

## PROVISIONAL LOCAL VESSEL ADVISORY COMMITTEE

### Assessment of Typhoon Shelter Space Requirements 2001-2016

#### Purpose

The purpose of this paper is to present the forecasting assumptions, parameters and the summary findings of the 2001 assessment of typhoon shelter (TS) space requirements, as compared to the last assessment in 2000.

#### Background

2. MD has been conducting an annual assessment on TS space requirements for planning the development of TS under the Government's Port Development Plan and Programme up to 2016.

3. A detailed report is prepared for each annual assessment. This paper serves to highlight the major assumptions, parameters, and findings of the current assessment and its comparison with the one conducted last year. The reports for the 2001 and 2000 assessment are available upon request.

#### Parameters

4. The economic estimates or forecasts released by the Government from January to August 2001 have been incorporated in the 2001 assessment. A comparison of the estimates and forecasts between the 2000 and 2001 assessments is shown below :-

	<u>2000 Assessment</u>	<u>2001 Assessment</u>
(a) Growth in Gross Domestic Product (GDP) for 2000	+5% (Estimate)	+10% (Actual)
(b) Forecast GDP growth for 2001	+4%	+1%
(c) Forecast GDP growth for 2002-2016	2002-03 +4.0% 2004-06 +3.9% 2007-16 +3.5%	2002-04 +4.0% 2005-09 +4.1% 2010-14 +3.6% 2015-16 +3.1%

5. The other parameters adopted for forecasting are Census and Statistics Department's latest population projections for 2000-2020 released in 2000, and the Port and Maritime Board/Economic Services Bureau's Port Cargo Forecasts, 2000. The very same parameters have been adopted in the last assessment.

### **Assumptions**

6. In the current assessment, the following key assumptions have been adopted as have been in the past:

- (a) the occupancy factor of 8/3 for estimating the TS space requirements for each vessel (i.e. vessel length x breadth x 8/3), and
- (b) 100% provision of TS space for locally licensed vessels.

The above assumptions have been validated by a series of researches and surveys conducted in 2000, and in connection with the Port Development Strategy Review (PDSR) carried out in 2000/01. Similar researches and surveys would be conducted in 2002 to make way for the next PDSR.

### **Researches**

7. A research on the demand arising from visiting mainland coastal and river vessels that may need to take refuge in Hong Kong during typhoon passage has been conducted in 2001. MD's records showed that an average of around 350 river vessels entered into HK waters each day in 1999 and 2000. These vessels require 45 Ha. shelter space. This finding matches well with the past assessment results.

8. The demand forecast on Government vessels based on regression has been compared against the known programme for acquisition and disposal of government vessels. They are roughly in tune with each other.

9. The regression equations for forecasting demand have been reviewed. The equation for barges/lighters has been refined #. The revised demand forecast for barges/lighters in 2016 is 2.7 Ha. or 1.3% less than the previous assessment.

*# The explanatory power of the equation measured by the coefficient of determination has increased from 0.75 to 0.99 (the closer to 1.00 the better) upon reformulation of the regression equation.*

## Demand and Supply

10. The current total supply of TS/sheltered anchorage space is 414 Ha. for cargo vessels and other non-pleasure vessels. This supply is sufficient for meeting the demand of 397 Ha. (as at the end of 2000).

## Forecast

11. The demand from cargo vessels and other non-pleasure vessels is forecast to increase to 455 Ha. (see table below) by the end of 2016, at 0.86% per year on compound rate basis, or about 3.6 Ha. per year, on simple average basis.

### Forecast of TS/shelter anchorage space requirement (Ha.)

	<u>2000</u> (Actual)	<u>2001</u>	<u>2006</u>	<u>2011</u>	<u>2016</u>
Cargo, fishing and other non-pleasure vessels	397	426 (433)	434 (440)	443 (450)	455 (463)
Pleasure vessels	133	146 (147)	154 (154)	161 (161)	168 (168)

- Notes:
- 1) Figures refer to year-end positions
  - 2) ( ) forecasts in 2000 assessment
  - 3) A notable gap is observed between the actual TS demand for non-pleasure vessels in end 2000 and the forecast for end 2001. This is because the forecasts for 2001-2016 not only consider the actual demand in recent years but also the trend over the past decades. When the actual demand figure for 2000 is relatively low compared to the past trend due to a downturn in the economy, the forecast for 2001 based on extra-polation of the trend can be notably larger than the actual figure for 2000.

