

DM COMPOSITES

DMWALK™

THE ORCHARDS NORWEST FRP RESIDENTIAL BOARDWALK

PROJECT BACKGROUND

DM Composites delivered the complete Design & Construct package for approximately 500 m² of elevated FRP boardwalk infrastructure within The Orchards residential development at Norwest, NSW.

Unlike a conventional supply-only FRP package, DM Composites' involvement extended from the ground up. The project incorporated geotechnical investigation, survey, civil and structural engineering, reinforced concrete foundations, complete FRP superstructure, accessible ramps and stairs, balustrades, custom service access hatches and coordination with electrical and landscaping works, followed by final engineering and accessibility close-out.

The result is a substantial network of elevated pedestrian infrastructure integrated into a premium residential landscape, providing residents with safe, accessible connections while navigating existing trees, changing ground levels, underground services and surrounding development interfaces.

The project is a strong example of the value of managing design, engineering, detailing, material supply and construction as one integrated package, particularly where the boardwalk must respond to considerably more than structural loading alone.





LOCATION:

Norwest, NSW

CONSTRUCTION COMPLETION:

September 2026



PROJECT CONTEXT

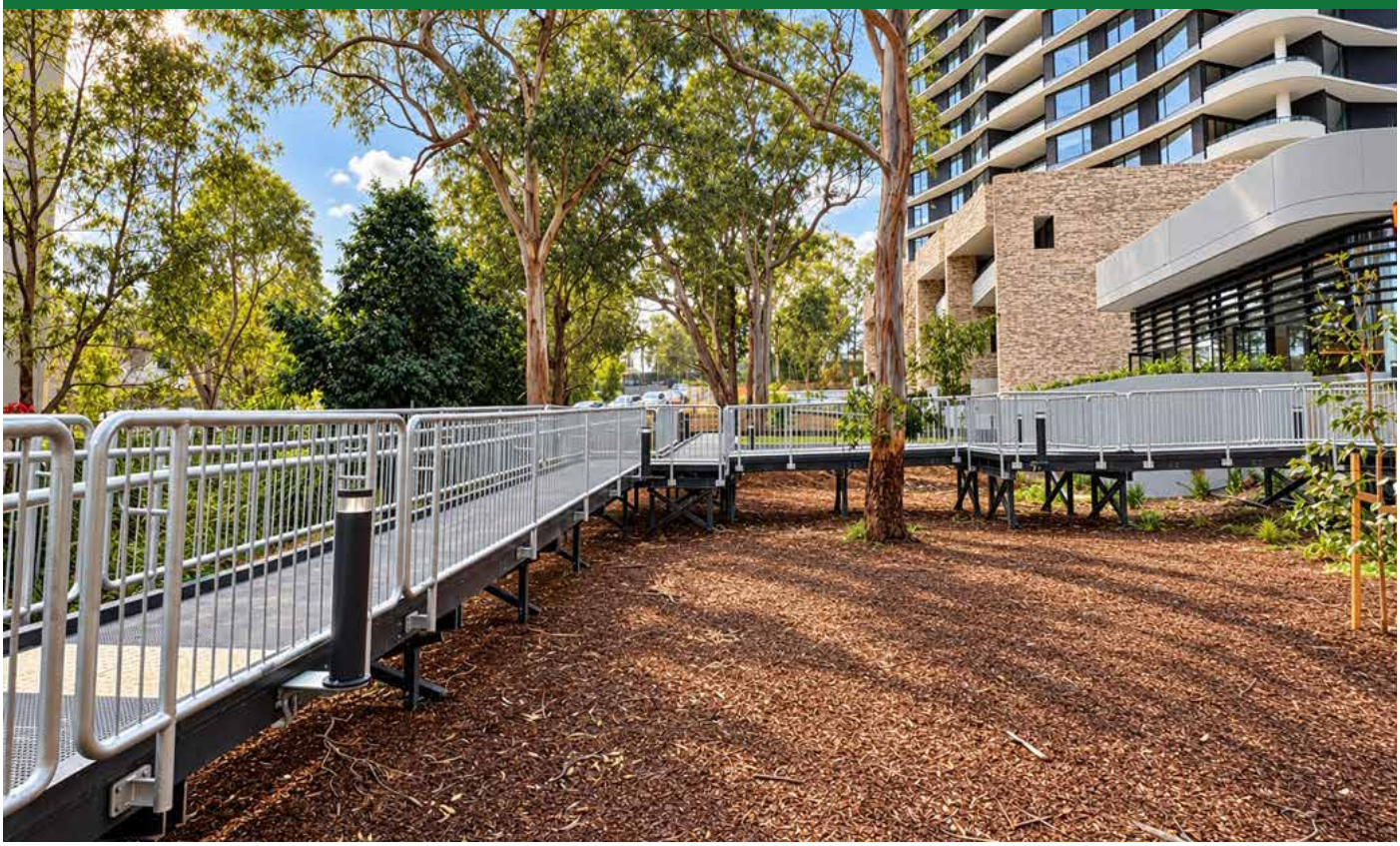
The Orchards is a major residential community at Norwest where the pedestrian environment forms an important part of how residents move between buildings, landscaped spaces and communal areas.

