MARR

INNOVATIVE CRANAGE SOLUTIONS **FOR METRO PROJECTS**

MARR CONTRACTING ARE WORLD LEADERS IN THE DESIGN AND DELIVERY OF HEAVY LIFT CRANES AND COMPLEX CRANAGE SOLUTIONS.

Not just a crew and cranes for hire, we're big thinkers and problem solvers who love a challenge with a string of 'world firsts' to our name – including the design of the world's largest capacity tower crane, the 330-tonne capacity M2480D heavy lift luffing (HLL) crane.

OUR UNIQUE APPROACH

DELIVERING VALUE THROUGH THE UNIQUE COMBINATION OF OUR KNOWLEDGE, EXPERIENCE, PROVEN SERVICE DELIVERY AND PEOPLE, WE WORK WITH YOU TO FIND AN ENGINEERING SOLUTION THAT WORKS – NO MATTER HOW BIG OR COMPLEX THE JOB IS.

Through early engagement we can work with you to develop innovative solutions that are specific to your project and deliver the best outcome for your preferred construction methodology.

And with a belief that anything is possible, we push the boundaries to deliver solutions that:

- de-risk construction
- reduce complexity, time & cost
- improve safety.

> THE KEY TO ACHIEVING MAXIMUM EFFICIENCY IS EARLY ENGAGEMENT WITH US – AND THE EARLIER THE BETTER.

SIMON MARR, MANAGING DIRECTOR, MARR CONTRACTING

SPECIALIST SOLUTIONS FOR METRO PROJECTS

MARR'S UNIQUE APPROACH TO CRANAGE SOLUTIONS FOR MAJOR INFRASTRUCTURE AND LARGE-SCALE PROJECTS HAS LED TO US BEING ENGAGED ON THE DELIVERY OF MULTIPLE PROJECTS WHERE OUR INNOVATIVE BID AND DELIVERY SOLUTIONS HAVE:

- Differentiated winning rail submission bids
- Enabled the delivery of safer, faster & lower-cost projects
- Reduced engineering, procurement & construction activities

Our solutions have helped to address the challenges associated with typical operational environments and constraints including:

- High-density urban areas
- Small site footprints with congested operations
- Heavy structural components – steelwork or pre-cast concrete
- High-volume construction
- Heavy plant install & removal

LEVERAGING EARLY ENGAGEMENT WITH THE WORLD'S LARGEST CAPACITY TOWERS, OUR EXPERIENCE HAS INCLUDED:

- TBM install, support & removal
- Excavation support
- Station box construction
- Station construction
- Station extension & redevelopment.

CRANAGE AS A PARTNERSHIP, NOT PROCUREMENT

THE LIMITATIONS OF A TRADITIONAL APPROACH

The traditional approach to construction views cranage through the lens of achieving the crane budget, a small package in relative terms on most projects. This approach can expose the project to the risk of delay and inefficiency through the selection of what fits as opposed to the best fit. This is because the traditional model considers cranage once design and procurement are established, leading to limitations:

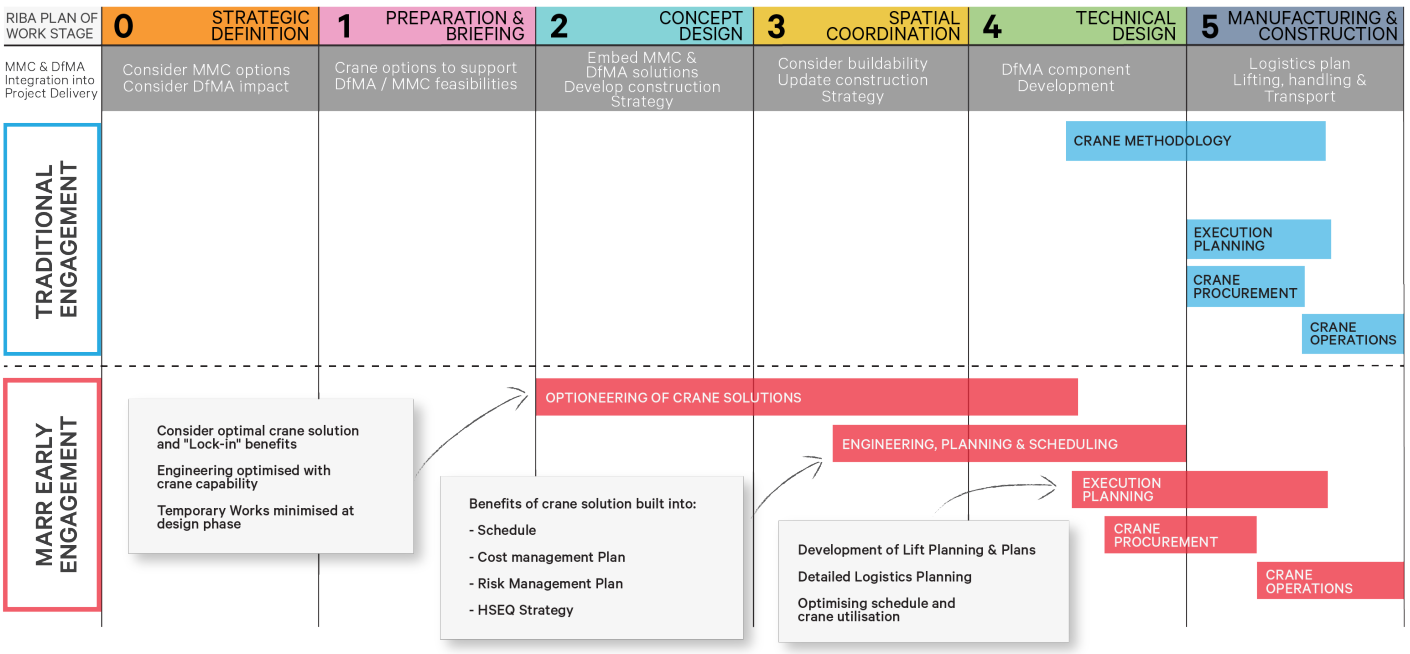
- Crane methodology - reduced opportunity to innovate limits construction solutions;
- Crane procurement – crane selection based on availability & cheapest rates; and
- Crane planning – reduced to number of hooks & ad-hoc radius plans.

