

For Information

**Legislative Council Panel on Environmental Affairs
Legislative Council Panel on Planning, Lands and Works**

**Information Note on
Overall Sewage Infrastructure in Hong Kong**

Purpose

This note informs members on the policy behind and progress of sewage infrastructure planning and implementation in Hong Kong.

Policy Goals for the Provision of Sewage Infrastructure

2. The policy goals for the provision of sewage infrastructure are the protection of public health and the attainment of the declared Water Quality Objectives for the receiving water environment. The latter are set so as to ensure our waters are of a sufficient quality to sustain certain uses which are valued by the community. These include, variously, abstraction for potable supply, swimming, secondary contact recreation such as yachting, and the ability to sustain healthy marine and freshwater ecosystems.

The Sewerage Planning Process

3. The sewerage planning process entails the systematic review of the sewerage needs in each sewerage catchment with the aim of drawing up a series of Sewerage Master Plans (SMPs) devised so as to ensure the above policy goals will be met. A total of 16 SMPs covering the whole of Hong Kong were completed between 1989 and 1996 (Annex 1). The SMPs started with those covering areas where waters were close to or exceeded their assimilative limits, were highly valued, or where excessive pollution had resulted in environmental black spots. For example, Hong Kong Island South SMP covering sensitive beach areas and Tolo Harbour SMP covering nutrient loaded Tolo Harbour were among the earliest conducted SMPs. Each study made recommendations for the appropriate network of sewers, pumping stations and treatment facilities for the proper collection, treatment and disposal of sewage generated in the catchment, with the aim of catering for the present and future development needs.

4. In determining the priority for implementation of the recommendations, we consider various factors including the extent of the current environmental problems, population projections, future urban and rural area planning, and cost effectiveness. Then the sewerage programme is implemented in an orderly manner so that the principal infrastructure components including sewage treatment plants and trunk sewers are built first.

5. The SMPs covering areas with significant revised population forecasts and development proposals have been reviewed and proposals for upgrading works are pursued on a priority basis. Recommended treatment levels are commensurate with the assimilative capacity of the receiving environment so that the designated Water Quality Objectives can be met.

6. In addition to the SMP recommendations, a strategic sewage disposal scheme, now known as the Harbour Area Treatment Scheme (HATS), was proposed in 1989 specifically to protect the water quality of Victoria Harbour. When the Scheme is fully implemented, it will put in place an overall sewerage network for areas on both sides of Victoria Harbour. The Scheme's Stage 1, covering the whole of Kowloon, Tseung Kwan O, and the northeastern sector of Hong Kong Island, was brought into operation in late 2001. Stage 2, which will deal with the remainder of the largely untreated sewage on Hong Kong Island, and cater for future projected development within the HATS service area, is currently under planning.

Progress Achieved

7. The locations of the main sewage treatment facilities progressively installed over the years are shown in the map in Annex 2 and those currently in operation are listed in Annex 3. There are now 14 large sewage treatment plants and 20 screening plants together with major sewage conveyance systems located in various parts of Hong Kong. Altogether over 1,500 kilometres of sewers have been laid so far. With the sewerage works already done, about 95% of the Hong Kong population is now connected to the public sewerage system. About three quarters of their sewage receives advanced levels of treatment. In the rural areas, funds have been allocated for village sewerage projects to provide proper sewage disposal facilities for around 330,000 people.

Environmental Improvements Brought About by SMPs and HATS Stage 1

8. Since the mid 1980s the systematic upgrading of our sewerage networks together with the adoption of good planning practices and enforcement of relevant pollution control laws have brought about marked improvements to our river, beach and marine water quality. Charts showing the improvements in river and beach water quality are at Annexes 4 and 5 respectively. As shown in Annex 4, the number of river monitoring stations achieving a "fair" or better Water Quality Index has significantly increased by over 50% from 1986 to 2004. As for the beaches, their Water Quality Objectives compliance rate has increased from 74% in 1986 to 83% in 2004. In particular, the number of beaches with the "Good" ranking has increased drastically from 9 in 1986 to 25 in 2004.

