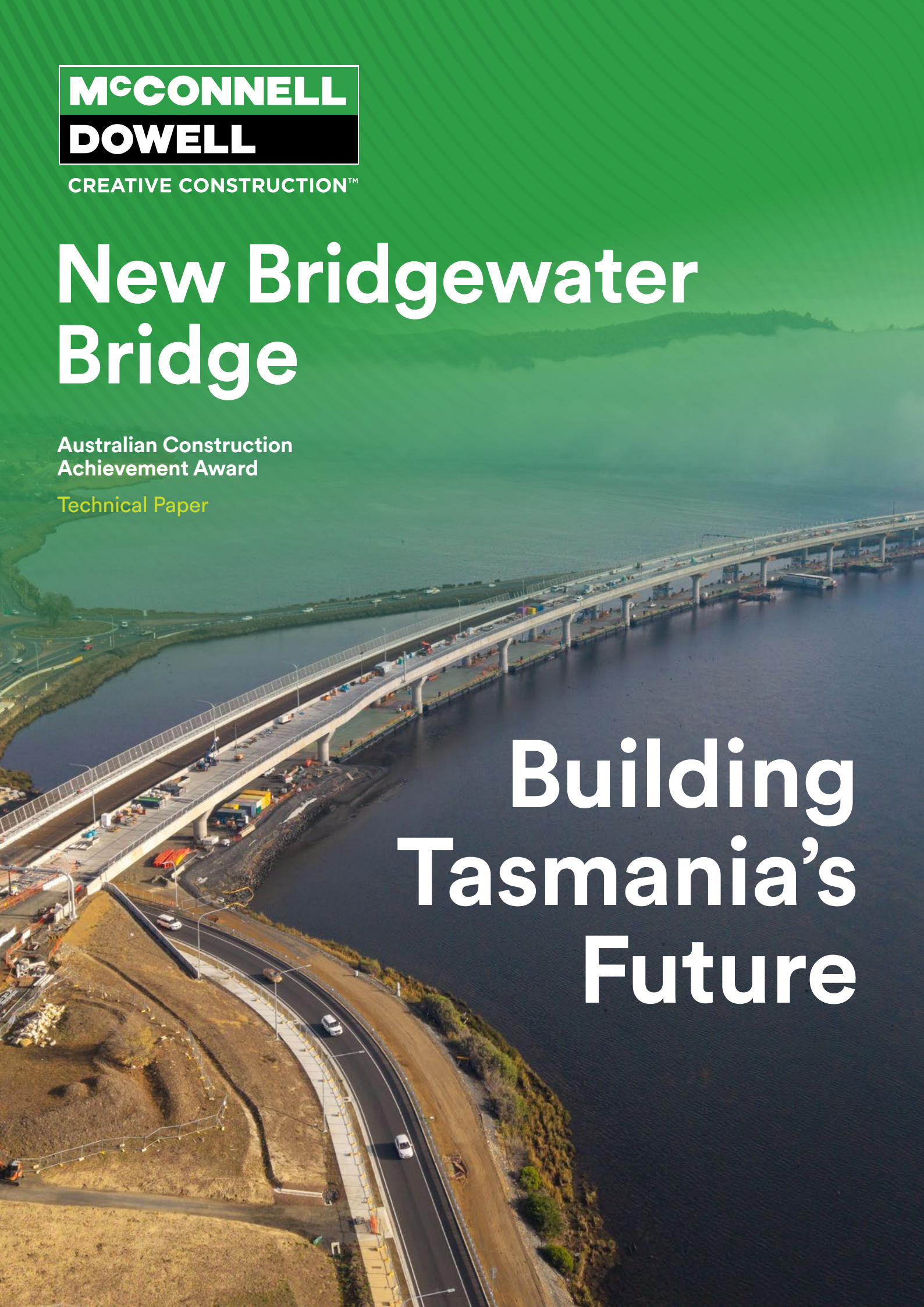
McCONNELL DOWELL

CREATIVE CONSTRUCTION™

# New Bridgewater Bridge

**Australian Construction Achievement Award**

Technical Paper



# Building Tasmania's Future

# A true feat of Tasmanian ingenuity. Built by local workers and companies from across the State.

Jeremy Rockliff
Premier of Tasmania



## Tasmania's National Highway Route 1 (Midland Highway), remains vital for freight and daily travel, linking the north and south of the State across the River Derwent.

## The New Bridgewater Bridge Project marks the next chapter in this crossing's history, aiming to deliver a safer, more efficient journey.

### Key objectives:

- **A modern four-lane divided highway with an increased 80 km/h speed limit to improve freight and commuter flow**
- **A separated shared pedestrian and cyclist path for safety and local connectivity**
- **Support for Tasmania's heavy vehicle network, meeting modern standards**
- **Improved traffic interchanges at Bridgewater and Granton**
- **Better connectivity to the Lyell Highway, local communities, and industry**
- **Preservation of marine navigation in the River Derwent with a fixed navigational clearance, supporting river access**
- **Enhanced open space and environmentally sensitive design**

Spanning 1.28 km across the River Derwent, the new crossing connects Brighton, Derwent Valley, and Glenorchy City, uniting diverse communities and landscapes. Following the State's extensive site investigations and community consultation, McConnell Dowell was proud to be appointed as the construction partner.

Further detailed planning and site investigations soon followed to ensure the project met Tasmania's future needs.

The project's scale and complexity set new standards:

- One of Tasmania's most ambitious initiatives, requiring collaboration across international and local stakeholders
- An innovative governance structure to address complexity
- Construction across a 1 km-wide river with shallow mudflats within marine reserves, unsuitable for large floating or land-based equipment
- The historic causeway, completed in 1836, is prone to subsidence and seismic activity
- The site includes wetlands, threatened seagrass, and habitats for aquatic life and migratory birds
- Situated within a landscape rich in Aboriginal history and reflecting over 200 years of European heritage.

This project exemplifies world-class engineering and collaboration, elevating Tasmania's infrastructure capacity. The New Bridgewater Bridge demonstrates how innovation, community engagement, and sustainability can come together to build a better Tasmania.

From advanced construction and environmental practices to fostering local talent and respecting heritage, the bridge sets a new standard for infrastructure and social responsibility—delivering more than a crossing; creating a legacy.

**Peter Fraser**
Project Director
McConnell Dowell

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**I was excited by the challenge and inspired by the innovative approaches developed by McConnell Dowell throughout this journey.**

**Ben Moloney**
Project Director, Department of State Growth Tasmania




# From the Client

The New Bridgewater Bridge stands as the largest transport infrastructure project in Tasmania’s history. As the State’s appointed Project Director, I was excited by the challenge and inspired by the innovative approaches developed by McConnell Dowell throughout this journey.

Smart delivery solutions—such as offsite pre-cast fabrication, concurrent construction fronts, and the use of twin Special Segment Lifting Devices (SSLDs)—enabled the project to stay on the critical path and minimise site-based risks like weather exposure. These approaches laid the foundation for:

- Meeting the project's delivery schedule, targeting mid-2025 completion
- Achieving exceptional quality, evidenced by zero pile defects across over 46 completed foundations (validated by 100% CSL and PIT testing)
- Delivering the project within the $786 million budget, jointly funded by the Australian and Tasmanian governments.

As we approach the mid-2025 completion date, it’s truly rewarding to reflect on a document like this—highlighting the many positive outcomes that extend far beyond the realm of infrastructure.

While the Tasmanian government sought a modern solution to connect our communities, we recognised the broader potential of this project to be a catalyst for lasting change. McConnell Dowell has risen to that challenge, and the community and local industry have embraced it. This project exemplifies what Tasmanians can achieve when we unite with a shared purpose.

McConnell Dowell has delivered on the brief—three years of construction, innovative solutions that minimised disruption, created opportunities, and protected our environment.