THE BENEFITS OF EARLY ENGAGEMENT

The early engagement approach to crane selection changes the way a project is delivered with benefits cascading through the whole lifecycle of a construction project. As a result of early engagement, technical and logistical clarity can be achieved, enabling engineering and procurement activities to proceed in an informed manner, which ultimately matches the construction requirements to suit the best fit crane selection.

This allows the benefits of the crane solution to be built into the project:

- Schedule
- Cost management plan
- Risk management plan &
- HSEQ strategy.



IMPROVED PROJECT OUTCOMES

MARR'S UNIQUE APPROACH, TECHNOLOGY AND SPECIFIC UNDERSTANDING OF HOW THE RIGHT CRANAGE SOLUTION CAN DELIVER BENEFITS ACROSS THE ENTIRE LIFECYCLE OF A CONSTRUCTION PROJECT.

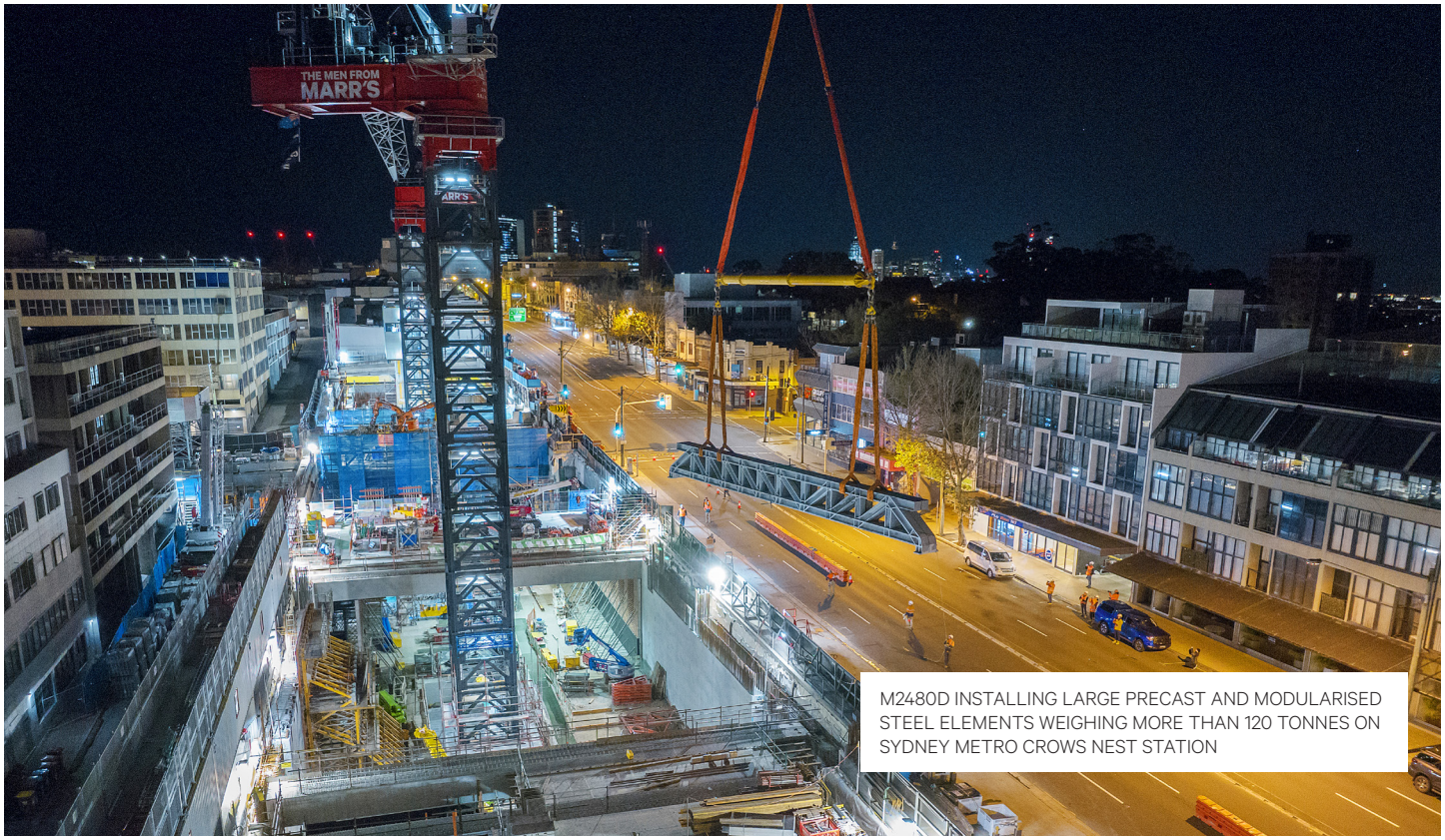
From a design and engineering point-of-view, early engagement with Marr's team opens up opportunities for improved project outcomes including:

- Shortened schedules
- Increased productivity & efficiency
- Higher quality builds
- Lower costs
- 'Greener' construction
- Improved attractiveness to developers.

