

DM COMPOSITES

DMWALK™

BOYES RD TO BARANDUDA FIELDS FRP BOARDWALKS

PROJECT BACKGROUND

The Boyes Road to Baranduda Fields Shared Path forms part of an important active-transport connection along Baranduda Boulevard, creating safer and more accessible infrastructure for pedestrians and cyclists travelling between Boyes Road and Athletes Avenue.

The broader project combines conventional at-grade concrete shared paths with elevated boardwalk structures where drainage, topography and environmental constraints make conventional pavement construction unsuitable. The overall shared path was designed as a 3.0 m wide pedestrian and cyclist route, with particular emphasis on accessibility, environmental protection and safe integration with the surrounding road corridor.

DM Composites was engaged specifically for the design, engineering and supply of the elevated FRP boardwalk structures, developing a complete structural system founded on screw piles and incorporating FRP columns, bearers, joists, bracing, decking and barrier systems.

Rather than treating the boardwalks as isolated structures, the design had to respond to the wider path alignment, changing ground levels, existing vegetation, underground services, drainage infrastructure and environmentally sensitive areas.

The result is a lightweight elevated pathway solution specifically engineered for a corridor where minimising excavation and ground disturbance was just as important as structural performance.



LOCATION:

Baranduda Boulevard,
Wodonga VIC

CONSTRUCTION COMPLETION:

September 2026



PROJECT CONTEXT: CONNECTING THE COMMUNITY

The shared path extends along the southern side of Baranduda Boulevard between Boyes Road and Athletes Avenue, interfacing with existing roads, drainage corridors, vegetation, fencing, services and adjoining land.

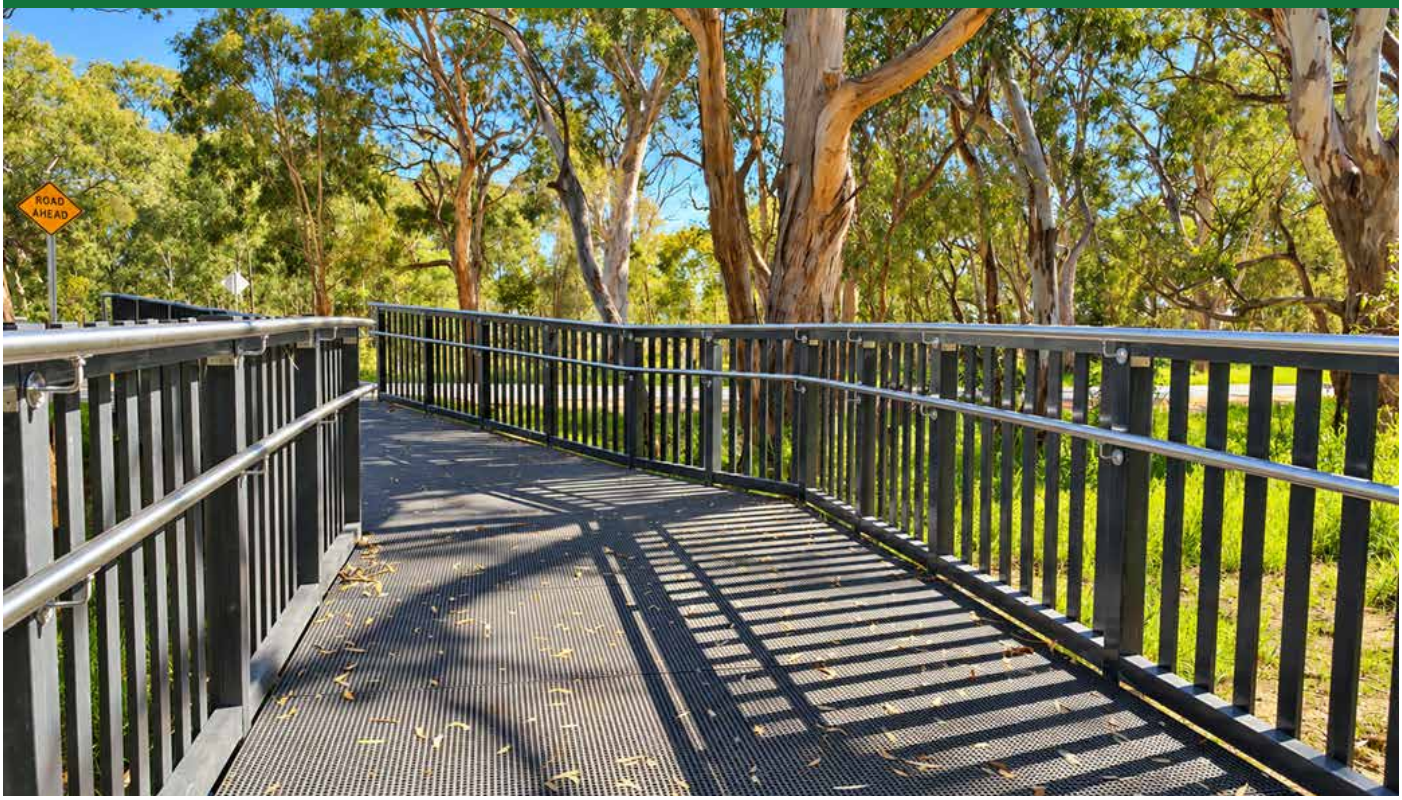
The project was not simply about constructing another footpath.

