Capability Profile
Coastal, Port and Harbour Engineers
Background

BMT JFA Consultants provide niche engineering services for port and maritime developments. We are a specialist consultancy employing passionate staff who are focussed on strong client relationships to deliver solutions in a timely and efficient manner.

BMT JFA Consultants is a key player in providing port related engineering services to a niche market in Australia. Founded in 1999, it has played a key engineering role in a number of major port developments in Western Australia whilst also managing numerous smaller projects at boat harbours and marinas around the state.

We have also completed numerous port and harbour assignments overseas and have a global reach through our affiliations within the BMT group, an international design, engineering and risk management consultancy, working principally in the energy and environment, transport and defence sectors.

Our services offered include full project management from conception to completion on marine, port and coastal engineering projects. We can act as an integral part of a team or lead a team managing all aspects from geotechnical investigation to design, construction and commissioning.

"We are committed to providing cost effective, value-for-money services and solutions to clients by only utilising staff who have a proven track record and who can professionally address issues, provide solutions and act independently on behalf of the Client."
## Capabilities

BMT JFA Consultants provides services and solutions in:

### Ports and Harbour Engineering
- Heavy Marine Structures - Design and Specification
- Port and Harbour Master Planning
- Project Management of Multidisciplinary Maritime Development Projects
- Marine Investigations and Data Collection
- Planning, Detailed Design and Project Management of Marinas/Small Boat Harbours and their Marine Structures
- Marine Engineering Design and Project Management inputs associated
- Mooring and Berth Operability Studies
- Process and Simulation Modelling
- Barging and Transport Studies

### Specialist Dredging Management
- Contract Management of Dredging Projects
- Dredge Supervision
- Input for obtaining Dredging Licences and Approvals
- Reclamation and Ground Improvement Works
- Management of Land and Hydrographic Survey
- Sand bypassing and Beach Renourishment Projects
- Management of Site Investigations
- UXO/EXO Investigations
- Cartography & Drafting

### Coastal & Maritime Structures
- Conceptual Designs, Layouts and Cost Estimates
- Detailed Design of Rock Armoured Breakwaters, Groynes and Seawalls
- Concept and Detailed Design of Jetty/Wharf Structures
- Design, Specification and Supervision of Physical Modelling Studies
- Quarry Investigations for Rock Armour Material
- Condition Assessment and Asset Management
- Assessment of Wave Faces and Scour Protection
We take pride in delivering project outcomes that satisfy the requirements of the Client from every perspective.

Coastal Dynamics
- Wind, Wave and Water Level Studies
- Numerical Modelling for Establishing Design Conditions
- Harbour Wave Penetration and Tranquility
- Wave Overtopping Assessments
- Wave Forces on Caissons and Piled Structures
- Berthing and Dredging Downtime Assessments
- Overseeing 2D and 3D Physical Modelling Studies
- Metocean Collection and Analysis
- Coastal Processes Studies

Other Services
BMT JFA are able to offer a wide range of other related services undertaken in conjunction with BMT Group subsidiaries, including:
- Heavy Marine Structures - Design and Specification
- Civil and Structural Engineering
- Geotechnical Engineering
- Water Quality Modelling Studies
- Environmental Studies and Statutory Approvals
- Coastal Morphology and Shoreline Management
- Ship Underkeel Clearance and Vessel Simulation
Projects

James Point Port – Bulk and General Facility

BMT JFA Consultants was engaged by James Point Pty Ltd (JPPL) to manage the Pre-construction phase of the development of a Bulk General Facility, a role which included the design development of all maritime structures and overall project management from concept stage to detail design. The proposed Port comprised three berths dredged to initially accept Handymax bulk vessels, and ultimately Panamax vessels.

Simultaneously, BMT JFA managed the offshore geotechnical investigation and deployment of wave monitoring instruments. A comprehensive Basis of Design was developed to meet the multi-functional objectives for the port.

Engineering studies by BMT JFA included analysis of metocean data, and simulation of ship navigation and berth operability. BMT JFA coordinated the environmental, planning, mechanical and wharf design consultants together with BMT JFA.

Client: James Point Pty Ltd
Ongoing 2012 - 2013

Dredging Program Management

BMT JFA Consultants provides complete management of the Western Australian Department of Transport's maintenance dredging program, a program encompassing more than 20 coastal facilities spanning thousands of kilometres of coastline.

This task involves complete project management of the various dredging and sand bypassing operations, from program budget planning through to individual site supervision, and sees BMT JFA works closely with DoT and contractors to ensure navigable access to the state’s commercial fishing and recreational boating facilities within the budget constraints of the Department. BMT JFA’s role includes contract management, resource allocation, dredging design, feasibility/cost estimation, survey review, project execution and site supervision.

Client: Department of Transport
2000 - Ongoing

Toliara Port Development

BMT JFA developed concept engineering options for a small port facility in southwest Madagascar to support a heavy metals mining and export operation on the order of 500,000 tonnes per annum. The port options included concepts for direct material loading to handy size bulk carriers, as well as for transhipping the material from shore via barges to a geared vessel moored a short distance offshore.

