

## WPI Research Project - February 2010

### Designing a “Living” Victoria Harbour: A Marine User’s Perspective

#### Introduction

The following is a progress update of the research of marine use and land/water interfaces in Victoria Harbour.

The project team comprises eight students and two advisors from Worcester Polytechnic Institute in Massachusetts, USA. We are working with our sponsors, Designing Hong Kong Limited and the Harbour Business Forum, supported by the Harbour Unit of the Development Bureau, to complete this study by March 5<sup>th</sup>.

#### The research objectives

1. The goals of this study were to develop a set of recommendations for a ‘living harbour’ which enables the development of marine uses and users. The objectives employed to reach this goal were (1) to locate and describe the existing marine infrastructure present in the harbour and (2) to forecast the change in marine activities and infrastructure requirements over the next 5, 10, and 15 years.

#### Audit existing marine infrastructure

2. Victoria Harbour was divided into twenty-three action areas adopted by the Harbourfront Enhancement Committee to categorize the data collected.
3. The first step was to locate and describe the existing marine infrastructure present in the harbour. In order to determine the current situation of Victoria Harbour, the project team audited each site along the harbour front. Utilizing a standardized rubric, the team recorded the marine activities, facilities, and events associated with each harbourfront action area. To support and explain the findings, the team photographed every land/water interface found.
4. A brief summary of the data collected during this phase of the project can be found in **Annex 1**. These maps depict each land/water interface, categorized by type of

interface. For each interface, the figures present the area in which it is located and the type of interface.

5. Upon completion, an on-line database will be made readily available using Google Earth maps and software on the Harbour Business Forum's website.

### **The forecast of marine activities and land/water interfaces required**

6. The second phase of this project involves forecasting the changing marine activities and infrastructure requirements over the next 5, 10, and 15 years. This involves desk research and interviews with key individuals and organizations. In order to properly forecast the changing face of Victoria Harbour, data is gathered regarding past trends, predictions by experts, and approved future plans for the waterfront.
7. To validate findings, a Stakeholders' Conference was organized involving approximately 25 marine-related stakeholders. Opinions on the future users of the harbour and the necessary facilities were gathered. The stakeholders commented on four different topics, including: predictions for future marine users, future marine facilities, obstacles in the way of waterfront development, and potential solutions for the problems in Victoria Harbour.
8. The stakeholders which have participated to-date are listed in **Annex 2**. Major statistics collected are highlighted in **Annex 3**.

### **Ongoing plans for the development of the harbourfront**

9. The team has reviewed the available information on the development plans for the harbourfront, and the plans for any changes to the marine users and uses which have been incorporated. We are determining the effect of each plan on the marine user groups, as well as assessing the ability of each plan to meet the projected needs of future users.

### **Safeguarding a 'living harbour full of life'**

10. Victoria Harbour, one of the world's most beautiful natural harbours, was instrumental in Hong Kong's growth from a small fishing village to an international trading center. As a central point of maritime trading activities in the region, Hong Kong serves vessels from all parts of the world. Additionally, Victoria Harbour's spectacular views and natural beauty draw visitors from around the globe to witness the impressive skyline along the harbour.
11. Vast land reclamations have reduced the size of the harbour, causing great concern amongst the citizens of Hong Kong. The Protection of the Harbour Ordinance

ensured that Victoria Harbour's waterfront would remain the same for 999 years, barring the demonstration of a "public overriding need" for further reclamation. The question in recent years, however, has become: "What demonstrates a public overriding need?"

12. The Protection of the Harbour Ordinance dramatically increased the importance of comprehensive waterfront planning. The increasing demand for waterfront land, coupled with the vast array of competing uses for the remaining space, limits the provision of adequate land/water interfaces and marine supporting land uses.
13. Our findings show that marine users – a major stakeholder in Victoria Harbour – are neglected in the planning and use of the waterfront. With the changing nature of land and associated marine uses, primarily the reduction of cargo handling in Hong Kong as this trails the move of manufacturing capacity westward up the Pearl River Delta, there is a need to carefully consider new and alternative marine supporting and water dependent land uses immediately adjacent to Victoria Harbour.
14. Although the size of Victoria Harbour may now be safeguarded, without marine users the value and attractiveness of the harbour as an economic asset will diminish rapidly.

