

## THE GORGON LNG PROJECT

# A GAME CHANGING CRANAGE SOLUTION FOR AUSTRALIA'S LARGEST RESOURCE PROJECT

### AT A GLANCE

CLIENT	CHEVRON AUSTRALIA
PROJECT	THE GORGON LNG PROJECT
LOCATION	WESTERN AUSTRALIA
SECTOR	OIL & GAS
DATE	2010-2016

CRANES	8 X M2480D
ENGINEERS	4
INSTALLATION CREW	8
MAINTENANCE CREW	2
OPEN-MINDED CLIENT	1

The world-first solutions designed by Marr Contracting for the Chevron-operated Gorgon Project has changed the way that companies like Chevron are looking at craneage logistics and construction solutions for large resources projects around the world.

#### THE PROJECT

With a construction cost of around US\$ 56 billion, the Chevron-operated Gorgon Project on Barrow Island is one of the world's largest liquefied natural gas (LNG) projects and the largest single resource development in Australia's history.

A joint venture between the Australian subsidiaries of Chevron, ExxonMobil, Shell, Osaka Gas, Tokyo Gas and JERA, the Gorgon Project is the most significant entry into the Western Australian domestic gas market since the late 1980s.

At full capacity and subject to market demand, the Gorgon Project has the potential to supply up to 300 terajoules per day (TJ/d) of gas to the Western Australian market, equivalent to generating enough electricity for 2.5 million households.

A 'mega project' with a legacy of world-first craneage solutions, the Gorgon Project was a game changer – not only for Marr and Chevron, but for the future of large-scale construction projects in the mining and resources sector.

#### THE CHALLENGE

The Western Australian coastline is one of the most remote and wild in the world. For Chevron, this meant delivering millions-of-dollars of freight to build the LNG Plant on Barrow Island in the face of dangerous seas, unpredictable weather patterns and cyclonic conditions.

Located approximately 140kms off the northwestern coast and 906 nautical miles from the Project's marine lifting facility (MLF) at AMC Henderson Perth, Barrow Island is also located in an A-class marine conservation reserve with the world's highest recorded wind speeds of up to 400kms per hour.

Environmental factors aside, the Gorgon Project posed a number of engineering, construction and logistics challenges for Marr's team.

As one of the world's leading integrated energy companies, Chevron expected the highest levels of safety and production. For one, their strict Quarantine Management System (QMS) required careful observance of more than 300 procedures, specifications, checklist and guidelines to protect the native flora and fauna of Barrow Island and its surrounding waters.

The high-cost project was also running to a demanding schedule with multiple contractors and suppliers. But the biggest challenge of all was in challenging how Chevron delivered craneage solutions on projects of this scale.

#### OUR SOLUTION

In 2007, Marr's team designed what would become the world's largest capacity tower crane – the Favelle Favco M2480D. After using the M2480D in the construction of the world's largest fully integrated waste to energy (WTE) plant in Doha for the Qatar Government in 2008, as well as numerous large scale mining projects in Australia, we knew that we had the right tower crane for the logistics project we were initially engaged on at Barrow Island.

Working with construction delivery partners, Kellogg Joint Venture – Gorgon (KJVG), in 2010 we erected a M2480D tower crane to increase the productivity of the project's materials offloading facility (MOF) at Wapet Landing.

Having proved ourselves at Wapet Landing – with the solution we designed reducing the time to unload each barge from up to five days to one – Chevron were willing to trust us on some even bigger challenges (see Project timeline following).

Working with the project delivery partners, we engineered additional components and methodologies to address the logistics and construction challenges that the project presented. Innovations such as the super fly (which added

extra reach and capacity to the cranes) and the SPMT transport system (which allowed us to move fully-assembled cranes to any part of the project as required) provided greater coverage, flexibility and value to Chevron's construction methodology.

#### THE RESULT

Our involvement on the Gorgon Project resulted in significant cost savings and productivity gains including:

- Reduced unloading and re-packing times at Wapet Landing – from up to 5 days to one;
- Reduced crane dismantle and reassemble times – from 2-3 weeks to 1.5 hours;
- Improved safety and risk reduction by isolating crane construction away from the worksite and plant workers on Barrow Island;
- Decongesting the work site by reducing the amount of cranes required on the project; and
- Increased productivity and availability from the crane with higher allowable working wind speeds, reach and load cycle times.

In 2012, Chevron's QMS for the Gorgon Project was also acknowledged by the Western Australian Environmental Protection Authority and was awarded a United Nations Environment Best Practice Award.

Ultimately, we have challenged the way that companies like Chevron have traditionally managed craneage logistics. By introducing heavy lift tower cranes, new technology and innovative methodologies to the project, we have helped Chevron adapt their construction methodology in such a way that the craneage solution can drive the program and schedule, and ultimately reduce overall risk on delivery.