The boardwalk package needed to establish practical pedestrian connections through landscaped areas where conventional at-grade construction was complicated by existing vegetation, Tree Protection Zones, underground infrastructure and variable levels.

Rather than forcing the surrounding landscape to accommodate the pathway, the elevated boardwalk was developed to work around these constraints.

This required careful coordination between structural engineering, arboricultural restrictions, accessibility requirements, existing pavements, underground services, landscaping and electrical infrastructure.

For DM Composites, this made the project fundamentally different from simply supplying FRP decking. The boardwalk had to function as a complete piece of residential infrastructure, with every structural and architectural interface considered from initial survey through to final handover.



DM COMPOSITES' ROLE

DM Composites was engaged under a full Design & Construct contract, taking responsibility for the boardwalk from early investigation and engineering through to completed construction.

Our scope included:

- Geotechnical investigation and review of ground conditions
- Detailed site survey and set-out
- Civil and structural engineering
- Design of reinforced concrete foundations
- Engineering certification
- Detailed shop drawings and construction documentation
- Procurement and fabrication of FRP structural components
- Construction of approximately 500 m^2 of elevated boardwalk
- FRP columns, primary beams, bearers and joists
- FRP mini-mesh pedestrian decking
- Kerb rails and balustrade systems
- DDA-compliant ramps and accessible pathways
- Stair systems, tactile indicators and contrasting stair nosings
- Custom removable FRP access hatches
- Interfaces with existing concrete pavements
- Coordination around existing underground services
- Coordination with landscaping works
- Integration and coordination of bollard lighting and light poles
- Final engineering review and certification
- Coordination with the Accessibility Consultant
- Final compliance review against the NCC and AS 1428 requirements.

Bringing these responsibilities under one package allowed design decisions to be tested continuously against what could actually be constructed on site.



