Harbour Business Forum
海港商界論壇

*The Harbour Values Study*

# How much are you willing to pay for an improved harbour?

# HK$73 Billion












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# The Harbour Values Study

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Carried out by

GHK

With support from

ACNielsen

DTZ Debenham Tie Leung 戴德梁行

eftec
Economics for the Environment Consultancy Ltd

Jones Lang LaSalle 仲量聯行

Knight Frank Petty 卓德·萊坊

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# 1. EXECUTIVE SUMMARY

## 1.1 Study Examines Value of Harbour Improvements

This Study examines the value of improved planning and development of Victoria Harbour. The purpose is to demonstrate the value of community preferences that lie outside considerations of the costs and revenues of development.

The methodology was developed using economic techniques considering experience internationally and in Hong Kong.

Valuing community preferences involved surveying the public to determine their preferences for the future planning and development of the Harbour and the value they placed on those preferences. This approach is called Contingent Valuation (CV) and uses surveys to determine value through willingness to pay. Two scenarios were valued: an ideal future harbour, as determined by the respondents and a second "control" scenario.

Understanding the meaning and implications of the value of community preferences involved developing a land valuation model and undertaking a case study to demonstrate the trade-offs between property development and community benefits. The case study covered three alternative development scenarios for the Central reclamation.

## 1.2 Community Values Harbour Improvements at $73 billion and $69 billion under Two Alternative Scenarios

**Scenario 1:** Where respondents selected their own set of pictures to represent their individual scenario of an "ideal harbour". The findings were as follows:

- 76% of respondents willing to pay
- Average length of time willing to pay 5.8 years

Contingent values were derived by calculating the present value of the monthly amount respondents were willing to pay, over the

### HEADLINES

***"Community places Capital Value of $73 billion on Ideal Harbour"***

***"Community places Capital Value of $69 billion on Vibrant Harbour but with no Major New Buildings"***

**Study Adopts Economic Technique called Contingent Valuation, which uses Willingness to Pay to Derive Value**

**Technique Recognised by many Governments and Institutions such as World Bank and Asian Development Bank**

**Limited Number of Other Studies in Hong Kong have also Responded to Calls for the Valuation of Environmental Issues**

**Community Values of $73 Billion and $69 Billion Compare to:**

- **Intangible Costs of Air Pollution Improvement from Average to Good: $19 billion per Year**
- **Cost of Harbour Area Treatment Scheme: $8.2 billion Stage I and estimated $19 billion Stage II**
- **Residual Land Value of Government Proposals for Central Reclamation (excluding Tamar): $37 billion**

**High Dollar Value Provides Evidence to Decision-Makers**

- **Harbour Planning and Development is a Priority**
- **Government Revenue-Generating Land Uses may not be the Best Solution for the Harbourfront**

length of time they were willing to pay and applying a discount factor of 4%. Grossed up to the adult population of 5.8 million gives an overall community value = $73 billion.

**Scenario 2:** A "control" scenario where respondents were provided with pictures which represented a vibrant harbour with green areas, open and recreational space, access at the ground level but no new major buildings. This scenario included seven of the most selected pictures under the ideal scenario and none of the three least selected. The findings were as follows:

- 74% of respondents willing to pay
- Average length willing to pay 5.6 years
- Grossed up to the adult population of 5.8 million gives an overall community value = $69 billion

Of those who said they were not willing to pay anything, some 60% thought that the government or others should pay or that they were already paying through taxes. Thus their true valuation was probably not zero, but simply not revealed.

### 1.3 Land Values of Alternative Scenarios for the Central Reclamation Range from $8.5 billion to $37.3 billion

The three development scenarios included in the case study varied in land use, overall gross floor area (GFA), layout, height, density, type of floor space, degree of open access, etc. No value was assessed for the Tamar site, as it was assumed to be common to all scenarios. The findings were as follows:

**Scenario 1:** Based on the government's Outline Zoning Plan (1998): GFA 448,620 sq m, land value $37.3 billion.

**Scenario 2:** Based on the proposals made by Society for Protection of the Harbour (2004): GFA 111,118 sq m, land value $8.5 billion.

**Scenario 3:** Based on a scenario that reflects alternative planning principles, whilst taking advantage of appropriate development opportunities: GFA 123,895 sq m, land value $11.9 billion.

### 1.4 Case Study Results Assist in Understanding the Trade-Offs in Harbour Planning and Development

The case study undertaken provides important insights into the order of magnitude and relative values of the trade-off between GFA, and public amenities and benefits which lies at the heart of the Hong Kong land use / revenue generation policy debate.

The reduction in GFA under Scenarios 2 and 3, assuming the sites were sold, would reduce land sales revenue by about $25-$29 billion. Although the community values of $73 billion and $69 billion apply to the whole harbour and not just Central, the order of magnitude suggests that for harbour front land, the trade-off warrants closer inspection.

### 1.5 Wider Policy Implications Suggest Revisiting Priorities for Planning and Development of the Harbour

The Study findings show that the community places a high dollar value on improvements to the planning and development of the Harbour. It responds to the many calls from stakeholders for evidence of the value of intangible benefits.

The community value provides useful evidence for analysis and decision-making and contributes to the policy debate. It suggests that the historical presumption of revenue-generating land usage may no longer be valid for sites where community values for environmental and amenity improvements score highly, such the harbour front.

The strength of community preferences valued in dollar terms cannot be ignored. The Study provides evidence that will assist decision-makers in prioritising planning and development objectives to make Hong Kong a more competitive and attractive place in which to live, work or visit.

# 報告摘要

## 1.1 報告研究維港在更佳規劃發展下之價值

此項研究報告旨在探討維多利亞港在更佳的規劃發展下之價值，目的是顯示香港市民對維港取向是非常重要的，但現時卻沒有計算在發展維港的成本和收入之內。

研究方法是以經濟學技巧爲基礎，並參照國際及香港的經驗。

爲評估市民眼中理想維港的價值，研究報告進行了公眾意見調查，藉此了解市民對維港未來規劃發展的取向，以及他們願意付出多少錢來實踐有關構想。研究報告利用「條件價值法」，透過不同的意見調查，了解市民的支付意願，從而推算出維港的價值。研究報告爲此評估了兩種情況：由受訪者選出理想的未來海港面貌；以及「對照」情況。

爲了解市民眼中理想維港的價值之意義和含意，研究報告建立了一套土地估價模式，並且展開個案研究分析，以便在物業發展與維港對社會的好處之間權衡取捨。個案研究分析了3個不同的中區填海發展方案。

## 1.2 在兩種不同的情況下，市民眼中理想維港的價值分別爲730億元及690億元

第一種情況：由受訪者隨意選出一輯海港面貌圖，代表他們心目中最理想的維港。 研究結果如下：

- 76%受訪者願意付錢
- 願意付款年期平均爲5.8年

將受訪者每月願付款的金額、願意付款的年期，再附上折扣率4%，以成年人口爲580萬人計算，推算維港的價值 = 730億元。

**新聞標題**

***「市民眼中理想維港的資本價值爲730億元」***

***「市民眼中朝氣蓬勃、沒有新建築物之維港的資本價值爲690億元」***

**研究報告採用以經濟學技巧爲基礎的條件價值法，根據市民的支付意願，推算維港的價值。**

**評估方法備受多個國家和地區的政府及機構認可，當中包括世界銀行和亞洲開發銀行等。**

**香港欠缺就環保議題估值的類似研究報告**

**市民眼中理想維港的價值分別爲730億元和690億元，相比：**

- **空氣質素水平由「平均」提升至「優良」的無形成本：每年需190億元**
- **淨化海港計劃之成本： 第一階段耗資82億元，而第二階段估計需要190億元**
- **特區政府建議的中區填海計劃之土地餘值(不包括添馬艦)： 370億元**

**市民給予維港高的金錢價值，爲香港決策當局提供強而有力的證據：**

- **證明海港規劃及發展工作是當務之急**
- **特區政府不應以土地可帶來收益之方式，作爲發展海旁用地的最佳方案。**

第二種情況：向受訪者提供多幅海港面貌圖，以便作爲「對照」之用；圖片以描繪一個活力充沛、朝氣蓬勃的海港，不僅沒有新建的高樓大廈，更設有綠化地帶、公共及休憩空間，而市民亦可以由地面行人道直達海濱。而對照情況包括提供在第一種情況中最受歡迎的7張海港面貌圖，但並不包括最不受歡迎的3張海港面貌圖。研究結果如下：

- 74%受訪者願意付錢
- 願意付款年期平均爲5.6年
- 以成年人口爲580萬人計算，推算維港的價值 = 690億元

另外，約有60%表示不願意付錢的受訪者認爲，應該由特區政府或其他人士付款，原因是他們繳交的稅款已包含有關費用，因此，維港對於他們的真正價值可能不是零，只是沒有披露而已。

### 1.3 根據不同的發展情況，中區填海地的價值在85億元到373億元之間

個案研究分析了三種發展方案，這些方案的土地用途、總樓面面積、規劃設計、建築物高度、建築物密度、樓面面積類型、信步可達的開放程度，各有不同。由於假定添馬艦地皮在這三種發展情況下的影響相同，所以它的估價沒有計算在內，個案研究結果如下：

第一種情況：按照特區政府的分區計劃大綱圖(1998年)： 總樓面面積爲448,620平方米， 地價爲373億元。

第二種情況：按照保護海港協會的建議(2004年)：總樓面面積爲111,118平方米，地價爲85億元。

第三種情況：按照另外可行的規劃原則以及充分利用適當發展機會之方案：總樓面面積爲123,895平方米， 地價爲119億元。

### 1.4 個案研究結果有助維港在規劃及發展時權衡取捨

個案研究就總樓面面積與公共設施及維港對社會的好處之間的取捨，提供了非常重要的真知灼見，列明當中的輕重次序及相對價值，有助制定香港土地用途 / 創造收入的政策。

第二及第三種情況的總樓面面積均大幅減少，假設地皮成功出售，賣地收入將減少250億元至290億元。但市民眼中理想維港的價值分別達730億元和690億元，雖然這些價值是以整個維港計算，並非單指中區，但對於海旁土地的發展，有關其輕重次序，決策當局在作出取捨決定前必須三思。

### 1.5 更廣泛政策含義意味需重新審視海港規劃及發展之優先次序

研究結果顯示，在更佳的規劃及發展下，市民會給予維港高的金錢價值，反映無形好處的重要價值，正好回應社會各界人士的訴求。

維港在市民眼中的價值，爲香港決策當局提供有用的證據，有助分析並作出明智決定，以及參與政策辯論。研究報告建議，對於一些市民重視改善環境和休閒設施的地區，如維港海濱，特區政府一直以來認定土地可帶來收益的觀念，或許已經不合適宜。

市民眼中理想維港的金錢價值，不容忽視。研究報告提供強而有力的證據，協助香港決策當局重新審視海港規劃及發展目標的先後次序，從而提高香港的競爭力和吸引力，令市民安居樂業及遊人留下深刻印象。

# 2. INTRODUCTION, BACKGROUND AND OBJECTIVES

## 2.1 Study Examines Value of Harbour Improvements

This Study, commissioned by the Harbour Business Forum[1] (HBF), examines the value of improved planning and development of Victoria Harbour.

