



Global Synthetics
Australian Company – Global Expertise

AUSTRALIAN COMPANY // GLOBAL EXPERTISE

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geonews

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WELCOME

Global Synthetics is a 100% Australian owned company staffed by engineers with extensive experience in geosynthetics in Australian conditions. Large stock supplies are held throughout Australia to service your requirements efficiently.

This newsletter showcases some recent projects with which Global Synthetics has been proud to be associated.

Thank You

As 2018 draws to a close Global Synthetics would like to thank all of our associates for a great year.

We could not have achieved any success without your help. If you purchased, specified, transported, inspected or indeed, in any other way, had involvement with our company, we hope that it was positive for you and that we can continue our relationship through 2019 and the years beyond.

We certainly wish you and your family a Happy Christmas Break and that everyone is safe and returns to work refreshed and ready for a prosperous 2019.

Warmest Wishes

The Global Synthetics Team

Global Synthetics Promoting a Geosynthetic Solution for Replacement of Rock Rip-Rap and other Hard Armour Treatments

Geosynthetics encompass a wide range of materials and manufacturing processes that are relatively inexpensive, easy to install and engineered to deliver a specific benefit and have been designed to replace expensive natural materials such as rock aggregate.

The range of geosynthetic use is across a wide range of engineering applications in the fields of transportation, hydraulics, environmental and marine.

Examples are the use of geotextiles as filter products to replace aggregate, geogrids to enhance the engineering characteristic of in-situ soils such that stable slopes may be constructed with increased factors of safety and the use of manufactured lining products (geomembranes and geosynthetic clay liners) to contain liquids without a need to import costly lining clays.

In North America, the use of specialty geosynthetics are commonly used in channel and slope applications, that previously, may have been designed with rock rip-rap, concrete or block system solutions.

These specialty geosynthetic products are known as High Performance Turf Reinforcement Mats (HPTRM's). By definition these products must

have a tensile strength greater than 44kN/m. The Propex Pyramat range offers such a product and is approved for use by relevant authorities in North America.

A well-recognised design methodology has been developed by the US Federal Highway Administration (FHWA) and can be referenced at Hydraulic Engineering Circular 15 (HEC -15).

The FHWA recommends that hydraulic shear stress be used to determine erosion potential rather than a velocity approach. Shear stress is the tractive force developed from the flow of water along a channel that looks to dislodge or remove soil particles. Full details may be found at <https://www.fhwa.dot.gov/engineering/hydraulics/pubs/05114/05114.pdf>

Global Synthetics in conjunction with their principal are able to justify the use of all their erosion products with respect to performance levels both from a hydraulic and environmental respect. See how cost effective and environmentally beneficial the use of a HPTRM can be to you on your next project.

For further information please contact martin@globalsynthetics.com.au



A Complete Solution at Skippers Row



Located on the banks of Perth's Swan River in the City Of Bayswater, Skippers Row subdivision presented its developer with some unique challenges. Having overcome barriers with development approval due to environmental impact concerns over an adjacent bird sanctuary, the stakeholder then encountered the difficulties of dealing with a site which had been a dumping ground for uncontrolled fill since the early 1980s.

A range of solutions were considered and adopted after intensive geotechnical investigations of the in-situ alluvial foundation. The foundation improvements were achieved using a range of geosynthetic materials supplied by **Global Synthetics**. The

sequence of works proceeded as follows:

- 1) Grub and strip entire site.
- 2) Trench the perimeter to prevent compaction/vibration stresses to neighbouring properties.
- 3) Placement of 400mm limestone working platform.
- 4) Installation of approx 110,000 lineal metres of Global Synthetics **Ceteau**® wick drain at 1.0m centres.
- 5) Deploy approx 50,000m² of **Combigrid**® 40/40 high modulus composite geogrid to form working platform.
- 6) Place and compact approximately 200mm of gravel

followed by approximately 15,000m² of **Geofirma**® **AS200B** separation geotextile.

- 7) Placement of approx 2.0m surcharge fill.

Geotech engineers **Galt Geo**, determined that without wick drains, consolidation was expected to take in the order of 10-15 years whereas inclusion of **Ceteau**® wick drains enabled stripping of the surcharge after only 6 months.

The tight footprint of this site also necessitated steep batters (of the surcharge fill) to the perimeter, bordering wetlands and Swan River. A reinforced soil wall design was adopted in order to achieve an almost vertical face using **ACETex**® **GT300/50** high strength woven geotextile. Sacrificial woven 'bulka bags' were

used to create a standing 'formwork' for the **ACETex**® to wrap around and return into the backfill at 700mm lifts.

A recent post-construction environmental assessment of the site resulted in conditional approval by the WAPC for Skippers Row to proceed with development of building lots and allocation of public open space. Construction was undertaken and completed by Perth based **Urban Resources** and **subcontractor Keller**, under project management by **Bulletproof Civil** and the assistance of the Global Synthetics design team.

For further information please contact sean@globalsynthetics.com.au

The Magic of Combigrid®/Secugrid® Reinforcement for Piling Platforms on Poor Sand - Gallery House, Brisbane

The \$140 Million Gallery House project is Brookfield Residential Properties' most luxurious project in Queensland and their seventh building in Northshore Hamilton. The project is located on an absolute riverfront site and includes "Gallery House One" with 169 apartments and approx. 1100m² retail in a 20 storey building with a single level basement, two storey podium and associated landscaping. "Gallery House Two" with 150 apartments and approx. 990m² retail in a 19 storey building with a single level basement, two storey podium and associated landscaping.

As the construction site was adjacent to the Brisbane River, the existing poor sandy subgrade did not have the required bearing capacity to withstand the proposed 370kPa piling rig pressures to be applied during the initial construction phase.

In order to achieve the required bearing capacity, **Geoinventions Consulting Services (GCS)** was engaged by Global Synthetics and **Mainland Civil Pty Ltd** to design a sufficiently thick working platform and provide design certification of the proposed Temporary Working Platforms (TWPs) to prevent any punching or bearing failures during the piling operations. GCS designed a 800mm thick platform using a **Combigrid® 40/40** integrated geocomposite at the subgrade interface and a **Secugrid® 40/40** geogrid within the platform. The geogrid component in **Combigrid®** provides reinforcement whilst the integrated geotextile component provides separation and filtration function.

Using **Combigrid®** and **Secugrid®** provided a considerable saving for the contractor by reducing the thickness of the platform compared to conventional working platform designs. This provided material savings and reduced the construction timeframe.

For further information please contact amir@globalsynthetics.com.au



(Ref.: <https://www.multiplex.global/projects/gallery-house-brisbane>)



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	Transnet®
Sheet Drains	ProDrain®
Drainage Cells	Hydrocell™
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®
Geosynthetic Sand Container	GeoRock™

www.globalsynthetics.com.au

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

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