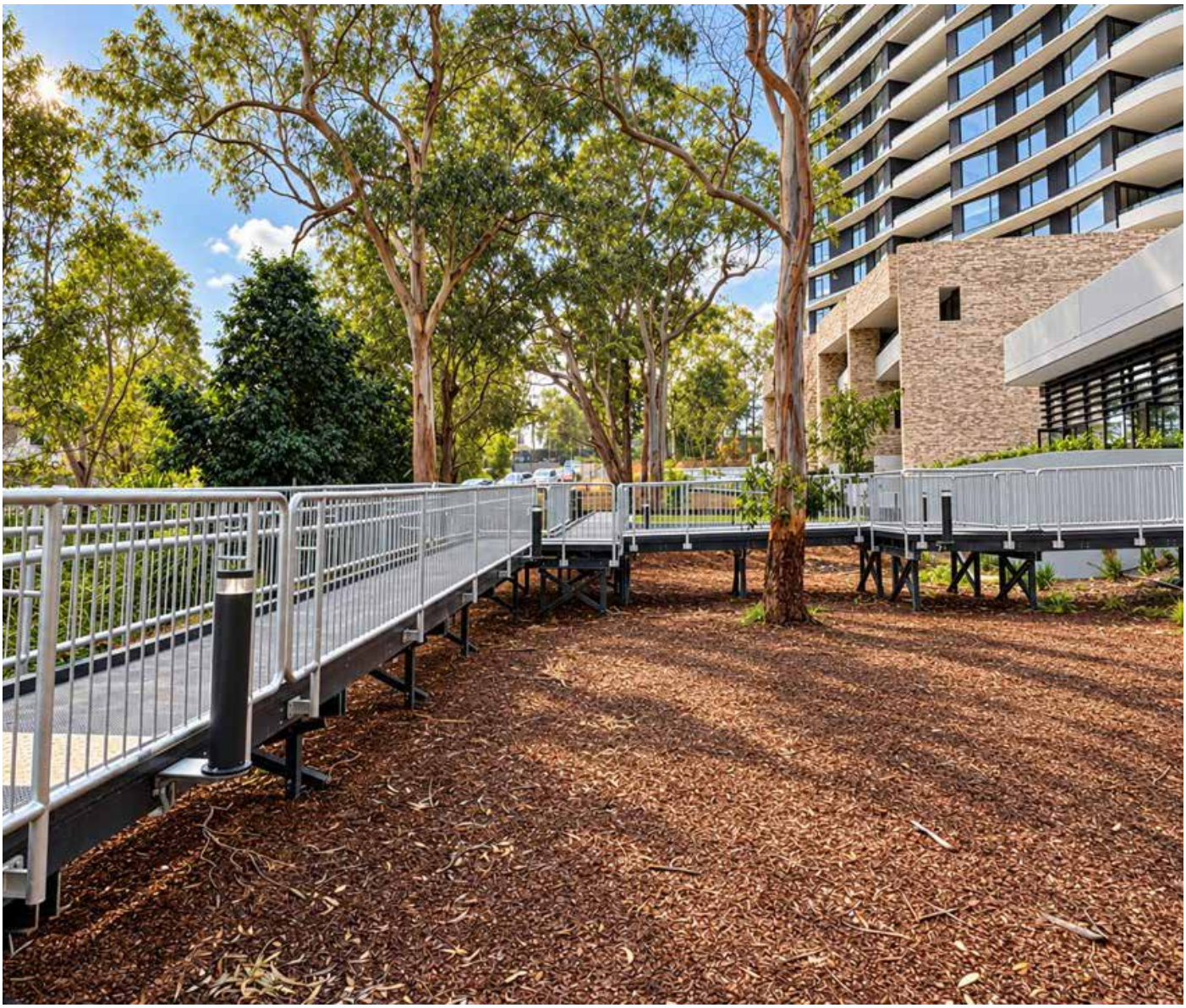
APPROXIMATELY 500 M² OF ELEVATED FRP INFRASTRUCTURE

At approximately 500 m², The Orchards represents a substantial application of FRP within a residential development.

The boardwalk is not a single straight structure. It forms an interconnected pedestrian system incorporating changes in direction and elevation, ramps, stairs, landings and interfaces with existing pathways and landscaped areas.

The structural system incorporates pultruded FRP columns, beams, bearers and joists supporting FRP mini-mesh decking, with edge protection, balustrades and kerb rails integrated into the overall arrangement.

The lightweight nature of FRP allowed a significant elevated structure to be delivered without introducing the weight and handling requirements typically associated with conventional steel or concrete construction.



DESIGNING THROUGH TREE PROTECTION ZONES

One of the defining challenges was constructing an elevated pathway through areas containing established trees and designated Tree Protection Zones (TPZs).

These were not areas where foundations could simply be positioned at regular intervals based solely on the most efficient structural grid.

The alignment and supporting structure needed to respond to the existing landscape.

Foundation locations, boardwalk geometry and structural spans were therefore coordinated to minimise impacts on protected trees and sensitive root zones while still maintaining the required structural performance and accessible pathway geometry.

This is where the versatility of the FRP framing system provided a significant advantage. Its high strength-to-weight ratio allowed the structural arrangement to be adapted around site constraints without unnecessarily increasing the mass of the supporting system.

The finished boardwalk consequently sits within the established landscape rather than dominating it, maintaining pedestrian access while allowing existing vegetation to remain an integral part of the residential environment.

FOUNDATIONS DESIGNED AROUND THE SITE

The elevated boardwalk is supported on reinforced concrete foundations, designed as part of DM Composites' civil and structural package.

Foundation design was informed by the geotechnical investigation, survey information, finished boardwalk levels, structural reactions and physical constraints encountered across the site.

Particular consideration was given to:

- Existing trees and root systems
- Underground utilities
- Existing and proposed pavements
- Landscape interfaces
- Finished surface levels
- Accessibility gradients
- Structural load paths.

