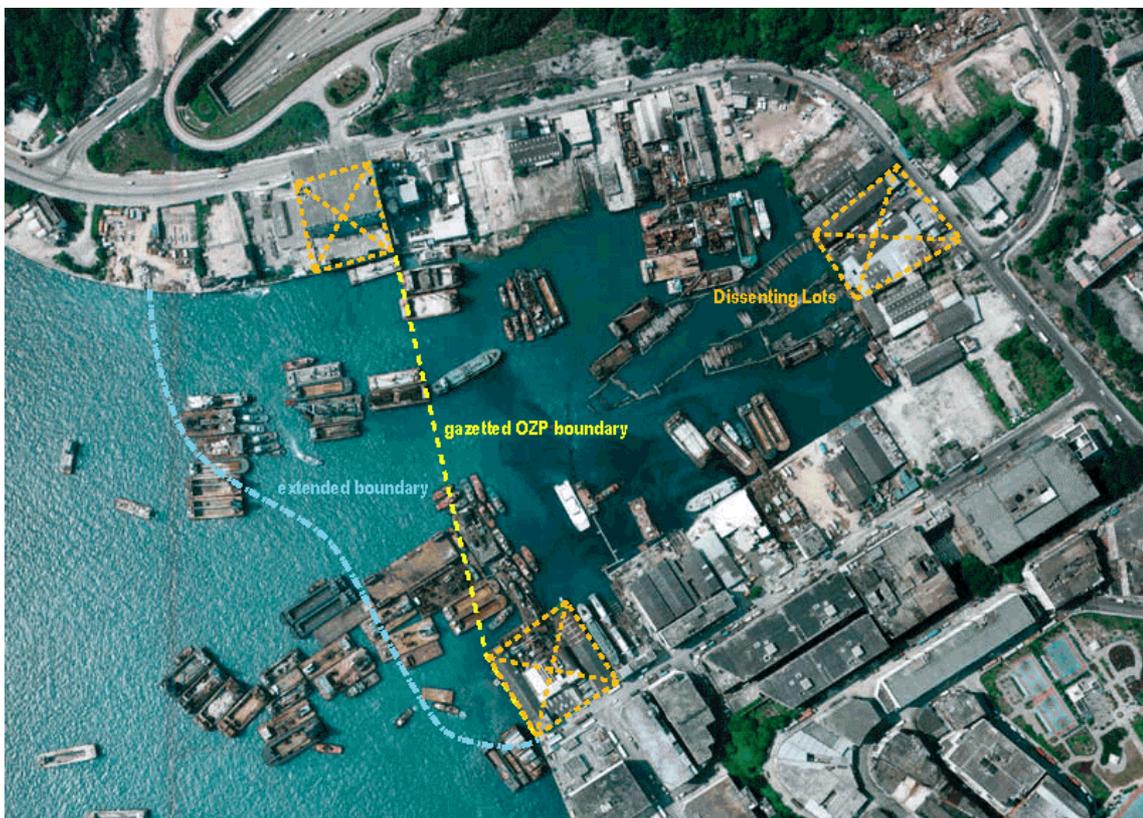


1 YAU TONG BAY SHIPYARD REVIEW

1.1 Background

Yau Tong Bay (YTB) has been zoned as a Comprehensive Development Area (CDA) with 23.7 ha of land including the reclaimed bay area and existing lots. The current users are predominantly ship yard/repair facilities and a sawmill who have agreed to form a development Joint Venture to redevelop the area into a residential/commercial development.

Out of the 42 YTB owners, 3 of them have not reached the agreement with the Joint Venture at this stage to become a partner in the redevelopment. Following review of the EIA submitted for the project, EPD considered that issues associated with the continuing operation of the 3 ship yards directly abutting the proposed residential buildings had not been addressed in sufficient detail. The location of the referred lots is illustrated below:



The nature of the objection rests in part on the ability of these 3 lots to function as shipyards following their isolation from the shoreline. BMT Asia Pacific has been requested to review the position of the shipyards following the redevelopment of Yau Tong Bay, specifically:

- To carry out a general appraisal of the ship repair and ship building industry in HK and likely mode of operation of the existing remaining shipyards, and
- To carry out a general assessment to the scale of operation for the remaining shipyards with geographical constraints in the absence of the marine access.

1.2 BMT Asia Pacific

BMT Asia Pacific is an independent consultancy concerned with the provision of specialist environmental, risk and marine technological services to governments, public institutions and the private sector within the Asia Pacific region. BMT Asia Pacific is a wholly owned subsidiary of the BMT Group of internationally based companies, which collectively comprise one of the world's leading maritime, engineering and environmental consultancies. BMT provides wide ranging and advanced research, design, risk management, experimentation and software, primarily to environmental, marine, offshore, defence and civil engineering markets

1.3 Basis for Review

This review has been conducted on the following basis:

- Data and information within the public domain has been sourced;
- BMT's familiarity with the YTB area and nature of local ship building/repair operations has been employed, and
- Site survey of the 3 lots, interviews or audit of operations have not been undertaken.

