

PROVISIONAL LOCAL VESSEL ADVISORY COMMITTEE

Summary Findings of the 2002 Assessment of Typhoon Shelter Space Requirements

Purpose

The purpose of this paper is to report on the summary findings of the 2002 round of assessment on typhoon shelter space requirements.

Background

2. MD has been conducting an annual assessment of the typhoon shelter (TS) space requirements to ensure provision of sufficient typhoon shelter space based on data going back some 30 years. The findings are used as a planning guide for the development of TSs. The regression model devised has been observed as accurate and effective during the period.

3. The scope and methodology of the present review is in line with that adopted in previous years.

Parameters

4. The parameters incorporated in this assessment include (Appendix I):

- (i) economic estimates and forecasts released by the Government after Financial Secretary's Budget Speech in March this year;
- (ii) Hong Kong Population Projections released by C&SD in May 2002; and
- (iii) forecasts of ocean container throughput handled at locations other than the Container Terminals based on the Hong Kong Port Cargo Forecasts, 2000/2001.

Assumptions

5. In the current assessment, we continue to adopt the following key assumptions as we have in the past:

- (i) the occupancy factor of 8/3 for estimating the TS space requirements for each vessel including provision of fairways, etc (i.e. area required = vessel length x breadth x 8/3); and
- (ii) 100% provision of TS space for locally licensed vessels.

Demand

Current situation

6. The current demand of typhoon shelter/sheltered anchorage space for locally licensed cargo vessels, fishing vessels, miscellaneous commercial vessels, Government vessels and visiting Mainland river trade and coastal vessels all together is estimated to be 404.2 ha. as at the end of 2001, representing a small increase of 7.5 ha. or 1.9% over the level of last year (396.7 ha.).

7. Increases are mainly recorded for barges and lighters (+6.2 ha. or +3.4%), Mainland vessels (+5.4 ha. or +11.9%) and miscellaneous commercial vessels (+2.6 ha. or +8.4%). However, decreases are recorded for fishing vessels (-4.5 ha. or -4.5%) and ferries and launches (-2.2 ha. or -7.9%) (Appendix II).

8. For barges and lighters, the increase is brought about by increase in the average vessel size (+5.7%), from 513m² (approx. 13m x 39.5m) to 542m² (approx. 13.5m x 40m), while the number of locally licensed barges and lighters in fact has decreased by 2.1% to 1 324. Similarly, the same observation applies to miscellaneous commercial vessels, with average vessel size having increased from 28.9m² to 31.6m² (+9.3%) while the number of licences has decreased by 0.9% to 3 982.

9. The current demand for pleasure vessels is estimated to be 125.2 ha., i.e. 7.3 ha. or 5.5% less than the demand of last year.

Forecast

10. The forecasting horizon has been extended from 2016 to 2021 in this review at the request of Secretary for Economic Development and Labour. The demand for cargo vessels and other non-pleasure vessels is forecast to increase from 404 ha. to 454 ha. in twenty years up to 2021, at about 0.6% per year (compound rate basis) or 2.5 ha. per year (simple average basis). This represents a slow down in growth of demand as compared with the previous year's forecast of 0.86% or 3.6 ha. per year. The slow down is mainly due to the less optimistic economic outlook in Hong Kong. On the other hand, buoyant cargo figures reflecting an expanding Mainland trading economy under the WTO results in firmer growth in cargo vessels. By 2016, the total demand for cargo vessels and other non-pleasure vessels based on this year's forecast would be 446 ha., which is 8 ha. or 2% less than the previous year's forecast (Appendix III). It is worth noting that the growth of total demand for TS/sheltered anchorage space is positively correlated with the

growth in economy. As the growth rates in GDP and container throughput pick up in future, the demand for TS space would also increase at a faster rate.

Table 1
Forecast of TS/sheltered anchorage space requirements (ha.)