The purpose is to demonstrate the value of community preferences that lie outside considerations simply of the costs and revenues of development. HBF regards these intangibles as important and believes their value should be taken into account in the planning and development of the harbour.

This Study builds on the findings of the earlier HBF Public Opinion Survey[2] which determined current usage of and *preferences* for the future of the harbour. This Study determines the *strength of those preferences* by using appropriate economic techniques to value the community benefits of improved planning and development of the harbour, in *dollar terms*.

HBF believes that the Study:

- Responds to the many calls from government, non-government organisations (NGOs) and the private sector for evidence of the monetary value of intangible costs and benefits
- Supports further engagement with stakeholders, about the value of improved harbour planning and development
- Provides useful evidence for policy analysis and decision-making with respect to the harbour

[1] The HBF is a coalition of over 100 diverse businesses in Hong Kong. HBF's mission is to see Hong Kong's Harbour and Harbourfront areas become a genuinely vibrant, accessible and sustainable world class asset

[2] HBF Public Opinion Survey, 2006

## 2.2 The Need for New Approaches to Policy Research and Evaluation

To support sustainable development policies, decision-makers need to incorporate environmental and social aspects into the evaluation and prioritisation procedure. Sustainability Assessment (SA) goes some way to assisting this process but does not provide the means to evaluate environmental improvements against costs. In fact although SA's in Hong Kong call for Cost Benefit Analysis (CBA), costs and benefits that are difficult to value in dollar terms are generally not included in the rate of return calculation, and, at best, are considered on a qualitative basis.

Similarly, public consultation in Hong Kong tends to be limited in scope. Consultation is mostly undertaken on detailed options of a proposal, sometimes with rather limited information, rather than on the principle of whether the scheme is a good idea or not. The case of Harbour Area Treatment Scheme (HATS) on the following page provides an example of both limited CBA and use of public consultation without providing the public with adequate information on which to make informed choices.

The disputes over reclamation and the planning and development of the harbour are linked to discussions of priorities and value. Until now, very little work has been undertaken in Hong Kong to inform decision-makers of the advantages and disadvantages of various trade-offs.

## 2.3 Objectives of the Study

The overall objective of the study is to:

- Determine the value of community preferences for improved planning and development of the harbour, and to assess its meaning and implications in the Hong Kong context

More detailed tasks of the Study were to:

- Develop an appropriate methodology
  - Examine valuation techniques used in Hong Kong and elsewhere for measuring harbour improvements and environmental impacts more generally
  - Adapt approaches for the valuation of community preferences and for understanding its implications
- Adopt economic techniques and use a public survey to determine community values
  - Examine people's preferences for the future planning and development of the harbour
  - Determine the value that people attach to those preferences
  - Determine an overall value for community preferences for harbour improvements, using statistical techniques
  - Consider the trade-offs in harbour planning and development to assist in understanding the implications of the community value
  - Develop a land valuation model that could be applied to alternative scenarios for new developments[3]
  - Undertake a case study of the land value of alternative development scenarios for the Central reclamation
- Consider the wider policy implications of the Study for harbour planning and development

[3] Details of the land valuation model and the case study are in **Annex A**

**The Harbour Area Treatment Scheme (HATS)**

HATS aims to improve the water quality of Victoria Harbour and involves the implementation of an integrated sewerage system that will collect and treat all of the sewage from both sides of the Harbour area in an efficient, effective and environmentally sustainable manner. Fully commissioned in 2001, Stage 1 of the Scheme treats 75% of the Harbour sewage and is reported to have resulted in a 90% improvement in water quality in the eastern Harbour.

In 2004, the Government of the HKSAR completed several technical studies on environmental impacts and engineering feasibility and carried out a 5-month public consultation to assist in deciding the best way forward for the remaining stages of HATS. The cost benefit exercise was part of the technical study and was limited to determining the least cost engineering solution; the benefits were not examined.

The public consultation exercise involved a series of in-depth technical briefings, discussion forums and public hearings and collected comments from 46 stakeholders and 81 written submissions. The technical studies and public consultation were carried out to consider several treatment options which would achieve the same level of improvement in water quality. According to the Government, the community supports the "polluter pays" principle and believes that it is worth paying higher sewage charges if the outcome is a cleaner Harbour.

However, the consultation document only tells the public limited information. It gives a total capital and operating cost but it is not clear to the public what the polluter pays principle means in terms of what they are expected to pay. In the same year, the Government decided to proceed with the implementation of Stage 2 in phases. The Government's policy target is to recover the full operating costs through levying higher sewage charges

# 3. MEASURING VALUE

## 3.1 The Role of Harbours and Waterfront Areas in City Development

The resurgence of waterfronts as places of public enjoyment began more than 40 years ago. Great cities of the world have transformed their waterfronts and added to their appeal to investors and visitors, to local business people and to the quality of life of those who live there. Harbour front development has been undertaken to catalyse a turnaround in economic role and performance. The list of cities is well documented; the most commonly cited include: Barcelona, Boston, London, New York, Singapore, Sydney and Toronto.

The experience of these cities is somewhat different from Hong Kong's, where reclamation of the harbour has been undertaken to create new land in close proximity to areas of thriving economic activity. To date harbour front areas in Hong Kong have been used primarily for buildings, roads and infrastructure. The harbour has not played an important role in creating open air breathing spaces for a city characterised by some of the most densely populated living spaces in the world. The creation of green spaces, urban parks, recreational areas and public amenities is particularly relevant in considering value and the importance of the relationship between the urban environment and quality of life.

## 3.2 Measurement of Benefits of Harbour and Waterfront Development

Largely because of their objective to redevelop and regenerate run-down areas, the measurement of the benefits of harbour and waterfront development elsewhere have tended to focus on performance targets and criteria rather than value. In this sense ex-post evaluation was used rather than ex-ante studies to help formulate policy and strategic decision-making. A good example can be seen in the Boston experience.

**The Boston Experience**

Boston provides a good example of both harbour and harbour-front regeneration and creation of public open space in the heart of the city. The recent report: The Leading Edge, Boston's New Role in the City Economy, Save the Harbour/Save the Bay, 2004, examines the contribution of the harbour and the waterfront to the economy of the City and to the region with the aim of helping the City and its people to realise the full value of the asset. However, the report acknowledges that indirect and intangible benefits are not addressed despite their importance "if not more important than direct economic benefits" and points towards a future study which will look more closely at the quality of life aspects using indicators.

In short, Boston portrays much of the experience of other port cities which have undergone transformation. Twenty years ago Boston Harbour was a source of embarrassment, water pollution and segregation from the heart of the city by the central artery highway meant that the City literally had turned its back on the waterfront. A series of investments primarily in sewage treatment to improve water quality and in highways began the transformation. The tunnelling of the central artery and creation of open space and parks is now nearly complete and the *Big Dig* is world renowned for its foresight in removing the barrier to the water-front and enabling the City to be connected to the Harbour once more. Numerous other public projects in cultural and transport facilities and recreational spaces have gone hand in hand with the initial regeneration initiative and private sector development in office, residential, retail, hotel and other uses.

The water-front has been at the leading edge of the City's economy:

- 60% of all population growth 1990-2000
- 88% of all job growth 1994 – 2001
- 13% higher earnings growth per worker 1994-2001

Between 1987 and 2004 the private sector:

- Invested US$2.2 billion in completed property development, including 3.2 million sq ft offices, 2,700 residential units, 1.0 million sq ft industrial and 1.9 million sq ft research, institutional, cultural and entertainment uses
- Has a further US$1.1billion under construction
- Further US$8.3 billion approved/proposed

"Needless to say, real estate is also benefiting from Boston's changes. Homes and condominiums that were originally in the shadow of the Central Artery are estimated to have risen in value by 40%".

*Thomas C Palmer, Jr. "Undeveloped Potential", the Boston Globe, 27 April 2005*

### 3.3 Turning Environmental Benefits into Value

The Harbour Values Study sought to determine community preference and the value of better future planning and development of the harbour rather than considering performance targets and outcomes of a specific urban development project. To achieve this, the Study's approach and methodology considered economic valuation techniques developed for environmental or 'non-monetary' benefits that have been developed and adopted elsewhere in the world.

The valuation of environmental and other resources is one of the fastest growing areas of research in environmental economics. The research aims to assist decision-makers to make informed policy choices through balancing the costs and benefits of goods. Putting a dollar value on cleaner air, purer water, and in this case, an improved harbour, is the goal and the challenge.

### 3.4 Methods of Valuing Intangibles

Environmental valuation techniques fall into two main categories:

- **Revealed preference** which analyses people's behaviour to derive value. In Hong Kong, most work in this field has focused on air pollution
- **Stated preference** which uses surveys to determine value. One such technique, Contingent Valuation (CV), is adopted in this Study because it is direct, transparent, relatively easy to administer and can deal with a future hypothetical situation. Thus CV is appropriate for the subject being examined

### 3.5 The Contingent Valuation Technique

The CV method first came into use in the early 1960's. An economist, R K Davis, developed the idea that it was possible to simulate a market, even where none exists, through carefully controlled research studies. Techniques have since been refined and extended and are now widely adopted for many environmental issues.

CV determines value by simulating a market, i.e. in the survey situation the interviewer acts as the seller and the respondent acts as the buyer and they negotiate until they agree on a price or a Willingness-to-Pay (WTP) for a particular intangible good or scenario.

A CV survey presents scenarios that offer different possible future states for the respondents, for example, of the harbour and harbour front. They can be represented in many ways, e.g. verbal or written description, visual stimulus, and/or virtual reality[4]. Respondents are asked to state their preferences and their willingness to pay for them. Using a direct WTP approach allows a simple derivation of monetary value which can then be compared to goods for which there is a market and a monetary value.

### 3.6 Application of Contingent Valuation Studies

Several thousand CV studies have been undertaken worldwide. Although in terms of number, the US and Europe dominate, many studies have been carried out in Asia, including China. CV is used by international agencies such as the World Bank and the Asian Development Bank. Studies relevant to Hong Kong include those about air, noise and water pollution, urban parks and green space and increasingly cultural and heritage assets. Overall, the use of CV is increasing, particularly for cost benefit analysis purposes for policies and projects of significant importance and in environmental legislation.

CV studies have been used for a variety of purposes:

- Legal damage assessment
- Demonstration of the importance of issues

[4] The sophistication of the stimulus is dependent on the issues being investigated, the budget and the nature of target respondents.