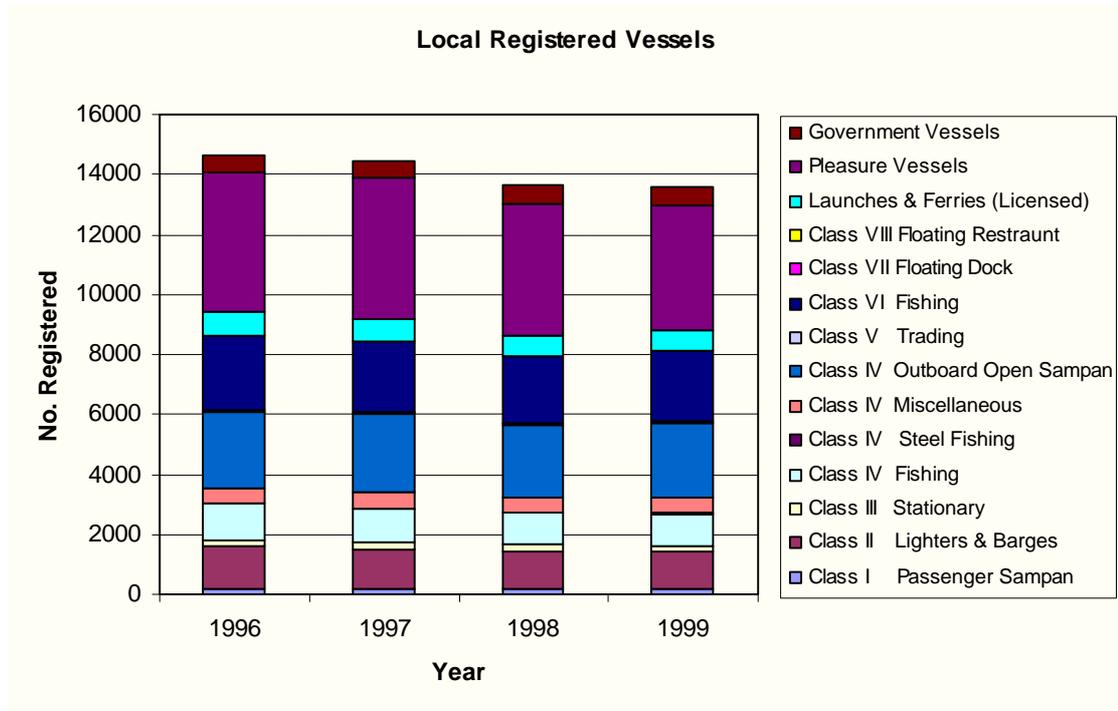
1.4 Ship Building and Repair in Hong Kong

While a principal port and world hub for cargo shipment, a major centre for shipowners and marine insurance, Hong Kong has seen a steady remorseless decline as a shipbuilding centre. This resulted initially from competition with SE Asian yards, notably Japan and Korea, and more recently with local yards in Southern China. The principal graving docks at Whampoa and Tai Koo are reclaimed and redeveloped, while the remaining dockyards in Yuen Long and Tsing Yi, and Stonecutters are focussed on niche markets. About 80% of the boat/shipyards are small establishments with 10 or fewer employees, the majority of which being repairers servicing local fishing boats and pleasure crafts with only about 10 shipyards employing more than 100 workers.

Hong Kong mainly manufactures boats of 10 to 20 metres in length. Though it is technically feasible to custom-build boats of up to 70 metres, space of most shipyards is not sufficient for large ship fabrication. The newbuild industry in Hong Kong focuses on vessels such as tugs and workboats for local users, including: trawlers for fishing; dredgers, barges and crafts for cargo-handling, fire-fighters, and police/customs' patrol boats. The new boat yards at Stonecutters are the principal focus for the larger newbuildings, most notably at the Wang Tak yard.

With a general decline in capital ship building local yards have focussed on repair works and conversion. There are three principal factors in ship repair – price, quality and time. In recent years the development of yards in Southern China, most notably within the Pearl River Delta, have provided Hong Kong yards with keen competition on price, and with increasing experience, quality too. An example of this is Afai Ships based in Panyu whose K50 Incat Australian designed catamarans are at the leading edge of the field. Hong Kong's remaining successful yards feature strongly on quality and time, to allow the shipowners to minimise time laid up. Following the upturn from the "Asian Crisis" and the requirements for upgrading of existing tonnage it is anticipated that the fortunes of local shipyards will improve slightly from the present low ebb. However this must be set against the competitive environment within Southern China, and the reduction in capacity, both industrial and manpower, to reenter the market that has occurred over the last decade.

