



# MARINE STRUCTURES

## WHEATSTONE BREAKWATER

### Marine Stone Columns

AUSTRALIA



#### Owner

Chevron / Betchel

#### Engineer

BEST-JV

#### General contractor

BEST-JV

#### Period of works

April 2014-August 2014

#### Main figures

##### Stone columns

2,000 dry bottom feed stone columns of 1m diameter 3.5 to 6.5m deep



#### Project description

The project's context is the development, by CHEVRON / BECHTEL, of a liquefied natural gas plant in Onslow, Western Australia, in the remote Pilbara Region (camp based, fly in/fly out).

The joint venture BESIX / THIESS (BJV) was awarded the construction of a Material Offloading Facility and adjacent breakwater.

#### Ground conditions

Across the breakwater footprint was identified the presence of a paleochannel and with it the risk of soil liquefaction. It was concluded that the stone column ground improvement methodology was the most appropriate mitigation measure.

#### Solution

The ground improvements works were to treat the whole 150m length and 55m width of the breakwater, which was designed to extend from RL -1.00 to RL +4.00.

Menard was awarded the installation of approximately 2,000 dry bottom feed stone columns of 1m diameter 3.5 to 6.5m deep. BJV supplied the working barge and other supporting equipment as well as provided materials and logistics for crew transfers; Menard provided technical expertise and performed the installation of stone column works.

The equipment mobilised by Menard consisted of the in-house designed vibro penetration units from Vibroflotation whilst feeding of stone was carried out using gravel pump. All works were carried out on double shifts.

The collaborative works of Menard, BJV and Vibroflotation led to the technical success of the project which was a first of its kind in Australia. Furthermore, the project was delivered with no safety or quality incident.

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