Designing Victoria Harbour: Integrating, Improving, and Facilitating Marine Activities

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Designing Victoria Harbour: Integrating, Improving, and Facilitating Marine Activities

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Abstract

Victoria Harbour is one of Hong Kong's greatest assets; however, the balance between recreational and commercial uses of the harbour favours commercial uses. Our report, prepared for Designing Hong Kong Ltd., examines this imbalance from the marine perspective. We audited the 50km of waterfront twice and conducted interviews with major stakeholders to assess necessary improvements to land/water interfaces and to provide recommendations on improvements to the land/water interfaces with the goal of making Victoria Harbour a truly "living" harbour.

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Table of Authorship

All members of this project contributed equally to the editing and revision of each section of the report. Each section was proof-read by every member of the team. In addition, certain members contributed to the project in ways not reflected in the table of authorship.

Brian Berard acted as the primary note-taker and task organizer. He provided many of the section outlines prior to their authorship and was responsible for formatting the final paper.

Jarrad Fallon was responsible for much of the data analysis. He also assisted with many of the tasks of the other members, working diligently in many different areas.

Santiago Lora collected most of the data regarding tour boats. He was also responsible for a significant portion of the team's public relations work.

Alexander Muir acted as the team leader, coordinating the project and providing guidance for all tasks undertaken.

Eric Rosendahl created, structured, designed, and scripted all of the team's PowerPoints for use in the presentations.

Lucas Scotta was the primary creator of the Google Earth database and also compiled the audit data into the Google Docs spreadsheet.

Alex Wong set up the first round of interviews and was responsible for keeping in contact with the seventy stakeholders on the contact list.

Becky Yang created the page that was placed on the Harbour Business Forum's website to host the Google Earth database.

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Executive Summary

Large bodies of water, such as rivers, bays, and harbours, serve as the defining element of many communities around the world. Many large port cities owe their existence to their harbours - without which, their trade and commercial industries would not have been able to flourish. Over time, waterfront uses change due to the evolution of industry, commerce, and technology. Marine uses require land/water interfaces: land- and water-based facilities that enable the transition between land and water. Piers, landing steps, ticketing kiosks, marine clubs, water kiosks, fuel stations, and marinas are all examples of land/water interfaces on which marine users rely. Marine-related land uses must compete with other uses such as residential developments, roads, promenades, and parks for scarce land available along the waterfront. The idea of a "living" harbour stems from the need for balance amongst these many waterfront uses. Proper waterfront management results in a harbour actively used for a diversity of land- and water-related activities. A true "living" harbour stimulates jobs in marine-related industries and attracts people to the waterfront.

Background

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 centre. As a central point of maritime trading activities in Southeast Asia, Hong Kong's container ports serve vessels from all parts of the world. With its mountainous landscape, this region has little developable land in its core urban areas. For 150 years, Hong Kong's primary method of expansion was the reclamation of land, reducing Victoria Harbour to less than half of its original width. In 1997, the government approved the Protection of the Harbour Ordinance to prevent future reclamation barring a "public overriding need without a reasonable alternative." As a result, the current water-edge of Victoria Harbour will be kept unmoved for 999 years.

The Protection of the Harbour Ordinance further increases the value of existing waterfront land, and there is a long list of competing needs for the last remaining plots around the harbour. In the past, redevelopment projects along Victoria Harbour's waterfront have focused primarily on the more economically valuable uses: commercial, corporate, or residential developments. Due to their lower economic value, marine users have often been forgotten or neglected during project planning. Residential developments, roads, parks, and promenades have been built along the waterfront, making it more beautiful and publicly accessible, but few improvements have been made to marine-supporting land/water interfaces. Land/water interfaces often requires piling and support grounded on the seabed (e.g. for piers). New marine infrastructure that requires reclamation must demonstrate a public overriding need to pass the strict tests set out under the Protection of the Harbour Ordinance.

Methodology

The goal of this project was to provide Designing Hong Kong, Ltd. with a set of recommendations to make Victoria Harbour into a "living" harbour – one that is actively used for a diversity of land- and water-related activities. To achieve this goal, our study was divided into two phases. In the first phase, we created a database with the locations and descriptions of the existing marine infrastructure in Victoria Harbour. In the second phase, we created a forecast of the changes in marine activities and infrastructure requirements over the next 15 years and a set of recommendations to improve the marine infrastructure in the harbour. The harbourfront was divided into twenty-three action areas as adopted by the Harbourfront Enhancement Committee to categorize the data collected. This study was sponsored by Designing Hong Kong Ltd. and supported by the Harbour Business Forum and the Development Bureau.

To obtain the information needed to create a database, we walked along Victoria Harbour's 50km of waterfront twice on foot and also toured the harbour by boat, identifying

each land/water interface. Using a standardized Waterfront Evaluation Form and photographic evidence, we recorded the marine users and the supporting facilities observed at each action area. All of this information was compiled into a single database using Google Earth. This database includes over 200 land/water interfaces with a reference code, description, GPS location, maintainer, and photograph for each. In addition, future development plans for the waterfront were also overlaid. This complete Google Earth database was a powerful tool for our analysis. As the only such database in existence, it will be a valuable tool for future studies and marine users of Victoria Harbour.

To accomplish the second phase, the forecast, we conducted a stakeholders' conference and interviews. The 25 stakeholders that attended the conference were from various marine-related industries, government departments, and planning organisations in Hong Kong. They commented on four different topics: predictions for future marine users, future marine facility requirements, obstacles faced by marine-focused waterfront redevelopment, and potential solutions for the problems in Victoria Harbour. This information was supplemented by interviewing key professionals and organisations that hold interests in the harbour. Through content analysis of the interviews and stakeholders' conference data, we formed a preliminary list of recommendations based on the opinions of the stakeholders. Using these preliminary recommendations as a basis, we conducted desk research to assess the feasibility and evaluate the relevance of each recommendation, eliminate unrealistic recommendations, and strengthen the final set of recommendations. We also researched past trends and future development plans for the waterfront in order to envision the harbour's future users and infrastructure.

Results and Analysis

Over the course of the study, clear trends appeared in the data, demonstrating similarities in the needs of multiple types of marine users. The major areas of focus identified for further analysis were sheltered water, piers/landing steps, marine-related

recreational areas, and PCWAs. These results emphasize seven major issues regarding the state of Victoria Harbour, present and future:

1. Sheltered water is an extremely vital asset in Victoria Harbour and is not currently recognized as such.
2. The quality and accessibility of existing land/water interfaces are inadequate.
3. Future plans do not give sufficient consideration to the potential for developing areas to become areas of leisure and recreation for both marine users and visitors to the waterfront.
4. The movement of public cargo working areas out of the Eastern and Central Harbour threatens to destroy the cargo industry currently using these facilities.
5. Little balance exists amongst the various classes of marine users in Victoria Harbour.
6. There is no overall plan for future developments in Victoria Harbour. All projects are undertaken on a case-by-case basis.
7. The large number of organisations with a controlling stake along the waterfront hinders the development of Victoria Harbour.

The usage trends in the harbour create three major divisions of marine users: industrial activity takes place in the Western Harbour, ferry services dominate the Central Harbour, and recreational uses are primarily located in the East. This division provided a guiding concept of the harbour and how future developments should proceed. While this conclusion appeared to be widely recognized, it was difficult to find any guiding plan to facilitate this view of the harbour. In fact, recent waterfront development has often neglected the marine users entirely, especially in the most valuable areas of water: sheltered water.

Conclusions and Recommendations

In order to address the problems identified by our study, we drafted a set of recommendations. These recommendations vary in scope, but many of them focus on

resolving the issue of insufficient sheltered water in Victoria Harbour. The most important recommendations are summarized here:

- Increase the amount of sheltered water available in Victoria Harbour to meet the increasing demand for shelter during typhoons and year-round mooring space.
- Give marine users strong consideration in the development of land surrounding sheltered water.
- Landing steps should be improved in the following categories: land access, signage, lighting, shelter, and safety.
- Add more public piers to the plans for developing areas in order to aid the growth of the harbour tour industry. In addition, public piers should be improved to provide additional facilities for their users.
- Recognize the industrial marine uses in the Western Harbour and provide adequate land, access, and modern permanent facilities.
- Establish a single organisation for the control of the waterfront – one to plan and implement future development projects and manage existing facilities.

Overall, 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 uses and associated marine uses, there is a need to carefully consider new and alternative marine supporting infrastructure along Victoria Harbour's waterfront. New marine-supporting infrastructure may require some reclamation, but it is vital in order to ensure a vibrant, "living" harbour.

1 Introduction

Waterfronts have often played an important role in the economic development of countries by providing an accessible venue for trade and travel. Due to the many uses of a waterfront and the finite amount of space available, the optimization of space for maximum efficiency is especially important. As available land in the city dwindles, local governments occasionally attempt to extend their waterfronts - a process known as "reclamation". As new land is created by reclamation, industries may attempt to expand along the growing waterfront. This practice results in the loss of waterfront accessibility for the city's inhabitants. With such valuable land along the waterfront, conflicts of interest between various user groups occur, and some users are often overlooked.

The delicate nature of waterfront development in Victoria Harbour requires that careful consideration be given to urban planning. There are many factors to consider, including the desire of multiple users to use the same land for different purposes, priority given to specific users, and the amount of resources that are accessible to each user. Unfortunately, not all harbour users are satisfied with the current uses of the harbourfront. Since the Hong Kong government has implemented a program to put a stop to additional land reclamation (Protection of the Harbour Ordinance, 1997), the uses of the harbourfront are now more important than ever before. The existing waterfront will become the permanent shoreline for the next 999 years. Any redevelopment of Hong Kong's harbourfront is made more difficult by the difference in perspective amongst users. Those using the harbourfront from the water side, such as recreational boaters, ferries, floating restaurants, and cargo shipping companies, would view the shoreline as the end of the water and beginning of the land, while land users, such as most businesses and the government, would have the opposite view, seeing it as the edge of the land and the beginning of the harbour. This is an important distinction because, given the power to do so, each stakeholder would develop the harbourfront differently to benefit themselves.

Tourism and income associated with land leases are two of the largest sources of revenue for the Hong Kong government. Tourism accounted for 3.4% of income in 2007 (Census and Statistics Department, 2009a, The Four Key Industries in the Hong Kong Economy). This pales in comparison to the revenue generated by land leases, which accounts for more than 35% (Hong Kong Democratic Foundation, 1996, 'Land Tax' and High Land Prices in Hong Kong). Due to the Protection of the Harbour Ordinance, the government must determine new ways to generate additional income. Thus, they have less of a financial interest in accommodating the needs of boaters and other water-based harbourfront users. This has led to a significant lack of amenities for harbour users along the waterfront, which could negatively impact the tourism industry. In 2003, the Hong Kong government sponsored research that looked into the need for water-based amenities (Hong Kong Tourism Board, 2003, Planning Study on the Harbour and its Waterfront Areas), but there are no current plans to implement the report's recommendations. Moreover, since the research was sponsored by the government, a party of interest, there is no guarantee that the research conducted was done in an impartial manner. Similar situations of necessary waterfront redevelopment have occurred around the globe, in cities such as Baltimore, Cape Town, and San Francisco. Each city had to optimize its waterfront in order to adapt to the city's changing economy and new uses of its harbour.

There has been research previously conducted about the Victoria Harbour waterfront (Jannetti et al., 2009; Hyde et al., 2008; Radio Television Hong Kong, 2006; Wan, 2005; Harbourfront Enhancement Committee, 2010a), but it seems none has investigated it purely from the perspective of water users. It is important to understand what boating amenities are needed and where they are needed. If the harbourfront is improved in the wrong way or in the wrong areas, the work will not benefit water-based users. Due to the Protection of the Harbour Ordinance, signed in 1997, the harbourfront that is built will remain for 999 years, making it important to devise a long-term sustainable solution that fully uses the harbourfront. Designing Hong Kong, Ltd. has a goal of developing Victoria Harbour from both land- and water-based perspectives to create a "living" harbour.

The goal of this project was to provide Designing Hong Kong, Ltd. with a set of recommendations to make Victoria Harbour into a "living" harbour – one that is actively used for a diversity of land- and water-related activities. In order to complete this task, our objectives included: locating and describing the existing marine infrastructure present in and alongside the harbour; identifying the current marine users of the harbour, what infrastructure they need, and what improvements that infrastructure needs; and forecasting how marine users and their infrastructure requirements will change over the next 5, 10, and 15 years. To conduct this research, we collected the opinions of actual water-based harbour users, who would be the ones most impacted by any government policy changes, as well as city planners responsible for the development of current and future waterfronts. Additionally, by visiting sites along Victoria Harbour, we determined what amenities and services are needed, first-hand. This study was required because the current harbourfront has become Victoria Harbour's permanent waterfront, and it is important to use it to its fullest potential. We also considered the feasibility of these solutions, because an impractical or unrealistic solution would never be implemented. Based on our findings, we developed a set of recommendations for Designing Hong Kong, Ltd. on how to ensure Victoria Harbour's future success.

2 Background

Hong Kong's Victoria Harbour is a unique entity on the world stage, and it possesses many traits not found in any other harbour of the world. From its numerous typhoon shelters for the protection of ships to its dazzling panoramic skyline, Victoria Harbour never ceases to impress. The vibrant atmosphere boasts a constant inflow of visitors from all parts of the globe. Past increases in demand for more land along the harbourfront have resulted in multiple harbour reclamation and redevelopment projects. While these efforts have been beneficial for many land-based users, however, there has been little consideration for the harbour's water-based users. One of the ways to address this ongoing predicament is to view the current situation of the waterfront from the perspective of multiple users. The investigation of harbour planning and redevelopment principles, concerns, and concepts includes research on the evolution of similar port-cities around the world to explore the inherent issues that affect waterfront development. This chapter discusses these topics in order to present a comprehensive explanation of the context in which this study takes place.

2.1 Value of Waterfronts

A multitude of the world's large cities, as well as countless other smaller cities and towns, were established near bodies of water, proving beneficial to their development. "For communities and areas fortunate enough to be near a body of water, the waterfront is often the unifying element that defines them and serves as the source of their beginnings, their heritage, and the reason for their existence" (The Waterfront Centre, 2007, Home Page). Not only do waterfronts provide unique economic opportunities for their surrounding communities, they serve as attractive destinations for leisure activities and recreational uses. Many facets of Victoria Harbour, such as trade ports, fishing fleets, beaches, piers, and promenades help define their surrounding waterfront areas. Many large port cities owe their existence to their waterfronts, without which, their trade and commercial industries would not have been able to flourish.

2.1.1 Historical Uses of Waterfronts

Waterfronts are a linkage medium, permitting access from the land to the water and vice versa. The cities and communities situated on vital waterfronts have historically used them for both peaceful operations and national defence purposes - namely fishing, trading, transportation, and military applications. Control of a harbour or a stretch of coastline confers influence over the traffic in the surrounding area, in particular trade and transport vessels, fishing boats, and naval warships.

Trade remains a vital component in the current economy; global trade continues to be on the rise despite the global economic recession. From 2000 to 2008, world merchandise exports grew 5% (World Trade Organisation, 2009b, Table I.2). Although some trade takes place over land via trains and trucks, the vast majority of goods are transported and pass through port cities by container ships. Container ships are by far the most cost-efficient method of transporting large quantities of goods. As a result, harbours will continue to be a valuable trade resource in the years to come.

2.1.2 Changing Waterfront Uses

As the economy of a waterfront community changes, its waterfront must also adapt to accommodate new uses so as to maintain its value as an asset to society. “Like the cities they help define, urban waterfronts are dynamic places, undergoing profound change” (The Waterfront Centre, 2007, Home Page). The growth of the non-commercial leisure boating industry has added many new uses to urban waterfronts and harbours, necessitating a fresh look at how these waterfronts are developed. Large container ships need drastically different facilities and services than smaller recreational boats or even large cruise ships.

Waterfronts are a finite resource, and competing harbour uses must be considered in any waterfront redevelopment project. Conflicting harbour uses can lead to many difficult decisions when determining an ideal development plan. If the different interests of the changing marine user demographic are not carefully considered, the infrastructure of the harbour will not be appropriately modernized to accommodate the new waterfront users – eventually causing the value of the harbourfront to decline. In many cases, economic changes

in harbourfront communities cause the shipping industry to suffer or move out of the harbour altogether, making way for new public harbour uses and tourism activities (Harms, 2008, p. 10).

2.2 Waterfront Redevelopment Projects Worldwide

During the last century, many port cities noticed that their waterfronts had become underused, misused, or unbalanced. Upon realizing this issue in the 1950s, the city of Baltimore, Maryland, became one of the first major port cities to undergo waterfront redevelopment in the United States. During the course of the waterfront's revival, the economic focus of the waterfront area shifted towards a more balanced distribution of uses. Similarly, Cape Town, South Africa was a city that noticed the changing trends in tourism and global shipping, respectively, and quickly made the appropriate adaptations. On the other hand, San Francisco, California is an example of delayed waterfront redevelopment, which resulted in San Francisco's loss of its shipping industry (Harms, 2008, p. 10).

2.2.1 Baltimore

Located at the head of Chesapeake Bay, Baltimore is a major shipping port. Baltimore's economy developed around shipping and industry and struggled to adapt to changing economic conditions during the 1950s. Most of the manufacturing jobs had left the city, along with a good portion of the population, which had moved to the suburbs. The shipping industry had all but abandoned the Inner Harbour, leaving large areas of the waterfront unused (Millspaugh, 2003, p. 2). Baltimore needed to do something quickly in order to improve its fortunes, and it turned to waterfront redevelopment as the most realistic, effective solution to revitalize the unused areas of the harbour

An organisation was formed by private interests in Baltimore to begin the process of redevelopment (Millspaugh, 2003, p. 2). This organisation was called the Committee for Downtown (CD) and was formed in 1954. The CD guided Baltimore through the first phase of the redevelopment, which ended with the completion of the Charles Center. As public and private support grew for the redevelopment, a private corporation was chartered (though it

was controlled via contract by the municipality) to take over the responsibilities of urban planning, called the Charles Center-Inner Harbor Management, Inc (CC-IH).

Figure 2.1: Baltimore Inner Harbour
(Raoul Pop, 2009)

When Baltimore decided to renovate the Inner Harbour, the waterfront was littered with old industrial buildings - too many to renovate all at once (Millspaugh, 2003, pg. 3). The CD realised that a series of small victories would be just as important to the public as the end result, so they placed their focus on making a first impression, and the Charles Center (CC) was born. The CC was designed to be a large development consisting of many buildings and plazas, the first of which, 1 Charles Center, is a 27-storey office building (Emporis, 2009, One Charles Center). As intended, the glass and aluminium building served as a focal point for the city's waterfront.

After the CC was completed, the redevelopment process started to gain momentum. More and more projects were started and completed, including the Maryland Science Center and several privately funded buildings intended to be corporate headquarters. Yet, development always focused on improving the waterfront, not just on building new office buildings (Millspaugh, 2003, pg. 5). A festival market and a 2,000-seat auditorium were

both built on old shipping piers. Then, in 1976, the Tall Ships, an international fleet of 18th and 19th century sailing vessels, came to Baltimore. This was a pivotal moment, as beforehand the waterfront redevelopment had been focused on making the Inner Harbour better for the residents of Baltimore. However, the Tall Ships visit turned the Inner Harbour into a tourist destination.

By the mid-80s, it became apparent that a balance needed to be struck between the new and different competing uses for the Inner Harbour. Therefore, in 1985, the City of Baltimore created the Marina Master Plan, with the goal: "to allow access to the water by recreational boaters while protecting and allowing for growth of the commercial shipping industry in Baltimore's Harbour" (City of Baltimore, 2003, p. iv). With this plan, Baltimore was able to balance its growing tourism and recreational boat traffic with the needs of its shipping industry in the rest of the harbour. This balance included the preservation of the shipping lanes to Baltimore's 16 public and private ports in addition to the creation of "boatels" – waterside hotels with dock space for those who travel by boat, and space for canoes and kayaks. The plan has been updated several times over the years as the situation has changed, but the balance has been maintained.

Once the flow of tourists started and a balance with industry had been achieved, the momentum of the redevelopment movement persisted. The Inner Harbour continued to develop through the 80s and 90s, and today, Baltimore is regarded as having one of the best waterfronts in North America (Millspaugh, 2003, pg. 1). It is estimated that 6.5 million people visit the Inner Harbour each year, bringing money into the city and fuelling the growth of the tourism sector. Yet, Baltimore got more out of this than just tourists; the people of Baltimore now take pride in their city. Dozens of abandoned buildings were levelled or renovated in order to build new office buildings, providing jobs for the people and property taxes for the city; the semi-dilapidated harbour was rebuilt into a vibrant area usable by both commercial and recreational vessels.

2.2.2 Cape Town, South Africa

The waterfront redevelopment project in Cape Town, South Africa is another excellent example of well-executed, intelligent planning that can provide valuable insight to cities in the process of redevelopment. A large portion of Cape Town's waterfront was converted from an underutilized plot of land to one of the most successful, attractive harbourfronts in the world. The once neglected shorelines of Victoria and Alfred Basins - after years of development - now serve as a multi-use area with a focus on retail, tourism, and residential development while maintaining the continued operation of a working harbour (V&A Waterfront Company, 2009, V&A Waterfront). The focal point of the V&A waterfront redevelopment project was the restoration of physical links between Cape Town and its waterfront. The project sought to create a quality environment, a desirable place to work, live, and play, and a preferred location to trade and invest for Capetonians and visitors (van Zyl, 2005, p. 1). This world-class seascape provides a true waterfront experience for both locals and visitors alike.

The project on the waterfronts of Victoria and Alfred Basins started in 1988 with the establishment of the V&AW committee (van Zyl, 2005, p.4). Once an industrial harbour, the V&A areas of Cape Town had become an under-utilized, poorly developed piece of land due to harbour expansions in other locations within the city. A very large redevelopment project was required in order to create a valuable land asset. The development project received no government funding, however, obtaining the necessary capital entirely from commercial organisations.

The V&AW committee immediately set to work forming a cost-effective development plan that would address their three major goals: to create public spaces, to develop the waterfront in a way that best accounts for its unique features, and to achieve maximum financial value through proper development (van Zyl, 2005, p. 10). The committee then established its objectives to further guide its planning. The committee's objectives were to create a rich and diverse environment, promote tourism and recreation, improve public access to the waterside, and create a viable business foundation.

Figure 2.2: Cape Town Pierhead, South Africa
(Mervyn Hector, 2008)

One of the most prominent areas of the V&A waterfront is the Pierhead (van Zyl, 2005, p.6). Development of the Pierhead added a number of new marine facilities to the harbourfront, including moorings, water access points, and docks. In order to create a more balanced recreational atmosphere, restaurants, shops, and arts centres joined the waterfront area. These multi-disciplinary developments in the Pierhead reflect the true success of the V&A waterfront: an area that promotes synergy between recreation and functionality in the harbour.

Cape Town's waterfront boasts a wide variety of marine-related activities for the enjoyment of visitors and residents alike, including boating, scuba diving, and fishing. Visitors can enjoy the harbour through various boat tours and ferry services located at the V&A waterfront. One of the most popular attractions is historic Robben Island. Daily ferries depart from the Robben Island Embarkation Building, located on one of the more popular jetties. The V&A waterfront redevelopment project strove to preserve as many of the city's historic waterfront activities as possible, while also providing modern facilities for the enjoyment of both residents and tourists.

Proof of the success achieved by the numerous developments on Cape Town's waterfront lies in the city's growing attraction of visitors. According to Ferreira (2007), the number of guests to the V&A waterfront has increased every year since the start of the development project and continues to grow. Over twenty-one million visitors comprising of locals, domestic travellers, and foreigners enjoyed the beautiful, functional harbour in 2004. Of these, 55% were local Capetonians, 24% domestic tourists, and 21% international tourists (p. 236). The V&A Waterfront redevelopment project seeks to integrate the uses of foreign tourists with those of the locals by making the waterfront enjoyable for everyone.

More visitors to Cape Town translate into an increase in revenue for the local economy. Restaurants, shops, vendors, and all forms of recreational services experience a higher volume of sales and business from tourists. The growth in sales volume helps to promote the city's local assets such as wine, flowers, and fruits (van Zyl, 2005, p. 12).

Capetonians further experience the benefits of the waterfront development through jobs created within the city. As local businesses grow to meet the demands created by increased tourism, employment directly related to the V&A Waterfront continues to rise. The number of permanent jobs created by the development has risen from 6,200 in 1992 to 15,610 in 2004 (Ferreira, 2007, p.237). This number does not include the thousands of temporary construction jobs created throughout the project. These numbers are indicative of how the V&A Waterfront project has created real regional economic growth for the city of Cape Town.

