



Global Synthetics

# geonews

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APRIL 2012 // ISSUE

## Welcome...

This newsletter updates our readers on a range of significant projects that **Global Synthetics** have had involvement over the previous few months. We are proud of the solutions that have been achieved and the positive outcomes for our clients.

Speak to one of our engineers located throughout Australia or visit our website at [www.globalsynthetics.com.au](http://www.globalsynthetics.com.au) and see how we may assist in your next project.

## LATEST NEWS FROM GLOBAL SYNTHETICS

### PROPEX GEOTEXTILES ARE FULLY ACCREDITED

**Global Synthetics** is pleased to announce as part of an on-going commitment to product quality within the Australian Geosynthetics market, the manufacturing facility of their distributed nonwoven geotextile, **Propex**®, has been awarded **A2LA**® laboratory accreditation. This accreditation has been gained across an extensive range of Australian Standard Methods of Test for Geotextiles and reflects the importance that we place on product quality and product performance.

Through a **NATA**® Mutual Recognition Programme it recognises that the product quality test reports issued by the factory (A2LA Accreditation) are acceptable under the most stringent quality requirements imposed by our Australian clients.

### NEW RANGE, NEW WIDTHS OF GEOTEXTILE

**GEOFIRMA**® is the brand name of a new range of nonwoven geotextiles that have been released by **Global Synthetics** across Australia. Global Synthetics have spent the last two years developing a virgin polyester nonwoven continuous filament geotextile for the local Australian market. An extensive range of grades is available for use by the local Australian market in applications of filtration, separation, protection and drainage to replace more traditional engineering treatments using expensive quarried materials.

**Product is available in a standard 4m and NOW a 6m roll width, in a wide range of grades to suit specific applications.**

### NEW WEB SITE

We recently launched our new web site [www.globalsynthetics.com.au](http://www.globalsynthetics.com.au)

We think it is the best in the business, with lots of information to assist designers and contractors make great product selections. You can easily contact us via our web site, throughout Australia and the Pacific Region, or by telephone and speak directly to one of our engineers who will assist you.



## Bentofix® Geosynthetic Clay Liner (GCL) Caps Off Bayersville Landfill

**M**ackay Regional Council recently called tenders for the capping of the Bayersville Landfill in Mackay Qld.

The landfill had come to the end of its usable life and required closure. The closure of a landfill requires a highly impermeable layer to be placed over the top of the landfill to prevent rainwater entering the waste and contributing to long term leachate problems that may enter groundwater. Mackay Regional Council took the environmental initiative in calling for tenders to undertake such works.

The original specification from Council called for 0.5m of high quality, compacted clay to be placed to prevent water entering the landfill (all covered by 0.15m of top soil for vegetation). One of the tenderers, Vassallo Constructions, were aware of a product that is marketed by Global Synthetics and is a proven alternative to compacted clay layers. The Bentofix® Geosynthetic Clay Liner (GCL) is a high quality sodium bentonite powder that is sandwiched between confining layers. The encapsulated clay layer swells upon contact with moisture and provides a highly effective, proven replacement for traditional clay layers. Vassallo Constructions offered the Bentofix® product as an alternative to Council. All relevant documentation was provided to Council detailing the technical performance, construction methods and case studies where the product had been successfully used in the past in similar applications.

Vassallo Constructions are a well established Mackay based construction firm that has many years experience in the general civil and construction market.

Bentofix® GCL offers significant savings due to transportation and placement costs of this product over the cartage and placement of clay. The use of Bentofix® GCL enabled the capping layer to be reduced by 0.35m.

Vassallo Constructions were awarded the tender based on their well researched and alternative bid using Bentofix® GCL.

Mackay Regional Council has been able to save monies that can be spent on other projects for the benefit of the residents and visitors of the region.

Capping of the landfill commenced in November 2011 with an area to be covered of more than 170,000m<sup>2</sup>. Global Synthetics provided Vassallo Constructions with two speciality deployment bars for placement of the Bentofix® GCL.

Vassallo Constructions are laying an average of 5000m<sup>2</sup> of Bentofix GCL a working day. Peak lay rates have been achieved up to 9000m<sup>2</sup> per day.

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# Secugrid®/Combigrid® Reinforces Hardstand in Brisbane for Precast Tunnel Segments for Legacy Way

In 2011, TRANSCITY was selected as the contractor to design, construct and operate the Legacy Way Toll Road in Brisbane's west. Legacy Way, once complete, will connect the Western Freeway at Mount Coot-tha with the Inner City Bypass at Kelvin Grove. The TRANSCITY conglomerate includes BMD Constructions, and international partners with vast experience in tunnelling including Italian Company GHELLA, and Spanish Company ACCIONA. The Legacy Way Toll Road is an initiative of the Brisbane City Council and intends to reduce travel time between the Centenary Bridge and the Inner City Bypass and reduce traffic on the Milton Road and Coronation Drive. It is scheduled for completion in 2014.