- Design of economic instruments and pricing
- Priority setting within a sector and across sectors
- Cost Benefit Analysis of projects, programmes and policies

Some examples of the application of CV in different countries and for different uses are summarised here. They have been selected to demonstrate the range and diversity of CV application.

- The Exxon Valdez Oil Spill brought CV to the fore in the late 1980's and early 1990's and is probably the most famous case of CV application for legal damage claims. The case was controversial, there were very large sums of money involved and there were many critics of the court settlement. In fact the case brought the validity of CV under review by a panel of experts including two Nobel Prize winners. The review found in favour of CV, albeit with strict guideline recommendations. CV remains acceptable evidence in the US for legal damage assessment.
- The case of the London Olympics demonstrates the flexibility of CV as a technique to investigate people's attitudes, strength of preferences and values. There were many sceptics of the bid for the London Olympics and the study provided evidence which showed that both Londoners and others were willing to pay for the perceived benefits of the Games.
- In the UK, CV helped to shape policy in the introduction of the building aggregates levy. In this case a CV study was undertaken to help inform the decision as to whether there should be a tax on aggregates (such as gravel and sand), and if so, at what level. The results were used as a basis for policy and in the UK's Budget April 2000; the Chancellor announced the introduction of an economic instrument – the aggregates levy, effective from 2002.
- The World Bank CV study to examine the feasibility of a loan to rehabilitate the Medina at Fez was pioneering in the application of CV to cultural heritage assets. Work in this particular field has grown in the last decade. The study was used to support the case for a World Bank loan, approved in 1998.

Other studies of urban green space are relevant for the planning and development of Victoria Harbour.

- In Sydney, Australia, a CV study assessed the non-market economic value of the recreational and other benefits of 315 ha of parkland, using travel cost and WTP studies. The results were used to support the case for management and maintenance costs and a foundation was set up in 1998 to enable people to donate to Centennial Parklands for environmental projects.
- More recently, a CV study of the recreational and amenity use of urban green spaces in Guangzhou was undertaken by academics at Hong Kong University. The authors' conclusions suggest the study verifies the applicability of CV to China and provides useful evidence to justify more resources for urban green spaces and to encourage the incorporation of public opinions into planning for sustainable cities.

Further details can be found in **Annex B**.

### 3.7 Contingent Valuation Studies in Hong Kong

The use of valuation techniques is in line with the Hong Kong policy context, primarily through CBA requirements. However, very little work of this kind has been undertaken in Hong Kong. Research carried out under funding from MTR Corporation Limited on the benefits of the West Island Line/South Island

Line refers to CV[5], but the study focuses on revealed preference techniques and CV estimates are not used to calculate benefits.

There has been economic cost benefit work on environmental issues, such as air pollution, which is certainly related, but to date this type of research has mainly focused on the costs through analysis of behaviour. Many studies have asked about peoples' opinions about and preferences for the harbour[6] but none of them included WTP or attempted to place a value on people's preferences.

The increasing use of and requirement for CV studies in Asia and elsewhere in the world and the techniques' acceptance as evidence in applying environmental legislation in parts of Europe, the US and Australia are clear. Certainly, as with any research technique, CV has its limitations and its critics; in particular, care must be taken in the survey design to mitigate any bias as far as possible. However, the evidence for its validity as a relevant technique for this Study is well founded.

### 3.8 Approach and Scope

The Harbour Values Study adopts the CV technique as the most appropriate and applicable approach to assessing the value of community preferences for improvements to the harbour [7] . The community value represents the value of improved planning and development of the harbour, as perceived by the Hong Kong public. It does not include value to visitors. There were two distinct streams of research work in the Study which preceded the overall analysis of findings: determining community value and undertaking a land value case study to assist in understanding the meaning and implication of that community value through demonstrating the trade-offs between community benefits and property development.

The steps undertaken in determining community value included:

- Design CV survey
  - Determine sample size, sampling frame and method
  - Undertake focus groups, determine appropriate CV stimuli and scenarios
  - Design questionnaire including appropriate content to provide context and background, questions about preferences and willingness to pay
- Pilot test and undertake survey
- Input, and clean data
- Undertake tabular, cross-tabular and statistical analysis
- Analyse survey results and undertake consistency checks
- Calculate appropriate community values for Hong Kong

The steps undertaken in the land value case study, described in detail in Annex A, included:

- Develop valuation model to enable rapid calculation of land values for any new development
- Undertake case study
  - Select area and determine land development scenarios
  - Analyse land values for three alternative scenarios

[5] West Island Line/South Island Line: Direct External Benefits, March 2004, The Centre of Urban Planning and Environmental Management, Hong Kong University, Civic Exchange, PlanArch Consultants Ltd,

[6] HBF Public Opinion Survey, 2006; HEC Study, City Planning Consultants, 2005

[7] A list of references is included as **Annex C**

# 4. COMMUNITY VALUES

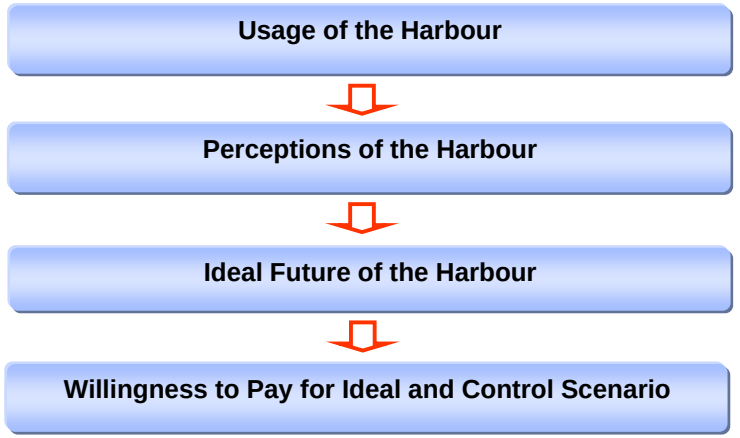
## 4.1 CV Survey Scientifically Designed and Implemented

In this Study, face to face interviews were undertaken with a sample of 1,034 Hong Kong residents[8]. Each interview lasted on average about 20 minutes. An area sampling system was adopted based on the tertiary planning unit/street block system[9]. Small street blocks with maps were the sample units. For each map, age and gender quotas were applied to give a sample close to the true population. The sample was then weighted to be representative of the 2004 population estimates in terms of age, sex and residential area, i.e. Hong Kong Island, Kowloon, New Territories and the outlying islands. Details of the sampling and weighting adopted are shown in **Annex D**.

The questionnaire was straightforward, understandable and relatively quick to administer. The Harbour Values Survey was developed using the results of the HBF Harbour Opinion Survey and focus group discussions, was tested in two pilot surveys[10] and incorporated advice from international experts in CV surveys[11]. A copy of the questionnaire is available from the HBF Secretariat.

## 4.2 Survey Coverage

The survey collected data on respondents' characteristics, usage of the harbour, overall impressions and a rating in terms of the importance of possible future elements of the harbour and the CV-related questions. The CV questions were designed to encourage the respondents to seriously consider the scenarios to be valued and to be as realistic as possible in their responses. The survey coverage is shown in the diagram below.




## 4.3 Selection of Visual Stimuli of Harbour Improvements

The design of the valuation part of the survey of "a better planned and developed harbour" had to be carefully considered. Respondents were asked to create a hypothetical scenario and then to value it. The more clearly the respondent could understand and visualise what he/she was being asked to value, the more realistic and reliable the results would be.

Of greatest sensitivity for the research was the task of finding the right visual stimuli of harbour improvements that represented different dimensions of change in a clear and unbiased way. The focus group discussions were extremely helpful in the development of such stimuli.

[8] Given the representative nature of the sampling method, the sample size is sufficient to give reliable results for the broad order of magnitudes of the preferences and valuations of the community at large. Harbour Values Survey 2006, AC Nielsen. See **Annex D**

[9] Used by Planning Department for Town Planning purposes

[10] For ease of implementation, the survey was conducted on the street and the survey was designed accordingly

[11] Economics for the Environment Consultancy (EFTEC), see **Annex E**

Pictures were researched through numerous public and company databases and the internet. Several rounds of short-listing and additional research were undertaken. An appropriate set of 12 pictures was selected (see page 11). Two pilots of 15 interviews were then undertaken in order to be sure respondents understood the visuals and to fine-tune the CV questions. Using the pictures, two scenario valuation exercises were developed to illustrate aspects of a potential future harbour.

### 4.4 Asking Willingness to Pay

In the first exercise, respondents were presented with a board containing all 12 pictures. Pictures had been included in the survey to demonstrate quality, whether for parks, commercial buildings or other features. The pictures aimed to be easily related to Hong Kong conditions but were, wherever possible, not easily recognisable as Hong Kong or any other city. After the first pilot survey, labels were added to the pictures to reduce any ambiguity about what each picture represented. Also the presentation of the pictures was rotated to reduce any effect from ordering. Participants were asked to select their own ideal scenario by choosing those pictures from amongst the 12 shown that represented their 'ideal state' for the harbour. They could choose as many or as few as they liked.

In the second exercise, the respondent was shown a control scenario of seven of the pictures. These seven were intended to represent a harbour which was vibrant with a focus on outdoor activities and creation of spaces where the public could easily get to and enjoy the harbour. Under the control scenario the value is of a single scenario, i.e. all respondents are valuing the same scenario. The seven pictures were:

- Green areas (Picture 1)
- Parks and open-air plazas (Picture 3)
- Promenade (Picture 5)
- Water activities (Picture 6)
- Open-air eating places (Picture 8)
- Recreational places (Picture 11)
- Ground level access to the harbour (Picture 12)

In order to encourage people to be as realistic as possible about what they would be willing to pay for harbour improvements, questions were drafted to emphasise the need for respondents to carefully consider the answers that they gave. The questions incorporated references to other payments that respondents might make on a regular monthly basis.

Respondents were asked to state the monthly amount, and the length of time over which they would be willing to pay the monthly amount. If respondents were not able to give a response, then they were shown a card with a series of value ranges including zero to assist them to identify an amount.

***Contingent Valuation Questions***

*Q. In order to understand how valuable your selection is to you, we would like you to imagine how much you would be willing to pay for it on a monthly basis out of your own income, such as what you spend each month on things like your mobile phone, eating out etc. How much would you be willing to pay for it?*

*Q. For this different scenario, I would like you to tell me how much you would be willing to pay for this harbour and harbour front on a monthly basis out of your own income, such as what you spend each month on things like your mobile phone, eating out etc. How much would you be willing to pay for it?*

**1. Green areas**

**2. Residential**

**3. Parks and open-air plazas**

**4. Cultural facilities**

**5. Promenade**

**6. Water activities**

**7. Roads and highways**

**8. Open-air eating places**

**9. Covered walkways**

**10. Commercial**

**11. Recreational places**

**12. Ground level access to the harbour**

Photographs 1, 11 and 12 are credited to SMWM.