The opening of the New Bridgewater Bridge marks the culmination of this infrastructure milestone, but it is merely the beginning for Bridgewater. By elevating the highway, we have reconnected communities and unlocked land ripe for future development. This project offers a real opportunity for the Bridgewater area to enjoy new connections and a vibrant community revitalisation.

**Ben Moloney**
Project Director
Department of State Growth
Tasmania

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**McConnell Dowell has delivered on the brief—three years of construction, innovative solutions that minimised disruption, created opportunities, and protected our environment.**

**Ben Moloney**
Project Director, Department of State Growth Tasmania

# The New Bridgewater Bridge is not just an infrastructure project—it's a catalyst for the State's future growth.

Funded jointly by the Australian and Tasmanian governments, the project has created over 2,000 jobs, with 77% Tasmanian employment, and collaborated with more than 380 local suppliers, providing a significant boost to the regional economy.

This project is situated within a landscape rich in indigenous, colonial history, and ecological significance.

It lies within the River Derwent Marine Conservation Area, home to threatened flora and fauna, migratory birds, black swans, and vital sea grasses. Mitigating impacts such as noise, light pollution, wildlife disturbance, and sediment mobilisation was a key focus during construction.



## Fast Facts

- Four-lane capacity serving more than 22,000 daily trips.
- Two upgraded major interchanges at Bridgewater and Granton.
- 1.28 km long bridge over the River Derwent.
- Over 1,082 pre-cast segments fabricated at a purpose-built local facility.
- Shared pathway for cyclists and pedestrians.
- 12 linked barges and a 350-metre bridge to minimise environmental impact.

**2018**
Project Planning

**2020**
Site investigations & concept design development

**2021**
Tender & ECI phase

**2022**
Early Works Contract Award (Q1)

Design Development Commences

Pre-Cast Yard Construction begins

Civil works for the North and South Interchanges begins

**2023**
Temporary bridge and barge installation

Construction of the bridge structure commences

-Bridge piles

-In-situ piers

Pre-Cast yard commissioned and fabrication of pre-cast segments begins

**2024**
Erection of precast segments continues

Bridge deck finishing works begins

ITS Installation

**2025**
Final pre-cast segment installed

Asphalt campaign

ITS commissioning

Bridge open to Traffic

Final road realignment works


ACCA 2025 | New Bridgewater Bridge
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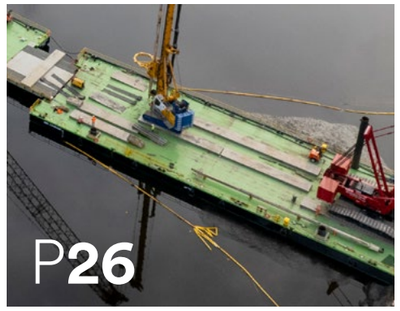




# Complexity, Challenges and Innovations

Multiple key construction activities being performed simultaneously along the 1.28km length of the new bridge.

## Navigating Unprecedented Challenges

The scale and technical complexity of the New Bridgewater Bridge make it a landmark project for Tasmania. The site presented unique hurdles — shallow mudflats unsuitable for traditional floating plant, a fragile ecosystem, a culturally significant landscape and a local community, some of which are located only metres from the project.

"Constructing over such sensitive environments required us to rethink conventional methods," Peter Fraser explains. "We had to develop innovative solutions that minimised environmental impact while maintaining schedule and safety targets."

> **This project pushed the boundaries of what's possible in Tasmanian construction.**

**Peter Fraser,**
Project Director



> **From tackling shallow tidal mudflats to managing environmental sensitivities, every aspect demanded innovation and precision.**

**Peter Fraser,**
Project Director

Shallow tidal mudflats with healthy seagrass alongside barges forming part of the temporary working platform.

As part of an Early Contractor Involvement (ECI) tender process, McConnell Dowell in collaboration with the Department of State Growth, developed a pre-cast segmental bridge solution, erected by a balanced cantilever methodology.

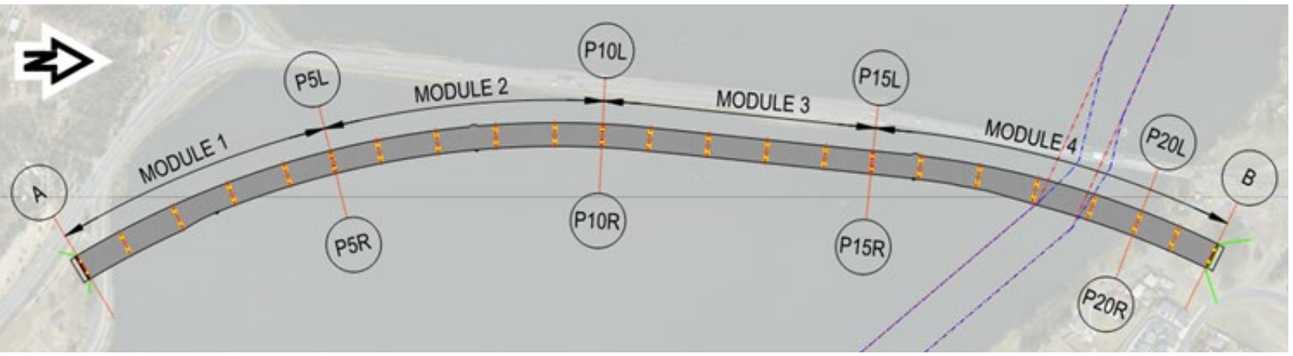
The bridge is founded on 2.5m diameter monopiles, up to 90 metres long, possibly the largest bored piles constructed in the southern hemisphere.

The superstructure consists of 1,082 pre-cast segments, weighing up to 90 tonne and fabricated in a purpose-built pre-cast facility close to the project site.

This solution addressed the site constraints while meeting government budgets and timelines.

To build the bridge, McConnell Dowell adopted an innovative and bespoke solution that shows how environmental considerations can drive construction innovation. Instead of traditional floating cranes, which would have had a detrimental impact on the wetlands and threatened seagrass habitats, the bridge team used interconnected flat-top barges placed directly on the seabed, combined with a more traditional temporary access bridge over the deeper river channel.

# Design and Construction Optimisation



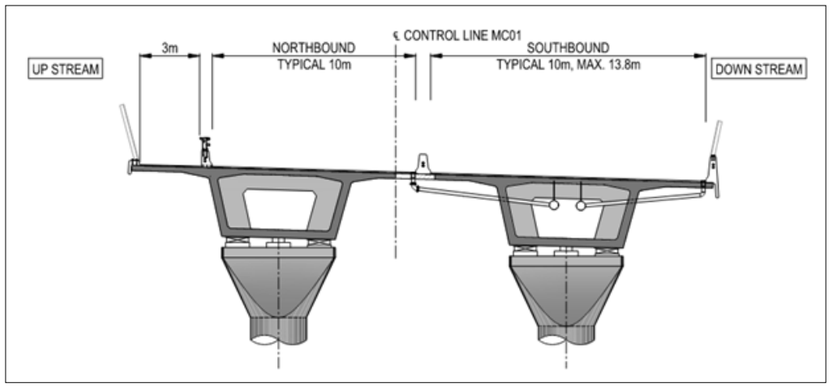

**Plan layout of bridge.**

Prior to McConnell Dowell joining the project, the Department of State Growth carried out extensive planning and optioneering of possible bridge solutions. Whilst the State did not want to dictate a specific solution for possible Contractors, the planning was necessary to develop the Project Specification and Technical Requirements (PSTR). In particular, minimum functionality requirements needed to be determined for the new highway and crossing, taking account of local impacts and budget constraints.

The State selected an Early Contractor Involvement (ECI) model with two separate proponents. This allowed the industry to develop innovative solutions that would meet the State's requirements, be delivered on time and provide value for money.