## **Conclusions**

Ahead of our final report, the team has made the following major conclusions:

15. Victoria Harbour lacks a balance of diverse marine activities; and no over-arching plan for the future development of marine uses in the harbour;
16. Little priority is given to marine supporting and water dependent uses of the harbourfront, especially the harbourfront of sheltered waters;
17. Sheltered water is an extremely vital asset in Victoria Harbour and is not currently recognized as such;
18. The quality and accessibility of existing land/water interfaces including landing steps, piers, pontoons and other supporting facilities is inadequate for both current and future users;
19. Future plans do not give sufficient consideration to combining marine uses and recreation in the development of waterfront areas.

## **Recommendations**

20. Increase in the amount of sheltered water available in Victoria Harbour to meet the demand for both shelter during typhoons and year-round mooring facilities.
21. Move the breakwaters in the Causeway Bay and To Kwa Wan typhoon shelters to increase the amount of sheltered water available in Victoria Harbour for both moorings as well as shelter during typhoons.
22. Prioritize land around sheltered water for marine users. Sheltered water is crucial for the safe mooring of smaller vessels and the waterfront should be designed to be able to cater to and support marine users accordingly.
23. Recognize the industrial marine uses in Yau Ma Tei, Tai Kok Tsui and Stonecutters, and provide adequate land, access and modern permanent facilities. The conglomeration of marine services, from cargo handling to repairs, guarantees the industry can operate efficiently and cost-effectively, and support Hong Kong as a maritime and shipping hub.
24. Use the sheltered water in Yau Tong Bay for public marinas to promote community leisure uses of the harbour.
25. Utilize the To Kwa Wan typhoon shelter to provide moorings for the tourism-supporting marine users, including harbour tours and water taxis.
26. Use the Central-Wanchai Bypass and Sha Tin Central Link construction to improve and expand the Causeway Bay typhoon shelter and adjacent ex-PCWA. Improvements include: enlarge the shelter, improve the mooring system with pontoons, ensure cleaner water, increase the water depth, and ensure access and amenities for community, leisure and watersport uses.
27. Use the Kai Tak Approach Channel and Typhoon Shelter for community, leisure and water sports.
28. With the development of the West Kowloon Cultural District, Kai Tak, and all other waterfronts, there will be an increase in demand for harbour-based tourism, leisure, and transport. In response to these growing numbers, new piers and landing steps should be created in development areas in order to ensure access to the waterfront.

29. Improve the design of piers and landing steps throughout the harbour in the following five categories:

- a. **Land access** – roads, walkways, or other forms of land-based transportation allow water-based transportation to become a viable option for travelers.
- b. **Signage** – Landing steps and public piers that are used frequently for passenger transport, harbour tour pick-up, or other frequent services should be given signs to identify their location and intended purpose.
- c. **Ticketing/information** – Space and facilities must be provided at piers to display information on sailing schedules, ticketing, cost and contact information of marine services providers
- d. **Lighting** – Many of the landing steps in Victoria Harbour lack any kind of lighting, making it nearly impossible for transportation or commercial services to make use of these areas after sun set.
- e. **Shelter** –Covered waiting areas would provide an area for passengers to wait, protected from the weather. These areas are significantly lacking in the harbour.
- f. **Safety** –These areas can become quite dangerous as passengers are forced to step off of rocking vessels. Safety should be a strong consideration in the development of landing steps. Additionally, this team has found that the situation in Lei Yue Mun is extremely dangerous – all of the life buoys are made of metal. Real life buoys should be provided.

30. Consider a more liberal policy permitting mooring and berthing of larger vessels along the shoreline adjacent to promenades and pleasure grounds.

### **Further research is required**

31. Given the broad scope and limited time, our findings must be considered preliminary. Given the wide ranging implications of our findings on waterfront land use planning, reclamation, the design and management of land/water interfaces, we urge all stakeholders to undertake further research in the value of Victoria Harbour as a marine resource, and to develop and validate our findings.