Cape Town's impressive success with the V&A Waterfront demonstrates the value of a "living" harbour – a place for residents and visitors to experience the waterfront for a variety of marine-related activities such as boating, sight-seeing, and fishing, as well as with various other arts, culture, and dining-related activities. The city's experiences offer an excellent benchmark for international waterfront development projects; Cape Town teaches the world many valuable lessons. The V&AW's development demonstrates many important aspects of waterfront development, including the need to maximize the views of the waterfront, provide public waterfront access with promenades and open spaces, attract all types of visitors, and

encourage a diverse set of marine uses. The V&AW's development's successes can teach waterfront developers many of the lessons that can lead to the success of future projects.

2.2.3 San Francisco, California

San Francisco, on the other hand, is an example of less than ideal waterfront redevelopment. San Francisco was caught unprepared for the change in shipping methods, and as a result, the shipping industry moved across the bay to Oakland. Having lost a major resource, San Francisco was left with kilometres of coastline with no set purpose. Many different development plans were proposed, including "[building] the unpopular Embarcadero Freeway over the old Embarcadero access road to the piers, blocking the city from the bay," and "[building] a 550 feet (sic) tower near the Ferry Building into the bay" (Harms, 2008, p. 13). In 1971, six years after Oakland overtook San Francisco in shipping volume, the San Francisco City Planning Department presented the *Comprehensive Urban Design Plan*. This was not actually a set plan on how to develop the waterfront, but rather "an elaborate series of zoning regulations and design guidelines" (p. 13). No significant steps were taken for another nineteen years, until after the earthquake of 1989. "Under public pressure from citizen groups and through a successful referendum proposition put on the voting ballot in San Francisco, the Port Authority was required to develop a comprehensive waterfront land use plan for port properties with maximum feasible public input" (p. 14). The result was *The Port of San Francisco Waterfront Land Use Plan*, published in 1994 – twenty-nine years after Oakland overtook San Francisco as a shipping centre. It would be another three years before the Port Commission would adopt the plan. The plan was guided by numerous goals including "reuniting the city with the waterfront and revitalizing the waterfront to create jobs, revenues, public amenities and benefits to port, city and state; also to provide parks, plazas, walkways and public open space at the water's edge; and to respect the historic character of the waterfront" (p. 14). Today, much of the waterfront in San Francisco is very attractive and well-developed, but there are still many piers that appear to be underutilized or empty. Even getting to this point has taken well over thirty years since Oakland surpassed San Francisco. San Francisco demonstrates that it is imperative for

waterfront development to stay on the cutting edge of world trends, or else it could take decades to create a new and more relevant waterfront.

After San Francisco lost its shipping industry, large areas of its waterfront were unused. Today, the waterfront has been mostly developed with tourism in mind. "The ferry building has been well restored with shops and restaurants on the ground floor, offices above and at street level, and a market on the weekends. Public access to the water has improved and more tourist ferries are operating" (Harms, 2008, p. 14). There are a variety of tourist ferries, including one that goes to the popular tourist destination of Alcatraz. In addition, there are often large cruise ships docked on the piers unloading tourists, and a handful of high-priced boat slips can be found along the waterfront between the Bay Bridge and the Golden Gate Bridge. Tourism in San Francisco has grown dramatically over the years, now the city's "no. 1 industry, employing 72,360 people who make a combined annual salary of USD$1.95 billion" (Smith, 2008, Tourism Strong Despite Flagging Economy). In 2007, tourists spent $8 billion in San Francisco, an all-time high up to that point. Many of these positive trends are due to the renovations that have been taking place along San Francisco's waterfront.

Figure 2.3: San Francisco's Waterfront
(Ingrid Taylar, 2009)

To govern all facets of San Francisco's waterfront, the town implemented a single organisation called the San Francisco Port Authority. The Port Authority's board of commissioners is composed of five members, each appointed by the mayor for a four year term. The goal of this organisation is to aid in "promoting a balance of maritime, recreational, industrial, transportation, public access and commercial activities on a self-supporting basis through appropriate management and development of the waterfront for the benefit of the public" (Port of San Francisco, 2009). It accomplishes this goal by monitoring the needs of all the parties involved and providing fair and viable solutions based on those needs.

Economic shifts and changing waterfront uses provide excellent opportunities for waterfront redevelopment projects in port cities like Baltimore and San Francisco. Many harbours around the world have experienced a shift away from heavy industrial uses, opening up space along their waterfronts for public access and recreational uses, including: Bellingham, Washington (Port of Bellingham, 2009, The Waterfront District); San Francisco, California (Harms, 2008, p. 8); Hamburg, Germany (Harms, 2008, p. 12); London, England; Halifax, Nova Scotia; Jinji Lake, Suzhou, China; Richmond, Virginia; Sydney, Australia; and Boston, Massachusetts (The Waterfront Center, 2007, Community Consulting Services). This trend is occurring around the world, and waterfront redevelopment projects have proven to be an effective way to revitalize underused waterfronts and to benefit waterfront communities.

2.3 Victoria Harbour

Victoria Harbour is one of Hong Kong's greatest assets. Located between Hong Kong Island and the Kowloon peninsula, Victoria Harbour provides deep waters and natural shelter, which are ideal for port activities – allowing it to become one of the busiest in the world. The astonishing natural beauty and night-time skyline of the harbour draw millions of tourists to Hong Kong yearly.

Figure 2.4: Hong Kong Island Waterfront
(Pauliyas, 2006)

2.3.1 Hong Kong's Harbour History

For 155 years, Hong Kong developed under British rule from a small fishing village to a vital link for trade in Asia. Upon the addition of the New Territories to the domain of Hong Kong in 1898, Hong Kong experienced substantial growth in the manufacturing sector (Carroll, 2007, p. 89). The stability of Hong Kong in relation to the tumultuous political scene in China attracted waves of immigrants to the British colony, supplying a steady stream of labour. The period following World War I witnessed vigorous industrialization in Hong Kong. Due to its location and manufacturing capabilities, Hong Kong developed into one of the most important ports in Asia. After manufacturing declined in the second half of the 20th century, Hong Kong became a centre for financial, commercial, service, and tourism industries. Given this new situation, port-specific land requirements in Victoria Harbour have experienced a steady decline, thus paving the way for a steady transition from industrial uses to commercial and recreational uses in the harbour.

2.3.2 Hong Kong as a Harbour

As one of the most important deepwater seaports in Southeast Asia, Victoria Harbour has allowed large shipping vessels to easily navigate its waters to load and unload cargo in Hong Kong. As a commercial and industrial centre of the Eastern Hemisphere, Hong Kong relies on the harbour for its livelihood. Many of the economic activities that support these communities depend on the waterfront, making the waterfront an invaluable resource (Carroll, 2007, p. 159). Now that the importance of shipping in Hong Kong has begun to decline, the density of crowded container ships along the shores of Victoria Harbour has

lessened. The commercial activities take place primarily in the Western Harbour, while the Eastern Harbour is used mainly for recreation.

Various organisations within the city are currently working to make leisure, tourism, and recreation the foci of Victoria Harbour. This section provides an explanation of the situation in Victoria Harbour in order to fully appreciate the current dynamics on the harbour's waterfront - the events, players, and motivations that had or have a role in Victoria Harbour's development.

2.3.3 Land Reclamation in Victoria Harbour

The growth of service industries and an increasing population in Hong Kong have created a demand for land along Victoria Harbour's waterfront. To facilitate this growth, land along the harbour has been reclaimed since the British colonized the island in January 1841. This reclamation consists of creating new land at waterfronts or riversides by deploying concrete and other hard materials on water space. Hong Kong is the fourth most densely populated area on Earth, with a population of over seven million and a total land area of just over 1,100 sq. km (Hong Kong Yearbook Fact Sheet, 2008, p. 1), at least half of which is occupied by the steep granite hills that provide shelter for Victoria Harbour. Land is a premium resource in Hong Kong, and since 1887, 68.17 sq. km of land has been reclaimed, including much of Victoria Harbour's original 7,000 hectares of water. Land reclamation has reduced the width of the channel between Hong Kong Island and Kowloon to half of its original width, to just 900 metres.

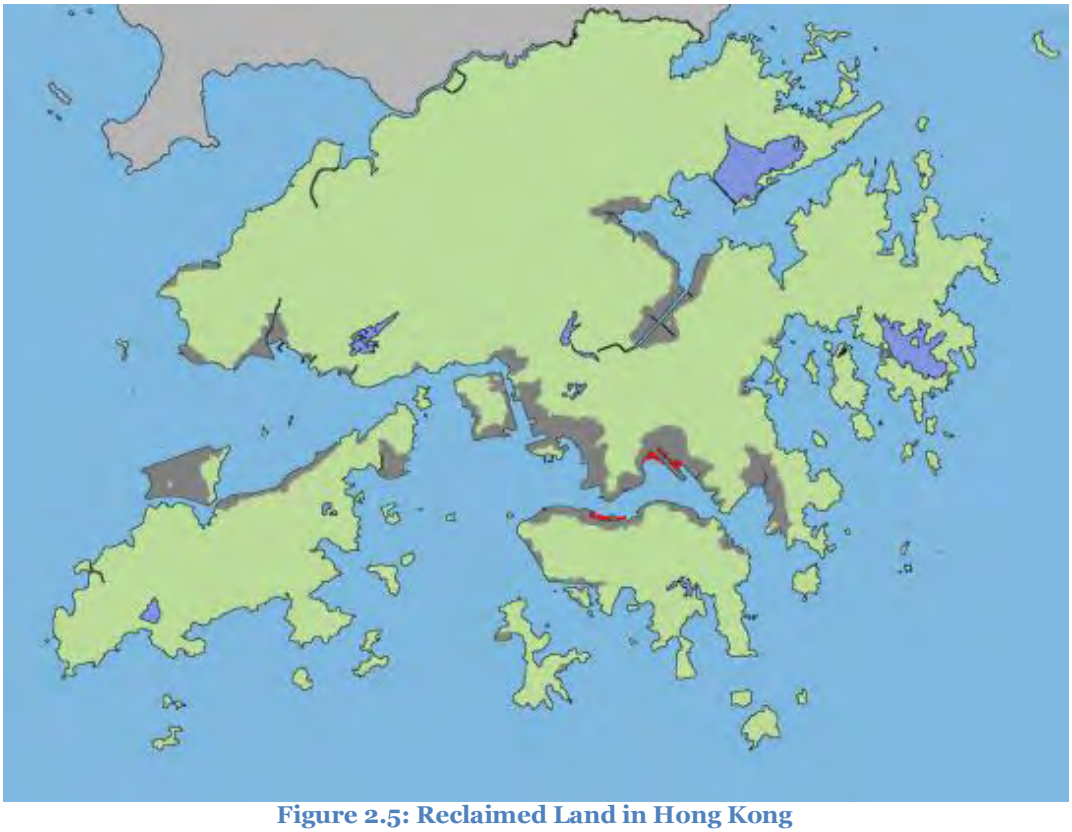

Figure 2.5: Reclaimed Land in Hong Kong
(Shizhao, 2006)

One of the first planned land reclamation projects in Hong Kong was the Praya Reclamation Scheme, carried out from 1868 to 1873 by the Hong Kong Land Company in colonial Hong Kong (Wordie, 2002, p. 64). Many merchants with private piers on the waterfront objected to the scheme. Additional land was reclaimed by the Tai-pan of The Hong Kong and Kowloon Wharf and Godown Company from 1889 to 1903. The scheme added between 59 and 65 acres of land to Hong Kong's Central waterfront using a total weight of 3.5 million tons of material (p. 65).

The Kowloon harbourfront, in particular, has experienced considerable land reclamation. Kai Tak Airport's modern runway was built in 1957 with a length of 2,194 metres. Built over reclaimed land on the Kowloon Bay, it was expanded to a length of 3,390 metres in 1975. All operations of this airport ceased and were transferred over to the new Chek Lap Kok airport in July of 1998.

Another large part of Kowloon's reclaimed land lies in the West Kowloon area. Reclaimed land in this area was intended for residential development and transportation

infrastructure. This land is part of the Airport Core Programme, a programme that used the space to build transportation terminals connecting Kowloon to the new airport at Chek Lap Kok. The southern peninsula of West Kowloon has not yet been developed and various projects have been proposed for the area, including the West Kowloon Cultural District (Hong Kong Yearbook, 2007b, Recreation, Sports, and the Arts). This project proposes the construction of cultural facilities for the public like theatres, concert halls and an art museum. South Kowloon, at Hung Hom, experienced large harbour reclamation between the Tsim Sha Tsui and Hung Hom MTR stations. The face of Hung Hom Bay has changed dramatically, nearly disappearing altogether.

In 1989, Hong Kong's Land Development Policy Committee conducted the Wan Chai Reclamation Feasibility Study, which proposed a five-phase land reclamation project in Victoria Harbour. Three of the five phases of the Central and Wan Chai Reclamation project have been completed, and the remaining two are currently in progress (Civil Engineering and Development Department, 2009a, Central and Wan Chai Reclamation).

Central Reclamation Phase I, completed in 1998, reclaimed 20 hectares of land and redeveloped an additional 6 hectares of land. This extended the coastline of Central up to 350 metres beyond the original coastline for the construction of Hong Kong Station and a new tunnel for Hong Kong's Mass Transit Railway (MTR) system (Civil Engineering and Development Department, 2009a, Central and Wan Chai Reclamation). Phase I also provided land to build new piers and to replace other facilities affected by previous reclamation projects.

The Central Reclamation Phase II was completed in 1997 and formed 5.3 hectares of new land, mainly by the reclamation of the Tamar Basin along Hong Kong Island (Civil Engineering and Development Department, 2009a, Central and Wan Chai Reclamation). Wan Chai Reclamation Phase I, also completed in 1997, resulted in 7.0 hectares of land for the extension of the Hong Kong Convention and Exhibition Centre on the Hong Kong Island side of Victoria Harbour.

Central Reclamation Phase III is scheduled to be completed in 2017 (Civil Engineering and Development Department, 2009a, Central and Wan Chai Reclamation) and will provide land for the Central-Wan Chai Bypass, new Star Ferry piers, new roads, and other facilities. Wan Chai Phase II is currently being reviewed and will extend along the water's edge from the Central Reclamation Phase III to Causeway Bay, providing land for the construction of the Central-Wan Chai Bypass (Central and Wan Chai Reclamation).

2.3.4 Protection of the Harbour Ordinance

In 1997, the Legislative Council of Hong Kong passed the Protection of the Harbour Ordinance, effectively setting a government-backed mandate against unnecessary land reclamation in Victoria Harbour. The bill maintained that "the harbour is to be protected and preserved as a special public asset and a natural heritage of the Hong Kong people, and for that purpose there shall be a presumption against reclamation in the harbour" (Protection of the Harbour Ordinance, 1997, 531). While the bill did not prevent projects that had already commenced, no additional land will be reclaimed in the harbour for 999 years. Land reclamation projects have continuously redefined the waterfront of Victoria Harbour and provided land for Hong Kong's economic development since the 1800s. Hong Kong's current waterfront is now an increasingly important resource. Victoria Harbour can provide many economic benefits to Hong Kong through tourism and recreational uses, and it is pertinent for any waterfront redevelopment projects to promote these valuable uses of the harbour.

2.3.5 Current Resources Available in the Harbour

Through the Harbourfront Enhancement Committee (HEC), the Marine Department establishes some degree of regulation over certain types of land/water interfaces within Victoria Harbour, including but not limited to: typhoon shelters, designated sea areas, Public Cargo Working Areas (PCWAs), landing steps, and piers. The regulations that the HEC makes are primarily concerned with the use of the sea area, with regards to certain specific nearby waterfront land/water interfaces (Harbourfront Enhancement Committee, 2009a, Welcome Message).

2.3.5.1 Typhoons and Typhoon Shelters

One unique aspect associated with Victoria Harbour is the regular occurrence of typhoons. Each year, during the months from May to November, Hong Kong experiences an average of ten typhoons. Typhoons could easily damage or destroy many of the ships and marine user facilities of Victoria Harbour if not for the 13 typhoon shelters located within the territory (Marine Department, 2009e, *Assessment of Typhoon Shelter Space Requirements 2005-2009)*. As the name implies, typhoon shelters are sea areas that are partly enclosed by breakwaters to protect ships of small to medium size from strong gusts of wind and rough seas during a typhoon.

2.3.5.2 Sea Areas and Designated Areas

The Marine Department designates certain parts of the harbour for certain uses, including vessel bunkering, private moorings, marine works, and entry restricted areas (Marine Department, 2009f, Existing Marine Uses and Activities). Vessel bunkering areas are places where mostly local vessels can refuel from anchored oil barges. These areas are primarily around the areas of Lei Yue Mun, Tai Kok Tsui, and Sham Shui Po. Moorings can be leased from the Marine Department by private boat owners. These can be found in Yau Ma Tei, Tsuen Wan, and Tin Kau. Marine works areas are areas in which there is water-based construction occurring. These can include servicing of underwater cables, dredging, or borehole drilling, and are usually temporary. Entry restricted areas prohibit vessels from entering a certain area, including most notably the naval base at Ngong Shuen Chau on Stonecutter's Island. The Hong Kong-Macau ferry terminal is another example, forbidding the entrance of any vessel aside from the ferries without permission of the Marine Department.

2.3.5.3 Public Cargo Working Areas

Victoria Harbour is a working harbour with many commercial industries that utilize the waterfront for inter-harbour business, especially for the movement of cargo containers (Marine Department, 2009f, Existing Marine Users and Activities). The twenty-foot

equivalent unit (TEUs) is the standard for containers around the world, with a length of 20 feet (6.1 metres), a width of 8 feet (2.4 metres), and a height of 8.5 feet (2.6 metres). A PCWA is paved with concrete and asphalt up to the seawall, with warehouses and space on the quay for the storage and holding of container units or any other type of cargo to be transported. Some PCWAs also have freight-handling capabilities such as cranes and facilities to load the cargo onto the adjacent ships.

2.3.5.4 Marina

Where a PCWA is designed for commercial marine users, a marina caters to recreational boaters. The facilities in a standard marina include an access road to the site, parking for vehicles, a clubhouse for members, a slipway to roll boats into the water, moorings to tie up boats, a hoist to lift/lower boats into/out of the water, and boatyard for storing or repairing boats (Marine Department, 2009f, Existing Marine Users and Activities). The mooring system in a marina usually consists of floating pontoons so that each leisure craft is easily accessible from the shore. Unfortunately, there are no public marinas in Victoria Harbour, which leaves marine users dependent on sampans to bring them to their boats.

2.3.5.5 Landing Step

A landing step is a simple land/water interface that bridges the gap between the two mediums; they facilitate access from the land to the water and vice versa. The public landing steps in Victoria Harbour are built into either a wharf or a pier extending into the water and have rubberized surfaces facing the waterside to avoid damaging boats that dock next to them (Marine Department, 2009f, Existing Marine Users and Activities). The sea area near the landings is to remain free of obstruction in order to permit marine access to the sites.

2.3.5.6 Ferry Piers, Public Piers, and Other Piers

Piers are man-made constructions that extend into the water to lengthen the available waterfront and/or facilitate easier access to vessels requiring deeper berths. There are various types of piers in the harbour: ferry piers which are for use by ferry services; public

piers that often have integrated public landing steps for anyone from tourism boats to local fishermen; and other piers that are privately owned and managed (Marine Department, 2009f, Existing Marine Users and Activities). Building new piers in Victoria Harbour is classified as a form of land reclamation because the pier would occupy space "in" the water. With the Protection of the Harbour Ordinance in place, proposals for new piers to be built face a rigorous process to justify their construction. The existing piers in the harbour are subsequently valuable land/water interfaces.

2.4 Stakeholders of Victoria Harbour

The Protection of the Harbour Ordinance affects many stakeholders along Victoria Harbour's waterfront, including but not limited to: the Hong Kong government, non-governmental organisations, residents, tourists, commercial users, leisure craft users, and real estate developers. Many of these stakeholders have diverse thoughts of how the waterfront should be utilized, and in recent years, Hong Kong has struggled to find a balance amongst these competing interests. While many studies have been performed by government agencies as well as non-governmental organisations, they lack a consensus regarding a proper course of action for the redevelopment of Victoria Harbour.

2.4.1 Hong Kong Government

One of the largest stakeholders in the development of Victoria Harbour is the Hong Kong government. In the past, Hong Kong's government has relied heavily on land reclamation projects to create new space for one of its major revenue sources: property. As a result, preservation of the waterfront has not been the government's highest priority. However, there are two organisations that work closely with the government to make decisions regarding the waterfront. These organisations are the Town Planning Board (TPB) (Town Planning Board, 2008, About Us) and the Harbourfront Enhancement Committee (HEC) (Harbourfront Enhancement Committee, 2010b, Success Through Consensus Building). The HEC, however, works as an advisory, non-government organization to provide guidance to policy decisions.

The Town Planning Board works to promote "the health, safety, convenience, and general welfare of the community through the systematic preparation of plans for the layout of such areas of Hong Kong as the Chief Executive may direct, as well as the types of buildings suitable for erection therein" (Town Planning Board, 2008, About Us). All plans for the development of Victoria Harbour are studied and critiqued by this Committee.

2.4.2 Non-Governmental Organisations

Designing Hong Kong, Ltd., the Harbour Business Forum and the Harbourfront Enhancement Committee are examples of non-government organisations that disagree with the views and policies of the Hong Kong government. Their mission is to see Hong Kong's harbourfront become "a genuinely vibrant, accessible, and sustainable world-class asset for Hong Kong's best long-term economic, social, and environmental interests" (Harbour Business Forum, 2009, About Us). These organisations believe that the harbourfront should be utilized by more than just the government and businesses. They believe the residents of Hong Kong should have a say in the redevelopment of the harbourfront. The people of Hong Kong hope that the waterfront will become less focused on development and more people-oriented in the future (Jannetti et al., 2009, p. 35).

2.4.3 Hong Kong Residents

Residents of Hong Kong identify with and feel closely related to Victoria Harbour, but extensive land reclamation and drastic transformations have deteriorated this feeling of belonging. According to the *South China Morning Post* (2006, July 3), the political and economic forces that drive the machinery of urban redevelopment are often opposed by Hong Kong citizens who cherish the historical, cultural, and sentimental value of heritage sites such as Queen's Pier. For sites such as Queen's Pier, the fight for preservation from concrete and steel under planned reclamation has been lost. According to the article *Focus Fight on Heritage Sites That Can Be Saved* (Chan, 2006, July 3), while the community of Hong Kong was able to have the Queen's Pier classified as a site of historic value, they were

regrettably unable to prevent the pier from being demolished. This clearly illustrates how some stakeholders' needs take priority over others if an overriding need is established.

2.4.4 Royal Hong Kong Yacht Club and Other Leisure Users

The Royal Hong Kong Yacht Club (RHKYC) location in Causeway Bay is one of the more prominent recreational user groups in Victoria Harbour. Though they have clubhouses in Middle Island and Shelter Cove as well, the only site within Victoria Harbour is in Wan Chai East on the former Kellett Island (Royal Hong Kong Yacht Club, 2005, History). Founded in 1890 under the name, "Hong Kong Corinthian Sailing Club" at North Point on Hong Kong Island, the RHKYC obtained its current name in 1894. The RHKYC moved to Kellett Island in 1938 and is now located on the only original, non-reclaimed piece of shoreline in Victoria Harbour.

The RHKYC is one of the largest yacht clubs in the world, with 12,000 members. The Yacht Club has a total of 391 moorings in 5 mooring areas, the largest grouping of which (152) is in the Causeway Bay typhoon shelter (Roger Eastham, Personal communication, 21 January, 2010). The Causeway Bay location is also the club's only mooring area within the harbour, with the maximum permissible length overall (LOA) of 30 metres and maximum draft of 3.5 metres. The RHKYC also has a boatyard on Kellett Island that has enough hard-standing space to store 93 keelboats and 80 sailboats.

Figure 2.6: Around the Island Race in Hong Kong
(SailKarma, 2009)

Figure 2.7: Extreme 40 Catamaran Race in Hong Kong
(Guy Nowell, 2009)

In terms of recreational events, the Yacht Club holds sailboat races almost every weekend and sponsors major events such as the Around the Island Race (Figure 2.6), the Extreme 40 Catamaran Race (Figure 2.7), the Louis Vuitton Trophy, and the dragonboat races (Figure 2.8). They were also responsible for helping organize Hong Kong Harbour Day in 2007. The RHKYC is instrumental in organizing and promoting recreational boating events in the Eastern Harbour.

Figure 2.8: Dragonboat Racing in Hong Kong
(Vincent Yu, 2009)

There are many different types of stakeholders with interests in Victoria Harbour, all of which have distinctly different needs. The wide array of ideas and opinions causes difficulty in determining the most important needs for the stakeholders. Our first step towards a solution was to determine the specific requirements to be given priority. The proper solution would allow stakeholders to share the available resources in Victoria

Harbour and enable them to use the harbour to its fullest potential. Current redevelopment plans exists with the goal of addressing these concerns.