> THE MANTRA FOR ALL PROJECTS SHOULD BE 'DESIGN FOR DELIVERY', WHICH IN ESSENCE IS DESIGNING FOR PRODUCTIVITY. IT IS THE PROCESS OF DESIGNING FOR THE CONSTRUCTION PROCESS TO ENSURE THAT THE BALANCE OF LOW MATERIAL COST AND PRODUCTIVITY IS MET TO OPTIMISE A PROJECT'S VALUE. AND THIS ALL STARTS WITH CRANAGE

JARRAD WARHURST, DIVISION DIRECTOR (UK/EUROPE) ROBERT BIRD GROUP [1]

[1] Cranes Hold the Key to Construction Productivity', New Civil Engineer, 23 July 2021



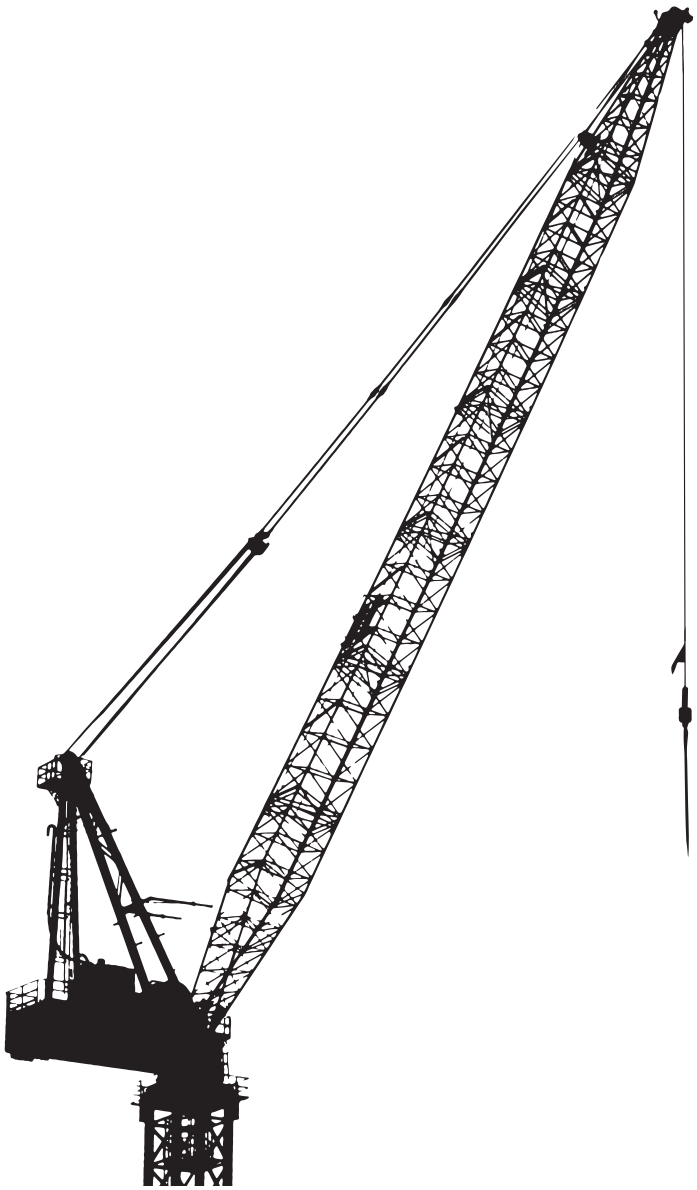
M2480D INSTALLING LARGE PRECAST AND MODULARISED STEEL ELEMENTS WEIGHING MORE THAN 120 TONNES ON SYDNEY METRO CROWS NEST STATION

EXPERTISE

WITH ALMOST 100 YEARS' EXPERIENCE WORKING ON LARGE-SCALE CONSTRUCTION PROJECTS IN AUSTRALIA, THE MIDDLE EAST, EUROPE, LATIN AMERICA, SOUTHEAST ASIA AND THE UNITED KINGDOM, OUR EXPERTISE SPANS: LARGE-SCALE CONSTRUCTION, MINING, OIL AND GAS, POWER GENERATION, MAJOR TRANSPORT INFRASTRUCTURE, MARINE AND TECHNOLOGY.

OUR SERVICES INCLUDE:

- resourced program & project crane solutions
- heavy lift crane solutions & design
- heavy lifting mobile & luffing tower cranes hire
- crane asset management
- recovery crane systems
- complete rigging services with highly qualified & experienced personnel
- crane crew – specialist tower crane operators, riggers, dogmen & crane co-ordinators
- engineered lift studies & job site lift planning
- a full range of towers, static & travel bases, internal & external climbing frames, grillages & other accessories
- ancillary equipment – man boxes, fuel tanks, first aid cages, brick cages, concrete kibbles & specialist heavy lift rigging equipment including spreader beams, synthetic slings & shackles



OUR FLEET

OUR FLEET OF THE WORLD'S LARGEST CAPACITY TOWER CRANES – RANGING FROM THE WORLD'S SMALLEST CRANE, THE TINY M40R, TO THE WORLD'S LARGEST CAPACITY TOWER CRANE, THE M2480D – COMBINES THE LIFTING CAPACITY OF MOBILE AND CRAWLER CRANES WITH THE HIGH PERFORMANCE OF TOWER CRANES.

Our fleet includes mobile and tower cranes for hire on high-rise and general construction jobs, but it is our heavy lifting cranage solutions and the way we approach a job that sets us apart.

As part of our commitment to sustainability, all Marr cranes are compatible with renewable diesel (HVO100).

UNIQUE FEATURES & BENEFITS

- High lift capacity – capable of lifting 330T (M2480D) to:
  - enable increased modularisation and installation of larger pre-assembled structures, therefore requiring fewer major lifts
  - decrease temporary works and reduce the need for working at height
  - increase daily tonnage count lifted into a project to drive schedule
- Long reach capability – boom lengths of up to 120m helps to:
  - deliver greater hook availability over a larger area for scheduled and unscheduled lifting
  - reduce congestion with fewer cranes required
  - overcome the impact of delayed plant deliveries by facilitating out of sequence plant installation
  - mitigate the need to relocate cranes, removing the necessity to integrate crane movements into project critical path
- Heavy and high-volume lifting:
  - increases productivity as tower cranes operate quicker than equivalent capacity crawler cranes
  - opens up multiple work fronts using the same crane
- Small base footprint:
  - Frees up valuable laydown areas and transport routes
  - Higher freestanding heights
  - Full climb capability for externally and internally climbed crane
- Ability to operate in higher wind speeds:
  - operational in wind of up to 20 m/s (compared with less than 10m/s for similar capacity crawler and mobile cranes)
  - increased availability helps to significantly improve utilisation and productivity
  - reduced risk to schedule
- Crane removal – recovery crane system to open up the backend of a project and take the crane removal off critical path
- Marr Transit System (MTS) – modular rail system that extends longitudinal reach with no loss of capacity – fully operational between site limits
- HVO100-compatible - up to 90% reduction in CO2 emissions when using 100% renewable diesel.