#### **WPI Research Team**

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## Annex 1

### Audit Data

This section presents the data collected during the audit of the waterfront. Each map lists all of the documented land/water interfaces. These interfaces include landing steps, piers, fueling stations, public cargo working areas (PCWAs), and any other marine-related facilities.

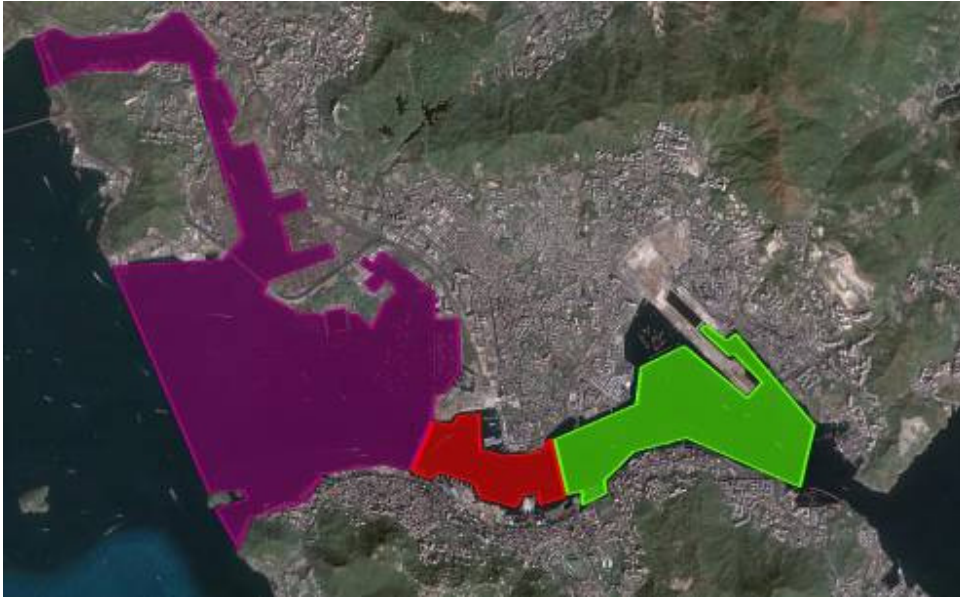
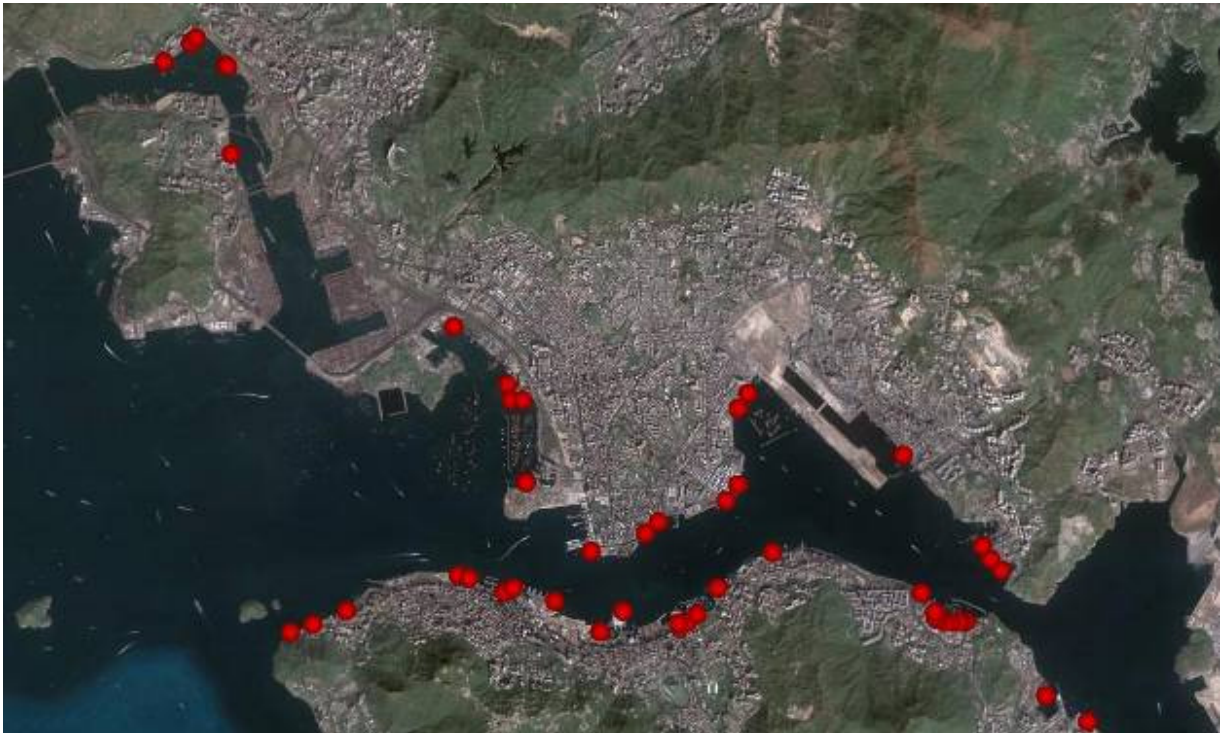


