COMPOSITES

DMWALK™

NIGRETTA FALLS STAIRS AND VIEWING PLATFORM

PROJECT CONTEXT & SIGNIFICANCE

Nigretta Falls sits on the Wannon River in the Western District volcanic province, a spectacular setting of ancient volcanic rock, seasonal flows, and steep escarpments. It's one of the region's signature natural attractions, with established picnic areas, a descent to the river base, and a formal lookout—now renewed through this upgrade.

Following flood and storm impacts (2022–23), Council prioritised a full replacement of the end-of-life timber stairs and the viewing platform, progressing procurement in late 2024 as part of the 2024/25 capital program before awarding the works.

LOCATION:

Nigretta Falls, near Hamilton, VIC, Australia

CONSTRUCTION COMPLETION:

AUGUST 2025

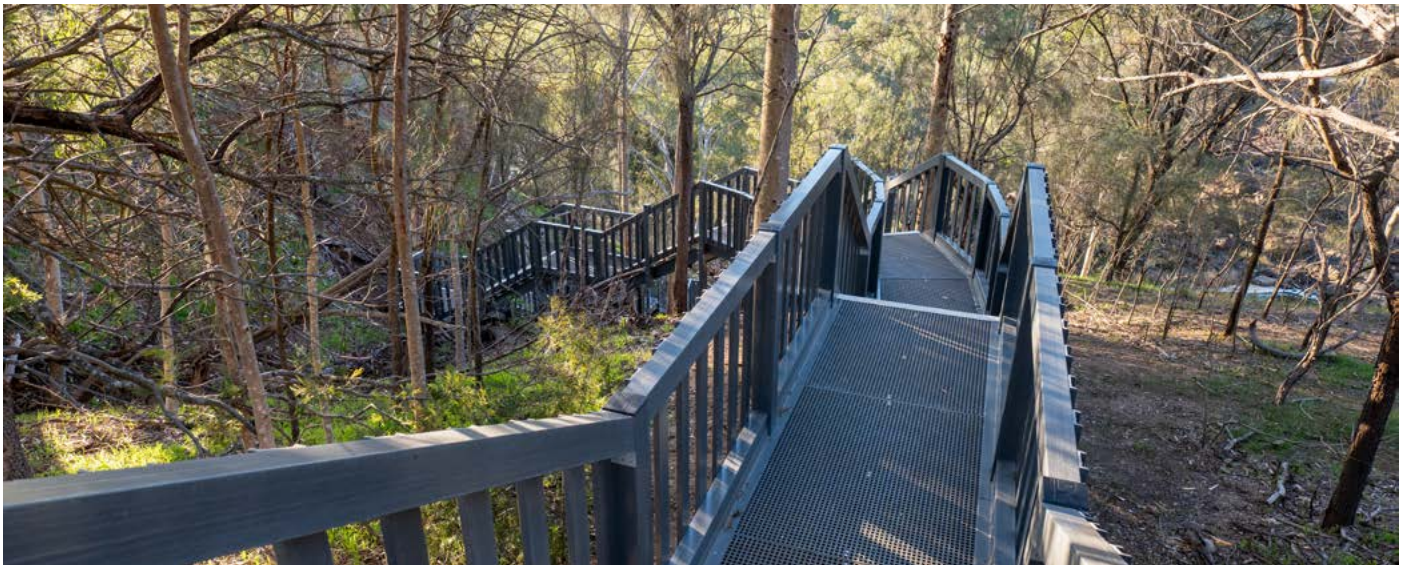
DM COMPOSITES' ROLE

DM Composites delivered a Design & Construct package in FRP (Fibre Reinforced Polymer): feature survey and geotech coordination, detailed design and certification, shop drawings and BOQ, off-site fabrication, site installation, QC/QA (ITPs, hold/witness points), and final as-built documentation. The new works replace the legacy timber structures with a durable, low-maintenance FRP solution designed specifically for steep, rocky terrain in a heritage and environmentally sensitive reserve.

DESIGN BRIEF, STANDARDS & PERFORMANCE TARGETS

The scope required a full engineering package and construction to the following performance and compliance framework:

