Transshipment and Bulk Handling

We have considerable experience in the costing, review and design of transshipment operations.

Barging and transshipment are increasingly being looked to as an alternative method for enabling the export of bulk materials, often due to the location or capacity of established port or harbour facilities.

The characteristics of the local physical coastline may also create difficulty in getting large bulk carriers (particularly of Panamax dimensions and above) into berth close enough to the coastline to use jetty or wharf-based ship loaders. This is where the use of barges and transshipment techniques can present a cost effective and operationally viable alternative solution.

From strategic high-level review to options appraisal concept design and feasibility studies, BMT has the necessary in-house expertise to evaluate the onsite conditions, identify the constraints and provide expert advice and recommendations on how to progress transshipment operations.

BMT also offers an extensive portfolio enabling clients to optimise the performance of bulk material handling equipment.

Our experts offer a complete service from initial investigations and design of machinery to project management, specialist electrical services, procurement and technical support.

Services and expertise provided

- Development of conceptual preliminary and detailed designs
- Assessment of project capital and operating costs
- Barging simulation studies
- Tender preparation management and evaluation
- Construction management and site supervision
- Conditions assessment and asset management
- Identification of likely project constraints, including anticipated environmental conditions
- Review and assessment of available site data to assess requirements for additional data collection
- Design and management of metocean survey programs to assist with site assessment and modelling studies
- Condition inspection of coastal structures
- Capacity design checks
- Detailed design of maritime port structures, wharves, jetties, breakwaters and protective structures
- Wharf rehabilitation design works
- Loader condition inspection and analysis
- Wharf loading assessments
- Bulk handling equipment inspection and assessment

Our experience

Project 1

Port Development
Magnetite Transshipment Feasibility Assessment

Following successful engagements in 2007 delivering port infrastructure feasibility studies for the project, BMT successfully delivered preliminary feasibility study (PFS) of transshipment for a mineral resource client in WA to assess less capital-intensive bulk export logistics.

BMT is undertaking the definitive feasibility study (DFS) to assess the mine to port throughout and inform the financial model by input from the transshipments market.

The project involved feasibility study level development of the port loadout facilities including: shiploader, abutment and jetty, transhipper marine logistics and assessment of port throughput to export 5mtpa magnetite. BMT has since completed the PFS and Pre-DFS (pre-definitive feasibility study) stages of the project, improving confidence in the feasibility of the proposed transshipment operation, developing a shortlist of optimal transshipment vessel options to take forward into the DFS phase and also developing CAPEX and OPEX cost estimates at target level of Class 4 (AACE 2016).

The DFS programme which BMT are currently undertaking will focus on detailed design development (wharf and shiploader), refined throughput analysis using the best available information to evaluate preferred options from the PFS, development of procurement strategies for capital equipment and refinement of cost estimates and the construction programme.

Services provided:

- Concept design of material handling plant (MHP) incl. shiploader and MHP on transshipment shuttle vessel (TSV)
- Concept design of TSV
- Transshipment port development feasibility study
- Metocean data analysis
- Hindcast current and wave conditions at transshipment sites
- Vessel market study – sizing the TSV
- Development of first pass operational limits
- Mine to port descerte event simulation and port throughput assessment
- CAPEX and OPEX cost estimates
- Options assessment
- Environmental approvals
- Storm surge preliminary assessment
- Seawall conditions assessment
- Geophysical investigation for design wharf
- Project marine risk management services
- Jetty reference design
- Seawall upgrade design

Project 2

Balla Balla Iron Ore Export Transshipment Study

The operation planned to export up to 10 Mtpa of iron ore. BMT considered the details of the proposed operation, from mine to port, including the haulage, storage, transfer, barging and transshipment.

Important operational restrictions, including current port capacity, cyclone risk and physical constraints were investigated. It was concluded initially that the development, whilst feasible, would present considerable engineering challenges with significant costs. Therefore, following initial screening of the transshipment options, BMT took the two most favourable options forward into a CAPEX and OPEX costing exercise.

Due to the challenges and costs associated with the preferred options, BMT also developed a conceptual, lower risk barging option, to facilitate initial export at a relatively lower capital start-up cost. This would permit the operation to secure early cash flow whilst awaiting delivery of greater port capacity.