12. The forecast of demand in the 2001 assessment has been revised slightly downwards, as compared to the last assessment. The demand by 2016 on TS/sheltered anchorage space is expected to be 8 Ha. or 2% less than the previous forecast. A decrease in demand is expected for fishing vessels, but an increase is expected for the Mainland coastal and river vessels. The main reason for these adjustments is the revision in GDP forecasts.

13. Regarding supply, a total of 5.3 Ha. shelter space would be lost by 2006 as compared to the last assessment in view of the following latest developments affecting relevant waterfront areas :

- (a) the size of the Tai O Sheltered Boat Anchorage planned to be available by 2006 would be revised from 8 Ha. to 4 Ha.,

- (b) part of the Cheung Chau TS occupying an area of 1.3 Ha. will be affected by reclamation.

Reclamation of the Wan Chai Cargo Basin (2 Ha.) under the Wan Chai Development Project has been calculated in both the 2000 assessment and 2001 assessment.

14. The current assessment has also considered the following related developments, but it is found that these projects would not effectively reduce the supply.

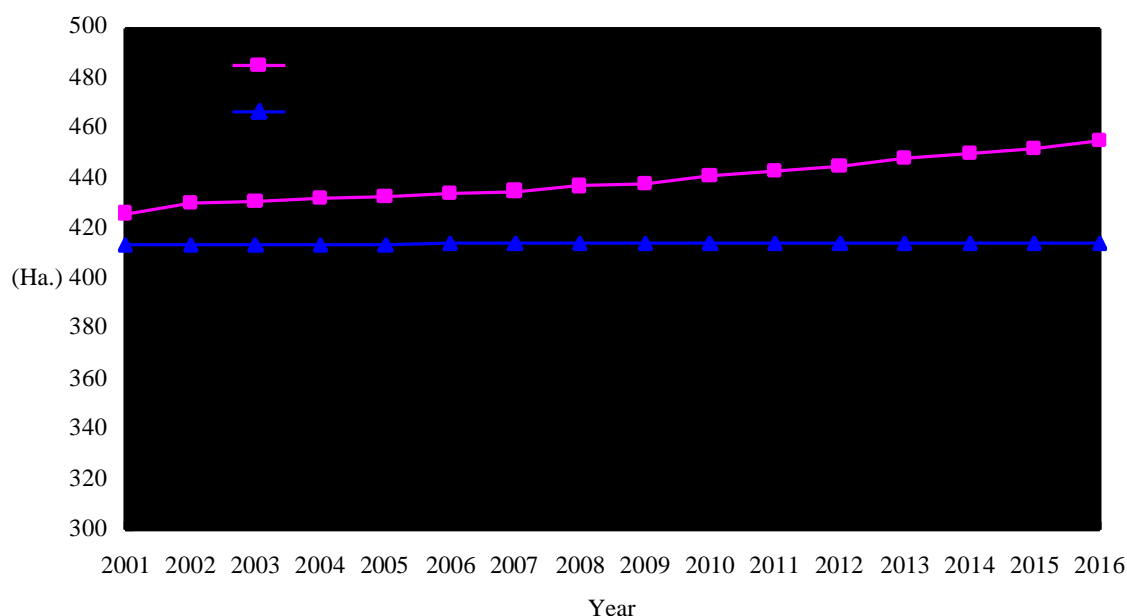
- (a) Reclamation of the Yau Tong Bay – the demand for TS/sheltered anchorage space for the local vessels owned by the shipbuilding/repair yards in the Bay, if any, would have been covered in the assessment. As part of the development package, these shipbuilding/repair yards will have their businesses terminated. These vessels would therefore be expected to be disposed of in future, e.g. scrapped, sold to the Mainland or other Asian countries. Even if they are sold to other local operators, it would not cause an increase in the demand for TS/sheltered anchorage space. Moreover, the Yau Tong Bay is only a natural bay without breakwaters or other attributes to serve as a sheltered anchorage. Reclamation of the Bay would not reduce the supply of TS/sheltered anchorage space.
- (b) Cancellation of TS provision in Tseung Kwan O (TKO) Area 131 - the planned provision of space in TKO Area 131 for vessels affected by the proposed reclamation works in Causeway Bay would instead be provided for in the proposed new site near the ex-Kai Tak Runway; a site planned for reprovisioning of the Kwun Tong TS and To Kwan Wan TS affected by South East Kowloon Development Project.

