

DM COMPOSITES

DMMARINE™

WESTPORT LINK PATHWAY KAYAK LAUNCHING STRUCTURE

PROJECT BACKGROUND

As part of the Westport Park Link Pathway & Wharf Project, Port Macquarie-Hastings Council sought to transform access to the Hastings River foreshore and provide safer, more inclusive opportunities for kayaking, canoeing and other non-motorised water activities.

A key element of Stage 1 was the replacement of the existing concrete river-access staircase with a purpose-designed fixed kayak launching structure integrated into the new 3-metre-wide shared pathway.

This was not a conventional set of stairs. The new structure needed to operate within the tidal zone, remain functional through changing water levels, tolerate frequent saltwater submersion and withstand hydraulic actions associated with a 1-in-50-year flood event, including flow velocity, buoyancy and debris loading. Council also required minimal ground disturbance and a durable, low-maintenance solution appropriate for long-term marine exposure. **Request-for-Quotation**

DM Composites was engaged to undertake the detailed structural design, engineering, certification and supply of the complete FRP kayak launching structure, delivering a purpose-built solution rather than adapting a standard staircase to a marine application.



LOCATION:

Westport Park, Port Macquarie, NSW

CONSTRUCTION COMPLETION:

September 2026



PROJECT OVERVIEW

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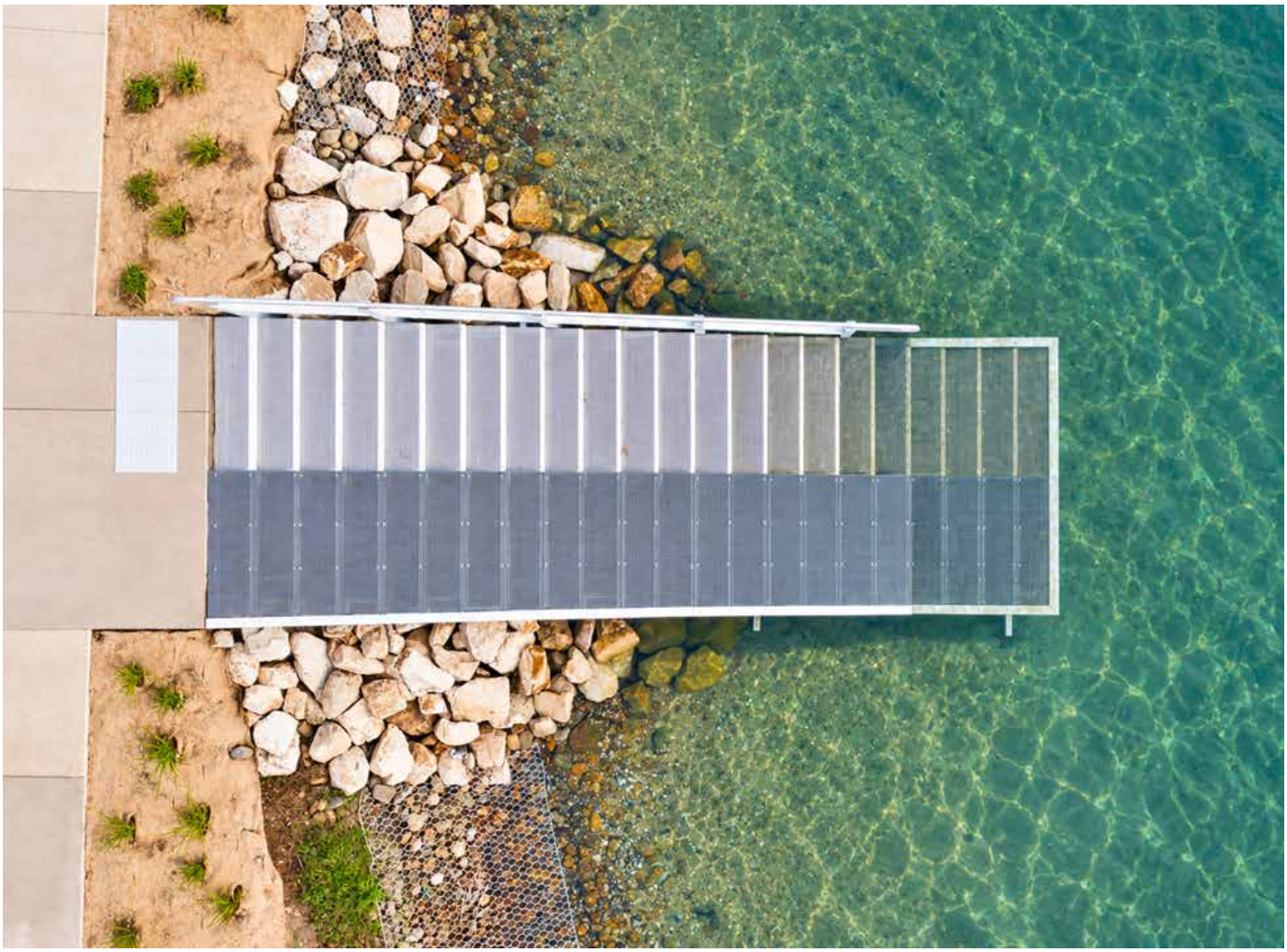
PROJECT CONTEXT: CREATING BETTER ACCESS TO THE HASTINGS RIVER

