



Client: Multidisciplinary Consultant

Project Title: Proposed Port Development in Malaysia

Completion: December 2020

Location: East Malaysia

Services: Master Planning and Conceptual Design

Paaras Marine Solutions was commissioned by a Malaysian multidisciplinary service provider to carry out master planning and conceptual design of a new port in East Malaysia. The port will be built in two phases, with the first phase serving container vessels, bulk carriers, passenger ferries and cruise ships and the second phase serving oil and chemical tankers.

Paaras Marine Solutions' scope of services consisted of:

- Reviewing the projected traffic demand for the port, including type of cargo, yearly volume for each type of cargo and mix of vessel sizes.
- Defining the functional requirements for the port, including land and waterfront facilities required to meet the projected traffic demand.
- Defining the site characteristics, including:
 - Topography;
 - Bathymetry;
 - Geotechnical conditions;
 - Metocean conditions; and
 - Existing infrastructure.
- Identifying the key considerations for planning of the port's land and waterfront infrastructure, including:
 - Previous master planning efforts;
 - Changes after the earlier master planning efforts; and
 - Potential revision of port boundaries following new directives from the Port Authority.

These considerations posed significant challenges to layout planning of the port.

- Identifying and evaluating alternative approaches to layout planning of the port, taking into account the above considerations.
- Developing and evaluating alternative outline layouts for the port.
- Developing the preferred outline layouts into concept layout plans, and performing sufficient engineering design to develop rough order-of-magnitude capital cost estimates for major components such as:
 - Dredging;

PROJECT DATA SHEET

- Land reclamation;
 - Ground improvement; and
 - Marine structures (i.e., wharf, quay wall, approach trestle, breakwater, and revetments).
- Evaluating the alternative conceptual layout plans and recommending a preferred conceptual layout plan.
 - Developing a draft project implementation schedule, from approval-in-principle through surveys, investigations and planning, preliminary engineering design, financial evaluation and business case analysis and concession negotiations to statutory approvals, detailed engineering design and tender document preparation, tender procurement and contract award, and construction and commissioning.
 - Preparing a report and a pitch deck for presentation to the Port Authority, including 3D animations of the alternative conceptual layout plans. The animations were prepared using Autodesk 3ds Max software.