9. As for improvements in marine water quality, Tolo Harbour is clearly benefiting from the investment in exporting as much of the treated effluent as possible from the catchment, and the eastern and central areas of Victoria Harbour have shown marked improvement since the commissioning of HATS Stage 1. In 2004 the

percentage compliance with Water Quality Objectives in the Victoria Harbour Water Control Zone was 87% compared with just 50% immediately before HATS Stage 1 was commissioned.

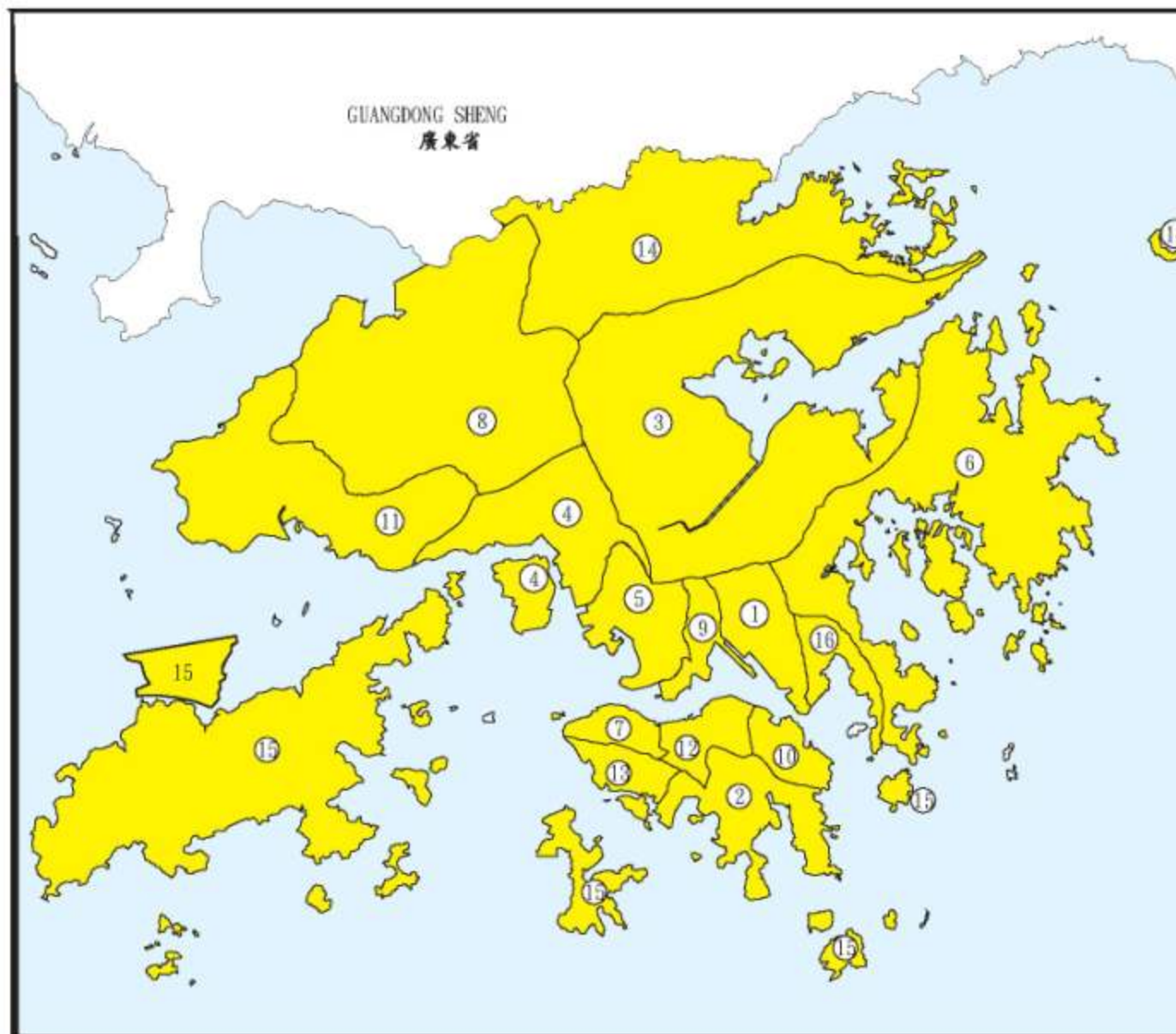
Future Sewerage Work and Plans

10. While HATS Stage 1 provides proper treatment to about three quarters of the sewage arising in the HATS service area, the remaining 25%, generated by a population of approximately 1 million people living on the northern and western shores of Hong Kong Island, still receives only rudimentary treatment prior to discharge into Victoria Harbour, where it exerts a significant negative effect on water quality. We plan to build Stage 2 of HATS, in phases, to deal with this problem.

11. The remaining non-HATS projects consist of village sewerage, as well as extension/upgrading of sewers and sewage treatment works. The committed new and upgrading works are shown in Annex 6, and they are targeted to complete within the next several years.

Resource Implications of Remaining Sewerage Projects

12. Between 1986 and the end of 2005, we have allocated about \$32 billion for capital spending on sewage infrastructure: \$23.5 billion for non-HATS projects and \$8.5 billion for HATS. The funds cover costs for construction as well as design and investigation. To complete our currently-envisaged sewerage programme we estimate a further investment of \$5 billion and \$8 billion will be required for non-HATS and HATS Stage 2A projects respectively. Of this, \$1.2 billion will be required for the village sewerage programme. In addition, an investment of about \$11 billion will be required for HATS Stage 2B, subject to a review of scope and timing to be carried out in 2010/11.



