



Global Synthetics

geonews

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BORAL WESTERN LANDFILL EXPANSION CONTINUES WITH BENTOFIX® GCL



GEOTEXTILE SELECTION GUIDE

Global Synthetics have recently prepared a guide on the most appropriate geotextile to be used in a wide range of construction activities.

The guide addresses drainage, pavement construction, retaining wall and revetment applications and then suggests an appropriate geotextile grade to use.

The guide follows the specification requirements for a range of construction activities of the major road authorities in Australia and New Zealand.

This 16 page document summarises and suggests the appropriate grade in an easy to understand format. It is ideal for estimators, purchasing managers and designers.

Obtain a free copy mailed to you by contacting info@globalsynthetics.com.au

The Boral Western Landfill, occupying an exhausted quarry, is one of the largest landfills in the country with available airspace totalling more than 15,000,000m³. The facility began offering municipal and commercial waste management services to metropolitan Melbourne in 1999.

Multiple processes and procedures are employed at the landfill to minimise the potential for any adverse affects on the surrounding environment and community, and to ensure compliance with Victorian EPA regulations and Landfill Best Practice Environmental Management (BPEM) guidelines. Such processes include well defined methods in the construction of each cell, which must be lined with multiple protective layers to prevent leachate contamination of groundwater.

The Boral Western Landfill also features a state-of-the-art Biogas to Energy plant. This plant uses the gases that are generated from

decomposition of the waste material and converts it into enough energy to supply the power needs of around 4000 homes, 24 hours a day.

Recently, two new cells have been added to the facility, requiring the installation of 160,000 m² of liner. To meet the stringent requirements of the Victorian EPA and comply with the BPEM guidelines for landfill, **Bentofix® GCL** was chosen as the most effective product to ensure high safety factors for leachate containment.

Global Synthetics would also like to take this opportunity to thank all relevant parties in working together from the Client (Boral), Consultant (Meinhardt), Installer (Jaylon VIC), Auditor (ERM) and Head Civil Contractor Goldsmith Civil & Environmental in working together to provide a successful solution.

For more information contact

andrew@globalsynthetics.com.au

BRISBANE AIRPORT

New Parallel Runway – Geosynthetic Solutions by Global



Forecasts indicate that annual passenger numbers at Brisbane Airport will grow from 21 million in 2012 to around 50 million by 2035. The New Parallel Runway (NPR) project, owned and operated by the Brisbane Airport Corporation (BAC), is designed to deliver the capacity needed to meet the predicted continued growth in domestic and international passengers and air services into Brisbane. The NPR is located 2km west of the existing main runway and includes a new 3,300 metre long runway, more than 12km of taxiways, navigational aids, airfield infrastructure and hundreds of hectares of airfield landscaping. Work on the \$1.3 billion NPR began in August 2012.

The new runway will be constructed in two phases. Phase 1 involves the preparation of the site (2012-2018) which includes construction of access roads, dredging & reclamation works, sand surcharge on the NPR site and a ground settlement period. Phase 2 involves the construction of the pavements and airfield (2018 - 2020). Phase 1 Civil Works commenced in September 2012 and the new runway is expected to be operational by late 2020 allowing twice the arrival and departure capacity at the airport.

The Brisbane Airport is located at sea level. The 2700 hectare airport precinct sits on an old river delta which contains an abundance of soft and waterlogged soil. The natural ground material over most of the site is characterised by weak, soft clay material that does not provide adequate stability or support in its unaltered state.

Hall Contracting was appointed by the main contractor, Jan De Nul, for construction of the 1m diameter steel dredge pipe and maintenance roads. To overcome the problem of the very soft soil, the contractor and its joint venture consultant investigated

various solutions. Finally, the geosynthetic solution provided by Global Synthetics was chosen as the most technically compliant and economic solution. The final package involved installing the **Combigrid®** Geocomposite on top of the existing subgrade with a welded geogrid made of prestressed textured bars named **Secugrid®** that was installed as a second layer within the granular layers.

Combigrid® geocomposite is a combination of a welded prestressed bar geogrid (**Secugrid®**) and an integral nonwoven geotextile. This technology has proven to be ideal for construction on soft soils providing immediate reinforcement, separation, filtration and drainage all in one product. The contractor benefited from installation of one product that performs the role of two products. Apart from being the most economical solution, **Secugrid®** and **Combigrid®** provided higher installation damage resistance, higher stiffness and better performance compared to other proposed geogrids according to various national and international independent test results and success stories (Available per request).

The dredging and reclamation project started in 2013 and is expected to be completed around late 2014. This is to be followed by a surcharging/settlement period of approximately 4 years duration. To accelerate the settlement process, vertical wick drains are to be inserted into the ground over the site to a depth of up to 35m. This will allow the moisture to be drawn from the soil more quickly than the action of gravity alone. Global Synthetics has been awarded the supply of many millions of metres of **Ceteau® Wick Drain** for the new parallel runway construction.

For more information contact
jason@globalsynthetics.com.au

ACETex® Structural Geotextile for RMS (NSW) Highway Upgrade

Roads and Maritime Services engaged Thiess to design and construct the Frederickton to Eungai upgrade which is a major section of the Pacific Highway Upgrades. The construction project involves building 26 kilometres of four lane divided road which will link the Kempsey Bypass through to the existing dual carriageway North of Eungai.

A major requirement of this project involved the procurement of High Strength Woven Geotextiles – **ACETex®** for use in the construction of embankment support over soft ground, load transfer platforms and embankment support over piles.

