

RAIL CAPABILITY



**McCONNELL
DOWELL**

CREATIVE CONSTRUCTION™

McConnell Dowell is the Creative Construction Company, building better communities through safe, smart, efficient infrastructure.

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DRIVING PROGRESS

DRIVING PROGRESS THROUGH RAIL

Our rail capability is comprehensive. From the provision of maintenance and renewal services for discerning asset owners, to the design and construction of every element of the rail system, McConnell Dowell has the skills and experience to deliver exceptional outcomes.

CAPABILITY, CAPACITY AND CREATIVITY

Using intelligent engineering systems and a creative construction approach, our experience in rail encompasses everything from the underlying civil works, ballast and track, to the overhead power and signalling systems, station buildings, bridges and tunnels.

Effective and efficient planning and logistics are crucial to getting the job done. We work rigorously to minimise the impacts of project delivery on rail operations, commuters and the neighbourhoods in which we work and carry out detailed staging and comprehensive risk assessments.

Underpinning all of this is our capacity to integrate everything into one seamless, creative rail solution, eliminating interfaces and providing our clients with surety of time, cost and quality.

OUR PEOPLE AND PLANT

Our people and plant are what sets us apart from the others.

The McConnell Dowell team is rich with rail professionals who have both operational and construction experience. Our depth of knowledge of rail operating environments gives us the insights we need to deliver in harmony with rail operations.

Beyond the construction of the asset, our team also brings sector knowledge and experience in maintenance and asset management, through condition assessment, preventative maintenance strategies, to remedial and life-extension initiatives.

Our specialist and purpose built rail plant and equipment ensures we are able to provide a total offering to our customers, whilst increasing our ability to influence quality and timely project outcomes.

SAFE, ASSURED AND COMMITTED

At McConnell Dowell we understand the importance of our people, our environment and the communities within which we work. Central to each of these areas is our vision that everyone goes 'Home without Harm'.

Our team acknowledges the importance of minimising operational impacts and are committed to maintaining safe working practices in a live railway environment for our workers, customers and the surrounding community.

McConnell Dowell holds Rail Safety Accreditation as a Rolling Stock Operator across Australia.

With effective management and control over all of our services to the rail industry, and a proven and auditable Safety Management System, we are the contractor of choice for discerning rail clients.





DRIVING PROGRESS IN PROJECTS

Successful rail projects demand a broad skillset and McConnell Dowell delivers every time.

We apply our broad rail skills throughout all of the phases of a project, from feasibility studies and surveys, through outline and detailed designs to construction, testing and commissioning.

Our strong project engineering, management and planning systems form the backbone of our multi-disciplinary approach. Critical interfaces are integrated, controlled and delivered through experienced project teams. Our integrated approach ensures compatibility of the systems, compliance with the project specification and co-ordination of delivery.

We work with our customers in the way that suits them. We regularly act as main contractor, with full design and build responsibility. We offer programme management for railway authorities, providing professional services through staff that have developed their skills in both railway construction and operations. We also form partnerships and alliances to ensure certainty of programme, quality and cost.

Our project capabilities are showcased in the case studies that follow.

North Melbourne Railway Station Upgrade – Victoria





Gold Coast Light Rail — Queensland



The Gold Coast Light Rail, Queensland's first light rail system, is a city-changing piece of infrastructure that integrates new and existing transport systems in Australia's tourist mecca.

McConnell Dowell was part of the joint venture responsible for delivering stage one of the system over three years from mid-2011. The scope included the financing, design, construction, operations and maintenance of 13 km of track, 16 stations, 14 vehicles, all rail systems and signalling, and a state-of-the-art maintenance depot.

Opened in mid-2014, our system is on track to carry 75,000 passengers per year bringing new mobility and access to one of the fastest growing regions of Australia.