## 4.5 Activities, Use and Opinions of the Harbour

A large proportion of the respondents had used the harbour in various ways. The three most popular were:

- Taking the ferry (62%)
- Strolling along the harbour front (57%)
- Viewing the harbour at night (55%)

Grouping respondents by usage, overall about one-third were heavy to medium users in the sense of using the harbour monthly or more frequently.

About three-quarters of the respondents had positive impressions of the harbour. The most frequently cited reasons were:

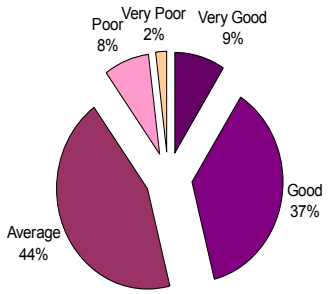
- Scenery, including lighting and seascapes (50%)
- Viewing buildings along the harbour (15%)
- Watching ships (10%)

Negative impressions were mentioned by slightly more than half the respondents. The most frequently cited were:

- The consequences of reclamation (36%)
- Pollution (18%)

In terms of an overall impression, fewer than half of all respondents hold a positive opinion of the harbour. Heavy users and younger people, especially those aged 25 to 34 years, were the most positive.

Overall Impression of the Harbour



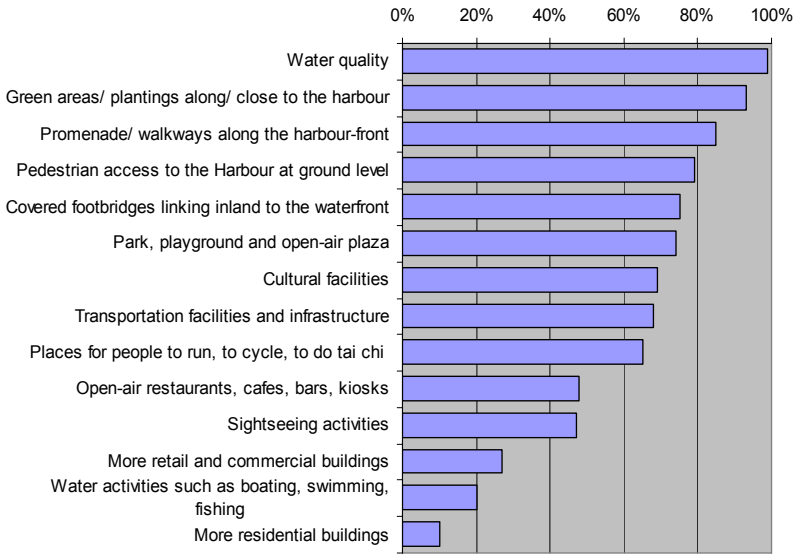

## 4.6 Most Important Elements of a Future Harbour

The top three elements were considered important or very important were:

- Water quality (99%)
- Green areas (93%)
- Promenades (85%)

Access scored 4th and 5th, with pedestrian access at the ground level (79%) rating higher than covered footbridges linking inland to the waterfront (75%).

Important Elements of a Future Harbour



The bottom three were considerably behind the other elements with less than 30% of respondents rating them important or very important. These included:

- More retail and commercial buildings (27%)
- Water activities, boating, swimming and fishing (20%)[12]
- More residential buildings (10%)

A "cluster" analysis was undertaken with respect to the selected elements of an "Ideal Harbour". This technique involves statistically grouping the participants with similar responses. Four groups emerged.

All of the groups have several elements in common:

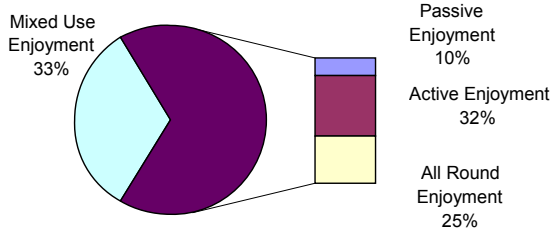
- Water quality
- Green areas
- Access (pedestrian access at the ground level and pedestrian footbridges)

Clearly these three elements have the highest ratings.

Three of the four groups also have another common element in that they exclude residential and commercial development. This represents some 63% of responses. Each harbour segment characteristic emerging from the cluster analysis has been given a name, reflecting the elements contained:

- ***Passive Enjoyment*** (10%). They favoured promenades and walkways in addition to the three common attributes, but wanted fewer facilities/buildings. They tended to be in the medium to higher income group, more active in the work force and slightly skewed towards males and the middle-aged
- ***Active Enjoyment*** (32%). This group shared the same elements as the Passive Enjoyment group, but want more parks, playgrounds and places to do Tai Chi and other activities. They also preferred fewer facilities/buildings and appear to want to enjoy the harbour in a more active way. This group had the highest average income and had the worst current impression of the harbour. The category was evenly split in terms of gender with slightly more middle aged people.
- ***All Round Enjoyment*** (25%) They shared the same elements as the previous two categories but preferred more transportation facilities as well as cultural facilities and open air restaurants. This group appeared to want to enjoy outdoor activities but also wanted some additional facilities and things to do. This group tended to be younger, have a lower average income and contained a higher proportion of students.
- ***Mixed Use Enjoyment*** (33%) This last group is distinct in their preference for more commercial and residential buildings as well as more transport facilities. This group wanted private development but combined with the other common elements. Of the four groups in the cluster analysis, this group had the lowest average income, and was skewed to the higher age brackets.

Segmenting Characteristics of the Harbour




[12] Low rating may reflect the lack of participation in these activities.

## 4.7 Most Popular Pictures for an Ideal Harbour

Responses were reasonably consistent with questions about the most important elements. The diagram on page 15 shows the results of the pictures selected for an ideal future harbour.

The top three most popular pictures selected were:

- Green areas (91%)
- Recreational places (91%)
- Promenades (89%)

Close behind was ground level access at 87%

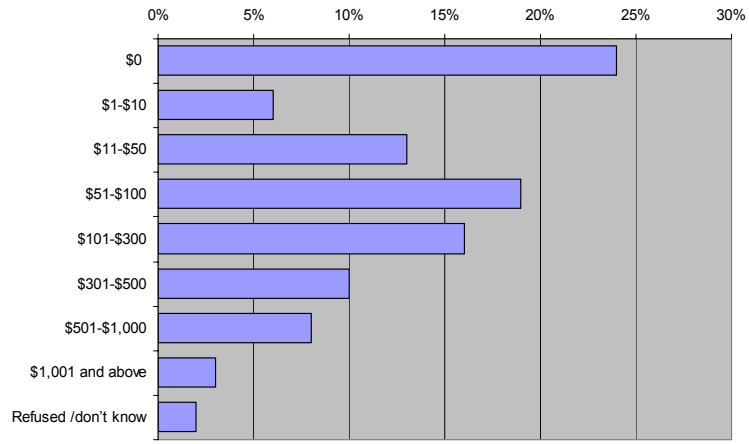
The bottom three pictures in terms of popularity were:

- Commercial (36%)
- Roads and Highways (36%)
- Residential (34%)

## 4.8 Willingness to Pay for an Ideal Future Harbour

About one quarter of respondents (24%) were unwilling to pay and a few (2%) were not able say what they would pay for improvements to the harbour. Some expressed willingness to pay only modest amounts whilst others, generally members of the middle and higher income groups, were willing to pay larger amounts. The median monthly amount people were willing to pay was $68 and the average monthly WTP was $222. This average incorporates all those respondents who said they were not willing to pay anything.

Willingness to Pay for Selected Harbour Improvements




Respondents were asked for how long they thought this monthly payment should be made to achieve their ideal harbour and harbour front. About 60% were willing to pay for less than two years and the average was 5.8 years.

Those unwilling to pay anything were asked why, and provided reasons. More than 60% of those who said they were not willing to pay believed that the government or others should pay or that they were already paying though taxes and thus their value was not necessarily zero, just not revealed. However, in order to be conservative in analysing results, these responses were treated as zeros.

## Respondents Selection of Pictures for Their Ideal Future Harbour

### Open Space, Green Areas, Ground Level Access

Green areas: 91%

Recreational places: 91%

Promenade: 89%

Ground level access to the harbour: 87%

### Parks, Facilities and Activities, Access

Parks and open-air plazas: 82%

Cultural facilities: 80%

Covered walkways: 67%

Open-air eating places: 65%

### Water Activities

Water activities: 60%

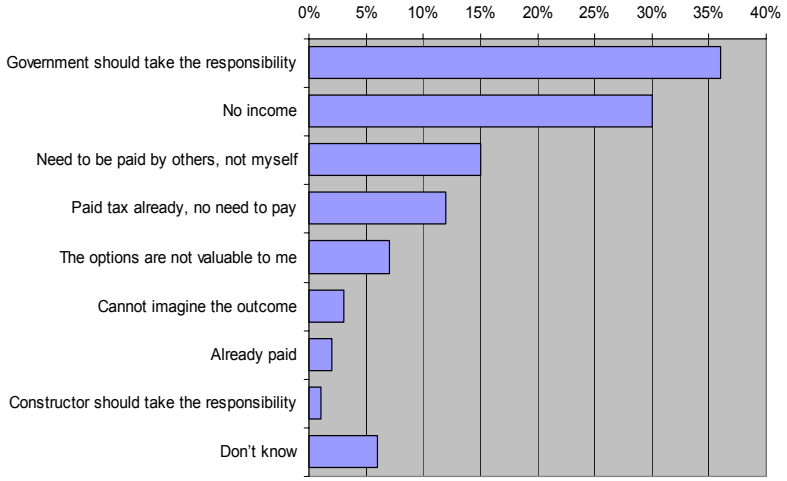
### Commercial / Residential Buildings and Infrastructure

Commercial: 36%

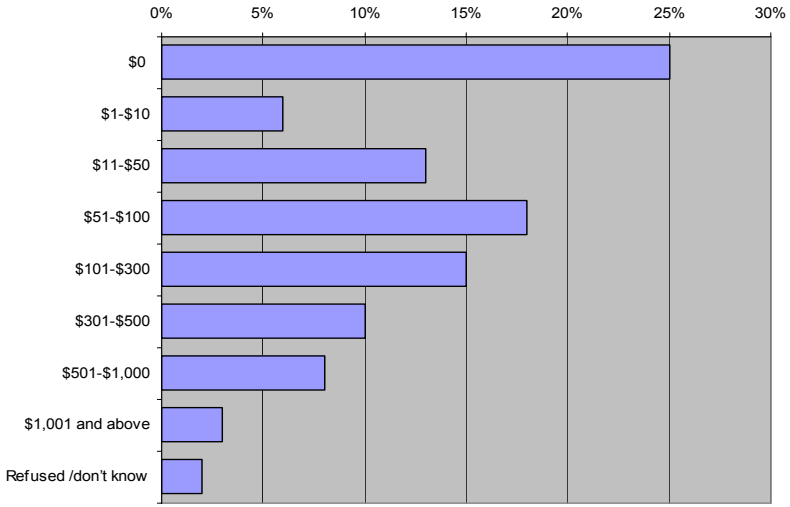
Roads and highways: 36%

Residential: 34%

Reason Stated by Those Respondents Not Willing to Pay




Willingness to Pay for Control Scenario with Focus on Vibrancy but No Major New Development




## 4.9 Willingness to Pay for Control Scenario

The Control Scenario contained just seven of the pictures with a focus on outdoor activities and creation of spaces which the public could easily get to but without major new facilities or buildings. Responses to the Control Scenario were fairly similar to the respondents' Ideal Harbour Scenarios in terms of WTP. On average respondents gave slightly lower values relative to their ideal harbour, a finding which was expected.