PROJECT: SYDNEY METRO MARTIN PLACE
CLIENT: JOHN HOLLAND CPB GHELLA (JHCPBG) JOINT VENTURE

"WE DON'T JUST HIRE CRANES – WE DESIGN THEM. SO, IF THE RIGHT CRANE FOR YOUR JOB DOESN'T ALREADY EXIST, WE'LL BUILD ONE."

SIMON MARR, MANAGING DIRECTOR, MARR CONTRACTING

SYDNEY METRO

REVOLUTIONARY HEAVY LIFTING SOLUTIONS FOR AUSTRALIA'S BIGGEST PUBLIC TRANSPORT PROJECT

AT A GLANCE

CLIENT	VARIOUS
PROJECT	SYDNEY METRO
LOCATION	SYDNEY AUSTRALIA
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2016 - CURRENT

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/SYDNEY-METRO

OVERVIEW

Sydney Metro is Australia's biggest public transport project. With one new metro line in operation and three under construction, the new driverless system will be a 113-kilometre standalone metro railway system.

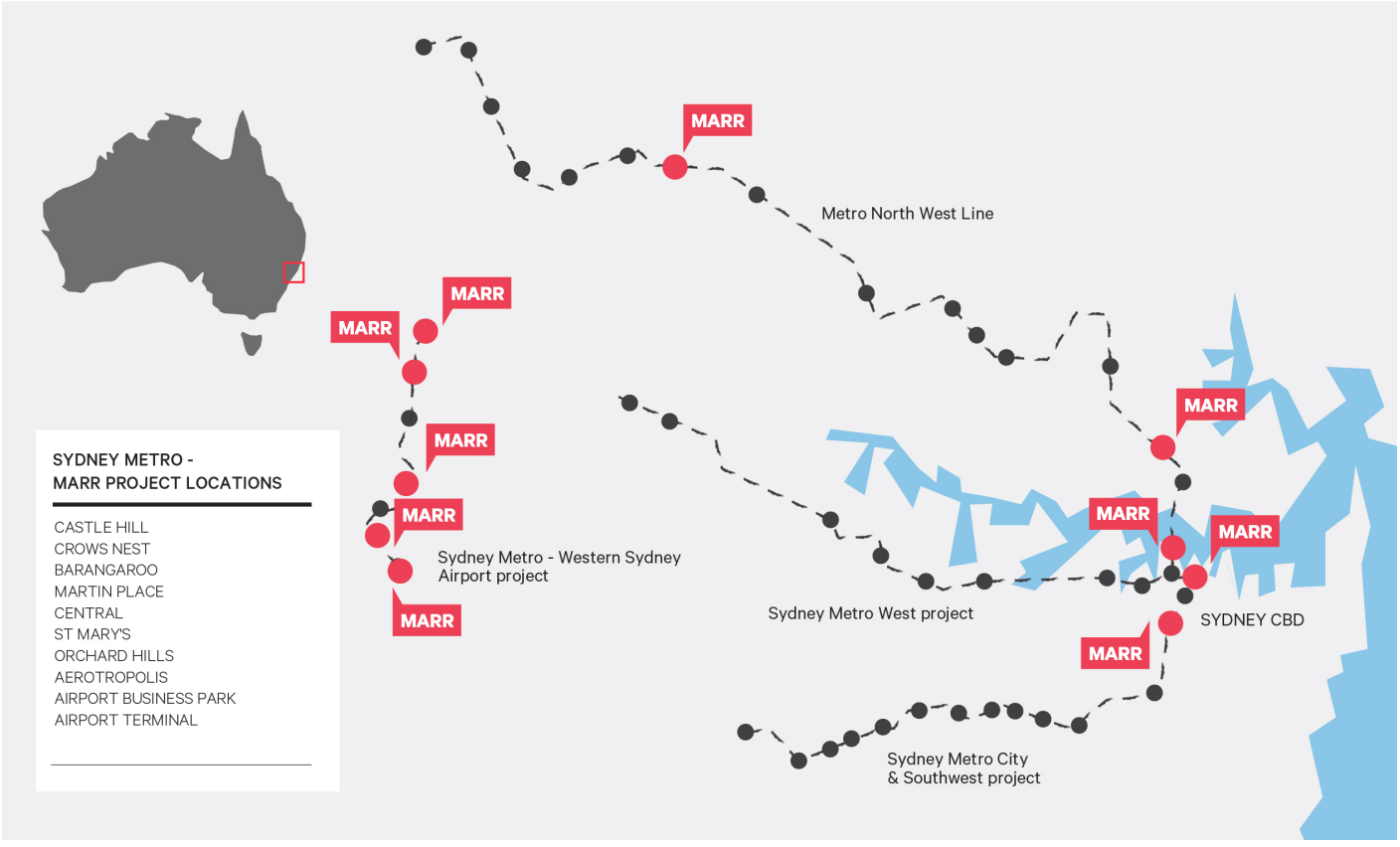
EARLY ENGAGEMENT AND INNOVATIVE THINKING - THE KEYS TO SUCCESS

From our initial engagement on the construction of the new Castle Hill Station and Sydney Yard Access Bridge at Central Station, Marr's team have subsequently been engaged to deliver bespoke cranage solutions across additional stations on the Sydney Metro City & Southwest project including Barangaroo, Central, Martin Place and Crows Nest, and the Sydney Metro - Western Sydney Airport project.

Key to the successes we have achieved for our clients across these projects has been the willingness of their project teams to engage us early in the planning stages – and to think differently about how cranage solutions can be procured and delivered.

Similar projects around the world have adopted the cut-and-cover box method, where crawler cranes are nearly always the immediate consideration, but Marr's approach has consistently demonstrated that installing the right cranes can change the way an entire project is constructed, principally because of the ability to lift bigger pieces and remove the requirement for costly, challenging and time-consuming groundworks.

