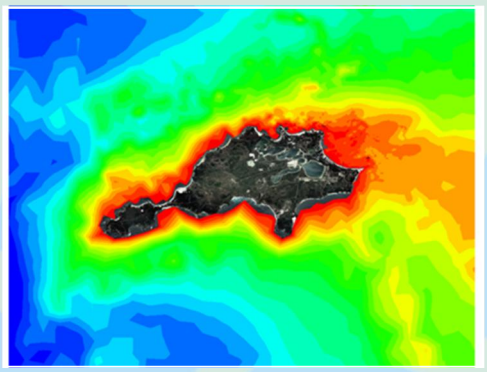
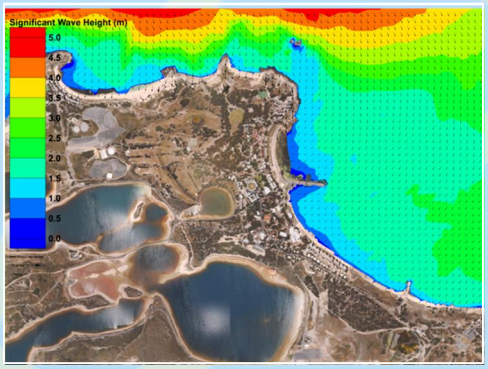
BMT JFA Consultants

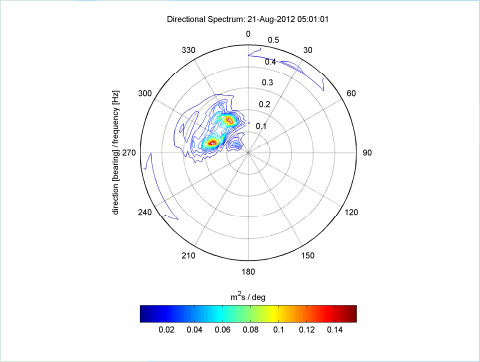
"Where will our knowledge take you?"

Thomson Bay Wave Study

Rottnest Island Authority







Location

Rottnest Island, Western Australia

Date

2012

"BMT JFA carried out extensive numerical wave modelling, using Unstructured SWAN, to develop design wave conditions for a proposed commercial marina. The model was calibrated to measured wave data at the project site."

The Rottnest Island Authority engaged BMT JFA Consultants (BMT JFA) to perform a wave modelling study to determine appropriate design wave conditions for a proposed commercial marina facility at Thomson Bay, Rottnest Island, Western Australia.

BMT JFA initially undertook a desktop review of the available wave data and identified the need for further data measurement for model validation. Subsequently BMT JFA conducted an 8 week wave data measurement program during winter to obtain directional and non-directional wave data at a number of locations within Thomson Bay.

BMT JFA carried out extensive numerical wave modelling, using Unstructured non-stationary SWAN, to transform the offshore wave conditions to the project site.

The model was calibrated to the measured wave data for the project considering both spectral data and wave parameter time series. The bimodal nature of the waves at Rottnest Island was investigated thoroughly and modelled using user defined wave spectra as boundary conditions.

The model reproduced the substantial level of refraction of the waves around the island accurately. The calibrated model was used to develop the design wave conditions for the proposed marina

BMT JFA Role

- Desktop review of available data including survey, wind, wave and water level measurements
- Management of metocean data acquisition
- Analysis of metocean data
- Modelling of extreme wave conditions
- Preparation of a report summarising results and findings

Services & Expertise Provided

- Metocean data collection
- Wave transformation modelling
- Developing design wave conditions
- Coastal Engineering

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