The average time period for which respondents were willing to pay for the Control Scenario was also slightly lower – an average of 5.6 years.

## 4.10 Overall Credibility Checks

The results of the WTP questions suggest that people took the survey seriously, considered their situation in responding to questions about value and answered realistically. These results were particularly encouraging since it was not possible to tell people how they would be expected to pay [13]; rather the emphasis in questioning was to encourage people to consider their overall income when responding and to consider their willingness to pay with reference to other monthly payments such as telephone bills.

[13] There is no recognised payment method for scenarios of "improved harbours". Rather there are many institutional models around the world for harbour management but normally they are wholly or partially paid for through taxation, usage fees, and/or policy and/or legislation via a harbour authority, a public private partnership or government itself.

Almost a quarter of people said they were not willing to pay anything for either scenario – ideal or control. On the face of it, this is a relatively high number which suggests that people did not feel obliged to say they would pay. 'No income' was a strong reason for not being willing to pay as well as other respondents who thought that the government or others should pay or that they were already paying through taxes. Again, these responses suggest that people were being realistic in their responses.

The respondents' Ideal Scenario was found to be worth more on average and in total than the Control Scenario. This appears logical since respondents are willing to pay more for their own scenario than for someone else's.

### 4.11 Contingent Valuations for the Ideal Harbour and Control Scenarios

WTP was determined as a monthly amount. In the focus group discussions and the pilot, other intervals were explored, e.g. weekly and yearly, but respondents seem most comfortable considering a monthly amount, most likely because many of their normal expenditures are made on this basis.

In order to assess the overall value of the Ideal and Control Scenarios, these figures were used to calculate a net present value – or capital sum equivalent. A discount rate was applied to reflect the time value of money.

The monthly sums that people were willing to pay were capitalised using the monthly WTP and the time period over which payment was to be made provided the estimate of each respondent's CV of the two different scenarios.

**Capitalising Monthly Willingness to Pay**

$CV = \{(WTP*12) * (\sum 1/(1 + r)^{t})\}$, where

WTP = stated willingness to pay per month

t = stated time period in years from 0 to t

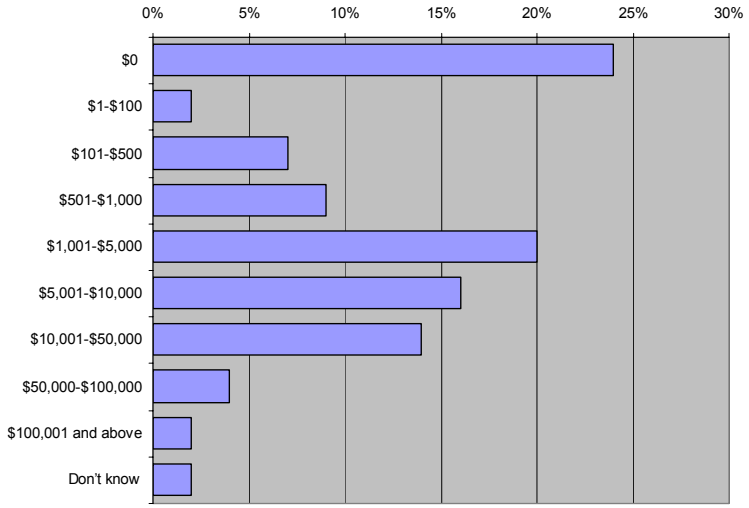
r = discount rate

The discount rate adopted to calculate the net present value presented in this report was 4%, which approximates the low risk rate of return on investments and government's long-term bond yield. A higher discount rate would produce a lower value, e.g. using a discount rate of 8% the calculated CV values are about 20% less relative to those calculated using a 4% discount rate.

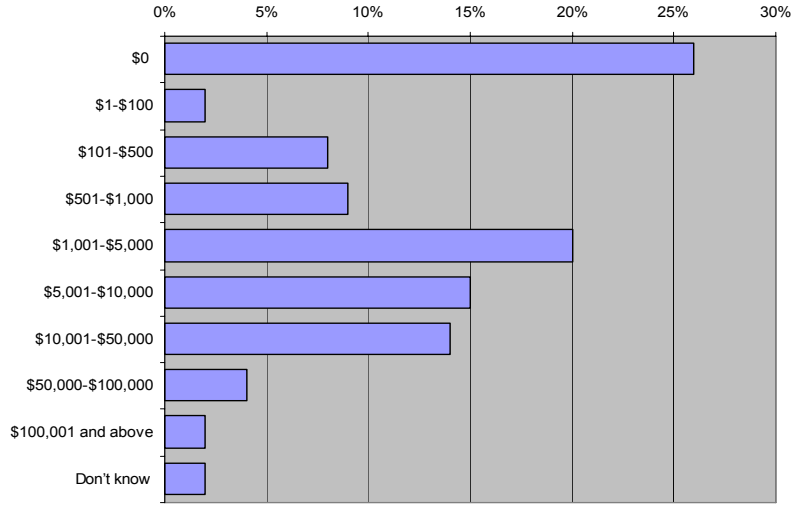
The range of values is quite varied with the highest percentage of respondents in the range with a value of zero and the next most observed range between $1,001 and $5,000. In looking at the values it is important to remember that they represent a capital value equivalent of a monthly payment over a stated period of time. Thus values will reflect both the length of period of stated payment and the stated amount of payment. The average of the individual CV's is $12,573 (net present value).

As with WTP to pay, the Control Scenario values are a little lower than the Ideal Scenario. The average net present value of individual CV's is about $11,855.

Individual Valuations of the Ideal Future Harbour ($NPVs)




Individual Valuations of the Control Scenario Harbour ($NPVs)




## 4.12 Overall Contingent Value of the Ideal Harbour and Control Scenarios

An exercise was undertaken to convert the results of the individual valuation estimates to the value for the Hong Kong population as a whole. The individual CV's were converted based on the 2004 population data[14]. Those who said they didn't know were excluded but those who answered zero are included in the grossing up.

**Grossing up Survey Results to Hong Kong Population**

CV (population) million = $\sum$(CV (individual) $^{1\text{-}n}$/n) * 5.798

*The overall value of the improvements to the planning and development of the harbour in the respondents' Ideal Scenario grossed up to the Hong Kong resident population is $73 billion.*

*The overall value of the improvements to the planning and development of the harbour in the Control Scenario grossed up to the relevant Hong Kong resident population is $69 billion.*

These values are broadly similar, which, given that seven out of the top nine pictures of the respondents' selections were also in the Control Scenario, was not unexpected. The Control Scenario also contains all of the key elements of greening, recreation, open space and access, i.e. the most sought after attributes for the harbour.

The values of $73 billion and $69 billion are large amounts which reflect the value and importance of improvements to the harbour to the people of Hong Kong. But importantly, they are not so large as to appear unrealistic, especially when considered that they are a capital net present value, not an annual amount.

[14] Census and Statistics Department; 5.798 million persons aged 15 and above

To put these results into context in terms of order of magnitude:

- In 2005, government spending on capital projects under the Capital Works Reserve Fund was $33.7 billion[15], expenditure on health was some $28 billion and expenditure on education was some $26 billion[16].
- Examples of assets of Hong Kong entities include: the Link REIT[17] which has investment property assets of about $34 billion; Hong Kong Airport Authority which has fixed assets with a value of $48 billion[18]; and, MTR Corporation which has fixed assets of $103 billion[19].

In short, a better harbour is worth more than double the government's annual Capital Works Reserve Fund; 2.8 times the net assets of one of Hong Kong's largest REIT's; 1.5 times the fixed assets of one of Hong Kong's largest authorities; and 70% of the fixed assets of one of Hong Kong's largest corporations.

### 4.13 What are the Driving Factors that Determine Contingent Valuation?

The results of the survey were examined and tested with the aim of:

- Understanding how the CV amounts vary between different individuals
- Whether there is any statistical correlation between the respondents' CV and their personal and other characteristics

Two sets of statistical inspections of the data were undertaken. First, simple cross-tabulations were produced between CV amounts and individual characteristics and then pair-wise comparisons were made. Second, multivariate analysis was undertaken to search for associations between CV amounts and characteristics in combination. The technique used for the latter was step-wise multiple regression analysis.

The tabulations between CV and individual characteristics produced some slight variations based on age, gender, and other characteristics of the respondents, including their preferences for particular harbour features. However, the effects of the characteristics in explaining the CVs were generally slight.

Younger respondents indicated they would pay a higher percentage of income than others, possibly because they anticipate higher income in the future; have a higher regard and value for the future of their harbour; or are less practical in determining WTP vis-à-vis other expenditure requirements. However there was no significant relationship between age and WTP.

The only association of any significance was with personal income, and other characteristics which are generally associated with income. It was found that, as expected, the WTP of lower income groups was lower than that of medium and higher income groups of respondents. Characteristics generally associated with low income, such as education level, and occupation, (including retirement) was also negatively associated with WTP

The multiple regression analysis revealed a broadly similar finding. While there are statistically significant associations between CV and several characteristics of the respondents and their preferences, the associations themselves do not provide much predictive power. Only about 8% of the variation in CV values was explained by the ten main variables that demonstrated statistical significance (at conventional levels of

[15] Financial Services and the Treasury Bureau

[16] Census and Statistics Department, includes capital and recurrent expenditure

[17] Includes 180 properties, primarily shopping malls and car parks, formerly owned by the Hong Kong Housing Authority. The Link REIT, Financial Highlights

[18] Airport Authority Hong Kong, Annual Report, 2005

[19] MTR Corporation Annual Report, 2005

significance) in the multiple regression equations. The ten variables statistically associated with CV were:

Personal characteristics:

- Monthly personal income
- Gender (males slightly higher than females)

Preferences and likes/dislikes associated with CV:

- Restaurant with a harbour view
- Viewing the harbour at night
- Sitting down and chatting with friends along the harbour
- Strolling along the harbour front
- Taking the ferry
- Availability of cultural facilities
- Parks, playgrounds and open-air plazas (this aspect in the creation of an ideal harbour)
- Pedestrian access to the harbour at ground level (this aspect in the creation of an ideal harbour)

It was also found that the average individual values did not vary greatly with different preferences for a better harbour. Those wanting more open spaces and amenities had broadly similar average values to those wanting, for example, more commercial developments, but there were many more people in the former than in the latter.