Figure A.1: Simple areas of activity around Victoria Harbour



Figure A.2: Detailed areas of activity around Victoria Harbour

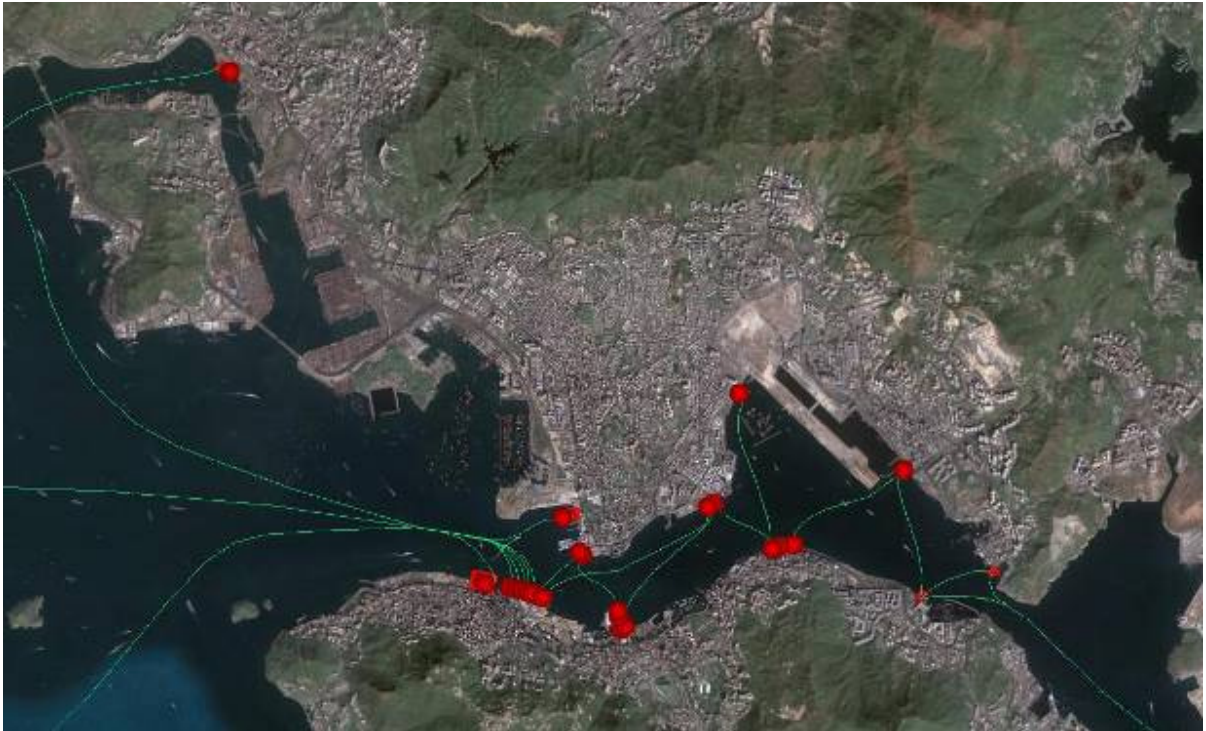
The major land/water interfaces are presented by category in the following figures.



