



NEWSLETTER

Civil & Environmental Specialists Since 1959

2009 Conferences & Expo:

During March we attended the **OzWater 2009 Conference and Exhibition** in Melbourne, Victoria. Our trade stand was designed to show Australian clients our range of water related products and services including the fabrication and supply of baffle curtains, de-watering bags, erosion control products and geomembranes.

It became clear that the upgrading of the water systems in Australia over the next few years will focus on the construction of new reservoirs and the upgrading of existing water reservoirs with pipelines running across the whole of Australia and water desalination plants to be a wide-spread reality.

The Erosion and Sediment Control Conference held in Auckland last June was organised by the Australasian Chapter of the International Erosion Control Association. Papers presented discussed the issues of erosion and sediment control in New Zealand, Australia and the USA. A case study presented by Ground Works Australia on the Tugun Bypass Project made mention of the use of E'Grid (Permathene supplied) geogrids being used as a base for the recycled organics containing native seeds for slope stabilisation.

BuildNZ 2009 Exhibition – one of largest of its type in New Zealand (Auckland, July), was a great success. Permathene promoted a variety of products including welded steel modular gabions, TurfPave grass/gravel paving systems, Ausdrain drainage high flow drainage cells and Ausdrain retention and detention Enviromodule systems.

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- **Ngaruawahia (Baffle Curtains) - New Zealand**

Water 51st Annual Conference in Rotorua, organised by Water NZ last September has raised a number of issues concerning water infrastructure in New Zealand. Topics discussed included irrigation water supply problems and the potential for using waste/ wastewater to help with New Zealand's energy needs. Permathene is already participating in this process with the fabrication and installation of floating covers on effluent ponds for the collection of biogas. As well, recent droughts have made the creation of effective water collection and storage facilities a paramount issue.

WasteMINZ 21st Annual Conference in Christchurch last October had several very interesting presentations outlining recent achievements in contaminated land remediation. Over the years Permathene has been involved in a number of remediation projects and it was great to see that attempts are being made to standardise and develop policies with a unified approach to remediation for contaminated sites by council, property owners, engineers and contractors. A site tour to the Bankside contaminated land project site was both interesting and informative.

This year's conferences introduced us to new technologies, future trends and developments and allowed us to spread the word about the Permathene range of products and services.



Welded Mesh - Ballast Point, Sydney

Ballast Point Park is a new public harbourside space recently completed in Sydney. Since 1933 the site was used for fuel storage and was returned to public use in 2002 and the development of this park in 2009. The park was designed by landscape architects McGregor Coxall and engineered by Landscape solutions. Permathene Pty Ltd was the successful bidder for the supply of the welded gabion panels.

A total of 9000 square meters of gabion panels were supplied to this project, including 204 square meters of non standard curved panels. These were custom made into 0.6m x 4.2m and 0.3m x 4.2m panels to build retaining walls up to 9 meters in height.

According to the Corrosivity Zones in Australia, Balmain is rated as C3 classification, which is medium. A higher corrosion resistance to increase the final life span of the gabions was used with coating of 95% Zinc and 5% Aluminium 3.15mm wire mesh was specified by the engineers for this project. Numerous corrosion tests (e.g.: ASTM B117), together with extended coastal field trials, shows the use of Aluminium/ Zinc will last approximately 2 to 3 times longer than plain galvanized (zinc only).

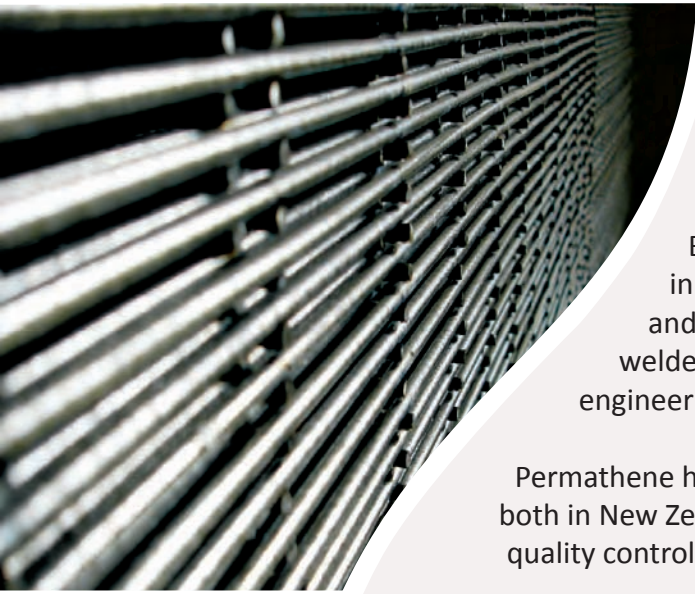
The park has been designed to consolidate the layers of history by putting re-use of materials sourced on site such as recycled concrete, sandstone boulders and even shells as part of the structure. To accommodate this design, Permathene supplied panels with mesh sizes of 50mm x 100mm (rather than standard 75mm x 75mm) to retain smaller rock, bricks and created an aesthetically pleasing structure.