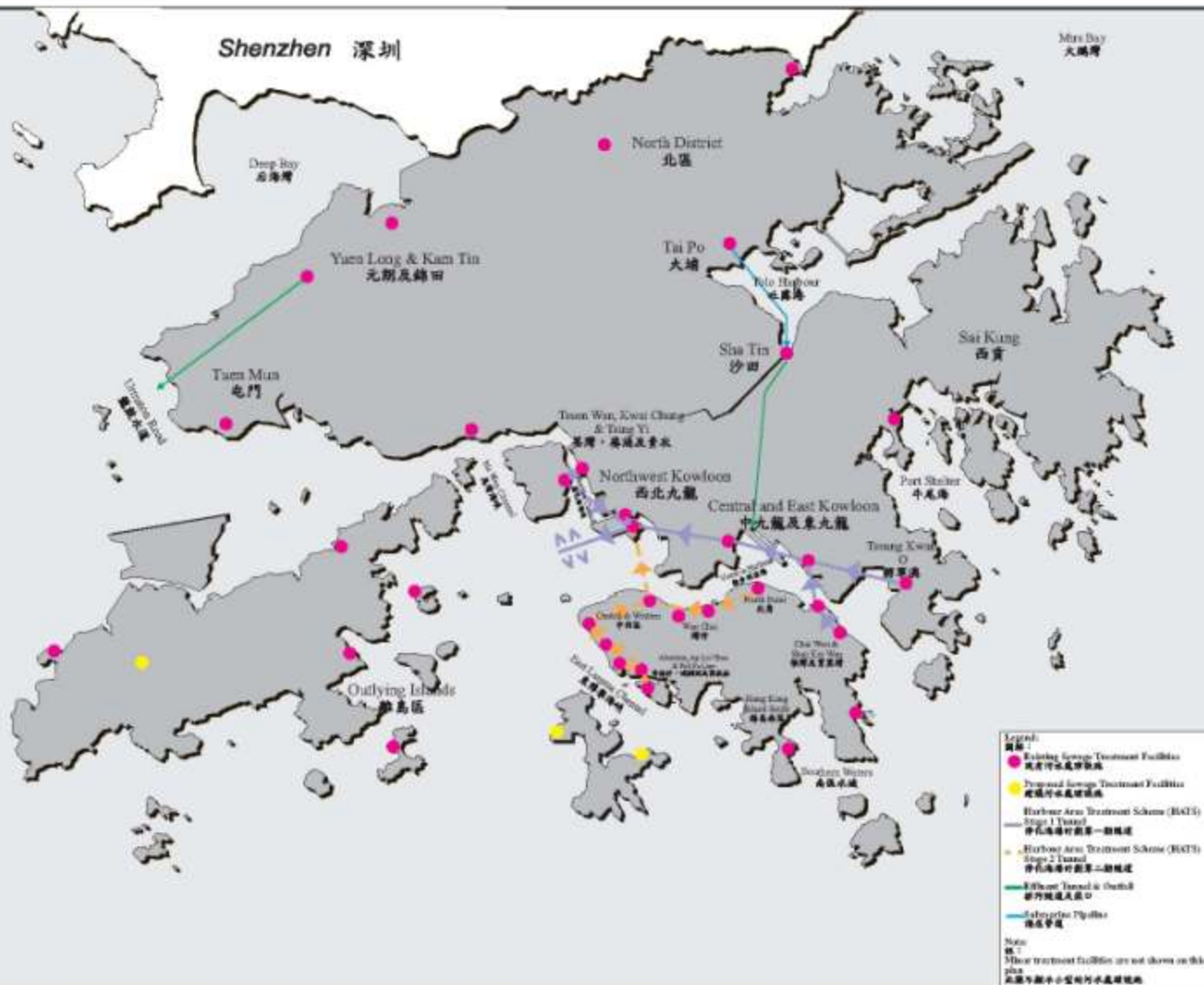
Sewerage Master Plan Areas
污水收集整體計劃分區圖

Sewerage Master Plan Study 污水收集整體計劃研究		Start 開始日期	Complete 完成日期
1	East Kowloon 東九龍	1987	1989
2	Hong Kong Island South 港島南區	1988	1989
3	Tolo Harbour 吐露港	1989	1990
4	Tsuen Wan, Kwai Chung & Tsing Yi 荃灣、葵涌及青衣	1989	1992
5	Northwest Kowloon 西北九龍	1989	1991
6	Port Shelter 牛尾海	1989	1991
7	Central, Western & Wan Chai West 中環、西區及灣仔西	1990	1993
8	Yuen Long & Kam Tin 元朗及錦田	1990	1992
9	North & South Kowloon 南北九龍	1991	1993
10	Chai Wan & Shau Kei Wan 柴灣及筲箕灣	1991	1993
11	Tuen Mun 屯門	1991	1993
12	Wan Chai East & North Point 灣仔東及北角	1992	1994
13	Aberdeen, Ap Lei Chau & Pok Fu Lam 香港仔、鴨脷洲及薄扶林	1992	1995
14	North District 北區	1993	1994
15	Outlying Islands 離島區	1993	1994
16	Tseung Kwan O 將軍澳	1994	1996



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ENVIRONMENTAL
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香港特別行政區政府
環境保護署

