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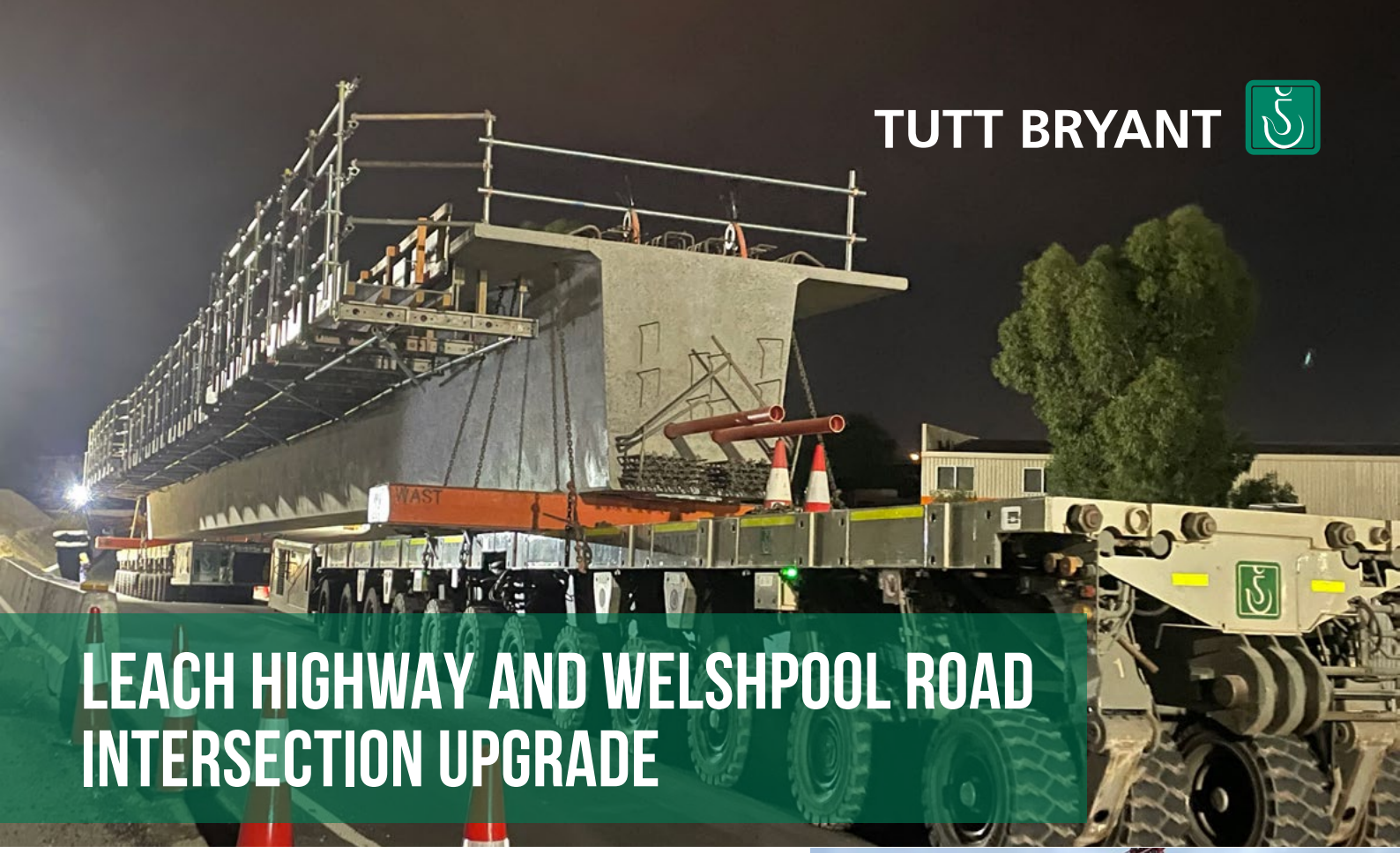
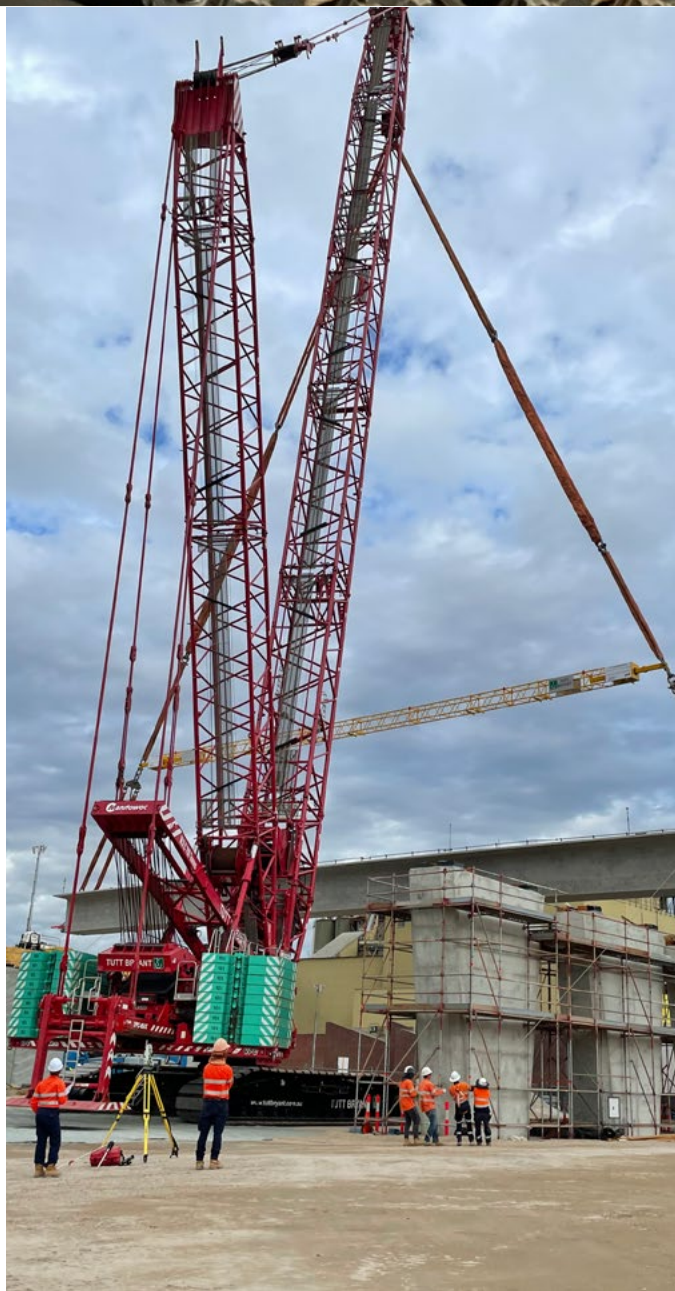