Sections of the proposed alignment pass through areas where conventional earthworks would have created significantly greater environmental disturbance. In these locations, an elevated structure allowed the pathway to continue across changing terrain and sensitive ground while maintaining the required pedestrian and cyclist connection.

The project documentation identifies parts of the corridor as Wodonga Retained Environmental Network Category 2 (WRENS Cat 2) areas. Works within these areas were subject to strict construction limits, with designated corridors and controls intended to protect surrounding environmental values.

This made the boardwalk component particularly important.

Instead of heavily modifying the terrain to bring the ground to the path, the elevated FRP system allows the pathway to move above the existing landscape, supported at discrete foundation points.



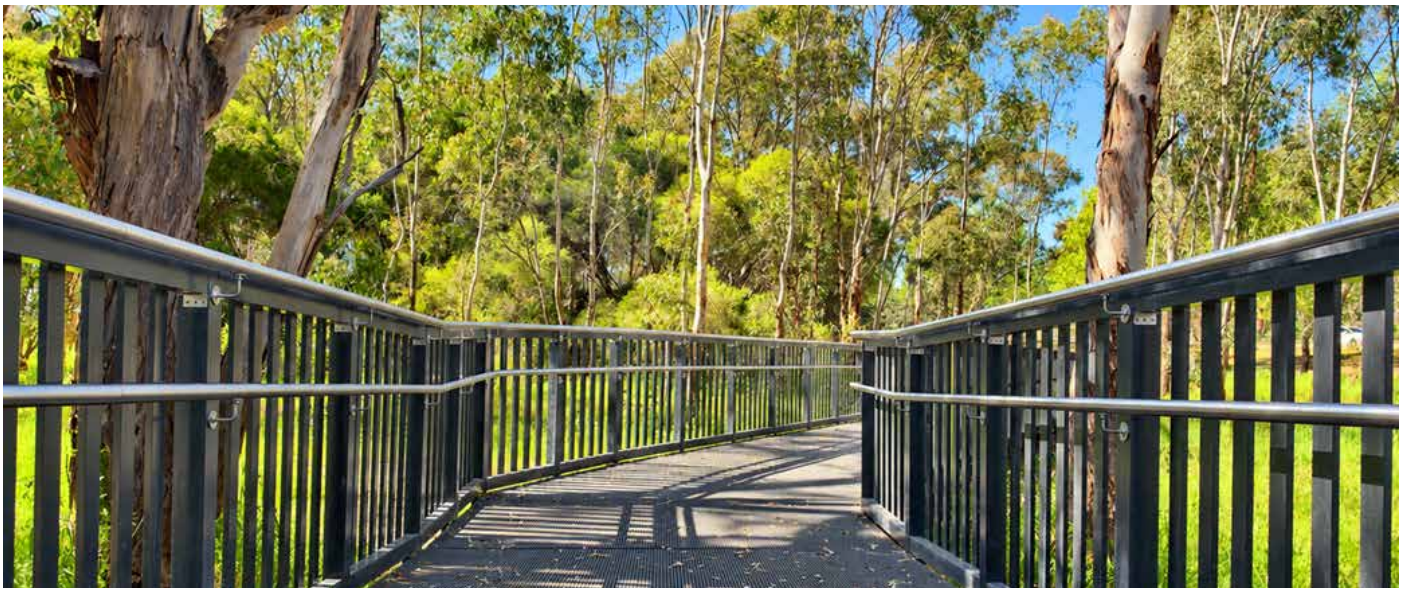
DM COMPOSITES' ROLE

DM Composites' involvement centred on transforming the required boardwalk geometry into a practical, structurally engineered FRP system suitable for fabrication and installation.

The package included the engineering and detailing of the complete elevated structure, including:

- Structural design and certification of the FRP boardwalk system
- Detailed shop drawings and marking plans
- Coordination of boardwalk alignment and finished levels
- Integration with the screw-pile foundation system
- FRP structural columns
- Primary FRP bearers
- Internal and external FRP joists
- Lateral and tie bracing
- FRP pedestrian grating
- FRP stanchions and barrier framing
- Rails and infill elements
- Pedestrian/cyclist grabrails
- Connection brackets and structural interfaces
- Interfaces with adjoining concrete shared paths
- Design coordination around existing services
- Fabrication detailing and component schedules.

The project drawings show that the boardwalk was developed as a complete structural assembly, rather than simply FRP decking installed over a conventional subframe. The typical section incorporates FRP columns, PFC bearers and external joists, internal joists, FRP grating and the complete barrier system, all supported from screw piles below.



THREE ELEVATED BOARDWALK SECTIONS

A particularly interesting aspect of the project is that the elevated infrastructure is not one continuous rectangular boardwalk.

The approved DM Composites marking plans identify three separate elevated boardwalk sections along the alignment:

CH37.13–CH43.13, approximately 6 m long; CH120.91–CH135.91, approximately 15 m long; and the larger CH146.53–CH174.20 section, approximately 27.7 m along the principal chainage.