*Figure A.3: Public Piers and Landing Steps*



*Figure A.4: Public Cargo Working Areas*



*Figure A.5: Ferry Services*



*Figure A.6: Typhoon Shelters*





*Figure A.7: Fueling Locations*



*Figure A.8: Fresh Water Kiosks*



Figure A.9: Mooring Buoys

### Land-Water Interfaces Total Count

#### Piers

Private Ferry Pier	17
Public (finger)	16
Cross Boundary Ferry Terminal	2
Floating/pontoon	4

**Piers Total** 39

**Landing Steps** 88

**PCWA** 7

**Boat Yards** 4

**Club House** 1

**Diesel and Petrol Fueling Station** 1

**Water Kiosk** 7

**Typhoon Shelter** 6

**Fire Station (Marine)** 3

## Annex 2

### Interview List

The following people attended the Stakeholders' Conference and/or participated in an interview for this study.

<b>Name</b>	<b>Organization</b>	<b>Industry</b>
Michael Agopsowicz	Waterfront Air	Transportation
Arthur Bowring	HK Shipowners' Association	Shipping
Ian Brownlee	Masterplan	Urban Planning
Tony Chan	Development Bureau	Government
Kim Lui Choi	HK Mid-Stream Operators Assoc.	Shipping
Warwick Downes	Royal Hong Kong Yacht Club	Recreation
Brenda Fung	Harbour Business Forum	NGO
Chris Fung	Development Bureau	Government
Roger Eastham	Royal Hong Kong Yacht Club	Recreation
Laurent Genna	Spysea Ltd.	Tourism
Sujata Govada	Urban Design Ltd.	Urban Planning
Chi Wan Kwok	HK Motor & Tug Boats Assoc.	Industry
Mabel Lam	Wheelock Properties	Property Development
Patrick Lau	HKSAR Eastern District Council	Government
Thomson Lee	HK Motor & Tug Boats Assoc.	Industry
Yuet Lee	Lee Yuet & Associates (Ret.)	Architect
Horace Leung	HK Tourism Board	Government/Tourism
Ray Parry	Royal Hong Kong Yacht Club	Recreation
Emmanuel Poon	HK Tourism Board	Government/Tourism
Priscilla Poon	HK Tourism Board	Government/Tourism
Garry Smith	Saffron Cruises Ltd.	Tourism/Recreation
Peter Cookson Smith	Urbis Ltd.	Urban Planning
Moody Tang	HK Maritime Museum	History
Roger Tupper	Marine Department	Government
Robert Wilson	Rowing Association	Recreation
Bonnie Wong	Hoi Kong Container Services Co.	Shipping
Miu-Sang Wong	HK Midstream Operators Association	Shipping
Frankie Yick	Wharf Holdings Ltd.	Shipping/Transportation
Paul Zimmerman	Designing Hong Kong Ltd.	NGO
Ping Zou	Marine Department	Marine Department

## Annex 3

### Assessment of Typhoon Shelter Requirements

#### Summary

Statistical data collected from various sources throughout the course of our study helps analyze the historic and anticipated growth or decline of marine users, and the availability of sheltered water. The conclusion is that there is a need for additional sheltered water in Victoria Harbour.

This study demonstrates the lack of priority given to recreational users in Victoria Harbour, highlighting the lack of consideration for pleasure vessels.

#### Assessment

One of the major government studies analyzed during the completion of this study was the Marine Department's (2009) *Assessment of Typhoon Shelter Space Requirements, 2009-2023* which identifies marine users, available shelter and moorings in Hong Kong and Victoria Harbour.