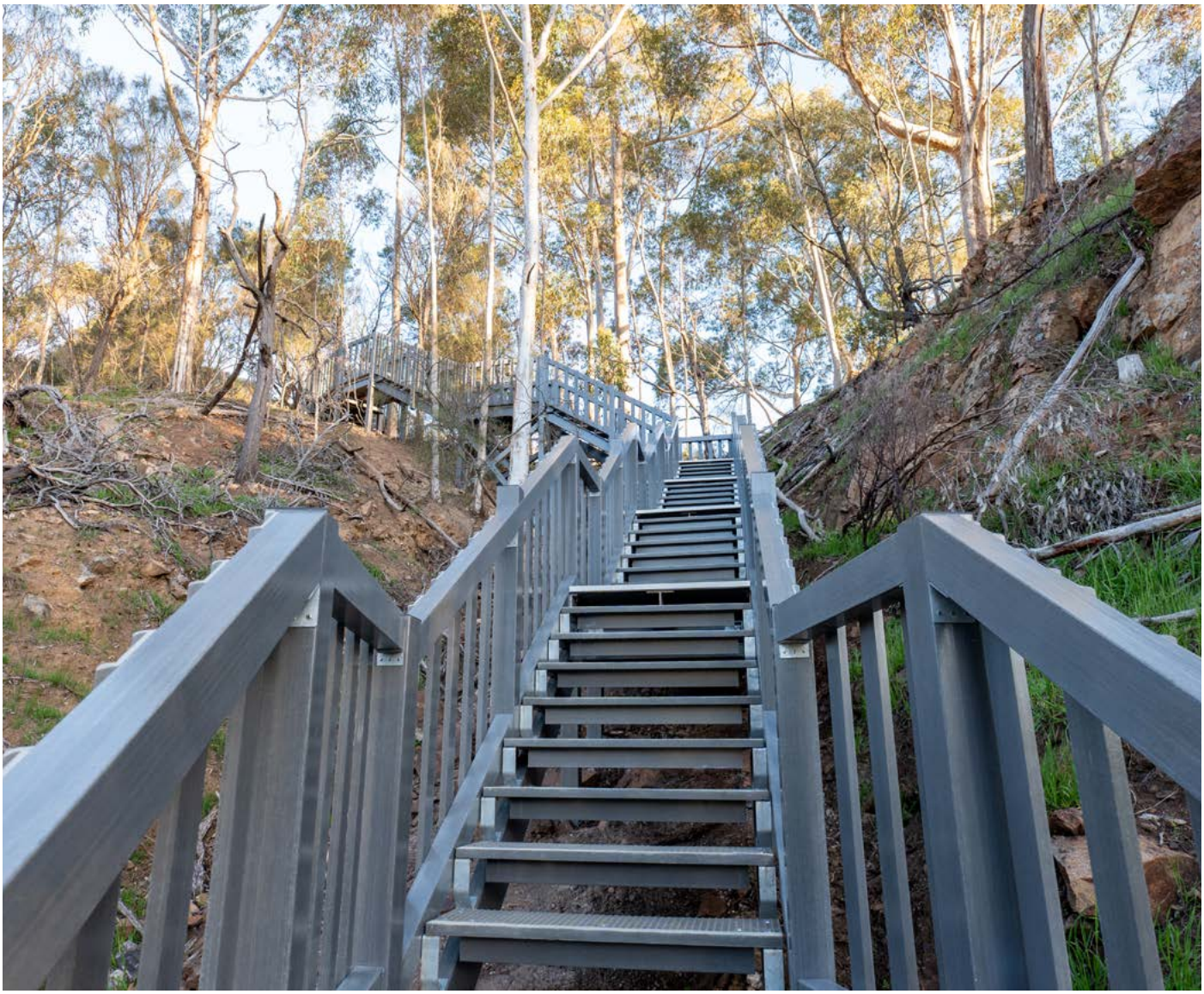
- Structures: FRP stair system (approx. 70.2 m total run over ~22.5 m descent) and a fixed viewing platform ~45 m², including handrails and landings.
- Codes & Standards: AS 2156.2 (Walking track—Infrastructure design), AS/NZS 1170.1 & 1170.2 (actions and wind), AS 1657 (fixed platforms, walkways, stairways & ladders).
- Procurement/Approvals: Draft → "for approval" design → 100% IFC; full calcs, ITPs, and as-built deliverables for Council acceptance.



ENGINEERING & MATERIALS SOLUTION (FRP FIRST PRINCIPLES)

System architecture. We employed a pultruded FRP superstructure (stringers, bearers, landings) with moulded FRP mini-mesh decking (anti-slip grit), and FRP stanchions with compliant rail geometry—optimised for wet traction, UV stability, and zero corrosion. **All fixings** (bolts/nuts/washers/rivets) are **HDG steel** for durability; handrails are all in FRP to resist tea-staining and provide a premium and long-lasting finish.

Design loads & service life. The stair and platform assemblies were designed for public pedestrian loads per AS/NZS 1170.1 and site wind per 1170.2, with member selection and connection detailing suited to long-term fatigue and vibration from footfall on stair flights. The FRP solution delivers a **50-year+ design life** in this exposure class with minimal maintenance burden compared to timber/painted steel.



CONSTRUCTION METHODOLOGY IN A STEEP, ROCKY RESERVE

Pre-works & access. We staged a light-footprint site establishment to keep plant and storage out of sensitive vegetation, using fenced lay-down pockets, tracked access, and hand-carried components where feasible to minimise disturbance and eliminate unnecessary widening. We implemented “No-Go Zones” around flora/fauna constraints and adopted wet-weather controls for winter works.