McConnell Dowell's approach to the ECI was to develop multiple options using the expertise of different consultants. The options were quantitively assessed to determine the best technical solution that also met the other objectives of the State including aesthetics, local content, and minimal impact to the environment.

The outcome of the studies and early work identified that the existing causeway and bridge were unlikely to be suitable for refurbishment. Anew bridge adjacent to the existing causeway would be required, which could be built off-line whilst traffic would continue to use the existing road network.

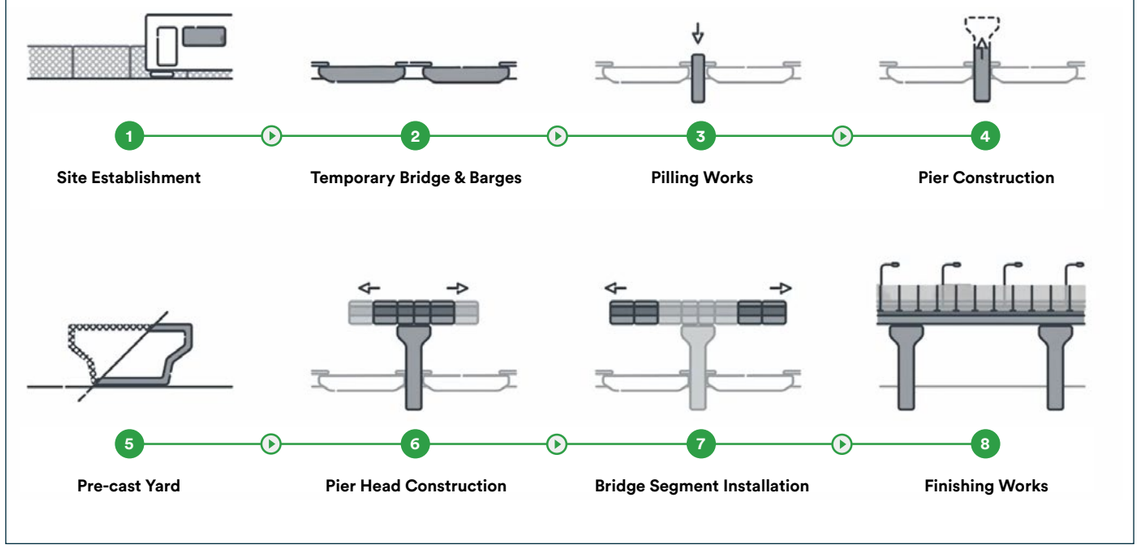



**Typical cross sections of bridge.**



**The solution, developed by McConnell Dowell and selected by the State for construction, consisted of the following key features:**

- A continuous twin box-girder bridge, consisting of 4 individual modules, nominally 300m each, allow for expansion/contraction between modules.
- Each box girder is supported by a standalone pier, founded on a mono-pile. This, simplified construction and provided an aesthetic structural form.
- Mono-piles were cased through the softer marine sediments and alluvial materials, then drilled through founding rock to achieve required strength and stiffness.
- Pier spacing was optimised to ensure the box girder could remain of constant depth, whilst individual segments remained at a maximum weight suitable for pre-casting, transportation and erection at site.
- The overall bridge length extended over the shoreline to allow connecting roads adjacent to the abutments and minimise visual impact to the shoreline.




**High-level staging of bridge construction.**

**Whilst the solution adopted for the project is elegant and simple, there were significant challenges that needed to be overcome:**

- How to build some of the largest and deepest mono-piles constructed in the southern hemisphere.
- How to construct the build over a sensitive marine environment, whilst achieving the productivity necessary to achieve the end date.
- How to build the pre-cast segments required for the solution to the required quality and deliver them to site at more than 4 per day at peak times.
- How to bring all the disparate components of the project together to complete the project.

# Mono-piles

The construction of the 2.5m diameter monopiles for the New Bridgewater Bridge presented significant technical challenges due to the highly variable and complex geotechnical conditions along the River Derwent.

A wide range of subsurface materials were encountered, from soft estuarine muds and gravels to extremely high-strength basalt with compressive strengths exceeding 200 MPa. Pile lengths varied dramatically, reaching up to 89.7 metres, necessitating the use of some of the largest piling rigs available in Australia. Achieving verticality tolerances within 1% over such depths required exceptional precision and operator skill, supported by advanced equipment such as Bauer BG45 rigs and 94m telescopic kelly bars.

The installation of steel casings and reinforcement cages introduced further complexity. Casings up to 48.3m in length were driven through soft soils using vibratory and impact hammers, with some requiring a drill-drive-hammer sequence to overcome skin friction and reach design toe levels. Reinforcement cages—some over 90m long—were fabricated locally for the first time at this scale and installed using innovative splicing techniques and bespoke access platforms. The dense reinforcement required careful detailing to ensure concrete flowability and structural integrity, particularly in the upper sections of the piles.

**Bored piling.**




Drilling fluid management was critical to maintaining borehole stability, particularly in the southern section where acidic soils affected the performance of the polymer-based drilling fluid. Continuous monitoring and chemical adjustment were required to maintain fluid quality and prevent socket instability. The polymer also offered environmental benefits and improved sediment settlement, which was essential for achieving clean pile bases. Base cleanliness was verified using weighted tape inspections, and verticality was confirmed using SHAPE testing, ensuring compliance with stringent quality standards.

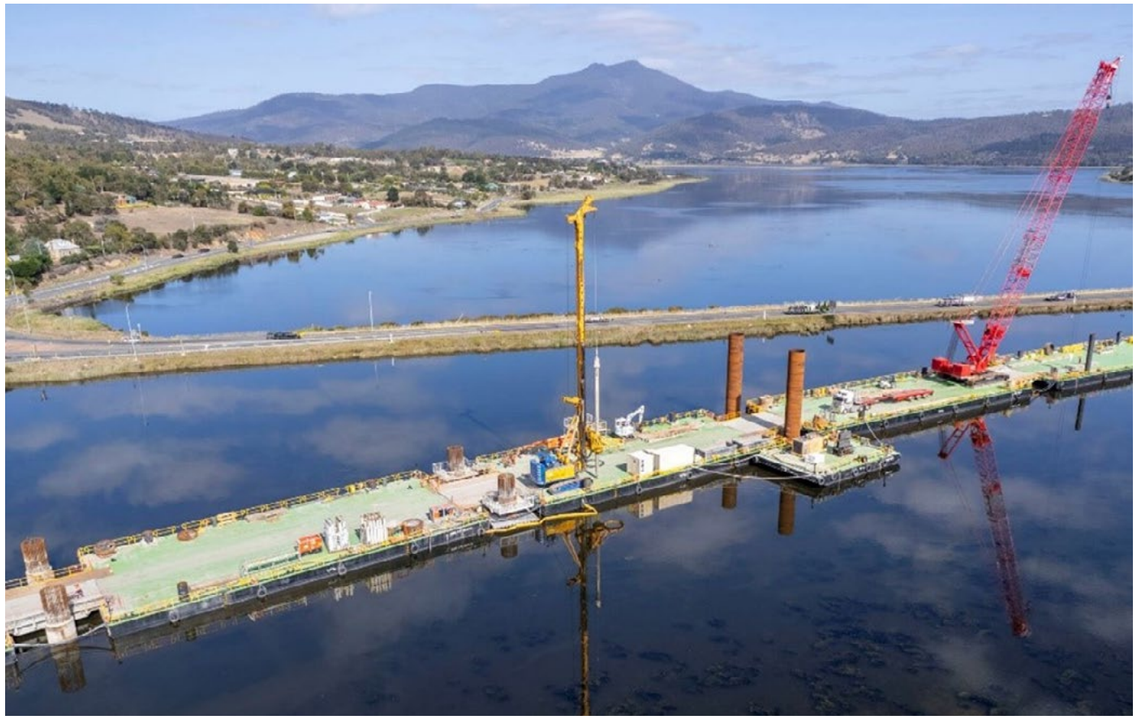
As part of the verification strategy, three test piles were constructed and tested using Osterberg Cell (O-Cell) equipment to validate the design assumptions and construction methodologies. These tests provided critical data on shaft and end bearing performance and confirmed the effectiveness of the construction approach. In addition to O-Cell testing, 100% of the permanent piles underwent integrity testing using PIT and CSL methods.