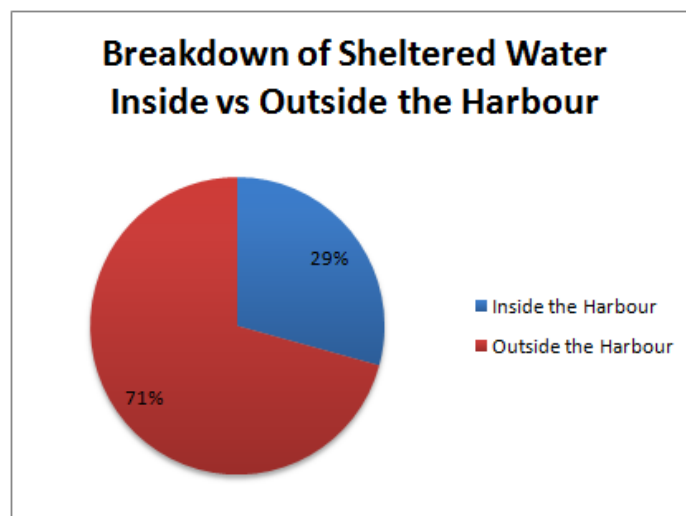


Figure C.1

Source: *Assessment of Typhoon Shelter Space Requirements*, Marine Department (2009).

The above graph shows that the majority of sheltered water is provided outside Victoria Harbour.

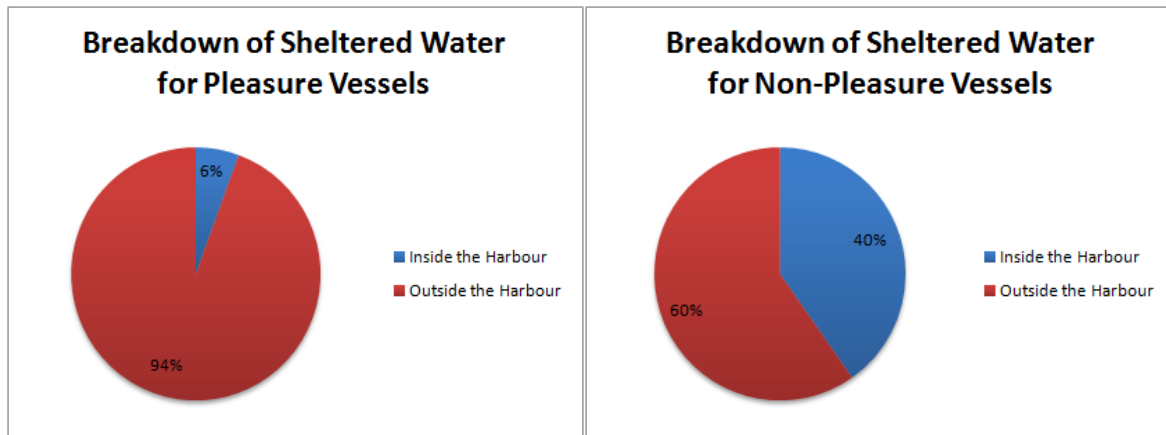


Figure C.2

Figure C.3

Source: *Assessment of Typhoon Shelter Space Requirements*, Marine Department (2009).

Figure C.2 shows that the majority of sheltered moorings for pleasure vessels are located outside Victoria Harbour. Less than 10% of all pleasure vessels have designated typhoon shelter space inside the harbour – almost entirely in the Causeway Bay typhoon shelter. On the other hand, 40% of commercial vessels are allotted mooring space in Victoria Harbour during typhoons, as shown in Figure C.3. It's assumed that pleasure vessels have returned to their home mooring well ahead of a typhoon.

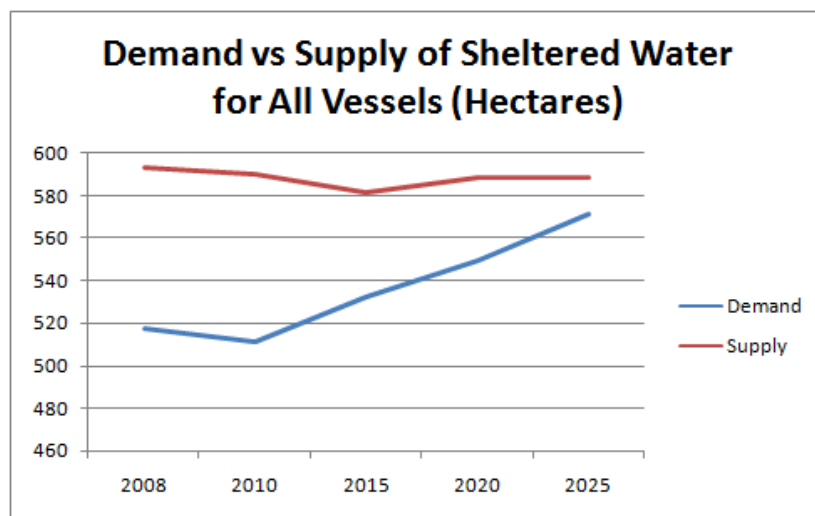


Figure C.4

Source: *Assessment of Typhoon Shelter Space Requirements*, Marine Department (2009).