Services provided:

- Transshipment and barging review
- Wharf and jetty construction cost estimates
- Haulage road construction and cost estimates
- Economic and operational comparison with slurry pumping option
- Process and systems simulation modelling

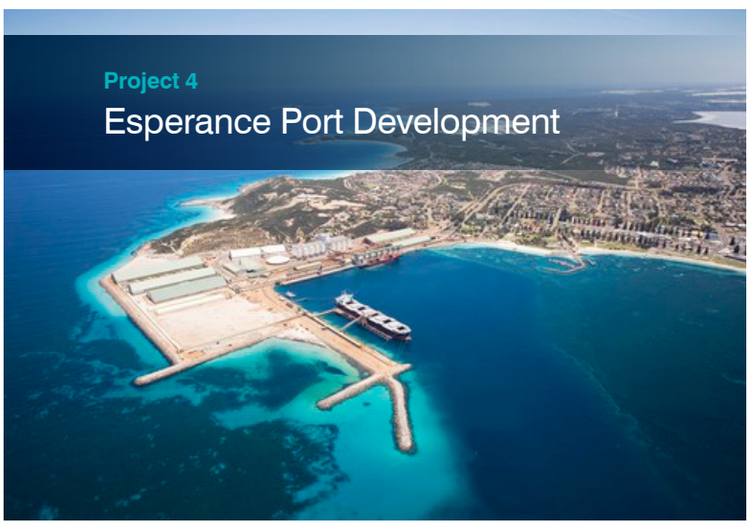
Project 3

Samalaju Port Development Bulk Handling System

BMT was commissioned to provide design expertise for an advanced bulk material handling system for the emerging port of Samalaju in East Malaysia.

Services provided:

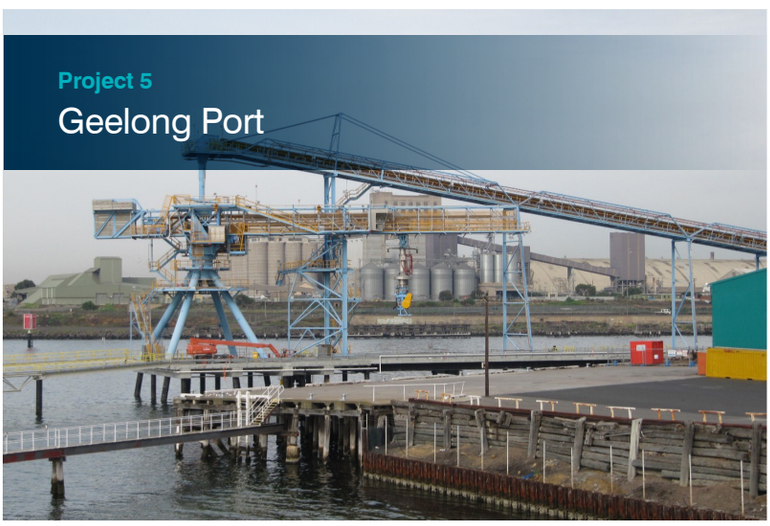
- Provision of technical expertise for bulk-material handling system
- Multi-commodity handling including coal, manganese ore, ferro-silicon, rock phosphate and fertiliser
- Three import conveyor lines with interchangeability to three separate stockyards complete with stackers and a control centre for the facility
- Auditing of engineering design of conveyor system facilities for compliance with the contract specification, ensuring the plant is designed with due consideration for safe operation and maintenance
- Technical support during the installation and commissioning of all the systems



Project 4

Esperance Port Development

BMT has undertaken a wide range of consultancy services for a major development of the Esperance Port, which involved planning, design and full project management of the port upgrade. The proposal to load Panamax size vessels at the existing wharfs and construct a new wharf for capesize vessels necessitated a re-design of the harbour basin and channel to optimise on under keel clearances and overall geometry.



Project 5

Geelong Port

BMT played a central role in the design, construction and commissioning of a new multi-purpose bulk material handling and transit terminal for TOLL Geelong Port. Tasks included preparing the specifications and contract documents, evaluating tenders, verifying the design, supervising construction and commissioning. BMT also addressed environmental regulations, and ensured integration with existing equipment.

For more information on our services
or details of how BMT can help you improve your
transshipment and bulk handling - get in touch.

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