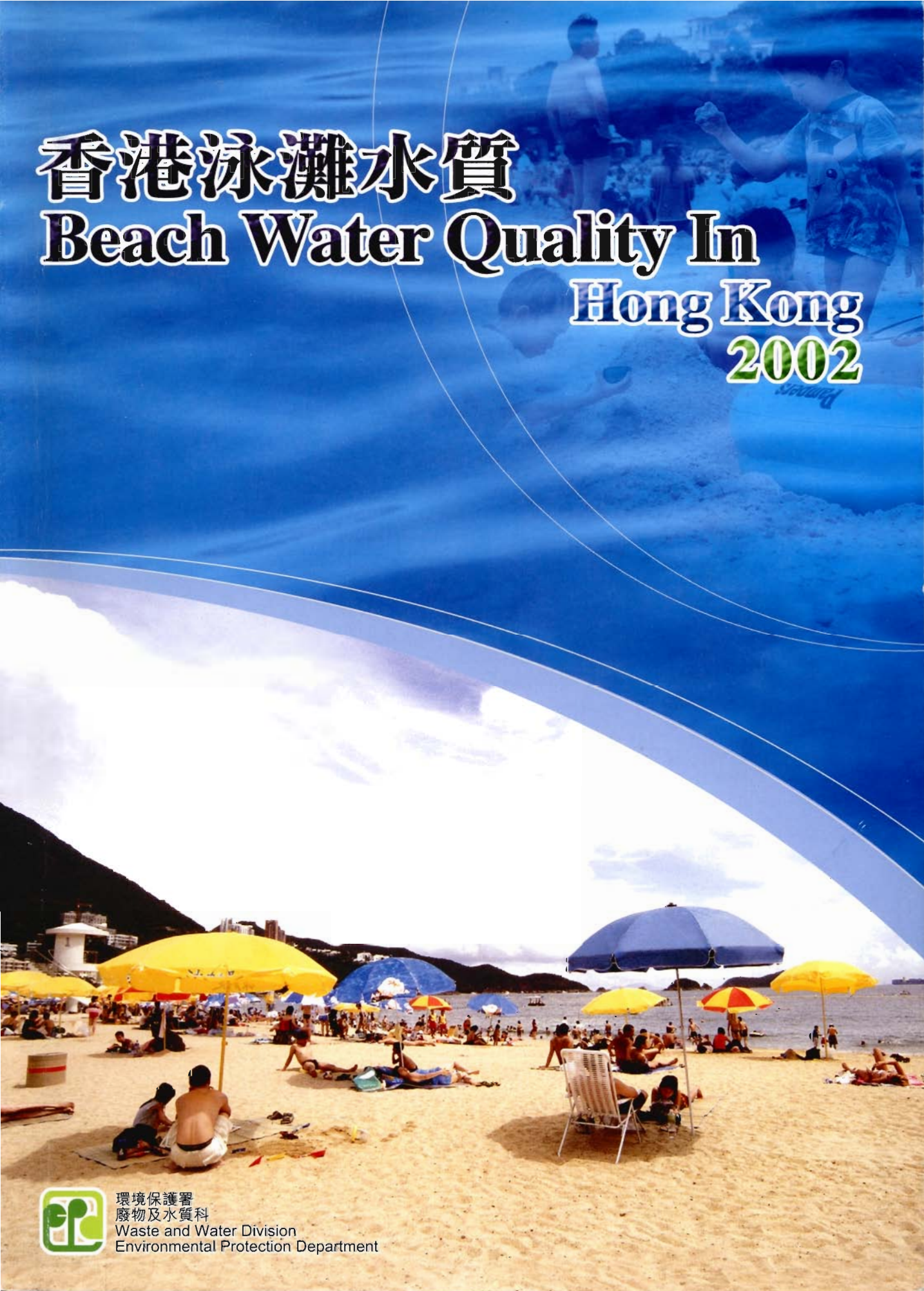
香港泳灘水質
Beach Water Quality In Hong Kong 2002



環境保護署
廢物及水質科
Waste and Water Division
Environmental Protection Department

2002

香港泳灘水質

Beach Water Quality In Hong Kong

香港特別行政區政府
環境保護署
廢物及水質科

Waste and Water Division
Environmental Protection Department
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目錄 Contents

使命

「使泳灘達致既定的水質指標，從而保障市民的健康和福祉，以及達致各種自然保育目標。」

Mission

"To achieve the water quality objective for bathing beaches that will safeguard the health and welfare of the community and meet various conservation goals."

引言
Introduction

1.1 炎炎夏日，特別在陽光普照、藍天碧海的日子，成千上萬的市民會紛紛前往本港各處的美麗泳灘暢泳(見附錄1)。為確保泳客安全，使他們充分享受游泳的樂趣，環境保護署(環保署)自一九八六年成立以來，已推行一項全面的泳灘監測計劃。

1.2 二零零二年一個重要的里程碑是淨化海港計劃第一期的全面啟用。此計劃的設施在二零零一年的十二月已經全面運作。自此，來自九龍及港島東北部一百三十萬立方米的污水，佔維港兩岸總污水量的七成，會經一個深層隧道網絡輸往昂船洲污水處理廠。

到泳灘暢泳是香港市民一個熱門的消閑節目
Swimming at beaches is a popular pastime for Hong Kong citizens

泳灘的水質由環保署監測
The water quality of beaches is monitored by the EPD

1.1 In hot summer, particularly on days with sunny weather and clear blue sky, tens of thousands of people visit our beautiful beaches in different parts of Hong Kong (Appendix 1). To ensure that the beach visitors can fully enjoy and safely swim at the beaches, the Environmental Protection Department (EPD) has implemented a comprehensive beach monitoring programme since its establishment in 1986.

1.2 An important milestone in 2002 is the full commissioning of Stage I of the Harbour Area Treatment Scheme (HATS). It was brought into full operation in December 2001. Since then, 1.3 million m^3 of sewage generated in Kowloon and the northeastern part of Hong Kong Island, representing 70% of the total sewage in the Victoria Harbour catchment area, is conveyed to the Stonecutters Island Sewage Treatment Works

在這污水廠，污水會經化學強化沉澱處理，以消除其中大部分的有機污染物。不過，有關程序並不能大幅降低污水的細菌含量。經處理的污水會排入維多利亞港以西的水域。淨化海港計劃第一期全面啟用對維港以及荃灣區和南區泳灘的水質具有相當的影響。整體而言，大浪灣、 石澳後灘和石澳的水質均明顯改善，但荃灣區泳灘的水質則有所惡化。就水質來說，維港內大部分水域的總無機氮、溶解氧及氨氮含量已有所改善，尤以海港東面的情況更為顯著。

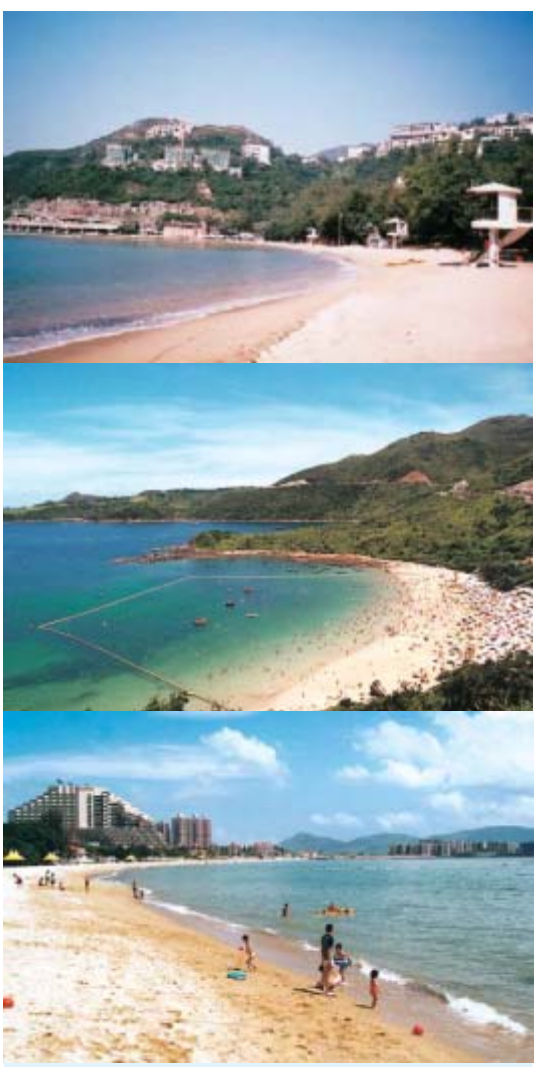
(SCISTW) via a system of deep tunnels. At SCISTW, sewage is treated using a chemically enhanced sedimentation process where a high percentage of organic pollutants are removed. However, the treatment process does not have significant effect in bacteria reduction. The treated effluent is discharged into the western approaches of the harbour. The full commissioning of Stage I of HATS has significant impact on the water quality of Victoria Harbour as well as the bathing beaches in the Tsuen Wan and Southern Districts. In general, there is significant improvement in water quality at Big Wave Bay, Rocky Bay and Shek O beaches, but there is deterioration at all the beaches in Tsuen Wan. As far as general water quality is concerned, there is improvement in terms of Dissolved Oxygen, Total Inorganic Nitrogen and Ammonia in most parts of the Victoria Harbour. Improvement is particularly noticeable in the eastern part.

七成來自維港兩岸的污水集中在昂船洲污水處理廠處理
70% of the sewage generated around the Victoria Harbour has been collected for centralized treatment at Stonecutters Island Sewage Treatment Works

泳灘水質監測
Beach Water Quality Monitoring

2.1 環保署自一九八六年起推行泳灘水質監測計劃。計劃經常予以檢討及修訂，務求為公眾提供更準確的水質資料。目前，計劃涵蓋的泳灘共有50個，包括41個憲報公布泳灘和9個非刊憲泳灘。上述所有泳灘全年均受監測。

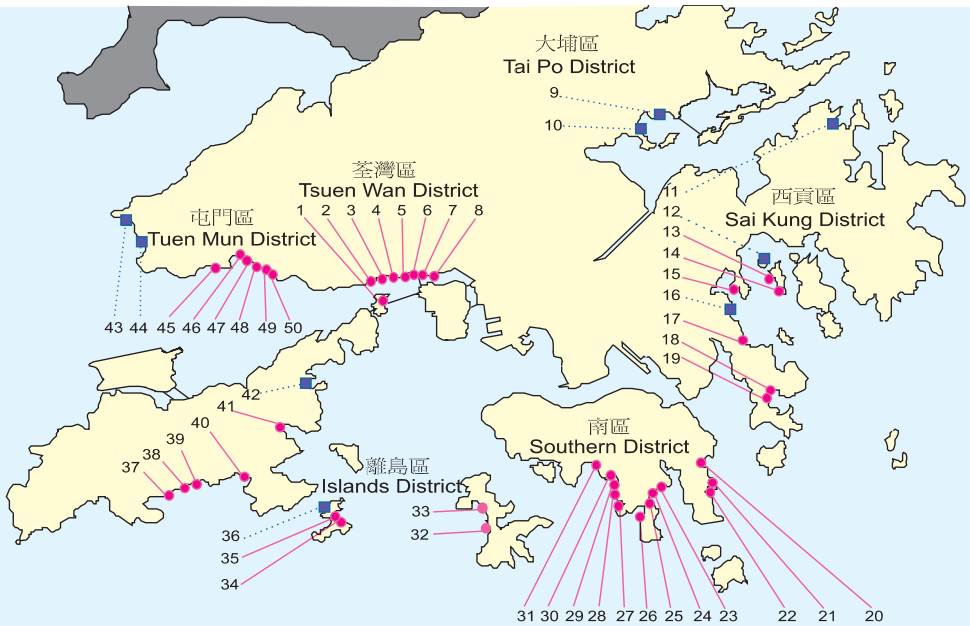
2.2 所有憲報公布泳灘分布於本港五個不同地區(見圖2.1)。開放的憲報公布泳灘是由康樂及文化事務署(康文署)管理，設有各項泳灘設施，並提供拯溺服務及負責清理泳灘上的垃圾。



自二零零一年全年開放的三個泳灘 — 深水灣（上）、 清水第二灣（中）及黃金泳灘 （下）
Since 2001, Deep Water Bay (top), Clear Water Bay Second (middle) and Golden Beach (bottom) are opened throughout the whole yeaar

2.1 The beach water quality monitoring programme has been run by EPD since 1986. It has been frequently reviewed and revised in order to provide better water quality information to the public. The current programme covers 50 beaches, including 41 gazetted beaches and 9 non-gazetted beaches. All of them are monitored throughout the whole year.

2.2 All gazetted beaches are located in five districts of Hong Kong (Figure 2.1). The opened gazetted beaches are managed by the Leisure and Cultural Services Department (LCSD), which provides beach facilities, life-saving services and is responsible for



荃灣區
Tsuen Wan District

1. 馬灣東灣 Tung Wan, Ma Wan
2. 釣魚灣 Anglers'
3. 雙仙灣 Gemini
4. 海美灣 Hoi Mei Wan
5. 更生灣 Casam
6. 麗都灣 Lido
7. 汀九 Ting Kau
8. 近水灣 Approach

大埔區
Tai Po District

9. [龍尾] [Lung Mei]
10. [沙灘] [Sha Lan]
11. [海下] [Hoi Ha]

西貢區
Sai Kung District

12. [白沙洲] [Pak Sha Chau]
13. 橋咀 Kiu Tsui
14. 夏門灣 Hap Mun Bay
15. 三星灣 Trio
16. [露營灣] [Campers]
17. 銀線灣 Silverstrand
18. 清水第一灣 Clear Water Bay First
19. 清水第二灣 Clear Water Bay Second

南區
Southern District

20. 大浪灣 Big Wave Bay
21. 石澳後灘 Rocky Bay
22. 石澳 Shek O
23. 龜背灣 Turtle Cove
24. 夏慤灣 Hairpin
25. 赤柱正灘 Stanley Main
26. 聖士提反灣 St. Stephen's
27. 春坎角 Chung Hom Kok
28. 南灣 South Bay
29. 中灣 Middle Bay
30. 淺水灣 Repulse Bay
31. 深水灣 Deep Water Bay

離島區
Islands District

32. 蘆鬚城 Lo So Shing
33. 洪聖爺 Hung Shing Yeh
34. 觀音灣 Kwun Yam Wan
35. 長洲東灣 Tung Wan, Cheung Chau
36. [大貴灣] [Tai Kwai Wan]
37. 塘福 Tong Fuk
38. 長沙上灘 Cheung Sha Upper
39. 長沙下灘 Cheung Sha Lower
40. 貝澳 Pui O
41. 銀礦灣 Silvermine Bay
42. [愉景灣] [Discovery Bay]

屯門區
Tuen Mun District

43. [龍鼓上灘] [Lung Kwu Upper]
44. [龍鼓下灘] [Lung Kwu Lower]
45. 蝴蝶灣 Butterfly
46. 青山灣 Castle Peak
47. 加多利 Kadoorie
48. 舊咖啡灣 Cafeteria Old
49. 新咖啡灣 Cafeteria New
50. 黃金泳灘 Golden Beach

圖例 Legend：憲報公布泳灘 Gazetted Beach；[非刊憲泳灘] [Non-gazetted beach]；已裝有防鯊網 Shark-prevention net installed

圖 2.1 香港泳灘位置圖
Figure 2.1 Location of beaches monitored

自二零零一年起，有三個泳灘，即深水灣、清水第二灣及黃金泳灘全年開放。由二零零二年冬季起，銀線灣泳灘亦全年開放給市民。其餘泳灘只在泳季期間開放。

2.3 香港有不少非刊憲泳灘，其中九個受環保署監測 (見圖2.1)。由於這些泳灘泳客眾多(例如愉景灣泳灘)或日後有機會成為憲報公布泳灘(例如龍尾泳灘)，所以亦由環保署監測。這九個泳灘的監測結果見於附錄 2 。

其中一個受環保署監測的非刊憲泳灘 — 龍鼓下灘
One of the non-gazetted beaches monitored by the EPD - Lung Kwu Lower Beach

水質指標

2.4 為保障泳客健康，環保署於一九九二年根據《水污染管制條例》制訂泳灘水質指標。水質指標是根據環保署與本地學術界人士於八十年代後期進行的本地流行病學研究的結果釐定。研究確定

collecting floating refuse at the beaches. Three beaches, namely Deep Water Bay, Clear Water Bay Second and Golden Beach are opened throughout the whole year since 2001. Commencing from winter 2002, Silverstrand is also opened all year round to the public. Other beaches are only opened during the bathing season.

