

## **PROVISIONAL LOCAL VESSEL ADVISORY COMMITTEE**

### **Study on Marine Traffic Risk Assessment for Hong Kong Waters**

(Stage I – Final Report)

#### **Purpose**

This paper is to brief Members on the findings of Stage I (Consultancy study) of the captioned study (the MARA Study) undertaken by the Marine Department and assisted by the BMT Consultants.

#### **Background**

2. The “MARAD Strategy Study” completed in 1997 outlined a blueprint for the future usage of Hong Kong waters based on the planning framework at that time. Much has changed since then, and Marine Department has appointed the BMT Asia Pacific Ltd. to carry out Stage I of the “MARA Study”, in order to readdress the future marine risks implicit in new developments.

3. The objective of the MARA Study was to assess the present and future levels of marine traffic risks in the waters of Hong Kong, and to recommend mitigation/improvement options to mitigate the identified risks.

#### **Findings**

4. The key findings of the Study are that the risks identified for HKSAR waters are within acceptable levels, and are anticipated to remain static in the future. Indeed, incident frequency has the potential to fall if the historic improvements in safety culture are realised in the coming years.

5. A review of risk management initiatives has been conducted to identify valuable risk control strategies for HKSAR waters. The following broad initiatives are recommended:

- Measures to minimise traffic risks within open waterways;
- Measures to minimise traffic risks within constrained waterways, and
- Specific traffic control measures for western waters and Yau Ma Tei / Central Harbour.

6. Details of the above initiatives are contained in the Annex attached to this paper. A quantitative cost-benefit assessment has been conducted on the specific proposals to identify the value of each control measure.

## **Conclusions**

7. In general the risk environment of HKSAR waters is anticipated to remain relatively static over the next decade, and has the potential to fall if safety improvements are realised. The Central Harbour and Yau Ma Tei areas maintain the focus of port activity and will experience the largest proportion of all incidents.

8. It has been identified that both present and future risk levels fall well within acceptable limits. This finding is consistent with the perception of marine safety in the region that, while busy, marine traffic activity is effectively regulated and generally safe.

9. It is anticipated that in the future marine traffic risk management will be focussed on the management of larger vessels that suffer hazards with more serious consequences than presently. It is proposed that future management measures are focussed on large vessels by the implementation of passage planning, enhancement of controls and reallocation of anchorage space, and the management of specific waterspaces following testing within the MARA model.

## **Way Forward**

10. Based on the findings of the Consultant, Marine Department will, in conjunction with other relevant Government bodies, review and develop a strategy to further implement risk controls to ensure that Hong Kong will continue to provide shipping with one of the safest and most efficient ports in the world in the coming years.

## **Presentation**

11. The paper will be presented by Dr. T L Yip, a representative of the Consultant.

Planning and Development Branch  
Planning and Services Division  
Marine Department  
April 2004

### **Proposed Traffic Management in Open Waterways**

1. It is anticipated that the HKSAR will face the challenge of the need, to provide safe access to the increasing size of vessels and volume of traffic transiting through Hong Kong to/from the Shekou Ports, should the Tonggu Waterway not be constructed by 2011. If the traffic activities at Ma Wan exceed approximately 30 movements per day of vessels over 200m LOA, there will be a need to introduce the “Passage Plan Approval System” (PPAS) for large vessels transiting this busy channel, which would:

- predict traffic utilisation within critical fairways / port areas; and
- provide early advice of potential vessel conflicts.

2. Such a system, working in concert with the existing VTS system, will assist the safe access and scheduling of large vessels.

### **Proposed Traffic Management in Yau Ma Tei Anchorage**

3. Almost 30% of all collision incidents occur in anchorages, 15% in the Yau Ma Tei (YMT) anchorage alone. It is anticipated that if the mooring of all vessels with LOA over 50m was prohibited within the YMT anchorage, and relocated to Kellett Bank it would reduce the density of this congested waterspace and improve the safety. From the initial assessment of vessel activity, it is estimated that the density of the YMT anchorage would initially decrease by at least 15% upon implementation, a greater percentage being diverted to Kellett bank in future years as vessels grow in size.

### **Proposed Specific Mitigation Measures**

4. Five specific marine traffic management measures have been tested in the marine traffic model to examine the cost-benefit of traffic control measures:

- ***Western waters - Traffic separation in Urmston Road (with a central dividing buoy proposed).*** A single buoy provides too little traffic separation to gain safety benefits that are not undone on the re-convergence of vessels at either end of the separation. However, an investment in instilling navigation discipline at the critical western entrance to Hong Kong waters is considered worthwhile.
- ***Western waters - Traffic separation in Urmston Road (with a Fairway proposed).*** While the establishment of principal fairway enhances the safety environment within western waters, the significant dredging capital costs and patrol operations render this option unsuitable in the short to medium term.
- ***Yau Ma Tei / Central Harbour - Enforcement of maximum speed limits of 10 knots within harbour areas (with exception of fast ferries).*** Strict adherence to the mandatory speed limits develops a cost benefit, however the intensive patrol operations required to enforce these measures will have similar costs.
- ***Yau Ma Tei / Central Harbour - Wider Northern Fairway (double width) to minimise traffic interaction adjacent to Yau Ma Tei anchorage.*** The potential benefits in spreading traffic across a wider Northern Fairway is not developed as the wide fairway places crossing traffic at greater risk.
- ***Yau Ma Tei / Central Harbour - Shifted Northern Fairway (to south) to minimise traffic interaction adjacent to Yau Ma Tei anchorage.*** The potential benefits in shifting traffic to a realigned Northern Fairway are not realised, as there is similar risk from the same traffic mix.

5. In summary, with the marginal increases in collision risk forecast for the Benchmark years of 2011 no risk control options have a clear cost-benefit. However it is considered that improved navigation discipline within western waters will be effected by installation of at least one centreline buoy.