The benefits of using Marr's technology – using fewer cranes with greater capacity and reach to deliver less complex, more efficient, and safer ways of constructing – is a game changer for future projects of this scale.



SYDNEY METRO CASTLE HILL

AN OUT-OF-THE-BOX SOLUTION A NEW BLUEPRINT FOR MEGA TRANSPORT PROJECTS

AT A GLANCE

CLIENT	NORTHWEST RAPID TRANSIT (NRT) CONSORTIUM
PROJECT	SYDNEY METRO NORTHWEST
LOCATION	SYDNEY AUSTRALIA
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2016 - 2018
CRANES	1 X M2480D, 1 X M1680D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/METRO-CASTLEHILL

At the time Marr started working on the project, the NRT Consortium was considering a cranage solution using crawler cranes travelling along the edge of a 200m x 30m cut-and-cover station box to cover the required lifts. However, as the site was congested and landlocked between two existing roads, this approach would have placed a large surge load against the station box walls and the consequence of having to excavate around the box and fill in with groundworks to specific bearing pressures. NRT challenged Marr to come up with a better solution.

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Understanding the benefits of combining fewer cranes with greater efficiency, Marr's solution using two heavy lift luffing tower cranes sitting alongside the station provided lifting capacity across the entire site. Changing the way the entire project was constructed, Marr's solution subsequently became a new blueprint for other station builds on Sydney Metro with the benefits of:

- Improved productivity & efficiency - through the ability to lift bigger, heavier pieces
- Removed the need for costly, challenging & time-consuming groundworks
- Decongested the site & improved site safety
- Reduced the chance of collision – through fewer, higher capacity cranes on site.

SYDNEY YARD ACCESS BRIDGE (SYAB)
AT CENTRAL STATION

A HEAVY LIFT SOLUTION FOR A FAST PACED PROJECT

AT A GLANCE

CLIENT	NORTHWEST RAPID TRANSIT (NRT) CONSORTIUM
PROJECT	SYDNEY METRO – SYDNEY YARD ACCESS BRIDGE (SYAB) AT CENTRAL STATION
LOCATION	SYDNEY METRO CITY & SOUTHWEST LINE
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2016
CRANES	1 X M2480D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/METRO - SYAB

Construction of the Sydney Yard Access Bridge (SYAB) at Central Station was the first and enabling works package for Sydney Metro City & Southwest. With plans to construct the access bridge by lifting structural steel sections and precast elements into place during restricted rail possessions over an existing network, Laing O'Rourke turned to Marr for a heavy lifting solution that could reduce complexity and de-risk the project.

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Using one of our M2480Ds – with its heavy lift capacity and extra reach – allowed the bridge sections to be preassembled alongside the operating rail line and lifted into place in a single lift during the scheduled rail possession.

With the assembly of the sections taken off critical path, Marr's solution reduced complexity and supported the project from a safety, time and cost point-of-view – helping Laing O'Rourke to deliver the project on time.

> THE USE OF THE TOWER CRANE AT SYAB PUSHED A LOT OF BOUNDARIES ... AN IDEA THAT RAISED MORE THAN A FEW EYEBROWS TURNED OUT TO BE THE BEST ENGINEERED SOLUTION FOR OUR CLIENT.

HUW GRIFFITHS, PROJECT LEAD, LAING O'ROURKE

CENTRAL STATION

A NEW APPROACH TO HEAVY LIFTING AT AUSTRALIA'S BUSIEST RAILWAY STATION

AT A GLANCE

CLIENT	LAING O'ROURKE
PROJECT	SYDNEY METRO CENTRAL STATION
LOCATION	SYDNEY METRO CITY & SOUTHWEST LINE
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2020 - JAN 2021
CRANES	1 X M1680D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/METRO - CENTRAL

After working with Marr's team on the successful delivery of the Sydney Yard Access Bridge (SYAB) to facilitate heavy vehicle access to Central Station, Laing O'Rourke engaged Marr to explore how a similar cranage solution could be adopted on construction of the new above and below ground works for new metro platforms at Central Station. They needed a solution that addressed the key challenges of:

- Lifting large architectural columns & heavy pre-assembled structure steelwork in a confined, live rail environment
- Restricted space & the need to de-risk rail possessions
- Restricted access for the delivery of heavy plant & materials to site.

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Marr's solution using one of our M1680Ds installed on a purpose-built steel grillage met the varied scope of lifting requirements and eliminated the need to use a range of different sized cranes which would have presented another set of challenges in such a confined space. With the combination of heavy lift capacity, long reach and a small footprint, our solution:

- Allowed the project team to adopt their preferred MMC methodology – including heavy lifts for precast concrete architectural columns (25T @ 50m) & preassembled steelwork (20T @ 60m);
- Enabled prefabricated roof trusses weighing up to 60T to be lifted in directly from laydown;
- Enabled high-volume general lifting direct from the yard; and
- Resulted in the roof installation being delivered ahead of schedule.

SYDNEY METRO BARANGAROO STATION

A WORLD RECORD TOWER CRANE LIFT FOR SYDNEY METRO

AT A GLANCE

CLIENT	JOHN HOLLAND CPB GHELLA (JHCPBG) JOINT VENTURE
PROJECT	SYDNEY METRO
LOCATION	BARANGAROO, SYDNEY, AUSTRALIA
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2018 - 2021
CRANES	1 X M2480D, 1 X M1280D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/SYDNEY-METRO

After working with John Holland and CPB Contractors as part of the NRT consortium on the construction of Castle Hill Station, the JHCPBG joint venture engaged Marr during the tender process to develop a cranage solution that would allow them to install heavy precast elements, reduce the construction program, and address the key challenges of:

- A restricted harbourfront, urban site adjacent to another development with limited real estate for access & the movement of equipment around the site;
- The retrieval of TBM sections weighing up to 255T mid-construction program; and
- A linear project requiring long reach capability, heavy lift capacity & the flexibility to remove the TBM as well as perform general construction tasks within a congested site.