Given that it is not anticipated that Hong Kong's shiprepair outlook will be greatly assisted by external market issues it is necessary to review the size and nature of the present local registered fleet. This market most benefits from the assets of quality and time local ship repair facilities can offer over Southern China yards. The figure below illustrates the pattern of local registered vessels over the last 4 years.



It is apparent that Pleasure, Fishing and Outboard Open Sampan comprise the majority of local craft. A steady decline of approximately 2.5% per annum is apparent, and has been due to a number of factors including:

- The completion of the airport and Core Projects reducing demand for workboats;
- The “Asian Crisis” and Handover reducing the number of Pleasure Craft owners, and
- Contractors sourcing marine plant from the Mainland.

1.5 Ship Building & Repair Requirements

The following section briefly reviews the general requirements for shipbuilding / ship repair facilities, with respect to the marine facilities needed to bring vessels ashore.

It is essential to undertake certain works on ships when they are on dry land, notably construction, and working on the outer bottom, propellers, rudders intakes etc. Also, ships must be taken out of the water periodically for statutory inspections and maintenance. There are a number of options for doing this:

- **Graving dock**, a permanent dock below sealevel which may be closed with a gate and pumped dry;
- **Floating docks** – a u-shaped semi-submersible structure which can be ballasted up under a vessel;

- **Shiplift** – A mechanical lift platform frequently coupled with slewing systems to manoeuvre vessels within a yard, as illustrated below (Hong Kong Shipyards, Tsing Yi):



- **Slipway** – the traditional solution, and present practice at TYB for bring vessels out of the water on an inclined ramp;
- **Boat Lift** – a mobile gantry crane spanning a “wet dock” which lifts the vessel within a cradle of webbing, and
- **Conventional Crane** – used for lifting small craft, limited by single point lift.

For small vessels (up to 200 tonnes displacement) the latter four options are the most appropriate; examples of each system may be found in Hong Kong. In order for vessels to be removed from the water safely a sheltered basin is also required.

The options described above assume the direct proximity of the facility to the sea. It is feasible that small craft (less than 2.4m in beam and approximately 12m in length) could be lifted and transported from a separate site to a shipyard via a standard articulated tractor unit. Vessels of a larger size would require specialist low loader plant and police escorts for passage of a wide load.

1.6 Yau Tong Bay Isolated Marine Lots

The following section reviews the opportunity for the 3 lots at YTB to continue operation as ship building/repair facilities in the light of the comments developed within the previous pages. The discussions focuses on the following issues:

- Capacity;
- Competition, and
- Cost.

1.6.1 Potential for Shipbuilding Work

Capacity: The removal of the sea access will effectively restrict the YTB yards to compete in the market for the construction of small wooden, aluminium or fibreglass launches, and speed boats which may be readily be transported by road following construction.

Competition: The track record and experience of the yards in question is not known however without a track record, appropriate tooling and experienced staff the yards are unlikely to be competitive against existing concerns which possess all three assets.

Cost: The cost base for the work will be of a similar order to the competition, should the existing yards possess the necessary plant and capacity to manufacture small craft.

1.6.2 Potential for Shiprepair Work

Capacity: The removal of the sea access will effectively restrict the yards to compete in the market for shiprepair of vessels under 2.5m beam, which removes at least 50% of locally registered craft from the potential market for the yards.

Competition: The removal of the seafrontage will remove the flexibility to rapidly service vessels, a key element in the Hong Kong market.

Cost: The yards will incur costs associated with the lifting, removal, transport and return of the vessels to and from the water at a 3rd party site. These costs are likely to render the yards uncompetitive against alternative suppliers.

1.7 Other Uses

This review has focussed solely on the potential for the 3 TYB lots to maintain shipbuilding/repair activity. It does not cover the opportunity that may exist for the facilities to engage in other industrial/manufacturing enterprises that could conceivably occur.

1.8 Summary

Competition with yards in Southern China have rendered the local shipbuilding/repair industry uncompetitive on a pure cost basis. Newbuilding is restricted to local launches, tugs and patrol craft while repair yards focus on offering ship repair service of high quality and speed. Yards are principally focussed on the concerns of the locally registered fleet that has shrunk by 2.5% per year in recent times.

Marine access for vessels to shipyards may be accommodated by a number of modes. However, access to a site entirely isolated from the sea practically limits operations to small craft which may be transported by conventional lorry.

A review of the opportunity for shipbuilding at the site suggests that the yards may have the potential to be competitive in the construction of small wooden, aluminium or fibreglass vessels. However, if these yards are not already active in this field the costs required to win this work would not make such a market entry and shipbuilding at the yards viable.

A review of the opportunity for shiprepair at the site suggests that the reduction in market share and logistical constraints associated with the need to transport vessels by road to the yard will not permit shiprepair activities to be viable.

This review has focussed solely on shipbuilding/repair activity and does not cover the conceivable opportunity for the sites to engage in other industrial/manufacturing enterprises.