The highly successful Ballast Point Park is considered to be one of Sydney's best new public spaces. Modular Welded Gabions is the hot trend in landscape architecture and has been widely recognised and adopted by landscape architects, designers and landscapers.



Welded Gabion

- *Landscape & Architectural*
- *Sea Walls*
- *Stormwater Filter*
- *Gravity Walls*
- *Erosion Control*



What's the hot trend in landscape architecture? Gabions!

Permathene Modular Gabion has great aesthetic design possibilities. They can be used effectively and economically in parks along highways and around bridge approaches to create walkways, rock gardens, patios and terraces. Gabions beautify the banks of lakes and ponds and accent trees and other plantings. In fact, their application to decorative landscaping is limited only by the ingenuity of the landscaper or the architect. Gabions can be vegetated offering a new technique in bio-engineering for strength and beauty.

There are many advantages in using modular welded gabions. Besides the quality, strength and speed, we can supply gabions in roll stock form allowing tremendous flexibility in terms of size and assembly, thus eliminating the need for double panelling. The welded steel modular gabion is widely used in river and highway engineering as retaining structures.

Permathene has supplied many welded modular gabions to major projects both in New Zealand and Australia, and has established a high standard of quality control for the product range.

Typical sizes of gabions

Normal basket sizes (m)	No. of daphragms	Capacity per basket (m ³)	Standard of mesh sizes	Standard of wire diameter
1 x 1 x 0.5	x	0.5	(mm) 50 x 50 75 x 75 100 x 50 100 x 100	1. Galvanised or Alu/ Zinc wire (mm) 2.50, 2.70, 3.00, 4.00, 4.50, 5.00 2. PVC on Galvanised or Alu/ Zinc coated wire 2.50/3.20, 2.70/3.40, 3.00/ 3.79, 4.00/4.710, 4.50/5.20
1 x 1 x 1	x	1.0		
1.5 x 1 x 0.5	x	0.75		
1.5 x 1 x 1	x	1.5		
2 x 1 x 0.5	1	1.0		
2 x 1 x 1	1	2.0		
3 x 1 x 0.5	2	1.5		
3 x 1 x 1	2	3.0		
4 x 1 x 0.5	3	2.0		
4 x 1 x 1	3	4.0		

More technical information is available on our website:

www.permathene.com

Baffle Curtains (FPP) - Ngaruawahia, New Zealand

The Ngaruawahia Waste Water Treatment Plant receives domestic wastewater from several towns for treatment. Upgrading of the plant required that the flow of the wastewater into the plant is never disrupted and that the quality of the water leaving the plant has received as much treatment as possible.

The latest stage of the plant upgrade included the removal of sludge and other deposits from the sewage treatment pond. This sludge had to be de-watered and the dried residue permanently deposited in designated areas of the treatment plant's wetlands. A temporary de-watering pond was commissioned for this part of the project and Permathene supplied 3,250 m² of Permaliner 0.5mm Flexible Polypropylene for the lining of the excavation. This liner was factory fabricated in three separate panels which were welded together on-site. De-watering bags were placed on this membrane and pumped full of sludge as part of the de-watering process. Five new floating baffle curtains were manufactured by Permathene and installed into the treatment pond. The baffle curtains allowed for the creation of an extended flow path through the pond thus separating the area into one facultative and four maturation zones. Baffles 1, 2, 5, and 6 were fabricated with a range of square openings which allowed for a controlled water flow throughout the four maturation zones.

This work significantly improved the performance of the treatment pond and prepared the pond for future upgrades.

Six baffles total length 730m were fabricated from a combination of standard 30m long units and units of non-standard lengths, interconnected by overlapping and secured connections. Buoyancy element baffle units were connected by strong reinforced 2mm thick HDPE plates. The baffle's slope parts had secondary skirts installed along the bottom part of the slope section, allowing fixation of the slope parts to the wave bund for prevention of material damage due to friction with wave bund surfaces.

Construction of maturation zones inside an existing pond required baffle connections including 3 "T" connections and one complex Cross-Connection.



All connections were made by welding additional 2m wide flaps to the baffle curtains. Firstly, all connecting baffles were connected via tension members. Then, after adjusting tension of the mooring lines, additional flaps were brought together and interconnected by sliding slotted HDPE pipe along reinforced sides of the flaps from the surface of the water. This allowed creation of watertight connections at all "T" connections and Cross-connections. Later positions of cross-connections were secured by installed cross-anchors (short mooring lines 4m long, connected to heavy concrete anchors on the pond's floor).

The baffles supporting system consists 8mm (Grade 316) stainless steel flexible wire ropes, on-shore anchors, cross-anchors, and wooden poles.

Baffles 1, 2 and 3 have been laterally stabilised by connection to pre-existing wooden poles. These connections were designed to allow accommodation of the pond's water level variation.

Permathene engineers provided support during the installation process. Total length of the baffle curtain system is 787m and to date is probably the longest floating geosynthetic baffle curtain system used in wastewater applications in New Zealand.

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