This comprehensive quality assurance framework was instrumental in delivering a robust foundation system under challenging geological and environmental conditions.

**Reinforcement cage installation.**

**Caisson installation.**

# Innovative Temporary Access Solution



Grounded barges for access over the mud-flats (causeway in the background).

The construction of the New Bridgewater Bridge required a robust and adaptable temporary access solution to span the Derwent River's complex and environmentally sensitive terrain. The project team encountered significant challenges due to the river's variable depth, tidal conditions, and soft estuarine mudflats in the south, contrasted with deeper, navigable waters in the north.

These conditions rendered conventional marine access methods impractical or unsafe for the scale of equipment and operations required. Additionally, the need to minimise disruption to public roads and reduce environmental impact added further complexity to the access planning.

To address these challenges, two distinct temporary access systems were developed: a 700-metre-long ballasted barge causeway across the southern mudflats and a modular temporary bridge over the deeper northern channel. The barge causeway, composed of interlinked heavy-lift barges, was carefully ballasted to embed into the riverbed, providing a stable, all-weather platform for heavy plant and equipment.

This innovative approach eliminated the need for floating marine plant in shallow, tidal zones and significantly reduced the risk of instability during critical operations. Real-time monitoring of barge settlement showed performance exceeded design expectations, even during heavy lifts.



In the northern section, where water depths and river velocities were greater, a temporary bridge was constructed to provide safe and consistent access. This structure was designed to accommodate large cranes and piling rigs while maintaining navigational clearance for river traffic.

The bridge's modular design allowed for efficient installation and relocation, supporting dual work fronts and enabling flexibility in the construction sequence. Its alignment and deck levels were carefully coordinated with the southern access and permanent works, ensuring seamless integration across the site.

Ultimately, the success of the temporary access strategy was a result of early planning, collaborative design, and a strong emphasis on safety and constructability. By tailoring access solutions to the unique conditions of each river zone, the project team was able to maintain productivity, reduce environmental impact, and mitigate programme risks.

These temporary works not only enabled the efficient delivery of the bridge foundations and superstructure but also demonstrated the value of investing in high-quality, purpose-built access infrastructure for complex marine construction projects.

Temporary bridge access over the deeper water channel.

# Bespoke Segment Production Pre-cast Facility

**The construction of 1,082 match-cast segments for the New Bridgewater Bridge presented a series of logistical, technical, and workforce-related challenges.**


A dedicated pre-cast facility was established just 2km from the bridge site.



A segment has been cast from the mould at the bespoke pre-cast facility.

Tasmania's limited existing infrastructure meant there were no suitable pre-cast facilities capable of supporting the scale and complexity of the segmental works. Additionally, the project's tight programme, the need for consistent high-quality output, and the constraints of transporting over-size over-mass (OSOM) segments to site demanded a purpose-built solution. The match-casting technique, which requires each new segment to be cast against the previous one, further complicated production sequencing and necessitated a highly controlled and continuous workflow.

To overcome these challenges, the project team established a dedicated pre-cast facility just two kilometres from the bridge site. The location was strategically selected based on proximity, road access for OSOM transport, and geotechnical suitability. The facility was designed with a manufacturing mindset, incorporating two large, covered sheds, five segment moulds, and a 100-tonne gantry crane servicing a storage yard capable of holding over 300 segments.

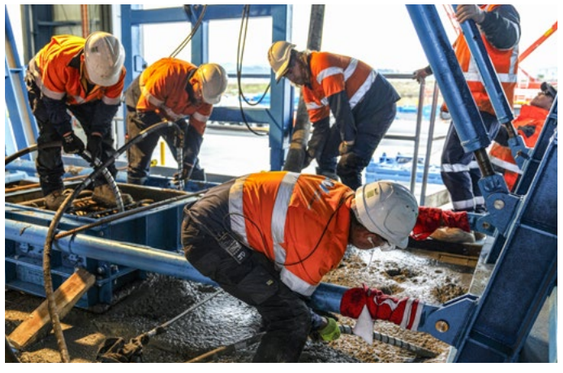
This setup enabled one-day casting cycles for field segments and two to three-day cycles for pier and abutment segments, effectively removing segment production from the project's critical path.

A key innovation was the adoption of a "slice" method for reinforcement cage fabrication, which significantly improved ergonomics and productivity. By pre-assembling reinforcement in modular slices on adjustable tables, over 50% of the steel fixing could be completed off the jigs, reducing manual handling and crane time. This approach, combined with custom-designed jigs and moulds that prioritised safety and access, allowed the team to scale up production rapidly.

The facility also implemented lean manufacturing principles, including just-in-time workflows and continuous improvement practices, to maintain consistent output and adapt to evolving project demands.

The success of the pre-cast yard was not only due to its physical infrastructure but also the investment in workforce development. Requiring over **150 workers** at peak, but with limited local experience in segmental bridge construction, the project adopted a self-perform model and invested heavily in training and upskilling local workers.

This approach fostered a strong team culture, with local personnel quickly stepping into supervisory roles. The combination of thoughtful facility design and location in close proximity to the bridge, innovative fabrication techniques, and a committed workforce enabled the project to meet its ambitious production targets safely and efficiently, setting a benchmark for future large-scale pre-cast operations in regional Australia.



Teamwork was the key to the successful casting of the first of 1082 New Bridgewater Bridge segments.

# Excellence in Delivery

The New Bridgewater Bridge project exemplified excellence in delivery through the seamless integration of complex construction methodologies across challenging environments.

Foundation works involved the installation of large-diameter mono piles at both river and land-based pier locations, using a combination of steel casings and deep rock sockets. Environmentally responsible practices were prioritised, including the use of biodegradable polymers and controlled spoil management to protect the river ecosystem.

The substructure, comprising 21 piers with twin columns and pre-cast transition shells, was constructed using offsite-fabricated reinforcement cages and single-pour casting techniques, enhancing durability and reducing construction joints.

The superstructure was delivered using balanced cantilever construction with twin pre-cast box girder segments, erected via cranes and Special Segment Lifting Devices (SSLDs) from temporary access platforms. This method provided flexibility in span arrangement and allowed multiple work fronts to operate concurrently, optimising the construction schedule.

> **Our pre-cast approach not only improved quality and productivity but also reduced environmental impacts and schedule risks.**

**Ed McPhillips**
Construction Manager

**The pier head segments were erected by crane, while the field segments were lifted into position by the Special Segment Lifting Devices.**



> **It's a prime example of how innovation can redefine construction standards.**

**Glynn Thomas**
Engineering Manager

**The placement of the last of 1082 pre-cast segments completed the new bridge.**

The approach also reduced the footprint and complexity of temporary works, making it particularly effective in constrained and environmentally sensitive areas. The use of offsite pre-cast technology further contributed to programme certainty, quality control, and aesthetic outcomes.

Beyond the bridge itself, the project delivered major interchanges at Bridgewater and Granton, incorporating integral road bridges, water-sensitive urban design, and extensive landscaping.

These interchanges were constructed using bottom-up methods with Super T girders and flexible abutments to ensure structural resilience. A comprehensive Intelligent Transport System (ITS) was also integrated, featuring real-time traffic management tools such as Variable Message Signs, CCTV, and vehicle detection systems. Together, these elements formed a cohesive, future-ready transport corridor that enhances safety, connectivity, and long-term operational efficiency.