The broader Westport Park project was developed to improve public access, recreational opportunities and usability along the Hastings River foreshore. Council specifically identified the kayak launcher as infrastructure that would support safe and inclusive access for non-motorised craft, while connecting directly into the new accessible shared path. Request-for-Quotation

The existing river access consisted of a relatively simple concrete stair arrangement descending through the rock-armoured foreshore into the tidal water.
The replacement needed to perform very differently.

Rather than users carrying kayaks down conventional stairs and attempting to enter the water from an uneven shoreline, the new structure creates a purpose-designed transition from the land to the river, incorporating a pedestrian stair alongside a dedicated kayak/canoe ramp extending progressively into the tidal zone.

The result is a piece of recreational infrastructure specifically engineered around the interaction between people, watercraft, tides and the river environment.



DM COMPOSITES' ROLE

DM Composites' package included:

- Site-specific structural design of the complete kayak launching structure
- Engineering and certification
- Design of the FRP pile foundation system
- Structural framing, bracing and connection design
- Dedicated pedestrian stair and kayak/canoe ramp geometry
- DMBEAM™ pultruded FRP structural profiles
- FRP CHS piles
- DMGRATE™ pedestrian grating and stair surfaces
- Dedicated concave-finish kayak ramp grating
- Integrated FRP balustrade system
- Marine-grade stainless steel grab rail
- Detailed IFC drawings and member schedules
- Installation requirements and pile-driving criteria
- Product documentation and technical support.

This meant DM Composites was responsible for resolving the structure from the riverbed foundations through to the user-facing deck and ramp surfaces.



A STRUCTURE DESIGNED AROUND THE TIDE

The defining construction constraint was the presence of AusNet overhead transmission lines directly above the bridge site.

This fundamentally changed how the project could be delivered.

A conventional bridge installation would typically involve positioning a sufficiently large mobile crane adjacent to the crossing, lifting the complete span and slewing it into position. At Troups Creek, that methodology was not suitable because the crane boom and suspended load could not safely operate within the restricted overhead environment.

The challenge therefore became:

How do you remove an existing bridge and install a 24 m replacement bridge while keeping the entire operation below the permitted plant and equipment height?

The solution influenced the bridge from the earliest planning stages.



TWO SURFACES, TWO COMPLETELY DIFFERENT FUNCTIONS

A particularly considered element of the design was the treatment of the walking and watercraft surfaces.

Pedestrian stair surface

The stair and pedestrian grating was specified in light grey RAL 7035 with barefoot grit, providing a slip-resistant walking surface and visual contrast at the stair/ramp interface.

Kayak and canoe ramp

The adjacent watercraft ramp uses mid Quartz Grey RAL 7039 grating with a concave finish and deliberately no grit.

This distinction is important. A highly abrasive pedestrian grit surface provides excellent traction underfoot but could scrape or damage kayak and canoe hulls when watercraft are moved along the ramp. DM Composites therefore developed the two adjacent surfaces around their actual use rather than applying one generic grating specification across the structure.

It is a relatively small detail visually, but an important example of designing FRP infrastructure around the end user rather than simply around structural capacity.