2.3. Hong Kong has many non-gazetted beaches. Among them, the EPD monitors nine selected ones (Figure 2.1). They are monitored because of their popularity (e.g. Discovery Bay Beach) or their potential to be gazetted in the longer term (e.g. Lung Mei Beach). Monitoring results of these nine beaches are shown in Appendix 2.

Water Quality Objective

2.4 To safeguard the health of bathers, the Water Quality Objective (WQO) for bathing water has been established under the Water Pollution Control Ordinance in 1992. The WQO is established on the basis of the results of the local epidemiological studies conducted in the late 1980s by the EPD and local academics. The relationships between the level of faecal

糞便中含有的指示性細菌與游泳所引致的發病率相關。結果顯示，在所有糞便指示性細菌中，以大腸桿菌與游泳所引致的發病率關係最為密切，因此是最適宜用作評估在本港泳灘游泳的健康風險。

2.5 根據水質指標，在三月至十月底泳季期間採集的所有樣本中，大腸桿菌含量的幾何平均值每百毫升不得超過 180 個，而每月須採集樣本最少三次，每次相隔大約三至十四天。這項水質指標適用於本港各水質管制區內的泳灘水質附屬區。

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indicators in water and the swimming-associated illness rates were established in these studies. The faecal indicator, *E. coli*, had been found to have the best correlation with the swimming-associated illness rates and is the best faecal indicator to estimate the health risk of swimming at beaches of Hong Kong.

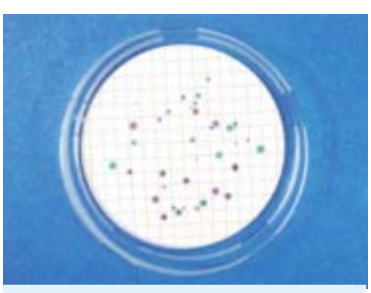
2.5 The WQO states that the level of *E. coli* should not exceed 180 per 100mL calculated as the geometric mean of all samples collected during the bathing season from March to end October. Samples should be taken at least three times a month at intervals of between 3 and 14 days. This WQO applies to the bathing beach subzones of all Water Control Zones in Hong Kong.

計劃的功用

2.6 除了評估水質符合指標的程度，泳灘水質監測計劃亦為達到下列目的而設：

- 監測泳灘的水質變化：泳灘如受到污染，監測結果可起示警作用，俾能及早處理可能出現的水質污染情況，以便在問題惡化前，能夠較容易解決。
- 識別水質有待改善的受污染泳灘：根據監測結果，當局可識別受污染的泳灘，以便按優先次序，採取補救措施，改善泳灘水質。
- 評估消減污染計劃：監測提供所需的資料，可用以衡量泳灘水質改善措施的成效，例如提供排污渠或執行有關法例的成效。

點算大腸桿菌菌落數目
Counting of E. coli colonies



大腸桿菌菌落(藍綠色的菌落)
E. coli colonies (greenish blue colonies)

Functions of the programme

2.6 Besides assessment of compliance with the WQO, the beach monitoring programme has been designed to achieve the following functions:

- **To detect any change in beach water quality**: Monitoring results can provide early warning of beach water pollution so that any potential pollution problem can be resolved more easily at an early stage.
- **To identify polluted beaches that need remedial actions**: Based on the monitoring results, the Authority can identify polluted beaches and set priorities to take remedial actions to improve the beach water quality.
- **To evaluate pollution abatement programmes**: Monitoring provides the information needed to determine the efficacy of beach-related improvement measures such as provision of sewerage or enforcement of relevant legislation.

- 決定是否開放泳灘：監測提供憲報公布泳灘的水質趨勢資料，以便康文署決定是否開放泳灘。
- 讓市民了解泳灘的水質情況：根據監測結果，市民可作出明智的決定，是否適宜在某個泳灘游泳。

採樣工作

2.7 為了達成這些目的，在泳季期間，環保署每星期在各憲報公布泳灘最少進行一次水質監測，而在非泳季期間則每月監測最少一次。至於在冬季月份仍然開放的泳灘，每星期仍會由環保署監測。環保署會隨機選出不同周日，包括周末和公眾假期進行採樣工作，以確保收集的水質資料更為全面。

以便攜式分析儀在現場量度一些物理參數
Some physical parameters were measured on site with portable analyzer

- **To decide on the opening of beaches**: Monitoring provides the information on water quality trends so that LCSD can decide on the opening of beaches.
- **To advise the public on the beach water quality status**: Based on the monitoring results, the public will be able to make an informed decision on whether to swim at a particular beach.

Sampling protocol

2.7 In order to fulfil these functions, the water quality of all gazetted beaches is monitored by the EPD at least once per week during the bathing season and at least once per month during the non-bathing season (Table 2.1). Those gazetted beaches that are opened during winter months are still monitored weekly. Water samples are collected on random days including weekends and public holidays so that non-biased information on water quality is collected.

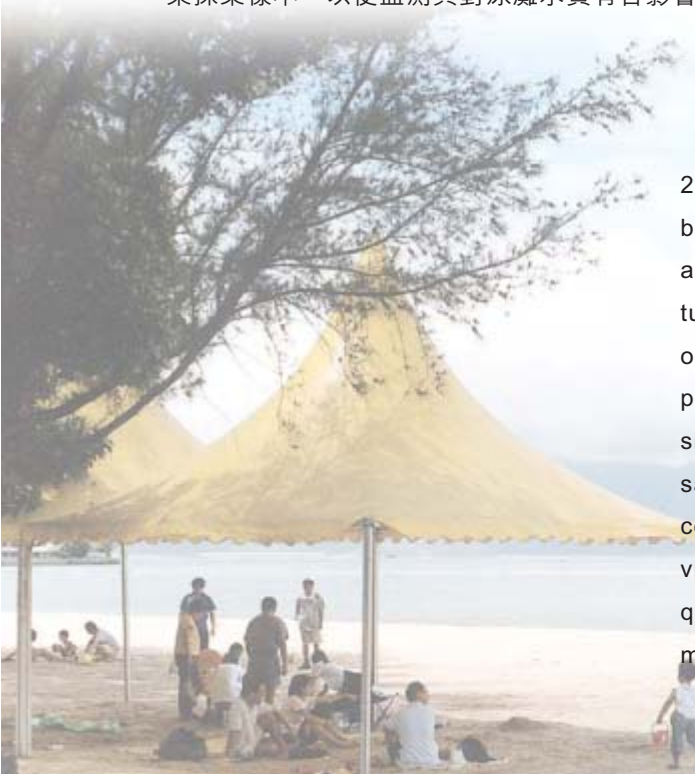
採集泳灘水樣本
Beach water sampling

表 2.1 泳灘監測次數
Table 2.1 Beach monitoring frequencies

泳灘 Beach	監測次數 Monitoring frequency	
	泳季 Bathing season	非泳季 Non-bathing season
全年開放的憲報公布泳灘 * Gazetted beaches opened all year round*	每月四至六次 4-6 times per month	每月四至六次 4-6 times per month
其他憲報公布泳灘 Other gazetted beaches	每月四至六次 4-6 times per month	每月最少一次 At least once per month
非刊憲泳灘 Non-gazetted beaches	每月二至三次 2-3 times per month	每月一次 Once per month

* *深水灣、黃金泳灘、清水第二灣及銀線灣*
* Deep Water Bay, Golden, Clear Water Bay Second and Silverstrand Beaches

2.8 每次在泳灘進行水質監測，均會在水深至大腿及腰之間的位置採集水樣本，以分析大腸桿菌含量及量度酸鹼值、含鹽量及混濁度。環保署人員亦會採用便攜式分析儀即場量度水溫及含氧量，同時記錄即日的天氣和現場觀察的泳灘狀況。除了泳灘範圍，環保署人員亦會在附近的溪澗及雨水渠採集樣本，以便監測其對泳灘水質有否影響。泳灘監測的工作程序見於圖 2.2 。



2.8 Water samples are collected from each beach at thigh to waist water depth for *E. coli* analysis and measurement of pH, salinity and turbidity. Water temperature and the dissolved oxygen content are measured on site using portable analyzer. Weather information and on site observations are also recorded. In addition to sampling within the bathing area, samples are also collected from streams and storm drains in the vicinity to monitor their impact on beach water quality, if any. The operational procedures of the monitoring programme are depicted in Figure 2.2.

抽取泳灘水樣本
(樣本保持在4°C)
Beach Water Sample Collection
(Samples kept at 4°C)

現場監測
(含氧量、水溫、天氣及泳灘狀況)
In-situ Measurement
(Dissolved oxygen, water temperature, weather and beach condition)

六小時內
Within 6 hours

細菌分析
Bacteriological Analysis

薄膜過濾
Membrane Filtration

置於培養基上
Culture on Growth Medium

細菌培養
(保持在44.5°C的有氧環境下)
Incubation
(At 44.5°C in aerobic condition)

18-24 小時 hours

點算大腸桿菌菌落數目
(藍綠色的菌落)
Counting of *E.coli* Colonies
(Greenish blue colonies)

其他測試
Other Testings

1. 酸鹼值 pH
2. 鹽度 Salinity
3. 混濁度 Turbidity

計算大腸桿菌數量
Calculation of *E. coli* Count

泳灘水質網頁
Beach Water Quality Webpage

數據資料庫
Databank

每周等級/全年級別
Weekly Grade/ Annual Rank

圖 2.2 泳灘監測工作程序
Figure 2.2 The operational procedures of the Beach Monitoring Programme

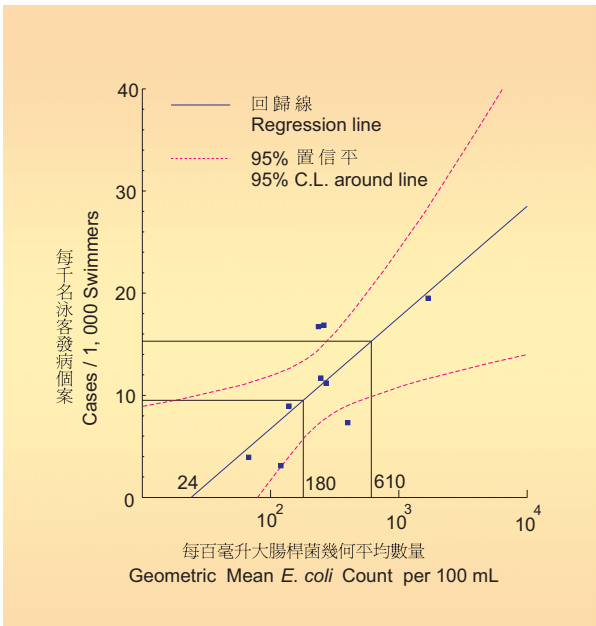


圖 2.3 泳灘水中大腸桿菌數量和游泳相關所得發病率的關係

Figure 2.3 Relationship between *E. coli* count in beach water and swimming-associated illness rate

泳灘評級制度

2.9 環保署會根據在泳區範圍內蒐集的水樣本中大腸桿菌含量，按泳灘等級制及全年級別制把泳灘評級。泳灘的等級顯示泳季期間泳灘最新的水質情況，而泳灘的全年級別則反映泳灘於整個泳季的平均水質。兩套制度均與健康風險有關，並根據海水的細菌含量，把泳灘分為四個類別。

全年級別制度

2.10 泳灘每年所獲的級別反映它的長期水質。級別是按三月至十月泳季期間採樣錄得的大腸桿菌含量的幾何平均值評定。全年級別制度簡列於表2.2。四個全年級別亦與於流行病學研究中所得的與游泳有關的發病率相符(見圖2.3)。泳灘屬「良好」及「一般」級別，表示水質達到指標。

Beach Rating Systems

2.9 The *E. coli* levels of water samples collected within the bathing area are used for rating a beach according to our beach grading and ranking systems. The grade of a beach indicates the latest water quality of the beach while the rank of a beach denotes its average water quality through the whole bathing season. Both systems are health risk related and beaches are classified into four categories according to their *E. coli* levels.

Annual Ranking System

2.10 The rank of a beach reflects its long-term water quality. It is determined by calculating the geometric mean *E. coli* level of all samples collected within the bathing area during the

表 2.2 全年級別制度
Table 2.2 Annual ranking system

級別 Rank	每百毫升大腸桿菌數量 * *E. coli* count per 100mL*	輕微疾病率 ** 〈每千名泳客感染個案〉 Minor illness rate** (Cases per 1000 swimmers)	符合水質指標 WQO Compliance
良好 Good	<=24	UD	符合 Complied
一般 Fair	25-180	<=10	
欠佳 Poor	181-610	11-15	不符合 Not complied
極差 Very Poor	>610	>15	

* *以泳季期間收集到的所有數據算出的大腸桿菌幾何平均數量。*
Geometric mean *E. coli* count calculated based on all data collected during the bathing season.
** *皮膚及腸胃病*
Skin and gastrointestinal illnesses
UD *不能驗出*
Undetectable

泳灘等級制度

2.11 泳灘等級制度簡列於表2.3。只有開放的泳灘會獲評級，讓市民知道最新的泳灘水質情況。泳灘等級是以最近五次採樣錄得的大腸桿菌含量的幾何平均值評定。為進一步保障市民的健康，

bathing season from March to October. The annual ranking system is summarized in Table 2.2. The four annual ranks correspond to the respective swimming-associated illness rates established in the epidemiological studies (Figure 2.3). Both 'Good' and 'Fair' ranks meet the WQO for bathing water.

Beach Grading System

2.11 The grading system is summarized in Table 2.3. Only opened beaches are graded to inform the public of its latest water quality status. A beach grade is calculated on the basis of the geometric mean *E. coli* level of the 5 most recent sampling occasions. To further safeguard bathers' health, the worst grade, i.e. Grade 4, is also given to a beach when a high *E. coli* level

表 2.3 泳灘等級制度
Table 2.3 Beach grading system

等級 Grade	泳灘水質 Beach Water Quality	每百毫升大腸桿菌數量 * *E. coli* count per 100mL*	輕微疾病率 ** 〈每千名泳客感染個案〉 Minor illness rate** (Cases per 1000 swimmers)
1	良好 Good	<=24	UD
2	一般 Fair	25-180	<=10
3	欠佳 Poor	181-610	11-15
4	極差 Very Poor	>610 或最近一次讀數 >1,600 or last reading >1,600	>15

* 除另有闡釋外，大腸桿菌數量是最近五次採樣的大腸桿菌幾何平均數。
Except otherwise indicated, the *E. coli* level is the geometric mean of the 5 most recent sampling occasions.
** 皮膚及腸胃病
Skin and gastrointestinal illnesses
UD 不能驗出
Undetectable

如最近一次採樣錄得的大腸桿菌含量超逾每百毫升 1600 個的高水平，則不論其幾何平均值如何，泳灘均會評定為第四級，屬最差的等級。因此，泳灘等級可反映泳灘在過去數周的短期水質變化趨勢或顯示最近水質出現惡化。

exceeding 1600 per 100mL is detected on the last sampling occasion, regardless of the geometric mean. Hence the grade of a beach reflects the short-term water quality in the past few weeks, and provides the information on recent deterioration of water quality.