As engineers, we often forget that large plant and equipment required to build major projects can be unsettling for some, and raise questions about what construction will look like, and will there be any impact.

To help our neighbours and the wider community understand how the project would be built, McConnell Dowell and the State produced an animation illustrating the construction process. Its success can be measured in the 26,000 YouTube views, and its use as a valuable visual tool for the onboarding of new employees.

**Scan the QR code to view the construction animation.**

# Collaboration and Collective Effort

> **Over 250 organisations played a vital role in the successful delivery of the New Bridgewater Bridge. Their expertise and dedication were instrumental in shaping its design, construction, and supply.**

**Ben Moloney**
Project Director, Department of State Growth Tasmania

Department of State Growth's small but strategic team of six or seven staff effectively managed the Deed, supported by an independent verifier, GHD, which operated under a tripartite agreement with McConnell Dowell and DSG to verify compliance.

"This structure fostered an open, efficient, and transparent working environment, with robust checks and balances ensuring accountability," explains Moloney.

McConnell Dowell's engineering team led the design efforts, engaging Jacobs for civil and roadworks, Tony Gee and Partners from Hong Kong for the main structure, and Tonkin and Taylor for geotechnical and foundation design. Local business pitt&sherry served as proof engineers and separately managed the temporary bridge design.

A sub-alliance between VSL and McConnell Dowell was established specifically for pre-cast yard operations and superstructure erection.

Throughout the project, McConnell Dowell worked hand-in-hand with Tasmanian businesses including - BridgePro, Hazell Bros, and Batchelor's—each vital to delivering pier construction, concrete supply, and other key components, seamlessly transitioning from planning into the delivery phase.



Fig. 02
**New Bridgewater Team Chart**


**Tasmanian Premier Jeremy Rockliff and key stakeholders.**

# Committed to Tasmania's future

**By supporting local industry, and driving economic growth through strategic partnerships, local investment, and workforce development.**

## Fast Facts

- Over 160,000 training hours for local workers
- More than 15 local training providers involved
- Over $12 million spent monthly within Tasmania
- 380+ local suppliers engaged

Our ‘Local First’ procurement framework maximised local content by designing work packages to suit local providers. We engaged major subcontractors to ensure scope, pricing, and requirements prioritised local employment and procurement opportunities.

This approach aimed to involve local businesses in planning, ensuring value for money and capacity. Recognising SMEs comprise about 94% of Tasmania’s civil construction industry, we developed a comprehensive local SME database.

We understood the social impact and aimed to create job and skills opportunities for disadvantaged groups. Collaborating with subcontractors and training providers, we targeted industry skill gaps and reduced non-local content through upskilling

During construction, around $12 million was spent monthly in Tasmania, with over 380 local suppliers contributing—highlighting our focus on regional economic growth and strong local relationships.

**Local female high school students participated in the Gender Equity in Trades programme as a pathway to trade apprenticeships.**




**The project celebrated diversity in construction at every opportunity. On this occasion it was International Womens Day.**

## Collaboration and Community Engagement

Strong relationships with TasPorts, Skills Tasmania, UTas, TAFE Tasmania, CCF, and Keystone supported employment pathways and tailored training programs. These networks facilitated local workforce growth and industry sustainability.

Local contractors like Hazell Bros, BridgePro, and Batchelor played key roles—developing local concrete mixes, innovative temporary solutions, and engineering expertise.

## Promoting Upskilling and Industry Connections

The project engaged with initiatives like the UTas PRIMED program, where students gained industry exposure and mentoring before starting careers. Some UTas students obtained casual engineering roles, with three securing graduate positions.

Graduates have gained experience across disciplines, building connections and broadening their skills..

Nearly all workers received structured training, ensuring Tasmania’s workforce remains competitive.

## Building a Sustainable Future

The ‘Local First’ approach extends beyond economics; it fosters skills, inclusion, and community resilience. By strengthening local talent and industries, the project paves the way for sustainable growth and self-sufficiency.

This project creates a lasting legacy of community and economic development.

# Setting Environmental Benchmarks in Infrastructure

Real-time monitoring ensures adherence to strict environmental regulations, while adaptive management strategies and rigorous oversight allow for continuous improvements.

The project site includes ecologically sensitive estuaries, threatened seagrass and aquatic species habitats in a marine conservation area, and a culturally significant landscape showcasing both Aboriginal heritage and 200 years of European transport history.

McConnell Dowell is not just building bridges; it is contributing to a more sustainable future by pioneering environmental solutions that can be adopted across the wider construction industry in Tasmania and beyond.

Through innovative sediment and water quality management systems, along with environmentally conscious material selection, McConnell Dowell is actively reducing its impact footprint while establishing new standards for sustainable infrastructure.

Our proactive engagement with regulatory bodies and communities ensures that our practices not only meet but exceed environmental compliance requirements. By integrating advanced solutions into our construction approach, like real-time erosion control and new waste treatment methods, we are driving industry-wide improvements, demonstrating that large-scale projects can be both efficient and environmentally responsible.

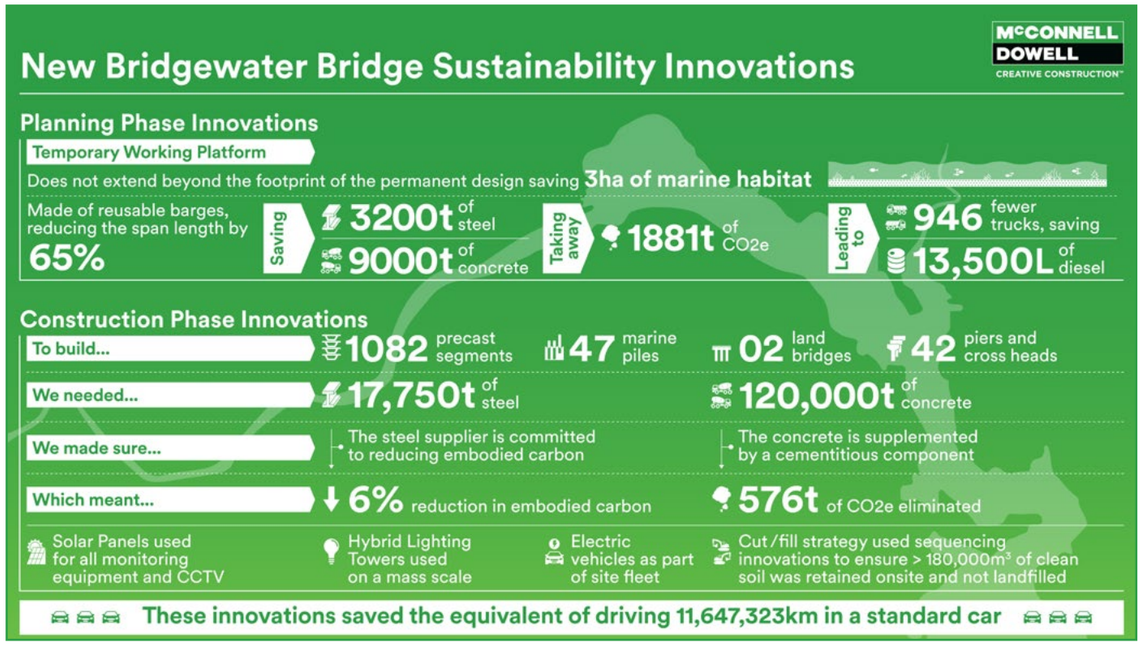
**The project includes sensitive environmental, cultural, and historical sites.**

> **McConnell Dowell minimises ecological impact through meticulous planning and environmentally friendly building approaches to enhance sustainability.**

**Gordon Williams**
Environment Manager, McConnell Dowell



# Building with Integrity: Responsible Sustainability




McConnell Dowell's commitment to low-carbon design, local sourcing, and circular economy initiatives aligns with its broader goal of achieving operational net zero by 2030, supported by a roadmap of 44 sustainability initiatives that are progressively being implemented.