2.5 Redevelopment Efforts

There have been numerous studies on how the Hong Kong waterfront can be developed or revitalized. Some of these studies have developed into concrete plans and have been completed. Others, however, remain in the planning stage while some proposals have been outright denied. Their foci have ranged from tourism to container ships.

The Hong Kong government has undertaken several recent redevelopment efforts in Victoria Harbour. In 2003, the Hong Kong Planning Department conducted a *Planning Study on the Harbour and its Waterfront Areas*. The vision statement of this study was "to make Victoria Harbour attractive, vibrant, accessible, and symbolic of Hong Kong – a harbour for the people and a harbour of life" (Hong Kong Tourism Board, 2003, 1.1.1). The study identified many constraints in Victoria Harbour's waterfront redevelopment, including incompatible and competing waterfront uses, poor and discontinuous accessibility to waterfront, lack of high quality open space, and poor water quality (Hong Kong Tourism Board, 2003, 4.1.1).

This study resulted in a few major findings. The committee made recommendations to improve the waterfront and developed concepts for the redevelopment of each area of the harbour (Hong Kong Tourism Board, 2003, 5.3). Figure 2.9 shows the committee's concept for the Causeway Bay waterfront:

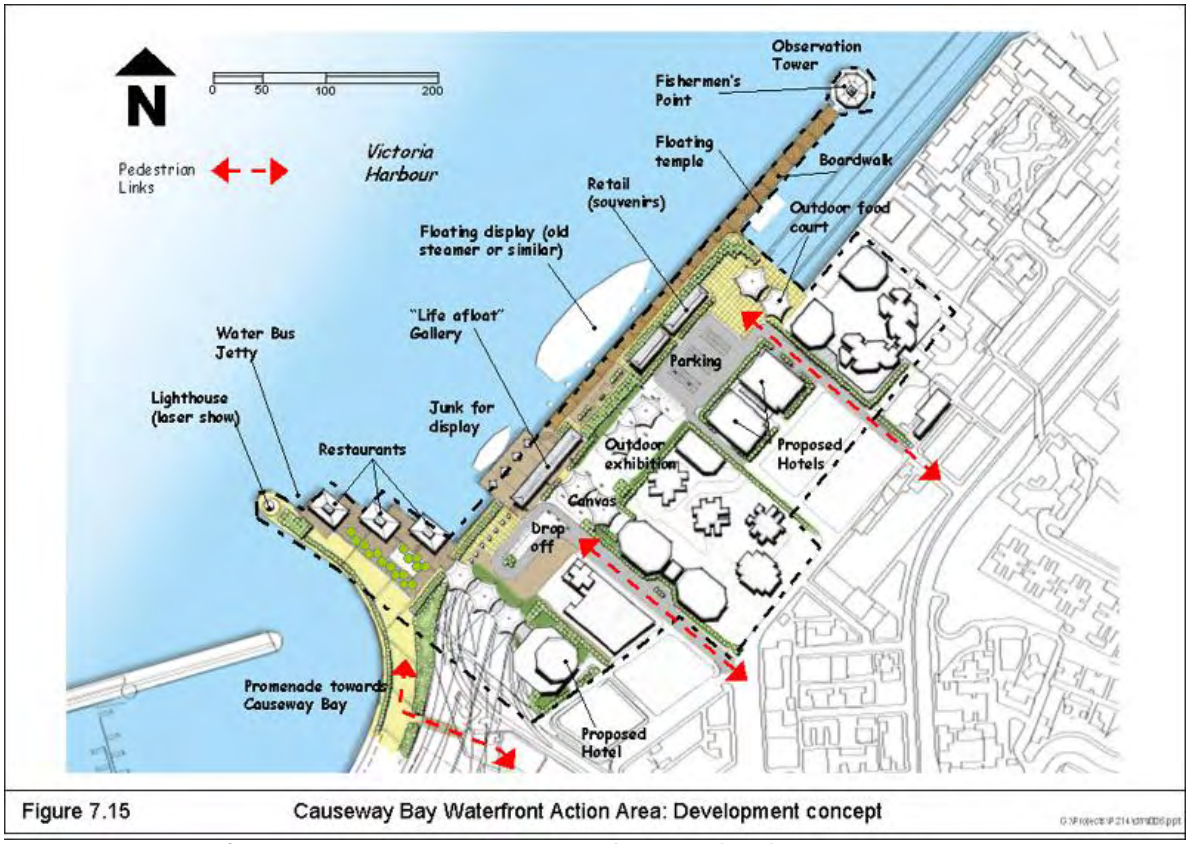

Figure 2.9: Causeway Bay Waterfront Redevelopment Concept
(Tourism Board, 2009)

The redevelopment plans suggested by the study focus heavily on tourism and land-based uses of the waterfront. The Harbourfront Enhancement Committee was also created as a result. The committee developed a set of harbour planning principles as "a set of guidelines for all individuals and organisations to facilitate the sustainable planning, preservation, development and management of Victoria Harbour and the harbourfront areas" (Harbourfront Enhancement Committee, 2009a, Our Harbourfront).

WPI students, with the help of organisations such as Designing Hong Kong Ltd., have also taken it upon themselves to analyse the waterfront. In the project titled "Four Tourists and Hong Kong's Harbourfront," a group of four students assessed the existing infrastructure of the Victoria Harbour in Hong Kong from the perspective of tourists with no prior knowledge of the layout of the waterfront (Hyde et al., 2008). They focused on pedestrian accessibility, availability of venues and facilities, and lighting and sidewalk aesthetics. The geographic scope of the study encompassed both the Kowloon and Hong Kong Island sides of Victoria Harbour; on the Kowloon side, the project group travelled the

waterfront stretching from the West Harbour District all the way to the Kai Tak airport. Across the harbour, the group walked from the western side to the eastern side of Hong Kong Island. According to their specified rubrics, the four students concluded that "most sections of the waterfront are very hard to find, unless [one] was a native. [They] often got lost as [they] tried to find [their] way through shopping malls, dead-end sidewalks, and confusing tunnels and foot bridges. With only a few exceptions, [they] found nothing to eat or drink on the waterfront and no public toilets. This made [visiting the waterfront] uncomfortable… [and difficult to] enjoy the spectacular views of the skyline and marine traffic" (p.182). In the following year, a different group of students analysed 48 sites listed by the Leisure and Cultural Service Department of Hong Kong and published the "Evaluation of 48 Leisure and Cultural Sites Along Victoria Harbour: Suggestions for a Vibrant Hong Kong Harbourfront" (Jannetti et al., 2009). The sites were evaluated on four main qualities, which were accessibility, connectivity, design, and maintenance. Different surveying and observation techniques were used to gather the necessary information for the authors of the project to be able to provide recommendations.

Port Development Strategy Reviews (PDSRs) are conducted by the Planning Department (PlanD) to review the state of Victoria Harbour's shipping industry. The last review was conducted in 2001 (Hong Kong Planning Development, 2001) and focused on bringing the shipping industry into harmony with the Government's desire to boost tourism, open space, and land-based infrastructure. In relation to the development of the Kowloon waterfront, the report estimated that the next typhoon shelter would not need to be built until after 2015.

The Tsim Sha Tsui Promenade Beautification Project was started in 2004 and is now nearing completion (Hong Kong Tourism Commission, 2004). Its focus was to revamp the narrow strip of waterfront to the east of the Ocean Terminal pier to make it more open and a better tourist attraction. The area already included the Hong Kong Cultural Centre, the Space Museum, and the Hong Kong Museum of Art, but lacked an open and walk-able venue.

Figure 2.10: Tsim Sha Tsui Promenade
(Hong Kong Tourism Commission, 2004)

The waterfront redevelopment efforts in Victoria Harbour are similar to the projects that have taken place in Cape Town, South Africa (van Zyl, 2005, p. 1) and San Francisco, California (Harms, 2008, p. 8). These projects sought to address changing harbour uses and make their respective waterfronts more attractive places. Though PlanD's study investigated tourism and recreational uses of the harbour, it focused primarily on reformations catering to land-based uses of the waterfront. Our study focuses specifically on recreational and leisure uses of the harbour itself. These activities help Victoria Harbour contribute more to Hong Kong's tourism industry and provide many benefits for Hong Kong.

Redeveloping Hong Kong Island's waterfront with the focus of being more boater-friendly would put more focus on Victoria Harbour as a tourist destination. This would help Hong Kong to continue its tourism industry's upward trend by improving one of its most popular tourist destinations. However, this would require a detailed look at what would be needed along the harbourfront to cater to the needs of boaters, whether they are large tourist ships or small recreational vessels. Improving the resources available to recreational users of the harbour would help Victoria Harbour reach its fullest potential, as other cities have done through waterfront redevelopment projects.

2.6 Current Redevelopment Plans

There are currently five redevelopment plans that are being implemented in Hong Kong, each of which will impact the waterfront, whether it is directly, such as redeveloping the waterfront itself, or indirectly, which includes increased barging traffic within the harbour.

2.6.1 Kai Tak Development Plan

The Preliminary Outline Development Plan proposes to create a new "urban node" at Kai Tak. This development spans over 320 hectares, covering the former Kai Tak Airport site and its nearby areas (Hong Kong Planning Department, 2007, Executive Summary). Public participation is an important aspect in this study; "'planning with the community' has been adopted as the objective in undertaking the public participation programme" (Hong Kong Planning Department, 2007, Executive Summary). The purpose of the Kai Tak plan is to strengthen tourism development at Kai Tak. Major features of this plan include a multi-purpose stadium complex fronting Victoria Harbour, a cruise terminal cum tourism node at the end of the former runway, a Metro Park at the Kowloon Bay waterfront, and more. The first of the cruise terminal berths is expected to open in the second quarter of 2013 (Civil Engineering and Development Department, 2009c).

2.6.2 Central Wan Chai Bypass

The Central and Wan Chai Reclamation plan was created by the Civil Engineering and Development Department. This plan will “accommodate strategic road and rail links along the north shore of Hong Kong Island between Central and Eastern Districts” (Civil Engineering and Development Department, 2009e). It will also accommodate the Hong Kong Station of the Airport Railway and the Hong Kong Convention and Exhibition Centre Extension along with road and rail links. The review for this plan has already been completed. The scheduled completion date of the construction is mid-2011.

2.6.3 The Truck Road Plan

The Truck Road (T2) plan is a part of the Route 6 proposal, which also consists of the Central Kowloon Route (CKR) and Tseung Kwan O – Lam Tin Tunnel (TKO-LTT). The overall proposal aims to relieve traffic congestion in central and eastern Kowloon, as well as at Tseung Kwan O. The purpose of the T2 plan is to link the CKR and TKO-LTT with a 3.6 km dual 2-lane truck road with 2.6 kilometres of tunnel. The road will start at Kowloon City, run parallel to the coast through the North Apron of the old Kai Tak Airport and the sheltered water off the coast of Kwun Tong, and end at Cha Kwo Ling (Civil Engineering and Development Department, 2009d). The planning study found that temporary reclamation would be necessary during construction.

2.6.4 The Central Kowloon Route

The Central Kowloon Route (CKR) is a part of the Route 6 proposal to relieve traffic congestion from eastern to central Kowloon through the construction of an underground tunnel starting at Western Kowloon and ending at Kowloon Bay (Highways Department Hong Kong, 2009, Central Kowloon Route – General Layout Plan). The dual 3-lane CKR will be 4.7 km long with 3.9 kilometres of tunnel and will link up with the Truck Road (T2) tunnel in the Kowloon Bay-Kowloon City area. One of the motives behind the CKR is to minimize impact on existing buildings.

2.6.5 West Kowloon Cultural District

The redevelopment plan for the West Kowloon Cultural District (WKCD) focuses on creating an "integrated arts and cultural district providing quality culture, entertainment and tourism programmes" (Home Affairs Bureau, 2008, p. 8). The plan is to renovate this district to contain 15 performing arts facilities with the hope that it will transform the WKCD into a centralized tourist hub. Because of its strategic placement, these redevelopments are seen as a cultural gateway to the Pearl River Delta. One of the main visions of this particular redevelopment project is to "improve quality of life through the provision of an accessible, open, spacious and vibrant harbourfront" (p. 8).

2.7 Summary

Hong Kong's attempts at waterfront redevelopment seek to restore Victoria Harbour to its former state as an instrument in the region's development into the international trading centre it is today. With the harbour serving a multitude of users, there is high demand for its limited waterfront space. Though there have been many land reclamation and redevelopment projects in the past, many have not been beneficial for the harbour's water-based users. Through studying worldwide water redevelopment projects and future redevelopment plans for Victoria Harbour, it is evident that the water-based users have not been taken into consideration as much as they should. With the marine users being a vital part of Hong Kong, it is essential not to overlook them in plans for the waterfront. There needs to be careful thought for the marine users amongst different users, in order for a preservation of balance to exist. The existence of this balance will result in Victoria Harbour's evolution into the vibrant harbour the people desire.

3 Methodology

The goal of this project was to provide Designing Hong Kong, Ltd. with a set of recommendations to make Victoria Harbour into a "living" harbour – one that is actively used for a diversity of land- and water- related activities. The objectives we used to accomplish this goal were:

- Locate and describe the existing marine infrastructure present in the harbour.
- Identify the current marine users of the harbour, what infrastructure they need, and what improvements that infrastructure needs.
- Forecast how marine users and their infrastructure requirements will change over the next 5, 10, and 15 years.

We compared the existing infrastructure with the future needs of the harbour in order to identify the gaps between them; our recommendations suggest ways of filling the gaps.

3.1 Locate and Describe the Existing Marine Infrastructure

Our first objective was to identify the current marine resources in Victoria Harbour. We used two methods to accomplish this objective: a direct survey of the existing marine infrastructure in the harbour and archival research. The collected data were compiled into a Google Earth database.

3.1.1 Archival Research of Existing Infrastructure

Before our team could begin surveying the waterfront in Hong Kong, we researched the types of infrastructure typically found along any waterfront. This information was gathered prior to our arrival in Hong Kong. The relevant terms were determined through personal experiences, background research on other cities' waterfronts, and with the help of Designing Hong Kong, Ltd. We used this list as the basis for the Waterfront Evaluation Form, which is discussed below in section 3.1.2.

3.1.2 Waterfront Audit

In order to specifically identify the existing land/water interfaces and marine resources in the harbour, the project team audited each site along the harbourfront. This was accomplished by walking along approximately 50 km of waterfront in pairs. One team member photographed each land/water interface while the other took notes on the Waterfront Evaluation Form (found in Appendix B), enabling us to have a visual and written record of all the marine activities and facilities at each action area. As mentioned above, the form design was based off of the data gathered during the research phase of the project. The form is broken down into two major sections: marine activities and marine facilities. In the activities section, we recorded existing activities such as commercial shipping, fishing, sailing, etc. In the facilities section, we recorded the existence of facilities such as landing steps, piers, typhoon shelters, etc. The photographs taken serve as evidence of current accessibility, usage, and aesthetics of the site. Data (including indices of the photographs) were recorded in a Google Earth database discussed in section 3.1.3. In order to maximize inter-observer reliability, teams of two observers independently audited each action area. Each action area was visited twice by two different pairs at different times.

3.1.2.1 Division of Action Areas

In order to keep the results of this study comparable to planning done by the government, our team segmented Victoria Harbour into 23 distinct action areas spanning the entire waterfront. The demarcation of these areas is shown below in Figure 3.1, as defined by the Marine Department. For a more detailed map depicting the action areas, refer to Appendix I. This map enabled us to not only generate general, non-specific improvements to the harbourfront but provide specific recommendations for specific areas.

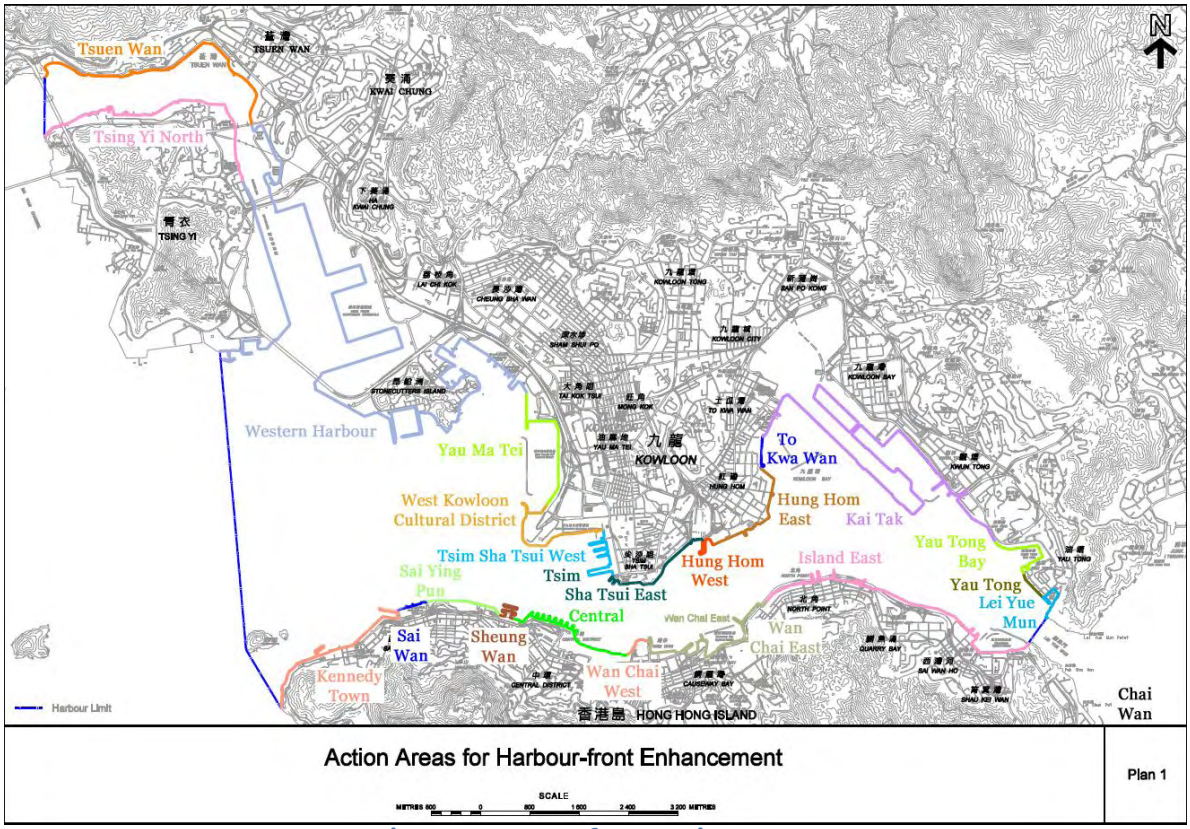

Figure 3.1: Waterfront Action Areas
(Marine Department, 2009)

Below is a table of the areas, broken down into two sections: Kowloon (including Tsing Yi Island) and Hong Kong Island.

Table 3.1: Waterfront Action Areas
(Marine Department, 2009)

Hong Kong Island	Kowloon
Kennedy Town	Tsuen Wan
Sai Wan	Tsing Yi
Sai Ying Pun	Western Harbour
Sheung Wan	Yau Ma Tei
Central	Western Kowloon Cultural District
Wan Chai West	Tsim Sha Tsui West
Wan Chai East	Tsim Sha Tsui East
Island East	Hung Hom West
Chai Wan	Hung Hom East
	To Kwa Wan
	Kai Tak
	Yau Tong Bay
	Yau Tong
	Lei Yue Mun

3.1.2.2 Waterfront Tour

As the first step towards understanding the waterfront, our team took a tour of the harbour on a chartered boat with the Marine Department and our sponsor, Paul Zimmerman, on 18 January 2010. The tour covered almost every district of the harbour (Kennedy Town, Sai Wan, Sai Ying Pun, and Sheung Wan were skipped due to time constraints) from the perspective of a marine user. This was a great opportunity to take many photographs of the coastline from the water. Mr. Zimmerman also introduced us to specific problem areas and other areas to which we would need to pay special attention.

3.1.3 Victoria Harbour Database

Data collected through the waterfront survey was presented in a Google Earth database. The purpose of this database was to provide people from all over Hong Kong with an easy-to-use reference of the facilities located in the harbour. The Harbour Business Forum announced their support of the database and their intention to host it on their website. Thus, we were able to create a database that would be accessible by the general public of Hong Kong. Before the construction of the database, we established a list of requirements that would help us choose the most appropriate style to meet those specifications.

1. **The database must be user-friendly and intuitive.**

   The target users of this database are those unfamiliar with the harbour itself. As determined at the beginning of our study, many marine users, waterfront planners, and government officials lacked a comprehensive knowledge of all of Victoria Harbour's many land/water interfaces and marine facilities. This database is meant to serve as a simple reference for any potential user to gain an introductory sense of the infrastructure available for marine use.

   As such, the database must be easy to use. It should be structured such that any user, regardless of technical knowledge and experience, could navigate to the website and use the system. The general user will not desire to read instructions nor

should they be required to spend a significant amount of time experimenting with the system just to figure out how it works.

2. **The information provided should be simple.**

The level of technical knowledge of this database needs to fit the intended users. We determined that we would provide an introductory level of information but also provide knowledgeable users with access to new information. Some more advanced material could also exist in the database, but this material would not be the focus of the final product. The intention was to have an easy-to-read database that requires no pre-existing knowledge of the waterfront to understand. The level of detail that the database has to provide will not be sufficient on which to base any waterfront plans, policy decisions, or any other serious decision regarding the harbour.

3. **The database must be functional.**

The database has to provide users with an idea of the land/water interfaces around the harbour. In order to address this requirement, we determined that the database will be organized in categories by the type of facilities. This will allow users to locate any of the services that they desire. Users should be able to easily sort the data in the order of their choosing.

For example, if a user wishes to determine the location of a landing step in their area in order to hire a sampan, he/she could sort the database by "landing steps" and quickly determine the nearest step.

4. **The database must be easy to update and maintain.**

Since the data will be passed into the hands of our sponsoring organisations, we must provide a means for the data to be updated easily. Our sponsor does not have the technical knowledge to update a complicated database, so one that is simple to modify would be ideal for the future.

5. **This data should be free and easily accessible.**

Users should not have to download any proprietary software for the operation of this database nor should they have to download complicated software of any kind. Users should be able to log onto the web and find our data at their convenience.

The level of interest in the waterfront in Hong Kong will guarantee that these data will actually be used, and we wish to allow people to access it as easily as possible. We want to educate those who are unfamiliar with Victoria Harbour and make people more aware of the current issues.

Based upon these five major requirements, we decided to use a program called Google Earth. Google Earth is a geographic information system (GIS) that was created by Keyhole, Inc. in 2004 and is now developed by Google. This program maps the Earth using satellite imagery and aerial photographs and provides the images in its database for free to all users. In order to operate this program, a user must simply download Google Earth and install it on their computer system. The Harbour Business Forum is hosting a link to download the database on their website. They will also host an embedded version of the database, which allows users to access a basic version of the program without the need to install the program.

3.2 Identify Current Marine Activities and Supporting Infrastructure

The second objective of our project was to identify the current water-based users of Victoria Harbour and the facilities that they use. Victoria Harbour supports a diverse set of marine activities, each of which has a minimum set of required supporting facilities and infrastructure. For example, yachting requires a marina, parking, water supply, fuel provision, and waste collection, whereas a ferry needs a schedule information display, ticket kiosks, a landing for passengers to embark and disembark, and facilities to stock food and

beverages. Our primary method of identifying the current marine activities and supporting infrastructure was by conducting interviews with the different stakeholders.

3.2.1 Marine User Interviews

We conducted interviews with commercial and recreational users of the harbour, as well as government and planning officials, to gain an understanding of the different kinds of activities that take place in the harbour, new activities that are gaining popularity, potential new uses of the harbour, and the resources that all of these activities require. The general interview protocol we followed is available in Appendix D. It must be noted, however, that this protocol was altered based on the specific user interviewed.

We identified interview candidates with the help of Designing Hong Kong, Ltd., personal affiliations, snowball sampling of interviewees, and through Internet searches. The interviewees, their organisations, and their industries are listed in Table 3.2 below:

Table 3.2: Marine Users Interviewed

Name	Organisation	Industry
Michael Agopsowicz	Waterfront Air	Transportation
Arthur Bowring	HK Shipowners Association	Shipping
Tony Chan	Development Bureau	Government
Warwick Downes	RHKYC	Recreation
Roger Eastham	RHKYC	Recreation
Brenda Fung	Harbour Business Forum	NGO
Chris Fung	Development Bureau	Government
Laurent Genna	Spysea Ltd.	Tourism
Peter de Kantzow	Waterfront Air Ltd.	Transportation
Mabel Lam	Wheelock Properties	Property Development
Sujata Govada	Urban Design Ltd.	Urban Planning
Yuet Lee	Lee Yuet & Associates (Ret.)	Architect
Emmanuel Poon	HK Tourism Board	Government/Tourism
Priscilla Poon	HK Tourism Board	Government/Tourism
Mike Simpson	Simpson Marine	Recreation
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	HK-China Rowing Association	Recreation
Miu-Sang Wong	HK Mid-Stream Ops Assn.	Shipping
Frankie Yick	Wharf Holdings	Shipping/Transportation
Paul Zimmerman	Designing Hong Kong Ltd.	NGO

We asked interviewees what activities they participate in and what specific marine resources and land/water interfaces they currently use for those activities. Interviewees were

also asked to suggest improvements to the resources that they regularly use in the harbour. These interviews helped us collect information about seasonal marine activities and special events that take place in the harbour, such as holiday celebrations or annual competitions that we could not observe during our eight-week study period.