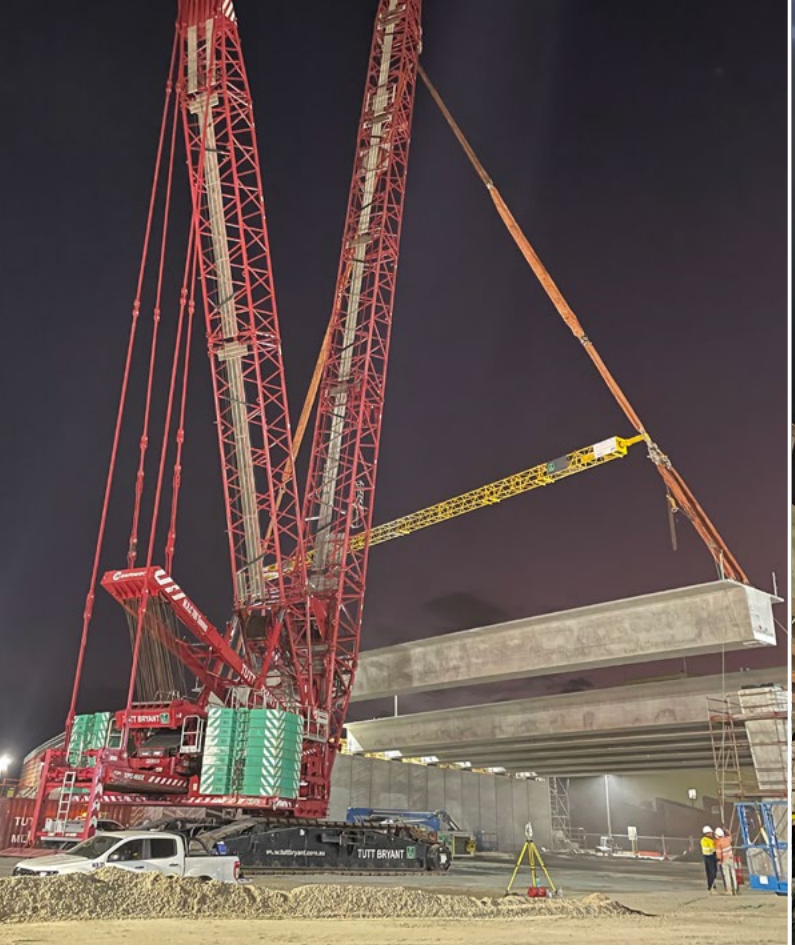
LEACH HIGHWAY AND WELSHPOOL ROAD INTERSECTION UPGRADE

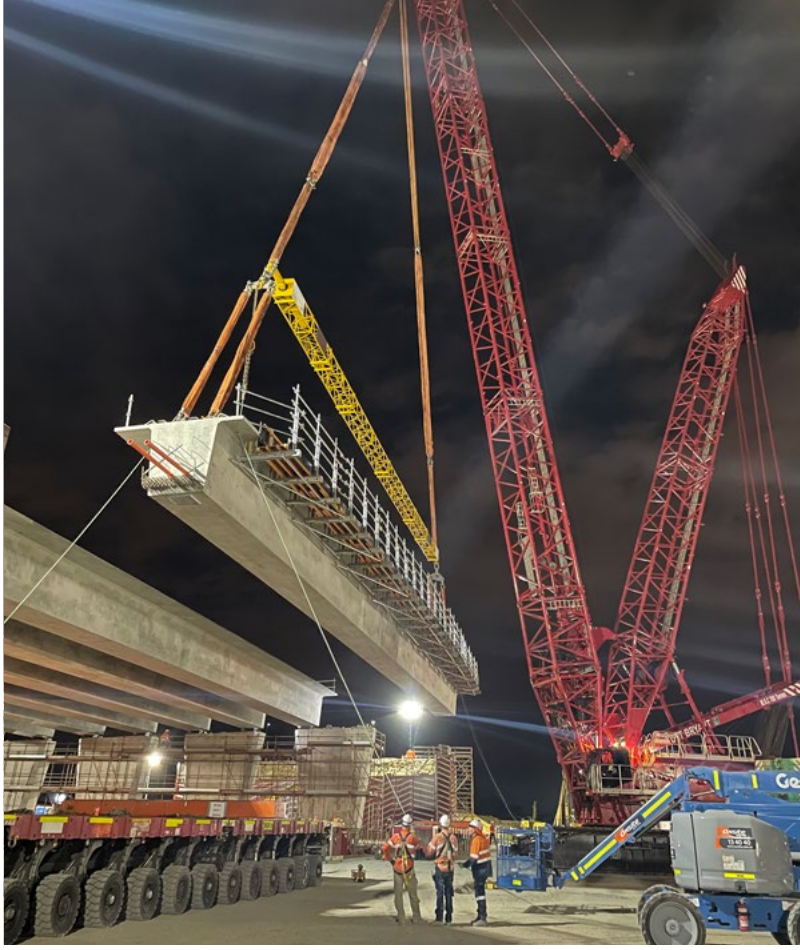
The Covid19 pandemic has had a global impact on many people's lives, not only physically but also financially. To cope with the crisis, many institutions have closed their doors or reduced their staff. Despite the challenges, the Western Australian government is committed to completing major infrastructure projects that will alleviate the difficulties faced by road users. The Leach Highway and Welshpool Road Interchange upgrade was proposed to enhance Western Australia's second most dangerous and congested intersection, which had more than 200 crashes between 2015 and 2019. To realize the proposed concept, local WA companies BG&E Pty Ltd, Georgiou Group Pty Ltd, and Golder Associates Pty Ltd allied. The Leach Welshpool Alliance (LWA), as they are known, was awarded a 93 million AUD contract for the interchange upgrade.[1]