This required considerably more coordination than establishing a repetitive footing grid. In constrained areas, the superstructure and foundations needed to work together to accommodate the available construction zones.



ACCESSIBILITY WAS DESIGNED INTO THE STRUCTURE

Accessibility formed a fundamental part of the project rather than a final compliance exercise.

The boardwalk incorporates accessible ramps, landings, stairs, handrails, tactile indicators and transition points designed to create continuous and practical movement through the development.

As construction approached completion, DM Composites coordinated the final works with the project's Accessibility Consultant, reviewing the completed infrastructure against applicable NCC and AS 1428 accessibility requirements.

Particular attention was given to the details that often determine whether an otherwise well-designed pathway actually works for users:

- Ramp gradients
- Landing arrangements
- Clear widths
- Handrail geometry
- Stair configuration
- Contrasting stair nosings
- Tactile ground surface indicators
- Transitions between FRP and adjoining pavement
- Changes in level
- Obstructions within the accessible path of travel.

The result is infrastructure designed not simply to move pedestrians from one point to another, but to provide a safe and inclusive route through the residential landscape.

WHY FRP WAS WELL SUITED TO THE ORCHARDS

Advantages of FRP

FRP provided several key advantages suited to the project's requirements.

Lightweight Construction

The low self-weight of pultruded FRP reduced handling requirements and simplified construction within landscaped areas and Tree Protection Zones.

Corrosion Resistance

FRP does not rust, providing long-term durability in exposed outdoor environments without conventional painted corrosion-protection systems.

Low Maintenance

FRP minimises future maintenance and disruption, eliminating the periodic repainting required for conventional painted structural systems.

Modular Construction

FRP profiles allow repeatable structural assemblies while accommodating trees, services, elevation changes and varying site geometry.

Integrated Colour

Colour pigmentation is incorporated into the FRP resin during manufacture, reducing the risk of peeling coatings and associated maintenance.

Adaptability

At The Orchards, FRP allowed the boardwalk to adapt around existing trees, underground services, service pits, landscaping and pavement interfaces while maintaining a consistent architectural finish.



Managing the Interfaces

A significant challenge was coordinating the numerous interfaces throughout the project, including:

- FRP connections to reinforced concrete
- Boardwalk transitions to existing pavements
- Ramp and pathway connections
- Stair connections between different levels
- Structural framing around underground services
- Access hatches aligned with service pits
- Light pole penetrations and adjacent installations
- Landscaping connections to elevated structures
- Foundation positioning within Tree Protection Zones
- Accessibility requirements influencing geometry

Each interface required careful coordination to avoid conflicts during construction.

Through its Design & Construct delivery model, DM Composites managed these challenges across engineering, shop detailing and construction, ensuring all components were integrated into a coordinated structural solution.

FROM ENGINEERING MODEL TO RESIDENTIAL LANDSCAPE

The final stages of the project involved much more than installing the last grating panel.

Handrails and stairs were completed and fine-tuned, landscaping and mulching were reinstated around the new infrastructure, electrical works were finalised, and the completed pathway underwent accessibility and engineering review.

Final housekeeping and site presentation were particularly important because the structure sits within an occupied residential environment rather than an isolated infrastructure corridor.

The objective was for the completed boardwalk to feel like a permanent and intentional part of The Orchards landscape, rather than simply an engineering structure passing through it.



PROJECT OUTCOME

Completed in September 2026, the elevated FRP boardwalk now provides residents at The Orchards with a safe, durable and accessible pedestrian connection through the Norwest development.

The approximately 500 m² system demonstrates how FRP can be applied well beyond traditional industrial walkways and marine infrastructure.

Here, FRP became part of the architecture and landscape of a residential community.

The project also demonstrates DM Composites' broader capability as a Design & Construct contractor, taking responsibility from geotechnical investigation and survey through engineering, foundations, structural framing, decking, accessibility elements, service coordination and final construction.

The most successful aspect of The Orchards is not any individual component. It is how the complete system works together.

Trees remain protected. Underground infrastructure remains accessible. Lighting is integrated. Accessible routes connect correctly. Landscaping wraps around the structure. And beneath the finished walking surface sits a complete engineered FRP structural system designed for long-term performance.

For DM Composites, The Orchards represents a strong example of what can be achieved when civil design, structural engineering, FRP fabrication and site construction are managed as one coordinated package.



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