3.3 Forecast of Future Harbour Activities and Supporting Facilities

Our final objective was to forecast future uses of the harbour and to outline how the need for supporting marine resources will change over the next 5, 10, and 15 years. We organized a stakeholders' conference and conducted archival research in order to accomplish this objective. Additionally, we used information obtained in the interviews described in 3.2.1.

3.3.1 Stakeholders' Conference

The Harbour Business Forum (HBF) organized a stakeholder conference for January 27, 2010, which was hosted by the RHKYC. The purpose of this conference was to get first-hand opinions regarding the future of waterfront development in Hong Kong. We chose to conduct a conference because we could gather the opinions of different marine users and gain multiple perspectives simultaneously. These data formed the foundation for our predictions of the future uses of Victoria Harbour. It was attended by 19 participants representing the following organisations:

- Designing Hong Kong Ltd.
- Lee Yuet and Associates
- Harbour Business Forum
- Hoi Kong Containers Services Co. Ltd.
- Hong Kong Development Bureau
- Hong Kong & Kowloon Motor Boats & Tug Boats Association
- Hong Kong Marine Department

- Hong Kong Midstream Operators Association
- Hong Kong Planning Department
- Hong Kong Rowing Association
- Masterplan (Planning and Development Consultancy)
- Royal Hong Kong Yacht Club
- Urban Design & Planning Consultants Ltd.
- Urbis Ltd. (Planning, Urban Design, Landscape, Golf & Environmental Consultants)

The structure of the conference had three main sections. The first was an introductory presentation of our project, the second was a breakout group discussion at four separate tables, and the third was a group discussion with all participants. While we ran the event, the HBF organized and sponsored it because its reputation in the marine industry helped to attract more stakeholders to the conference. During this conference our questions focused on four main categories: current and future uses of the harbour; current and future infrastructure in the harbour, what uses/infrastructure should be added and where to add them; and laws and regulations affecting waterfront planning and development. This conference enabled us to identify both conflicting and common desires and needs amongst stakeholders. Efforts were made to include representatives from different industries and organisations at each table, though for reasons of the language barrier, one table was set aside for participants who were more comfortable speaking in Cantonese. Two members of the project team were assigned to each table, one to lead the discussion and the other to take notes.

In these four groups, participants were each given a survey packet to complete, as well as a map of the harbour for easy reference. The packet contained separate sheets of questions divided according to our four main topics and can be found in Appendix E. On the first sheet, participants were given a list of marine activities and asked to record their predictions for each activity - would the demand or participation for each activity increase, decrease, or stay the same over the next 5, 10, and 15 years? On the second page of the

packet, the stakeholders were given a list of land/water interfaces and were asked to predict whether or not there was enough of each type of interface. On the third page, stakeholders were given a list of land/water interfaces and were asked to comment on the state of each type of interface and whether they thought it could be improved in general construction or design. On the fourth page, participants were asked to discuss any obstacles they faced when trying to use or improve the waterfront. On the map, they were asked by our team to write down comments and ideas.

At the conclusion of these breakout sessions we quickly summarized each table's main points and presented each table's key ideas to the rest of the participants. The conference then opened up for discussion and debate, moderated and recorded by our team, in an effort to determine a solution that was best for everyone and to identify the main conflicting opinions. A detailed outline of the conference, as well as copies of the notes, can be found in Appendix E.

3.3.2 Archival Research for the Forecast

After the action area audits, we used archival research to discover important statistical data regarding the waterfront use and procedural data for obtaining waterfront services. Statistical data research focused on topics like sheltered water and mooring space for different users, number of tourists visiting Hong Kong SAR, and number and type of vessels licensed with the Marine Department. Procedural data research focused on topics like location of fuel stations and fresh water kiosks, tourism boats pick up/drop-off and mooring locations, and boatyard locations. In addition, we had researched specific plans and proposals for development along the waterfront, as found in Chapter 2. Such plans include the Central Wan Chai Bypass, Kai Tak Cruise Terminal, and West Kowloon Cultural District, amongst others. By conducting this research, we identified the different types of resources available and their respective locations. In addition, we identified the organisations responsible for maintaining the different facilities.

3.4 Summary

This chapter outlined the methods we used in order to collect the data needed to achieve our objectives. These methods allowed us to collect information with respect to the location of exiting marine infrastructure, the current activities and users of the harbour, and the forecast of marine users and their facilities. The results found using each of these methods and the analysis of these results can be found in Chapter 4.

4 Results and Analysis

In the first part of this chapter, we present the data collected during the audit of Hong Kong's waterfront, as well as through archival research as they apply to the current facilities and users in the harbour. This data provides a detailed understanding of the current infrastructure around Victoria Harbour – the number, location, and administrator for each land/water interface. Additionally, we discuss the existing users of the harbour: where they operate, the numbers for each type of user, and the facilities that each group requires.

In the second part of this chapter, we discuss the results of the third project objective. This section presents the forecast data regarding the change in Victoria Harbour's marine infrastructure over the next 5, 10, and 15 years. It also discusses the current issues in Victoria Harbour and analyses how this data affects its future.

4.1 Current Land/Water Interfaces

During the first phase of this study, we observed the existing land/water interfaces in each of the 23 action areas along all of Victoria Harbour. This section presents all relevant data collected at each site, providing a summary of the major observations. Each of the land/water interfaces identified was given a code based on the name of the action area and a number (i.e. TW1 for the first land/water interface in Tsuen Wan). The tables located in Appendix C present the results in much greater detail.

Tsuen Wan (TW)

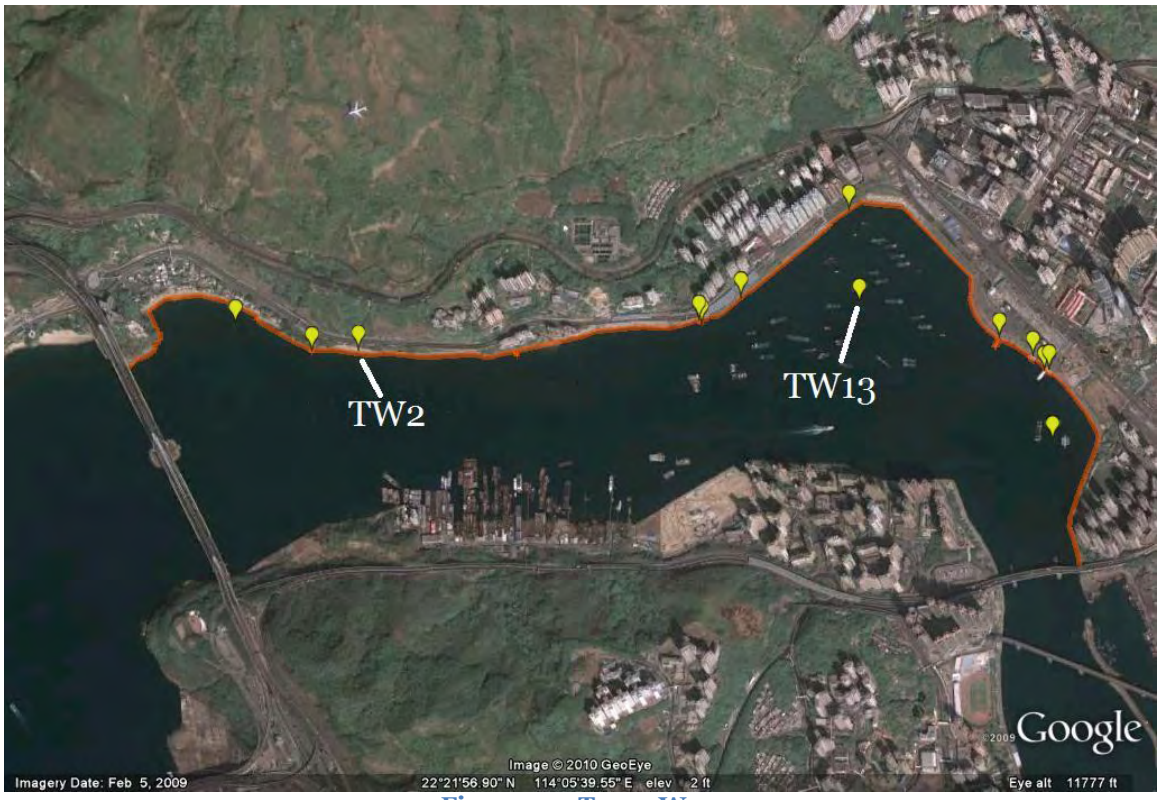

Figure 4.1: Tsuen Wan

The Tsuen Wan waterfront is the westernmost action area within the boundaries of the Inner Harbour on the Kowloon side. The channel between Tsing Yi Island and Kowloon is primarily used by commercial vessels bound for the Kwai Chung container terminals and is relatively devoid of recreational users. As a result, there are numerous mooring buoys (TW13) off the shore of Tsuen Wan with various commercial vessels tied to them (Figure 4.2), as well as several steel structures anchored in the middle of the channel to which smaller ships may dock.

Figure 4.2: Moorings in Tsuen Wan

The channel between Tsing Yi and Tsuen Wan would not likely be safe for leisure crafts with the number of larger commercial vessels plying those waters. However, just east of the Ting Kau Bridge, there is a stretch of beach (TW2) that permits easy approach to the shore for the public and storage of both canoes and water sports equipment. The beach represents the only significant site of recreational activity other than the occasional local fisherman on the promenade. In addition, there are two public piers and one ferry terminal in Tsuen Wan. The Park Island Ferry Terminal sits on a floating dock attached to a pier (Figure 4.3), while the adjacent public pier sports 4 sets of landing steps.

Figure 4.3: Park Island Ferry Terminal

While Tsuen Wan has some land/water interfaces suitable for marine users – some landing steps and piers and a sandy beach (Figure 4.4), there is little else there on the waterfront by way of activities, especially for recreational purposes. The western half of the long promenade that runs along almost the entirety of Tsuen Wan's waterfront is significantly elevated above sea level without any way of going down to the beach or the waterfront, while the eastern half is more or less sterile; no activities available with the exception of the ferry terminal.

Figure 4.4: Tsuen Wan Approach Beach

Tsing Yi North (TYN)

Figure 4.5: Tsing Yi North

The northern coast of Tsing Yi Island is the waterfront facing Tsuen Wan. There is little by way of publicly-accessible land/water interfaces on the waterfront beyond the fireboat station (TYN11) (Figure 4.6) located north of the Cheung Tsing Bridge and the public pier (TYN7) off the promenade. Directly in the centre of the northern face of the island is a boat yard (TYN1) that is not accessible by the public.

Figure 4.6: Tsing Yi Fireboat Fire Station

A continuous promenade runs through much of the northern and eastern coasts of Tsing Yi Island. Unfortunately, there is little to do along the promenade; the walkway separating a number of residential complexes from the water has a high railing that is only interrupted by the occasional landing step. The container terminals on Tsing Yi begin once the promenade ends. Because the Tsing Yi waterfront is bounded by a boat yard in the north and container terminals in the southeast of the island, and numerous commercial vessels make use of the channel between Tsing Yi and Tsuen Wan to reach the commercial facilities along the sides of the Rambler Channel, the likelihood of finding any leisure craft in the area is low. The lack of facilities oriented towards recreational users and elevated level of commercial vessel traffic in the aforementioned areas do not encourage recreational activity.

Western Harbour (WH)

The Western Harbour was not audited on foot because none of it was accessible to the public, though we did visit the action area by boat. The waterfront is the longest out of any action area in the Inner Harbour, and it is almost exclusively used by ocean-going cargo vessels – the only exception is the military naval base located on the southern coast of what was once Stonecutters Island. The naval base at Stonecutters Island has a sheltered basin which is off-limits to non-military vessels. The container terminals is composed of container freight-stations, container yards, shipyards, dry-docks, and shipping berths for the massive container ships.

This particular area is ideal for ocean-going cargo industries because it is located further away from the inner harbour so there is a lower volume of smaller vessel traffic and

the large container ships can more easily reach the open water. The harbourfront east of the naval base and all the way till the end of the Western Harbour action area is home to large dry-docks and shipyards that service smaller scale commercial ships as well as the ocean going vessels.

Yau Ma Tei (YMT)

Figure 4.7: Yau Ma Tei

Yau Ma Tei is predominately used by smaller scale commercial ships. Yau Ma Tei is home to Victoria Harbour's largest typhoon shelter, on the shores of which can be found a large public cargo working area (YMT13), a water-selling kiosk, a Harbour Patrol station, and various mooring areas. The volume of commercial boat traffic is very high because the Yau Ma Tei Typhoon Shelter is one of the primary typhoon shelters for industrial users of the harbour in addition to having permanent moorings for cargo barges, container ships, and tugboats.

The northern stretch of this action area contains a length of waterfront promenade that is currently under construction. This promenade follows the waterfront behind nearby

residential complexes, continuing into the typhoon shelter area. Along this promenade are some mounts for boarding planks (Figure 4.8) and a landing step.

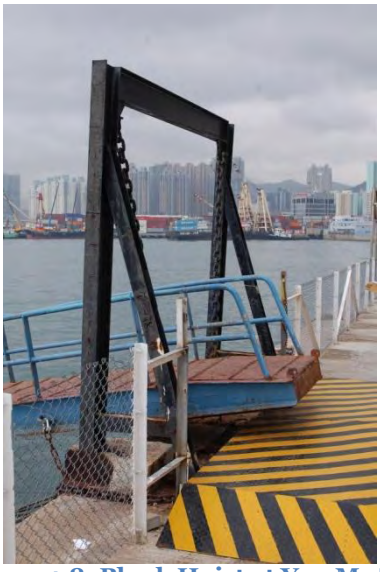

Figure 4.8: Plank Hoist at Yau Ma Tei

The northern area of the typhoon shelter is comprised of a vertical stone wall along the promenade. This section, however, lies nearby to a road. Fishermen, merchants, and other small cargo handlers use this area to load and unload their boats and trucks, despite the fact that there is nowhere to actually tie up their boats or to park their trucks. As a result, they are forced to bring their boats up to the wall and stop the trucks by the side of the road. This is shown in Figure 4.9.

Figure 4.9: Improvised Cargo-handling Area in Yau Ma Tei

The typhoon shelter hosts a number of different mooring areas for vessels of various types. Marine service vessels, barges, work boats, ferries, and launches utilize this area for permanent mooring. A number of mooring buoys remain unused outside of the typhoon season.

Figure 4.10: Yau Ma Tei Water-selling Kiosk

This shelter is also home to one of Victoria Harbour's public cargo working areas (Figure 4.11). It provides docking areas for cargo vessels, as well as a water-selling kiosk (Figure 4.10) for all forms of vessels, public or private. Nearby to the kiosk is a sewage-pumping area to service ships. The proximity of industrial facilities, abundance of moorings for commercial ships, and PCWA lining the typhoon shelter waterfront are several reasons why commercial shipping is concentrated in Yau Ma Tei. The anchorage offshore to the west provides a significant amount of the area's cargo handling. With the scheduled closure of other public cargo working areas in the eastern harbour, to be discussed later, business operators in Hong Kong are quickly finding themselves without an inexpensive alternative for cargo operations. The PCWA in Yau Ma Tei should remain as a functional facility for use by commercial shipping.

Figure 4.11: Yau Ma Tei Public Cargo Working Area

West Kowloon Cultural District (WKCD)

Figure 4.12: West Kowloon Cultural District

The waterfront of the West Kowloon Cultural District (shown in Figure 4.12) does not provide marine users of Victoria Harbour with any form of land/water interface. The entire reclamation area consists of a flat area devoid of much foliage, and a newly-constructed promenade. Access to the water is strictly denied by the fence (Figure 4.13) that stretches along the entire length of the coastline.

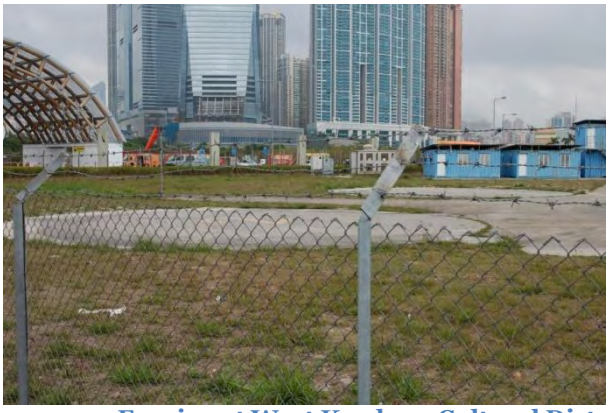

Figure 4.13: Fencing at West Kowloon Cultural District

While the plan for this area is still under development, it is quite apparent that this area was not meant to enable marine use in its current state. Slanted rock faces encompass the entire shoreline of the area. The area contains no landing steps, piers, or accessible waterfront of any kind. Given that the waters around the West Kowloon Cultural District

experience a lot of vessel traffic and that the Yau Ma Tei waterfront near the northern side of the peninsula is a hub of commercial activity, any development to facilitate marine uses is not advised in the short term. Once the construction projects on the peninsula finish, however, there could be land/water interfaces, such as a ferry or public pier, to enable marine user access to the Cultural District.

Tsim Sha Tsui West (TSTW)

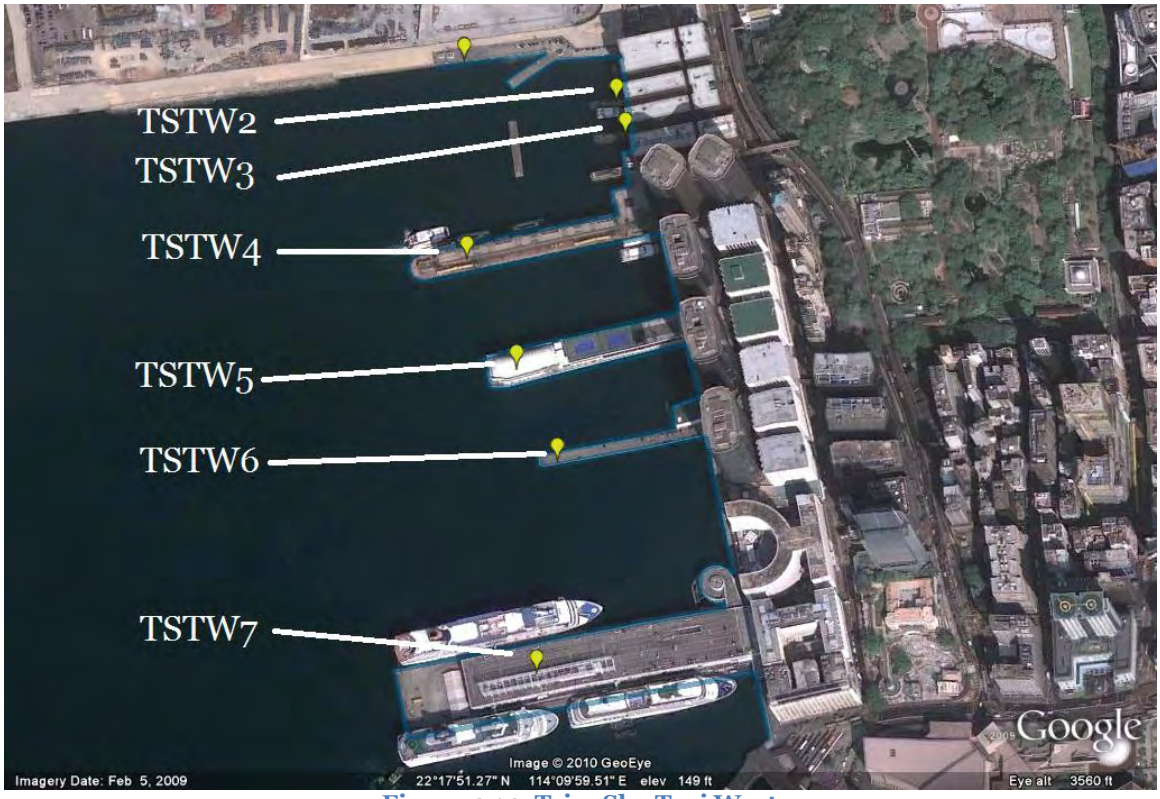

Figure 4.14: Tsim Sha Tsui West

The Tsim Sha Tsui West waterfront is characterized by its many piers; it is home to one of Hong Kong's cross-boundary ferry terminals, various utility piers, and the Ocean Terminal – the only cruise terminal currently available in Victoria Harbour. Additionally, Harbour City Mall takes up the rest of the waterfront behind the piers, which means visitors need to go through the mall to get to the piers. While the ferry terminals and the Ocean Terminal experience heavy traffic, the other piers in this area do not serve marine users.

Figure 4.15: Tsim Sha Tsui West Main Cross-boundary Ferry Pier

The HK-China Ferry Terminal (TSTW4) provides service for various ferries to Macau and areas of China such as Shenzhen and Guangzhou. Apart from the primary service pier with gangways, boat ties, and luggage management services, the ferries utilize three pontoon platforms (Figure 4.16). These pontoons (TSTW2 & TSTW3) serve as temporary access to the boats that are not docked at the primary service pier (Figure 4.15).

Figure 4.16: Tsim Sha Tsui West Ferry Floating Pontoon Dock

The Pacific Club pier (TSTW5) is located to the south of the HK-China Ferry Terminal. This private club provides sports facilities, recreation areas, and dining to its members. The club, however, provides no marine-related activities. The pier has no landing steps, boat ties, docking areas, or water access of any kind. Directly south of the Pacific Club is another private pier. This pier (TSTW6), however, serves simply as car parking. There are no land/water interfaces along the entirety of the pier.

Figure 4.17: Tsim Sha Tsui Ocean Terminal

Tsim Sha Tsui West contains Hong Kong's only operational cruise terminal (Figure 4.17). The Ocean Terminal (TSTW7) is a five-story pier solely for the purpose of servicing large pleasure cruise lines such as Queen Elizabeth 2, Norway, and the Star Princess. The lower three floors feature shops and restaurants for passengers. The top two floors serve as parking garages. A single store structure extends further down to the road, providing direct access to the pier at ground level. The terminal contains two berths for ocean liners.

The harbourfront along Tsim Sha Tsui West is a major access hub; cruise passengers and visitors ferried in from Macau or China enter Hong Kong through the Ocean Terminal and ferry terminals. As a result, the majority of the vessel traffic in the central part of the harbour consists of the various types of ferries. While those facilities bring tourists to the waterfront, there is a relative lack of available land/water interfaces for everyone else to use. For example, the Pacific Club pier could be improved by changing the infrastructure to permit access to the water. The car park is an utter waste of a medium-sized pier; it can be put to far better use than putting stationary vehicles on a potentially useful land/water interface. On the other hand, there are reasons for the limited land/water interfaces in Tsim Sha Tsui West; the number of ferry routes in the area translates to choppy waters that are unfavourable for small ships. The physical length of the action area waterfront is small and the existing marine users already have occupied most of the available space.

Tsim Sha Tsui East (TSTE)

Figure 4.18: Tsim Sha Tsui East

Tsim Sha Tsui East is home to several piers serving as transportation access points; it contains the Star Ferry terminal consisting of two piers (TSTE1 & TSTE2) and a large public pier that is used by various passenger and tourist boats for the loading and unloading of passengers.

Figure 4.19: Tsim Sha Tsui East Star Ferry Terminal

The Star Ferry piers (Figure 4.19) in Tsim Sha Tsui East provide transportation services to Central and Wan Chai. The Star Ferry Harbour Tour also operates out of this terminal. The terminal offers seating and shelter for waiting passengers as well as hosting several stores and food kiosks. Currently, the buildings on the piers are undergoing renovation. Many tourist boat services advertise their respective services at impromptu

stations in front of the entrance to the piers (Figure 4.20) to take advantage of the high pedestrian traffic.

Figure 4.20: Ticketing Kiosk on Tsim Sha Tsui East Pier

The Tsim Sha Tsui public pier is a two-story structure with benches and an expansive vista on the upper level. The lower level offers a similar view, but also hosts six public landing steps (TSTE3) that are used by tour boats and launch services to load and unload passengers (Figure 4.21). Between the hours of 17:00 and 20:00, this area is particularly busy as overnight casino cruise shuttles pick up passengers to transport them to the cruise ships anchored in the middle of the harbour.