SCOPE OF WORK AND CHALLENGES

Part of the interchange upgrade was to install sixteen bridge beams for Bridge 1883 consisting of two spans and eight beams per span. The maximum weight of the beam is 200 metric tons with a length of 45m, which would require a decent size of crane to handle the operation. Simultaneous project executions had affected the availability of the cranes in the country and bringing in cranes from overseas would have been an expensive approach. With these limitations, the LWA had sorted multiple options to satisfy the constraints and deliver the project on time.







OUR METHODOLOGY

Tutt Bryant Heavy Lift & Shift (TBHLS) a renowned heavy lift contractor and crane provider proposed an installation methodology with the use of a crawler crane with a variable positioning counterweight (VPC). With this proposal, the crane would only be at two positions, pick and carry the beams and install them in the final position. This method would not only save the crane from having several positions, which would necessitate some groundwork, but also increase the number beams installed to fulfil the deadline. The delivery of the bridge beams from the current offload locations to the crane's pick-up position was another part of this project.

TBHLS proposed two sets of self-propelled modular transporters (SPMT), in which beams were received simultaneously and the succeeding beams were ready after the preceding beams had been installed. TBHLS also introduced the use of a rigging spreader to expedite the installation of the beams and as a result, it saved additional costs associated with employing assist cranes to handle the rigging tackles.

EQUIPMENT SOLUTION

The proposed solution delighted the LWA, and the contract was given to TBHLS. The crane that was suggested and was the only crane available and could handle the operation is the **Manitowoc MLC650** with VPC-MAX and a maximum rated capacity (MRC) of 650 metric tonnes. Due to its size, the first challenge was the suitability of the assembly location. It was extremely tight and congested, with the live traffic that could not be disrupted as per main road guidelines. To save the traffic, TBHLS devised an assembly strategy in which only crane parts needed were brought on site that day. TBHLS used a **Demag AC300-6** a 300 metric ton capacity telescopic crane owned by Cranecorp Australia with several riggers, to assist with the MLC650 as part of the joint venture.

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The assembly was completed three days ahead of schedule, boosting the alliance's confidence in the TBHLS heavy lift team. The delivery of the rigging spreader was another important hurdle that was critical to the project's success. Due to lack of option, TBHLS decided to create their own, which will serve as an asset for future projects. The rigging spreader was finished and transported to site two days before the scheduled lift with the assistance of a local fabrication firm.

PROJECT COMPLETION

Only one weekend was set for the transport and installation operation. The roads were closed on Friday night, and the installation completed by Sunday evening, with the road re-opening at 05:30 on Monday morning. To meet the requirements, TBHLS provided two separate crews working day and night shifts.

The sixteen bridge beams were successfully transported and installed by the TBHLS team ahead of the schedule. The crew managed to reduce and create working solution that avoided any delays of the transit of the beams towards the pick-up position, thank to their skill and experience in handling these operations. Numerous progress meetings and risk management were held to ensure that all viable solutions and hazards were explored and managed. The ability of the ground to bear the stresses exerted by the massive crane required collaboration between the LWA and TBHLS teams. The engineering team of TBHLS developed 3D models to ensure that clashes were avoided.

Reference:

[1] Cabinet D 2022 Media statements - Local contractor to deliver Leach Highway and Welshpool Road upgrade Mediastatements.wa.gov.au