



MCCONNELL

DOWELL

CREATIVE CONSTRUCTION™

Dams and Hydropower

CAPABILITY



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

contents

Driving Progress Through Dams & Hydropower	4
Driving Progress in Dams	6
Driving Progress in Hydropower	14
Company Profile	18

DRIVING PROGRESS

DRIVING PROGRESS THROUGH DAMS AND HYDROPOWER

We provide innovative water storage and hydropower solutions for our customers across diverse environments, no matter how challenging or sensitive. That is the McConnell Dowell difference.

Creative capability

McConnell Dowell's water and power infrastructure sets the standard – from constructing the only large hydropower plant built in Australia in the last 25 years, to expanding dam capacity in central Tasmania, rural Queensland and country NSW. Our projects have helped to alleviate drought and bring water and power security to urban and rural communities.

Our depth of expertise across pipelines, mechanical, civil, tunnelling and building, combined with more than 55 years of experience and a commitment to our customers and local communities, is what sets McConnell Dowell apart.

Vision and innovation

At McConnell Dowell we work hard to create infrastructure that does more than maximise returns. Our projects are designed to enhance environments and enrich communities.

Our creative approach drives innovation. This enables us to deliver clever solutions that meet the technical, environmental and logistical challenges inherent in today's infrastructure projects.

Partnership and consultation

Our technical expertise is complemented by our significant stakeholder relationship management experience and flexible approach to contractual arrangements. We work collaboratively with our customers and our technology and engineering partners to deliver creative solutions.

We are very aware of the impact our projects have on local communities. We engage closely with them before each project and prioritise use of local resources to strengthen regional economies. We are committed to leaving every community with better facilities while causing minimal disruption to lives and businesses.

Safety and sustainability

McConnell Dowell is deeply committed to the safety of its workers, clients and the community. Sustainable outcomes are integral to each project and we follow through with 'green' work sites. We are proud that these essential aspects of our work are regularly acknowledged for their industry-leading excellence.

**McCONNELL
DOWELL**



3 large hydro-power plants
6 major dams
100km of water and wastewater tunnels
Cross-country water pipelines up to 1,450 mm diameter



DRIVING PROGRESS IN DAMS

“McConnell Dowell managed this difficult project well. They always maintained a focus on the project objective and how best to achieve this.”

Steve Gibson
Project Manager
Lake Manchester Dam Upgrade
Brisbane City Council

Water security through water storage solutions

Dams are vital to the ongoing resilience of our communities. They store precious drinking water, retain and manage water for industry and irrigation, and help minimise flooding.

Dams are logistically challenging to construct. They require a multidisciplinary skillset, sensitivity to environmental settings and river health, and an ability to work effectively in remote locations.

McConnell Dowell has delivered many award-winning new and refurbished dams, bringing water security to numerous communities in need. Our diverse construction techniques include roller compacted concrete, post-tensioned ground anchoring, concrete spillway refurbishment and intake/outlet pipework systems.

Our water storage focus is:





- Enhancing water security and safety through dam refurbishment and augmentation
- Using creative construction techniques to guarantee safety and environmental compliance
- Overcoming (often extreme) logistical challenges to deliver on time and budget
- Minimising impact on river health through our marine construction experience

Meander Dam- Tasmania, Australia

In collaboration with the Tasmanian Water Solutions Consortium, McConnell Dowell built a 47m high roller-compacted concrete dam in the heart of the state's north. Located in the Meander Valley, the 43,000ML capacity dam is 180m long across its top and employs precast concrete – a safe, environmentally friendly and effective construction method – for the spillway training walls and crest.

Generating 85,000m³ of roller-compacted concrete and 225,000 tonnes of rock from an onsite quarry ensured tight construction timelines were achieved. McConnell Dowell's stakeholder engagement experience was also essential at every stage of the project and helped deliver a successful outcome for Meander's people, wildlife and environment.

Capabilities used on this project:

-  Civil
-  Electrical
-  Marine
-  Mechanical

180M LONG, 47M HIGH NEW DAM WALL
225,000M³ OF ROCK QUARRIED
85,000M³ OF ROLLER COMPACTED
CONCRETE LAID

WINNER TASMANIAN CIVIL CONTRACTORS
FEDERATION EXCELLENCE AWARD



Hume Dam — New South Wales, Australia



**REFURBISHED
DAM HOLDS 3
MILLION ML
OF WATER**

One of the mightiest Australian structures of the inter-war years, the Hume Dam near Albury-Wodonga can hold three million megalitres of water. This is about six times the volume of Sydney Harbour.