The project involves construction of a 4.6 kilometre road tunnel using a combination of tunnel boring machine (TBM) and cut and cover techniques. The road tunnelling is completed with the installation of precast concrete tunnel segments. These segments are already being cast and stacked in Brisbane ready for installation.

The precast concrete segments weigh some 8 tonne each and were to be stacked 9 units high stabilised on concrete feet and separated by two support beams. Each stack of precast concrete tunnel segments would weigh some 70 tonne spread over the two concrete feet creating a normal pressure of more than 400kPa. Combined with the dead load of the concrete segment stacks the solution also needed to consider the live load of a 16 tonne forklift truck used to stack the segments.

Global Synthetics were contacted to provide assistance in strengthening a granular pavement suitable for stacking of the precast units. Limited depth was available for placement and compaction of the granular pavement and the subgrade was a relatively weak 2% CBR at the selected location for the hardstand pavement.

To overcome this, Global Synthetics provided a solution to the client adopting 2 layers of geosynthetic reinforcement to stabilise the subgrade and support the imposed loads of the precast concrete units.

Global Synthetics, in partnership with Naue, the international manufacturer of many geosynthetic products including **Carbofol**® Geomembranes, **Secugrid**® Geogrids, **Combigrid**® Composite Geogrids and **Bentofix**® Geosynthetic Clay liners, provided a solution of 2 layers of geosynthetic to achieve the desired outcome.

The product selected at the subgrade interface was the **Combigrid 40/40 Q1** product which provides a reinforcement function to the pavement, but also a separation function by way of the unique integral geotextile incorporated in the Combigrid composite geogrid. The separation function ensures that the imported pavement gravels do not mix with the fine grained subgrade soils, reducing the risk of weakening of the reinforced base course over time.

The solution also required a second layer of geogrid installed midway in the reinforced base course section to provide additional reinforcement and support. The geogrid adopted was **Secugrid 40/40 Q1 geogrid**.

The pavement was completed in late 2011 and will soon be stacked with concrete segments ready for use on the Legacy Way project in Brisbane.

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# Wanneroo Drainage Scheme a Winner

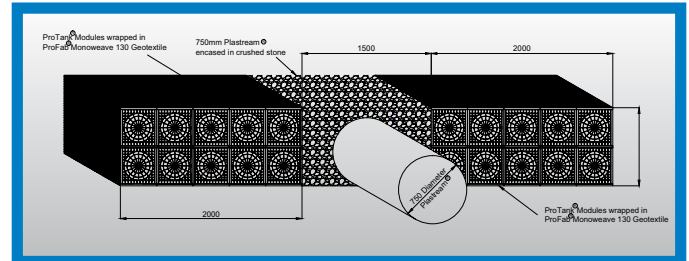
Consulting engineers Westcoast Engineering chose the Global Synthetic's ProTank® / Ellipse® Modules in conjunction with Rocla Plastream® slotted pipe to meet the stringent requirements of the City of Wanneroo (WA) & solve the site drainage issues for the Landsdale Road subdivision.

The Global Synthetics design provides unrestricted access for inspection and clean out of any storm drainage debris while preventing any of this material from entering the underground infiltration modules. The benefits of this design compared to more traditional systems include;

- Ease of clean out due to a fully rigid pipe surface.
- Total prevention of drainage debris from entering infiltration modules.
- Greater rates of infiltration due to larger wetted surface area.
- Greater storage capacity to excavation ratio due to modules having a 95% void.
- Smaller footprint resulting in less excavation & less land being lost for drainage.
- Less overall design height allowing installation in areas of high water table.
- High compressive strength enabling minimum cover for trafficable areas.
- Substantially less crushed rock required than with other systems.

All these benefits add up to fast installation, easy maintenance & lower cost. Also, the modular design of the ProTank®/Ellipse® allows multiple structural 'plates' which further increase the compressive strength to cater for increased static or dynamic loads. The ProTank®/Ellipse® system is purpose designed to provide stormwater infiltration & harvesting for a variety of applications including, public open spaces, sports fields, road kerb/gutter & reserves, swale drains, car parks, along with roof & paved surface collection.

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LANDSDALE ROAD SYSTEM during construction showing gross pollutant collection pipe.

# Hunter River Remediation at Kooragang Island

At \$600million cost, BHP has undertaken one of the largest remediation projects of its kind. The project involved the removal and treatment of approximately 800,000 cubic meters of contaminated river sediments adjacent to the former Mayfield steelworks. The site had operated as a steel making facility for 85 years.