Figure 4.21: Water Taxi at Landing Step in Tsim Sha Tsui East

The remainder of this action area is composed of the Avenue of Stars in front of the New World Centre, and the Tsim Sha Tsui promenade (Figure 4.22) that stretches from where Chatham Road intersects Salisbury Road all the way to the Cross Harbour Tunnel entrance. Only two landing steps exist along this entire stretch of waterfront. After the promenade ends, the rest of the waterfront is fenced off.

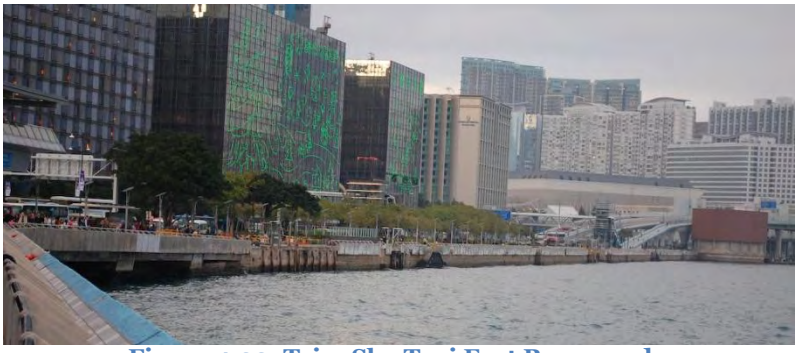

Figure 4.22: Tsim Sha Tsui East Promenade

Although the western end of Tsim Sha Tsui East is primarily used by transportation businesses such as ferries and launches, the rest of the waterfront is less busy and can be redeveloped to support recreational users. The seawall along Tsim Sha Tsui East is empty with the exception of only two landing steps, which also lack amenities such as sheltered waiting areas and adequate signage.

Hung Hom West (HHW)

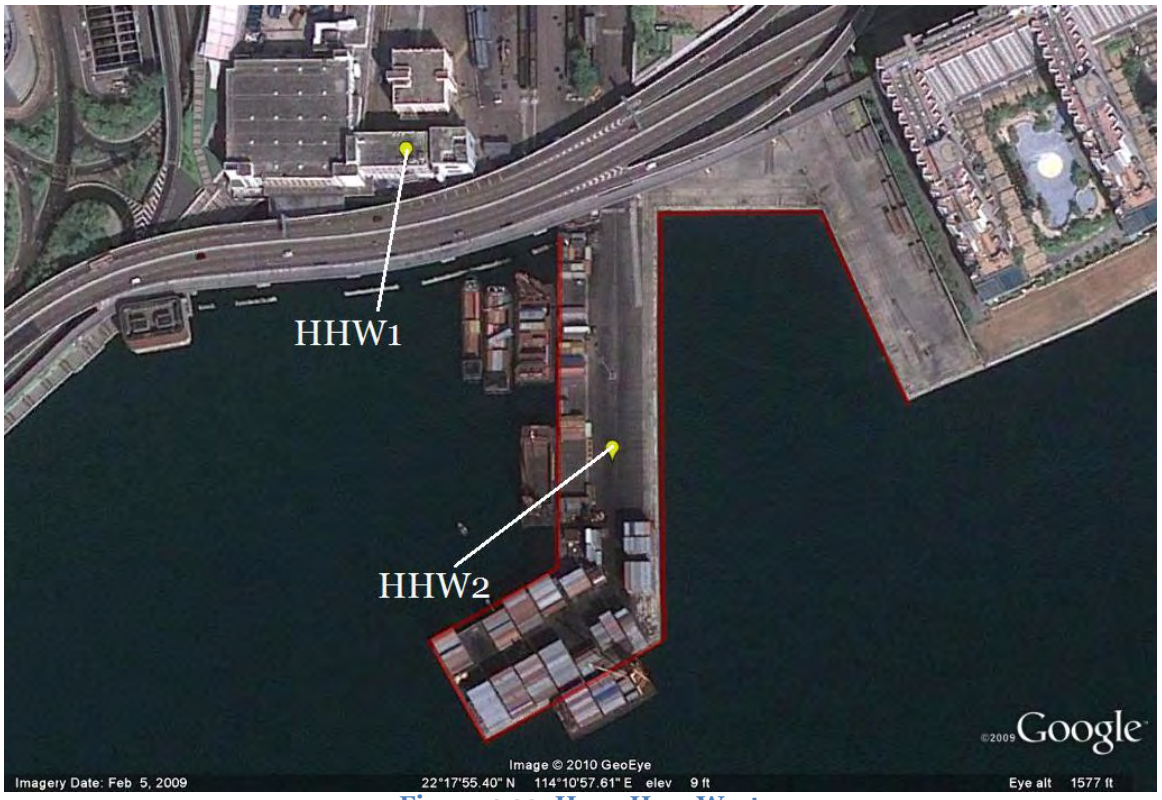

Figure 4.23: Hung Hom West

Hung Hom West is one of the smallest action areas on the Kowloon side. It is home to a Hong Kong mailing centre (HHW1) that dealt with both local and international shipping and a PCWA (HHW2) that is managed by the Marine Department. The privately-owned mail

centre appears to be under-utilized, even though it has boat tie-ups and landing steps. On the other hand, the PCWA (Figure 4.24) showed signs of commercial activity, with container ships and barges tied up at the pier. Unfortunately, neither the mail centre nor the PCWA was accessible by the public, and the only marine users were commercial.

Figure 4.24: Hung Hom West Public Cargo Working Area

The public cargo working area on the Hung Hom pier is somewhat underutilized, based on the limited visible commercial activity; and it will soon disappear as the area has been rezoned for other purposes. Possible future applications of the pier might be to modify it for ferries and public use. There is also space in the water sufficiently far away from the commercial fairway to permit a small number of moorings along the waterfront, particularly the small area east of the pier that could be converted sheltered water.

Hung Hom East (HHE)

Figure 4.25: Hung Hom East

There are three piers in Hung Hom East, two of which are ferry terminals and the other owned by the marine police. The two ferry companies that own and use these piers are Star Ferry (HHE1) (Figure 4.26) and First Ferry (HHE2) (Figure 4.27), and they travel to Wan Chai and North Point, respectively. Both of the ferry piers are sheltered and the First Ferry pier even has a restaurant on the ground level.

Figure 4.26: Hung Hom East Star Ferry Terminal

Figure 4.27: Hung Hom East First Ferry Terminal

The marine police pier (HHE8) (Figure 4.28) is used primarily as a boat storage facility. The rest of the Hung Hom East harbourfront is a long promenade that contains

three public landing steps that are primarily used by launch operators (Figure 4.29) to taxi passengers around the harbour.

Figure 4.28: Hung Hom East Marine Police Pier

Figure 4.29: Water Taxi at Landing Step

The hinterlands behind the eastern half of the Hung Hom East waterfront are predominately occupied by high-rise residential tower blocks almost right up to the water's edge, but the land behind the Star Ferry pier to Wan Chai is unused and may possibly be redeveloped with a focus on marine users. Although, the presence of the same ferry pier may be a deterring factor to introducing more vessel activity to an area frequented by ferries.

To Kwa Wan (TKW)

Figure 4.30: To Kwa Wan

Another small action area on the Kowloon waterfront, To Kwa Wan contains a large typhoon shelter (Figure 4.31) that is typically used for container ships, barges, and other commercial vessels. This area has no facilities for serving the cargo ships, nor does it offer much access to the waterfront beyond a solitary landing step (TWK2).

Figure 4.31: To Kwa Wan Typhoon Shelter

The one landing step in this area is located in a decrepit parking lot, surrounded by broken fences and rusty pipes. It is primarily used by launch services to pick up cargo workers to transport them to their ships (Figure 4.32). The To Kwa Wan harbourfront is

severely underutilized; there are no marine users other than the small number of barges and lighters–large, flat-bottomed barges for loading/unloading ships, temporarily moored in the typhoon shelter and to be re-serviced for reuse in the Hong Kong Island redevelopment projects. There are almost no land/water interfaces along the promenade to facilitate access to the water, effectively rendering the waterfront sterile.

Figure 4.32: To Kwa Wan Landing Step

The typhoon shelter in To Kwa Wan is currently occupied by mainly commercial vessels but those boats are not involved in any commercial activity on any nearby harbourfront. Those vessels are merely moored in the shelter, which can certainly house other types of ships – such as tourism boats and leisure craft. The waters in the Kowloon Bay are relatively calmer than the western and central harbour areas, and the typhoon shelter can be expanded to vastly increase the amount of sheltered water that anyone may use.

Kai Tak (KAIT)

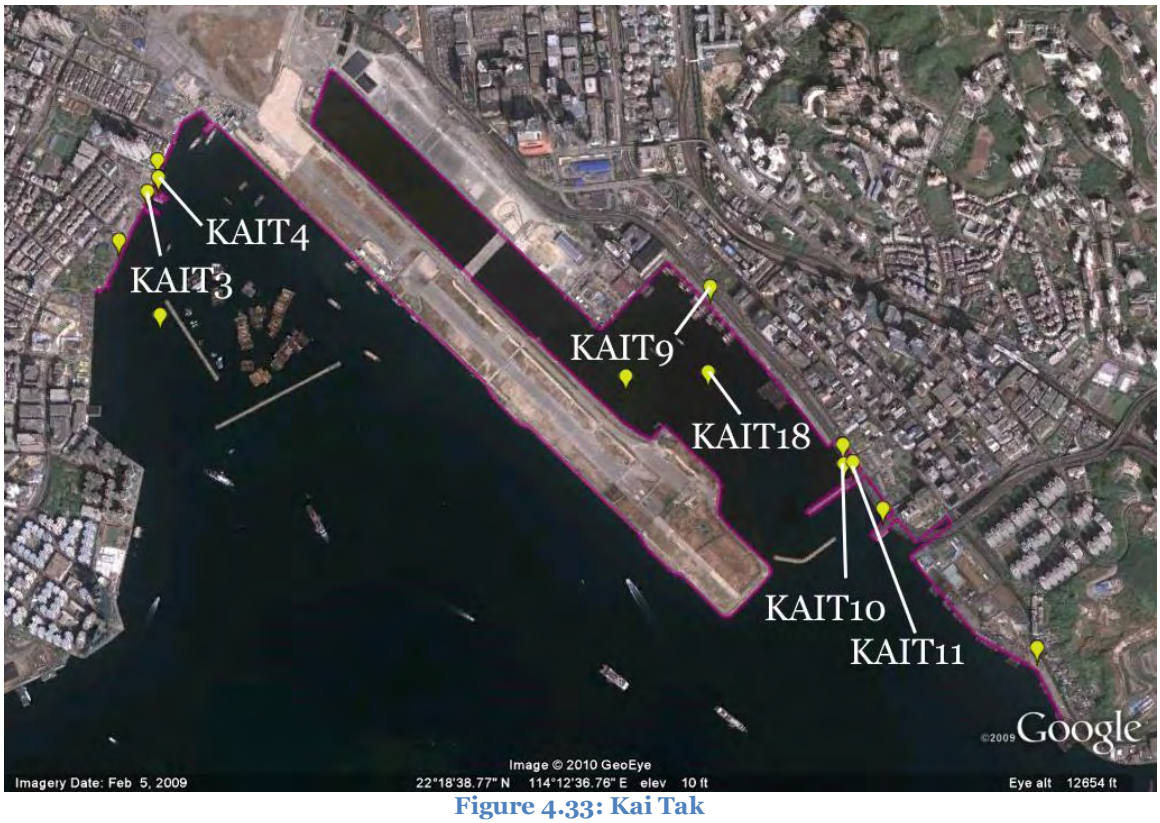

Figure 4.33: Kai Tak

Formerly the home of the only airport in Hong Kong, Kai Tak is now undergoing extensive redevelopment – especially with respect to its waterfront. Currently, there are several piers with different applications: three are west of the former airport runway where one is closed to the public (KAIT3) (Figure 4.34), one is a ferry terminal (KAIT4) to North Point on Hong Kong Island, and the other the Ma Tau Kok public pier (Figure 4.35). The public pier sports three public landing steps for access to the water.

Figure 4.34: Closed-off Pier in Kai Tak

Figure 4.35: Ma Tau Kok Public Pier

Of the two piers on the other side of the runway, one is the Kwun Tong Ferry Terminal (KAIT10) and the other a car ferry terminal (KAIT11) (Figure 4.36), but both ferry services are bound for North Point as well.

Figure 4.36: Kwun Tong Car Ferry Terminal

The ferry terminal (Figure 4.37) west of the runway is owned and operated by First Ferry while the Kwun Tong Pier (Figure 4.38) is used by Fortune Ferry Company Ltd. All of the ferry terminals have multi-story buildings on the piers to handle the passengers and vehicles; and all but the Kwun Tong Ferry Terminal are situated behind breakwaters.

There are many ferry piers providing access to both sides of the Kai Tak runway, but there is no transportation access along the 3.4 kilometre runway itself. Once the redevelopment in Kai Tak concludes, there should be easily accessible transportation to bring people to and from the area. Especially when the new cruise terminal scheduled to be built at the tip of the runway is in service, there will be no way to get tourists across the harbour to Hong Kong Island or to other destinations on the Kowloon waterfront by boat.

Figure 4.37: Kai Tak First Ferry Terminal

Figure 4.38: Kwun Tong Ferry Terminal at Kai Tak

There is also significant commercial activity on the Kai Tak waterfront, a PCWA lies on the outer section of the North Apron (KAIT9) (Figure 4.39) while a larger one occupies much of the Cha Kwo Ling waterfront (KAIT 18). The PCWAs and the inland redevelopment are off-limits to the public. There are also a number of mooring buoys in the sheltered waters between the runway and the shore, as well as next to the To Kwa Wan typhoon shelter that is west of the runway.

Figure 4.39: Kai Tak Public Cargo Working Area

The Kai Tak harbourfront has little by way of land/water interfaces oriented towards marine users beyond the commercial vessels in the PCWAs because Kai Tak was once an airport and did not take into account recreational boating or water sports. For example, the new Kwun Tong promenade was constructed along the shore of the Kai Tak approach channel to add a beautiful new leisure area. The issue, however, occurs because these projects don't address the needs of the harbour as a whole. Using the same example in Kwun Tong, the glass wall along the waterfront of the promenade denies access to the water and provides no useful land/water interfaces along the coast of some very valuable sheltered water. There is a lot of potential for the extensive waterfront in Kai Tak now that the airport is gone, but the water quality in the sheltered waters is very poor because of the sewage runoff from pipes depositing untreated waste into the water. Any development involving activities in the water will need to vastly improve the cleanliness of the waters.

The long waterfront of Kai Tak is a valuable resource and the current redevelopment of the area is a major opportunity for including facilities oriented towards recreational

marine users; in fact, the PCWAs in Kwun Tong and Cha Kwo Ling have been rezoned and will eventually disappear, removing a major type of marine user from that area. Once the water in the Kai Tak nullah has been cleaned up, there is a substantial amount of sheltered water between the runway and the North Apron; that water should not be bordered by glass walls prohibiting of access between the land and water. The nullah and approach channel can support rowing activities and small leisure craft sailing, while the appropriate facilities such as a rowing centre and a small marina can be built on the North Apron and the runway. These facilities and the sheltered water can be for public use and will add to the available recreational activities within the harbour.

Yau Tong Bay (YTB)

Figure 4.40: Yau Tong Bay

Virtually all of Yau Tong Bay is a commercial shipping development (Figure 4.41) along the waterfront of the bay and consequently is closed off to the public. There are moorings, warehouses, and piers within the bay for the commercial vessels docked in Yau Tong Bay but no land/water interfaces for leisure crafts.

Figure 4.41: Yau Tong Bay Public Cargo Working Area

Yau Tong (YT)

Figure 4.42: Yau Tong

Similar to Yau Tong Bay, the Yau Tong harbourfront action area is by and large devoid of recreational activity as a large number of privately owned businesses, consisting mainly of scrap metal recycling and concrete production, use the waterfront for commercial purposes. There are, however, a couple of landing steps (YT1 & YT2) that can be found on the waterfront. They are occasionally used as access points by fishermen to offload seafood (Figure 4.43).

Figure 4.43: Yau Tong Landing Step with Fishing Boat

Lei Yue Mun (LYM)

Figure 4.44: Lei Yue Mun

Lei Yue Mun is the easternmost action area on the Kowloon side. It is a fishing village with dozens of seafood markets and restaurants, a typhoon shelter, and home of the Sam Ka Tsuen Ferry pier (LYM2) with service to Sai Wan Ho (Figure 4.45).

Figure 4.45: Sam Ka Tsuen Ferry to Sai Wan Ho at Lei Yue Mun

The typhoon shelter (Figure 4.46) is rather small and only has moorings (LYM3) for fishing boats, houseboats, and several small yachts. A number of temporary, improvised wooden pontoons extend into the water from the shore where a total of 5 concrete staircases (Figure 4.47) lead to the street level (LYM4 through LYM8). There is also a landing step used by the fishing boats to offload their catch to the trucks parked nearby.

Figure 4.46: Lei Yue Mun Typhoon Shelter

The water quality in Lei Yue Mun is extremely poor; due to the distinctive U-shape of the typhoon shelter, refuse from all over Victoria Harbour collects in the bay with the currents and tidal movement so that the seabed is heavily littered with garbage. The untreated sewage that is permitted to enter the typhoon shelter from the surrounding fishing settlement – and possibly the nearby developed buildings as well, adds to the pollution in the water.

Figure 4.47: Stairwell to Polluted Water in Lei Yue Mun Typhoon Shelter

The waterfront at Lei Yue Mun is primarily used by the local citizens, particularly the fishermen who live along the eastern shore. Lei Yue Mun serves as a major access point for the fresh fish entering Victoria Harbour as well as a place to moor the smaller fishing vessels. But on the other hand, the waters are far too contaminated for other marine activities to take place. The result is a lack of any land/water interfaces oriented towards recreational users.

Kennedy Town (KENT)

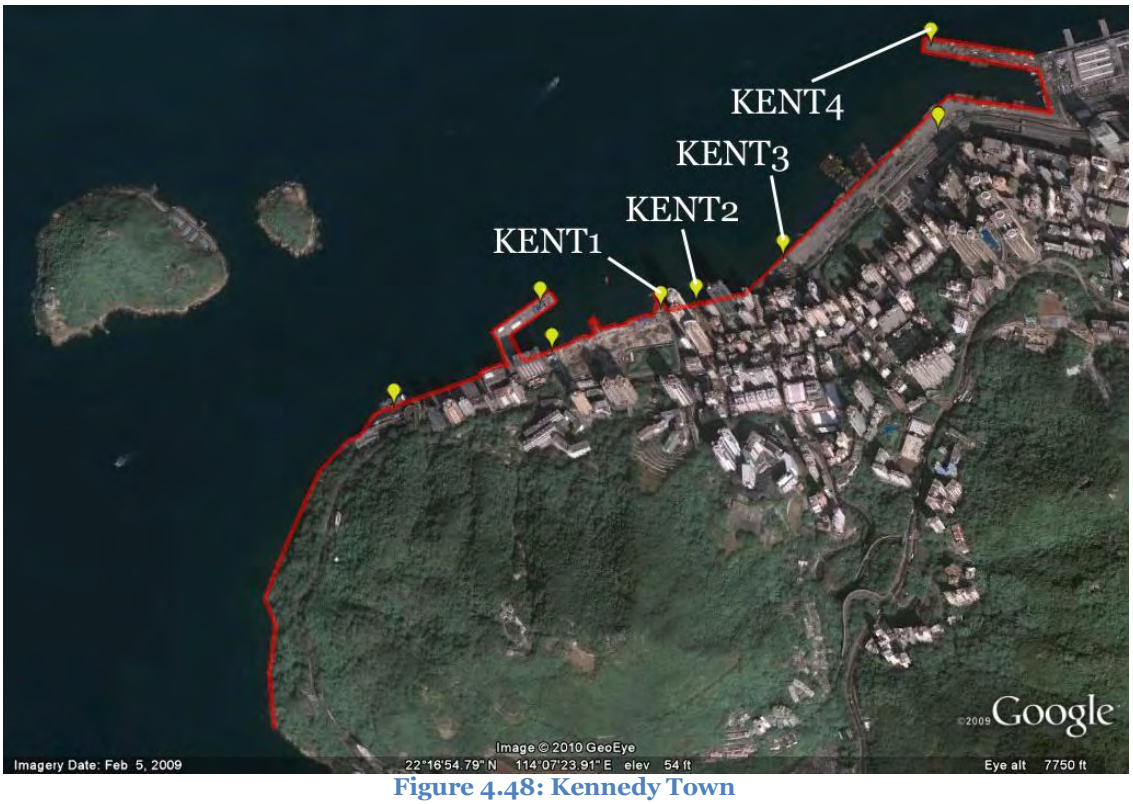

Figure 4.48: Kennedy Town

Kennedy Town is the westernmost action area of Hong Kong Island. The Western District PCWA occupies the majority of the waterfront in Kennedy Town. The PCWA extends from the northernmost pier (KENT4) to the landing step (KENT3) and includes an area of

semi-sheltered water. Many cargo vessels are moored against the seawall of the cargo working area in order to unload cargo as well as take on fuel and water.

Figure 4.49: Western Public Cargo Working Area in Kennedy Town

The northern pier (KENT4) of the western PCWA is not fully utilized by cargo vessels. Most of the vessels were docked along the seawall (Figure 4.49) while the pier was used mainly as a place to store cargo. Although the pier was part of a PCWA, many visitors and fishermen are able to enjoy the excellent view of the harbour and passing vessels (Figure 4.50 and Figure 4.51).

Figure 4.50: Northern Pier in Kennedy Town

Figure 4.51: Fishing on Northern Pier

With plans of extending the MTR Island Line to reach Kennedy Town, there is currently a lot of ongoing construction; one of the piers (KENT1) is currently blocked off for that reason. Another pier (KENT2) is owned by the Government Property Agency but it was locked and fenced off with barbed wire. Kennedy Town's westernmost pier is the China Merchants Wharf. It is primarily used for private cargo handling operations by the China Merchants International Holdings Co., Ltd.

Figure 4.52: China Merchants Wharf in Kennedy Town

The China Merchant's Wharf (Figure 4.52) serves as an alternate berthing location for cruise vessels that cannot dock at the Ocean Terminal in Kowloon due to size or schedule conflicts. As a cargo terminal, the Merchant's Wharf is a poor place for cruise ship passengers to arrive in Hong Kong because Kennedy town is largely an industrial area and the pier is very far away from Hong Kong's major tourist attractions. Tourists arriving in Kennedy Town have no easy way to get to the nearest MTR station in Sheung Wan, located over two kilometres to the east, making Kennedy Town a far from the ideal location to welcome tourists to Hong Kong. Due to the high traffic of commercial and ferry vessels in the western harbour, Kennedy Town's location coupled with the PCWA and available sheltered water makes it ideal for commercial use rather than recreational uses.

Sai Wan (SAIW)

Figure 4.53: Sai Wan

Just east of Kennedy Town is Sai Wan, an action area with five piers, all of which belong to the Western Wholesale Food Market and none of which are used (Figure 4.54).

Figure 4.54: Western Wholesale Food Market in Sai Wan

The Western Wholesale Food Market is one of two wholesale markets operated by the Hong Kong Government and accommodates markets for freshwater fish, vegetables, fruit, poultry, and eggs. The market occupies Sai Wan's entire waterfront, and there are no other public land/water interfaces for marine users in the action area.

Sai Ying Pun (SYP)

Figure 4.55: Sai Ying Pun

Sai Ying Pun is located between Sai Wan and Sheung Wan on Hong Kong Island. The area under construction along the waterfront, when completed in early 2011, will contain the Sun Yat Sen Memorial Park and Swimming Pool Complex. The construction plans do not include any plans for new land/water interfaces along the waterfront, and the construction is currently blocking access to landing step SYP1. The promenade along Sai Ying Pun's eastern waterfront contains a water-selling kiosk (SYP2) (Figure 4.56) and a landing step (SYP1).

Figure 4.56: Water-selling Kiosk in Sai Ying Pun

Cross-boundary ferries frequently pass through the Southern Fairway to the north of Sai Ying Pun's waterfront on their way to Macao and mainland China, creating large waves along much of Sai Ying Pun's waterfront.

Sheung Wan (SHEW)

Figure 4.57: Sheung Wan

Sheung Wan is a small action area between Sai Ying Pun and Central on Hong Kong Island. The HK-Macau Ferry Terminal (SHEW1) in Sheung Wan provides high-speed ferry services to Macao and southern China. The HK-Macau Ferry Terminal is one of the busiest in the world, with over 100 departures and just as many arrivals per day. Approximately 16.5 million passengers passed through the Macau Ferry Terminal in 2008-2009, representing an 11.5 percent increase over the previous year's traffic. The ferry terminal has customs and immigration facilities.

The Ferry Terminal is a part of the Shun Tak Centre, a commercial and transport complex, and is connected to the MTR. Helicopter transportation services between Hong Kong and Macau use the helicopter pads on top of the ferry terminal piers. The terminal complex also contains the Vessel Traffic Centre, a branch of the Marine Department

responsible for maintaining surveillance over Hong Kong's navigable waters to monitor and regulate vessel movements. This action area's location and existence of ferry terminals in the central harbour make it an ideal candidate for easy ferry transportation.