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Marr's solution – using two heavy lift luffing tower cranes sitting on purpose-designed foundations in and outside the station boxes – provided lifting capacity across the project and took up less than 90 per cent room than the traditional crawler crane and gantry set up originally proposed. Our solution resulted in:

- A simplified scheme, reduced congestion and improved site utilisation;
- A game changing solution for the extraction of TBMs - M2480D positioned within the station box to remove the TBM's 255T shield;
- Higher capacity cranes – providing the option to build with precast beams allowing for increased modularisation and fewer lifts.

> THE M2480D HEAVY LIFT TOWER CRANE WAS THE ONLY SOLUTION FOR THE JOB. WITH A VERY LIMITED FOOTPRINT AND HEAVY LOADS TO LIFT, THE M2480D SAVED TIME ON THE PROGRAM BY MINIMISING THE NUMBER OF CRANE LIFTS REQUIRED, WITHOUT IMPACTING CONSTRUCTION ACTIVITIES OF THE BARANGAROO STATION WORKS ADJACENT.

DAN CALDICOTT, JHCPBG BARANGAROO STATION SITE SUPERINTENDENT

SYDNEY METRO MARTIN PLACE

A FLEXIBLE CRANAGE SOLUTION FOR A MAJOR INFRASTRUCTURE PROJECT IN THE HEART OF SYDNEY'S CBD

AT A GLANCE

CLIENT	JOHN HOLLAND CPB GHELLA (JHCPBG) JOINT VENTURE TUNNEL AND STATION EXCAVATION WORKS
PROJECT	SYDNEY METRO CITY & SOUTHWEST
LOCATION	MARTIN PLACE STATION SITE
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2019 - 2020
CRANES	1 X M1280D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/MARTIN-PLACE

The John Holland CPB Ghella (JHCPBG) Joint Venture was contracted to deliver the Tunnel and Excavation Works for the Sydney Metro City & Southwest project, which included the excavation of the Martin Place Metro Station site. Faced with a challenging schedule of works, JHCPBG partnered with Marr for a cranage solution that would address the key challenges of:

- Excavation & construction works on a congested CBD site in the middle of a busy pedestrian thoroughfare & high traffic area;
- Restricted access for the delivery of heavy plant & materials to site including 30m-long, 80T plunge columns; and
- Underground services limited options for crane positioning.

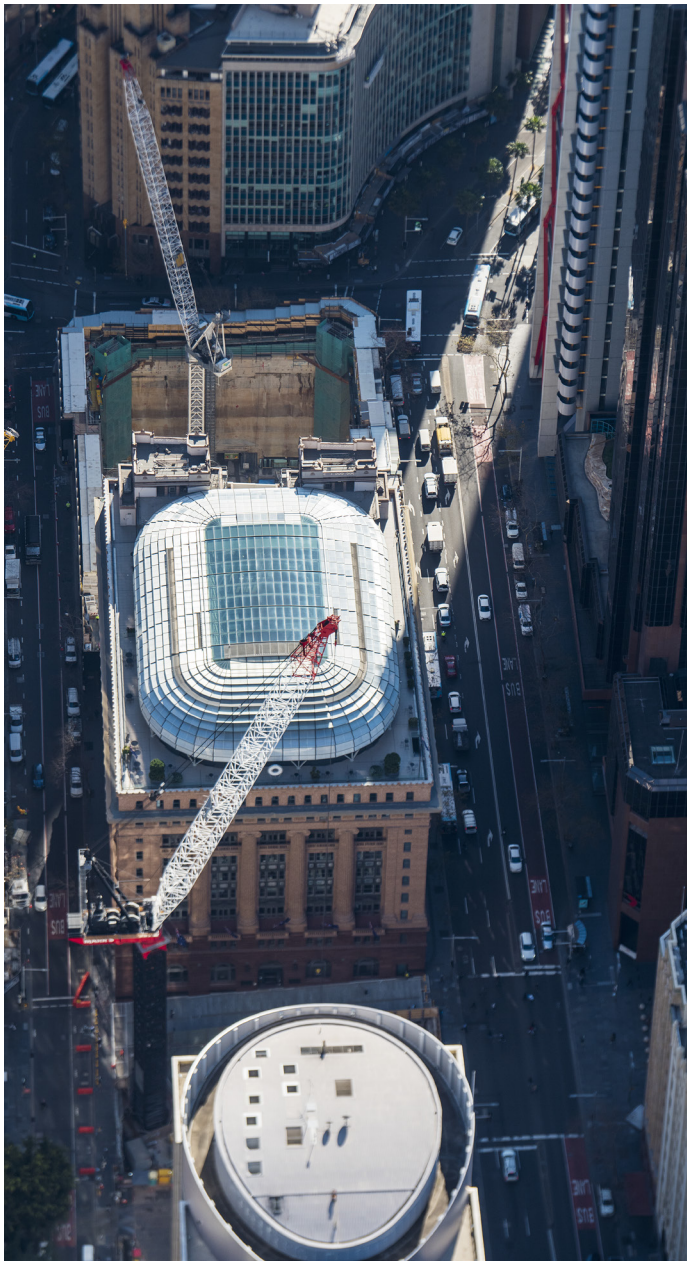
BENEFITS OF EARLY ENGAGEMENT WITH MARR

The original cranage scheme proposed - using two crawler cranes and a smaller tower crane installed on a steel platform – would have necessitated costly road closure and associated risks to the program; and require the plunge columns to be delivered in 20T sections before being assembled and welded onsite prior to installation.

- Eliminated the need for road occupancies
- Allowed the 80T, 30m plunge columns to be prefabricated offsite and lowered into their final position – avoiding onsite scope;
- Provided the flexibility to meet unscheduled lift capacity – avoiding delays
- Supported the project being delivered ahead of schedule.

> SITE PRODUCTIVITY IMPROVED BY MORE THAN 100%. WE WOULD HAVE TAKEN MORE THAN THE SAME TIME AGAIN IF WE HAD USED CRAWLER CRANES ONSITE.