Foundations & footings. The escarpment’s steep, fractured volcanic geology required selective drilling into competent outcrops and localised anchors, with **rock drilling and concrete backfill** to support posts/struts in line with design verification and the geotechnical model. Existing footings were predominantly **not reusable**; however, we kept the **footprint alignment** as close as practicable to the legacy path to preserve desire lines, viewsheds, and vegetation.

Stair alignment & geometry. Multi-flight geometry was set out with survey control for consistent risers, goings, and landings; we paid special attention to the **transition geometry between flights** to maintain code compliance while respecting rock outcrops and tree root protection zones. Tight **post orientation tolerances** were maintained to keep handrail lines true and kickboard interfaces clean. (Survey + site checks included in ITPs.)

Viewing platform. The 45 m² lookout deck was framed on FRP bearers with an elevation that preserves **panoramic views** while limiting visual bulk. Edge kerbs, toe-boards, and balustrade infills satisfy barrier performance under AS 2156.2, with drainage gaps to avoid ponding and grit loss.

Approaches & interfaces. We poured two **reinforced concrete approaches** at top and bottom to transition cleanly to existing paths and to improve aesthetics, durability, and universal access outcomes.

ENVIRONMENTAL & CULTURAL STEWARDSHIP

In parallel with design, Council progressed **Flora & Fauna and Cultural Heritage** assessments to ensure the replacement enhanced safety without compromising values of the reserve. Our construction controls aligned with these constraints: limited clearing, sealed on-site cutting of FRP (to prevent fibreglass fines dispersal), spill kits, and strict waste segregation/removal. The entire program aligned to Council's protected-area expectations for **minimal disturbance** and fast rehabilitation.

PROGRAM, BUDGET & GOVERNANCE

Council's media releases note the upgrade was scheduled within the **2024/25 Capital Works Program** and contract award followed the December 2024 ordinary meeting. The project proceeded through staged construction and reopenings, culminating in full public access restoration in mid-2025.

CHALLENGES WE SOLVED

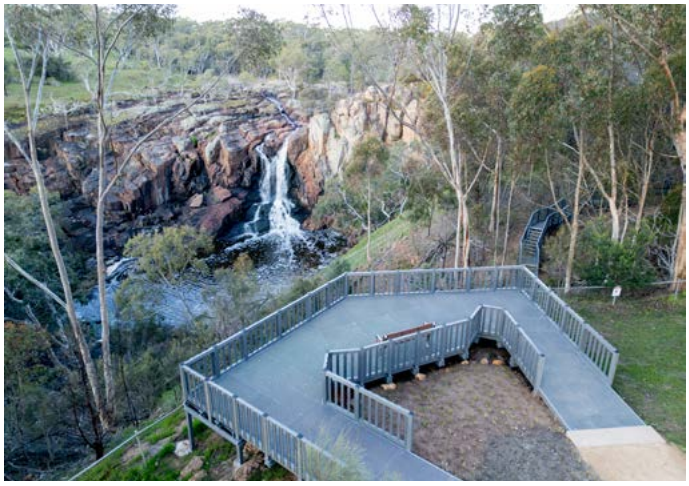
Winter build in exposure. Construction occurred through cold, wet, and windy periods typical of the Southern Grampians. We front-loaded off-site fabrication; on site, we used short work fronts and weather windows to complete rock drilling and concrete placements, then fastened prefabricated FRP modules under fall-arrest protocols.

Steep, rocky footing design. Irregular rock faces meant achieving both **bearing capacity** and **anchor pull-out** targets while threading through root zones. We combined resin-bonded anchors (where specified) and cast-in sockets with controlled grout to meet the geotech acceptance criteria without blow-outs into fractured seams.

Legacy alignment, modern compliance. Retaining the spirit of the original route while meeting **AS 1657** and **AS 2156.2** geometry was a key constraint; our stair modelling balanced comfort ratios with platform spacing to deliver compliant risers/goings and clear landings that feel natural in the landscape.

QUALITY ASSURANCE & CERTIFICATION

We delivered a full **ITP suite**—from fabrication dimension checks to installation hold points (anchors, post plumb/level, torque checks, deck fixings)—plus welding/NDT where applicable to steel interfaces, and final cleaning/defecting ahead of **as-built handover**. The works were certified by a **qualified structural engineer** in accordance with the nominated Australian Standards and Council's acceptance pathway.



BEFORE

AFTER

OUTCOMES & COMMUNITY IMPACT

The renewed Nigretta Falls access now provides a **safe, durable, and low-maintenance** visitor experience—restoring access to the base and delivering a modern lookout that celebrates the site's volcanic geology and river corridor. The switch to FRP eliminates rot and painting cycles while improving whole-of-life costs for Council, with a robust barrier system and high-traction deck that performs in wet conditions. The result is a landmark upgrade to one of the Shire's best-known natural attractions.

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