	<u>2001</u> (Actual)	<u>2006</u>	<u>2011</u>	<u>2016</u>	<u>2021</u>
Cargo, fishing, miscellaneous commercial vessels, Government vessels, & Mainland vessels	404	429 (434)	438 (443)	446 (454)	454 (N.A)
Pleasure vessels	125	149 (154)	154 (161)	160 (167)	165 (N.A)

Notes: 1) *Figures refer to year-end positions*
2) () *forecasts in previous assessment made in 2001*

11. For pleasure vessels, the demand is forecast to increase from 125 ha. to 165 ha. by the end of 2021, at 1.4% or 2 ha. per year. This result is not very different from the previous year's forecast.

Supply

12. The current supply covering the gazetted TSs, Government Dockyard at Stonecutters Island and the natural sheltered anchorages that are relatively safe for cargo vessels and other non-pleasure vessels to take shelter during typhoon passage is 414 ha.. This supply is sufficient for meeting the demand of 404 ha. The expected supply in future is shown in Appendix IV.

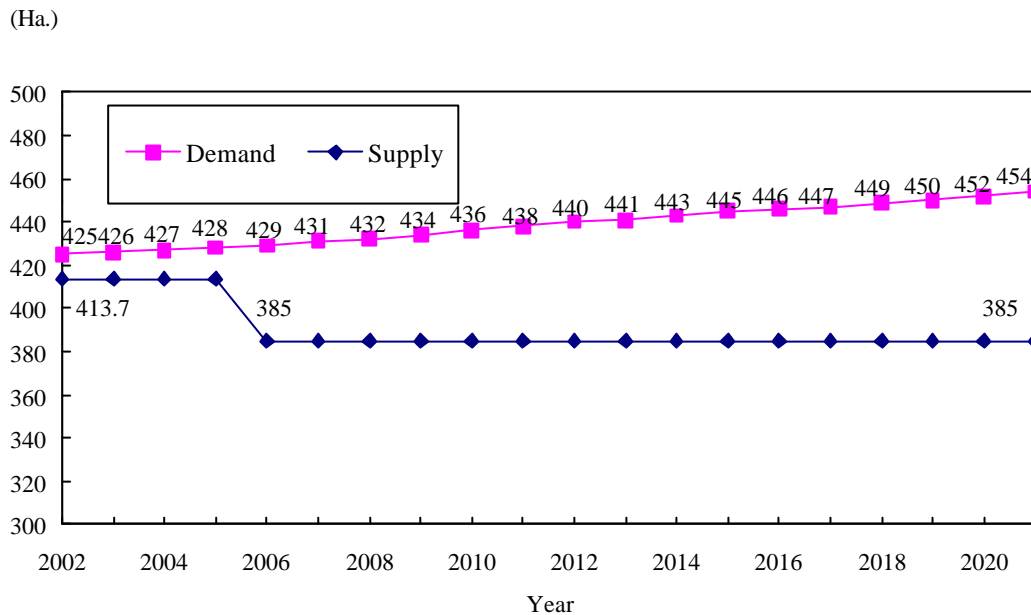
13. According to the revised development scheme of the SE Kowloon Development, the Kwun Tong TS and To Kwa Wan TS with a total effective area of 48.6 ha would be affected by 2005. The original proposal is to re-provision a typhoon shelter of equivalent size extending to the Harbour beyond the Kai Tak Point. In view of the interface with the proposed tourism development at the tip of the former Kai Tak runway, the Town Planning Board requested the Administration to review the need for, size and location of the typhoon shelter in SE Kowloon. An area of water north of the ex-Kai Tak Runway is now retained to provide some 23.5 ha. of shelter space. Moreover, another 6 ha. of TS space for vessels will be lost from the Wan Chai Cargo Basin (2 ha.) and part of the Causeway Bay TS (4 ha.) are affected by the Wan Chai Development Phase II Project.

Surplus/Shortfall

14. Without a new TS, the shortfall by 2006 would be 44 ha., with 6 ha. attributed to the Wan Chai Development Phase II Project and the remaining mainly attributed to the SE Kowloon Development Project. The shortfall would amount to more than 10% of the total demand by 2006.