WILL FREELANDER
CONSTRUCTION MANAGER, JHCPBG
MARTIN PLACE METRO STATION



SYDNEY METRO CROWS NEST STATION

HEAVY LIFTING CAPABILITY ON ONE OF SYDNEY'S BUSIEST ARTERIAL ROADS

AT A GLANCE

CLIENT	A W EDWARDS
PROJECT	SYDNEY METRO
LOCATION	CROWS NEST, SYDNEY, AUSTRALIA
SECTOR	MAJOR PUBLIC INFRASTRUCTURE – RAILWAY
DATE	2018 - 2023
CRANES	2 X M2480D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/SYDNEY-METRO

> OUR EARLY ENGAGEMENT ON THIS PROJECT HAS SUPPORTED SYDNEY METRO'S DESIRE TO DESIGN AND CONSTRUCT THE NEW CROWS NEST STATION BY ADOPTING A DESIGNED FOR MANUFACTURE AND ASSEMBLY (#DFMA) CONSTRUCTION APPROACH. IT'S ESSENTIALLY ABOUT TAKING A WHOLISTIC VIEW TO ALIGN THE CRANAGE WITH THE PREFERRED CONSTRUCTION METHOD, AND THEN USING THIS TO SECURE THE CONSTRUCTION PROGRAM WITH A SAFER, MORE EFFICIENT AND COST-EFFECTIVE SOLUTION
>
> **SIMON MARR, MANAGING DIRECTOR**
> **MARR CONTRACTING**

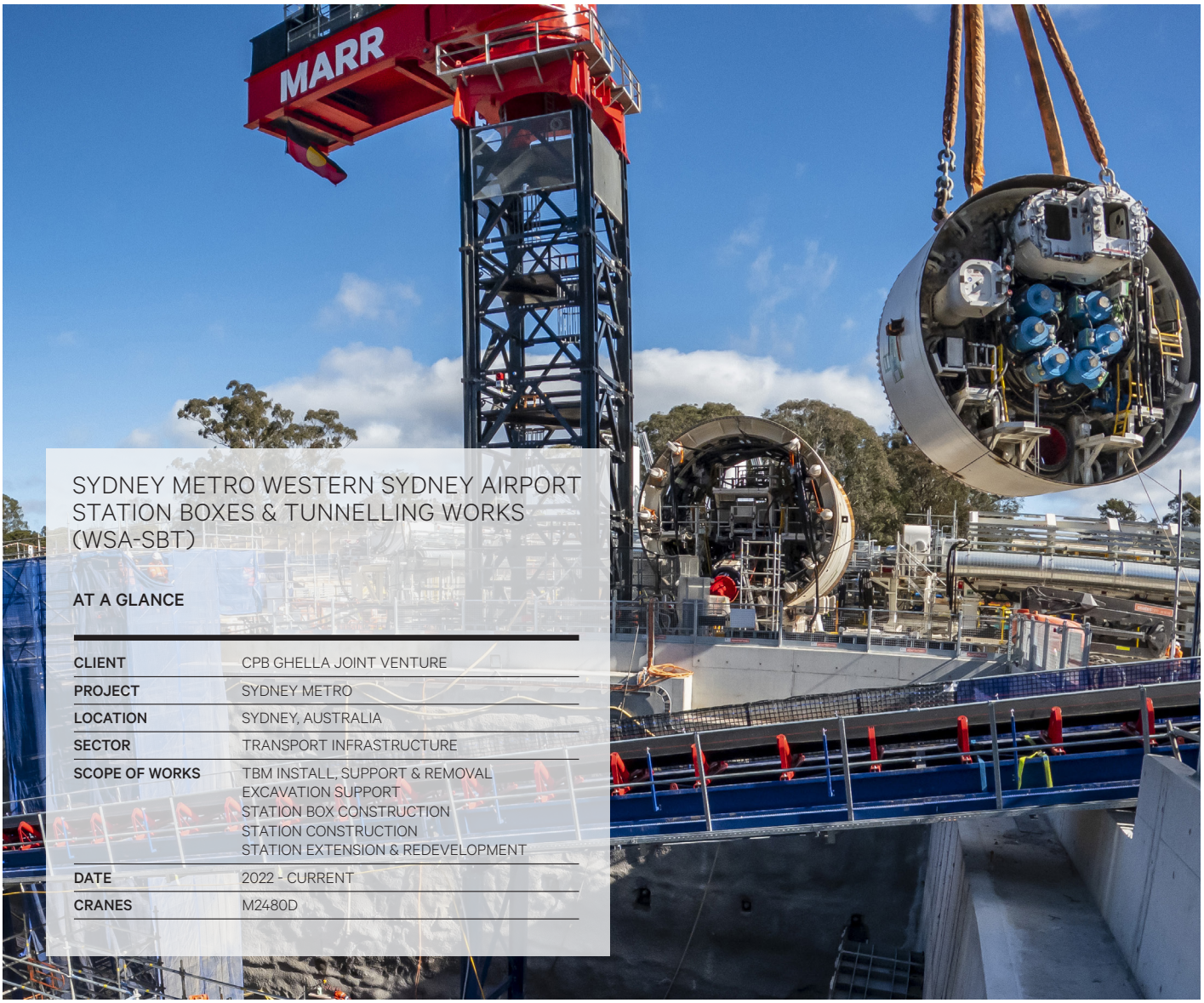
Marr's early engagement with the end-client, Sydney Metro, at the front-end design of this project allowed their design team to unlock a construction methodology that was previously thought to be impossible. It was essentially about taking a wholistic view to align the cranage with the preferred construction method, and then using this to secure the construction program. This helped address the key challenges of:

- A constrained site – limited space within the station box construction site
- Location – adjacent to one of Sydney's busiest arterial roads
- Limited space for the delivery of materials, crane install and removal
- A tight construction schedule — driven by where the project sat within Sydney Metro's overall project delivery schedule for the Sydney Metro City & Southwest project
- Heavy lifting requirements – precast elements weighing up to 120T

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Over 18 months, Marr worked with Sydney Metro's design team to develop a solution that:

- Supported Sydney Metro's preferred DfMA construction approach – allowing larger and heavier structures to be fabricated off-site and installed in single lifts
- Eliminated the need for temporary works
- Aligned the cranage solution with the construction program – helping to de-risk the program
- Provided a solution that was safer, more efficient and cost-effective
- Allowed Sydney Metro to issue a considered and evaluated design for the construction tenderers with a suitable cranage solution built into it – meaning that the project could transfer easily from contract award to construction in a short timeframe.