泳灘資料的發布

游泳人士可在下水前查看告示板上的最新泳灘等級
Bathers could check the beach grades at the notice boards before entering the water

2.12 為向市民提供最新的泳灘水質資料，環保署透過不同途徑公布泳灘的等級。環保署每星期會在周末之前發布新聞稿，公布各泳灘的等級，以便泳客決定前往哪個泳灘游泳。而環保署網頁(網址：http://www.epd.gov.hk)上的泳灘等級及泳灘辦事處的泳灘等級告示板上的資料亦會在周內不時更新。市民亦可致電泳灘水質熱線(2511 6666)，查詢這些最新資料。

2.13 游泳人士在下水前，可於泳灘辦事處的告示板上查看最新的泳灘等級。然而，泳灘水質在大雨後可能出現變化或較預測的等級為差，因此，在特別容易受雨水影響的泳灘，經已豎立雨天效應警告牌，以提醒泳客水質可能出現短暫惡化(見附錄3)。

Dissemination of beach information

2.12 In order to provide the public with the most updated information on beach water quality, the beach grades are disseminated through various channels. A summary of beach grades is released through the press media before weekend so as to facilitate the weekend beach goers to decide on where to swim. During the week, beach grades are also updated on the beach water quality webpage at EPD's website (http://www.epd.gov.hk) and at the grading notice boards of the beach offices whenever new information is available. The public can also access such updated information through the beach water quality hotline (2511 6666).

2.13 Bathers could check the beach grades at the notice boards of the beach offices before deciding to enter the water. Nevertheless, as the water quality may fluctuate after heavy rain and may be worse than the grades suggest, rainfall warning signs have been erected at those beaches particularly susceptible to the effect of rain to alert bathers of the possible transient deterioration in water quality (Appendix 3).

西貢區的泳灘
Beaches in the Sai Kung District

3.1 二零零二年，西貢區的泳灘繼續符合泳灘水質指標。在該區的六個憲報公布泳灘中，四個的級別屬於「良好」(見圖3.1)，它們分別是夏門灣、橋咀、三星灣及清水第二灣。與二零零一年一樣，

3.1 The beaches in the Sai Kung District continued to meet the WQO for bathing water in 2002. Four out of the six gazetted beaches in Sai Kung were ranked 'Good' (Figure 3.1). They were Hap Mun Bay, Kiu Tsui, Trio and Clear Water Bay Second. Silverstrand and Clear Water Bay First had the same rank, i.e. 'Fair' as in 2001. Despite no change in ranking, slight

圖 3.1 西貢區泳灘在二零零二年度的全年級別
Figure 3.1 Annual ranks of Sai Kung beaches in 2002

銀線灣及清水第一灣均同屬「一般」級別。雖然泳灘級別保持不變，但三星灣和清水第二灣的水質均見輕微改善。其餘四個泳灘的水質則與過去數年相若。

3.2　夏門灣及橋咀均位於橋咀洲，與主要陸地分隔，因此該兩處腹地的人口不多。這兩個泳灘均持續獲得「良好」等級(見圖 3.2)，反映它們的水質較少受到雨量影響。過去連續七年，兩個泳灘

improvement in water quality was observed at Trio and Clear Water Bay Second. The water quality of the other four beaches remained similar as in previous years.

3.2　Hap Mun Bay and Kiu Tsui are located on the Sharp Island separated from the mainland and do not have much residence in their hinterland. They were less susceptible to the effect of heavy rain as reflected by their good beach grading (Figure 3.2), and both beaches had the

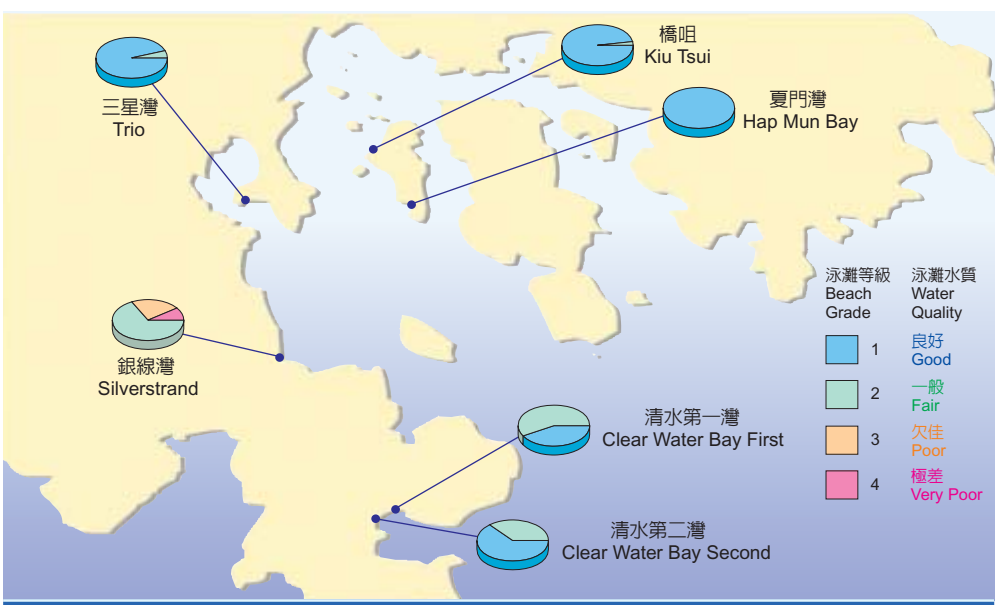
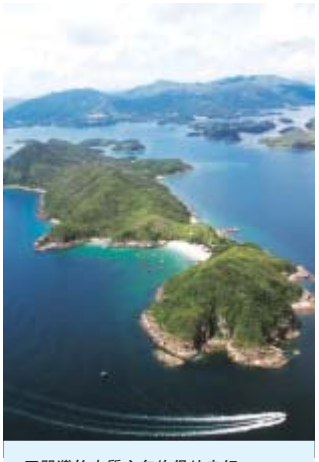


圖 3.2　西貢區泳灘在泳季期間的每周等級分布圖
Figure 3.2　Distribution of weekly grading at the Sai Kung beaches during the bathing season

全年的大腸桿菌幾何平均值均為每百毫升少於 5 個。同樣，三星灣亦保持良好的水質，泳灘等級只是偶有變化。

3.3 位處牛尾海的三個泳灘，即銀線灣、清水第一灣及第二灣的水質並不穩定，每年均會錄得變化。從上述三個泳灘在泳季期間所獲的等級可見，它們的水質出現較大變化(見圖3.2)，當中以銀線灣的水質變化較為顯著(見圖3.3)，因為該處未敷設排污渠的腹地建有較多住宅，而且數條溪澗及雨水渠均流向泳灘附近範圍。



夏門灣的水質全年均保持良好
The water quality of Hap Mun Bay is consistently good throughout the whole year

annual geometric mean *E. coli* counts below 5 per 100mL for the last seven consecutive years. Similarly, Trio also had good water quality and its beach grading only showed slight fluctuation.

3.3 The water quality of the three beaches located at Outer Port Shelter, viz. Silverstrand, Clear Water Bay First and Second, is comparatively less stable and fluctuations are observed from year to year. The beach grades of these three beaches also reflect wider fluctuations in their water quality during the bathing season (Figure 3.2). Among them, the water quality of Silverstrand fluctuated more widely (Figure 3.3) because its unsewered hinterland had more residential developments and a number of streams and storm drains leading to the vicinity of the bathing area (Figure 3.4).

銀線灣泳灘的腹地有較多住宅
The hinterland of Silverstrand Beach has relatively more residential development

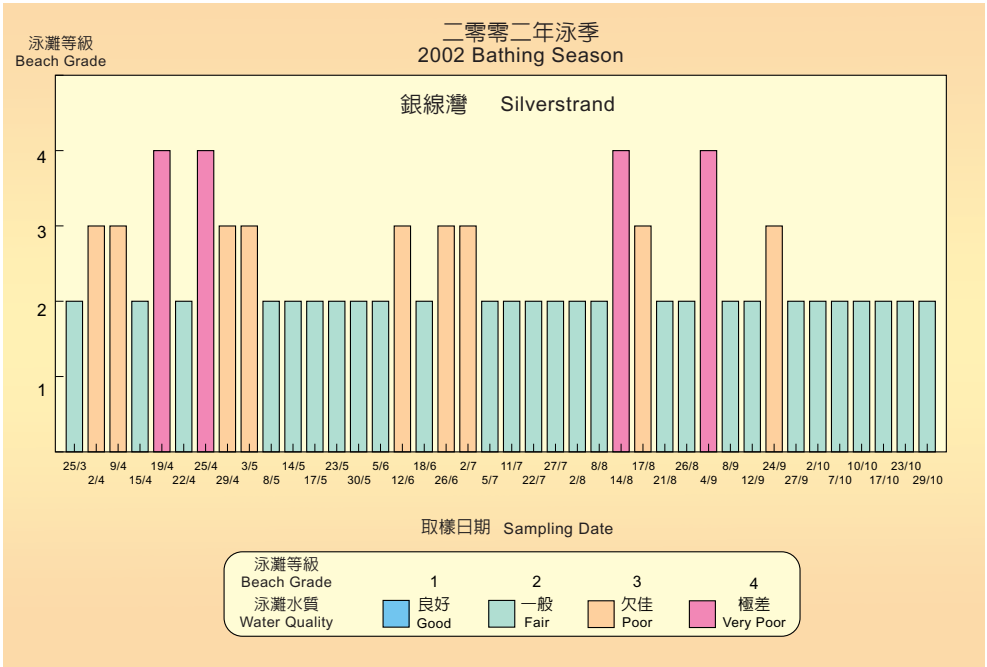


圖 3.3 銀線灣在泳季期間的水質變化
Figure 3.3 Water quality changes of Silverstand Beach during the bathing season

3.4 這些位處牛尾海的泳灘腹地的污水處理設施主要包括私人污水處理廠或化糞池及滲水井系統。銀線灣腹地共有超過六十個污水處理設施，當中多數與溪澗十分接近。化糞池特別容易受大雨影響，造成污染物溢流。除了大雨的影響外，化糞池的滲液、污水廠因例如停電、缺乏消毒劑、管

3.4 The major sewage treatment facilities (STFs) in the hinterland of those beaches at Outer Port Shelter are either private sewage treatment plants (STPs) or septic tank and soakaway pit systems. Silverstrand has over sixty of these STFs in the hinterland and many of these are at close proximity to the streams. Septic tanks are particularly susceptible to the effect of heavy rain which may flush out pollutants from them. Apart from the effect of heavy rain, septic tank

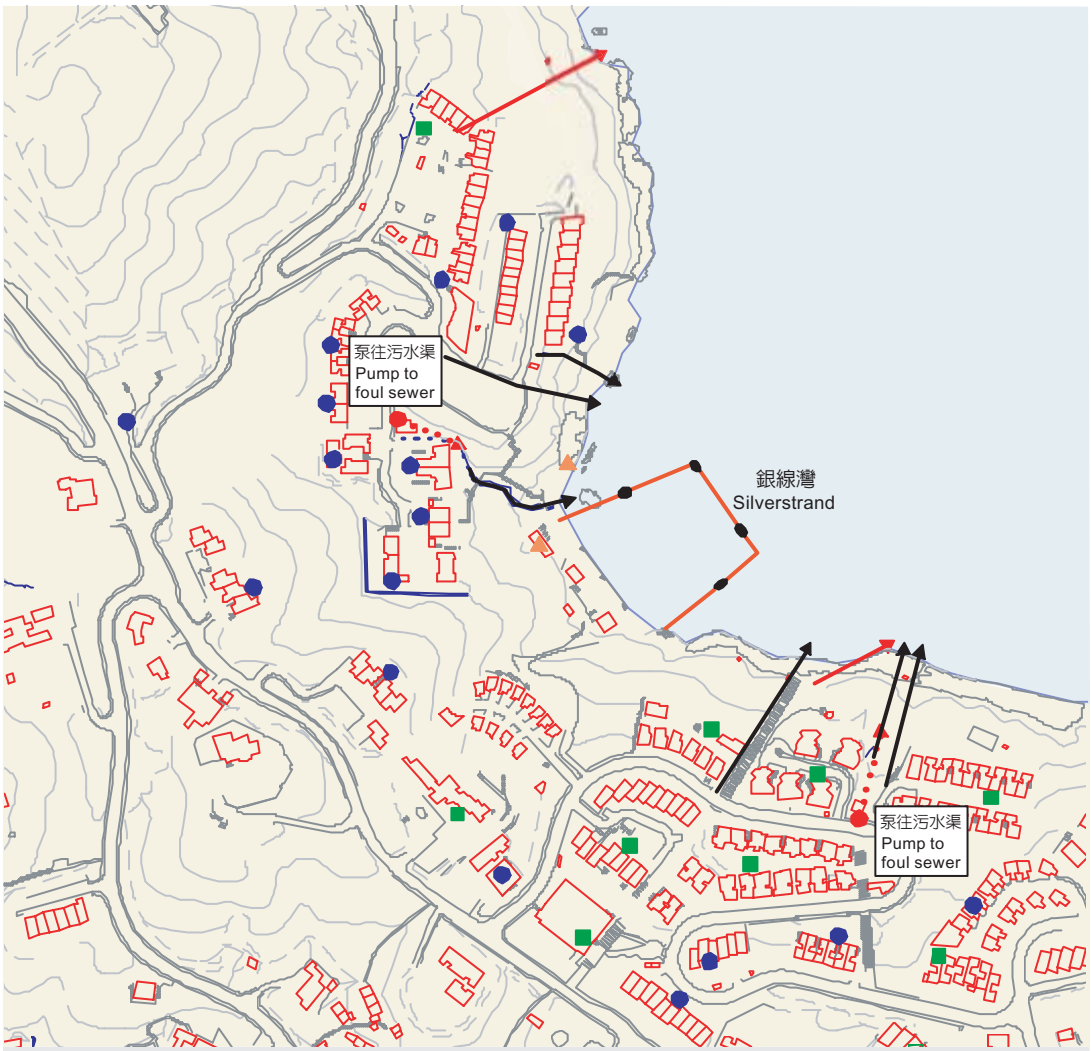


圖 例:
Legend

- 政府泵房 Government Pumping Station
- 私人污水處理廠 Private Sewage Treatment Plant
- 化糞池/石濾池/滲水井 Septic Tank / Stone Filter / Soakaway Pit
- 泳灘設施(包括沖身設施及廁所) Beach Facilities (incl. showers & toilets)
- 經處理污水排放口/渠口 Treated Effluent Discharge / Outfall
- 繞流/溢流 Bypass / Overflow
- 雨水渠 Storm Drain
- 泳灘浮波線 Boom Line of Beach

圖 3.4 銀線灣的集水範圍圖
Figure 3.4 Catchment plan of Silverstrand Beach

道淤塞等原因而中斷運作均會導致泳灘水質短暫惡化。環保署不遺餘力，經常巡查這些污水處理設施，並對造成污染的排放者採取執法行動。在泳季開始前，環保署亦致力加強巡查，提高居民的環保意識，以確保區內所有污水處理設施均妥善維修，並符合污水排放標準。

3.5 為保護牛尾海一帶的水質，當局在牛尾海污水收集整體計劃中建議為西貢區提供完善的排污設施(見圖3.5)。在銀線灣地區的排污系統屬第一期的部分工程，已於二零零二年啟用。當局亦向銀線灣的居民發出通告，籲請他們把排水渠接駁至公共污水渠。到二零零三年，當腹地大部分村屋接駁至公共污水渠後，銀線灣便會較少受大雨所影響，屆時水質可望得到改善。

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seepages and malfunctioning of these STPs due to power failure, running out of disinfectants, pipe blockage, etc. may also cause temporary deterioration in beach water quality. The EPD had made continuous effort to carry out inspections of these STFs and enforcement against any polluting discharges. Prior to the beginning of the bathing season, EPD would step up the inspection programme against STFs to arouse the awareness of house owners to ensure that all STFs in the area were properly maintained and the effluent discharge standards were met.

3.5 In order to protect the coastal water quality of Port Shelter, it had been recommended in the Port Shelter Sewerage Master Plan to provide proper sewerage for the Sai Kung District (Figure 3.5). The sewerage system for the Silverstrand area, which was part of the Stage I works, had been commissioned in 2002. Notice to urge the house owners in the Silverstrand area to connect their discharges to the public sewers had also been issued. By 2003, when most of the village houses in the hinterland are connected to public sewers, Silverstrand would be less susceptible to the effect of heavy rain and its water quality is expected to improve.

