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Magnetic Island Walkway protected against salt corrosion

A world first Australian product – Emesh - was used by the Townsville City Council to reinforce 3,500m² of combined pathway on Magnetic Island.

Developed by Queensland engineering firm Fibercon, in conjunction with researchers from James Cook University, Emesh uses recycled polypropylene plastic instead of the traditional steel mesh to reinforce concrete in pathways and other infrastructure.

The pathway connects the X Base Resort, to Nelly Bay, and is located adjacent to the beach - subjected to a continuously high salt environment. With polymer joints and dowels the pavement has no elements that can corrode – resulting in significantly lower maintenance and whole of life costs. The project was completed on time with a quality finished and crack free pavement. By using Emesh the CO₂ footprint of the pavement was reduced by over 35 tons.

The dosage rate was 4kg/m³ with a 100mm slab and 32MPa concrete, 3metres wide, saw cuts at 3 to 4metres and Danley K-Form at 18 Meters.

Senior Project Manager for Townsville Council Bob Hickey explained “There are the environmental benefits that come with the use of recycled plastic, but also the fact that it is easy to transport the fibres, especially to Magnetic Island. There are also no problems with corrosion in the saltwater environment. The result was an excellent product with no visible uncontrolled cracking.”

“Recycling is not just putting materials in a recycling bin at the kerbside: collection is only the start of the process” stated Fibercon CEO Mark Combe. “Markets must exist for recyclable materials and buyers must be found for products made with recyclable materials. With China drastically reducing its import of waste in 2017, finding new uses for recycled plastics is more important than ever.”

Since its development in 2015, the use of Emesh for reinforcement instead of steel, has achieved the following environmental milestones:

- 70 tons of plastic reused - equivalent to the annual plastic waste for 674 Australians
- 1750 tons of CO₂ reduction – equivalent to the annual CO₂ output for 374 cars
- 32670 m³ water saved
- 350 ton fossil fuels saved