Together, these represent approximately 49 metres of elevated 3.0 m wide boardwalk infrastructure, subject to the final geometry of the curved section.

Each structure responds differently to its location.

The first is a relatively short crossing. The second transitions progressively in elevation over approximately 15 metres. The third is considerably more geometrically complex, incorporating a change in direction to follow the path alignment through the constrained corridor.

This meant the structural system could not simply be repeated as identical straight modules.



FOLLOWING THE LANDSCAPE, NOT FIGHTING IT

The drawings show how the boardwalk geometry responds directly to the site.

The largest section changes direction through the alignment rather than cutting a straight route across the landscape. The framing plan consequently incorporates varying external and internal joist geometries, different column heights and individually detailed structural members.

The longitudinal sections also demonstrate the changing levels across the structures. For example, the 15 m section rises from approximately RL 178.702 to RL 179.452, while the longer boardwalk transitions between approximately RL 179.168 and RL 178.689 over an 18 m portion of the alignment. D#060_~1 D#060_~1

This is one of the advantages of an engineered modular FRP system.

Rather than undertaking extensive cut-and-fill operations to create a uniform ground platform, the elevated structure can accommodate changes in terrain through variable support heights and carefully coordinated structural geometry.

Screw Piles: A Low-Impact Foundation Strategy

The boardwalks are supported on screw/helical piles, a foundation system particularly well suited to the environmental constraints of this project.

The design drawings specify piling in accordance with AS 2159, with the screw-pile design informed by project-specific geotechnical parameters. The drawings require the piles to found within the nominated stronger clay strata rather than relying on fill or the weaker upper clay unit.

From an environmental perspective, the foundation strategy offered an equally important advantage.

Screw piles create relatively small points of ground disturbance compared with large reinforced-concrete footings or extensive excavation. The project methodology specifically identified screw/helical piers as a low-impact construction technique intended to minimise excavation, disturbance and impacts to vegetation and root zones. DMC-PR~1

For this project, that meant the foundations were doing more than supporting the boardwalk.