銀線灣區的渠務工程
Construction of sewerage system for the Silverstrand area

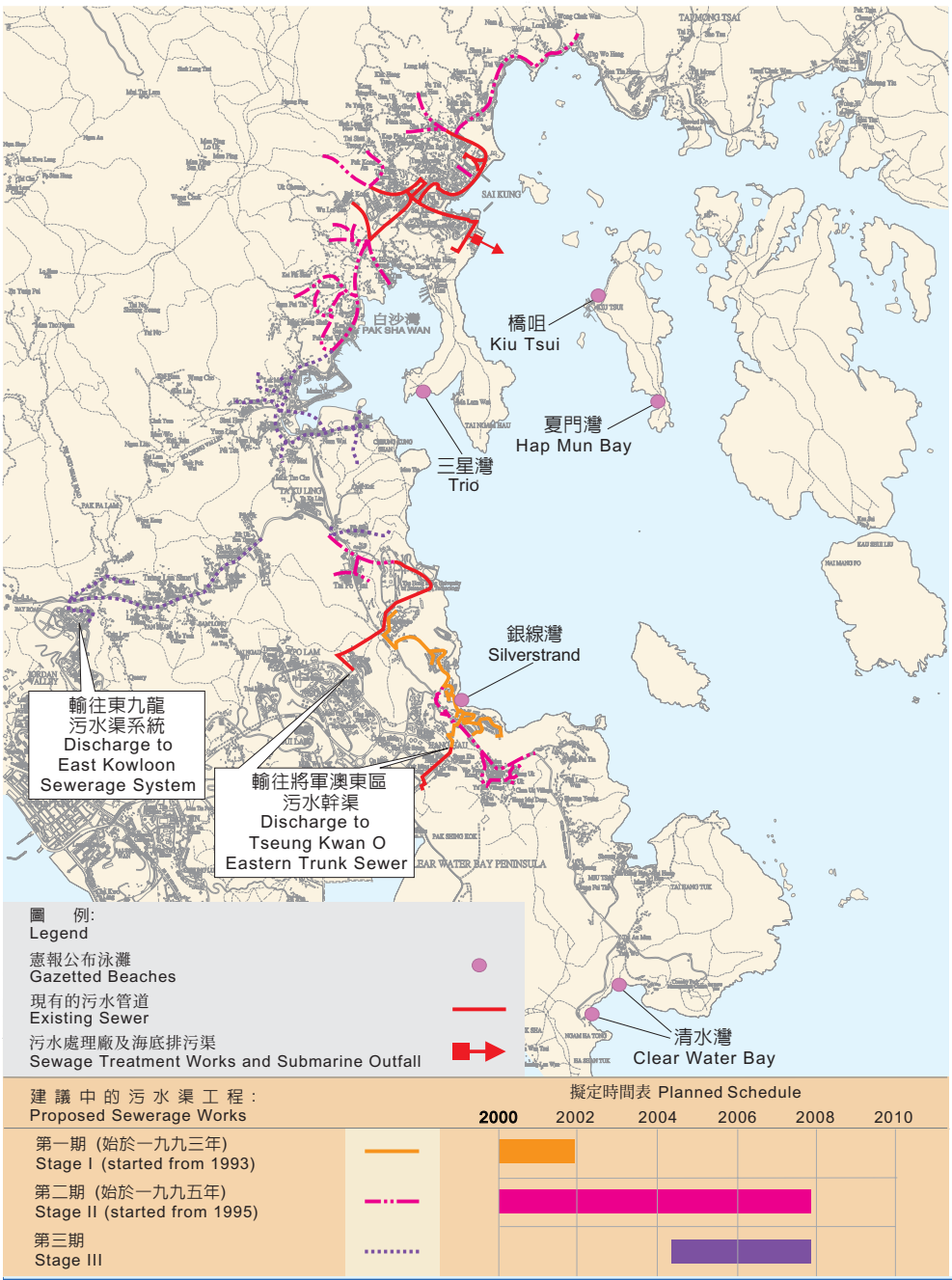


圖 3.5 建議中的西貢區污水渠工程圖
Figure 3.5 Proposed sewerage works for Sai Kung District

3.6　排污計劃的第二及第三期，包括為沙角尾、蠔涌、大埔仔及井欄樹提供排污網絡的工程暫定於二零零七年完成。當這些改善工程完成後，牛尾海以至西貢區泳灘的水質將得以保持良好。至於第四期工程的施工計劃則會於較後時間擬定。

3.6　The Stage II and III works, including the provision of sewerage to Sha Kok Mei, Ho Chung, Tai Po Tsai and Tseng Lan Shue, are tentatively scheduled to be completed by 2007. When these improvement works are completed, the good water quality of the Port Shelter and the beaches in Sai Kung will be safeguarded. The implementation programme for the Stage IV works will be developed at a later stage.

南區的泳灘
Beaches in the Southern District

4.1 二零零二年，南區十二個泳灘繼續達到泳灘水質指標。當中十一個泳灘的水質屬於「良好」，一個則屬於「一般」(見圖4.1)。水質「良好」的泳灘大多位於港島南面，該處的樓宇設有排污系統，污水均輸送至污水處理廠作妥善處置(見圖 4.2)。

4.1 The twelve beaches in the Southern District continued to meet the WQO for bathing water in 2002. Among these, eleven were ranked 'Good' and one was ranked 'Fair' in water quality (Figure 4.1). The 'Good' water quality beaches were mainly located at the south of Hong Kong Island where sewerage systems were provided to the premises and sewage was conveyed to sewage treatment plants for proper disposal (Figure 4.2).

圖 4.1 南區泳灘在二零零二年度的全年級別
Figure 4.1 Annual ranks of beaches in the Southern District in 2002

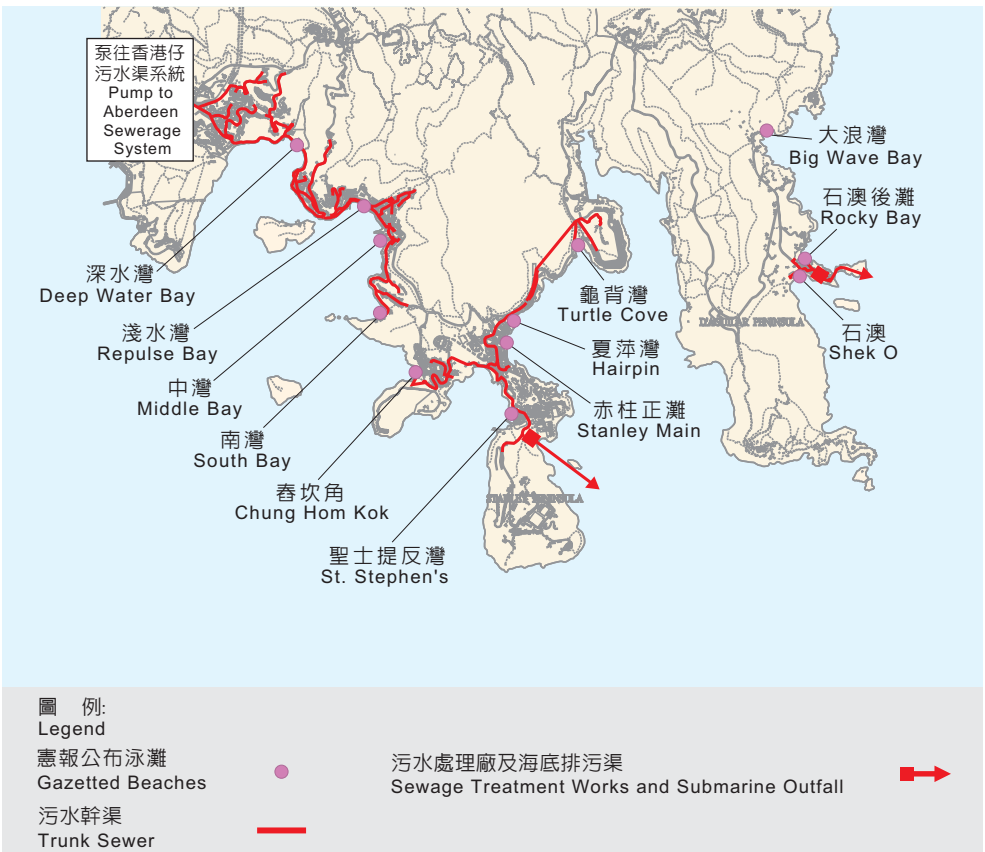


圖 4.2 港島南污水收集整體計劃提供的污水渠網絡
Figure 4.2 Sewerage network provided under the Hong Kong Island South Sewerage Master Plan

4.2 由於這些水質「良好」的泳灘亦較少受到大雨所影響，因此水質亦較少出現變化 (見圖4.3)。特別是南灣、赤柱正灘和聖士提反灣，它們的水質在二零零二年均持續保持「良好」。

4.2 These 'Good' water quality beaches were also less susceptible to the effect of heavy rain and had little fluctuation in water quality (Figure 4.3). In particular, South Bay, Stanley Main and St. Stephen's had consistent 'Good' water quality in 2002.

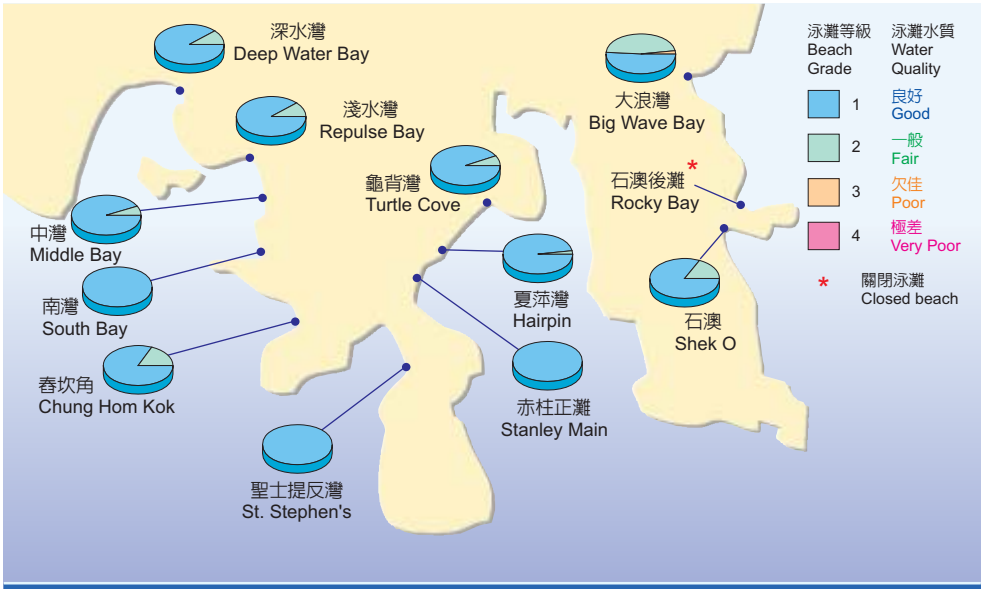


圖 4.3 港島泳灘在泳季期間的每周等級分布圖
Figure 4.3 Distribution of the weekly grading at beaches on Hong Kong Island during the bathing season

4.3 二零零一年八月，來自深水灣泳灘設施的廢水引流至公共污水渠排放。此後深水灣的水質輕微改善，在二零零二年，大腸桿菌的全年幾何平均數值降至每百毫升 10 個。採取上述的引流措施後，深水灣腹地現已完全接駁至排污渠。

4.3 In August 2001, wastewater from the beach facilities of Deep Water Bay was diverted to a public sewer. Since then, the water quality of Deep Water Bay has slightly improved with the annual geometric mean *E. coli* count improved to 10 per 100mL in 2002. With this diversion, the hinterland of Deep Water Bay is now completely sewered.

深水灣腹地現已完全接駁至排污渠
The hinterland of Deep Water Bay is now completely sewered

隨藍塘海峽的水質改善，石澳泳灘的級別亦提升至「良好」
With the improvement of water quality at Tathong Channel, the rank of Shek O Beach has also improved to 'Good'

4.4 與二零零一年比較，位於港島東面的三個泳灘，即石澳、石澳後灘及大浪灣的水質均明顯改善(見圖4.4)。石澳及大浪灣的水質均由「一般」改善至「良好」。雖然石澳後灘的全年評級仍屬「一般」，但大腸桿菌的全年幾何平均數值已由二零零一年的每百毫升118個減至二零零二年的每百毫升43個。

4.5 上述三個泳灘的水質得以改善的主要原因是淨化海港計劃第一期於二零零一年底實施。計劃第一期的設施包括一個收集及輸送污水至昂船洲的中央污水處理廠處理的深層隧道網絡，以及一條把經處理污水排入維多利亞港以西水域的深海排污渠。來自柴灣及將軍澳的污水，原先經由海底排污渠排入藍塘海峽，現時則已轉流至上述排污隧道網絡(見圖4.5)

4.4 The water quality of the three beaches on the east of the Hong Kong Island, namely Shek O, Rocky Bay and Big Wave Bay has significantly improved as compared with 2001 (Figure 4.4). The water quality of Shek O and Big Wave Bay has improved from 'Fair' to 'Good'. Although the annual rank of Rocky Bay remained at 'Fair', the annual geometric mean *E. coli* count was reduced from 118 per 100mL in 2001 to 43 per 100mL in 2002.

柴灣污水廠的污水已轉流至淨化海港計劃的排污隧道網絡
Sewage from Chai Wan Preliminary Treatment Works has been diverted to the tunnel network of HATS

4.5 The improvement was mainly due to the commissioning of Stage I of HATS at the end of 2001. The Stage I of HATS comprises a deep tunnel network for collection and transfer of sewage to a centralized sewage treatment plant at Stonecutters Island for treatment and a submarine outfall for disposal of the effluent to the western approaches of the Victoria Harbour. Sewage arising from Chai Wan and Tseung Kwan O, which was previously discharged to the Tathong Channel via submarine outfalls, had been diverted to the tunnel network (Figure 4.5).

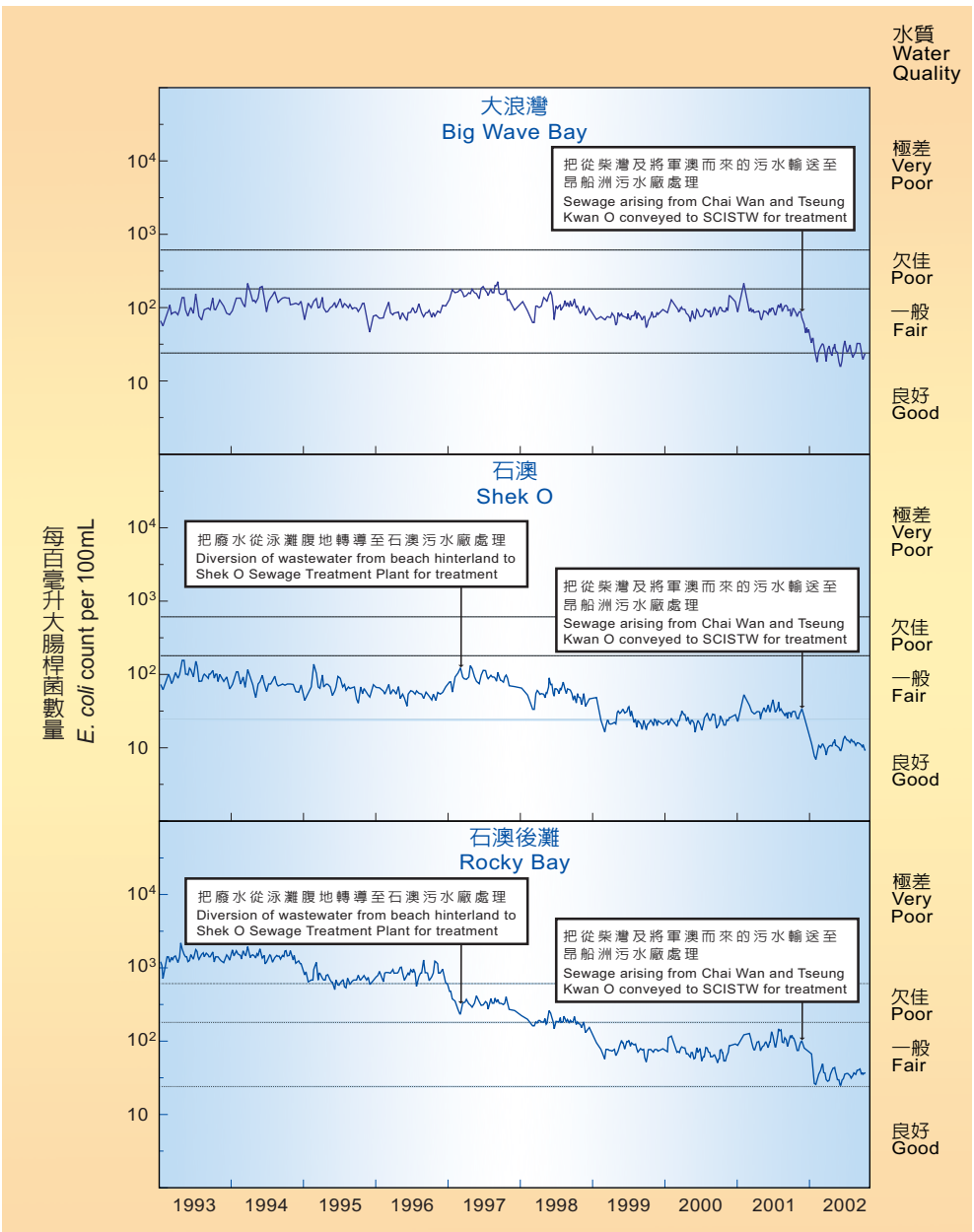


圖 4.4 位於港島東面的三個泳灘的水質趨勢圖
Figure 4.4 Water quality trend lines of the three beaches on the eastern side of Hong Kong Island