Central (C)

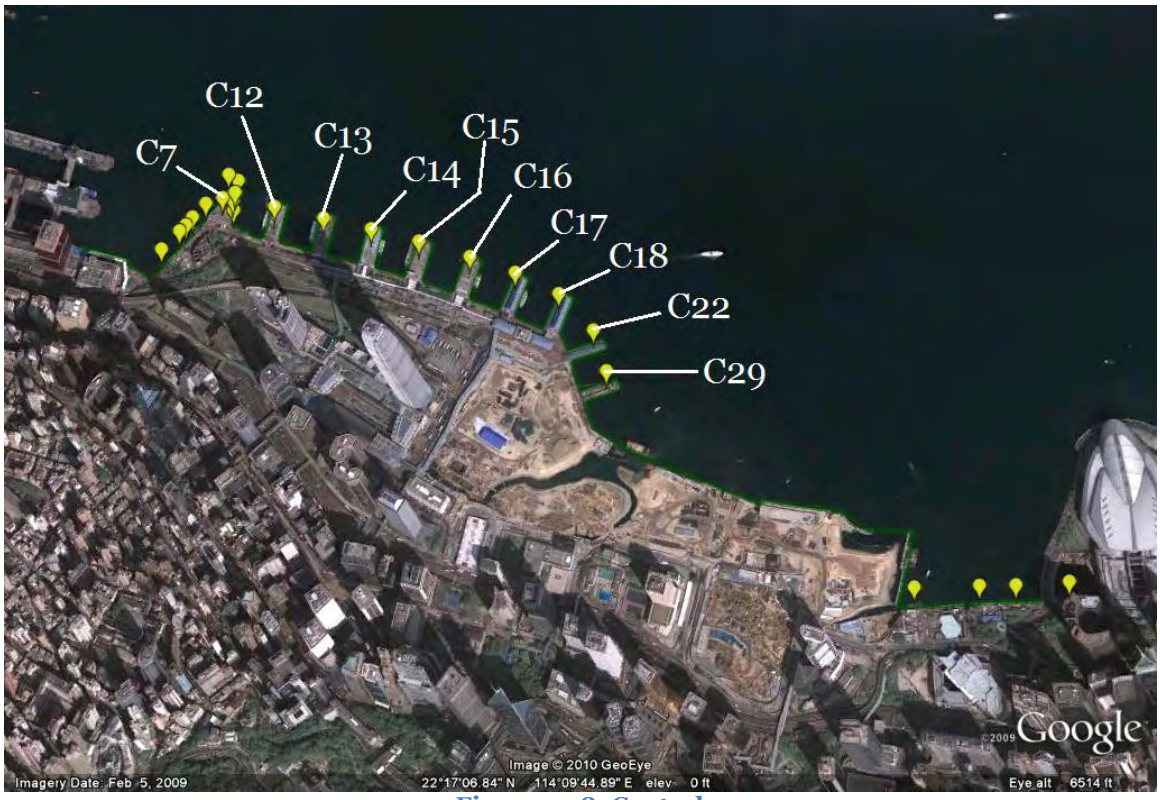

Figure 4.58: Central

A major stretch of the Hong Kong Island waterfront, Central is located in the middle part of the harbour directly across from the WKCD. Central contains 10 piers, known as Central Pier No. 1 through 10, of which No. 2 through 8 are ferry piers. Most of the harbour's local ferry traffic is located in the area between Central and the Tsim Sha Tsui peninsula, just 900 m across the harbour. Ferries at Pier 2 (C12) depart to Park Island, those at Pier 3 (C13) depart to Discovery Bay on Lantau Island, and the ones at Pier 4 (C14) depart to Lamma Island.

Central's westernmost pier is the Central Government Pier (C7). There are several actively used government landing steps on the Central Government Pier and on the western edge of Central's waterfront, shown in Figure 4.59. These landing steps, although not open to the public, are some of the best landing steps in the harbour.

Figure 4.59: Covered Government Landing Steps in Central

The government landing steps are easily accessible by car with areas for parking nearby, a covered waiting area between the parking spaces and the landing steps, and overhead cover from the rain at the landing steps. The landing steps also have lighting, railings, and excellent rubber fenders to protect the vessels moored alongside them.

Some ferry services travel to the outlying islands in the New Territories such as the New World First Ferry to Cheung Chau at Pier 5 (C15), and the Hong Kong & Kowloon Ferry Holdings, Ltd. ferry to Peng Chau and Mui Wo at Pier 6 (C16). Piers 7 (C17) and 8 (C18) are used by the Star Ferry with services to Tsim Sha Tsui and Hung Hom, respectively. All of those piers are 2 or 3 stories tall to permit passengers boarding from multiple levels. The third story of Central Pier No. 8 is the future location of the Hong Kong Maritime Museum, which is relocating from southern Hong Kong Island to the Star Ferry pier in a mutually beneficial plan to attract more tourists to both the museum and the Star Ferry. The Central action area is located in the heart of Victoria Harbour, and therefore is easily accessible to tourists and ferries alike. The abundance of piers and accessibility allow Central to function in a manner conducive to ferry traffic and tourist related uses.

The two remaining piers, Pier 9 (C22) and 10 (C29) are both public, single-story piers. Pier 9 contains 6 public landing steps for passenger pick-up and drop-off. The public piers (Figure 4.60) are covered and well-equipped with seating, lighting, trash cans, railings, and a lighted beacon. Pier 10, part of Central Reclamation Phase III, is still under construction and is not yet publically accessible, but when finished it will be identical to Pier 9.

Figure 4.60: Central Piers No. 9 and 10

Central Reclamation Phase III (Figure 4.62), scheduled for completion in 2013, will add another 18 hectares of land to Central and extend its waterfront approximately 200 metres further into the harbour.

Figure 4.61: Central's Waterfront Before Central Reclamation Phase III

The Queen's pier, visible in Figure 4.61, was demolished in 1998 despite controversy and protests from Hong Kong's citizens. It was disassembled and will be reassembled on the new waterfront when Central Reclamation Phase III is complete.

Figure 4.62: Central Reclamation Phase III

In addition to Central Pier No. 10 and the reassembled Queen's pier, the Planning Department's Master Layout Plan for the New Central Harbourfront includes two new public landing steps, a People's Liberation Army berth, a "marine place" and a "harbour place" for waterfront-related commercial and leisure uses.

Wan Chai West (WCW)

Figure 4.63: Wan Chai West

The Wan Chai West action area consists of the waterfront on the western side of the Hong Kong Convention and Exhibition Centre. The waterfront promenade surrounding the convention centre contains one landing step (WCW3). There are several ladders, cargo hoists, and moorings (Figure 4.64) between the two access roads to the convention centre.

Figure 4.64: Cargo Hoists Under the Convention Centre in Wan Chai West

There is a small waterway between the convention centre and the rest of Hong Kong Island, but it is inaccessible to all but the smallest vessels that can fit under the bridges and between the bridge support structures. There are unused structures along the banks left over from the old waterfront before the construction of the convention centre.

Wan Chai East (WCE)

Figure 4.65: Wan Chai East

Wan Chai East is located in the Eastern Harbour, where most of the harbour's recreational activities take place. The Causeway Bay typhoon shelter in Wan Chai East is the main mooring area for the Royal Hong Kong Yacht Club. Wan Chai East also contains the Star Ferry pier (WCE4) to Tsim Sha Tsui, government helipads (WCE6), a large, unused ex-PCWA (WCE7), and two ferry piers (WCE1, WCE2) east of the Hong Kong Convention and Exhibition Centre.

The Causeway Bay typhoon shelter was Hong Kong's first typhoon shelter, originally constructed in 1883. In 1908, it was deepened and expanded to 30 hectares. It was moved further into the harbour to its present location in 1953, and the old typhoon shelter was reclaimed to provide land for Victoria Park. Reclamation for the Cross Harbour Tunnel has further decreased the size of the shelter to its current total area at 26 hectares.

Figure 4.66: Royal Hong Kong Yacht Club

The typhoon shelter has a number of public moorings, many of which are used by the RHKYC (Figure 4.66) while some others are in use by other pleasure vessel owners. The eastern part of the shelter is occupied by a 'floating village' where people live in their boats on the water and rarely leave the typhoon shelter. The mooring system in the shelter is a fore/aft system with no docks to access the boats, but demand for moorings in the Causeway Bay typhoon shelter remains high because of the easy accessibility to the Inner Harbour. There is a similar demand for recreational events in the harbour, but insufficient facilities at the Causeway Bay typhoon shelter inhibits the RHKYC from hosting those activities.

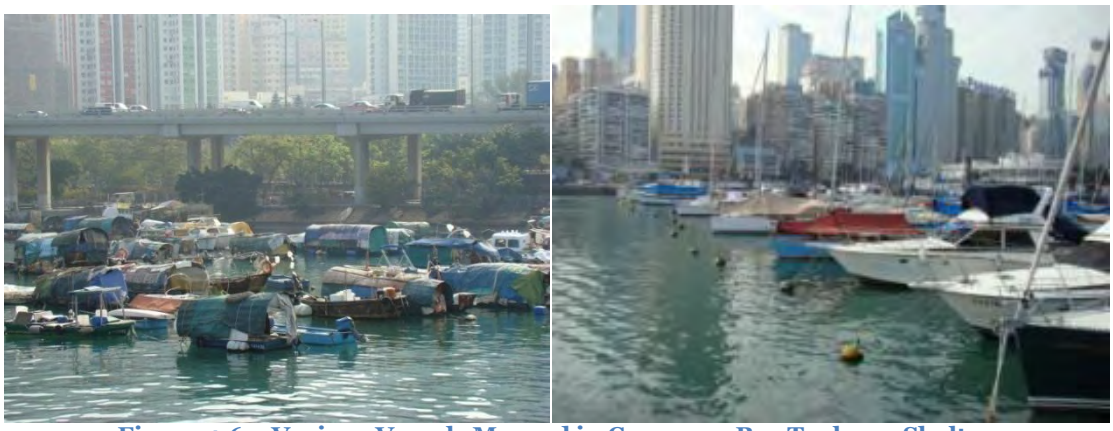

Figure 4.67: Various Vessels Moored in Causeway Bay Typhoon Shelter

There are many landing steps along the inside of the typhoon shelter, frequented by boat owners travelling to and from their ships moored in the water. Almost all of the landing steps are maintained by the CEDD. The example below (Figure 4.68-WCE19) is a makeshift rain shelter that has been constructed from a tarp and some bamboo; most landing steps in the harbour lack nearby covered waiting areas.

Figure 4.68: Makeshift Covered Waiting Area Next to Landing Step in Wan Chai East

The water quality in the typhoon shelter is much worse than in the harbour because the water does not flush out of the sheltered area as easily as the rest of the harbour. A combination of sewers and storm drains from the surrounding area emptying into the typhoon shelter, coupled with waste and raw sewage dumped into the shelter by illegal sewer connections from surrounding buildings, adds to the water quality problems in the typhoon shelter. The floating village also contributes to the pollution in the water by putting waste directly into the typhoon shelter because there are no sewage-pumping facilities for the boats in the shelter. The water quality is so bad that it can eat through the fibreglass boat hulls if they do not have a special protective coating. Waste from the grease traps of surrounding restaurants also ends up in the typhoon shelter water. The problem with water quality could be fixed by changing the storm drains to empty into the harbour or connecting them to existing sewage systems. The typhoon shelter is also getting shallower and shallower due to the accumulation of solid sewage on the seabed, it needs to be dredged to deepen it and remove the polluted layer of sediment that has formed in it.

Island East (IE)

Figure 4.69: Island East

Island East is the largest action area on Hong Kong Island, stretching from Oil Street in the west all the way to the eastern end of the Shau Kei Wan typhoon shelter. There are a variety of marine facilities along the waterfront, including multi-purpose piers, fish markets, and boatyards. There are a total of three ferry terminals in Island East; one services the Fortune Ferry line (IE3) travelling between North Point and Kwun Tong, another is for the Bauhinia Ferry (IE2) providing tours of the Inner Harbour, and the last one is used by the Kwun Tong-Sam Ka Tsuen Ferry line (IE13) travelling between Kwun Tong and Sam Ka Tsuen. With two ferry lines transporting people to Island East and a pier dedicated to a tourism boat service, harbour cruises (Figure 4.70) are one of the most popular recreational activities in this action area. The abundance of sheltered water and minimal commercial traffic make Island East a prime location for recreational uses within the harbour.

Figure 4.70: Harbour Tour Boat in Island East

The Island East waterfront is also home to a marine police pier (IE12) with the capacity to moor five or more standard marine police vessels simultaneously (Figure 4.71) and two private docks (IE5, IE6), both of which are located in a restricted area on the waterfront. There are two freshwater kiosks (Figure 4.72), both of which are restricted for marine use only – one (IE11) is about 340 metres west of the marine police pier and the other (IE22) within the Shau Kei Wan typhoon shelter.

Figure 4.71: Island East Marine Police Pier

Figure 4.72: Water-selling Kiosk in Island East

The Shau Kei Wan typhoon shelter (IE14) is located at the eastern end of the action area and contains a combination of small commercial ships, service vessels, leisure craft, and fishing boats. Along the typhoon shelter waterfront are five boat yards (IE24) (Figure 4.73) that service many of the privately owned watercraft and the Shau Kei Wan Wholesale Fish Market where the fishing boats unload their catch to be sold.

Figure 4.73: Shipyards in Island East

There are twelve public landing steps scattered along the waterfront, but the majority of them are found within the Shau Kei Wan typhoon shelter. We also found two landing steps that are privately owned and maintained (IE25), one of which is located directly behind the Shau Kei Wan Wholesale Fish Market (Figure 4.74).

Figure 4.74: Shau Kei Wan Wholesale Fish Market in Island East

Chai Wan (CW)

Figure 4.75: Chai Wan

Chai Wan is the easternmost action area of Hong Kong Island. The harbourfront in Chai Wan consists primarily of parks and promenades with concrete walls bordering the edge of the waterfront. There is a small bay in Chai Wan that was once designated as a typhoon shelter, but it is now the home of several barges at the back and a floating community near the entrance (Figure 4.77). Besides the three landing steps noted, of which one is completely fenced off (Figure 4.76) and another with barriers inhibiting its access, the waterfront is inaccessible.

Figure 4.76: Fenced-off Landing Step in Chai Wan

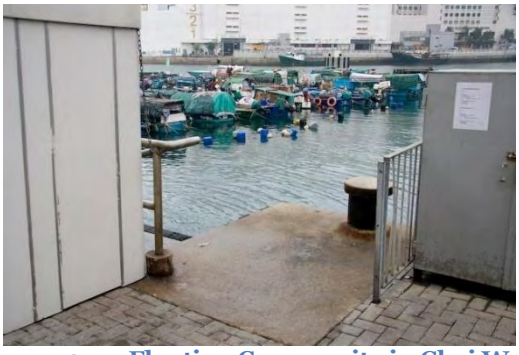

Figure 4.77: Floating Community in Chai Wan

4.2 Forecast

After collecting all of the audit data from each of the 23 sites, we compared this data to the information we collected during the stakeholders' conference, interviews, and archival research. In general, we conducted content analysis on our data in order to determine which data are reliable and relevant, as well as to determine any trends amongst the data. The five major topic areas outlined in this section are: sheltered water, improvement of existing facilities, new types of facilities, the balance of users in the harbour, and the governing structure of the harbour.

4.2.1 Sheltered Water

There is an important distinction between sheltered water and typhoon shelters: sheltered water is a body of water that has reduced wave action as compared to the rest of the harbour[1], whereas a typhoon shelter is a type of sheltered water that is safe during a typhoon and denoted as such by the Marine Department[2]. It became apparent during interviews that this distinction was not always clear. In general, the above mentioned definitions are the ones that we have used in analysing our data.

[1] This is different from the Marine Department's definition of sheltered water, which is defined simply as the total area of Victoria Harbour

[2] It is possible for "sheltered water" to be safe during a typhoon, and such areas while not technically typhoon sheltered, are treated as such by both this study and the Marine Department

Importance of Sheltered Water

Sheltered water provides a safe environment for getting on and off of boats, loading and unloading cargo, and for water-based recreation. These are activities, apart from larger vessels for which wave action is less of an issue, which can only take place in sheltered water. However, as waterfront property is also valuable to real estate developers, conflicts arise over the use of sheltered water.

Yau Tong Bay is a good example of an area in conflict. Currently, the Bay hosts a number of commercial docks. The owners of those docks have formed a consortium in order to remove those commercial facilities and put in residential buildings (Kowloon District Planning Office, 2010). The plan they presented to the HEC includes a waterfront promenade but no marine uses for this important bit of sheltered water. As this bay is one of the few areas of naturally sheltered water in Hong Kong, marine users would desperately like to make use of it (Appendix D, Robert Wilson). They suggest that a small marina could be included in the plans for a promenade so that this opportunity, to them, is not wasted.

Another example is in Sai Ying Pun, where there are several landing steps that are rendered less useful because of their placement. Due to the Macau Ferry Terminal directly to the East, the water at these steps can be very rough. This makes it dangerous to get on and off any vessel. Additionally, there is a water-selling kiosk there that is also dangerous to use because of the passing ferries. These landing steps in Sai Ying Pun is just one example of facilities that either need sheltered water or need to be moved to sheltered water.

The Supply of Sheltered Water

Typhoon shelter space is always at a premium. The Marine Department Typhoon Shelter Space Requirements report from 2009 estimates that over the next 15 years, no additional space will be required.

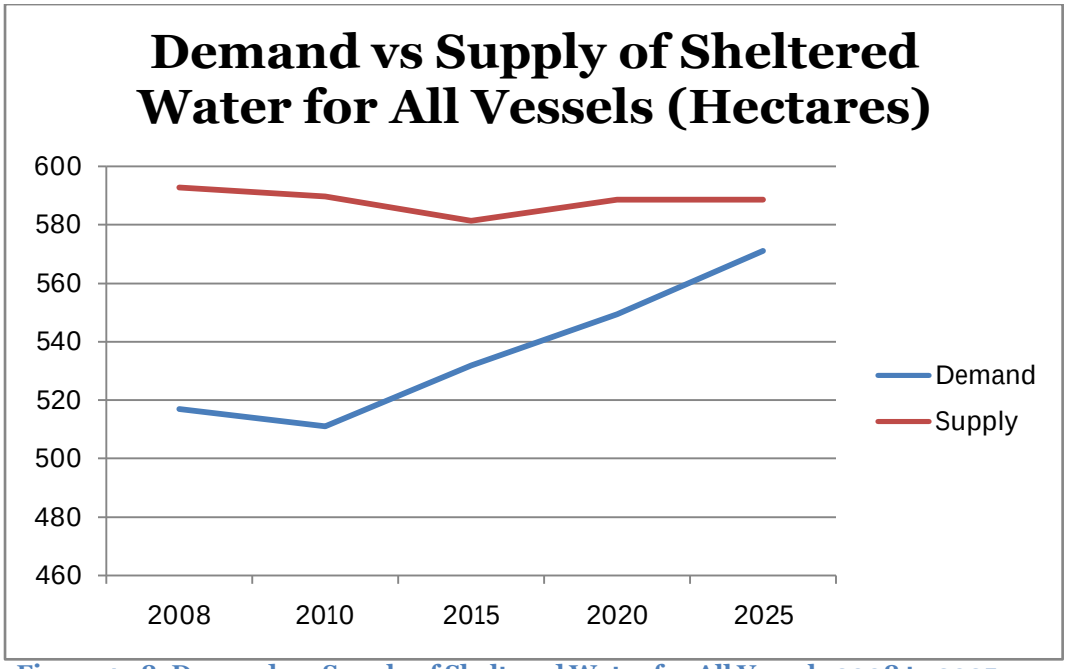

Figure 4.78: Demand vs. Supply of Sheltered Water for All Vessels 2008 to 2025
(Marine Department, 2009)

The issue is that this graph includes all vessels and all sheltered water- which is not the way sheltered water usage is distributed to users in practice. In fact, the Marine Department reserves specific areas of sheltered water for pleasure craft, and other areas for all other classes of vessels. Thus, the actual supply and demand graphs, broken down by pleasure craft and non-pleasure craft, look like the following:

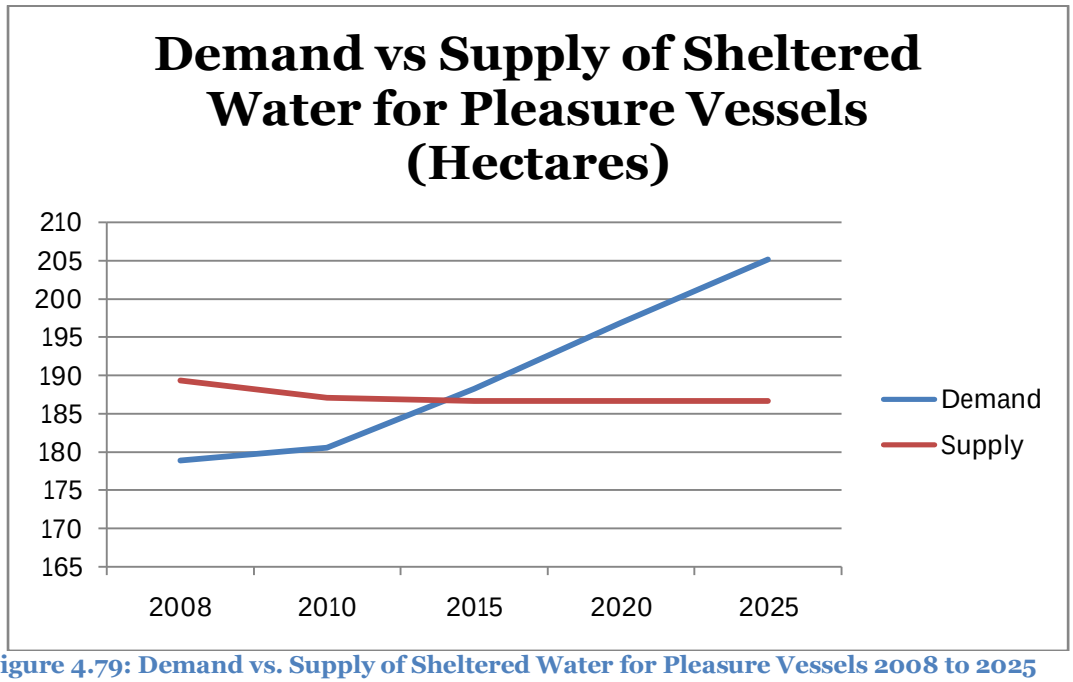

Figure 4.79: Demand vs. Supply of Sheltered Water for Pleasure Vessels 2008 to 2025
(Marine Department, 2009)

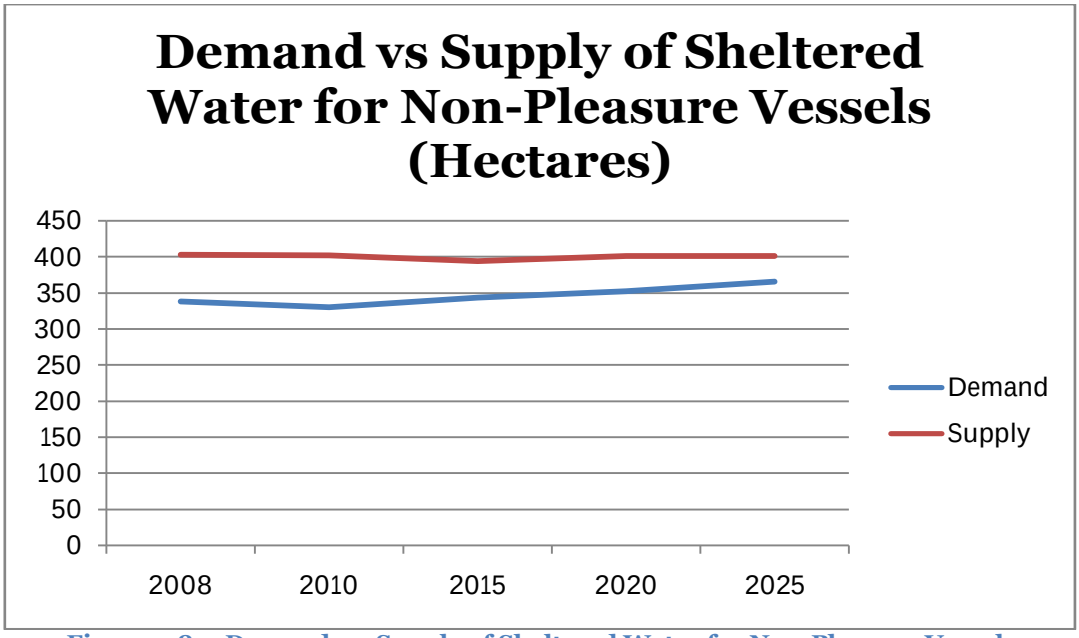

Figure 4.80: Demand vs. Supply of Sheltered Water for Non-Pleasure Vessels
(Marine Department, 2009)

While sheltered water reserved for non-pleasure craft certainly will not need to be increased before 2025, one can see from Figure 4.79 that the amount of available space for leisure craft will run out before the year 2015.