Engineering for a Permanently Harsh Marine Environment

The structure sits directly within the Hastings River tidal zone and is expected to experience repeated wetting, saltwater exposure and partial submersion throughout its service life.

Council's specification required marine-grade, corrosion-resistant materials and surfaces capable of performing safely in both dry and submerged conditions. Request-for-Quotation

DM Composites' design uses a predominantly FRP structural system incorporating:

- DMB-PFC-203 series FRP bearers
- DMB-PFC-152 series joists and bracing
- DMB-SHS structural studs and stanchions
- DMB-CHS-250 × 12.7 mm FRP piles
- DMB-RHS FRP rails
- DMGM301919 FRP grating
- Marine-grade stainless steel components at nominated interfaces.

The final member schedule demonstrates the extent to which the structure was developed as a complete engineered FRP system rather than simply an FRP deck placed over a conventional substructure.

5 kPa Public Access Design Load

The structural system was designed for a 5 kPa general floor live load, reflecting its function as permanent public infrastructure rather than a lightweight private access structure.

The engineering needed to account for conventional pedestrian actions together with the considerably more complex environmental actions associated with the river.

Council specifically required resistance to a 1-in-50-year flood, including:

- Flow velocity
- Buoyancy
- Hydraulic forces
- Debris loading
- Repeated tidal inundation.

These requirements influenced not only member sizing but also the bracing system, foundations and connections throughout the structure. Request-for-Quotation

FRP Piles: Extending the Composite Solution Below the Waterline

One of the strongest technical features of the project is that the FRP solution does not stop at deck level.

DM Composites designed 250 mm diameter FRP CHS piles to support the launcher, extending the corrosion-resistant structural system down into the foundation zone.

The IFC package identifies pile lengths ranging approximately from 4.5 m to 6.5 m, with pile embedments dependent upon location and confirmation of actual ground conditions during installation.

The design specified a test-pile process to verify driveability and actual embedment. Pile-driving records were to monitor blow count and displacement, with dynamic testing available where necessary to confirm capacity. Design pile actions included 50 kN compression, 15 kN uplift and 20 kN shear.

This approach responded directly to Council's requirement for minimal-impact foundations, avoiding large slab bases and limiting excavation and disturbance within the foreshore.



DESIGNING FOR CONSTRUCTABILITY

Constructability and documentation were particularly important.

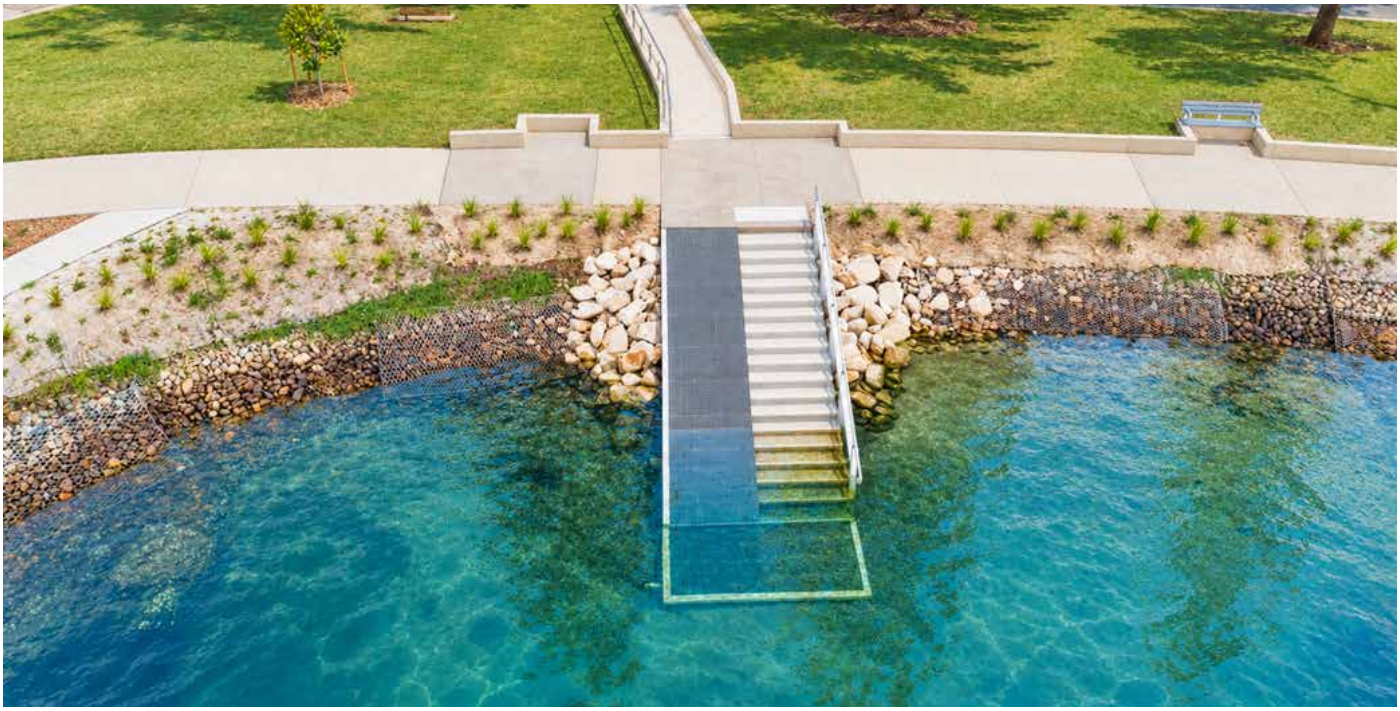
The work package needed to understand precisely how a relatively sophisticated marine FRP structure was to be assembled and supported.