圖 4.5 改善藍塘海峽水質的淨化海港計劃工程
Figure 4.5 HATS works causing improvement of water quality at Tathong Channel

4.6 儘管藍塘海峽的海水污染源已大致消除，但大浪灣、石澳及石澳後灘的水質仍會受到大雨的影響。大浪灣的腹地仍未敷設任何污水渠，石澳及石澳後灘則使用混合排水系統，目前僅有部分地區接駁至污水渠。一些寮屋仍舊使用化糞池及滲水井系統。大雨時，污染物可從地面水渠及化糞池和滲水井沖出，引致上述泳灘的水質在泳季期間出現較大的變化，尤以大浪灣的情況最為顯著(見圖 4.3)。

4.6 Although pollution of the marine water at Tathong Channel has been mostly removed, the water quality of Big Wave Bay, Shek O and Rocky Bay is still susceptible to the effect of heavy rain. The hinterland of Big Wave Bay is unsewered, while that of Shek O and Rocky Bay is only served by a combined drainage system and is partially sewered. Some of the squatter houses are still served by septic tank and soakaway pit systems. During heavy rain, pollutants may be flushed out from the surface channels as well as the septic tank and soakaway pit systems. This resulted in wider fluctuation in water quality at these beaches, in particular Big Wave Bay, during the bathing season (Figure 4.3).

未敷設排污渠的大浪灣腹地仍是泳灘的潛在污染源
The unsewered hinterland of Big Wave Bay is still a potential pollution source for the beach

荃灣區的泳灘
Beaches in the Tsuen Wan District

5.1 荃灣區共有八個憲報公布泳灘。二零零二年，位於馬灣的東灣和海美灣的水質均屬「欠佳」，其餘六個泳灘的水質則屬「極差」(見圖 5.1)。其中三個水質「極差」的泳灘自九十年代中期起已關閉，不開放給市民使用。區內所有泳灘的水質均普遍出現惡化。

5.1 There are eight gazetted beaches in the Tsuen Wan District. Tung Wan on Ma Wan and Hoi Mei Wan had 'Poor' water quality while the other six beaches were ranked 'Very Poor' in 2002 (Figure 5.1). Three of the 'Very Poor' beaches had already been closed to the public since mid 1990s. There was general deterioration of water quality at all beaches in the district.

圖 5.1 荃灣區泳灘在二零零二年度的全年級別
Figure 5.1 Annual ranks of Tsuen Wan beaches in 2002

5.2 在設有泳灘的地區中，惟獨荃灣區內的憲報公布泳灘未達到泳灘水質指標。區內泳灘的水質欠佳是由於受到未有敷設排污渠的泳灘腹地排放的污染物、污染的深井明渠及荃灣沿岸一帶海水的高含菌量影響所致。鑑於受到多個潛在污染源的影響，各泳灘的水質在泳季期間出現頗大變化(見圖 5.2)。

5.2 Tsuen Wan was the only district where gazetted beaches did not meet the WQO for bathing water. The poor water quality of the Tsuen Wan beaches is attributed to pollutants discharged from their unsewered hinterland, the polluted Sham Tseng Nullah and the relatively high bacterial level in the marine water off the Tsuen Wan coast. As the beaches are susceptible to pollution from a number of potential sources, their water quality fluctuated widely during the bathing season (Figure 5.2).

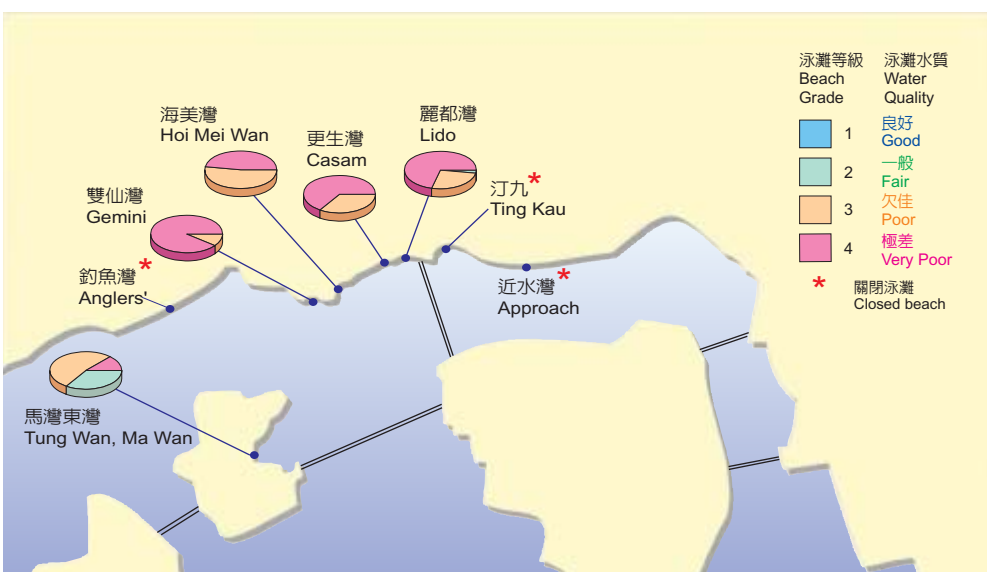


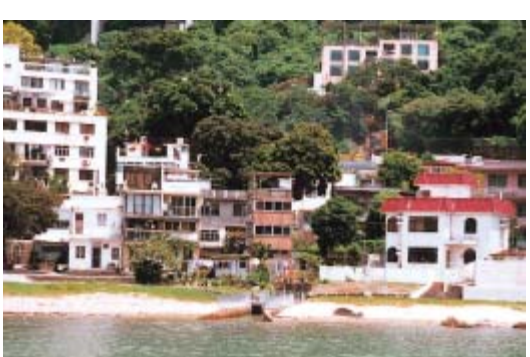
圖 5.2 荃灣區泳灘在泳季期間的每周等級分布圖
Figure 5.2 Distribution of the weekly grading at beaches of Tsuen Wan during the bathing season

5.3 由東面的汀九至西面的青龍頭一段的青山公路目前仍未敷設排污渠。雖然青山公路一帶新建的樓宇設有私人污水處理廠，但沿路的大部分村屋依然使用化糞池及滲水井系統。故此，青山公路一帶泳灘的水質極易受到污染，尤其在大雨時，污染物會從化糞池及滲水井溢出，以致污染的地面徑流亦會增多。

村屋化糞池滿溢時會影響附近泳灘的水質
Overflow from septic tanks would adversely affect the beach water quality

5.4 汀九當地的污染源使該處的污染問題進一步惡化。汀九村約有居民一千人，常見的村屋大多使用化糞池及滲水井系統處理污水。汀九的水質直接受到流向泳灘的水道所影響。受污染的地面徑流及來自村屋的生活污水均排入上述水道中。在其中一條水道的下游，設有由康文署操作的次氯酸鈉劑量調控系統，為流入泳灘的溪水進行消毒。然而，若該系統發生故障，泳灘水質便會受到污染。為確保泳灘水質不受此污染源所污染，環保署密切監察上述系統的運作。

5.3 The area along Castle Peak Road from Ting Kau in the east to Tsing Lung Tau in the west is still unsewered. Though new developments along the Castle Peak Road have private sewage treatment plants, many village houses along the road are still using septic tank and soakaway pit systems. The water quality of the beaches along the Castle Peak Road is therefore vulnerable to pollution, particularly during heavy rain, which may flush out pollutants from septic tank and soakaway pit systems and increase polluted runoffs from the surface drains.



此雨水渠亦會把泳灘腹地的污染物帶至汀九泳灘
This storm drain also brings pollutant from the hinterland to Ting Kau Beach

5.4 The pollution problem at Ting Kau was exacerbated by local pollution sources. The Ting Kau Village has a population of about 1,000 and typical village type houses with septic tank and soakaway pit systems for sewage treatment. The water quality of Ting Kau is directly affected by watercourses that run straight into the beach water. Polluted surface runoffs and sullage from the village houses are discharged into these watercourses.

汀九泳灘的次氯酸鈉劑量調控系統
The hypochlorite dosing system at Ting Kau Beach

5.5 釣魚灣位於深井明渠西面，兩處相距僅數百米。明渠受到兩側樓宇排放的污水嚴重污染，受污染的水流因而直接影響泳灘的水質。該處亦有其他潛在的污染源，包括腹地未有敷設排污渠的村落，以及青山公路一帶的私人污水處理廠。

5.6 在深井區未有完善的排污渠網絡前，為紓緩深井明渠的污染問題，當局採取暫時措施，興建額外設施處理或收集排入明渠的部分污水。這些設施包括一所附設消毒系統的生物處理廠。該處理廠已於二零零一年底落成啟用，處理來自深井上下重建村所收集的污水。此外，當局亦興建儲水缸，收集深井臨時垃圾收集站、公廁及臨時街市排放的廢水，以待吸糞車運走處理。

At the downstream of one of the watercourses, there is a hypochlorite dosing system operated by LCSD to disinfect the water before entering the beach. However, any malfunctioning of this dosing system could result in pollution of the beach water. In order to ensure that the beach water is not polluted by this source, this system is under close scrutiny by the EPD.

5.5 The Anglers' Beach is on the west of Sham Tseng Nullah and at a distance of only a few hundred meters away. The Nullah is heavily polluted by sewage discharged from premises along its two banks. Its polluted flow has direct impact on the water quality of the beach. There are also potential local pollution sources, including the unsewered villages in the hinterland, and the private sewage treatment plants along the Castle Peak Road.

5.6 As an interim measure to alleviate the pollution problem of the Sham Tseng Nullah before provision of sewerage, additional facilities have been constructed to treat or collect some

在下游的商業活動亦為深井明渠帶來污染
Commercial activities at lower stream also contributed to the pollution of Sham Tseng Nullah

5.7 當局興建的另一所附設消毒系統的生物處理廠亦已於二零零一年底啟用，處理位於青龍頭區的圓墩重建村所收集的污水。污水經處理後會經雨水渠直接排入大海。青山公路一帶大部分人口排放的污水均由多間設有消毒設施的私人污水處理廠處理。這些污水處理廠會把經處理的污水直接排入沿岸海域。假如這些污水處理廠運作出現故障，便會導致泳灘水質嚴重惡化。環保署經常巡查這些設施，以確保它們妥善運作及維修保養。

5.8 為長遠改善整個地區的水質，當局已計劃在汀九至青龍頭一段的青山公路興建排污渠(見圖 5.3)。各泳灘腹地多個村落排放的污水經收集後會輸往位於深井填海區新建的污水處理廠處

深井的臨時污水廠收集及處理部分流入深井明渠的廢水
The interim sewage treatm ent plant at Sham Tseng collects and treats part of the wastewater discharged to Sham Tseng Nullah

of the wastewater discharged into the nullah. These include a biological treatment plant with disinfection which was commissioned at the end of 2001 to treat the sewage collected from the Sham Tseng Upper and Lower Resite Villages, and storage tanks to collect wastewater from the Sham Tseng temporary Refuse Collection Point, public toilet and the temporary market for tankering away.

5.7 Another biological treatment plant with disinfection facilities was constructed and commissioned at the end of 2001 to treat wastewater collected from the Yuen Tun Resite Village in the Tsing Lung Tau area. The treated effluent is then directly discharged to sea via a storm drain. A large population along the Castle Peak Road is served by a number of private sewage treatment plants with disinfection facilities. Treated effluent from these plants is discharged directly to the coastal water. Any malfunctioning of these sewage treatment plants could result in severe deterioration of beach water quality. The EPD had paid frequent visits to these facilities to ensure that they were properly operated and maintained.

5.8 As a long-term solution to improve the water quality of the whole area, it has been planned to provide sewerage along the Castle Peak Road from Ting Kau to Tsing Lung Tau

正在進行中的青山公路擴闊工程
Castle Peak Road widening work in progress

理。在這所新污水廠裡，污水會首先經化學強化一級處理和消毒，然後才經海底排污渠排入大海。污水處理廠及海底排污渠的興建工程已於二零零一年展開，預計大約在二零零三年底完成。不過，沿青山公路敷設整條污水幹渠的工程預計會直至大約二零零五年底才能完成，以供村屋及其他屋宇的接駁。因此，該處泳灘腹地的污染源預期最早在二零零六年之後才開始消除。

5.9 荃灣區泳灘水質欠佳亦與荃灣沿岸海域海水的含菌量較高有關。自淨化海港計劃第一期於二零零一年底全面啟用後(見圖5.4)，西面水域的含菌量已見上升。由於昂船洲污水處理廠全面運作後的污水處理量由每日三十萬立方米升至一百三十萬立方米，較局部運作時大幅增加約四倍，因此當大量經處理污水在維港以西水域排放時，便會造成該處海水的含菌量上升，對區內泳灘的水質造成負

(Figure 5.3). Sewage from the villages in the hinterland of all beaches will be collected and conveyed to a new sewage treatment plant to be built on reclaimed land in Sham Tseng for treatment. At this new plant, sewage will be treated by chemically enhanced primary treatment with disinfection prior to discharge to sea via a submarine outfall. The construction of the sewage treatment plant and submarine outfall has commenced in 2001 and is expected to be completed around the end of 2003. However, the laying of the whole trunk sewer along the Castle Peak Road is only expected to be completed around the end of 2005 for connection with village houses and individual properties. It is therefore expected that the removal of the local pollution sources in the hinterland will begin to happen after 2006 at the earliest.