WATER POLICY GROUP
水質政策組



Sewerage Catchment 污水收集區	Sewage Treatment Plants 污水處理廠
Central & Western 中西區	Central Sewage Sewering Plant 中環污水處理廠
Wan Chai 灣仔	Wan Chai East Sewage Sewering Plant 灣仔東污水處理廠 Wan Chai West Sewage Sewering Plant 灣仔西污水處理廠 (to be de-commissioned in the future 即將停止使用)
North Point 北角	North Point Sewage Sewering Plant 北角污水處理廠
Chai Wan & Shau Kei Wan 柴灣及筲箕灣	Chai Wan Sewage Sewering Plant 柴灣污水處理廠 Shau Kei Wan Sewage Sewering Plant 筲箕灣污水處理廠
Aberdeen, Ap Lei Chau & Pok Fu Lam 香港仔、鴨脷洲及薄扶林	Cybernet Sewage Treatment Plant 網絡淨水處理廠 Ap Lei Chau Sewage Sewering Plant 鴨脷洲污水處理廠 Pok Fu Lam Sewage Sewering Plant 薄扶林污水處理廠 Sandy Bay Sewage Sewering Plant 沙灣污水處理廠 Aberdeen Sewage Sewering Plant 香港仔污水處理廠
Hong Kong Island South 港島南區	Stanley Sewage Treatment Plant 史丹利污水處理廠 Shek O Sewage Sewering Plant 石硤灣污水處理廠
Central and East Kowloon 中九龍及東九龍	Ewan Tong Sewage Sewering Plant 新灣仔污水處理廠 Tin Kiu Sewage Sewering Plant 土庫灣污水處理廠
Northwest Kowloon 西北九龍	Shen Chau Sewage Treatment Plant 神洲污水處理廠 Mushan Sewage Sewering Plant 木山九龍灣污水處理廠
North District 北區	Shek Wu Tsai Sewage Treatment Plant 石塘咀污水處理廠 Shek Tin East Sewage Treatment Plant 沙頭角污水處理廠
Tai Po 大埔	Tai Po Sewage Treatment Plant 大埔污水處理廠
Sha Tin 沙田	Sha Tin Sewage Treatment Plant 沙田污水處理廠
Yuen Long & Kam Tin 元朗及錦田	Yuen Long Sewage Treatment Plant 元朗污水處理廠 See We Sewage Sewering Plant 新田污水處理廠
Tuen Mun 屯門	Pilar Hill Sewage Sewering Plant 望角山污水處理廠
Tsuen Wan, Kwai Chung & Tsing Yi 荃灣、葵涌及青衣	Shau Tong Sewage Treatment Plant 塘門污水處理廠 Kwai Chung Sewage Sewering Plant 葵涌污水處理廠 Ting Yi Sewage Sewering Plant 青衣污水處理廠
Sai Kung 西貢	Sai Kung Sewage Treatment Plant 西貢污水處理廠
Tsung Kwan O 將軍澳	Tsung Kwan O Sewage Sewering Plant 將軍澳污水處理廠
Outlying Islands 離島區	Tai O Sewall Plant 大澳離島廠 Mau Wo Sewage Treatment Plant 廟灣污水處理廠 Hong Chai Sewage Treatment Plant 紅磡污水處理廠 Shek Tin West Sewage Treatment Plant 石塘咀西離島廠 Cheung Chai Sewage Treatment Works 青洲第一離島污水處理廠 Ting Tat Sewage Treatment Plant 汀角離島污水處理廠 Tin Kiu Sewage Treatment Plant 土庫灣離島污水處理廠 Tung Tau Sewage Treatment Plant 龍門灣離島污水處理廠

Main Sewage Treatment and Disposal Facilities of Hong Kong
香港的主要污水處理和排放設施



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Existing Main Sewage Treatment Facilities