The IFC package therefore developed the structure down to individual:

- Bearers
- Joists
- Braces
- Stub columns
- Stanchions
- Rails
- Piles
- Grating panels
- Connection details.

The final member schedule assigns individual member codes and lengths throughout the structure, while the detailed drawings establish connection arrangements, tolerances and assembly geometry.

Components were labelled, sorted and packaged for straightforward assembly, accompanied by final certification and installation documentation.



WHY FRP WAS PARTICULARLY WELL SUITED

For a structure that spends part of its working life above the river and part effectively within it, material selection was fundamental.

Corrosion resistance

FRP does not rust and is inherently suited to saltwater and tidal environments where conventional metallic structures can require significant corrosion-protection systems.

Frequent submersion

The system was specifically designed for regular tidal inundation rather than occasional accidental wetting.

Low maintenance

There is no conventional painted structural coating system requiring periodic stripping and recoating in a difficult over-water location.

Lightweight construction

FRP's high strength-to-weight ratio simplifies handling of structural members and supports installation in a constrained foreshore environment.

Integrated pigmentation

The structural elements incorporate their colour within the FRP resin system rather than relying on an applied decorative coating, supporting long-term appearance without the same peeling risk associated with surface-painted composite systems.

Long-term marine durability

Council required structural certification demonstrating suitability for tidal marine conditions and a minimum 30-year design life in the coastal saltwater environment.

From an Ageing Concrete Stair to Purpose-Built Water Access

The contrast between the original and completed infrastructure tells the story particularly well.

The previous arrangement was essentially a concrete staircase terminating directly into the river, with a single handrail and limited provision for handling watercraft. Council's RFQ explicitly identified the existing staircase for removal and replacement with the new kayak launching structure.

The completed structure is a substantially more sophisticated piece of public infrastructure: a broad, engineered FRP access system providing separate but integrated routes for the person and their watercraft.

Its sloping geometry follows the foreshore into the tidal zone, while the pile-supported arrangement allows the structure to remain elevated over the underlying shoreline.

PROJECT OUTCOME

Completed in September 2026, the Westport Link Pathway Kayak Launching Structure provides Port Macquarie-Hastings Council with a purpose-designed recreational asset that improves the connection between the new shared path and the Hastings River.

The project demonstrates how FRP can move beyond conventional boardwalk and bridge applications into specialised marine access infrastructure.

For DM Composites, the challenge was not simply to supply corrosion-resistant materials. It was to develop a complete structural system capable of simultaneously responding to people, watercraft, tides, flood actions, saltwater exposure, variable ground conditions and constructability.

The resulting structure combines DMWALK™, DMBEAM™ and DMGRATE™ components into a single integrated system, creating a durable new gateway from the Westport foreshore directly onto the Hastings River.



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WESTPORT LINK PATHWAY KAYAK LAUNCHING

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