The dredged material was treated and tested prior to being placed within a state of the art landfill facility at Kooragang Island. As part of the lined landfill system Global Synthetics provided the Composite Drainage Geonet called PRONET® TN220. The ProNet is a high quality virgin HDPE biplanar drainage net. In this application the core net was laminated with a 200g/m2 polypropylene geotextile on both sides of the geonet.

As part of a landfill lining system, PRONET® applications include:

- Landfill drainage systems
- Landfill leak detection systems
- Membrane protection
- Landfill cap drainage systems
- Leachate collection & removal
- Gas venting systems
- Liquid collection and management of liquid in a wide range of applications

For further information, contact [george@globalsynthetics.com.au](mailto:george@globalsynthetics.com.au)



# Applying GCL Knowledge: Bentofix® IQ

**W**hen NAUE invented the needle punching method of manufacturing geosynthetic clay liners (GCL's) in 1987 it entirely changed the field. The innovation significantly increased the shear strength of GCL's which expanded the range of applications. Now, as NAUE nears the 25th anniversary of this development the company is drawing upon its quarter of a century of Bentofix® GCL expertise in a new information series called Bentofix® IQ.

Bentofix® IQ addresses four key subject areas to understanding geosynthetic clay liners (GCL's):

## Technics, Quality, Application and Quality.

To provide a general theme to understanding the essential design and barrier selection criteria, the Bentofix® IQ approach utilises the classical four elements of water, fire, earth and air in describing proper GCL production, design, application and installation.

**Technics (Water)** focuses on how the high-quality, high swelling powdered sodium bentonite in the core of the Bentofix GCL creates the exceptional barrier against liquids that defines this class of geosynthetics. Additional discussion covers the needle punching processes and the outer nonwoven geotextile and how this provides long-term protection against physical, mechanical and hydraulic stresses

**Quality (Fire)** analyses the importance of GCL components from the bentonite quality to the selection of nonwoven fibres for the protective geotextile layers. The Quality brochure also outlines the importance of the Bentofix® Thermal Lock process which uses heat to thermally bond the entangled fibres with the high quality bentonite, thus increasing pullout resistance, extension of GCL life and improvement of factors of safety.

**Application (Earth)** explores the range of uses for Bentofix® GCL's: hydraulic applications like dams, canals, levees; landfill applications such as caps and base seals; infrastructure and environmental protection such as beneath roads and railways; and other containment applications such as used in the mining industry, secondary containment (e.g. fuel farms), tunnel lining and more.

**Ecology (Air)** shows the many ways in which the selection of Bentofix leads to significant environmental benefits. For example the carbon footprint of a project is greatly reduced when GCL's are used instead of conventional compacted clay for a barrier layer. Though significantly thinner, Bentofix greatly outperforms clay-only liners and requires only a fraction of the site space and transportation and installation costs.

Global Synthetics as the Australian Distributor of Bentofix GCL's can be contacted at [info@globalsynthetics.com.au](mailto:info@globalsynthetics.com.au) or our contact form on our web site [www.globalsynthetics.com.au](http://www.globalsynthetics.com.au) to receive your complimentary copy of these brochures.

For further information, contact [george@globalsynthetics.com.au](mailto:george@globalsynthetics.com.au)



## BENTOFIX® X 2 Geosynthetic Clay Liners

NAUE have recently released an addition to their Bentofix® geosynthetic clay liner (GCL) range. The well known and proven Bentofix® GCL can now be supplied with an additional laminated polyethylene layer that significantly improves the ability of the product to reduce gas emission. So now, in one product, liquids and gas containment can be significantly improved, without the need in many cases, to specify additional costly additional geosynthetic layers.

## Product Listing

PRODUCT TYPE	PRODUCT
Geotextiles - Nonwoven	ProFab®
Geotextiles - Nonwoven	Geofirma®
Geotextiles - Woven	ProFab®
Geotextiles - Reinforcement	ACETex®
Geogrids - Pavement	Secugrid®
Geogrids - Reinforcement	ACEGrid®
Rock Mattress	Link Mattress
Gabions	Link Gabions
Geosynthetic Clay Liners	Bentofix®
Geocells	Miracell®
HDPE Membranes	Carbofol® & ProLiner®
Geonet	ProNet®
Sheet Drains	ProDrain®
Drainage Cells	Nerocell®
Water Tanks Modular	Protank®
Erosion Blankets - TRM	Landlok®
Erosion Blankets - TRM High Performance	Pyramat®
Erosion Blankets - Biodegradable	Jutemaster®
Silt Fences	Global
Floating Silt Curtains	Global
Dewatering Tubes	ProTube®
Wick Drains	CeTeau®



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[www.globalsynthetics.com.au](http://www.globalsynthetics.com.au)

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