While not mandated, McConnell Dowell adopted ambitious sustainability metrics, focusing on resource reduction sustainable procurement practices prioritising low-carbon materials and local sourcing to reduce carbon miles. Strategies include innovative construction methods like mono piles and low-carbon cement blends. Hybrid lighting towers, hybrid excavators, electric vehicles and solar-powered equipment were utilised over the use of diesel alternatives to further reduce the overall construction phase carbon footprint.


**Environment Manager, Gordon Williams, stands near one of the project's electric vehicles – part of our drive to reduce emissions.**

# Environmental Spotlight: Unique Solutions for Unique Challenges

Managing the health of the River Derwent was critical to environmental success.

To manage turbidity, telemetry-based water quality monitoring provided real-time environmental data, while shallow-draft vessels and continuous silt curtains minimised sediment disruption.

Biosecurity measures ensured temporary bridge barges arrived fully compliant with Biosecurity Tasmania's regulations, with specialised risk assessments and hull cleaning protocols applied to project vessels before entry into Tasmanian waters.

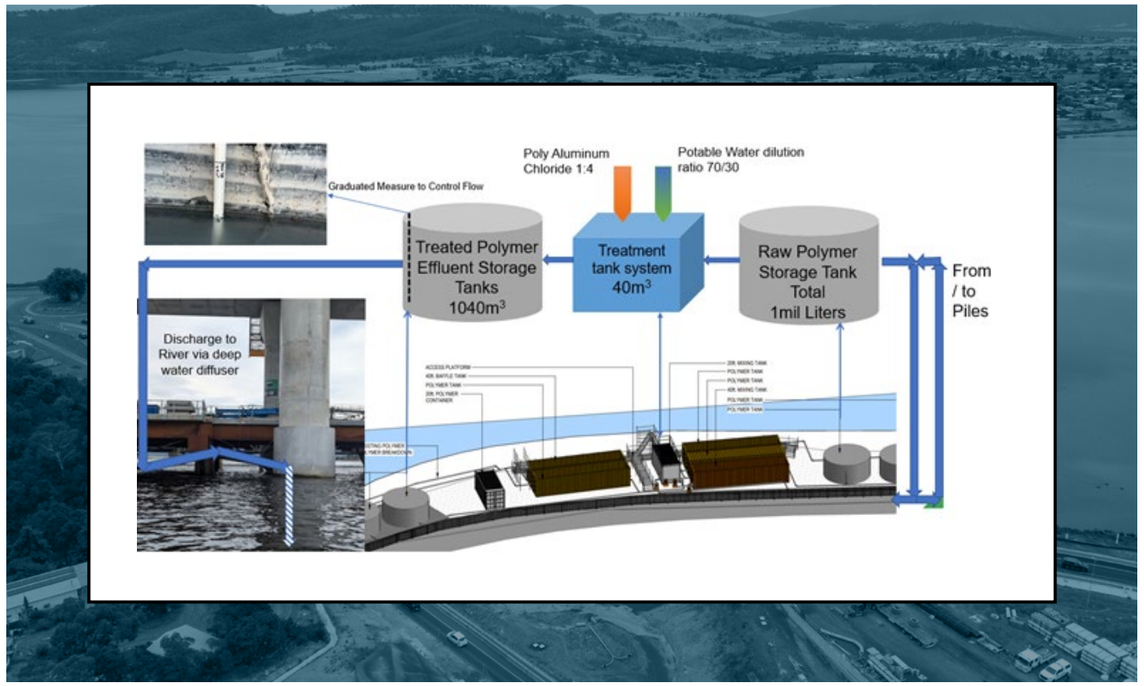
Seagrass habitat protection was achieved through defined barge landing locations, preventing lateral movement and allowing natural regeneration post-removal. The barge bridge was positioned within the shading zone of the permanent bridge to limit further impact.

Noise and marine fauna risks were reduced with bubble curtains, soft-start piling procedures, and fauna guards, while encapsulated welding platforms and protective blankets prevented debris from entering waterways.

Land reclamation strategies included silt curtains to manage turbidity, controlled clean fill placement to prevent sediment mobilization, and rolling fill platforms providing a 1-2 meter barrier during Mass Soil Mixing (MSM).

Spill prevention was reinforced on-site and in the Marine Reserve with spill kits, and hydrocarbon absorbent booms, ensuring response and protection against hydraulic oil and chemical spills.






McConnell Dowell developed a groundbreaking polymer treatment process showcasing project innovation.

# Environmental Spotlight: Pioneering Polymer Disposal - Breaking the Cycle of Inefficiency

Traditional polymer disposal options were unviable due to high costs and regulatory hurdles. McConnell Dowell innovated by developing a groundbreaking polyaluminium chloride treatment process, separating solids from water safely and efficiently.

**Results:**

**- Over 1 million litres of treated effluent discharged safely**

**- Zero ecological harm**

**- Sludge repurposed for beneficial reuse**

This industry-first approach not only solved disposal challenges but also set new environmental standards for future projects.

# Environmental Spotlight: New Bridgewater Bridge ERSED, Revolutionising sediment and erosion control on civil projects

For decades, construction sites have relied on static, pre-construction soil and erosion plans—once drawn up, they were filed away and rarely revisited. While these traditional methods checked the compliance boxes, they often fell short when it came to adapting to the dynamic realities of a construction site. The result? Inefficiencies, missed opportunities, and increased environmental risks.

Thanks to this groundbreaking Tasmanian innovation, we now have a new approach: live, dynamic mapping.

New Bridgewater Bridge ERSED is a GIS-driven system that is rewriting the rules of environmental management. Instead of static plans, the system provides a live, real-time map that tracks and responds to site changes as they happen.

This smart technology allows construction teams to respond immediately to evolving conditions, reducing environmental risks and ensuring compliance.

The innovative approach has garnered attention from regulators and industry leaders alike, setting a new standard in environmental responsibility.

New Bridgewater Bridge ERSED is shaping the future of sediment and erosion control legislation across the region with a model for the future.

As a result, Steph Holterhoff, McConnell Dowell's Environmental and Sustainability Graduate on the project, was recognised with the NAWIC Innovation Sustainability Award 2024, which highlights innovation in sustainable design, practice, and process-driven sustainability.

**NAWIC Tasmania Innovation and Sustainability Award winner 2024, Steph Holterhoff.**



# Environmental Spotlight: Sustainable Waste Management - Revolutionising Acid Sulfate Soil Treatment

**The challenge of managing Acid Sulfate Soil on the project started a longer term management plan for the Tasmania.**

Tasmania's first Acid Sulfate Soil (ASS) treatment facility at Mornington Park showcases the project's commitment to innovative waste management, successfully diverting over 13,500 tonnes from landfill and repurposing it sustainably.

This demand provided the necessary funding for local Tasmanian company Mornington Park Waste to establish the facility, which will now support future developments across Tasmania facing similar environmental challenges.

Excess fill was repurposed for community benefit—creating a berm for the Hobart Clay Target Club. This was a sustainable use of waste material that would otherwise have become landfill.

We've made decisions about waste that sit higher in the waste management decision heirarchy, driving us towards net zero.

# Building Skills for Tasmania's Future

**Our focus on training and development is about more than just meeting targets — it's about empowering the next generation of Tasmanian workers and industry leaders.**

**Naomi Walker**
Training and Development Manager.


The Construction Discovery Tour saw almost 1000 local school children, particularly young girls, visit the project and learn about career options in the construction industry.