Region	District/Catchment	Population Connected to Public Treatment Facility At Present (Note 1)	Receiving Sewage Treatment Facility (Note 2)	Receiving Water Body of Treatment Facility
Hong Kong Island	Central and Western	216,000	Central Sewage Screening Plant (#)	Victoria Harbour
	Wan Chai	136,000	Wan Chai East Sewage Screening Plant (#) Wan Chai West Sewage Screening Plant, to be de-commissioned in the future	
	North Point	218,000	North Point Sewage Screening Plant (#)	
	Chai Wan and Shau Kei Wan	379,000	Chai Wan Sewage Screening Plant (*) Shau Kei Wan Sewage Screening Plant (*)	Victoria Harbour via Stonecutters Island Sewage Treatment Plant
	Aberdeen, Ap Lei Chau and Pok Fu Lam	246,000	Cyberport Sewage Treatment Plant (#) Ap Lei Chau Sewage Screening Plant (#) Wah Fu Sewage Screening Plant (#) Sandy Bay Sewage Screening Plant (#) Aberdeen Sewage Screening Plant (#)	East Lamma Channel
	Hong Kong Island South	28,000	Stanley Sewage Treatment Plant Shek O Sewage Screening Plant	Southern Waters
Kowloon	Central and East Kowloon	1,303,000	Kwun Tong Sewage Screening Plant (*) To Kwa Wan Sewage Screening Plant (*)	Victoria Harbour via Stonecutters Island Sewage Treatment Plant
	Northwest Kowloon	689,000	Stonecutters Island Sewage Treatment Plant	Victoria Harbour
			Northwest Kowloon Sewage Screening Plant (*)	Victoria Harbour via Stonecutters Island Sewage Treatment Plant
New Territories including Outlying Islands	North District	199,000	Shek Wu Hui Sewage Treatment Plant	Deep Bay
			Sha Tau Kok Sewage Treatment Plant	Mirs Bay