They formed part of the environmental strategy.



ENGINEERING THE PILE-TO-FRP INTERFACE

Connecting a lightweight composite superstructure to steel screw piles requires careful detailing.

DM Composites developed the structural interface around an FRP column supported from the pile connection assembly. The detailed drawings show the screw pile, pile bracket, base plate and FRP column working together as a coordinated support connection. D#060_~1

This connection had to accommodate loads from the elevated deck, barriers and environmental actions while maintaining a practical installation sequence.

Once the piles were installed and verified, the structural system could be progressively assembled above them:

Screw piles → column connections → FRP columns → primary bearers → internal/external joists → bracing → FRP decking → barrier system.

This modular arrangement is particularly effective for linear infrastructure because construction can progress sequentially without requiring extensive heavy civil works beneath the entire footprint.

DESIGNED AROUND GEOTECHNICAL CONDITIONS

The screw pile design was not based on a generic assumption.

DM Composites' drawings reference the project geotechnical information and distinguish between different subsurface materials, including firm-to-stiff clay, very stiff clay and hard clay.

Importantly, the design notes specifically state that the piles are to be socketed into the stronger Unit 3B or Unit 3C material and are not to rely on fill or Unit 3A. Installation torque and depth therefore become important quality indicators during construction. D#060_~1

The project methodology similarly required pile locations to be surveyed before installation, with installation torque and depth monitored and recorded for each pier.

This provided a clear connection between the geotechnical design assumptions and what actually occurred during installation.



A FULLY FRP STRUCTURAL SUPERSTRUCTURE

Above the foundations, the boardwalk uses an extensive pultruded FRP structural system.

The typical cross-section identifies a 3.0 m overall boardwalk width, with the structure incorporating FRP columns, PFC bearers, external PFC joists, internal joists, structural bracing and FRP grating.

The DM Composites drawings nominate structural profiles including:

DMBEAM™ PFC bearers forming the principal transverse structural members.

DMBEAM™ internal and external joists creating the longitudinal deck-support system.

FRP SHS columns transferring the boardwalk loads down to the screw-pile connections.

FRP lateral and tie bracing stabilising the elevated structure.

DMGRATE™ FRP grating forming the trafficable pedestrian and cyclist surface.

This provides a genuine composite superstructure in which FRP is performing the primary structural role rather than being used only as a surface material.

DESIGNING FOR PEDESTRIANS AND CYCLISTS

At 3.0 metres wide, the elevated sections form part of a shared pedestrian and cyclist route rather than a narrow pedestrian-only boardwalk.

That changes the requirements for both the deck and edge protection.

The project methodology required the shared path to comply with relevant Austroads and IDM requirements, while the barrier system was developed with reference to Austroads Guide to Road Design Part 6A and structural loading requirements.

The typical barrier arrangement shown on the DM drawings extends approximately 1.4 m above deck level, incorporating FRP stanchions, rails, infill elements and a separate cyclist/pedestrian grabrail arrangement.

The design therefore needed to provide both structural containment and a practical user interface for cyclists travelling across the elevated sections.



DESIGNING AROUND EXISTING SERVICES

Another significant design consideration was the presence of existing infrastructure beneath and around the boardwalk alignment.

The project corridor contains water, sewer, electricity, gas and communications infrastructure, requiring service locations to be identified and protected during the works.

DM Composites' drawing package includes a dedicated Existing Services Overlay Plan, mapping the boardwalk structures and screw-pile locations against known services.

This was particularly important because screw piles introduce discrete penetrations into the ground. Their locations therefore needed to be coordinated not only for structural efficiency, but also against existing buried assets.

It is a good example of why boardwalk design cannot be undertaken in isolation. Structural geometry, geotechnical conditions, services, environmental constraints and constructability all need to be resolved together.

PROTECTING WODONGA'S ENVIRONMENTAL CORRIDOR

The environmental context is one of the most significant aspects of the wider project.

Sections of the alignment pass through WRENS Category 2 environmental areas, with construction restricted to nominated corridors and controlled work zones. Existing established vegetation and tree protection zones were also required to be protected.