Inside the Harbour, the situation is worse. Only 29% of the total sheltered water area in Hong Kong is within Victoria Harbour, as seen in Figure 4.81.

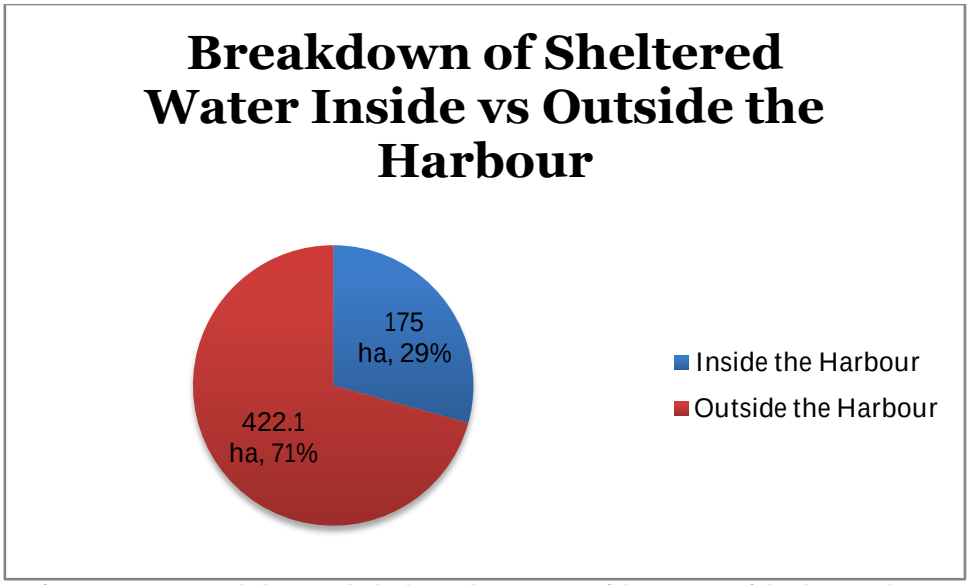

Figure 4.81: Breakdown of Sheltered Water Inside vs. Outside the Harbour
(Marine Department, 2009)

Of that sheltered water in Victoria Harbour, only 6% is available for use by pleasure vessels, as seen in Figure 4.82.

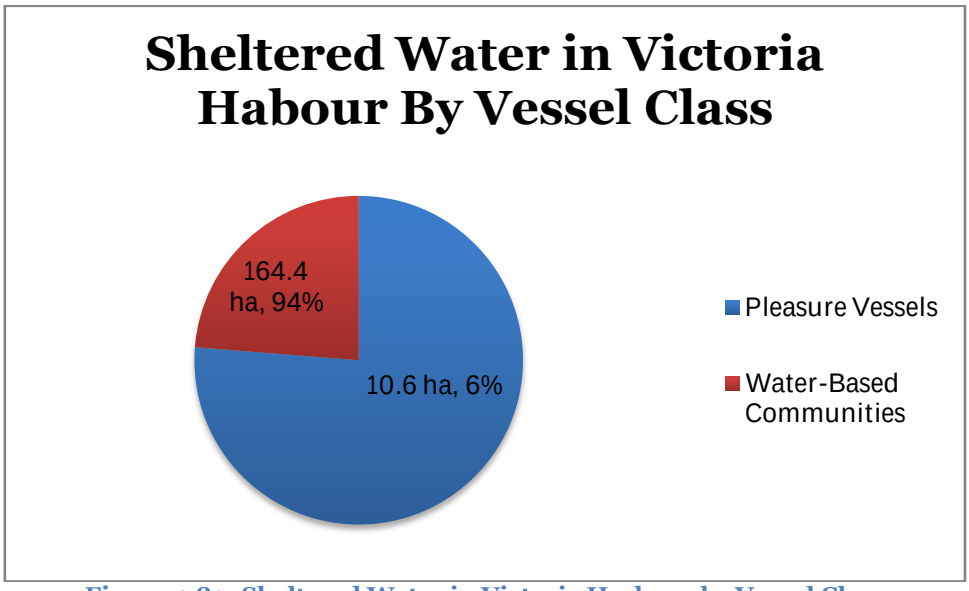

Figure 4.82: Sheltered Water in Victoria Harbour by Vessel Class
(Marine Department, 2009)

The Need for Additional Sheltered Water

Stakeholders consistently told us that they need additional sheltered water inside of the harbour. They gave many reasons, including travel time, fuel costs, and safety.

Travel time is an issue because vessels are often stored outside the harbour when the actual usage of the vessel takes place in the harbour. Additionally, during a typhoon, commercial vessels which operate in the harbour but do not have shelter there need to leave several hours before the typhoon arrives in order to get to the shelter in time, which translates into lost work hours. Table 4.1 approximates the distances from the Central Piers to all sheltered water in the territory. This table was created by measuring the distances on a map.

Table 4.1 Sheltered Water in Hong Kong S.A.R. by Approximate Distance from Victoria Harbour (all numbers rounded to the nearest nautical mile or minute)

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

Eight knots is the approximate cruising speed of the Star Ferry (Frankie Yick, Personal Communication, 23 February 2010) and is an appropriate speed for calculating travel times for larger vessels. As one can see, the closest commercial sheltered water area is 45 minutes away, in Aberdeen West.

An issue related to distance is the fuel cost. Table 4.2 was created from information gathered from different boat operators on their vessels' fuel efficiency, and the cost of diesel from Caltex Inc. on February 22, 2010 (HKD$11.74/litre). It lists the cost of one round trip from the Central Piers to these shelters. When used in conjunction with the distances from Table 4.2 above, one can see the fuel cost of storing a boat outside of the harbour.

Table 4.2 Cost of Moving Vessels from Selected Shelter Waters to Victoria Harbour, by kilometres per litre

		List of Shelters							
		Clearwater Bay	Marina Cove	Aberdeen West	Shuen Wan	Middle Island	Tai Mei Tuk	Tai O	Sha Tau Kok
Fuel Efficiency (km/L)	0.1	$2,817.60	$7,748.40	$2,582.80	$16,436.00	$3,991.60	$15,496.80	$10,331.20	$16,436.00
	0.2	$1,408.80	$3,874.20	$1,291.40	$8,218.00	$1,995.80	$7,748.40	$5,165.60	$8,218.00
	0.3	$939.20	$2,582.80	$860.93	$5,478.67	$1,330.53	$5,165.60	$3,443.73	$5,478.67
	0.4	$704.40	$1,937.10	$645.70	$4,109.00	$997.90	$3,874.20	$2,582.80	$4,109.00
	0.5	$563.52	$1,549.68	$516.56	$3,287.20	$798.32	$3,099.36	$2,066.24	$3,287.20
	1	$281.76	$774.84	$258.28	$1,643.60	$399.16	$1,549.68	$1,033.12	$1,643.60
	2	$140.88	$387.42	$129.14	$821.80	$199.58	$774.84	$516.56	$821.80
	3	$93.92	$258.28	$86.09	$547.87	$133.05	$516.56	$344.37	$547.87
	4	$70.44	$193.71	$64.57	$410.90	$99.79	$387.42	$258.28	$410.90
	5	$56.35	$154.97	$51.66	$328.72	$79.83	$309.94	$206.62	$328.72
	6	$46.96	$129.14	$43.05	$273.93	$66.53	$258.28	$172.19	$273.93
	7	$40.25	$110.69	$36.90	$234.80	$57.02	$221.38	$147.59	$234.80
	8	$35.22	$96.86	$32.29	$205.45	$49.90	$193.71	$129.14	$205.45
	9	$31.31	$86.09	$28.70	$182.62	$44.35	$172.19	$114.79	$182.62
	10	$28.18	$77.48	$25.83	$164.36	$39.92	$154.97	$103.31	$164.36

Smaller vessels fall somewhere in the 1-10 km/L range, while large vessels, such as the Star Ferry and some tug boats, fall in the 0.1-1 km/L range. One should note that these costs are for one trip *only*. A working vessel would be making this trip almost every day, and fuel costs would be correspondingly larger. One should also note that vessels buying diesel in bulk often receive discounts on the cost of the fuel. Nevertheless, Table 4.2 should give the reader a general sense as to the potential fuel costs, not to mention the additional wages for the crew as well as the additional maintenance required due to extra use associated with storing a vessel outside of the harbour when it operates inside of the harbour.

Safety of small vessels, typically pleasure vessels or small sampans, is an important consideration when discussing the need for sheltered water in Victoria Harbour. The Marine Department typically issues warnings to vessels under 5 metres in length to avoid the harbour when wave action is anticipated to be high, such as during the Chinese New Year's fireworks celebration. In practice, this advisory is always in effect for the Western Harbour due to the ferries passing through on a regular basis. A vessel under 5 metres in length would

not be able to safely pass through these waters and it would also run the risk of being hit by one of these ferries. Thus, vessels less than 5 metres in length are effectively prohibited from using the harbour if they are not already stored there.

Additionally, given that in 2006 the monthly median income in Hong Kong is only HKD$10,000 (Census and Statistics Department, 2006) - compared to about HKD$32,000 (Department of Commerce, 2008) in the United States in 2007, using HKD$7.65 per USD$1 as the exchange rate - the majority of the population in Hong Kong simply cannot afford a boat larger than a dinghy for fishing on the weekends, let alone one over 5 metres long. Due to the lack of sheltered water inside Victoria Harbour, the majority of the population of Hong Kong is barred from owning and operating their own boat in the Harbour.

One solution to this problem would be to provide boat rental facilities inside the harbour. This would ensure that people who want to use a boat but cannot afford the purchase price or the maintenance costs could still use the harbour for a small rental fee. Another solution would be to provide more sheltered water inside the harbour for those who could afford a small boat. Note that these solutions are not mutually exclusive and could complement each other.

Ways to Increase Sheltered Water in Victoria Harbour

There are two ways to expand the area of sheltered water available in the harbour. One idea is to move the breakwaters in Causeway Bay and To Kwa Wan to make the typhoon shelters larger. The Marine Department commented on the idea and said that both breakwaters could be moved without adversely affecting marine safety or the Hong Hom Fairway (Appendix D, Roger Tupper). Below are an artist's renditions of the two shelters with relocated breakwaters:

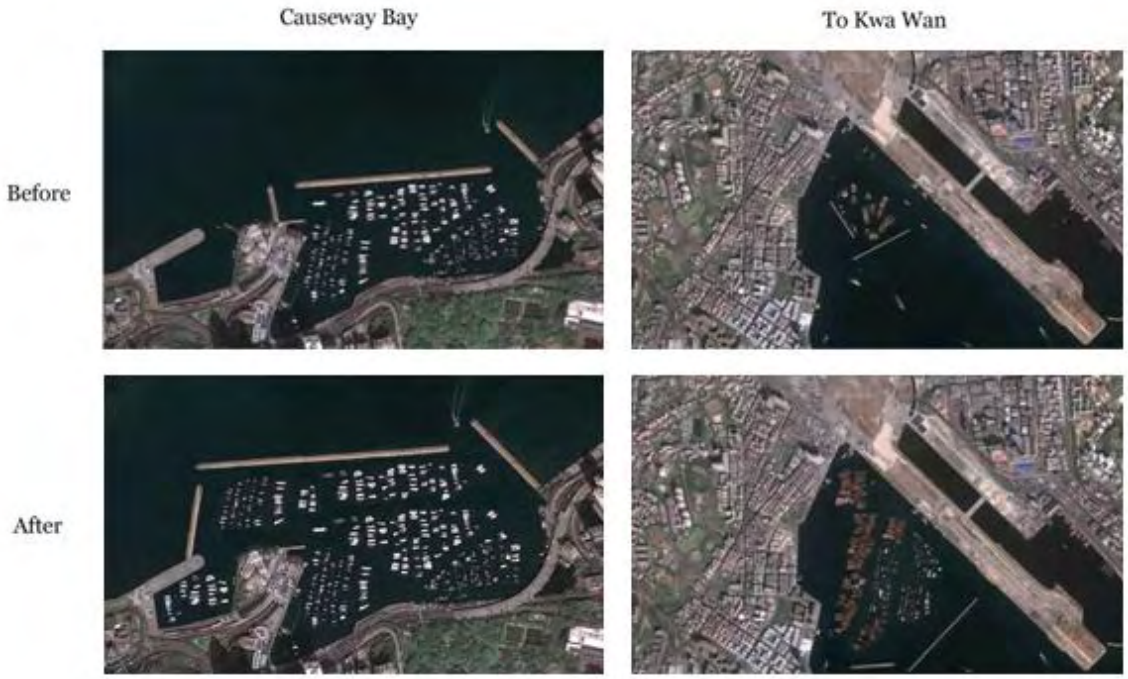

Figure 4.83: Expansions of the Causeway Bay and To Kwa Wan Typhoon Shelters

Another possible way to increase the space available in typhoon shelters is to reorganize them. The RHKYC has a proposal on how to re-organize the Causeway Bay typhoon shelter around a floating dock system instead of a mooring system. The Marine Department has said that they favour that type of arrangement over the mooring system because it keeps things more organized and helps get more boats into the same typhoon shelter. Timing, specifically for the Causeway Bay typhoon shelter, could correspond with the Central-Wanchai Bypass construction.

There are significant issues with both proposals – the biggest one being the Protection of the Harbour Ordinance. To move the breakwaters, as in the first proposal, would require land reclamation. In the RHKYC proposal, the dock system requires permanent fixtures on the seabed, which is technically land reclamation as well. In addition, the dock system would require a managing organisation. If that organisation were to make the docks private, the Marine Department would interpret that as a net loss of space in the typhoon shelter system and that organisation would then need to provide an equal amount of typhoon shelter space somewhere else in the territory. Otherwise, a current government department would need to take ownership of the docks.

Boat Accessibility in Sheltered Water

Under current conditions, many areas of sheltered water are used by people to store their boats near the harbour. This is a use for which many sheltered water facilities, including typhoon shelters, were not designed. This issue is felt most in sheltered water that hosts floating communities - where users often improvise methods for gaining access to their boats in order to avoid paying for a sampan – but this problem is relevant in any sheltered water area in which users store their boats permanently.

In the Lei Yue Mun typhoon shelter, we discovered several "staircases to nowhere," pictured below in Figure 4.84.

Figure 4.84: Staircase to Nowhere

The stairways appear to be intended for use in getting on and off of a boat, but as one can see from the photo, local boaters prefer to make their own docks rather than use the staircase. There is nowhere to tie up a boat next to the stairs or to get on or off a boat larger than a dinghy.

In Tsing Yi, local boaters have created their own mooring fields, land/water interfaces, and methods for reaching moored vessels, as one can see from the pictures below.

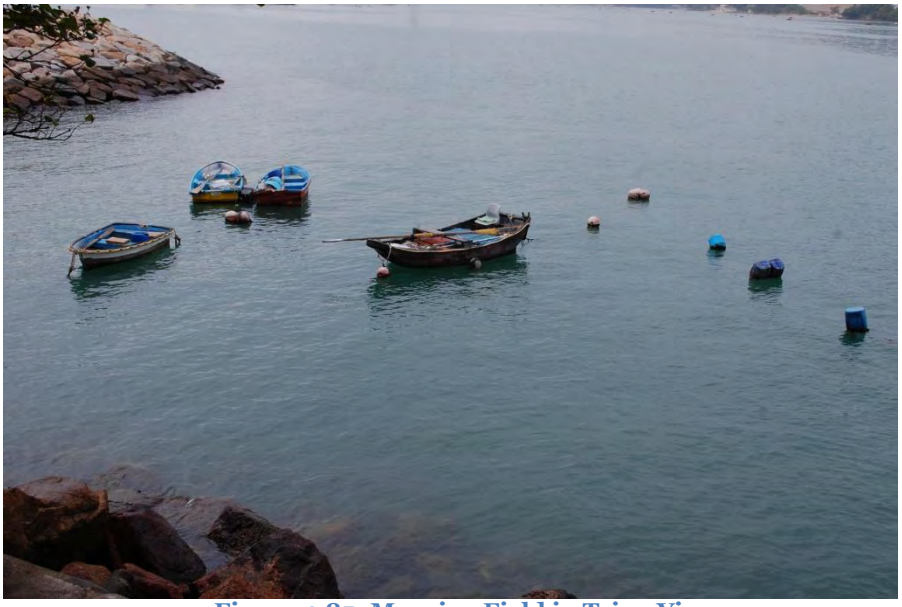

Figure 4.85: Mooring Field in Tsing Yi

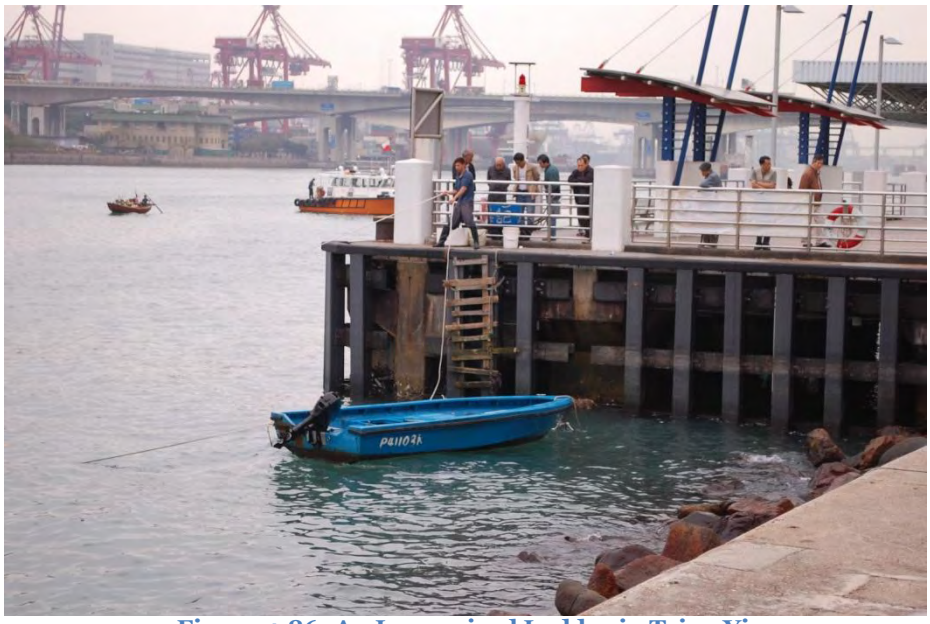

Figure 4.86: An Improvised Ladder in Tsing Yi

In Figure 4.85, the moorings are unlicensed and are evidence of the latent demand in the area for marine activities. In Figure 4.86, a man has just disembarked from his boat and is using a series of ropes to move the boat back to its mooring, safely away from the pier. There is also an improvised ladder made by residents in order to access their boats from the pier itself.

The first step towards solving this problem of accessibility is the recognition by the Marine Department that these users exist and need support. Though there could be many ways to support these users, the simplest method would be small floating-dock facilities in

areas of sheltered water where community users have created their own land/water interfaces. The docks could be attached directly to the shoreline in order to avoid reclamation issues and could be managed by the local district government.

4.2.2 Current Facilities – Upgrades and Additions

Further analysis of the waterfront facilities presented in section 4.1, in conjunction with data obtained during the forecast of future uses and users from the stakeholders' conference, presented in Appendix E, revealed the inadequacies inherent in marine infrastructure in Victoria Harbour. Data provided by our site visits has provided a general understanding of the facilities that exist along the harbour. Our direct observations identified preliminary areas of focus including, but not limited to: public and private piers, landing steps, vessel-supporting facilities, and tourist facilities. Further research into these areas of interest through the stakeholders' conference, desk research, and interviews with stakeholders provided additional detail to the problems identified by our observations.

Piers

One of the major issues identified by our team during the audit phase was the lack of access to piers for transportation across the harbour or for any other purpose. This issue was further expanded upon during the stakeholders' conference and interviews with the Tourism Board and Saffron Marina. These observations and interviews demonstrate that many of the underlying reasons that piers are perceived as inadequate are: their size, quantity, and accessibility.

Ferries transport passengers across the waters of Victoria Harbour on a regular basis. These passenger services provide transportation to many different areas of Victoria Harbour, as well as to areas throughout Hong Kong, but their routes are limited by the availability of piers. Ferry services such as the Star Ferry and First Ferry may only provide transportation to areas in which they possess a private pier. The Star Ferry has operations in Central, Tsim Sha Tsui, Wan Chai, and Hung Hom, and its service may only carry passengers to these locations. The First Ferry has locations in Hung Hom and Kowloon City that carry customers

to North Point. Additionally, First Ferry's location in Central carries passengers to areas outside of Victoria Harbour.

In addition to ferry services, residents may use launch services to get transported to various areas around the harbour. Passengers can phone one of these services to pick them up at a specified location – typically a landing step - and they are then transported to another pre-specified location. These transportation companies run no regular routes, and are based on a chartering system. Again, these services are limited by the available piers and landing steps (discussed below). This more complicated system of travel decreases the convenience of travelling by boat; people would rather use the MTR or other public transport that runs a regular service.

Currently, most piers are situated far from other forms of transportation. Harbour reclamation over the past few decades has pushed the waterfront farther and farther from land-based transportation. As a result, travellers must walk some distance from the MTR to the waterfront in order to pick up a ferry, cross the harbour, and then walk from the waterfront to their destination. As the number of popular destinations around Victoria Harbour increases, the importance of transportation to and from these waterfronts will also become more important. The lack of piers in areas with good land-based transportation, such as MTR stops, bus terminals, and parking areas, causes a problem for ferry services.

While it is important to include more public piers in waterfront areas, it is also important to ensure that piers adequately accommodate their users. Many large tour boats and ferries require multi-story piers for gangways, ticket sales, and other supporting facilities. Piers without areas for commercial ticket sales, shops, and restaurants hinder the growth of the harbour tour industry. Users want practical, attractive piers to further enhance the many tourism and transportation businesses in Victoria Harbour.

Landing Steps

Landing steps are the most plentiful type of land/water interface in Victoria Harbour. They provide access to the water in areas all around Hong Kong. Most are public and readily accessible by vessels of many sizes. These landing steps, however, are not sufficient for many uses and users because they lack the following characteristics: land access to roads and promenades; signage noting where steps are and how to get to them; lighting for illuminating the steps after dark or in the rain; shelter for users waiting for boats during inclement weather; and appropriate safety equipment, such as life buoys.

Land access is important because landing steps are *land/water interfaces*- not just water interfaces. If the step is meant to be used by pedestrians, there at least needs to be a way to walk to the step. In addition to that, if the step is meant for commercial users, there should be a way to drive a car or a truck to the step as well as park the vehicle for cargo transport. Pedestrians and commercial users can also benefit from illumination at the steps and sheltered waiting areas. Both amenities help during foul weather, and the illumination also ensures that the step can be used after dark (Figure 4.87).

Figure 4.87: Landing Step in Causeway Bay

It is often difficult to locate a landing step without searching the waterfront, as seen in the *Four Tourists* study conducted in 2008. The only two locations where landing steps

have adequate signage are at Central Pier #9 and the Tsim Sha Tsui public pier beside the Star Ferry pier. Other steps are often difficult to spot as there is no visible difference in the sea wall and railing until a visitor is in close proximity to the step. Additionally, many landing steps are located in locations that offer no indication of purpose. For example, one landing step was discovered in the far corner of a makeshift dirt parking lot (Figure 4.88). This landing step served to help cargo workers take water taxis to their barges, but the step was surrounded by torn-down chain fences and garbage, so this purpose was not immediately obvious.

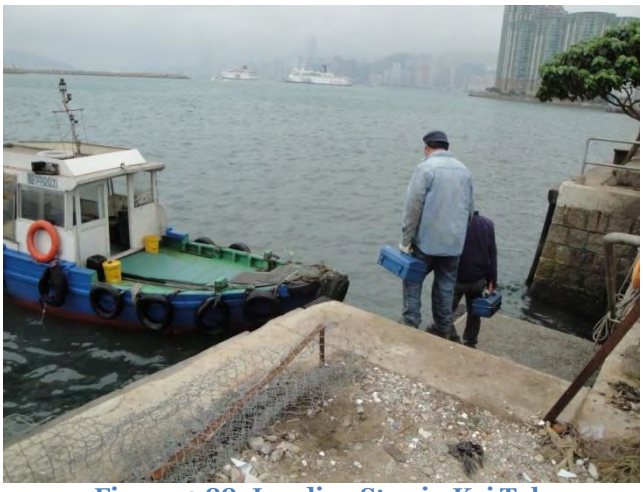

Figure 4.88: Landing Step in Kai Tak

Safety is also an important factor to consider when improving landing steps. Jumping into the boat is sometimes dangerous for boarding passengers, as the typical method for taking on passengers is for boats to bump their nose on the step and run the motor to push the boat against the step for the duration of the boarding procedure. This can be very dangerous as the boat's nose is typically narrow and railings are located on the opposite side of the step, as seen in Figure 4.87 and Figure 4.88.