-  Track & Drainage
-  Power & Electrification
-  Signalling & Communications
-  Stations & Precincts

27 KM OF TRACK
3,500 TRACK WELDS
52 ROAD-RAIL INTERSECTIONS
30,000 KM OF UNDERGROUND
SERVICES UPGRADED
6 BRIDGES COMPLETE

Murray Basin Rail — Victoria



The \$440 million Murray Basin Rail Project for V/Line is the largest current rail freight upgrade project in Australia.

The upgrade includes conversion of 1,055 kilometres of track to standard gauge to provide better rail freight services and improved freight access to major ports.

The peak workforce will be more than 500 personnel working across 490km of Victoria's central and north-west regions, with approximately 35 per cent of workforce residing in regional Victoria.

Following the upgrade, the new rail network is forecast to capture approximately 20,000 journeys currently undertaken by trucks, providing producers with an attractive transport alternative and improving local amenity and safety.

-  Track & Drainage
-  Signalling & Communications

CONVERTING 1055 KILOMETRES OF TRACK TO STANDARD GAUGE
50,000 WELDS AND 100,000 CUTS OF THE RAIL
180,000 TONNES OF BALLAST TOTAL ACROSS THE PROJECT
INSTALLATION OF MORE THAN 230,000 CONCRETE SLEEPERS
180 LEVEL CROSSINGS









Seaford Rail Extension — South Australia



To meet the growing transport needs of Adelaide, McConnell Dowell, in joint venture, delivered the Seaford Rail extension for the South Australian government between 2010 and 2012.

The project involved the design and construction of a 5.7 km extension of dual track rail line including stations and park'n'ride facilities, a bus interchange, a 1.2 km elevated rail bridge, and three road bridges over the new rail track.

Our solution cut 10 minutes off the city commute and opened up access to community facilities. We also engineered a world-class viaduct to minimise environmental impacts on the Onkaparinga Valley wetlands.

-  Track & Drainage
-  Power & Electrification
-  Signalling & Communications
-  Stations & Precincts



5.7 KM DUAL TRACK RAIL LINE
1.2 KM LONG ELEVATED RAIL BRIDGE
TWO NEW STATIONS
ONE BUS INTERCHANGE



Western Program Alliance — Victoria







Part of the Victorian government's ambitious level crossing removal program, the Western Program Alliance (involving McConnell Dowell, the Level Crossing Removal Authority, MTM, Arup and Mott Macdonald) has commenced construction on the first of six potential projects in Melbourne.

The first site, at Kororoit Creek Road in Williamstown North, is used by 22,000 vehicles each day and is part of VicRoads' Principal Freight Network - a key transport corridor connecting local industry, nearby ports, and residential areas to the Princes Freeway.

The project includes construction of a new rail bridge (artist impression shown) and duplication of 800 metres of track on the Altona Loop, allowing additional train services.

The second project in the program is the Abbots Road level crossing removal in Dandenong South, east of Melbourne.

-  Track & Drainage
-  Power & Electrification
-  Signalling & Communications
-  Stations & Precincts

SIX LEVEL CROSSING REMOVAL PROJECTS
COMPLEX INNER-URBAN LOGISTICS
EXTENSIVE STRUCTURES
NEW RAIL TRACK, OVERHEADS & SIGNALS

DRIVING PROGRESS IN INFRASTRUCTURE SERVICES

Infrastructure Services

Passenger, freight and light rail asset owners and operators have benefitted from our infrastructure services that include greenfield track enhancements, existing line renewals and upgrades, ballast treatments and sleeper replacement.

We have designed and built complete track systems or worked with our customer's design, managing the procurement and supply of all types of rail, sleepers, fastenings and turnouts. Our experience covers all forms of trackwork; from ballasted to non-ballasted, including direct fixation and other slab track and embedded trackforms. We can also undertake asset maintenance from initial condition assessment and periodic inspection regimes, through to the execution of any required remedial works.

We are experts at managing rail occupations or closures too. Through detailed planning and diligent execution, our skilled teams always ensure the timely completion and safe handback of the renewed asset to train operations.