BMT JFA developed economical engineering solutions for jetty construction in order to reach sufficient water depths for ship berthing and/or barge landing, and estimates of barge loading and transfer operations for comparison to direct loading options. BMT JFA were also engaged to complete a Pre-Feasibility Study, to arrange and manage all required site investigations and modelling studies, and develop the Basic Engineering Design and costs to a DFS-level.

Client: World Titanium Resources
2012 - Ongoing
Esperance Foreshore Protection & Enhancement Project

As a part of the Esperance Foreshore Protection & Enhancement Project, BMT JFA Consultants was originally commissioned to help develop the technical specifications for the production of a sufficient quarry rock to construct a granite seawall and headland. Our involvement rapidly expanded to encompass the construction specifications and to review and finalise the detailed design of the structures. The scope of works sees additional engineering support during the construction and post-construction management phases, including design of a temporary bridging solution which will allow continued recreational access to Esperance’s historic Tanker Jetty and the assessment of coastal setback requirements for further shoreline structures.

Client: Shire of Esperance
2010 - Ongoing

Barrow Island Pioneer Material Offloading Facility Wharf

BMT JFA were appointed as specialist marine engineering consultants to provide advice to civil and structural engineers involved in the design of the wharf and mooring structures. As experts in the field, our involvement in the project has encompassed providing a wide range of specialist inputs, from definition and supervision of physical modelling through to providing key structural design advice during the design.

The proposed development will include a RORO berth, module carrier berth, barge berth and small craft landing, with associated dredging of an entrance channel and berth pockets. The site is subject to cyclonic conditions and large waves, and the wharf design conditions to withstand a 1 in 200 year cyclonic event with minimal damage.

Client: BCH Engineering Consultants
2009 - 2013

Albany Port Expansion Project

BMT JFA was appointed by Grange Resources/Sojitz Corporation to manage the loadout jetty and offshore component of the Bankable Feasibility Study for the Southdown Magnetite Iron Ore Project. The proposed scope of work is based on a major upgrade of the Port of Albany, including dredging a 10 km long navigation channel and construction of a new loadout jetty including reclamation and seawall structures. Having undertaken the detailed design, BMT JFA were also involved with the procurement processes and are well positioned to be involved with site management when the execution phase of this project commences.

Client: Grange Resources / Albany Port Authority
2004 - Ongoing
Cape Lambert 320mtpa Upgrade
SKM-RTIO Expansion Projects (SKM-RTIOEP) expanded the facilities at Cape Lambert in order to increase the iron ore output capacity at the port. The proposed development included the expansion of an existing tug facility and the construction of new wharf structure. We provided specialist marine design inputs and dredging advice, including review of existing wave, water level and extreme event information, numerical modelling for design conditions, preliminary harbour layout options (including a Heavy Offload Facility), dredging reviews, wave forces on piled structures, preliminary breakwater designs for causeway and new tug harbour basin, breakwater quarry requirements and water circulation assessments. We also provided input and assistance for proposed dredging investigations and approvals and assisted with the supervision of capital dredging works associated with the expansion.

Port Maintenance Dredging
BMT JFA Consultants was awarded separate contracts by the Port Authorities of Bunbury and Port Hedland to provide project management services for maintenance dredging campaigns at both ports in 2004 and 2007. For both projects we were required to define the scope of work, produce tender documentation, manage the tender process, and then undertake on-site project management. In 2004, both contracts were awarded to Dredco Pty Ltd, who deployed the large Trailer Suction Hopper Dredge – the 25,000 m³ hopper capacity Pearl River. BMT JFA Consultants’ dredge supervisors were on board the dredge 24 hours a day.

Client: Bunbury Port Authority / Port Hedland Port Authority 2004, 2007, 2010 (PHPA)

Oakajee Port Development
BMT JFA Consultants was engaged by OPR to provide marine engineering advice for the proposed Oakajee Port Development just north of Geraldton. The scope of our services included development of port layouts, all marine site investigations, undertaking dredging studies, and breakwater design involving input from international experts. The Oakajee site is challenging with respect to both dredging and breakwater construction due to its exposure to the prevailing swell and strong geotechnical conditions, thus requiring detailed investigations and assessments to ensure the development of an optimum port layout.

Client: Oakajee Port and Rail 2006 - 2011

Image courtesy of Oakajee Port & Rail

Image courtesy of Rio Tinto

Client: BMT JFA Consultants

Cape Lambert 320mtpa Upgrade
Ongoing 2007 - 2012

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Image courtesy of Rio Tinto

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Image courtesy of Rio Tinto
**Geraldton Port Enhancement Project**

The AUD$100M Geraldton Port Enhancement Project was undertaken to allow fully laden Handymax vessels to use the port. The main dredging contract was extremely difficult due to a combination of a hard rock limestone seafloor and the exposed nature of the 5 km long shipping channel.