Overall, while there was a correlation between some variables and WTP, a model was not found that could predict an individual's WTP to pay. It appears that individuals' preferences about the value of the harbour are linked mainly to personal preferences rather than socio-economic factors.

CV studies and social surveys conducted elsewhere tend to have similar results with relatively low predictive ability, the highest ones showing about 15-20%. For example, the CV survey of green belt land in the UK[20] showed that income was the only variable statistically significant at a 95% confidence level and, as in this Hong Kong study, the predictive ability of all the combined variables was only 8%. The statistical findings in this study are therefore in line with similar studies undertaken elsewhere.

### 4.14 Summary Community Value Results and Broad Implications

Values for improvements in the harbour's public amenities, while high, are credible. The respondents took the survey seriously and gave considered judgements on the choices that they were asked to make. Characteristics that were expected to correlate with or explain responses to the value questions, in particular income, did so. About a quarter of people said they were not willing to pay anything which suggests the survey was not biased in eliciting a positive response.

The $69 billion or $73 billion represents the value that the community places on improvements to the harbour and harbour front areas. These figures only include the value to Hong Kong people. Visitors were not included in the valuation exercise and thus the Study did not measure the value which visitors would place on an improved harbour and harbour front.

The precise number of $69 billion or $73 billion is not the issue here. The value could be slightly more or less, *but the message would not change*. The harbour and harbour front areas are valuable to the people of Hong Kong and the value they attach to improving the planning and development of the harbour is of this broad order of magnitude.

[20] Valuing the Environment: Recent UK Experience and an Application to Green Belt Land, Hanley and Knight, Journal of Environmental Planning and Management, Vol 35, No 2, 1992

# 5. HARBOUR VALUES, ANALYSIS AND DEBATE

## 5.1 Implications for Policies affecting the Harbour

The Study has demonstrated public preferences for environmental and recreational improvements in the future planning and development of the harbour. People in the community want these kinds of improvements and are willing to pay for them.

The Central reclamation case study investigates the potential trade-off between public amenity and land sales revenue. It shows that the trade-off of providing less GFA and more recreation and greening at the waterfront is not necessarily as costly as it appears to be under the current system which looks only at the costs of providing public amenity but not at the value.

The examination of land values created through property development scenarios for Central demonstrated that land sales revenue generated on reclaimed land is high. The land values are primarily generated by the GFA created within a generalised location rather than the site proximity to the harbour itself. The estimated land values created under different scenarios for the Central reclamation ranged from about $8 billion to $37 billion with there being a $25 billion difference between a scenario based on the government's Outline Zoning Plan and an alternative scenario based on alternative planning principles whilst maximising development opportunities.

GFA undeniably has a high dollar value, and less of it means value foregone. But additional public amenities also have a high dollar value, about $70 billion for harbour improvements, as demonstrated in this Study. Considering the wider benefits, to give up some GFA for additional amenities might not be a net dollar value loss, but a gain. So, where does this evidence lead to in policy terms?

It clearly suggests that parks and recreation areas along the harbour front should be a policy priority. The provision of such amenities are not necessarily unaffordable because they are considered valuable by the community, they contribute to the overall attractiveness and future competitiveness of the City and the public is willing to pay for them.

The results suggest that an adjustment to the historical mix of uses, away from buildings and infrastructure and in the direction of greater public amenity, appears in order. The relatively high value that the public place on the development of the harbour for recreation and environmental benefits, *in dollar terms,* is clearly established and provides a strong justification for revisiting existing plans for the harbour, and for planning in the future.

The issue of a planning authority for the harbour was not explicitly covered in this Study, but the implications for such an authority seem straightforward. Put simply the community value attached to harbour improvements is high. In other cities with harbours of the importance of Hong Kong's, specific authorities, such as the Sydney Harbour Foreshore Authority, Toronto Waterfront Revitalisation Corporation and London Docklands Development Corporation, are tasked with the responsibility of ensuring appropriate planning and development of their waterfronts. In contrast in Hong Kong there are more than 20 government agencies which are involved in the planning and development of the harbour and there is no overall plan or strategy. To date, projects of enormous scale and importance have been planned and implemented without consideration of their impact on the harbour as a whole.

The logical implication is that an asset as valuable as the harbour requires a dedicated agency to guide its future development.

## 5.2 Implications for Analysis of other Government Policies

To date Cost Benefit Analysis and Sustainability Assessment studies in Hong Kong, have been constrained by the very limited information provided to the decision-maker since most of

the intangible costs and benefits have not been valued in dollar terms. Contingent Valuation has strong merits in being adopted to inform decisions where there is evidence that there are costs or benefits that otherwise cannot be adequately valued using market-based or revealed preference indicators. There are many other policy decisions where a similar sort of approach would be beneficial in terms of better information about the strength of community preferences and community values.

The HBF hopes that these findings will widen the scope for the government to obtain evidence of community preferences and values not only for the harbour, but also across a wide range of policy issues affecting the quality of life in Hong Kong.

Victoria Harbour – A Valuable Asset, A Great Opportunity

# ANNEX A: TRADE OFFS IN HARBOUR PLANNING AND DEVELOPMENT, A CASE STUDY

## A.1 Purpose of the Case Study of Central Reclamation

In order to understand the meaning and implications of the value of community preferences, the Study develops a model that enables rapid valuation of new property development proposals[21]. The model enables a case study for the Central reclamation proposals to be undertaken to demonstrate the technique and to provide a useful example of the trade-offs between property development and community benefits.

## A.2 Scope of the Central Reclamation Case Study

The case study examines the differences in land values generated under three possible scenarios, each with varying amounts of property development, parks, open space, access, etc. The Tamar site, with assumed development of 150,000 sq m gross floor area (GFA), is common to three scenarios and has not been given a value. The scenarios detailed methodology and maps are shown below:

- Scenario 1: Loosely based on the government's Outline Zoning Plan (1998), this scenario contains significant open space and parkland but also a substantial amount of commercial and retail development. The GFA is 448,620 sq m; or a total of 598,620 sq m including Tamar.
- Scenario 2: Based on the proposals made by Society for Protection of the Harbour (2004), this scenario contains less development and considerably higher areas of open space. The GFA is 111,118 sq m; or a total of 261,118 sq m including Tamar.
- Scenario 3: Based on a scenario that reflects sound planning principles, whilst taking advantage of appropriate development opportunities. This scenario serves to demonstrate the value implications of the trade-off between GFA and planning principles. The scenario incorporates the Central Ferry Piers and adjacent area into the plan since in adopting such principles, Central and the harbour are looked at as a whole and sites immediately outside the OZP boundary may be more appropriate and desirable for development[22]. The GFA is 123,895 sq m; or 273,895 sq m including Tamar.

## A.3 Calculating Values of New Developments

The land value created was valued according to the principles of residual valuation, taking into account the GFA's of the scenarios and other factors that would be relevant to the assessment of total property value. All valuations were undertaken at early February 2006 property prices. The basis for making the valuations was comparability with market values established by transactions in the general area of Central. The values do not take into account specific property characteristics such as lease length and conditions.

The residual method of land valuation was adopted as the method of valuing land by reference to its permissible development potential.

This approach first assesses the gross development value or estimated value of the proposed development as if completed at the date of valuation. Estimated total cost of the development includes costs of site formation, construction, marketing, professional fees, finance charges, and associated costs, plus

[21] The model is not only applicable to Central and the Harbourfront, but to all new developments, such as at South East Kowloon, Oil Street or any Comprehensive Development Area (CDA).

[22] It may be possible to identify sites within the OZP boundary that would offer development potential through a change of use but this has not been included

an allowance for the developer's risk and profit. These total costs are deducted from the gross development value. The resultant figure is the residual value of the land. In the valuation for this Study, the following general assumptions were made:

- The parcels of land are ready for development at the date of valuation
- Land grants have been made and conditions reflect the prevailing town planning conditions
- Buildings and other Ordinances and Regulations are applicable
- Parking and loading/unloading provisions are in accordance with the Hong Kong Planning Standards and Guidelines
- For retail use in the Comprehensive Development Area (CDA) zone floor-to-floor heights for the G/F are not less than 4.3 m, while for upper floors it is 4.0 m and elsewhere the height is not less than 4.5 m
- For office buildings, the floor-to-floor height is not less than 3.6 m
- The park/open space is built to high standards
- There are no direct MTR/rail linkages to the relevant land parcels
- For retail and commercial developments, only one basement floor for car parking is allowed and for office developments no more than three levels are allowed

## A.4 Property Values, Results

The land values generated by the developments for each scenario were as follows:

**Scenario 1**

The land values generated under Scenario 1 totalled $37.30 billion. Considerable value is generated from Site 2 and the two Comprehensive Development Area (CDA) sites.

| | $ Billion |
|---|---|
| Site 1 | 4.29 |
| Site 2 | 12.68 |
| Site 3 | 0.80 |
| Site 4 | 0.94 |
| CDA Site 1 | 10.03 |
| CDA Site 2 | 8.56 |
| Total Land Value | 37.30 |

**Scenario 2**

The land values generated under Scenario 2 are considerably lower than those in Scenario 1, at a total of $8.51. This is due to the large reduction in GFA on all sites and the provision of more park/open space instead.

| | $ Billion |
|---|---|
| Site 1 | 0.13 |
| Site 2 | 7.20 |
| Site 3 | 0.24 |
| Site 4 | 0.34 |
| Site 5 | 0.60 |
| Total Land Value | 8.51 |

**Scenario 3**

The land values generated under Scenario 3 were $11.88 billion. The value is again considerably less than those in Scenario 1 as GFA was reduced in adopting planning principles, particularly in facilitating ground level access through corridors leading to the waterfront.

| | $ Billion |
|---|---|
| Site 1 | 0.37 |
| Site 2 | 1.44 |
| Site 3 | 2.17 |
| Site 4 | 0.90 |
| Site 5 | 1.40 |
| Site 6 | 4.10 |
| Site 7 | 1.50 |
| Total Land Value | 11.88 |