5.9 The poor water quality of the beaches in the Tsuen Wan District is also related to the relatively high bacterial level in the marine water off the Tsuen Wan coast. After the full commissioning of the HATS Stage I at the end of 2001 (Figure 5.4), elevation in bacterial level had been observed in the western water. As the daily treatment capacity of SCISTW has

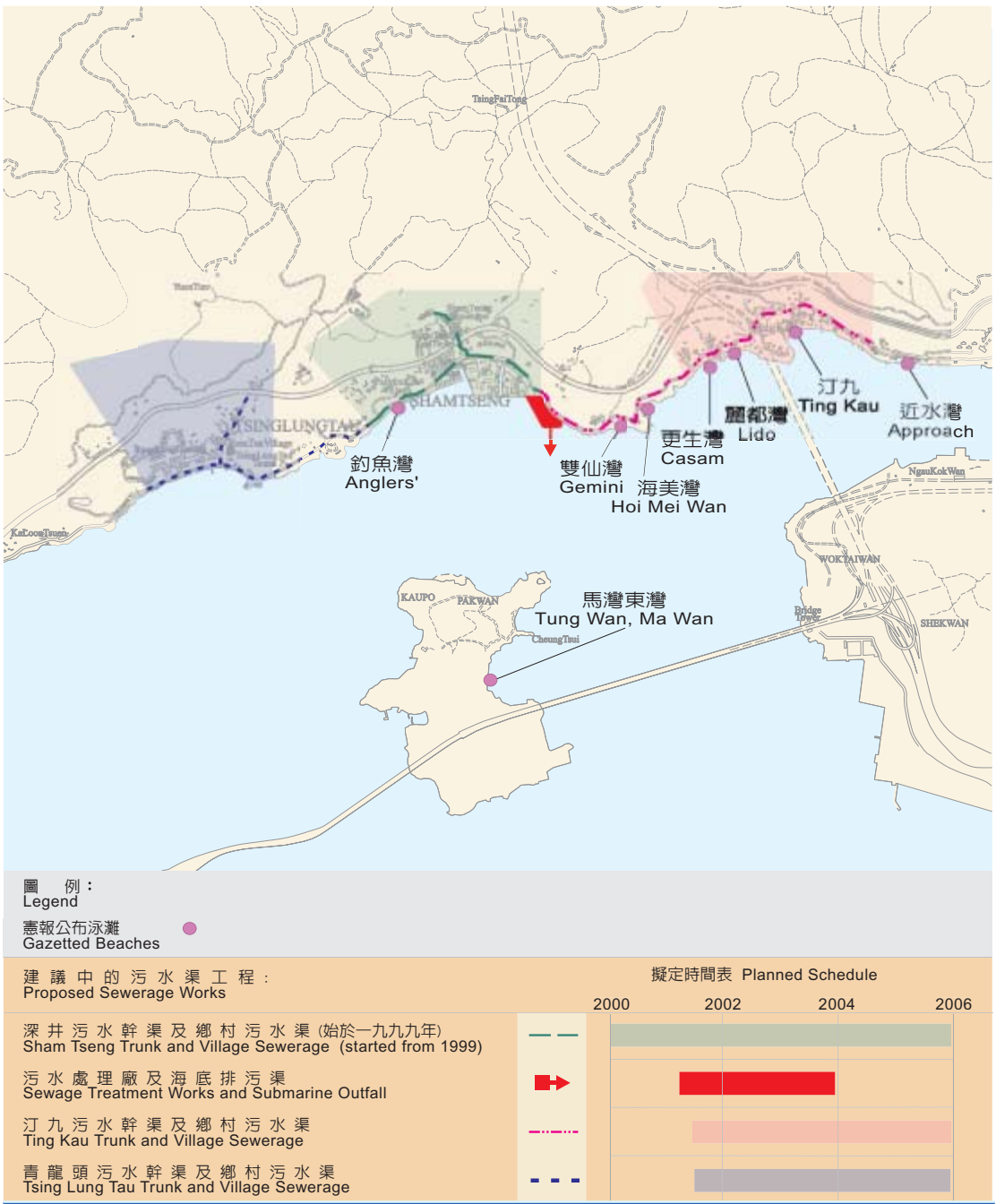


圖 5.3 建議中的青龍頭、深井和汀九污水渠工程
Figure 5.3 Proposed sewerage works for Tsing Lung Tau, Sham Tseng and Ting Kau

面影響。當局現正進行多項研究，以決定淨化海港計劃餘下各期最終採用的污水處理水平和技術。預期當這項計劃其餘各期的工程完成後，荃灣區的海水及泳灘水質將會大為改善。

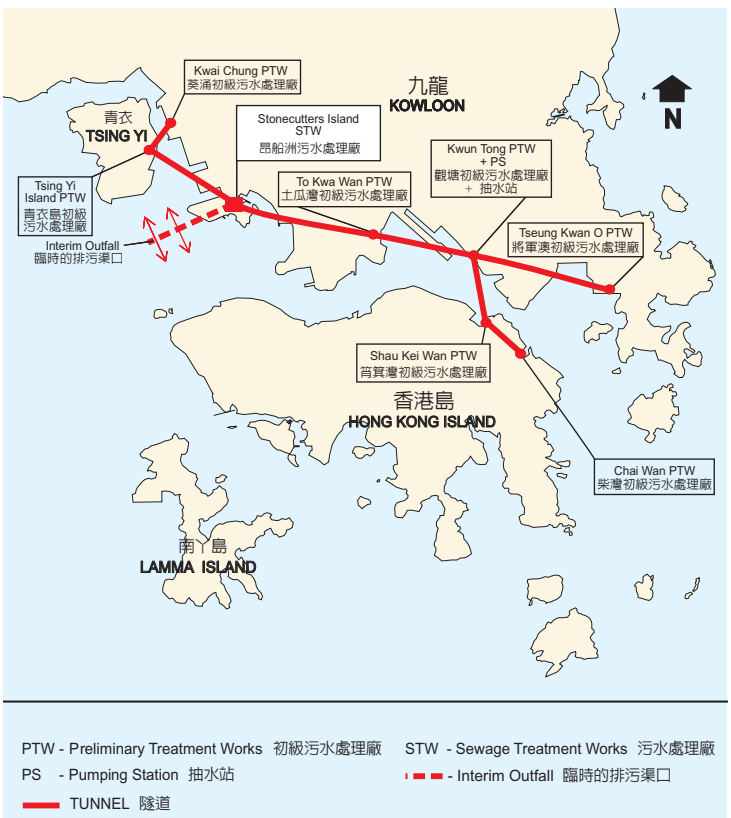


圖 5.4 淨化海港計劃第一期
Figure 5.4 Harbour Area Treatment Scheme Stage I

approximately quadrupled from 0.3 million m^3 per day during partial operation to 1.3 million m^3 per day after full commissioning, the discharge of such a huge volume of treated effluent at the western approaches of the Harbour has resulted in the elevation of bacterial level in the marine water there and imposed an adverse impact on the water quality of the Tsuen Wan beaches. A series of studies on the final level of treatment and technology to be adopted for the remaining stages of HATS is being undertaken. It is envisaged that when the remaining stages of HATS are implemented, the water quality of the marine water and beaches in the Tsuen Wan District will significantly improve.

屯門區的泳灘
Beaches in the Tuen Mun District

6.1 自一九九九年初望后石污水隔濾廠的舊海底排污渠更換後，屯門區六個憲報公布泳灘的水質均改善至「一般」級別。二零零二年，區內各憲報公布泳灘的水質維持「一般」級別，繼續符合泳灘水質指標(見圖 6.1)。這情況亦是由於屯門污水收集整體計劃所建議的市區污水設施改善工程

6.1 Since the replacement of the old submarine outfall of the Pillar Point Sewage Screening Plant (SSP) in early 1999, the water quality of all the six gazetted beaches in the Tuen Mun District had improved to 'Fair'. In 2002, the water quality of all the gazetted beaches in the district was maintained at the 'Fair' rank and continued to meet the WQO for bathing water (Figure 6.1). This was related to the completion of improvement works in the town area as

圖 6.1 屯門區泳灘在二零零二年度的全年級別
Figure 6.1 Annual ranks of beaches in the Tuen Mun District in 2002

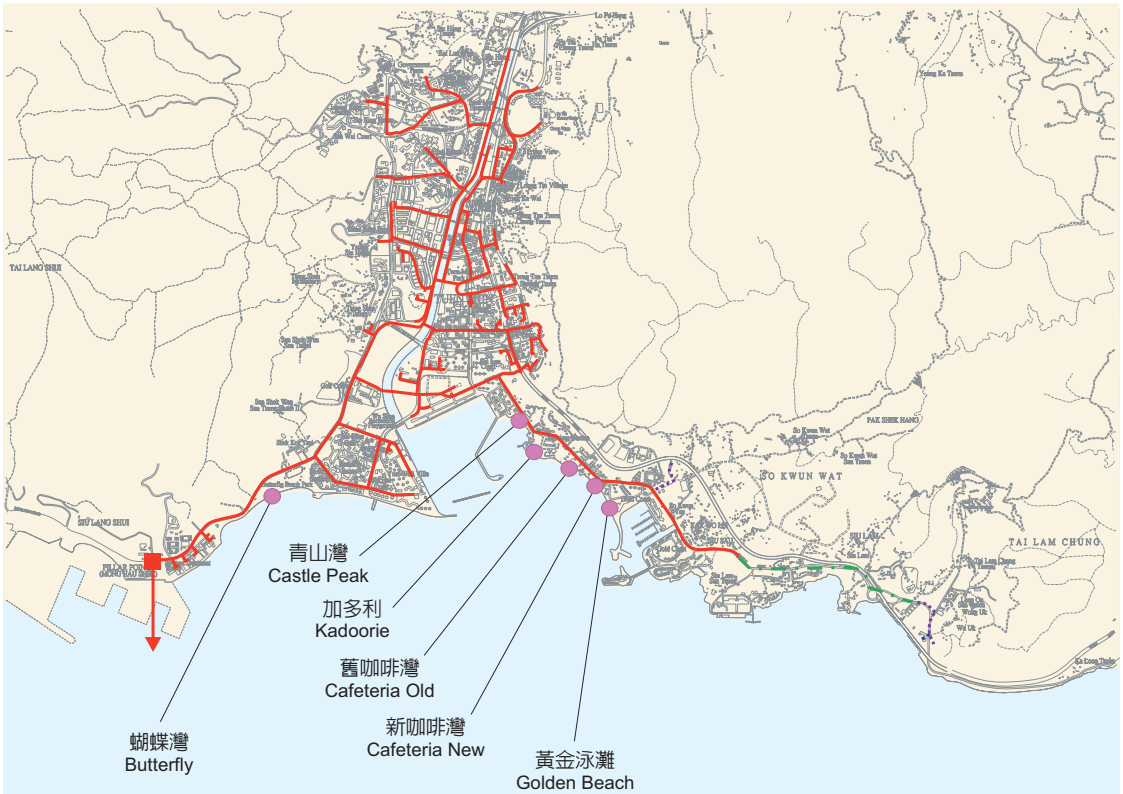


圖 例:
Legend

憲報公布泳灘
Gazetted Beaches

現有的污水管道
Existing Sewer

污水處理廠及海底排污渠
Sewage Treatment Works and Submarine Outfall

建議中的污水渠工程:
Proposed Sewerage Works

擬定時間表 Planned Schedule

2001 2003 2005 2007 2009

延展至大欖涌的污水幹渠
Trunk Sewer Extension to Tai Lam Chung

掃管笏及大欖涌鄉村污水渠
So Kwun Wat and Tai Lam Chung Village Sewerage

圖 6.2 屯門區污水渠工程
Figure 6.2 Sewerage Works in Tuen Mun

(見圖 6.2)及把區內泳灘設施排放的污水接駁至公共污水渠的工程相繼完成所致。

蝴蝶灣泳灘的水質在二零零二年較為穩定
Water quality of Butterfly Beach was relatively more stable in 2002

6.2 泳季期間，據泳灘每周評級顯示，在區內開放的五個泳灘中，四個泳灘（即黃金泳灘、舊咖啡灣、新咖啡灣及蝴蝶灣)的水質較為穩定(見圖6.3)。相對而言，加多利較受大雨所

recommended by the Tuen Mun Sewerage Master Plan (Figure 6.2), and diversion of wastewater discharges from all the beach facilities in the district to public sewers.

6.2 The water quality of four out of the five opened beaches in the district viz. Golden, Cafeteria Old, Cafeteria New and Butterfly was relatively more stable as reflected in their weekly grading during the bathing season (Figure 6.3). Comparatively, Kadoorie was more susceptible to the effect of heavy rain. The fluctuation of water quality was likely related to

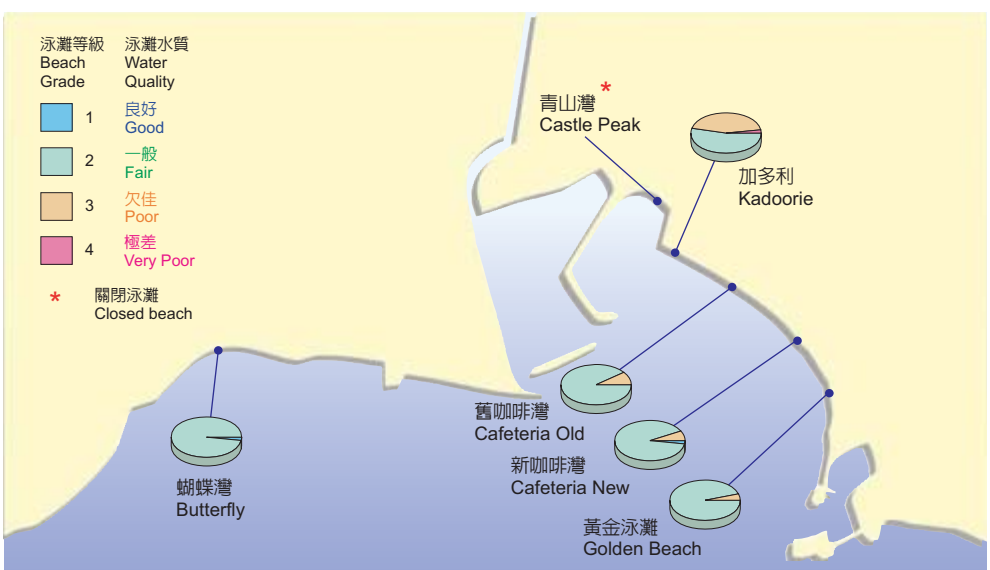


圖 6.3 屯門區泳灘在泳季期間的每周等級分布圖
Figure 6.3 Distribution of the weekly grading at beaches in the Tuen Mun District during the bathing season

影響。水質出現變化大概是由於大雨時污染物從屯門河及屯門避風塘沖至泳灘所致。

加多利泳灘的水質在二零零二年出現較大變化
Kadoorie Beach had more fluctuated water quality in 2002

6.3　屯門河的其中一個污染源來自上游地區未敷設污水設施的鄉村排放的污水。這些鄉村使用化糞池及滲水井系統處理污水。長遠來說，屯門區排污系統將伸延至這些未有敷設排污渠的地區，以便收集村屋的污水作出處理。當有關工程完成後，預期屯門河及附近泳灘的水質將進一步改善。

6.4　某程度上，經隔濾的污水分別從新圍污水隔濾廠和望后石污水隔濾廠經新界西北區海底排污渠及望后石海底排污渠排放至龍鼓水道亦對屯門區對開海域造成污染。為配合屯門區預期增長的人口及計劃中的發展項目，當局已計劃進行工程，改善現時望

屯門避風塘是屯門泳灘的一個潛在污染源
Tuen Mun Typhoon Shelter is a potential pollution source for beaches of Tuen Mun

pollutants flushed down from the Tuen Mun River and the Tuen Mun Typhoon Shelter during heavy rain.

6.3　One of the major pollution sources of the Tuen Mun River is the sewage from the unsewered villages at the upper reach. All these village houses use septic tank and soakaway pit systems for sewage treatment and disposal. In the years ahead, the Tuen Mun sewerage system will eventually be extended to these unsewered areas so that sewage from all village houses would be collected for treatment. When the project is implemented, the water quality of the Tuen Mun River and that, of the beaches in the vicinity is expected to improve further.

屯門河上游仍未敷設污水渠
The upper reach of Tuen Mun River is not yet sewered

6.4　The discharges of screened sewage from the San Wai SSP and Pillar Point SSP via the Northwest New Territories (NWNT) and the Pillar Point submarine outfalls respectively into the Urmston Road also contributed to some extent to the pollution

后石污水隔濾廠的污水處理能力和提升它的污水處理水平為化學強化一級污水處理及加設消毒設施。另一項籌劃中的工程是提升新圍污水隔濾廠的污水處理水平。當各項工程完成後，屯門區對開海域的水質將會顯著改善。

6.5 二零零二年，已關閉的青山灣的水質已是連續第四年獲評為「一般」。自從一九九九年初更換望后石海底排污渠後，該泳灘的水質持續達到泳灘水質指標。為進一步改善泳灘情況及確保泳客安全，康文署已於二零零一年底展開一項清除海床約300至500毫米厚泥層的工程。待工程完成後，有關方面便會進一步檢討是否重新開放泳灘供市民進行水上活動。

青山灣泳灘已是第四年獲評為水質「一般」
Castle Peak Beach was ranked 'Fair' for the fourth year

of marine water off the Tuen Mun District. A project has been planned to expand the sewage treatment capacity and upgrade the treatment level of the existing Pillar Point SSP by the addition of chemically enhanced primary treatment with disinfection facilities in order to cater for the projected population and planned developments in the Tuen Mun area. Another project to upgrade the San Wai SSP is also being planned. Upon completion of these projects, the marine water quality off the Tuen Mun District will significantly improve.