Young project engineers share their experience and knowledge with UTas students.

## Fast Facts

- 99% of training hours achieved against target
- 78% trainee and apprentice completion rate
- 57 people participated in the pre-employment program
- 26% women and 28% Indigenous participants in the pre-employment program
- 17 participants secured employment on the project through the program

## Achieving World-Class Training Outcomes

**The project has set a high standard in workforce development, currently achieving 99% of its target of 160,000 training hours. Of these, 70% are dedicated to trainees and apprenticeships, which boast an impressive 78% completion rate—well above the industry average.**

The remaining 30% of hours focus on high-risk work licenses, safety, and leadership training, ensuring a comprehensive skills development program that supports safety and operational excellence.


**Engaging people with disabilities benefits the community and the whole project team.**

## Industry Engagement and Educational Pathways

The McConnell Dowell/UTas PRIMED Program, connected students directly with industry professionals. This initiative provided students with invaluable insights into how their education translates into real-world infrastructure projects, creating clear graduate pathways and fostering local talent. We've had over 20 members of our project team participate in this program through mentoring partnerships, special guest lectures and providing hands on support in student lessons.


**Supporting the Migrant Resource Centre demonstrated the project team's desire for diversity in the workforce.**



## Employee Spotlight
## Tiarna Bricknell's Transformation

**Tiarna Bricknell**

**"I wake up feeling motivated for work every morning, I love being a part of this construction family, and I am so thrilled to be part of a project that will change the way we travel in Tasmania.**

**Tiarna Bricknell**
Stakeholder Engagement & Communications Administrator

"I am Tiarna Bricknell, a 21-year-old Tasmanian woman working with external stakeholders on the New Bridgewater Bridge Project team.

In 2020, I studied hard and achieved my TCE at New Norfolk High School. I wasn't sure what I wanted to do for work. I ended up working as a cleaner on the New Bridgewater Bridge Project.

As construction works progressed, I was exposed to more aspects of construction and learned more about what other workers do on the project. I was fortunate to have some great female mentors who gave me a leg up, along with some very good advice.

I came to the attention of the lead contractor McConnell Dowell who offered me a role on their Administration Team.

I took to the role very quickly and was supported to take up some training with a Certificate III in Business.

In late 2023 I received a promotion to my current role of Stakeholder Engagement and Communications Administrator, and I haven't looked back!"

Along with my increased confidence, I have obtained more accreditation and some tickets and have expanded my construction knowledge. But I want to learn more, and more. I have now just completed my IAP2A Certificate in Engagement, an internationally recognised accreditation."

With many large-scale projects planned for Tasmania in coming years, it is important that our State has a good supply of experienced engagement professionals, ready to manage community impacts, implement community partnerships, and ensure smooth construction delivery."

# Safety First: Building Tasmania's Future with Care and Commitment

**A focus for McConnell Dowell on the New Bridgewater Bridge project, was developing a strong safety culture throughout the workforce. With many either entirely new to the industry or the complexity of the project, it was critical to adopt a multi-layered/faceted approach to safety.**

McConnell Dowell collaborated with local safety experts to develop a comprehensive four-stage Safety Culture Program, designed to empower project leaders, team members, and contractors

1. **Leadership – Developing great safety leaders**
2. **Engagement – Unlocking and harnessing intrinsic motivations**
3. **Culture – Nurturing a positive safety culture**
4. **Care – Harnessing the power of "psychological safety"**

> "Safety isn't just a policy — it's a mindset we cultivate every day. Our success is measured by everyone going home safe.

**Luke Gardner**
Health and Safety Manager.



## CASE STUDY: Preventative initiatives to drive safety outcomes

A screenshot from the 'Melon head' safety video

With so much of the worksite elevated above the temporary access bridge, the risk of dropped objects was a major focus for the team.

Safety Manager, Luke Gardner, implanted a multi-pronged approach, such as specific inductions and training, regular targeted inspections, motivational speakers and engaging demonstrations to build an understanding and improve compliance with all of the controls implemented on the project to prevent dropped objects.

**The Melon Head**

What we were trying to achieve: To illustrate to the entire workforce what the impact of dropped object could be on anyone working or travelling below the elevated worksite.

**What we did**

A simulation was set up in a controlled environment to enable various common objects found on the construction site to be dropped from the top of the bridge deck to the ground below. Watermelons with hard hats were used to simulate a workers head and (spectacularly in some cases) illustrate the damage possible.

This demonstration paired with the messaging from motivational speaker Scott Roth (Coach Tasmanian Jack Jumpers) "Be the best .... When no one is watching" was formed in to the safety messaging for the workforce

**"We do it right every time, no shortcuts ..... Critical Controls, even when no one is watching."**

**The impact**

- The initiative achieved excellent engagement from the crews during the sessions, a few people mentioned "I thought my hard hat was stronger than this".
- Beyond the project - The New Bridgewater Bridge Melonhead video was produced and widely viewed within industry.

**Scan the QR code to view the 'melon head' safety video.**

### Risk Management – Psychosocial and psychological safety

Before mobilisation, the team conducted a thorough review and a Cultural Maturity Survey, adapted from the Australian Government's People at Work Survey. The findings informed targeted improvements, enabling evidence-based decision-making to address potential risks.

The team focus on creating a psychologically safe work environment was especially important with a number of the staff and workforce having relocated for the project and being away from their normal routines and support networks.

Wellbeing surveys continued throughout the project to allow the Leadership Team to respond proactively to issues and concerns and target areas requiring attention. An example of this beyond 'just work" approach was how the team was able to assist in expediting visas for family of a team member who required support

# Building Bridges with Community: Engagement and Legacy

> **Our goal was to create more than just a bridge — we wanted to foster a genuine connection with the Tasmanian community...**

### Stakeholder Engagement and Strategic Communication

"Building trust was fundamental," emphasises Ally Hicks. From the project's inception, a comprehensive stakeholder analysis identified key groups, with tailored communication strategies to ensure transparency and collaboration.

A dedicated engagement team maintained regular contact with community members, local councils, and project partners. This approach fostered a high level of trust and support, with community involvement woven into the project's fabric.


**Attending community events and career and jobs expos has inspired Tasmanians to consider careers in construction.**



### Gender Equity in Trades (GET Program)

One of the standout community initiatives was Gender Equity in Trades (GET), a collaboration with local high schools, the South Central Trade Training Centre, and Build Up Tassie employment programme. A 20-foot shipping container was purchased and fully fitted out over six months by a dozen local female students, providing hands-on experience with electricians, painters, and carpenters.

"Seeing young women confidently learn trades and secure apprenticeships has been incredibly rewarding," Ally Hicks highlights.

The container was donated to the Brighton Community Food Hub close to the project site, serving as a training and coffee break space for volunteers, turning the project into a community asset.

"This program was about breaking down barriers and showing young women that construction is for everyone.," she adds.

**The Gender Equity in Trades programme kick-started careers in trades for young local female students.**

> **...from inspiring young women to pursue trades to celebrating local arts, every initiative aimed to leave a lasting positive impact.**

**Ally Hicks**
Stakeholder Engagement & Communications Manager


**The project's Construction Discovery Tour has exposed upper primary and early high school aged students to career options in construction.**

### The Construction Discovery Tour

Nearly 1,000 Tasmanian students participated in the Construction Discovery Tour, gaining insights into careers in construction. Special emphasis was placed on encouraging more young female students to consider careers in construction. The programme included interactive site visits and career talks that showcased our female staff and workers to the young visitors.

These potential future construction workers will continue to build the Tasmania of the future.

### Case Study: The Bridge Art Prize Legacy

The Bridge Art Prize 2025 was launched to celebrate the bridge's significance to Tasmanians through creative expressions across all media—photography, painting, sculpture, music, and more. Artists explored their connection to the bridge, resulting in an exhibition that attracted more than 400 people to the opening event, and a further 1000 Tasmanians to the month-long exhibition.