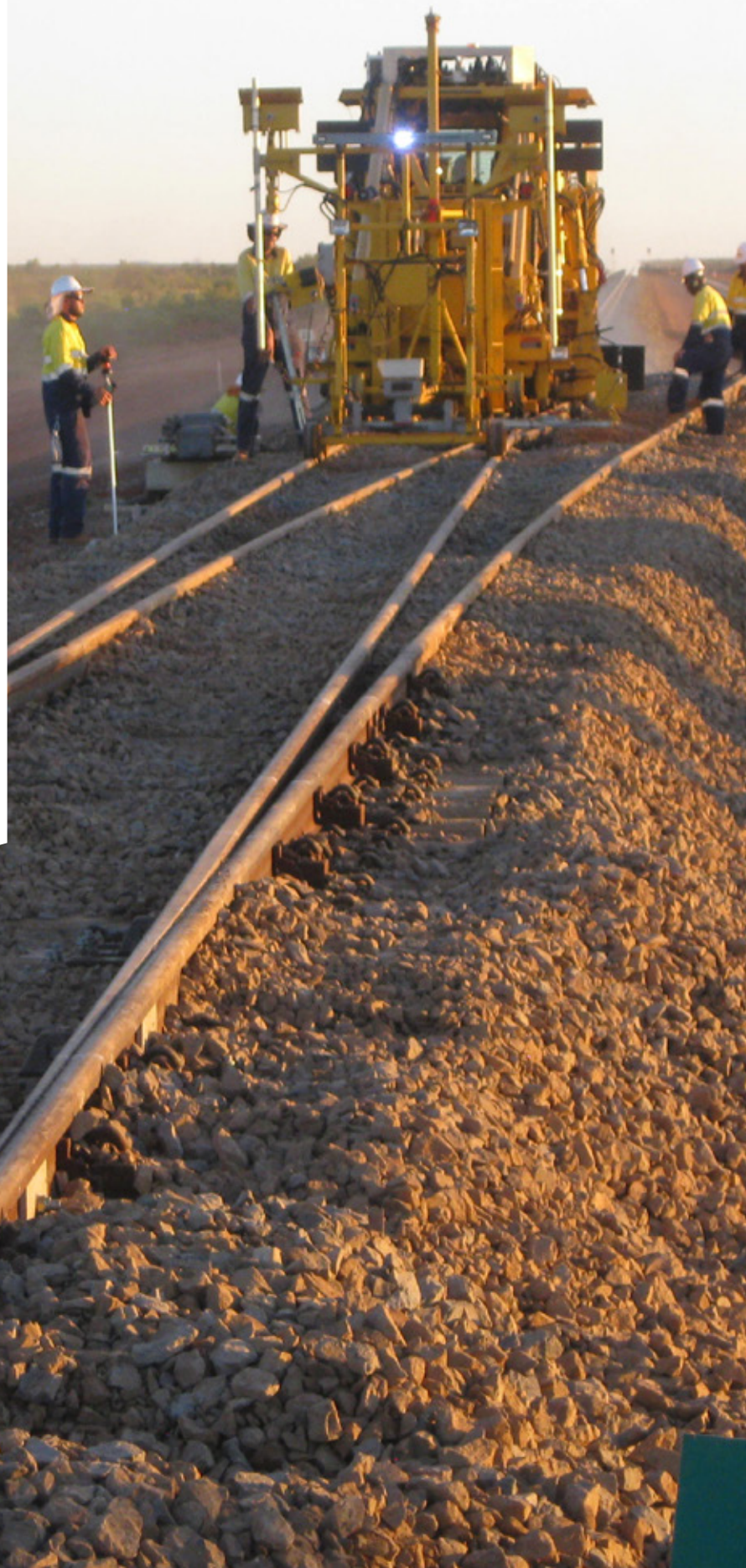
Our infrastructure services capabilities are showcased in the case studies that follow.

FMG Rail –
Western Australia

Fortescue Metals Group Ballast Treatment Services - Western Australia

McConnell Dowell is partnering with Fortescue Metals Group in Western Australia and providing an innovative ballast protection solution to keep their Port Hedland iron ore operations on track.