6.5 The closed beach, Castle Peak, has been ranked 'Fair' for four consecutive years. Since the replacement of the Pillar Point submarine outfall in early 1999, the water quality of the beach has continued to meet the WQO for bathing water. To further improve the condition of the beach and ensure safety for swimmers, LCSD has started in late 2001 a project to remove about 300-500mm thick layer of mud in the seabed of the beach. Subject to completion of the project, opening of the beach to the public again for water activities will be considered.

離島區的泳灘
Beaches on Outlying Islands

7.1 離島區的大嶼山、南丫島及長洲設有多個水質良好的熱門泳灘。在上述三個島嶼中，憲報公布泳灘共有九個。二零零二年，除了銀礦灣外，其餘泳灘的水質均屬「良好」。銀礦灣的評級屬於「一般」，與二零零一年時相同。九個泳灘的水質全都符合泳灘水質指標(見圖 7.1)。

7.1 In the Outlying Islands District, Lantau, Lamma and Cheung Chau are the outlying islands where popular beaches of good water quality are found. There are altogether nine gazetted beaches on these three islands. In 2002, all except Silvermine Bay had 'Good' water quality. Silvermine Bay was ranked 'Fair' in 2002, which was the same as in 2001. All nine beaches were able to comply with the WQO for bathing water. (Figure 7.1).

圖 7.1 離島區泳灘在二零零二年度的全年級別
Figure 7.1 Annual ranks of beaches on the Outlying Islands in 2002

7.2 二零零二年，離島區大多數泳灘的水質均保持穩定。大嶼山的塘福和長沙上灘與南丫島的兩個泳灘，即洪聖爺及蘆鬚城的水質在整個泳季持續良好。大嶼山的長沙下灘、貝澳、長洲的觀音灣及東灣的水質則出現輕微變化。離島區各憲報公布泳灘在二零零二年錄得的每周評級變化見於圖7.2。

長洲兩個泳灘的水質在泳季期間出現輕微變化
The water quality of the two beaches on Cheung Chau have slight fluctuation during the bathing season

7.2 Most of the beaches on the outlying islands had stable good water quality in 2002. Tong Fuk and Cheung Sha Upper on Lantau and the two beaches on Lamma, viz. Hung Shing Yeh and Lo So Shing had consistent good water quality throughout the whole bathing season. Slight fluctuation in water quality was observed at Cheung Sha Lower and Pui O of Lantau, Kwun Yam Wan and Tung Wan of Cheung Chau. Figure 7.2 shows the distribution of weekly grading recorded in 2002 for all the gazetted beaches in the Outlying Islands District.

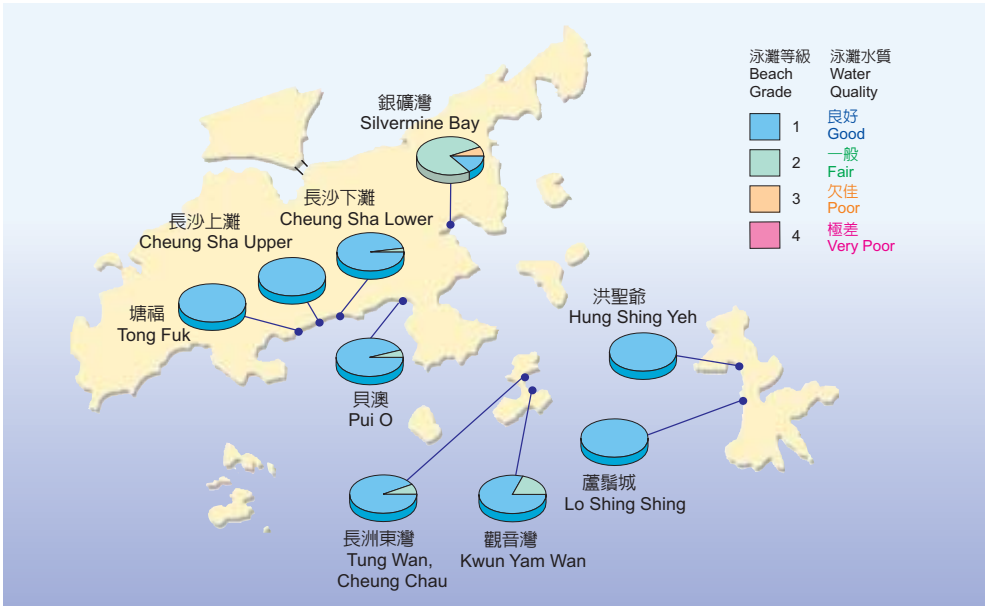


圖 7.2 離島區泳灘在泳季期間的每周等級分布圖
Figure 7.2 Distribution of the weekly grading at beaches on the Outlying Islands during the bathing season

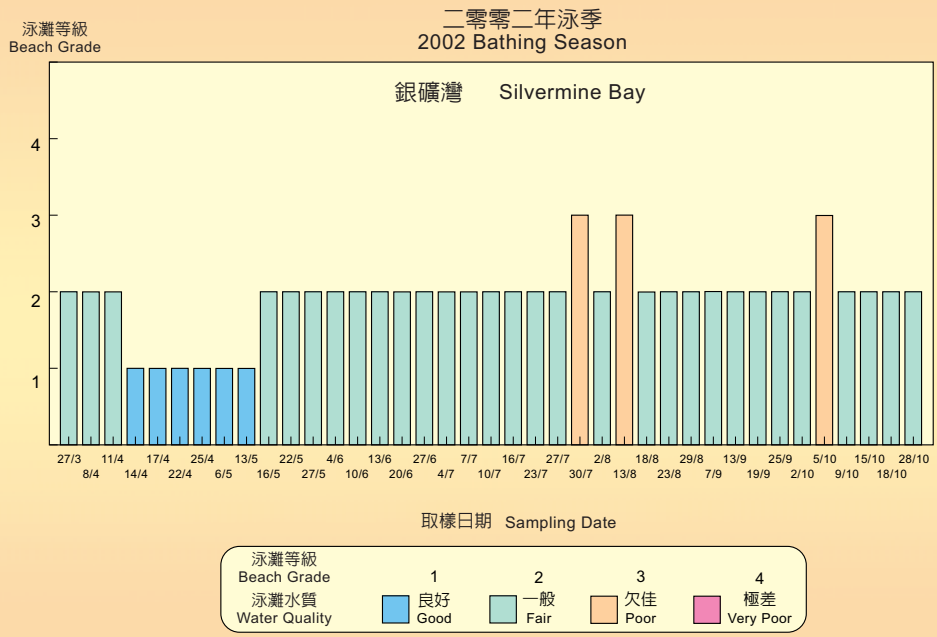


圖 7.3 銀礦灣在二零零二年度泳季期間的水質變化
Figure 7.3 Water quality changes of Silvermine Bay in the 2002 bathing season

7.3 在離島區九個憲報公布泳灘中，以銀礦灣泳灘的水質變化最大。該處腹地的人口較多(見圖7.3)。梅窩及周圍鄉村約有八成人口已接駁排污網絡，但集水區內仍有部分村屋使用化糞池和滲水井系統處理污水。這些村屋大多非常接近溪澗

水質有較大變化的銀礦灣泳灘
Wider fluctuation of water quality was observed at Silvermine Bay Beach

7.3 Among the nine gazetted beaches on outlying islands, wider fluctuation in water quality was observed at Silvermine Bay where its hinterland was relatively more populated (Figure 7.3). Although about 80% of the population of Mui Wo and the surrounding villages are connected to sewerage, some houses in the catchment still use septic tank and soakaway pit systems for sewage treatment and disposal. Many of these houses are at close proximity to streams. If these treatment systems are not properly maintained, sewage may

及河岸，假如這些處理系統缺乏妥善維修保養，便會溢出污水，流入附近的河溪，最後流向泳灘。來自村屋的生活污水同樣亦可經地面明渠排放至附近的水道。因此，銀礦灣的水質極易受大雨的影響，大雨會把從腹地流出的污染物沖入泳灘中。

生活污水可經地面明渠流入水道
Sullage can be discharged via surface channels to watercourses

7.4 為減低泳灘水質受到污染，環保署不時視察泳灘腹地，確保化糞池和滲水井系統妥善維修及定期清除淤泥。環保署亦透過派發勸諭信，忠告經營渡假屋的人士及假日住客妥善維修污水處理系統及處置他們的廢物。

7.5 為村屋提供污水渠是解決泳灘污染問題的關鍵。由東灣頭至銀礦灣東北面的污水幹渠現正興建中。此項工程預定於二零零三年完成。梅窩集水區內的大地塘及白銀鄉已興建新的污水幹渠，但接駁至村屋的工程尚待展開。

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overflow to the nearby streams and rivers leading to the beach. Similarly, sullage from village houses would also be discharged via surface channels to watercourses in the vicinity. Hence the water quality of Silvermine Bay is particularly susceptible to the effect of heavy rain, which may flush pollutants from the hinterland into the beach water.

7.4 In order to prevent pollution of beach water, EPD had conducted frequent inspections to ensure that the septic tank and soakaway pit systems in the beach hinterland are properly maintained and regularly desludged. Advisory letters had been distributed to the companies of holiday bungalows in the Silvermine Bay area to advise the management and the holiday users to maintain their sewage treatment systems and dispose of their waste properly.

沿東灣頭路的污水渠敷設工程
Construction of sewer along Tung Wan Tau Road

7.5 As provision of sewerage to village houses is the key to mitigate beach pollution, trunk sewer is now being built at Tung Wan Tau to the northeast of Silvermine Bay. The works are scheduled for completion in 2003. Construction of trunk sewers at

建議中會擴充梅窩污水處理廠以處理來自南大嶼山的污水
The upgrading of Mui Wo STP has been proposed to treat also the flow from the south of Lantau

7.6 現時梅窩污水處理廠位於銀礦灣以南的較遠位置，接駁部分梅窩地區，包括銀礦灣酒店及泳灘以南涌口村的大部份範圍。污水處理廠提供二級污水處理，並設有消毒程序，離島區污水收集整體計劃第二期的檢討計劃建議擴充現時的梅窩污水處理廠，並提升其污水處理能力，以便處理來自梅窩及南大嶼山的污水(見圖 7.4)。當局會以污水幹渠連接南大嶼山多個抽水站，以便把污水輸送至梅窩排污幹渠系統。排污支渠會伸延至南大嶼山及梅窩一帶的鄉村，包括橫塘、梅窩舊村及菜園村，而污水渠亦會接駁至白銀鄉、鹿地塘、大地塘、涌口及東灣頭的村屋。這些工程的進度表尚未有定案。但當局在檢討離島區污水收集整體計

Tai Tei Tong and Pak Ngan Heung in the catchment of Mui Wo has also been completed, but house connections have yet to be made.

7.6 The existing Mui Wo Sewage Treatment Plant (STP) is located further south from the beach, currently serving part of Mui Wo, including the Silvermine Bay Hotel and most of the Chung Hau Village at the south of the beach. The STP provides secondary level sewage treatment with disinfection. The Outlying Islands Sewerage Master Plan (SMP) Stage II Review Study recommended to expand and upgrade the existing Mui Wo STP for treating sewage from Mui Wo and the south of Lantau (Figure 7.4). Trunk sewerage incorporating a series of pumping stations will be constructed to convey sewage from the south of Lantau to the Mui Wo trunk sewerage system. Branch sewerage will be extended to villages at the south of Lantau as well as to villages around Mui Wo including Wang Tong, Mui Wo Kau Tsuen, and Tsoi Yuen Tsuen. House connections will be provided in Pak Ngan Heung, Luk Tei Tong, Tai Tei Tong, Chung Hau and Tung Wan Tau. The implementation programme for the proposed works has not been finalized. Of the SMP packages that have been developed in the Outlying Islands SMP Review Study, village

白銀鄉的村屋在未來亦會接駁至排污渠
Village houses at Pak Ngan Heung will also be connected to sewer in future

圖 7.4 建議中的南大嶼山及梅窩污水幹渠工程
Figure 7.4 Proposed trunk sewer for south Lantau Island and Mui Wo environs

劃所建議的工程時，把為梅窩一帶村屋接駁污水渠的工程列為首要工程。當這些建議中的渠務工程完成後，大嶼山各泳灘的水質可望繼續保持良好。

sewerage connections to the Mui Wo environs is of high priority. By the time when these proposed sewerage works are implemented, the good water quality of the beaches on Lantau will be further safeguarded.

為村落提供污水渠可改善流入泳灘的河溪水質
Provision of village sewerage will improve the water quality of rivers and streams flowing to the beach

泳灘上的垃圾
Refuse at Beaches

8.1 市民往往把泳灘清潔與否聯繫到觀感而非水質，亦即泳灘是否出現漂浮垃圾。即使泳灘的水質適宜游泳，但對泳客來說，漂浮垃圾始終令人生厭。

8.2 漂浮垃圾可源自撞船等海上意外或岸上的人類活動。潮汐漲退及海浪均可把垃圾沖入憲報公布泳灘的範圍。為處理漂浮垃圾的問題，海事處和康文署均扮演積極的角色，分別負責收集海面及憲報公布泳灘的漂浮垃圾。

滿佈垃圾的泳灘令泳客生厭
Beaches with a lot of floating refuse certainly create nuisance to swimmers

8.1 The public often relates the cleanliness of a beach to the visual impact, i.e. occurrence of floating refuse, rather than its water quality. Although the water quality of a beach is suitable for swimming, floating refuse certainly creates nuisance to swimmers.

漂浮垃圾可源自岸上人類的活動
Floating refuse can originate from human activities on land

8.2 Floating refuse can originate from sea due to marine accidents such as shipwrecks, or from land due to human activities. It can enter the gazetted beach area as a result of tidal movement and waves. To tackle the floating refuse problem, both the Marine Department and LCSD have played active roles in collecting floating refuse at sea and in the gazetted beach areas respectively.

8.3 作為管理泳灘的部門，康文署負責各個憲報公布泳灘日常清理垃圾的工作。康文署的員工會使用救生艇或「海貍」清除漂進泳區的垃圾，而該署的外判清潔工人則收集已沖上沙灘的垃圾。二零零二年康文署於各憲報公布泳灘收集得的漂浮垃圾量載於附錄 4 。

清潔工人正在收集已沖上沙灘的垃圾
Cleansing staff collects floating refuse landed on the beach

8.4 每年，各泳灘收集的漂浮垃圾量均會隨風向、水流和風暴的發生次數而有所不同。既然人類在岸上的活動會製造漂浮垃圾，故此致力加強公眾保持泳灘清潔的意識，對解決漂浮垃圾問題大有幫助。近年來，不同團體亦在各沙灘舉行了多項環保運動。相信在政府與市民共同努力下，定能有效地解決漂浮垃圾問題。

8.3 The LCSD, which is the beach management authority, is responsible for collection of refuse at all gazetted beaches. Within the beach area, floating refuse is collected by LCSD staff with the aid of a catamaran or “seacat”, while the contract cleansing staff of LCSD would collect floating refuse landed on the beach regularly. The amount of floating refuse collected by LCSD at various gazetted beaches in 2002 is shown in Appendix 4.

8.4 The amount of floating refuse collected at the beaches varied from year to year depending on wind direction, current and the frequency of occurrence of storms. Since human activities on land also contribute to the floating refuse problem, enhancing the public’s awareness in keeping the beach clean would also help combat the problem. Various organizations have in recent years organized a number of environmental protection campaigns at beaches. With the concerted effort of the government and the public, the floating refuse problem at beaches would be effectively controlled.