	Tai Po	254,000	Tai Po Sewage Treatment Plant (@)	Victoria Harbour via Tolo Harbour Effluent Export Scheme
	Sha Tin	574,000	Sha Tin Sewage Treatment Plant (@)	
	Yuen Long and Kam Tin	354,000	Yuen Long Sewage Treatment Plant	Deep Bay
			San Wai Sewage Screening Plant, discharging to Urmston Road via effluent tunnel and long outfall	Urmston Road
Tuen Mun	467,000	Pillar Point Sewage Screening Plant	North Western Waters (Urmston Road)	
New Territories including Outlying Islands	Tsuen Wan, Kwai Chung and Tsing Yi	705,000	Sham Tseng Sewage Treatment Plant	Western Buffer (Ma Wan Channel)
			Kwai Chung Sewage Screening Plant (*) Tsing Yi Sewage Screening Plant (*)	Victoria Harbour via Stonecutters Island Sewage Treatment Plant
			Sai Kung	24,000
	Tseung Kwan O	311,000	Tseung Kwan O Sewage Screening Plant (*)	Victoria Harbour via Stonecutters Island Sewage Treatment Plant
	Outlying Islands	63,000	Tai O Imhoff Tank Mui Wo Sewage Treatment Plant Peng Chau Sewage Treatment Plant Siu Ho Wan Sewage Treatment Plant Cheung Chau Primary Treatment Works	Outlying Islands

Notes:

1. Only residential population of the districts is shown in the table.

2. (a) # = Facilities to be connected to Stonecutters Island Sewage Treatment Plant under HATS Stage 2A;

* = Facilities connected to Stonecutters Island Sewage Treatment Plant under HATS Stage 1;

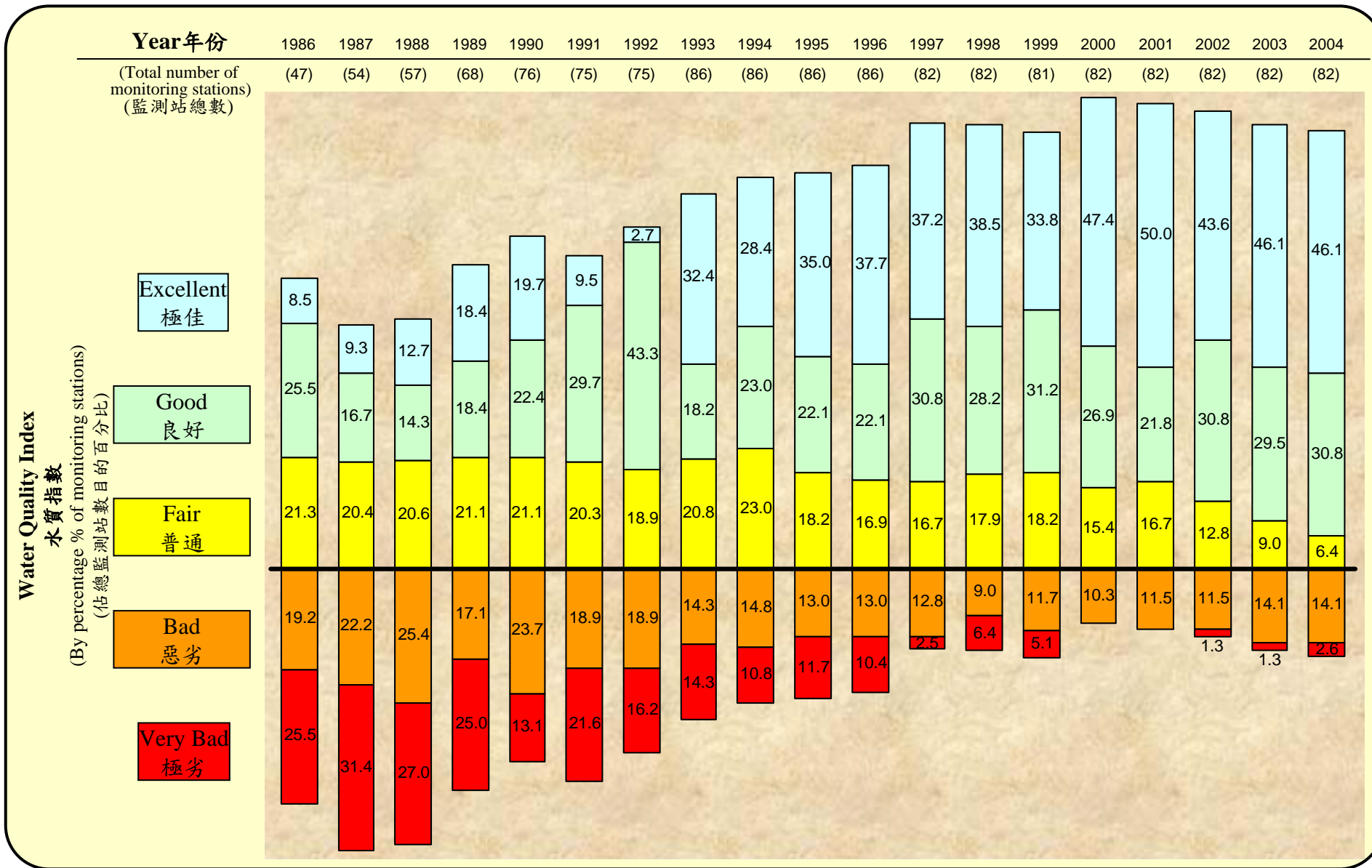
@ = Facilities connected to Tolo Harbour Effluent Export Scheme, discharging treated effluent to Kai Tak Nullah.

