Development of a new tug facility in Port Hedland, Western Australia

Port of Port Hedland in Western Australia is the world’s largest bulk export port and is located in the East Pilbara region of WA. Given the size of the vessels and navigational constraints, the day to day operations of the port is dependent on viability and service of tugs. In 2017, Fortescue Metals Group (FMG) subsidiary Pilbara Marine, as the newly appointed operator of tug services in Port Hedland, awarded Besix Decmil Joint Venture (BDJV) a contract to design and develop a new tug facility in the harbour. BDJV subsequently appointed GHD to assist Besix in the design of marine structural elements. Over the next 12 months, the BESIX/GHD team developed an innovative design allowing BDJV to deliver the state of the art facility in July 2018.

Port Hedland is located in the cyclonic region of Western Australia and experiences large tidal variations. The proposed facility is located within the waters of the Port Hedland harbour and while protected from ocean swells, is exposed to cyclonic winds and locally generated waves creating challenging environmental design conditions. The design concept comprised of an array of large diameter mono piles and uniquely developed floating collars to house cyclone mooring bollards and secure pontoons in place in place of traditional brackets.

Further design development required an extensive and detailed study of tug motion to evaluate environmental forces on the piles, the collars and mooring lines. The project team successfully finalised the design and the project was completed and delivered to FMG in July 2018.

This presentation will summarise the project specifications and how through engineering and collaborative design effort, the combined design and construction teams overcame the design challenges.

SPEAKER
Shahab Hosseini – GHD Pty Ltd

Shahab Hosseini is a technical director at the GHD Sydney maritime and coastal team. Shahab was GHD’s design manager throughout tender, concept development and detailed design phase of the FMG tug facility project. Shahab has more than 20 years of experience as coastal and marine engineer and has been with GHD in UAE, Western Australia and now New South Wales over the past 12 years.