions for the landfill sector also include cushion geotextiles for liner protection including Texcel and bidim at a fraction of the cost of a sand protection layer.

LEAK DETECTION

bidim C Range nonwoven geotextile is the World's first commercial conductive geotextile made possible with imgne® X3 geotextile graphene technology. bidim C Range offers an effective, lower cost means for designers and installers of lining systems to undertake liner integrity surveys in newly constructed containment cells.

The technology built into bidim C Range only requires overlap of the geotextile to deliver the conductivity required for pin hole detection in a membrane layer above using standard liner integrity survey equipment. There is no welding required and the geotextile does not contain any wires - meaning installation does not require special skills or equipment. Just roll it out with approximately 100 mm overlap on all edges. Spark or arc testing can be conducted to ASTM D7953 at as low as 1kV.



LEACHATE DRAINAGE SYSTEMS

Trinet triplanar geonets provide a cost effective alternative to traditional gravel drainage layers on steep side slopes. The three dimensional triplanar structure of Trinet will perform better than traditional biplanar geonets and maintain high flow rates under large confining pressures. This results in high crush resistance and low intrusion of Geotextiles when soil or soft boundaries are applied under load. The replacement of a gravel layer with Trinet will remove the need for liner protection geotextiles.

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 70 m.

The leachate collection system is designed based on the potential leachate volumes generated but the primary function is to prevent heads acting directly on the lining system. The traditional configuration is a 300 mm drainage aggregate covered by a bidim separation geotextile.

CAPPING SYSTEMS

All landfills require some sort of capping system to prevent continued leachate generation and prevent the dispersion of gas which has a harmful effect on the environment. The choice of liner for a landfill cap is heavily dependent on the likely settlement of the waste in the landfill cell. Factors such as depth, compaction level, and make up of the waste will impact on the potential settlement. In cases where large differential settlements are expected, the use of traditional lining membranes such as HDPE (max.

strain 0.25%) and compacted clay liners (max. strain ~ 7%) are not recommended. GCLs provide a distinct advantage in this area with allowable elongations ranging from 15% for the standard grades, to 30% for the heavy composite grades.

Geofabrics has experience in construction methodology and is able to advise on techniques and products that suit the site specific application as well as site specific shear testing.

WASTE ROCK & SOIL CAPPING

Geosynthetics can be used extensively to cap tailings dams or waste rock detentions. Capping can be achieved using low permeability Elcoseal GCL and geomembrane barriers to meet regulatory guidelines, incorporating Megaflo and drainage geocomposite layers to remove head pressures acting on the liner. Geosynthetics can be used in permeable barriers to rehabilitate waste rock and problem soils, providing

flexible solutions to treat dispersive/reactive soils, restrict Acid Metalliferous Drainage and Acid Sulphate Potential. Reagent barriers containing media designed to enter solution and treat subsoils can be encapsulated in bidim geotextiles, with careful analysis of the filter properties enabling the choice of suitable geotextile such as Texcel or bidim.

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.

In capping layers, the use of Flownet biaxial geonets is often used to remove gas from below the liner and prevent 'boils', or localised areas of high gas pressure, occurring in the liner. The gas is able to flow quickly through the two dimensional structure to discharge points where the gasses are treated.

DEWATERING OF SEDIMENT DAMS & LEACHATE PONDS

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. A cost-effective alternative is to make use of geosynthetic dewatering systems. Geotube dewatering technology uses high strength geotextiles with unique filtration and retention properties to provide solutions to mining and mineral processing. 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.

PORSMITH LANDFILL, CAIRNS, QUEENSLAND, AUSTRALIA

Elcoseal Geosynthetic Clay Liner, Megaflo Flat Panel Drain and Trinet Triaxial Drainage Net used in a landfill capping system



WASTE & CONTAINMENT PRODUCT SOLUTIONS



ElcoSeal
Geosynthetic Clay Liner



Flownet
Biplanar Drainage Net



Trinet
Triplanar Drainage Nets



bidim C Range
Conductive Geotextile



bidim
Nonwoven Geotextiles



Texcel
Nonwoven Geotextiles



Megaflo
Flat Panel Drains



Coolguard
Polypropylene Liners



Geotube
Dewatering Containers

QUALITY & TRACEABILITY

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

We operate two quality assured testing facilities in Australia and products are tested frequently and transparently.

Our reliability as a supplier of high quality goods is borne out by our track record spanning more than 35 years of product supply for Australian infrastructure projects.

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.

In keeping with our commitment to quality assurance, the products we manufacture can be readily identified from the labelling on their wrappers.

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.

Importantly, this means that the product you have ordered and the grade you have paid for is the product and grade that is delivered to site.

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.



UNMATCHED EXPERTISE & SUPPORT

We draw from our experience to tailor design and provide geosynthetic solutions to best meet our client's performance and economic requirements.

Our superior technical support includes design and construction suggestions, certified designs, construction and installation systems.

Our comprehensive design advice for projects can include 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.

To assist engineers with this process, the Geofabrics 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.

Our team also provides on-site installation training as well as guidelines and diagrams to assist contractors or maintenance crews.



TECHNICAL LEADERSHIP

As the Australasian leader in geotextiles and geosynthetics, we pride ourselves on our reputation for supplying world-class technical leadership and engineering support through our innovation, research, industry education, design and independent testing services.

Geosynthetic Centre of Excellence

Geofabrics' Geosynthetic Centre of Excellence is a specialist R&D laboratory that works with clients to develop the right geosynthetic solution for their waste and containment problems.

Based in southern Queensland the Geosynthetic Centre of Excellence 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 – a major step forward to ensure the right solution is adopted.

The Geosynthetic Centre of Excellence is committed to precision analysis and comprehensive reporting. Analysis is performed according to Australian and International test methods and comprehensive test reports are generated, including results, photos, graphs, test conditions and details of the apparatus 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.

Geosynthetic Testing Services

Geosynthetic Testing Services is a commercial testing laboratory that specialises in the testing of geosynthetics. It is widely used by clients to ensure they are meeting their Construction Quality Assurance obligations.

Geosynthetic Testing Services is a fully independent, confidential, NATA registered laboratory based in Albury. With quick turnaround times and competitive rates, Geosynthetic Testing Services supports the infrastructure industry in Australia.

Central Design Hub

Geofabrics Central Design Hub can provide our clients with specification reviews, design suggestions and certified designs for geosynthetic applications.

Innovation & Education

As leaders in our industry we believe it is our role to provide technical and practical education to engineers about the use of geosynthetics in infrastructure projects.

Our team conducts technical seminars for engineers and contractors; we run in-house workshops for our clients and undertake lectures at universities around Australia and in New Zealand.

We also support the next generation of engineers through sponsorship of PhD candidates. We aim to extend their knowledge through mentoring opportunities and through provision of access to the Geosynthetic Centre of Excellence to allow candidates to test and validate their PhD thesis - in turn expanding the knowledge of our industry.



GEOFABRICS®

AUSTRALIAN MANUFACTURED

Many of the products we supply are manufactured in our two manufacturing plants in Albury (NSW) and southern Queensland. We employ more than 100 manufacturing staff and we return more than \$7.5 million per annum into the regional communities in which we operate.

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 Geofabrics 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.

HENRY STREET LANDFILL, CLAYTON, VICTORIA, AUSTRALIA

Elcoseal Geosynthetic Clay Liner, Megaflo Flat Panel Drain and Trinet
Triplanar Drainage Net used in a landfill capping system





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Coolguard is a registered trademark of Cooley Group.

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