



## Precast protecting a delicate environment

The opening of the new, 360-metre long Red Bluff Shared Walkway spells win-win-win for residents, local government and the fragile ecosystem of the Lake Macquarie region.

The elevated boardwalk is suspended over the seagrass wetlands of Red Bluff on the New South Wales Central Coast. It enables residents, tourists, fishermen and others to traverse the area between the Lake and the nearby Eleebana boat ramp without damaging the vulnerable habitat of numerous native species.

The \$2.2 million contract to build the walkway was awarded to Waeger Constructions following a lengthy and detailed concept submission and competitive tendering process, which addressed rigorous design, budget, environmental and social performance demands.

The project involved Waeger swinging both its precast and engineering divisions into action to work closely with the Lake Macquarie City Council to ensure the design and construction met with the brief.

This called for an open framed structure to allow maximum light through to the water below so wildlife, in particular the essential seagrass, would not be adversely affected.

Both super- and sub-structures had to meet critical loading requirements, such as storm surge, impact forces, uplift and crowding. Components used in construction had to be easily handled and transported without damaging the local environment. Potential shadowing issues had to be considered and, finally, the structure had to be maintenance-free, with a minimum design life of 50 years.

### Project Owner

Lake Macquarie City Council

### Architect and Project Superintendent

Lyn Patrick, Lake Macquarie City Council

### Service Engineer

Waeger Engineering Services

### Precast Manufacturer

Waeger Precast

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To address these requirements, there was significant use of precast in various applications, because it offered the flexibility of both design and application to meet the brief.

Use of prestressed precast concrete components also eliminated many of the potential environmental risks associated with over-water construction.

To address the shadowing issues, for example, specially designed, lightweight pile caps were cast to top the single, hollow, HDPE-sheathed steel tube piles.

They were tapered in all directions for minimal shadowing effect. These special precast caps also assisted with the stability of the very slender, 9m girders – also made from prestressed precast to carefully defined specifications to meet the special requirements of the job and minimise overshadowing.

The girders were designed as twin 400mm high x 230mm wide prestressed beams and spaced at 1m centres to enable securing of the cantilevered crossbeams. The cross beams themselves were also prestressed to reduce the overall weight and increase their load capacity.

At each abutment, textured precast concrete retaining wall panels were used, a finish specially selected to echo the flowing seagrasses of the lake.

To further minimise environmental and community disruption, all precast and other components were delivered to the site on a carefully planned 'as required' basis, positioned using a land-based maximum 80 tonne crane at 35m reach. Specially

constructed trolleys were used to transport thousands of components along the length of the boardwalk.

Even more than its on-time, on-budget completion, perhaps the greatest testimony to the overall success of this project is the overwhelmingly positive community response it has received.

Meticulous planning, creative use of materials and a spirit of respect and teamwork for all parties involved meant that none of the potential perils and protests so often associated with development in environmentally sensitive areas happened – instead it was smiles all round.