Global Synthetics **ACETex®** Polyester is an engineered woven geotextile that has exceptionally high tensile strength characteristics at low levels of strain. These products may be constructed with strengths up to 1200 kN/m. Strains generated at characteristic tensile strength are typically less than 10%. Being composed of high tenacity polyester fibres, there are low creep strains when subject to high tensile loads. Creep strains of less than 1% at design loads of 40%+ of the initial tensile strength at 120 year design life are obtained.

Global Synthetics worked with Thiess to provide the appropriate documentation and Quality Assurance information to fully satisfy the project design and the requirements set by the Roads and Maritime specification R67 – High Strength Geosynthetic Reinforcement.

In total, Global Synthetics supplied approximately 200,000m² of **ACETex®** High Strength woven geotextile in various grades, widths and length rolls. Grade selection was dependent upon the ground conditions and application.

For more information contact

chris@globalsynthetics.com.au



ProFab® Supports New Runway At Onslow (WA)



The redevelopment of Onslow's aerodrome represents a major infrastructure boost to the regions transport hub in Western Australia. Works include a large new runway, taxiways & modern terminal building. Chevron have injected over \$30M dollars into the project with benefits extending beyond the resource industry (which include the massive Wheatstone LNG Project) into local businesses, residents & tourism.

The runway embankment design involved surface stripping of the existing mudflats & transfer of over 350,000m³ of fill to achieve the 105m x 2,200m footprint. In order to assist with stabilization over the soft foundation & provide a degree of insurance against upward migration of salt laden silts, the construction team opted to deploy a layer of nonwoven geotextile over the subgrade prior to placement & compaction of sub-base. **ProFab®** nonwoven needle punched geotextile was chosen for this purpose due to its ability to retain & separate fine sediments from the structural layers whilst maintaining a high degree of permeability.

The construction team also called upon Global Synthetics to provide a solution for erosion protection of the runway batters. This time, **ProFab®** ULTRA was selected as a puncture resistant filter beneath limestone rock to prevent washout through the armoured wall. In total, approximately 20,000m² of embankment batter was protected at an average gradient of 1:3 (H).

ProFab® ULTRA represents the heavy mass series of Global Synthetics geotextiles, ranging from 600g/m² up to 2,000g/m². **ProFab®** and **ProFab®** ULTRA both use specialised virgin 'staple fibre' technology which differentiates them from 'continuous filament' fibres commonly seen in the Australian market.

Approximately 155,000m² of combined **ProFab®** geotextile was installed for this scope. Construction manager Ean McDowell from Shire Of Ashburton reported that Global Synthetics had done an admirable job in delivering vast quantities of geotextile at short notice. The Shire quoted "Such an enormous and exciting project would not be possible without tremendous teamwork between all involved.."

For more information contact

sean@globalsynthetics.com.au

GLOBAL SYNTHETICS HITS THE STAGE!

As part of Global Synthetics mission in providing Continuing Professional Development in training and education in the field of geosynthetics, the group has also exhibited and presented at a number of recent Conferences. The industry sectors that Global Synthetics core businesses are aimed towards include; road and railway infrastructure; bridge and earth retaining structures; landfills and containment systems.

Our Applications Engineer, Amir Shahkolahi, recently presented a technical paper at the Conference on Railway Excellence (CORE 2014) in Adelaide. He co-authored a paper titled Advantages of Biaxial Welded Geogrids.

Global Synthetics also exhibited at Waste 2014 at Coffs Harbour. Our Applications Manager, Raymond Chow, presented a special talk on the next generation of lining systems; Coated GCLs.

At another exhibition, called the Earth Structures & Retention Conference in Sydney, focusing on retaining structures and slope stabilization, Raymond Chow presented a topic on Engineered Anchored Reinforced Vegetation System (ARVS) for Slope Stabilisation. This system, called **ArmorMax®** was developed in the USA to minimise shallow slip failures on channel banks and sloped embankments.

Future events to look out for in the second half of 2014 include; the 7th International Congress on Environmental Geotechnics (10-14 Nov.) in Melbourne, Victoria.

Finally, for our local business partners in Western Australia, Global Synthetics Perth office will also be making an appearance at the 7th International Conference on Scour and Erosion (2-4 Dec) in Perth.

For further information on any past or upcoming events, please do not hesitate to contact your local Global Synthetics' representative or visit globalsynthetics.com.au

Call us now for Global Expertise!



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®
Geomembranes	Carbofol® & ProLiner®
Geonet	ProNet®
Sheet Drains	ProDrain®
Drainage Cells	ProCell®
Water Tanks Modular	ProTank®
Erosion Blankets - TRM	Landlok®
Erosion Blankets - TRM High Performance	Pyramat®
Erosion Blankets - Biodegradable	JuteLok™
Silt Fences	Global
Floating Silt Curtains	Global
Dewatering Tubes	ProTube®
Wick Drains	CeTeau®



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For a comprehensive product catalogue, please email info@globalsynthetics.com.au

Call our Geosynthetic experts on:

■ SYDNEY PHONE: (02) 9725 4321
 ■ PERTH PHONE: (08) 9459 4300
 ■ BRISBANE PHONE: (07) 3865 7000

■ ADELAIDE PHONE: 0405 074 140
 ■ DARWIN PHONE: 0411 171 737
 ■ HOBART PHONE: 0405 074 140
 ■ MELBOURNE PHONE: (03) 9791 1772