Fouling of the track drainage system with iron ore overspill is causing uneven track settlement in some areas. In a series of strategic shutdowns, the McConnell Dowell Pilbara team is removing the effected ballast and installing a geotextile wrap to prevent reoccurrence. The operation is completed with the laying of new ballast, tamping the track to its design line and level, and fixing the new geotextile membrane to the rails.



ARTC Track Renewal Program - New South Wales

To help keep the coal mines, industries and passengers of NSW safely on the move, McConnell Dowell is an active partner with ARTC for their Hunter Valley track renewals program.

Highlighting the importance of a knowledgeable crew and modern, well maintained plant; our three state-of-the-art flashbutt welders are active, delivering a high-quality, high-precision finish for the new track installations.

Our equipment up-time, crew productivity and weld integrity is amongst the best in the industry, giving our client confidence that we will continue to deliver within the tight timeframe and fixed budget specified for each shutdown.



DRIVING PROGRESS IN PLANT SERVICES



McConnell Dowell is committed to meeting and exceeding clients' expectations.

With access to leading industry equipment such as Hi-Rail Excavators, Hi-Rail Ultrasonic Vehicles, Tampers, Regulators, Flash Butt Welders, Track and resleeper machines, Rail Grinding Machines, ballast cleaners, locos and wagons, McConnell Dowell is committed to driving Progress. Always.

Our specialised rail plant is managed and supported by a team of highly mobile, flexible and competent operators, fitters, electricians, supervisors and work crews. We have an established training regime to guarantee the accreditation and safety of our employees and the local environment and communities in which we work.

Our national rail plant yard and workshop in Victoria, Australia, provides a full suite of maintenance services for our rail plant and equipment fleet.



Sunshine North — Rail Plant Yard



McConnell Dowell's rail plant yard is equipped with both standard and broad gauge tracks, the 650 metre long and has direct access to the mainlines of both the metropolitan and interstate networks.

The facility can provide safe and secure storage and materials handling services for freight operators, as well as assisting companies moving equipment and materials across the network for projects like Melbourne Metro and the level crossing removals program. Efficient and flexible materials handling is provided through two overhead gantry cranes.

The on-site workshop provides flashbutt welding services for long-welded rail, in addition to the full scope of rail plant asset management and maintenance services.



CAPABILITIES

WELDING RAIL UP TO 165M STRINGS
STORAGE OF RAIL PLANT/SETS
STORAGE OF RAIL
LOAD RAIL TRAIN (STANDARD & BROAD)
LONG STAY/SHORT STAY/OVERNIGHT STAY
RAIL PLANT MAINTENANCE

RAIL YARD

2 x 500M STANDARD GAUGE TRACKS
2 x 600M BROAD GAUGE TRACKS
2 x GANTRY CRANES
3 HECTARES
STORAGE SPACE AVAILABLE



Flashbutt Welders



Piloted by our knowledgeable crews who know how to get the best from each machine, our fleet of flashbutt welders consistently produce high quality welds at exceptional production rates.

We provide a complete welding service using our purpose built machines from Vaia Car and Holland. All are capable of welding various sizes and specifications of rail with production efficiency and quality consistency.

When McConnell Dowell's welders are on the job, clients know they are getting a safe, high quality welded track solution while being rewarded with outstanding time and cost savings.

Ballast Regulators

McConnell Dowell has four ballast regulators including Harsco and Kershaw machines.

Our Harsco ballast regulators are versatile machines with the power and capacity to match our high production tampers.

All our regulators have the flexibility to suit standard and broad gauge rail and have air-conditioned cabins for driver comfort and productivity.

These services have been provided to **MTM** for the metro Melbourne network, **V/Line** for the regional Victorian network and **ARTC's** network.