(b) Treatment levels of the facilities are:

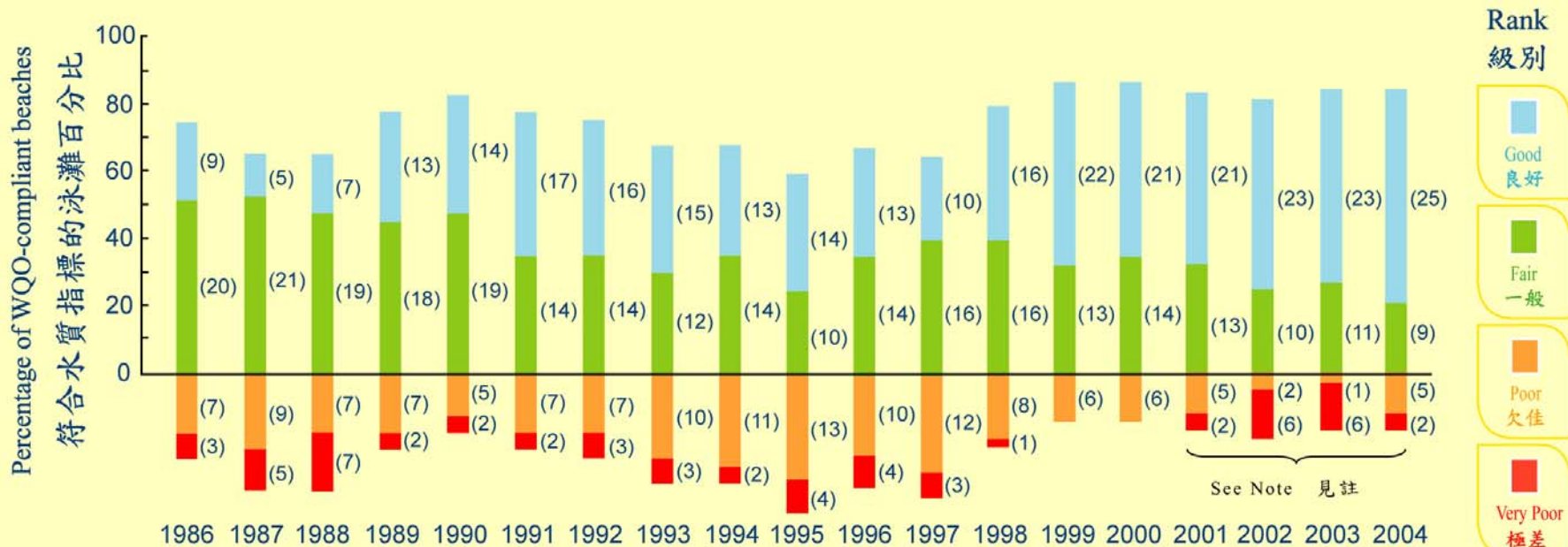
> Facilities named with "Sewage Screening Plant" - basic screening