宣傳保持泳灘清潔的運動
Environmental protection campaigns at beaches

總結
Conclusion

9.1 二零零二年，在環保署監測的41個憲報公布泳灘中，達到水質指標的泳灘共有33個(80.5%)(見圖9.1)。水質「良好」的泳灘數目增加了兩個至23個，已超過本港憲報公布泳灘的半數(56.1%)。除了荃灣區的泳灘外，其餘大部分泳灘的水質在二零零二年均與二零零一年相若(見圖 9.2)。

9.1 Among the gazetted beaches monitored by the EPD, 33 out of 41 gazetted beaches (80.5%) met the WQO for bathing water in 2002 (Figure 9.1). The number of 'Good' water quality beaches had increased by two to 23, which was more than half of the gazetted beaches in Hong Kong (56.1%). Apart from the beaches in the Tsuen Wan District, most beaches in 2002 had similar water quality as in 2001 (Figure 9.2)

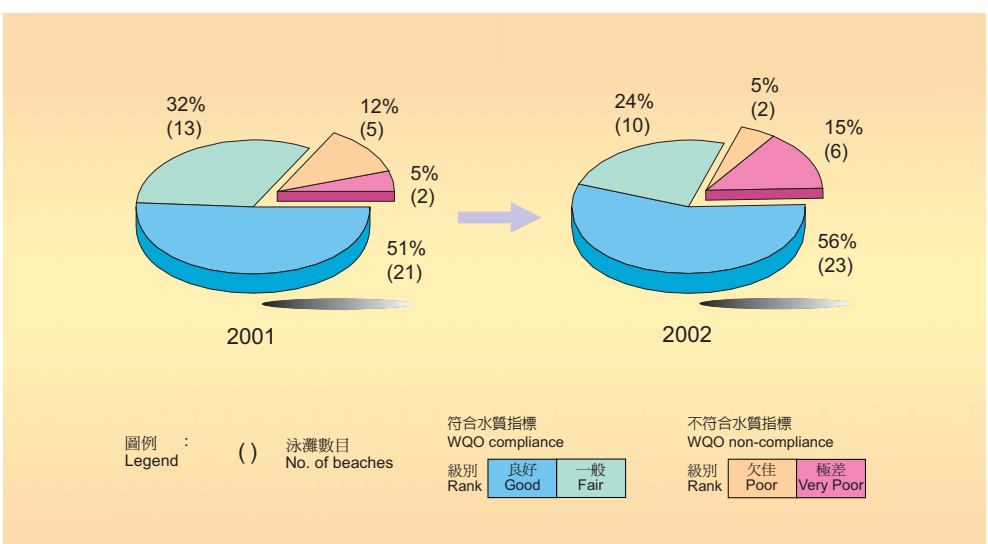


圖 9.1 憲報公布泳灘在二零零一年及二零零二年度的全年級別分布圖
Figure 9.1 Distribution of annual ranks for gazetted beaches in 2001 and 2002

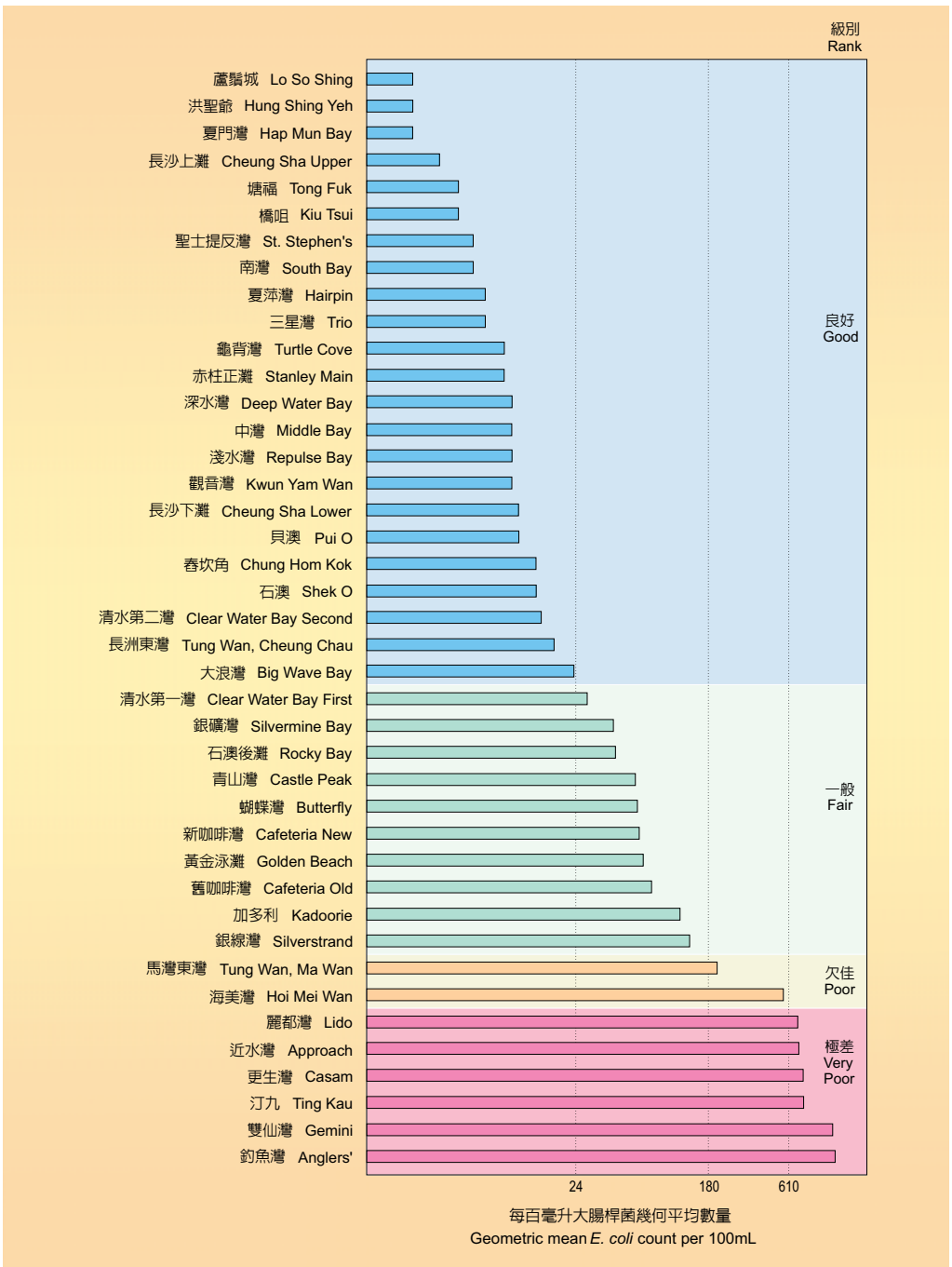


圖9.2 憲報公布泳灘在二零零二年度的全年水質評級
Figure 9.2 Annual ranking of gazetted beaches in 2002

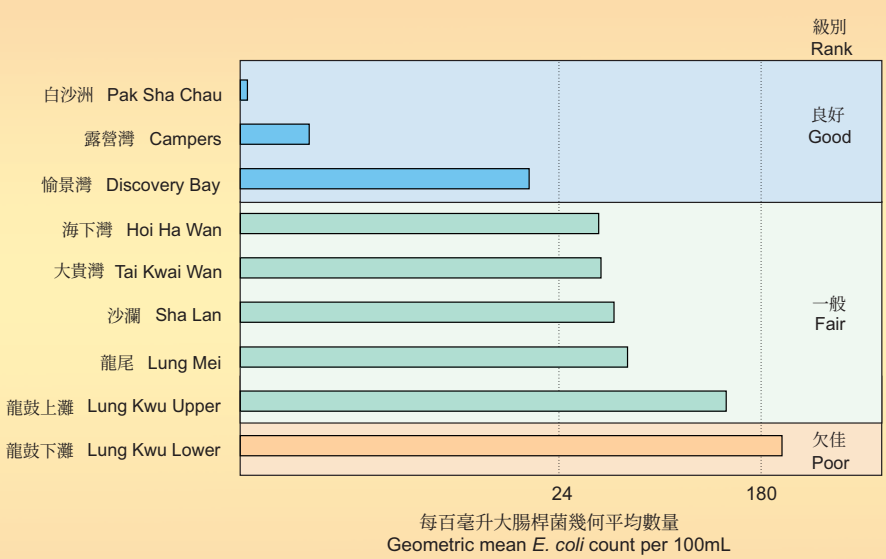
前往憲報公布泳灘的遊人數目
Number of Visitors to Gazetted Beaches

憲報公布的泳灘 Gazetted Beach		平均每日人次 Average daily attendance		最高峰人次 Peak attendance		總人次 Total attendance
		平日 Weekday	週末及公眾假期 Weekend & public holiday	最高峰日 Peak day	最高峰月 Peak month	
南區	Southern District					
大浪灣	Big Wave Bay	180	1513	4242	30432	148067
春坎角	Chung Hom Kok	74	716	3000	13120	68184
深水灣	Deep Water Bay	1731	3822	11000	182870	587170
夏萍灣	Hairpin	133	560	2100	10263	65927
中灣	Middle Bay	331	840	1450	16725	120750
淺水灣	Repulse Bay	3530	7497	28000	205800	1174190
石澳	Shek O	1229	9522	30000	153620	948031
南灣	South Bay	105	834	3200	21720	82631
聖士提反灣	St. Stephen's	146	544	1700	13175	66804
赤柱正灘	Stanley Main	723	3238	17600	75140	373360
龜背灣	Turtle Cove	61	298	1550	5326	33498
離島區	Islands District					
觀音灣	Kwun Yam Wan	30	80	394	2131	11206
長洲東灣	Tung Wan, Cheung Chau	228	1266	6700	38410	136760
洪聖爺	Hung Shing Yeh	64	442	1370	7372	45184
蘆鬚城	Lo So Shing	17	86	419	1513	9597
長沙下灘	Cheung Sha Lower	41	144	330	3155	18040
長沙上灘	Cheung Sha Upper	55	170	575	4916	22464
貝澳	Pui O	65	212	900	4819	27454
銀礦灣	Silvermine Bay	60	231	1250	5130	27985
塘福	Tong Fuk	40	84	415	3348	13224
西貢區	Sai Kung District					
清水第一灣	Clear Water Bay First	120	524	2150	15545	60963
清水第二灣	Clear Water Bay Second	2230	9899	57000	277960	1144490
夏門灣	Hap Mun Bay	315	2282	10940	61494	230579
橋咀	Kiu Tsui	31	206	1041	3147	21263
銀線灣	Silverstrand	82	441	2120	11039	48121
三星灣	Trio	78	472	2180	11920	49785
荃灣區	Tsuen Wan District					
釣魚灣	Anglers'	48	133	844	3387	18333
近水灣	Approach	21	43	69	917	6914
更生灣	Casam	26	52	170	1573	8400
雙仙灣	Gemini	7	17	40	447	2529
海美灣	Hoi Mei Wan	2	11	49	220	1152
麗都灣	Lido	99	222	1305	6665	33816
汀九	Ting Kau	10	26	42	537	3606
馬灣東灣	Tung Wan, Ma Wan	15	39	264	1322	5620
屯門區	Tuen Mun District					
蝴蝶灣	Butterfly	510	4949	24000	74125	471165
青山灣	Castle Peak	506	1050	2000	24040	166440
黃金泳灘	Golden Beach	1662	3669	23550	94475	563800
加多利	Kadoorie	151	495	1150	11190	63850
新咖啡灣	Cafeteria New	409	1255	5300	32140	166150
舊咖啡灣	Cafeteria Old	447	1552	7580	31270	195645

備註 : 資料由康樂及文化事務署提供。
Notes Information provided by Leisure and Cultural Services Department.
石澳後灘的遊人數目並沒有記錄。
No beach attendance record has been kept for Rocky Bay Beach.

附錄 2
Appendix 2

非刊憲泳灘在二零零二年度的全年水質評級
Annual Ranking of Non-gazetted Beaches in 2002



已設有雨天效應警告牌的泳灘
Beaches with Rainfall Warning Notices Displayed

區域 District	泳灘 Beach	
南區 Southern District	大浪灣	Big Wave Bay
	夏萍灣	Hairpin
	石澳	Shek O
	赤柱正灘	Stanley Main
	龜背灣	Turtle Cove
離島區 Islands District	觀音灣	Kwun Yam Wan
	長沙下灘	Cheung Sha Lower
	貝澳	Pui O
	銀礦灣	Silvermine Bay
	塘福	Tong Fuk
西貢區 Sai Kung District	清水第一灣	Clear Water Bay First
	清水第二灣	Clear Water Bay Second
	橋咀	Kiu Tsui
	銀線灣	Silverstrand
	三星灣	Trio
荃灣區 Tsuen Wan District	更生灣	Casam
	雙仙灣	Gemini
	海美灣	Hoi Mei Wan
	麗都灣	Lido
	馬灣東灣	Tung Wan, Ma Wan
屯門區 Tuen Mun District	蝴蝶灣	Butterfly
	黃金泳灘	Golden Beach
	加多利	Kadoorie
	新咖啡灣	Cafeteria New
	舊咖啡灣	Cafeteria Old

附錄 4
Appendix 4

在憲報公布泳灘所收集得的漂浮垃圾量
Quantity of Floating Refuse Collected at Gazetted Beaches

憲報公布的泳灘 Gazetted Beach		二零零一年的漂浮垃圾量(立方米) Floating refuse in 2001 (m^3)	二零零二年的漂浮垃圾量 Floating Refuse in 2002		
			總量 (立方米) Total Volume (m^3)	最高月份 Peak Month	每百米收集量 (立方米) Volume per 100m (m^3)
南區	Southern District				
大浪灣	Big Wave Bay	469	605	九月 Sept	423
春坎角	Chung Hom Kok	158	113	七月 Jul	59
深水灣	Deep Water Bay	537	698	九月 Sept	167
夏萍灣	Hairpin	420	319	九月 Sept	469
中灣	Middle Bay	565	317	**五月** May	311
淺水灣	Repulse Bay	495	240	七月 Jul	46
石澳後灣	Rocky Bay	697	477	八月 Aug	282
石澳	Shek O	1130	604	九月 Sept	170
南灣	South Bay	207	19	十月 Oct	7
聖士提反灣	St. Stephen's	362	327	九月 Sept	227
赤柱正灘	Stanley Main	593	449	四月 Apr	94
龜背灣	Turtle Cove	375	367	六月 Jun	316
離島區	Islands District				
觀音灣	Kwun Yam Wan	124	76	三月 Mar	35
長洲東灣	Tung Wan, Cheung Chau	229	169	九月 Sept	20
洪聖爺	Hung Shing Yeh	49	36	八月 Aug	17
蘆鬚城	Lo So Shing	24	42	八月 Aug	17
長沙下灘	Cheung Sha Lower	178	110	六月 Jun	24
長沙上灘	Cheung Sha Upper	70	123	七月 Jul	27
貝澳	Pui O	713	287	六月 Jun	29
銀礦灣	Silvermine Bay	84	77	八月 Aug	12
塘福	Tong Fuk	152	88	八月 Aug	16
西貢區	Sai Kung District				
清水第一灣	Clear Water Bay First	72	83	九月 Sept	76
清水第二灣	Clear Water Bay Second	247	477	八月 Aug	127
夏門灣	Hap Mun Bay	37	77	六月 Jun	38
橋咀	Kiu Tsui	23	16	十月 Oct	8
銀線灣	Silverstrand	60	95	八月 Aug	92
三星灣	Trio	40	38	七月 Jul	24
荃灣區	Tsuen Wan District				
釣魚灣	Anglers'	72	113	七月 Jul	32
近水灣	Approach	98	99	十月 Oct	75
更生灣	Casam	124	157	八月 Aug	159
雙仙灣	Gemini	88	93	九月 Sept	309
海美灣	Hoi Mei Wan	68	64	七月 Jul	56
麗都灣	Lido	152	210	**七月** Jul	109
汀九	Ting Kau	106	95	十月 Oct	35
馬灣東灣	Tung Wan, Ma Wan	59	32	四月 Apr	12
屯門區	Tuen Mun District				
蝴蝶灣	Butterfly	331	264	六月 Jun	39
青山灣	Castle Peak	192	168	七月 Jul	68
黃金泳灘	Golden Beach	677	649	五月 May	108
加多利	Kadoorie	155	153	七月 Jul	136
新咖啡灣	Cafeteria New	157	133	八月 Aug	57
舊咖啡灣	Cafeteria Old	152	153	八月 Aug	62
全部泳灘	**All Beaches**	**10541**	**8712**		

備註 : 資料由康樂及文化事務署提供。
Note Information provided by Leisure and Cultural Services Department.

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