Tampers

Our fleet of dual gauge equipment includes Pandrol Jackson 6700 series and Plasser 09/32 tampers to support both measurement and compensation tamping as part of maintenance and asset management regimes, or full design alignment for new track installation to meet the requirements of construction track geometry standards.

Our Pandrol Jackson machine has a production rate of 20+ sleepers per minute and uses the state of the art Jupiter control system, giving our skilled operator maximum control for a superior track finish.

The Plasser is a universal machine capable of high production rates for both plain line and switches.

These services have been provided to **MTM** for the metro Melbourne network, **V/Line** for the regional Victorian network and **ARTC's** network.



COMPANY PROFILE

McConnell Dowell is the Creative Construction Company for clients who want to build better communities through safe, smart, efficient infrastructure.

Since 1961, we have built thousands of quality assets and facilities for clients and communities. Our expertise has grown steadily to span civil, electrical, fabrication, marine, mechanical, pipelines, rail, tunnel and underground construction.

With over 3,500 employees and professional engineering and construction teams in Australia, New Zealand, Asia and the Middle East, our clients benefit from our unique mix of local knowledge and international experience.

Our culture is founded on expertise, creativity and progressive thinking. We constantly challenge ourselves and our partners to find the best solution for every project. This attitude, along with our safe, high-quality, systematic

and structured approach, has earned us the trust and loyalty of our clients.

We engage in all types of business relationships, from fixed price contracts through to risk-reward based systems such as Early Contractor Involvement, and alliancing.

Most importantly, we have a reputation for delivering what we promise in three key sectors:

Infrastructure — the foundation of today's urban communities

From metro tunnels in Singapore, geothermal energy production in New Zealand, to award winning desalination plants in Australia, McConnell Dowell is building better communities through safe, smart, efficient transport, power and water infrastructure.

Resources — the backbone of economies


McConnell Dowell is driving progress and supporting growth and prosperity in cities and rural communities through the delivery of new oil and gas and mining facilities, marine terminals, process plants and modules, cross-country pipelines and underground mines.

Building — the fabric of our cities

Our building group, Built Environs, leads the way in delivering architecturally stunning and environmentally sustainable facilities. These include accommodation, commercial, defence, education, entertainment, sport, government, health, industrial, office, retail and transport. www.builtenvirons.com.au



Market Sector & Capability Matrix

McCONNELL DOWELL CAPABILITIES	MARKET SECTORS								
	Infrastructure			Resources			Building		
	Power	Water & Waste Water	Transport	Mining & Metals	Oil & Gas	Petrochemical	Government	Commercial / Industrial	Social
 Building	•	•	•	•	•	•	•	•	•
 Civil	•	•	•	•	•	•	•	•	•
 Electrical	•	•	•	•	•	•	•	•	•
 Fabrication	•	•		•	•	•			
 Maintenance	•	•	•		•	•			
 Marine	•	•	•	•	•	•			
 Mechanical	•	•	•	•	•	•	•	•	•
 Pipelines	•	•		•	•	•			
 Rail			•	•			•		•
 Roads & Bridges	•	•	•	•	•	•	•		•
 Tunnelling	•	•	•	•	•	•	•		•

The McConnell Dowell Group

McConnell Dowell Group provides corporate oversight of operating entities:



McConnell Dowell – The Creative Construction Company, building better communities through safe, smart, efficient infrastructure.

www.mcconnelldowell.com
Operating in: Australia, Asia, New Zealand, Pacific



Built Environs – Provides multi-disciplinary capability in design and construction of commercial, industrial and institutional buildings.

www.builtenvirons.com.au
Operating in: Australia



Parent Company Aveng Limited, have a number of specialist operating groups that partner with McConnell Dowell on projects.

www.aveng.co.za

McConnell Dowell:

- Deliver individual infrastructure contracts circa \$1 Billion in value
- Experienced in all contract delivery models
- Employ over 3500 office and project staff
- Operate in 23 locations – Australia, Asia, New Zealand, Pacific Islands & the Middle East
- Over 55 years of creative construction 1961 – now



**DRIVING
PROGRESS**

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