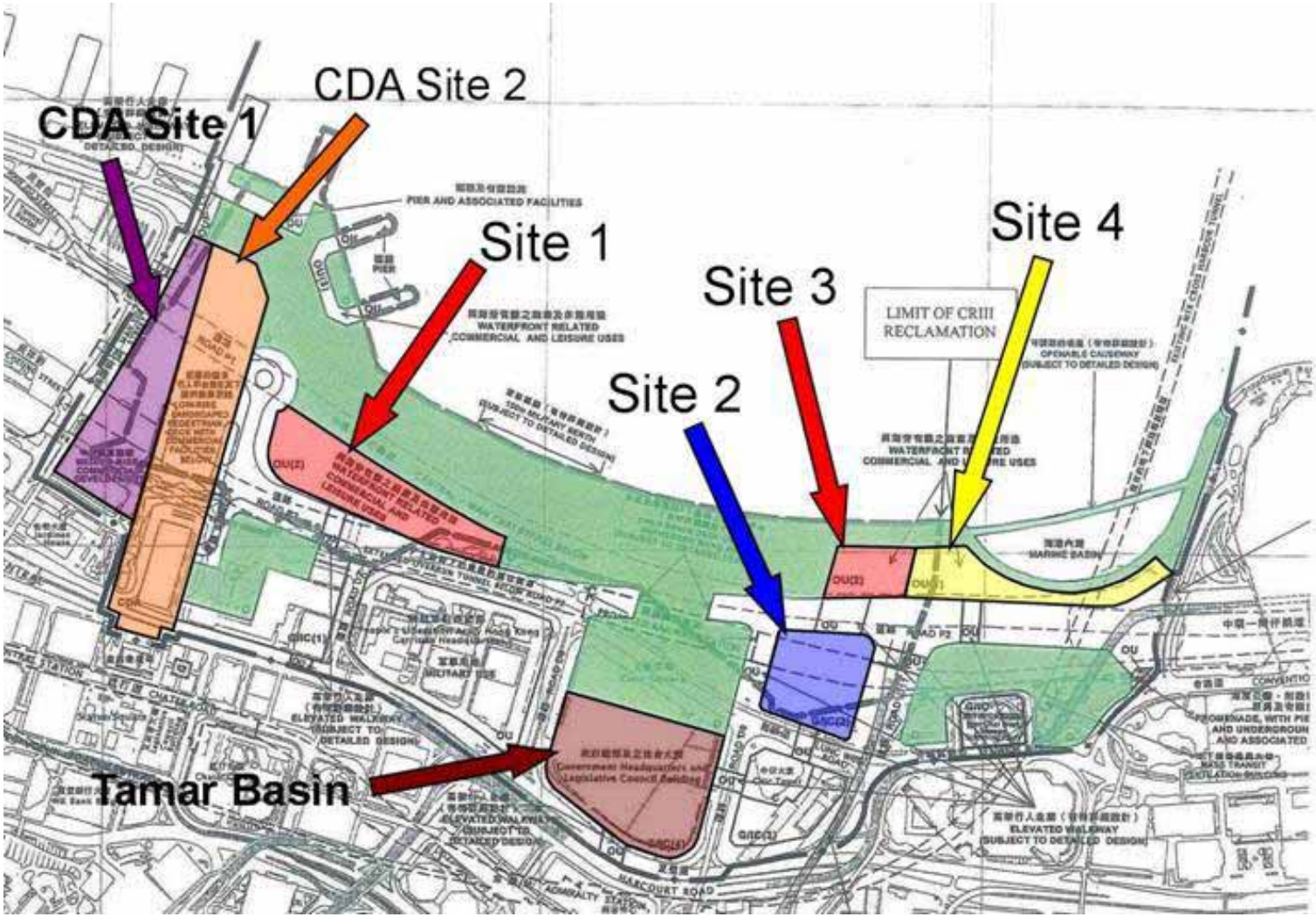
## A.5 Summary Case Study Values and Implications

The case study of Central shows differences in residual land values in the order of some $25 billion between Scenarios 1 and 3, and some $29 billion between Scenarios 1 and 2. Assuming the government sold the sites, this would reduce the land premiums accruing to the government by these amounts.

This is where the CV study findings become relevant. Although revenues from development may be lower in scenarios with lower GFA's, value is also created through increases in public amenity. The CV survey estimated that respondent's ideal scenario was worth $73 billion. Although this value relates to the whole harbour and not just Central, the order of magnitude suggests that the trade-off of land uses with less property development, in favour of sound planning principles and public amenity through creation of more greening, open and recreational spaces and good pedestrian access, is certainly worth revisiting.

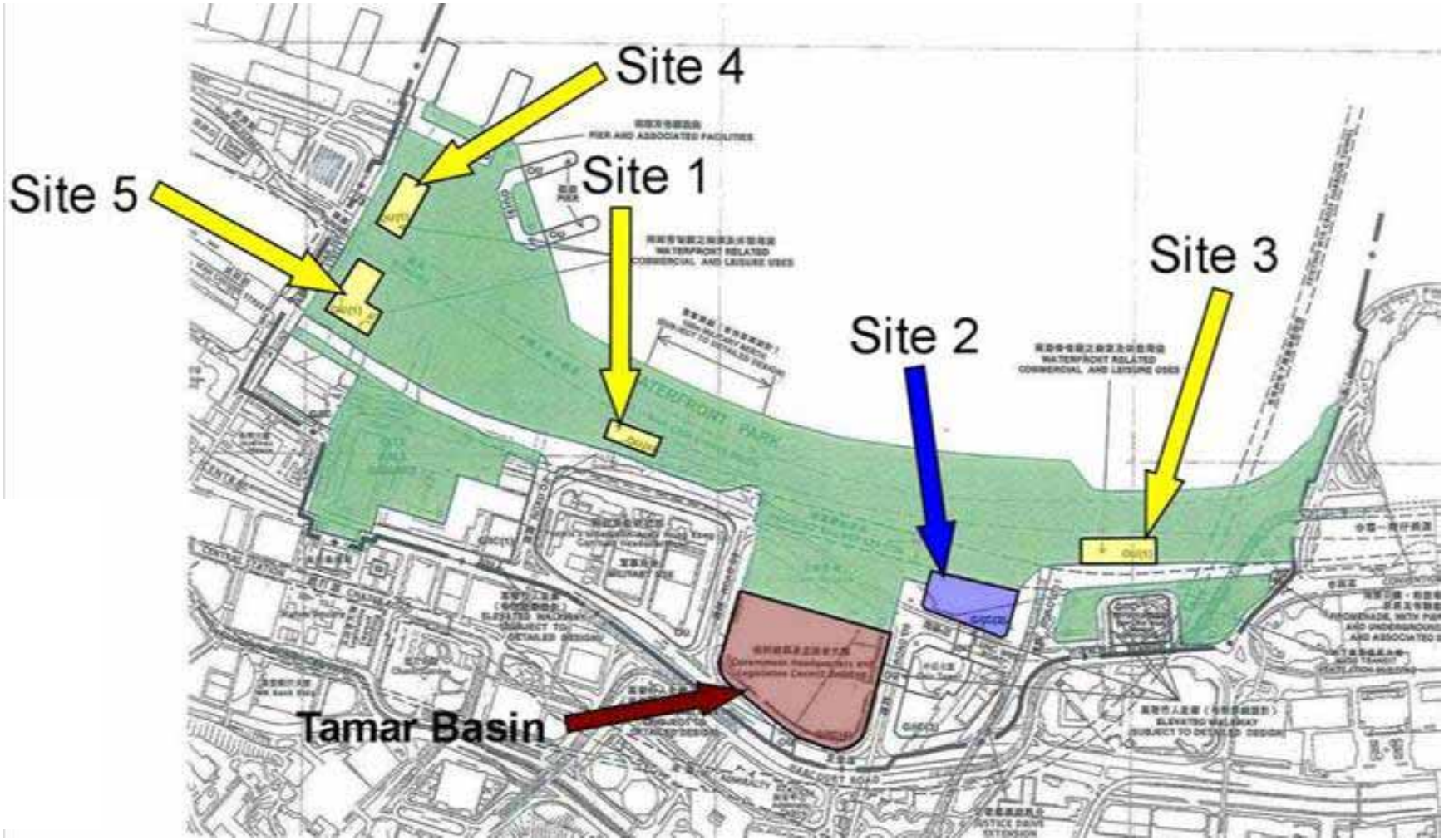
In short, the revenues accruing to government as land premiums under Scenario 1 would be greater than under Scenarios 2 and 3. However, Scenarios 2 and 3 would find more favour with the public and would generate community value for which people have indicated a clear and substantial willingness to pay.

**Scenario 1: Based on the Government Outline Zoning Plan for the Central Reclamation (1998)**



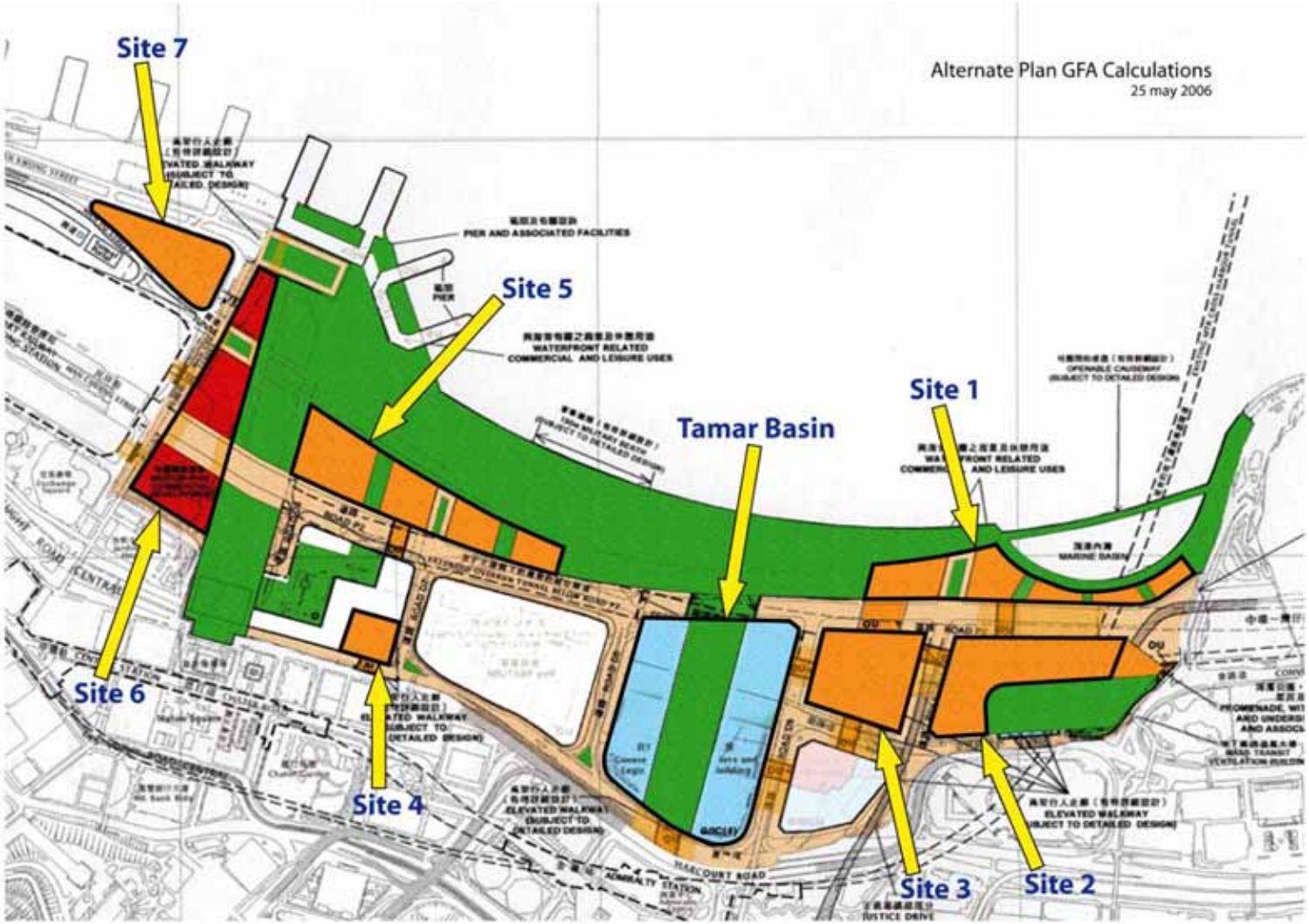

Source: Volume 1 Planning Statement, Rezoning Request prepared by Society for Protection of the Harbour Ltd (September 2004)