Figure 4.89: Steel Ring in Lei Yue Mun

While most landing steps and typhoon shelters include real life buoys, not all of them do. Figure 4.89 shows a steel life buoy in Lei Yue Mun which is welded to the railing. There are many other such "steel rings" in the area, but no actual life buoys. In an emergency someone could waste valuable time running to one of these rings instead. A simple solution would just be to remove them all and make sure real buoys are available.

Services and Supplies

The two most important supplies for boats in Victoria Harbour are fuel and fresh water. Fuel can be obtained from fuelling barges at bunkering areas or from fuelling pumps at the waterfront. Fresh water can be obtained from water selling kiosks on shore or individual water distributers at typhoon shelters. The methods for obtaining these supplies are sometimes inconvenient or dangerous.

Diesel fuel can be obtained from fuelling barges at any of the three bunkering areas inside Victoria Harbour. One is located near the Lei Yue Mun channel and the other two are located in the area between Stonecutters Island and the Yau Ma Tei typhoon shelter. Although these areas offer fuelling services to any boat, it is difficult and sometimes dangerous to fuel boats in open water, especially for small boats or wooden junks. The only alternative is to berth at a land based diesel fuelling pump – the only one being in the Shau

Kei Wan typhoon shelter. Although this is much safer because it is inside sheltered water, it is not convenient for boats that function on the opposite side of the harbour.

Regular petrol cannot be obtained by the public anywhere within Victoria Harbour. The RHKYC has a licensed delivery service of petrol, but it is limited to use by members. This lack of petrol fuelling facilities forces users like tourism power boats to load extra tanks of fuel in their boats in order to have enough to come all the way from their mooring locations outside of Victoria Harbour to the piers at Central and Tsim Sha Tsui for picking up passengers. Kayak and Hike Ltd. recommended the construction of a petrol fuelling station in the eastern Victoria Harbour, possibly in Lei Yue Mun or at North Point. Most power boats that need petrol come in and out of the harbour on the eastern side, so Lei Yue Mun would be a convenient location for them, while North Point offers a safe space for a fuel station since it is located away from residential areas as well as from the heavy traffic of the Central waterfront. Adding a new petrol station in Lei Yue Mun channel not only solves the lack of petrol availability, but also reduces the risks of illegal petrol delivery within Victoria Harbour.

Fresh water can be obtained at one of the seven Water Supply Department (WSD) water-selling kiosks within Victoria Harbour. Water needs to be prepaid at the WSD (offices located in Mong Kok and Shau Kei Wan), which issues tickets that can be exchanged for water at the kiosk. The other alternative is to buy it directly from small water sampan distributors in typhoon shelters or sometimes obtaining it for free from fuelling barges at the bunkering areas. No additional need has been expressed by any of the interviewees or stakeholders with respect to modifying the current fresh water supply methods.

Tourist Facilities

Tourist attractions in general are highly concentrated in the areas of Central and Tsim Sha Tsui. The majority of harbour tours pick up and drop off passengers on the public piers at these two locations. Passengers board tour boats in abundance for a multitude of

tours, dining cruises, party trips, and casino cruises. These tours however, face several difficulties in their operations.

Tour boats are forced to use landing steps to which they cannot tie their boat in order to pick up passengers. Not only is this inconvenient for passengers, it is also difficult for the tourism companies. The lack of permanent facilities makes it more complicated for potential customers to locate the boats and board at the proper times.

Licensing restrictions prevent tour boats from selling tickets directly to passengers. Tourism boats need to be classified as Class IV pleasure vessels in order to include the types of amenities such as food and drink, which passengers on these boats expect. However, Class IV licensed vessels can only be chartered as a whole – they cannot sell tickets to individuals. This restriction is typically avoided by chartering boats to travel agencies who sell and distribute individual tickets. Makeshift advertising stations appear all over Victoria Harbour's most active waterfronts, but ticket purchases must take place off-location, sometimes quite far away. Permanent ticket counters require a dedicated commercial location.

It is the opinion of the tourism companies and the Tourism Board that current harbour tour activity is driven by concentrated hotel and tourist activity in the Central area and Tsim Sha Tsui. As new tourist destinations are developed in the West Kowloon Cultural District and Kai Tak, there will be an increase in the need for tour services in those areas. Currently, the plans for these areas only include public piers. While these piers may be sufficient for smaller size tour boats, they are inadequate for bigger boats from companies that plan on carrying more than a couple dozen passengers. Larger vessels, such as ferries, require at least two stories for a gangplank. The availability of these larger, specialized piers could also provide other services to visitors on the waterfront such as dining, shops, rest areas, bars, lounges, and other attractions (Appendix D, Horace Leung). Well-facilitated harbour tours that take off from prime tourist locations provide the greatest amount of services for visitors to Hong Kong.

In terms of storage facilities, the tourism companies that we talked to requested space for their vessels in the harbour, for reasons given in section 4.2.1. The expanded To Kwa Wan typhoon shelter would be an ideal location because of its proximity to Central and Tsim Sha Tsui.

4.2.3 New Uses of the Harbour

Compared to other harbours around the world, Victoria Harbour is devoid of water-based recreation. As the harbour was developed with commercial use in mind, it should be no surprise that there are no public facilities solely designated for that purpose. There are three main facets to this issue: the lack of public accessibility of the harbour, the lack of publically accessible land/water interfaces to which to tie a boat, and the lack of water sports facilities inside the harbour. Through interviews and research on other harbours, we learned of different ideas for facilities, such as boat rental, boat parking, and a water sports centre, all of which would work to remedy this situation.

One distinct issue concerns the public accessibility to the harbour. If someone would like to enjoy the harbour for a day but does not own a boat, he/she is limited to participating in a structured tour or chartering a boat. While this does satisfy the requirement of being on the harbour, it lacks the freedom of control. If boat rental facilities were available, this would enable virtually anyone to enjoy Victoria Harbour in a manner of their own choosing.

Another significant shortcoming within the harbour deals with the lack of interfaces that aid in the transition between water and land. Currently it is almost impossible for boat users to park along the waterfront, disembark and walk around. The only exceptions require membership at a private organisation in order to be allowed to perform those actions. Small marinas could be included in Yau Tong Bay or the Kwun Tong typhoon shelter (Appendix D, Robert Wilson). If marinas were created and made available to the public, this type of recreational activity would become possible.

Currently there are five water sports centres (managed by the LCSD) for use by Hong Kong residents. While these facilities are good, they are far from where most people live. One proposal designed to address this issue is the Kai Tak International Regatta Centre.

According to Robert Wilson, Chairman of the Hong Kong China Rowing Association, the water space between the typhoon shelter and the Kai Tak nullah is very valuable due to its potential to become a rowing course with international standards, as well as its convenient location close to Hong Kong residents. Part of this plan includes the addition of a sluice gate to help flush that area as well as To Kwa Wan of the dirty water there. Additionally, as mentioned above, a small marina and boat rental facility could be included in this development in order to make the harbour more accessible to the general public. Currently, there is a recycling facility located in Kai Tak; but that will be leaving the area within five years (Appendix D, Roger Tupper).

4.2.4 Preserving a Balance

We discovered through the stakeholders' conference discussions and follow up interviews that each stakeholder desired the appropriate facilities and features to satisfy his/her own needs. They all placed emphasis on the importance of satisfying all stakeholders' needs, as well, in order for a balance of their competing interests to be achieved. Tony Chan of the Development Bureau stated, "Not everyone agrees with how the harbourfront should be enhanced. When changing anything in Victoria Harbour, balance is a very key word." Currently recreational users are found primarily in the Eastern Harbour, transportation users are found primarily in the Central Harbour, and commercial users are found primarily in the Western Harbour.

At the stakeholders' conference, recreation and tourism uses of the harbour were identified as likely to increase in the coming years. Similarly, transportation was identified as having the potential to increase, depending on the land developments around the harbour. Commercial shipping was identified as neither increasing nor decreasing. The difficulty in balancing the harbour is in accommodating recreation, tourism, and transportation without destroying commercial shipping, which, as a major industry in Hong Kong, should be preserved.

The first thing to consider when balancing the harbour is what cannot move – in Victoria Harbour that would be commercial shipping. The ocean going vessels utilize the

Rambler Channel and the container ports there, while river-trade vessels and smaller commercial vessels use the facilities in Yau Ma Tei. The shore facilities and sea lanes required by these users are already in place in the western harbour, so it does not make sense to move them somewhere else. The commercial shipping area could also be strengthened, or at least preserved, by keeping residential zones at an appropriate distance. Commercial zones often have characteristics that residents find annoying, such as early-morning operating hours, foul smells, loud noises, and "ugly" industrial ships and equipment. Proper zoning would help reduce the pressure on these facilities to move.

Central contains seven ferry piers and is home to most of the marine-based transportation is found in Central. Intra-territory marine-based transportation facilities are currently located in areas where demand for water-based transportation exists, so moving them does not make sense either. In fact, even a small move away from land-based transportation hubs or destinations can cause significant harm to the intra-harbour ferries; for instance, the Star Ferry has lost 18% of its business on its Tsim Sha Tsui to Central route as a result of having to move 300 metres due to the Central/Wan Chai bypass project (Appendix D, Frankie Yick). Marine transportation can be strengthened by placing facilities near popular destinations. In the future, this could mean Kai Tak and the West Kowloon Cultural District.

The majority of pleasure boats are found in the eastern harbour because of the Causeway Bay typhoon shelter. Though there is public space in the typhoon shelter, the majority of it is occupied by the RHKYC – which is private. As discussed above in 4.2.1, it is very difficult for smaller pleasure vessels to get in to the harbour. With the majority of the commercial operations in the eastern harbour leaving within a few years, there is now an opportunity to increase public access via the eastern harbour, in places such as Kai Tak and Yau Tong Bay.

Tourism boats are technically a subset of pleasure boats under the Marine Department's vessel classification scheme, even though their operators have needs more similar to those of marine transportation. Due to their classification as pleasure vessels, their

needs often go unnoticed by the government. We have learned through interviews with organisations like the Hong Kong Tourism Board, Saffron Cruises, and Spysea that though they do not have an area of the harbour devoted specifically to their use, they would like to be included in the balancing of the harbour. Beyond the specific facilities discussed in 4.2.2, the To Kwa Wan typhoon shelter could be made to accommodate tourism vessels.

4.2.5 Governing Organisation

Every time we talked to a stakeholder, whether it was through an interview, at the stakeholder's conference, at a marine-related event, or through casual conversation, they all repeated the same line: the government impedes progress on the waterfront. Their specific complaints varied, and not all their comments were negative, but, overall, they listed the government as the biggest problem.

The first issue raised was that there are too many different government organisations involved in the waterfront. The Marine Department is responsible for safety. The Leisure and Cultural Service Department is responsible for managing the promenades and government-run maritime recreational facilities. The Lands Department owns all the land and the seabed. The Planning Bureau is responsible for tendering and making plans. The Civil Engineering and Development Department is responsible for the design and maintenance of land/water interfaces. The Environmental Protection Department is responsible for the water quality. The Highways Department is responsible for highway development along the waterfront. The individual Town Councils are responsible for implementing plans specifically in their own townships. The list goes on; the point is that there is a multitude of organisations responsible for different aspects of the waterfront, making communication between marine users and the government, and between government departments difficult at best.

The lack of a unified vision for the harbour's future was another issue raised by many stakeholders. This problem manifested itself in different ways; for instance, several urban designers commented that the Planning Department's plans were often excellent from the point of view of a marine user, but the plans were often ruined by other organisations with more influence. In addition, the District Councils often want changes to their district's

waterfronts, but, by definition, they do not have the entire waterfront in mind when they make decisions. Piecemeal planning and implementation, such as is the case in Hong Kong, only ensures piecemeal results.

Many other cities have solved this problem by adopting an over-arching government organisation responsible for the entire waterfront and harbour, as seen in Chapter 2. With some initial capital investment, such an organization could be self-funded if it collected fees from things such as vessel licences, moorings, and fines for safety and health violations. This would allow the harbour area to be developed by one organisation with the proper scope and perspective of all the issues and stakeholders and provide a much more consistent flow of policies, while, at the same time, helping to reduce government bureaucracy from taking over. The Harbour Business Forum published a document recently called the *Integrated Harbour Vision & Delivery Plan*, which discusses in-depth a possible structure of such an organisation, as well as a more in-depth analysis of its strengths, weaknesses, and implications.

5 Conclusions and Recommendations

As a result of the information collected and the trends identified over the course of our project, we determined a set of conclusions regarding the needs of Victoria Harbour. In order to address the issues noted in these conclusions, we provide recommendations for the future improvement of Victoria Harbour's waterfront. These recommendations are intended to provide guidelines for future planning of waterfront space to better facilitate an increase in marine activities and to preserve Victoria Harbour as a focal point of Hong Kong's identity.

1. Sheltered water is an extremely vital asset in Victoria Harbour and is not currently recognized as such.

Sheltered water has an incredible value to marine users of all kinds, from ocean-going cargo vessels to community boats, as described in 4.2.1.

- **We recommend an increase in the amount of sheltered water available in Victoria Harbour to meet the increasing demand for shelter during typhoon seasons and year-round mooring facilities.**

  The number of vessels in the harbour is growing, and, in order to allow the number of vessels in the harbour to continue to grow, more space must be provided for moorings. The issue, however, lies in the availability of space for shelter during typhoons. If year-round moorings are placed in typhoon shelters, they detract from the typhoon shelter space available in that area. It is for this reason that additional moorings cannot currently be added in typhoon shelters. Due to this lack of available space, governing bodies should consider an increase in the amount of sheltered water; more sheltered water would allow for increased mooring space for the growing number of small vessels while retaining typhoon shelter space for existing vessels.

- **In order to increase the amount of sheltered water for moorings as well as shelter during typhoons, we suggest moving the breakwaters in the Causeway Bay and To Kwa Wan typhoon shelters.**

  Currently, the Causeway Bay typhoon shelter is the primary location allocated by the Marine Department for the mooring of pleasure vessels. This shelter is already unable to accommodate additional pleasure vessels, preventing the growth of recreational boating.

  Expansion of the To Kwa Wan typhoon shelter would serve the community by providing additional space for boat storage during typhoons. This large shelter is currently used primarily for temporary shelter and could be expanded to further facilitate this function.

  - **We recommend that the To Kwa Wan typhoon shelter be used to provide moorings for the tourism-supporting vessels, including harbour tour boats and water taxis.**

    To Kwa Wan could provide a more convenient location for these vessels, which are currently forced to moor in the Aberdeen typhoon shelter, and facilitate the tourism industry growth. Allowing these vessels to moor within the harbour rather than an area located on the other side of Hong Kong Island would allow these companies to reduce their cost of operation, expand their business, make harbour tours more readily available and affordable.

- **Use the Central-Wanchai Bypass and Shatin-Central Link construction to improve the Causeway Bay typhoon shelter and adjacent ex-PCWA.**

The Central-Wanchai Bypass' temporary effect on the Causeway Bay typhoon shelter could easily become beneficial rather than detrimental. We recommend that

this potentially valuable opportunity not be wasted. While the construction is occurring in the area, other necessary projects could also be undertaken in order to improve the typhoon shelter.

- **The shelter should be enlarged to accommodate the increasing number of pleasure vessels and to facilitate the further growth of the recreational boating industry.**
- **The fore-aft mooring system should be replaced by a more efficient pontoon system that would allow boaters walking access to their vessels, as well as allow more ships to fit into the same amount of space.**
- **Access and amenities for community, leisure, and watersport uses should be provided. Namely, access to boating should be provided for the general public, including boat rentals, space for very small boats, and facilities for the floating communities located in the Causeway Bay shelter. Additionally, proper fuel, fresh water, garbage disposal, sewage removal, and maintenance services should be provided for use by the general public.**

- **We recommend that marine users be given higher consideration in the development of land surrounding sheltered water.**

Sheltered water is crucial for the safe mooring of smaller vessels. It also provides easy access to boating and other marine-related activities. As such, the water-edge around sheltered water should be designed to cater to and support marine users.

2. The quality and accessibility of existing land/water interfaces is inadequate.

The issues noted in section 4.2.2 prevent users from making proper use of public piers and landing steps. These interfaces are vital to many industries in Hong Kong and should receive much more attention than at present.

- **We recommend that landing steps be improved in the following categories:**
    - **Land access** – Roads, walkways, or other forms of land-based transportation allow water-based transportation to become a viable option for travellers. It is not only important to have land/water interfaces located nearby to proper land-based transportation but also to have land-based access for existing interfaces.
    - **Signage** – Landing steps that are used frequently for passenger transport, harbour tour pick-up, or other frequent services should be given signs to identify their location, as well as their intended purpose.
    - **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 dark.
    - **Shelter** – In inclement weather, many potential passengers for transport ships have nowhere to wait for their boat. Covered waiting areas would provide an area for passengers to wait, protected from the weather. These areas are significantly lacking in the harbour.
    - **Safety** – Most landing steps in Victoria Harbour lack railings. These areas can become quite dangerous as passengers are forced to step off rocking vessels, as there are currently no supports on these slippery steps. Additionally, we found that the situation in Lei Yue Mun is extremely dangerous. All of the life buoys surrounding the typhoon shelter are made of

metal and are welded to the railing. **We recommend that the lack of real life buoys in Lei Yue Mun be fixed <u>immediately</u>.**

- **We recommend that more public piers be added to the plans for Kai Tak, Yau Tong Bay, West Kowloon Cultural District, Kennedy Town, North Point, and future developing areas in order to facilitate transportation to these areas and aid the growth of the harbour tour industry. In addition, public piers should be improved to provide adequate facilities for all users.**

  These piers should be multi-purpose, offering ticketing facilities, shops, restaurants, bars, and other commercial and pleasure services for all to enjoy.

3. Future plans do not give sufficient consideration to the potential for developing areas to become areas of leisure and recreation for both marine users and visitors to the waterfront.

The development of the West Kowloon Cultural District, Kai Tak, and all other waterfronts will cause an increase in demand for harbour-based tourism, leisure activities, and water-based transport. At present, government plans for developing areas neglect marine users. In order to allow for maximum use of available space for marine-related activities, planners must keep in mind the needs of marine users.

- **We recommend additional piers and landing steps be included in the plans at the very minimum.**

  More specific recommendations for some of the major developing areas follow.

- **Central**

We recommend that additional facilities be added to the plan, including a pier addition to the PLA birth for increased access, a display ship, and docking along the waterfront nearby to the Convention Centre.

Figure 5.1: Current PLA Berth Plan

Figure 5.2: UDA Proposal PLA Berth

- **Wan Chai**

We recommend consideration of the highlighted themes in the Royal Hong Kong Yacht Club's 2005 proposal for this area, with the addition of an expanded typhoon shelter, repositioned breakwater in the ex-PCWA, facilities for public small-boat enjoyment – including boat rental facilities, fishing supplies rental, public moorings, public slipway, etc. – and an additional pontoon system for the community vessels located in the Causeway Bay typhoon shelter.

- **Kai Tak**

  We recommend that the current plan for Kai Tak area be expanded to transform the area into one of watersports activity for the general public. Specifically, the Hong Kong-China Rowing Association plan for an international rowing facility should be given serious consideration.

  Second, we recommend additional public piers and landing steps over the course of the runway to serve increased visitor traffic to the Kai Tak area and to accompany our previous recommendation of increased usage of the typhoon shelter space.

- **West Kowloon Cultural District**

  In this area, we recommend the consideration of marine users in future plans. Namely, public piers and landing steps for small transport vessels, as well as a pier for ferry services to this area.

- **Yau Tong Bay**

  With the re-zoning of this area, we recommend that future developments along this area not neglect marine users. The value of this area as sheltered water would make the bay an excellent location for a small marina to accompany any proposed waterfront promenade.

4. The movement of PCWAs out of the eastern and central harbour threatens to destroy the cargo industry currently utilizing these facilities.

- **We recommend the recognition of the industrial marine uses in Yau Ma Tei, Tai Kok Tsui, and Stonecutter's Island, and the provision of 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. The consolidation of industrial marine services to this area should be further strengthened by a long-term lease to industrial services so that permanent, modernized facilities may be constructed. Not only would this increase the effectiveness of the industry in the area, but it would also increase the attractiveness of these facilities.

It must be noted that in order to continue proper operations, the hinterland in this area must also remain as a dedicated industrial area. The land surrounding industrial areas should not be re-zoned as residential because this creates conflicts contributing to the further decline of Hong Kong's historical industry.

5a. Little balance exists between the various classes of marine users in Victoria Harbour.

Over the course of this study, we determined a number of specific imbalances amongst the many users of the harbour that prevent Victoria Harbour from reaching its full potential. Common use divides the harbour into its three areas – industry, transportation, and recreation - but waterfront development projects fail to facilitate the users located in each area. Current development plans for the harbour do not consider the preservation of balance amongst marine users. Future plans should consider the harbour as a whole to make the best possible decisions for marine users of all kinds.

5b. There is no overall plan for future developments in Victoria Harbour. All projects are undertaken on a case-by-case basis.

Future developments should consider the harbour as a whole, protect and support the balance of marine users, and provide services, facilities, and attractions within the harbour. It is imperative that all waterfront areas of Victoria Harbour work together. An integrated network of facilities, waterfront areas, and users creates a vibrant waterfront and draws more visitors.

5c. The large number of organisations with a controlling stake along the waterfront hinders the development of Victoria Harbour.

In order to create the best possible harbour, the waterfront must be developed with a guiding plan that considers the balance of marine uses and users, but the current waterfront governance system prevents action. All of the organisations with a stake in Victoria Harbour's waterfront operate independently – each has an agenda and separate goals for development projects. Under these circumstances, it becomes nearly impossible to support an over-arching vision for Victoria Harbour.

Each controlling organisation has its own interests in the harbour, but none of those interests are *the harbour*. In order to ensure that the future of Victoria Harbour is one of vibrancy and balance, the organisational structure of the harbour's governance must be modified. Victoria Harbour needs an organisation with the sole interest in the harbour as a whole – one organisation that can determine an overall goal for the harbour, create a development plan to reach that goal, and execute the plan quickly, efficiently, and completely.

Our final recommendation addressing conclusions 5a, 5b, and 5c is to establish a single organisation for the control of the waterfront – one to plan and implement future development projects and manage existing facilities.

A single controlling entity will ensure that Victoria Harbour experiences balance amongst users. This organisation would develop the overall plan for the creation of a vibrant harbour and would be responsible for seeing it through. An organisation with full administrative powers will ensure that action is taken, necessary improvements are made, and that Victoria Harbour will become a truly magnificent harbour that sets Hong Kong apart from all other harbours the world over.

Reflections & Improvements

The implications of the recommendations made by our team are extensive, and further study into a number of these conclusions should be undertaken. Our recommendations require a large amount of effort, policy change, and cooperation, but they are based on facts collected over the course of this study that should be verified by additional research. In this section, we identify areas of interest for further study, as well as provide advice for these studies based on our experiences and observations.

Geographical Scope

Hong Kong is in the unique position of having both a small metropolitan core city and wider territory under its control. While the region encompasses many different islands, bays, and rivers, the city itself is centred around Victoria Harbour. The scope of this project addressed this urban core. We excluded the resources available to the government and to the other marine stakeholders in the rest of the Hong Kong territory. These resources are important to the goal of balancing marine activities and uses in the harbour, as space along the water is finite and it is impossible to fit everything there. Future studies should therefore cover the entire territory and not just the harbour.

Design of Future Studies

This study provides a solid basis of information upon which further research may build. This paper presents a significant introduction to the facilities, governance, services, and issues present throughout Victoria Harbour. Our Google Earth database exists solely to help others to understand these issues and concerns. Future studies should become acquainted with the harbour before designing the study. Our methods should be considered and analysed during the design process of any further studies.

Additionally, the many stakeholders along the waterfront should be considered in future studies, as they are often under-represented in policy decisions. The goal of bringing

people to the waterfront and the waterfront to the people should be recognized in any further study. Marine users must be given equal consideration to land users and the focus of research should reflect this consideration.

Forecast

One of the objectives of this project was to forecast how the uses of Victoria Harbour will change over the next 5, 10, and 15 years. We estimated the change in marine users to the best of our ability, using existing plans, past trends, and stakeholder predictions. We believe strongly that our forecast is as accurate as possible, but future research should delve further into the issues discussed in this study. Future studies should therefore include advanced economic and statistical analysis.

Given the wide-ranging implications of our findings on waterfront planning, reclamation, and the design and management of land/water interfaces, we urge all stakeholders to undertake further research on the value of Victoria Harbour as a marine resource and to develop and validate our findings.