According to the Marine Department, the estimated demand for supply shelter space for all vessels will be sufficient until after 2023. According to this data, no further typhoon shelter space will be required in Hong Kong overall for many years to come.

The Marine Department's (2009) *Assessment of Typhoon Shelter Space Requirements* shows that the demand and supply for non-pleasure vessels shows a narrow gap (Figure C.5.)

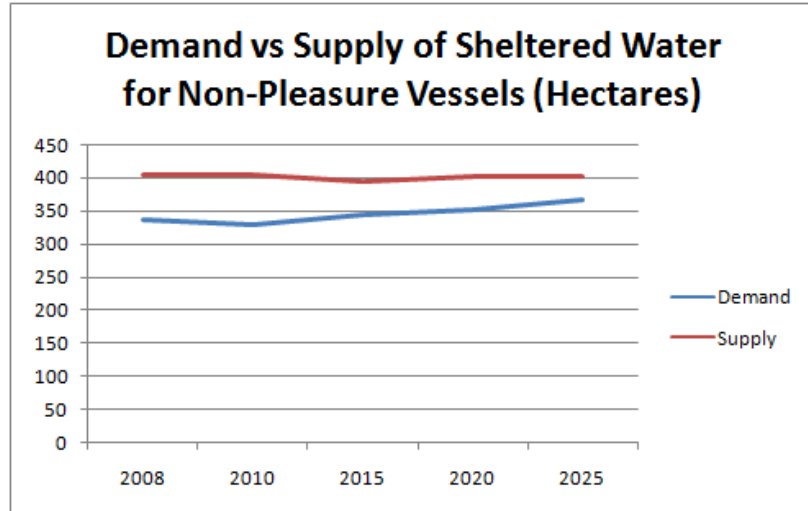


Figure C. 5

Source: *Assessment of Typhoon Shelter Space Requirements*, Marine Department (2009).

Accordingly, non-pleasure vessels will have no need for further typhoon shelter space well past 2023. The demand for shelter space for these vessels is not growing very quickly, and should be sustained for a good amount of time.

As pointed out by various stakeholders, this estimate may not be entirely accurate, as the increasing number of construction projects around Victoria Harbour will increase the need for barges and work ships. Under these circumstances, the current shelter space may prove to be insufficient much sooner than predicted herein especially shelter in the harbour is in short supply. The operators working on the project would require shelter in the harbour, rather than away in Heiling Chau. Moreover, the operators believe that shelter there has limited use (typhoon shelter only) as no support services or facilities are available.

### **Pleasure vessels**

The Marine Department's study regarding shelter space for pleasure vessels shows that available shelter space will become insufficient within only a few years.

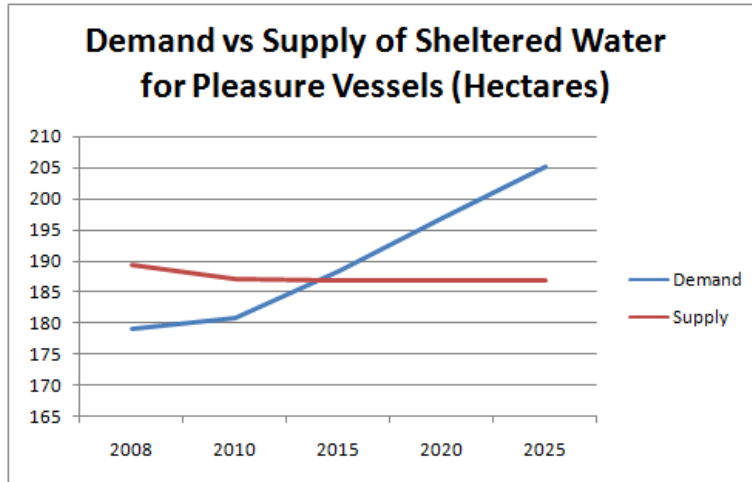


Figure C.6

Source: *Assessment of Typhoon Shelter Space Requirements*, Marine Department (2009).