In 2014, McConnell Dowell undertook a project to strengthen the dam's existing concrete gravity Southern Training Wall by constructing a 20,000 m3 mass concrete buttress on the spillway side. This will greatly improve overall safety in the event of extreme flooding.

Constructing the temporary cofferdam was a key challenge that McConnell Dowell overcame using its specialist marine construction capability. This enabled dewatering to be carried out smoothly and continuously for the duration of the project.

Capabilities used on this project:

-  Civil
-  Marine




Lake Manchester —Queensland, Australia

McConnell Dowell delivered the design and construction upgrade of the Lake Manchester Dam near Brisbane. The project strengthened the existing dam wall to meet current Australian National Committee on Large Dams guidelines and industry state of practice standards.

In a world first, McConnell Dowell employed an anchoring solution incorporating 69 vertical and inclined post-tensioned anchors to increase sliding friction resistance of forces on the dam wall. In an Australian first, McConnell Dowell undertook the sensitive task of rock blasting within 50m of a live concrete gravity dam.

A highlight of the project's excellent environmental record was capturing five Queensland lungfish from the spillway 'plunge pool' during the course of the earthworks and their subsequent successful release into the nearby Brisbane River.

Capabilities used on this project:

-  Civil
-  Marine
-  Mechanical



**90,000M³ OF EARTHWORKS
69 POST TENSIONED GROUND ANCHORS INSTALLED
DAM WALL RAISED BY 5.8M
WINNER QUEENSLAND CIVIL CONTRACTORS
FEDERATION EXCELLENCE AWARD**

Cosseys Dam Upgrade & remedial works — New Zealand



41M HIGH, ZONED
EARTHFILL DAM
36M DEEP EXCAVATION
FACE ZERO LTIS
300,000M³ OF FILL
REPLACED



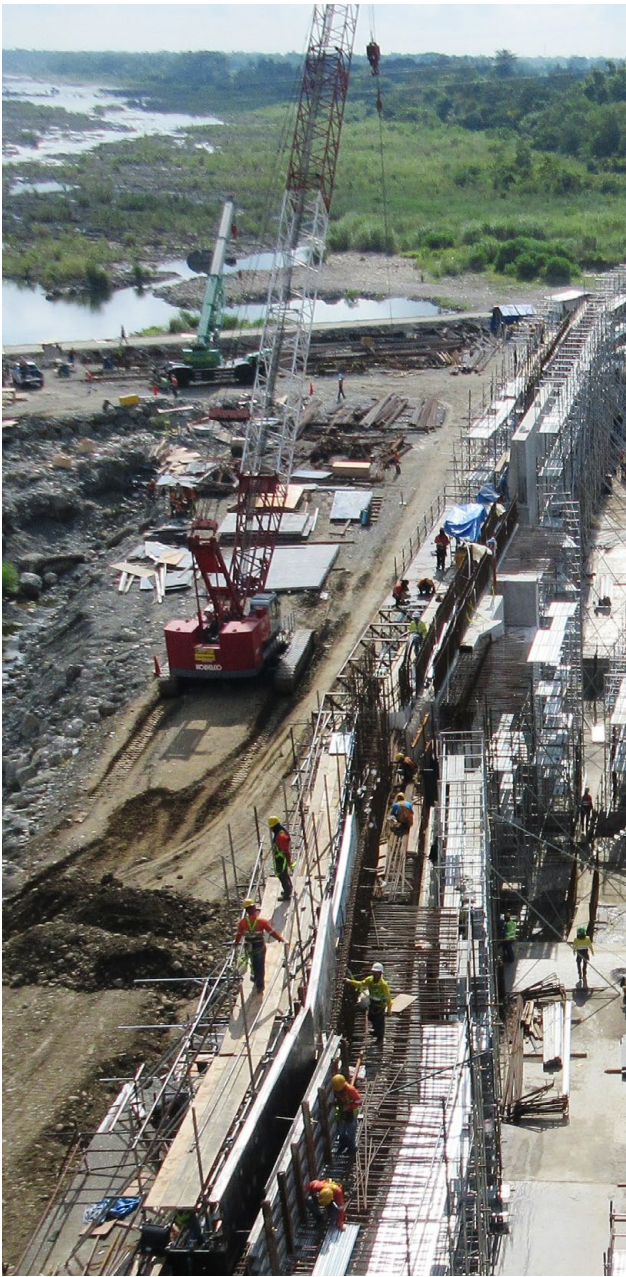
This upgrade and remediation contract for Cosseys Dam, Auckland’s third largest dam, was awarded to McConnell Dowell and its JV partner after Watercare detected deterioration in the 1950s built earth fill structure. Located in the Hunua Ranges the dam holds 14% of the city’s water storage.