Chart

Supply of TS/sheltered anchorage space matched against demand for non-pleasure vessels
2002-2021



	2006	2011	2016	2021
Surplus(+)/Shortfall(-) (ha.)	-44	-53	-61	-69
(as % of demand)	(-10.3%)	(-12.1%)	(-13.7%)	(-15.2%)

Notes : Figures refer to year-end positions

By adopting the same trigger mechanism as in the last assessment for planning the provision of new TSs for cargo vessels and other non-pleasure vessels (i.e. to accept a 10% tolerance between demand and supply), a new TS needs to be available before 2006. Site search, various impact assessments and other related planning work should start as soon as possible, and a fast-track approach should be adopted to ensure that the 10% tolerance would not be exceeded by 2005/06.

15. For pleasure vessels, it is expected that there will be a surplus in sheltered space over the entire forecasting horizon as in the previous year’s assessment. The existing surplus is about 64 ha. or 51% of demand and it would be reduced gradually to about 24 ha. or 15% of demand by 2021 (see Table 2).

Table 2

Forecast of surplus/shortfall for TS/sheltered anchorage space for pleasure vessels

	<u>2001</u> (Actual)	<u>2006</u>	<u>2011</u>	<u>2016</u>	<u>2021</u>
Demand (ha.)	125	149	154	160	165
Supply (ha.)	189	189	189	189	189
Surplus (ha.)	+64	+40	+35	+29	+24
(As % of demand)	(+51%)	(+27%)	(+23%)	(+18%)	(+15%)

16. The supporting considerations for accepting a 10% tolerance between demand and supply have been explained in previous years' assessments. For ease of reference, the main points are recapitulated below:

- (a) based on the survey findings in 2000-2002, about 5%-10% of the locally licensed vessels would not seek shelter in HK waters during typhoon passage as they happen to be not in the vicinity of HK at the time.
- (b) the RTT basin (about 25 ha.) may serve as a buffer to meet part of the demand for vessels happen to be working or waiting for operation at the RTT.
- (c) such a planning approach would help to optimize the use of existing TSs, and meets the considerations for constructing a TS of some 50 ha. in size.

17. Some members of the Provisional Local Vessel Advisory Committee (PLVAC) and Port Operations Committee (POC) have in fact expressed strong reservations about the approach to accept a 10% tolerance between demand and supply. To address their concerns, the explanations are that the forecast model tends to capture the trend in the past 30 years as to how demand would correlate with the economic growth, population growth and port container throughput growth. This model based on long-term trend indicates a tendency to slightly over-compensate when the economy slows down but produces slight under-forecasts

when the economy is growing quickly. Experience during the last 4 years of slow to zero economic growth indicates that the model has slightly over-forecast the demand.

Table 3

<u>Forecasting model</u>	<u>Forecasts for 2001 (demand in ha.)</u>	
	<u>Original (based on assumed parameters)</u>	<u>Revised (based on actual parameters)</u>
1998 Assessment	433.6	425.8
1999 Assessment	441.1	432.0
2000 Assessment	433.4	430.7
2001 Assessment	425.6	426.0

As can be seen from the above table, slight over-forecasts for 2001 are still obtained even if we use the actual parameters for forecasting.

Conclusion

18. By continuing to adopt the established trigger mechanism, a new TS would be required before 2006. This has been necessitated in view of the loss in TS space for cargo vessels due to the proposed reclamation affecting the Kwun Tong TS and To Kwa Wan TS. Planning work should start as soon as possible and a fast-track approach needs to be taken in view of the lead-time required for planning and constructing a new TS.

Way Forward

19. The first and foremost task is for the Government to examine any proposed site suggested by the stakeholders and undertake a thorough review of Hong Kong Waters in an attempt to identify any new possible TS sites apart from those recommended under the PADS Study.