> Facilities named with "Sewage Treatment Plant" - biological treatment, except for Cyberport, Stonecutters Island, Sham Tseng and Siu Ho Wan which have chemically enhanced primary treatment.

(c) There are other minor treatment plants in Hong Kong, and are not included in the table.



Water Quality Index (WQI) of inland waters of Hong Kong from 1986 to 2004
1986年至2004年香港河溪的水質指數



Legend : () Number of beaches in each rank
圖例 個別級別的泳灘數目

Note : Deterioration in beach water quality in Tsuen Wan areas, subsequent to the commissioning of HATS Stage 1.
註 於淨化海港計劃第一期啟用後，荃灣區泳灘的水質受到影響。

Annual Beach Rankings of Gazetted Beaches in Hong Kong from 1986 to 2004

1986年至2004年憲報公布泳灘的全年級別

New and Upgrading Sewerage Works (Funded)

Region	District/ Catchment	Funded Planned Works	Indicative Target Completion Date
Hong Kong Island	Wan Chai	Upgrading of sewers in Wan Chai East and North Point; improvement works to North Point Sewage Screening Plant	2009
	North Point		
Kowloon	Central and East Kowloon	Upgrading of sewers in To Kwa Wan, Kowloon City, Hunghom, San Po Kong and Tsimshatsui	2012
New Territories including Outlying Islands	North District	Upgrading of Shek Wu Hui Sewage Treatment Plant, new sewage pumping station on Ting Kok Road, new trunk sewers and provision of village sewerage in North District	2008-2015
	Tai Po	Upgrading of Tai Po Sewage Treatment Plant; village sewerage, new and upgraded sewage pumping stations and sewers in Tai Po areas	2009-2014
	Sha Tin	Upgrading of Sha Tin Sewage Treatment Plant; village sewerage, new and upgraded sewage pumping stations and sewers in Sha Tin areas	2010-2014
	Yuen Long and Kam Tin	Upgrading of San Wai Sewage Treatment Plant; new sewage pumping stations and sewers in Kam Tin, Nam San Wai, Au Tau, San Tin, Yuen Long south and Tin Shui Wai; village sewerage in Yuen Long areas	2009-2013
	Tuen Mun	Upgrading of Pillar Point Sewage Screening Plant; village sewerage, sewage pumping stations and sewers in Tuen Mun, Tai Lam and So Kwun Wat	2011-2013
	Tsuen Wan, Kwai Chung and Tsing Yi	New sewage pumping stations and sewers, provision of village sewerage in Sham Tseng, Tsing Lung Tau and Ting Kau	2009
	Sai Kung	New sewage pumping stations and sewers in Sai Kung Area 4 and Mang Kung Uk	2010
	Outlying Islands	Upgrading of Peng Chau and Siu Ho Wan Sewage Treatment Plants; construction of Ngong Ping, Yung Shue Wan and Sok Kwu Wan Sewage Treatment Plants and outfalls; construction of sewage pumping stations and sewers in Yung Shue Wan and Sok Kwu Wan; provision of village sewerage in Peng Chau	2006-2011

Note: These include all projects of Category B for which funds have been earmarked. On-going construction and upgrading works for sewage treatment plants under Category A projects are also included, in light of their significance in the sewerage system. These plants are those in Shek Wu Hui, Tai Po, Sha Tin, Ngong Ping, Peng Chau and Siu Ho Wan.