Marr's team were subsequently contracted to design and deliver the craneage solutions for Chevron Australia's next major venture – the Wheatstone Project near Onslow, Western Australia.



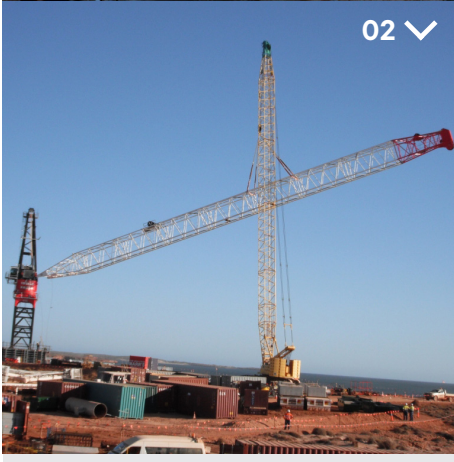
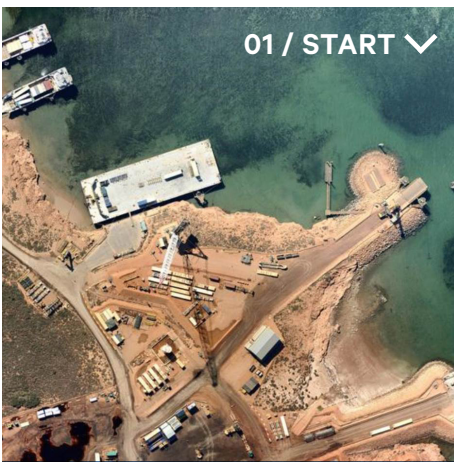


The Gorgon Project was a game changer for Marr's team. As testament to what can be achieved with a brave and trusting client like Chevron, we were able to push the boundaries of what is possible in a way that has changed the way large-scale resources projects are constructed."

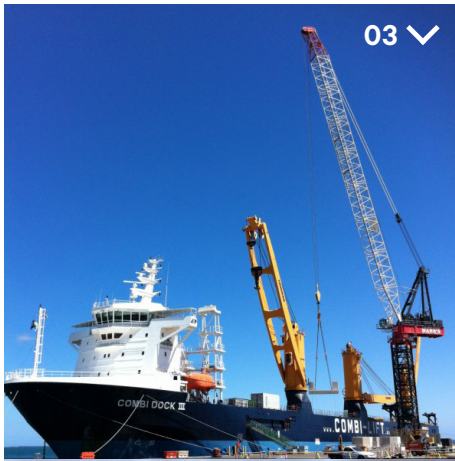
SIMON MARR, MANAGING DIRECTOR,  
MARR CONTRACTING



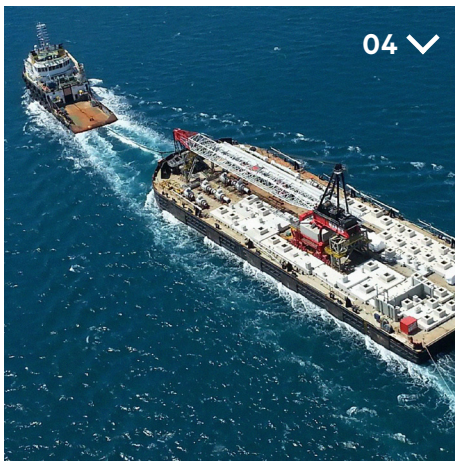




**AUGUST 2010 – SEPTEMBER 2015**  
 (Barrow Island): Working with KJVG, Marr's team erected a Favelle Favco M2480D tower crane to unload freight at the MOF at Wapet Landing on Barrow Island. The solution reduced barge unloading and repacking times from 4-5 days to a day.



**APRIL 2011 – MAY 2014** (Perth): KJVG contracted Marr to provide a craneage solution for the Project's marine lifting facility at AMC Henderson, Perth. Using a world-first engineering solution, we used SPMT trailers to achieve 'the impossible' – loading a 12,000 tonne M2480D crane onto the Barrow Island-bound super barge, "Miss Hannah".



**MAY 2013 – MAY 2016** (Perth – Barrow Island): Fully-loaded with the M2480D crane and multi-million-dollar cargo, Miss Hannah made repeated return journeys along the 906 nautical miles of coastline to deliver construction materials and supplies for the LNG Plant on Barrow Island.



**OCTOBER 2013 – NOVEMBER 2016**  
 (Barrow Island): The SPMT trailer solution we used to load the M2480D onto Miss Hannah was employed at the LNG Plant to move tower cranes around the construction site within 1.5 hours instead of taking 2-3 weeks to dismantle and reassemble each time a crane was relocated.



On the success of the Gorgon Project, Marr subsequently worked with international engineering, construction and project management company, Bechtel, to build the \$40 billion Wheatstone Project near Onslow in Western Australia.