Statistics Section
 Planning & Development Branch
 Planning & Services Division
 Marine Department
 November 2002

Comparison of the Parameters Used in the 2001 Assessment and 2002 Assessment of Typhoon Shelter Space Requirements

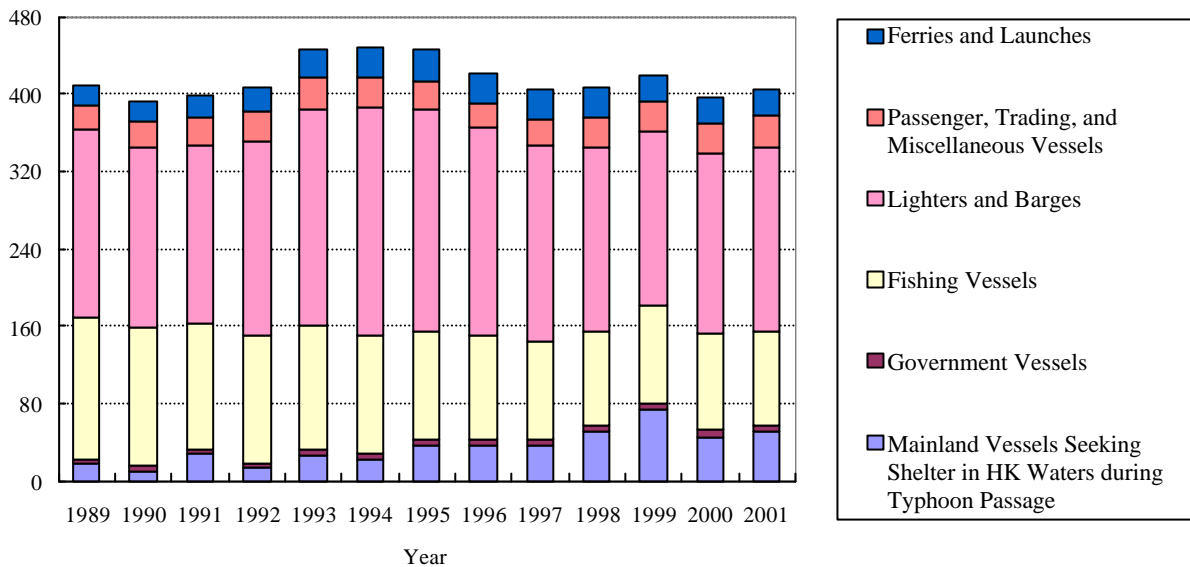
	<u>2001 Assessment</u>	<u>2002 Assessment</u>
1. GDP forecasts (at constant 1990 prices) (HK\$ million)		
2002	938 571	908 006
2006	1 100 108	1 042 206
2011	1 332 009	1 208 202
2016	1 574 359	1 400 637
2021	N.A.	1 623 722
	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <i>01 : +1.0% p.a.</i> <i>02 - 04 : +4.0% p.a.</i> <i>05 - 09 : +4.1% p.a.</i> <i>10 - 14 : +3.6% p.a.</i> <i>15 - 16 : +3.1% p.a.</i> </div>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <i>02 : +1.5% p.a.</i> <i>03 - 06 : +3.5% p.a.</i> <i>07 - 21 : +3.0% p.a.</i> </div>
2. Populations (mid-year) (‘000)		
2002	6 954.1	6 799.8
2006	7 242.6	7 121.8
2011	7 610.0	7 527.7
2016	8 023.2	7 896.5
2021	N.A.	8 228.3
3. GDP per capita (HK\$)		
2002	134 967	133 534
2006	151 894	146 340
2011	175 034	160 501
2016	196 226	177 374
2021	N.A.	197 334
4. TEUs by Ocean Vessels (Other than Container Terminals) (‘000 TEUs)		
2002	3 005	3 005
2006	3 001	3 001
2011	3 218	3 218
2016	3 273	3 273
2021	N.A.	3 047

Note: N.A. - Not Applicable

Past Trends on the Demand for Typhoon Shelter/Sheltered Anchorage Space by
Classes of Non-Pleasure Vessels