The broader project also included habitat associated with Sloane's Froglet, identified in the vicinity of the drainage corridor east of Athletes Avenue. This resulted in specific environmental controls and a mandated timing requirement for associated drainage works.

While DM Composites' package related specifically to the boardwalk design and supply, these broader constraints directly informed why a low-disturbance elevated structural solution was appropriate.

The boardwalk allows users to travel through the corridor while concentrating structural contact with the ground at discrete pile locations rather than constructing a continuous earthworks platform.



WHY FRP WAS WELL SUITED TO THE PROJECT

The Boyes Road to Baranduda Fields project demonstrates several reasons why FRP is increasingly being adopted for environmentally sensitive shared-path infrastructure.

Lightweight Structural System

Pultruded FRP provides a high strength-to-weight ratio, making individual structural components easier to transport and handle within restricted construction corridors.

Corrosion Resistance

FRP does not rust, providing a strong durability advantage for outdoor infrastructure exposed continuously to rain, moisture and changing environmental conditions.

Reduced Maintenance

The FRP structural system does not depend on a conventional painted corrosion-protection coating that requires periodic recoating throughout the asset's service life.

Modular Construction

The system can be broken into repeatable structural elements and assembled progressively along the alignment.

Adaptability to Terrain

Variable column heights and individually detailed structural members allow the elevated structure to follow changing site levels without extensive modification of the underlying landscape.

Reduced Ground Disturbance

Combined with screw-pile foundations, the lightweight FRP superstructure provides a particularly effective solution where excavation, vegetation disturbance and construction access need to be minimised.



Quality Built Into the Design

Quality control extended beyond simply specifying the correct member sizes.

The boardwalk methodology incorporated verification of:

- Screw-pile installation records
- Substructure alignment
- Structural fixings
- Deck installation
- Barrier and handrail installation
- Finished dimensions and levels.

The project documentation required inspection of the screw piles before proceeding with the superstructure, followed by inspection of the FRP framing before deck installation and final inspection of the barrier system before public opening.

The FRP itself was also subject to defined material and fabrication requirements. DM's drawings specify UV-resistant resin systems, manufacturing requirements for FRP gratings and pultruded profiles, dimensional and visual inspection requirements, and sealing of cut or drilled surfaces to protect exposed fibres.

WHY FRP WAS WELL SUITED TO THE PROJECT

From a design perspective, one of the most interesting parts of the package is the transition from simple straight boardwalk modules into the longer directional section.

The marking plans show how the structure progressively changes direction through multiple framing bays while maintaining the continuous 3.0 m shared path.

This required individually coordinated:

- External joist lengths
- Internal joist geometry
- Bearers
- Bracing
- Columns
- Stanchions
- Rails
- Grating panels
- Connection details.

The extensive assembly schedule demonstrates the degree of component-level detailing involved, with different column heights and individually scheduled joists, rails and structural members developed to reproduce the required geometry on site.

That level of detailing is what turns an architectural alignment into a system that can actually be fabricated, delivered and assembled efficiently.

PROJECT OUTCOME

The Boyes Road to Baranduda Fields FRP Boardwalks demonstrate how engineered composite infrastructure can solve more than a structural problem.

The elevated structures provide continuity to a new 3.0 m wide shared pedestrian and cyclist route while responding to changing terrain, environmental restrictions, protected vegetation, existing services and geotechnical conditions.

By combining pultruded FRP structural framing with screw-pile foundations, the project reduces the need for conventional excavation-heavy foundations and allows the boardwalks to sit lightly within the surrounding corridor.

For DM Composites, the project showcases the depth of engineering behind the DMWALK™ system.

What appears to the end user as a simple elevated pathway is, underneath, a carefully coordinated system of geotechnical assumptions, pile interfaces, variable-height columns, structural bearers, internal and external joists, bracing, FRP decking and cyclist-compliant barriers, all developed around the physical constraints of the site.

It is a strong example of how DM Composites' Design & Supply model can transform a challenging shared-path alignment into a complete, fabrication-ready FRP structural solution, while helping councils deliver durable, low-maintenance active-transport infrastructure in environmentally sensitive locations.



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