Within the next five years, the demand for pleasure vessel typhoon shelter space will surpass the current space that these vessels are allotted. However, leisure boat industry has noted that there is an immediate shortage of mooring spaces throughout all marinas for various type of leisure vessels.

Further, the demand and supply of sheltered water does NOT take into account the increase in demand for sheltered mooring of community, leisure and tourism vessels in Victoria Harbour specifically.

The predictions for the growth of pleasure vessels are further supported in Fig. C.7

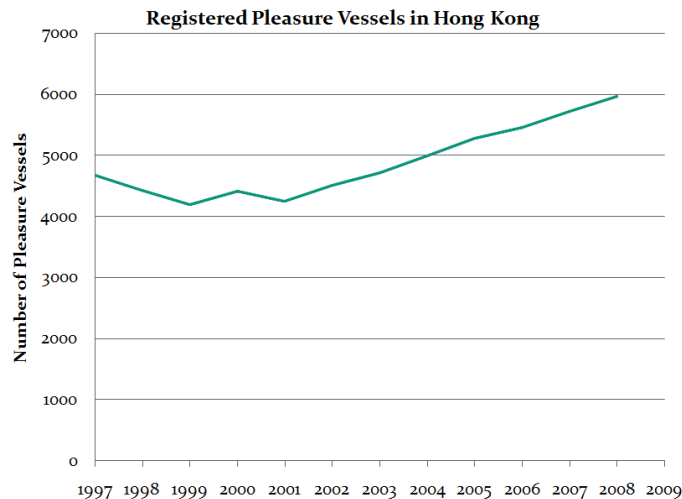


Figure C.7

Source: *Statistics on Licensed Vessels*, Marine Department (1997-2009)

## Distance decay – the cost of travel between moorings and the use in the harbour

The strong increase in pleasure vessels supports the need for increased space and facilities for marine users. Moreover, concerned stakeholders explain is that much of the typhoon shelter space that is provided to pleasure vessels is not located in the harbour.

Table C.1

<b>Name of Sheltered Water</b>	<b>Distance from Victoria Harbour (Nautical Miles)</b>	<b>Travel Time at 8 knots (Minutes)</b>
Aberdeen West	6	45
Clearwater Bay	6	49
Discovery Bay	8	61
Aberdeen South	8	61
Hei Ling Chau	8	61
Middle Island	9	69
Cheung Chau	10	77
St. Stephen's Bay	11	81
Gold Coast	14	101
Tuen Mun	14	101
Tai Tam Tuk	15	113
Yim Tin Tsai	17	126
Marina Cove	18	134
Pak Sha Wan (Hebe Haven)	18	134
Sai Kung	18	134
Tsam Chuk Wan	20	150
Tai O	24	178
Kat O	33	251
Tai Mei Tuk	36	267
Shuen Wan	38	284
Sha Tau Kok	38	284

They have expressed concern that the distance from the harbour requires hours of time, as well as large quantities of fuel, to travel between the harbour and the mooring. Table C.1 lists the approximate distance of all areas of sheltered water from the Central piers, as well as the travel time at 8 knots. This distance issue negatively impacts the number of community and leisure craft in the harbour, and costs commercial vessels, such as tour boats, barges, ferries, etc lots of time and money.



## **Conclusion**

The final conclusion in the Marine Department study that the overall typhoon shelter space is sufficient until 2023 fails to take into account the distance between the harbour and the moorings. Together with the development of the harbourfront there will be an increase in demand for tourism, community, leisure and water sports which require shelter for mooring, berthing and events, in addition to shelter during typhoons, within the limits of Victoria Harbour.

It is our finding therefore that the demand for sheltered water in Victoria Harbour has and will surpass supply.