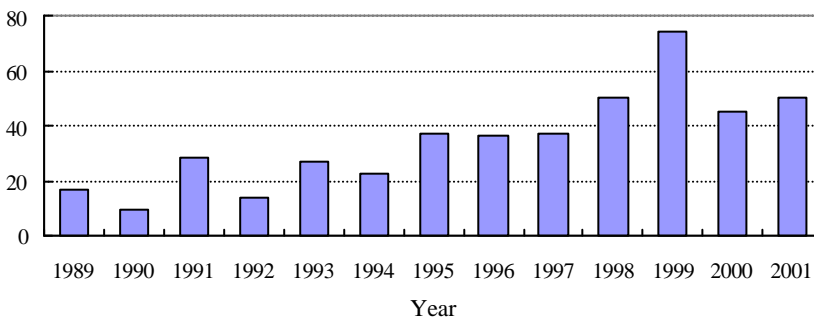
(a) All Vessels

Area in Hectares



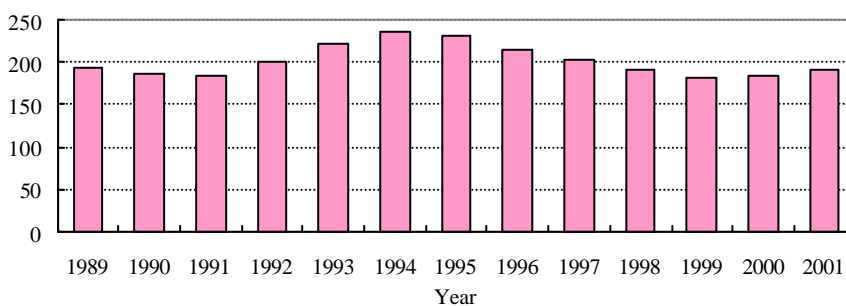
(b) Mainland Vessels

Area in Hectares



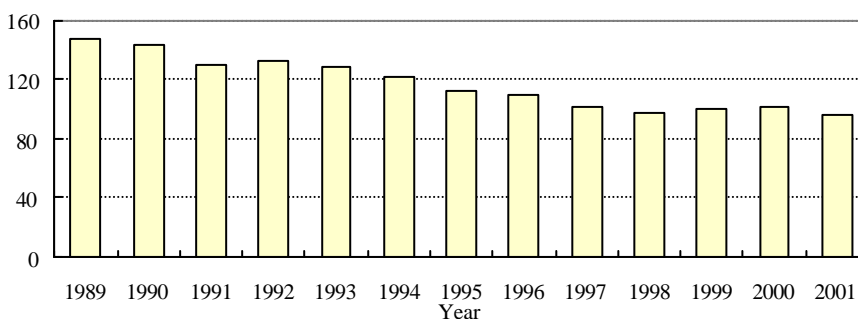
(c) Lighters and Barges

Area in Hectares



(d) Fishing Vessels

Area in Hectares



Appendix III

Forecasts of Demand for Typhoon Shelter/Sheltered Anchorage Space Requirements (in ha.), 2002-2021

	<u>Actual</u>	<u>Forecast at Year End</u>			
<u>Vessels other than pleasure vessels</u>					
<u>Class</u>	<u>End 2001</u>	<u>2006</u>	<u>2011</u>	<u>2016</u>	<u>2021</u>
Ferries and Launches	25.7	31.6 (34.2)	35.1 (39.4)	39.0 (44.9)	43.6 (N.A.)
Passenger, Trading, and Miscellaneous Vessels	33.5	36.8 (38.3)	41.3 (44.8)	46.9 (52.3)	54.2 (N.A.)
Lighters and Barges	191.2	207.2 (208.4)	209.0 (210.3)	209.4 (210.7)	207.6 (N.A.)
Fishing Vessels	96.3	90.0 (85.5)	76.6 (64.1)	60.7 (44.6)	41.8 (N.A.)
Government Vessels	6.8	6.4 (6.4)	6.7 (6.8)	7.0 (7.1)	7.3 (N.A.)
Mainland Vessels seeking shelter in HK waters during typhoon passage	50.7	57.1 (60.8)	69.1 (77.4)	83.0 (94.7)	99.2 (N.A.)
Total:	404.2	429.1 (433.6)	437.7 (442.8)	446.1 (454.3)	453.7 (N.A.)
<u>Pleasure Vessels</u>					
Pleasure Vessels	125.2	148.9 (153.5)	154.3 (160.9)	159.7 (167.3)	165.1 (N.A.)