**Scenario 2: Based on the Society for the Protection of the Harbour Alternative Scheme for Central (September 2004)**




Source: Volume 1 Planning Statement, Rezoning Request prepared by Society for Protection of the Harbour Ltd (September 2004)

**Scenario 3: Alternative Scenario Based on Sound Planning Principles Whilst Taking Advantage of Development Opportunities**



# ANNEX B: APPLICATION OF CONTINGENT VALUATION, SOME EXAMPLES

**Exxon Valdez Oil Spill**

On the night of 24 March, 1989 the oil tanker, Exxon Valdez ran aground, spilling 11 million gallons of crude oil into Prince William Sound, Alaska, an area of pristine wilderness. Whilst not the largest oil spill ever, it was one of the most devastating to wildlife, killing an estimated 250,000 sea birds, 2,800 sea otters,300 harbour seals, 250 bald eagles, up to 22 killer whales and an unknown number of salmon and herring.

Economic impact studies were undertaken to support evidence for natural resource damage assessment, including impacts on recreational fishing and tourism and a Contingent Valuation (CV) study which assessed the willingness to pay of US citizens to prevent a similar future accident. The CV put the value at US$2.8 billion. The court settlement was over US$1 billion and the Exxon estimated clean up costs were US$2 billion. The case was particularly controversial given the scale of the damage and the costs involved. As a result in 1992, an expert panel review of CV was set up by the US National Oceanic and Atmospheric Administration, led by two Nobel Prize winning economists. The review found in favour of CV, albeit with strict guideline recommendations, whilst more recent attempts by industry to discredit it have also failed.

In practise the case has led to a greater use of preventative measures and better emergency response systems, in part as a result of Contingent Valuation being accepted as evidence in assessing legal damage claims under the Oil Pollution Act, 1990.

**Use of Contingent Valuation Studies, the Case of the UK Building Aggregates Levy**

The then Department of the Environment, Transport and the Regions, commissioned a Study: The External Costs and Benefits of the Supply of Aggregates, Phase II, which was published in 1999. This study followed earlier work which aimed to inform the Department of the value that people placed on the damage caused to the environment by the quarrying of aggregates such as rock, sand and gravel.

Respondents within a 5 mile radius were asked how much they would be willing to pay to shut down the local quarry, restore the site in keeping with the surrounding landscape and ensure the workers found new jobs. A further set of respondents were asked what they would be willing to pay to close down a quarry in a National Park. These respondents were included to demonstrate the value to those who were not directly affected.

The impacts included nature and biodiversity, noise, traffic and visual intrusion. The national average amount was calculated at £1.80 per tonne of output. These conclusions played an important role in helping to inform the decision over the introduction of the levy and a charge of £1.60 per tonne was introduced, with effect from April 2002.

**Centennial Park, Sydney**

In Sydney, Australia, a CV study assessed the non-market economic value of the recreational and other benefits of 315 ha of parkland using travel cost and willingness to pay studies. Total value per hectare was approximately equal to HK$75,000 per ha per year for the 1.2 million households in Sydney or a total of about HK$230 million a year for the park. The Study supported the case for management and maintenance of the park and later in 1998 a foundation was set up to enable the public to contribute towards environmental projects.

**London's Olympic Bid 2012**

In 1995, the UK Department of Culture, Media and Sport commissioned a CV study to address public opinion and determine willingness to pay for the intangible benefits of London hosting the 2012 Olympic Games. The Study showed support for the Games both within and outside London and helped to answer the many critics who questioned whether Londoners really wanted the Games and whether the UK should bid.

The Study helped to demonstrate the community's strength of preference for the bid and helped to justify and support the successful bid for the UK capital city.

**The Medina at Fez**

In 1997, the World Bank undertook a CV survey to support preparation of a loan project for the comprehensive rehabilitation of the Medina at Fez. This Study helped pioneer the use of CV for cultural heritage assets. Neglected for many years, the Medina was in need of improvements to the housing stock, modernisation of infrastructure and environmental improvements including to air and water quality.

The CV survey demonstrated willingness to pay from visitors and non-visitors leading to the conclusion that even if only a fraction of the benefits could be captured, that the benefits would far outweigh the costs. A World Bank loan of US$14 million was approved in 1998.

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# ANNEX D: SURVEY SAMPLE AND WEIGHTING

**Survey Sample**

| | Un-weighted | | Weighted | |
|---|---|---|---|---|
| | Male | Female | Male | Female |
| **Age group** | | | | |
| Base | 502 | 532 | 2,756,100 | 3,041,900 |
| | % | % | % | % |
| 15-24 | 17 | 16 | 16 | 15 |
| 25-34 | 18 | 22 | 17 | 19 |
| 35-44 | 24 | 23 | 22 | 24 |
| 45-54 | 18 | 17 | 20 | 19 |
| 55 or above | 23 | 22 | 25 | 23 |
| | | | | |
| **Living District** | Total | | Total | |
| Base | 1,034 | | 5,798,000 | |
| | | | % | |
| Hong Kong Island | 19 | | 19 | |
| Kowloon | 29 | | 30 | |
| New Territories | 52 | | 51 | |

**Population Statistics, 2004 Mid Year Estimate**

| **Population** | | | | |
|---|---|---|---|---|
| | Male | Male | Female | Female |
| Age group | | | | |
| Base | 2,756,100 | 2,756,100 | 3,041,900 | 3,041,900 |
| | N | % | N | % |
| 15-24 | 450,700 | 16 | 445,500 | 15 |
| 25-34 | 468,900 | 17 | 585,500 | 19 |
| 35-44 | 602,900 | 22 | 735,300 | 24 |
| 45-54 | 556,700 | 20 | 571,800 | 19 |
| 55 or above | 676,900 | 25 | 703,800 | 23 |

| **Living District** | Total | Total |
|---|---|---|
| Base ('000) | 5,798 | 5,798 |
| | N | % |
| Hong Kong Island | 1,080,400 | 19 |
| Kowloon | 1,755,900 | 30 |
| New Territories | 2,961,700 | 51 |

Source: AC Nielsen; Census and Statistics Department

## ANNEX E: THE STUDY TEAM

The overall approach and method for the study, its management and the synthesis of findings has been undertaken by members of GHK (Hong Kong) Ltd, the Hong Kong office of a London based economics and policy analysis consultancy.

GHK were supported by two sets of advisors. The Hong Kong-based advisory team consisted of Margaret Brooke of Professional Property Services and Chairperson of the HBF Best Practise Committee; Michele Weldon, HBF Co-ordinator; and Peter Weldon, a specialist in market research and social surveys.

The international advisory team was provided by Economics for the Environment Consultancy Ltd (EFTEC). EFTEC is one of the leading institutes in the field of applied economics for the environment and studies of the economic value of environmental and social impacts in particular.

Associate members included the late Emeritus Prof David W Pearce OBE, (University College London) who was the pioneer of new approaches to valuation in the early 1970's and through his school led the field in this subject of applied economics.

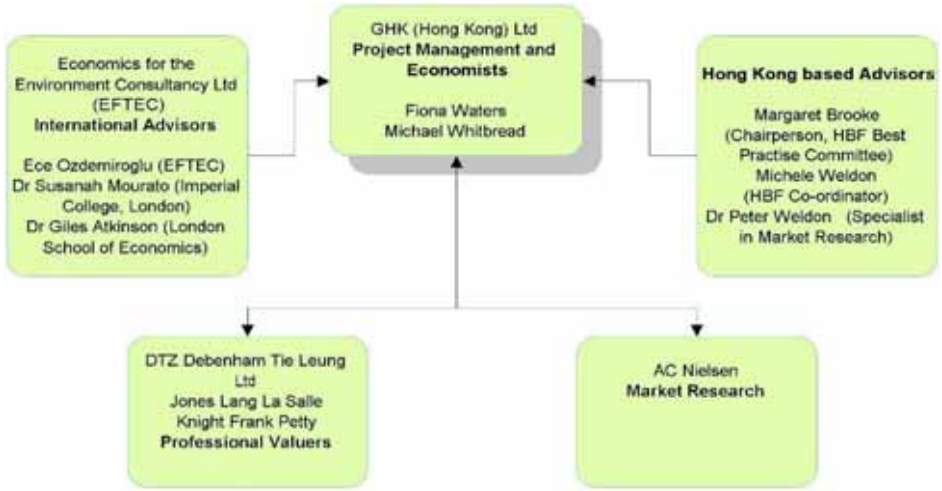
The advisory team was headed by Ece Ozdemiroglu, director and founding member of EFTEC, and included two associates of EFTEC and academic specialists in the field, Dr Susana Mourato of Imperial College, London and Dr Giles Atkinson of the London School of Economics. The international team reviewed and commented on the method and application of CV but not the data analysis.

The survey work was carried out by AC Nielsen, an internationally recognised market research company. AC Nielsen was selected through a competitive tender. Under a separate contract AC Nielsen were also selected to undertake the HBF Public Opinion Survey[23] and as such had experience of the subject matter. They also carried out a literature review and several focus group discussions which were very useful in developing the questions for the surveys and in determining the kinds of CV stimuli to be used.

The professional valuers team were drawn from three leading property consultants in Hong Kong, bringing together some of the most respected names and professional valuation experience to the Study. The team was coordinated by DTZ Debenham Tie Lung and included Knight Frank Petty and Jones Lang La Salle.

The authors would also like to thank all those who contributed to the Study through informal advice and guidance, allowed access to existing work and supplied information.

**The Study Team**




[23] HBF Public Opinion Survey, 2006