SYDNEY METRO WESTERN SYDNEY AIRPORT STATION BOXES & TUNNELLING WORKS (WSA-SBT)

AT A GLANCE

CLIENT	CPB GHELLA JOINT VENTURE
PROJECT	SYDNEY METRO
LOCATION	SYDNEY, AUSTRALIA
SECTOR	TRANSPORT INFRASTRUCTURE
SCOPE OF WORKS	TBM INSTALL, SUPPORT & REMOVAL EXCAVATION SUPPORT STATION BOX CONSTRUCTION STATION CONSTRUCTION STATION EXTENSION & REDEVELOPMENT
DATE	2022 - CURRENT
CRANES	M2480D

M2480D LIFTING A TBM SECTION WEIGHING 265T IN A SINGLE LIFT

INNOVATIVE SOLUTIONS FOR TBMs

Marr's unique approach and heavy lift fleet is taking the complexity out of installing and retrieving TBMs by:

- allowing TBM sections weighing up to 330T to be lifted in a single lift;
- reducing the amount of ground improvement works; and
- eliminating the need for other temporary works required to support traditional approaches and crane solutions.

CROSS RIVER RAIL – BOGGO ROAD STATION

AT A GLANCE

CLIENT	CPB – BAM – GHELLA – UGL JOINT VENTURE
PROJECT	CROSS RIVER RAIL
LOCATION	BRISBANE, AUSTRALIA
SECTOR	TRANSPORT INFRASTRUCTURE
SCOPE OF WORKS	STATION CONSTRUCTION STATION BOX CONSTRUCTION
DATE	2021 - 2023
CRANES	2 X M2480D

CROSS RIVER RAIL – BOGGO ROAD STATION

The new underground Boggo Road Station is part of the Cross River Rail project – a new 10.2-kilometre rail line in Brisbane delivered by the Queensland Government.

Joint venture partners – CPB Contractors, BAM, Ghella and UGL Design and Construction (CBGU D&C JV) – awarded the heavy lift cranage contract to Marr Contracting after the Pulse consortium, of which CBGU is the D&C member won the competitive State tender to deliver the design and construction package for the project.

After previously working with two of the joint venture partners (CPB Contractors and Ghella) on construction of the Sydney Metro Barangaroo and Martin Place stations, Marr was invited by the CBGU D&C JV to work with them at bid stage to develop a cranage solution that would support the desired construction methodology for the project which was based around heavy precast elements and beams.

The cranage solution – using two of Marr's M2480D heavy lift luffing (HLL) tower cranes – has allowed the joint venture partners to adopt a construction methodology similar to that used on the successful Sydney Metro projects to help drive productivity, improve safety, and reduce time and project cost.

WADANGGARI PARK

AN INNOVATIVE CRANAGE SOLUTION FOR A CHALLENGING OVER-RAIL BUILD

AT A GLANCE

CLIENT	ARENCO (NSW)
PROJECT	WADANGGARI PARK
PROJECT ENGINEER	AURECON
LOCATION	SYDNEY, AUSTRALIA
SECTOR	PUBLIC INFRASTRUCTURE
DATE	JULY – OCTOBER 2022
CRANES	1 X M2480D

VIEW FULL CASE STUDY: MARR.COM.AU/PROJECTS/WADANGGARI-PARK

When we talk about removing construction complexity by using the right crane solution, this is the kind of project we are talking about. This transformative over-rail plaza is a triumph of urban design, but for the design engineers at Aurecon, it was a difficult construction challenge. Faced with the dilemma of how to build the project, Aurecon turned to Marr for a solution.

Envisaging a precast construction methodology for the over-rail structure, Aurecon needed a cranage solution that would align their proposed methodology with the constraints of the site. The key challenges included:

- Location - wedged between high-rise buildings, one of Australia's busiest arterial roads & spanning a major rail corridor;
- A congested site – with an area of approximately just 7m wide to establish a crane capable of lifting precast elements weighing up to 150T, across a 95m x 30m-wide rail cutting; and
- A challenging construction program – relying on restrictive night road closures and rail possessions.

> "THE HEAVY LIFTING CAPACITY OF MARR'S M2480D TOWER CRANE PROVIDED AN EXTREMELY EFFICIENT CRANAGE SOLUTION THAT MAXIMISED THE AVAILABLE TIME FOR CONSTRUCTION WORKS DURING THE RAIL CORRIDOR SHUTDOWNS AND ULTIMATELY DELIVERED PROGRAM BENEFITS THROUGHOUT THE DURATION OF THE PROJECT."
>
> **PAUL FITZGERALD, SENIOR PROJECT MANAGER, AURECON**

BENEFITS OF EARLY ENGAGEMENT WITH MARR

Working with Aurecon over 18 months we designed a solution using one of our M2480Ds that gave the engineers the confidence that their design concept could be constructed. Our solution subsequently became part of the tender package for the build-phase of the project and subsequently provided the Head Contractor, Arenco, with a safe, efficient solution to what would have been an otherwise complicated task. The result was: :

- The installation of more than 40 precast beams each weighing between 80-150T;
- Arenco's team could focus their attention on maximising the number of beams delivered to the waiting crane hook (instead of the number of beams that the crane could install), during rail possessions and road closures; and
- An innovative solution that has paved the way for alternative approaches to constructing projects that have been deemed inaccessible to traditional construction methods.

MARR CONTRACTING PTY LTD

P +61 (2) 9738 5533 (AUSTRALIA)
M +44 7930 271 791 (UNITED KINGDOM)
E INFO@MARR.COM.AU
MARR.COM.AU

marr-contracting
@marr_contracting
vimeo.com/user41811335
@marrcontracting8881