Note: Forecast demand figures of the 2001 assessment are shown in bracket for comparison purpose.

N.A. - Not Applicable

**Anticipated Supply of Typhoon Shelters and Sheltered Anchorages
(Effective Area in ha.)**

Type	End 2001	2006	2011	2016	2021	Remarks
<u>Part A</u>						
For vessels other than pleasure vessels (excluding the 72 DG barges)						
I. Typhoon Shelter (TS)						
Aberdeen (West)	34.2	34.2	34.2	34.2	34.2	
Shau Kei Wan	17.2	17.2	17.2	17.2	17.2	
Cheung Chau	50.0	48.7	48.7	48.7	48.7	Due to the Cheung Chau Development Project, 1.32 Ha. of water area in the Sai Wan TS at Cheung Chau will be reclaimed before 2006.
Causeway Bay (part)	4.3	-	-	-	-	Part of Causeway Bay TS for cargo vessels (4.3 ha) would be lost due to the Wan Chai Development Project Phase 2. The original idea of reprovisioning equivalent space in SE Kowloon needs to be further studied.
To Kwa Wan	14.8	-	-	-	-	} The Kwun Tong TS and To Kwa Wan TS (48.6 ha) would be affected under the SE Kowloon Development Project.
Kwun Tong	33.8	-	-	-	-	

**Anticipated Supply of Typhoon Shelters and Sheltered Anchorages
(Effective Area in ha.)**

Type	End 2001	2006	2011	2016	2021	Remarks
Kwun Tong (Cha Kwo Ling)	-	23.5	23.5	23.5	23.5	23.5 ha. of the existing Kwun Tong TS will be retained.
Rambler Channel	12.9	12.9	12.9	12.9	12.9	
Sam Ka Chuen	1.9	1.9	1.9	1.9	1.9	
Shuen Wan	10.3	10.3	10.3	10.3	10.3	
Tuen Mun	56.8	56.8	56.8	56.8	56.8	
New Yaumatei	64.6	64.6	64.6	64.6	64.6	
Yim Tin Tsai	9.2	9.2	9.2	9.2	9.2	
Hei Ling Chau	76.6	76.6	76.6	76.6	76.6	
Stonecutters Island (Government Dockyard)	8.0	8.0	8.0	8.0	8.0	
Sub-total	394.6	363.9	363.9	363.9	363.9	

II. Sheltered Anchorage

Chai Wan Cargo Basin	11.2	11.2	11.2	11.2	11.2
Kat O	1.6	1.6	1.6	1.6	1.6
Sha Tau Kok	0.6	0.6	0.6	0.6	0.6

**Anticipated Supply of Typhoon Shelters and Sheltered Anchorages
(Effective Area in ha.)**

Type	End 2001	2006	2011	2016	2021	Remarks
Wan Chai Cargo Basin	2.0	-	-	-	-	Due to the Wan Chai Development Projects Phase 2, the Wan Chai Cargo Basin will be lost by 2006. The original idea of reprovisioning equivalent space in SE Kowloon needs to be further studied.
Tai O Sheltered Boat Anchorage	-	4.0	4.0	4.0	4.0	
Tsuen Wan Bay Minor Moorings	3.7	3.7	3.7	3.7	3.7	
Sub-total	19.1	21.1	21.1	21.1	21.1	
Total for (A)	413.7	385.0	385.0	385.0	385.0	

**Anticipated Supply of Typhoon Shelters and Sheltered Anchorages
(Effective Area in ha.)**

Type	End 2001	2006	2011	2016	2021	Remarks
IV. Marinas						
Clearwater Bay	7.4	7.4	7.4	7.4	7.4	
Discovery Bay	8.5	8.5	8.5	8.5	8.5	
Marina Cove (Port Shelter)	10.0	10.0	10.0	10.0	10.0	
Gold Coast	4.8	4.8	4.8	4.8	4.8	
Sub-total	30.7	30.7	30.7	30.7	30.7	
Total for (B)	189.4	189.4	189.4	189.4	189.4	

Sources : Drawings, plans and known programmes from the Planning and Development Sections of the Marine Department.