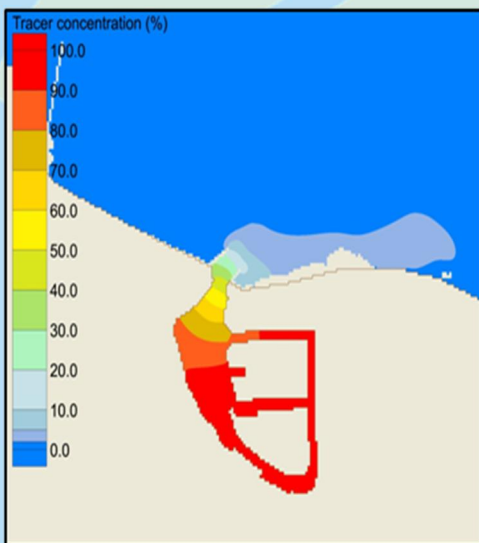
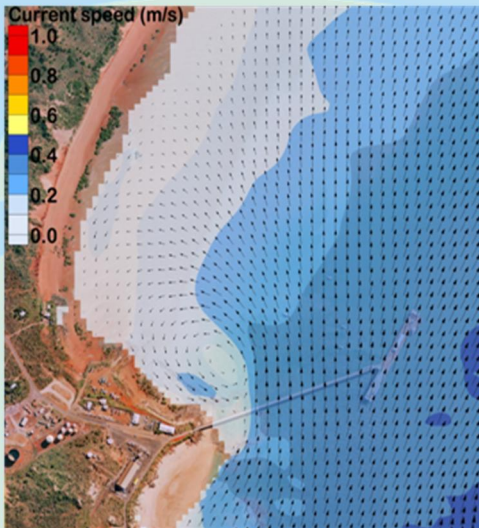


Coastal Dynamics

Hydrodynamic Studies



Hydrodynamic models are used in simulating storm surge effects in order to establish design water levels, waves and currents. Moreover, hydrodynamic models also provide the basis for simulating sediment transport, flushing, plume transport, particle tracking and morphological change.

“ Numerical hydrodynamic modelling plays a significant role in the design of coastal development, including quantitative assessment of potential impacts and environmental footprints. ”

BMT JFA has substantial experience in hydrodynamic and flushing studies. Benefiting from a range of in-house hydrodynamic models, BMT JFA is able to approach a very wide range of design and environmental issues, including sediment, water quality, dredge plume and morphological modelling. In addition, access to global hydrodynamic and wave models calibrated with satellite data, allows boundary conditions to be generated and extracted for nearshore hydrodynamic models where no offshore measurement is currently available. This can be done for any required location.

Key Capabilities

- Hydrodynamic and flushing modelling
- Sediment transport modelling
- Morphological modelling
- Water quality modelling and monitoring
- Design and implementation of metocean data acquisition.

Related Projects

- Flushing Study for Cape Peron at Mangles Bay
- Broome Hydrodynamic Modelling
- Cape Lambert Tug Harbour Flushing Study

Services Offered

- Two-Dimensional (2D) depth averaging hydrodynamic modelling
- Full range of hydrodynamic modelling for water surface elevation, nearshore current speed and direction (utilising radiation stresses derived from wave models)
- Global surge studies in cyclonic and non cyclonic regions – these encompass global wind modelling, generating of synthetic storm data and Monte Carlo simulation to obtain the design wave climate for higher return period events
- Modelling advection dispersion, to demonstrate the extent of tracer dispersion across the full tidal cycle and identifying residency times within marinas and harbours
- Dredge plume modelling
- Water quality modelling
- Particle tracking modelling based on Lagrangian techniques
- Design and supervision of nearshore and offshore instrument deployment strategies for metocean data capture.

Software

- Tuflow FV
- ADCIRC
- CMS
- RMA 4
- PTM
- XBEACH
- MIKE21-HD-FM.