**Esperance Port Upgrade Project**

The AUD$54M Esperance Port Upgrade Project was required to position the port to accommodate cape size vessels and allow for future expansion.

The project works included the dredging of 2M m³ of mainly sand and reclamation of 23 hectares of land, quarrying 550,000 tonnes of granite rock to construct new seawalls, building a new berth with a 4,500 tonne/hour shiploader and construction of a new 300,000 tonne iron ore shed.

**Port Coogee Development**

The Port Coogee development is a premier residential and commercial waterside development being undertaken by Australand Holdings Pty Ltd on Cockburn Sound, south of Fremantle, WA. The engineering for the project is being undertaken by Sinclair Knight Merz (SKM). BMT JFA Consultants worked with SKM to provide specialist marine design, site supervision and management duties for all the internal marine aspects of the project. This includes the marina edge walls, seawalls, land reclamation, dredging, beach designs, boat pens, boardwalks and the development of a 300 berth marina for the project. Assisting in marine superintendent roles for the project, BMT JFA Consultants were also involved in managing the on-site technical, contractual and safety aspects of the marine development.

**Esperance Port Upgrade Project**

BMT JFA Consultants was responsible for the full project management including design of two key aspects of the project – the dredging and reclamation and quarrying & seawall construction contracts.
Testimonials

BMT JFA Consultants is committed to providing cost effective/value-for-money services and solutions to all our customers.

“BMT JFA Consultants provided expert input into the design and selection of the preferred export port option for our Ranobe Mine Project in Madagascar. They then developed and are currently coordinating marine and geotechnical studies to enable detailed design of the preferred option. BMT JFA Consultants possesses deep port engineering knowledge and experience and was able to apply this knowledge effectively to enhance our project.”
Mr Bruce Griffin, CEO
World Titanium Resources

“BMT JFA Consultants provided expert advice on an extremely complex damages case involving munitions dumped in the Albany Port. The work involved detailed analysis of contracts, reconstruction of events and the development of remediation strategies: all this work was tested under cross examination in the Supreme Court. Without doubt, the success of the case (through favourable settlement) for the port was largely due to the work of JFA.”
Brad Williamson, Chief Executive Officer
Albany Port Authority

“BMT JFA Consultants has been instrumental in the successful completion of the marine works component of the Feasibility Study for the Southdown Magnetite Project. The company brought a wide range of coastal and port engineering knowledge and experience to the table which was applied in a practical and thorough manner to the challenges our project presented. BMT JFA Consultants was able to add value from day one and has ensured that the Feasibility Study designs were innovative and economically sound.”
Fernando Moutinho, Project Director
Southdown Grange Resources

“BMT JFA Consultants was used to provide expert advice on an excellent support given to the James Point Port project over a considerable period of time, and in particular for the concentrated effort of the last final months to complete Reference Designs on time and on budget. That was an outstanding achievement.
I was particularly impressed by the professional manner with which they collaborated very effectively with our environmental and planning consultants, and the way in which they showed great flexibility and innovation in addressing the myriad challenges.
The project had many complex and inter-related dimensions, and I was very impressed indeed by the overall project management of the work program and the management of costs to the client.”
Dr Chris Whitaker, Chairman
James Point Pty Ltd

BMT JFA Consultants is committed to providing cost effective/value-for-money services and solutions to all our customers.
“BMT JFA assisted in selection of the technique that would be best suited to economically achieving the desired end result. I am sure we would not have been able to complete the project as economically and successfully without their assistance. The company and their employees always exhibited the highest level of professionalism. SBR was totally satisfied with the performance of BMT JFA over the whole project.”

Ken Grinter,
Production Manager
Shark Bay Resources

Many thanks for all the reports and a very successful project outcome for PHPA, ahead of time and well within budget with an expectation of significantly greater than 200 mm additional draft achieved. I look forward with great expectation to the outcome of the TSHD campaign with the Nile River in the coming weeks to see what draft we will actually secure. I would like to extend the thanks of both management and the board of PHPA to BMT JFA Consultants for a job very well done.”

Andre Bush
CEO
Port Hedland Port Authority

“Recognising the experience and skills of the personnel within BMT JFA Consultants, the Department has high expectations of its performance. BMT JFA Consultants has met these expectations and has always displayed a desire for continuous improvement. The contract with JFA is considered to be returning value for money, to the extent that JFA have again been appointed as the Department’s Engineering Consultant for all of its dredging requirements in the State.”

Cleve Flottmann
Senior Maritime Engineer
Department of Transport

“BMT JFA was engaged to provide engineering and design support for marine related works for the Esperance Port Multi User Iron Ore Facility. The quality of engineering, tender process management and feasibility report was excellent and has contributed to a successful outcome, ahead of time and within budget. The team led by Rhys Jones had a diverse range and depth of experience, making them our first choice for similar works.”

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