Works included excavation of the downstream dam core and shoulder to base rock. The excavated material was stockpiled for subsequent re-compaction of the dam up to a higher crest level following installation of a new in-dam filter and drainage system. The project scope also included construction of a new access bridge over the Wairoa River, valve tower strengthening works, and mechanical refurbishment of the valve tower. The earthfill dam stands 49m high and 170m long at the crest, and a 230m long diversion tunnel links to the valve tower and scour systems.

Capabilities used on this project:

- Building
- Civil
- Fabrication
- Marine
- Mechanical

Maris Dam Regulating Gates — Philippines



SN Aboitiz Power (SNAP) awarded McConnell Dowell Philippines additional works in the form of the Maris Dam Regulating Gates Works on Luzon Island, Philippines.

This substantial additional works package has been secured as a result of our excellent customer relationship, technical expertise, efficient project execution along with our excellent safety record and ability to schedule in additional work within an existing site area.

This project maintains a long standing relationship of project delivery with the customer SN Aboitiz Power (SNAP) in the Philippines and further enhances our position both with the client and in the market as the leading multi discipline contractor for hydropower including rehabilitation and expansion of existing assets in remote environments.

Capabilities used on this project:

- Civil
- Fabrication
- Marine
- Tunnelling



DRIVING PROGRESS IN HYDROPOWER

“McConnell Dowell has produced a leading edge, world-class asset of which both AGL and McConnell Dowell can be well proud.”

John Arnold
AGL Project Director
Bogong Hydro Power Plant

Bringing sustainable power to the people

Generating and supplying sustainable ‘green’ power through hydropower plants enhances the wellbeing of regional communities, economies and the environment.

Diverse skills and experience are required to construct hydropower plants. Effective coordination is pivotal. Managing stakeholder needs and expectations is critical.

McConnell Dowell’s proven record and string of industry and environmental awards are testament to our ability to successfully deliver new hydropower plants, as well as rehabilitate and enhance existing ones.

Our hydropower infrastructure project focus is:

- Adds value through innovative solutions that cut costs significantly
- Accelerates civil programs to reduce construction time
- Ensures finished projects blend in and have positive environmental effects
- Engages communities to achieve ‘no complaint’ solutions
- Uses community management and awareness programs tailored to stakeholders and local authorities
- Safeguards local residents and mitigates noise and vibration impacts caused by construction
- Boosts local economies by locally sourcing and up-skilling onsite staff

Bogong Hydro Power Plant —
New South Wales, Australia

Ambuklao and Binga Hydropower Plants — Philippines



McConnell Dowell showcased its hydropower construction capacity by resurrecting two important facilities in the northern Philippines – the former 75MW Ambuklao Power Plant and the ailing 100MW Binga Plant.

A key component was furnishing the Binga plant with new generators and equipment so it can now generate 120MW of power and achieve an average annual production of 419GWh.

The Ambuklao and Binga Hydropower Plants project won a Silver Award for Best Renewable Energy Power Plant at the 2011 Asian Power Awards.

Capabilities used on this project:

- Civil
- Electrical
- Mechanical
- Tunnelling



**19,000M3 OF CONCRETE
POURED 700 TONNE OF
REBAR, 230 TONNE OF
STEEL LINING 2 MILLION
MAN HOURS LTI FREE
SILVER AWARD WINNER
FOR RENEWABLE
ENERGY POWER PLANT
OF THE YEAR**

Maris South Canal HEPP Hydropower Project — Philippines



McConnell Dowell was the lead contractor on this new 8MW low-head hydroelectric power station constructed on the south bank of the Magat River in North Luzon, the Philippines.

The new station is located 5km downstream from the existing 360MW Magat hydropower plant and uses releases from the larger facility to maximise overall power generation. Constructed for SN Aboitiz Power and the National Irrigation Administration, the new station uses two 4MW bulb type turbines.

The project was another successful collaboration between McConnell Dowell and SN Aboitiz Power, and followed on from the successful delivery of the Ambuklao and Binga Hydropower projects.

Capabilities used on this project:

- Civil
- Fabrication
- Marine
- Tunnelling

243 TONNES OF HYDRAULIC STEELWORK.



**7.8KM OF 5M DIAMETER TUNNELLING
UNDERGROUND POWER STATION CONSTRUCTION
INSTALLATION OF TWO 70MW TURBINES
WINNER VICTORIAN CIVIL CONTRACTORS
FEDERATION EXCELLENCE AWARD**

Bogong Hydro Power Plant — New South Wales, Australia





The largest hydropower project built in Australia in 25 years was designed and constructed by McConnell Dowell.