15. If no additional TS becomes available in future, the supply of TS/sheltered anchorage space would remain at the existing level of 414 Ha., throughout the entire forecast period. Although the reclamation works affecting the Wan Chai Cargo Basin (2 Ha.) and part of the Cheung Chau TS (1.3 Ha.) would reduce the supply by 3.3 Ha. by 2006, the new Tai O Sheltered Boat Anchorage would provide an additional 4 Ha. of space.

16. By adopting the same approach as outlined in the last assessment for planning the provision of new TSs for cargo vessels and other non-pleasure vessels (i.e. to accept a temporary mismatch between demand and supply of up to 10% of the total demand for non-pleasure vessels), an additional TS needs to be available in 2016 as shown in the matching of demand and supply below.

## Chart

Supply against demand for TS/sheltered anchorage space for non-pleasure vessels  
year-by-year,  
2001-2016:



Notes : *Figures refer to year-end positions*

( ) *temporary mismatch between demand and supply as % of demand*

17. For pleasure vessels, it is expected that there will be a surplus in supply of shelter space over the entire forecasting horizon.

18. The approach of accepting a 10% temporary mismatch between the demand and supply is supported by the following considerations:

- (a) Some safety margin has already been allowed for in the forecast of demand. Based on a survey conducted in 2000, about 10% of the locally licensed vessels would not seek shelter in HK waters during typhoon passage probably because these vessels were not in the vicinity of HK at that time.
- (b) With the opening of the RTT, the vessels happen to be working there during typhoon passage, can use the RTT basin for sheltering purpose.
- (c) Between now and 2016, 10% of the total demand is about 40 - 50 Ha., which is more or less the size of a typical TS.
- (d) Such a planning approach would help to optimize the use of existing TSs.
- (e) The explanatory power of the regression model is about 90%, indicating that the regression model cannot adequately explain about 10% of the forecasting errors.

19. The demand and supply of TS/sheltered anchorage space are assessed on a territory-wide basis. MD is fully aware of the fact that some TSs are more popular than the others, for example those near the urban area, such as the New Yaumatei TS, Aberdeen TS, Kwun Tong TS, etc., as compared with those located in the more remote areas, such as the Hei Ling Chau TS and Yim Tin Tsai TS. However, as the site selection for a new typhoon shelter is subject to many constraints, including land use and other strategic planning/environmental considerations, it would be extremely difficult to identify a site in the urban/harbour area for new TSs. MD is well aware of the needs of the typhoon shelter users, e.g. good road access, nearby replenishment facilities and convenient logistics supports, and would continue to liaise with the concerned parties and government departments in the future site search and planning of new TSs. In the meantime the department has taken active measures to avoid over-crowding in the popular TSs during the passage of typhoons, including frequent patrol, radio broadcast on the current occupancy of the various TSs and on scene advice to vessels operators to seek shelters in the less congested TSs etc.

## **Conclusions**

20. An additional TS would not be required until 2016. This conclusion is the same as that of the last assessment. Although the demand for TS/sheltered anchorage is forecast to be smaller than the last assessment, the supply is expected to be reduced correspondingly due to reclamation works and other developments.

## **Way Forward**

21. By adopting a trigger system as proposed last year, planning works for the additional TS need to be commenced by 2009. This is based on the 7 years lead-time for planning and construction of a new TS. The two locations at Siu Lam and Peng Chau planned for construction of new TS would be reviewed in due course to confirm whether they are still suitable sites or if there are other better alternatives.