"This was a great opportunity for both emerging and established Tasmanian artists to showcase their talent and connect with Tasmania's heritage," said Ally Hicks.

With a prize pool over $36,000, including a $25,000 main prize, the competition was sponsored by McConnell Dowell and it's bridge-building business partners, attracted entries from across the State.

Funds raised will support youth arts projects fostering the next generation of creatives, and more prizes and exhibitions planned for years to come.

A collaboration between McConnell Dowell and Derwent Valley Arts, the prize aims to leave a lasting legacy for Tasmanian youth in the arts sector.

Twenty-one subcontractors and suppliers sponsored the event, demonstrating strong community support. The competition celebrated the construction of the bridge by inviting Tasmanians to interpret "the bridge" through diverse media.

The exhibition was officially opened by the Governor and Infrastructure Minister, who also presented awards, reflecting widespread support across Tasmania.


**The sponsor's launch of the Bridge Art Prize heralded a new chapter for the arts in the local area.**



**Project workers produced and helped install headstones on unmarked WWI graves with the Headstone Project.**

### Honouring Heritage and Community Contributions

The project also paid tribute to Tasmania's history through initiatives like The Headstone Project, where 100 concrete headstones and plinths honouring Tasmanians who fought in World War I were cast at the pre-cast facility. Several workers volunteered to install 20 of these on Tasmania's west coast in late 2024.

The sponsorship of the Australian Wooden Boat Festival 2025 saw a large ferry transporting over 1,100 locals to Hobart's iconic event—an environmentally friendly alternative to road transport that eased congestion downtown.

### Community Site Tours and Cultural Showcases

Tasmanians were excited about the prospect of their new bridge. A wide range of community groups were guided through site tours of the project, speaking with workers, and gaining insights into the construction process.

Site tours, including water-based visits aboard the historic vessel Egeria, raising funds for the historical vessel's maintenance and celebrating Tasmania's maritime heritage.

Collaborations with local arts organisations showcased Tasmanian history through artwork and cultural displays, ensuring the project's legacy extended beyond engineering.

**Site tours for community groups were common - Tasmanians were keen to view, and be part of the new bridge's construction story.**

# Making a Lasting Impact

**Fast Facts**

- **5% Indigenous participation rate**
- **18% of engaged workers from socially and economically disadvantaged backgrounds**
- **Seven finalists and four winners in the 2024 NAWIC Awards**
- **Partnerships with Colony 47 and Possibility to support housing, training, and employment**
- **Dedicated initiatives to support women, First Nations, and people with disabilities**
- **20+ nationalities represented across the workforce**
- **Contribution to a Project Award 2023 NAWIC Awards – won by our Environmental Advisor Hannah Yap.**
- **Safety Advocacy Award 2024 Woman in Industry Awards - won by our Senior Health and Safety Advisor, Kathleen Kelly.**

ACCA 2025 | New Bridgewater Bridge
Diversity & Inclusion


**“Our focus is on creating pathways for women and other under-represented groups to thrive in construction.**

**Diversity makes us stronger and more innovative while creating a lasting social impact.**

**Rosie O’Brien**
Human Resources Manager

## Pre-Employment Program

Early in the project, McConnell Dowell launched a pre-employment program with TasTAFE and Lifeline, funded by Keystone Tasmania, to overcome barriers to employment. The program provided foundational skills, confidence, and industry awareness for at-risk groups, including women, Indigenous Australians, and those with disabilities.

Support, such as transportation through Area Connect, helped remove access barriers. Of the 57 participants, 26% were women, 28% Indigenous, and 7% had a disability. Post-program, 17 secured roles at the pre-cast facility, with others gaining employment locally in construction.

Four participants with disabilities achieved nationally recognised qualifications and full-time employment as cleaners through the Possability program. McConnell Dowell employed 17 of these individuals, some still working on the bridge, and others found work in Hobart’s construction sector.

**The local community looked forward to the delivery of their regular newsletters from the Possability team, engaged by the project to support employment of people with disabilities.**

### Championing Women in Construction

The project's success in advancing women's participation is exemplified by numerous accolades.

At the 2024 National Association for Woman in Construction (NAWIC) Awards, over half of the awards on offer were earned by female members of our project team. With seven finalists and four winners of the awards, it was a testament to the team's commitment to increasing gender representation in the industry.

Minister for Infrastructure, Kerry Vincent, also acknowledged this achievement:

"This is a credit to the team for not only delivering our largest infrastructure project but also for making sure it fosters inclusion and diversity in the sector."


**NAWIC 2024 award winners:**
**Tiarna Bricknell – Next Step Scholarship**
**Tahlia Bennett – Achievement by a Tradesperson**
**Naomi Walker – Crystal Vision**
**Steph Holterhoff – Innovation and Sustainability**

### Community-Led Solutions: The Jump Start Initiative

Partnering with Colony 47, a local social enterprise, the project participated in the Jump Start initiative which provided accommodation to three employees facing housing difficulties. By offering safe, affordable housing within commuting distance, the project broadened its candidate pool and supported community well-being.

One of our labourers, who was living out of his car before joining the project, now has a stable home and meaningful employment.

**Senior project workers took an active interest in the progress of workers from non-construction backgrounds.**

### Supporting At-Risk Groups

The project prioritised the inclusion of at-risk groups, particularly those from socially and economically disadvantaged backgrounds. With a participation rate of 18%, the project worked with local service providers to create employment pathways.

We partnered with CCF Tas to support the running of their Migrant Pre-employment program. As part of the programme, the project hosted one of the participants for work experience so he could use his newly learned skills in the workplace. This worker became a valued member of the pre-cast facility team.

**Civil Construction Federation members tour the project's bespoke pre-cast facility.**



## Employee Spotlight
## Tahlia Bennett - Career Transformation


**Tahlia Bennett**

> **Along with the engineers, I helped develop new methods of lifting, making it safer and more efficient for my crew and myself.**

**Tahlia Bennett**
Gantry Crane Operator

"I am Tahlia Bennett, a 20-year-old Tasmanian woman who worked as the only female gantry crane operator in the reinforcement shed of the New Bridgewater Bridge Project's pre-cast facility.

I was working in a bottle shop before I was fortunate to have the opportunity to undertake the projects Pre-Employment Program. After being employed full-time at the pre-cast facility in early 2023, I worked on the quality aspects of the reinforcement steel for the bridge segment cages where I developed my critical knowledge of reinforcement.

Showing a keen interest in crane operations, I undertook training, gained my high-risk dogging license and was able to assess risks and put controls into place so that I could confidently and safely lift and shift loads.

Each day I unloaded trailers with up to 30 tonnes of steel required across the working areas of the production process, to ensure work could continue to flow well for everyone in the reinforcement shed.

What has helped enormously when facing challenges and complex problems, is having a mentor, and recognising my own achievements from time to time.

Before I left the project I was able to step up in my role and regularly inspect the rigging gear, as well as the safety documentation for heavy lifts carried out by some of our 60-plus workers in the shed.

Along with the engineers, I helped develop new methods of lifting, making it safer and more efficient for my crew and myself. I had the confidence to start training and assisting other new starters".

# Building Legacy Beyond Construction

**The New Bridgewater Bridge isn't just a feat of engineering; it's a catalyst for community growth and cultural celebration.**

**The project's engagement initiatives have fostered local pride, inspired young Tasmanians, and laid the foundation for a lasting legacy.**



**"We're proud to have created a project that connects people, celebrates history, and supports the arts.**

**This is the true bridge—linking communities, inspiring youth, and honouring our shared heritage.**

Laura Middleton
Department of State Growth Project Manager Stakeholder Relations

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# Australian Construction Achievement Award

## Technical Paper