The project incorporated a new underground hydroelectric power station with two 70MW turbines near Falls Creek in Victoria's pristine Alpine National Park. Working in a national park meant the project was highly scrutinised by AGL Southern Hydro and the EPA. The results were exceptional.

McConnell Dowell's engineering team worked with consultants to reduce the project price by A\$30 million. The team realigned tunnels and developed innovative materials-handling techniques that included providing rock spoil to the shire council for upgrading local roads.

The power station now generates 140MW of renewable power from the East Kiewa River and existing water resources released from the Mackay Creek Power Station.

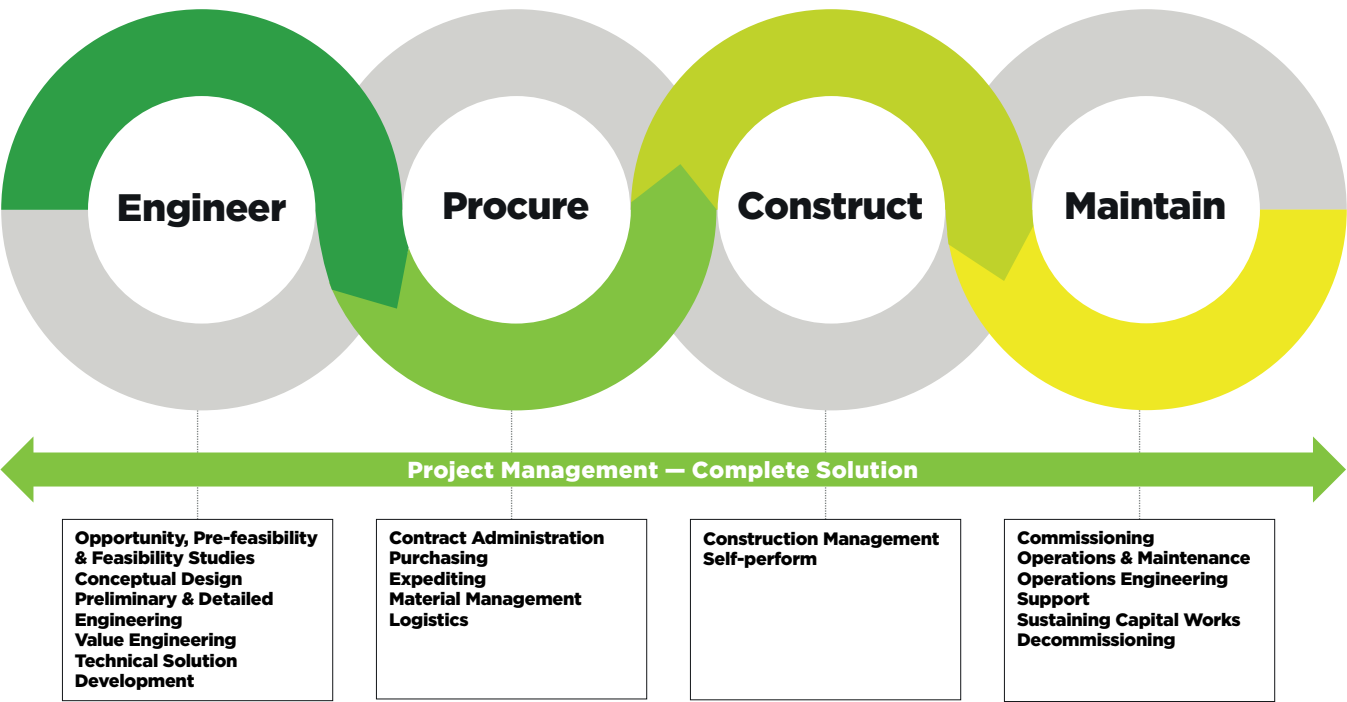
Capabilities used on this project:

-  Building
-  Civil
-  Electrical
-  Mechanical

BUSINESS MODEL

A value offering encompassing part or full optimal integration of the complete life cycle of project execution; Project Management, Engineering, Procurement, Construction, Commissioning and Operations.

Value Offering



Market Sectors

Infrastructure

- Power
- Water & Waste Water
- Transport

Resources

- Mining & Metals
- Oil & Gas
- Petrochemical

Building

- Government
- Commercial/Industrial
- Social/Residential

Specialist Capabilities

- Marine
- Pipelines
- Tunnel & Underground
- Rail
- Mechanical
- Civil
- Fabrication
- Building





CREATIVE CONSTRUCTION™

**DRIVING
PROGRESS**

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