



# WATER 供水 SUPPLY

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我們堅守使命，為客戶提供可靠和源源不絕的食水和沖廁用海水。年內，我們在供水方面續有良好表現，完全達到各項目標。為開發其他可再生的水源，確保能長期提供持續而穩定的供水，我們已就其他潛在水源展開可行性研究，包括海水化淡、廢水循環再用及擴大集水區範圍等。

## 用水量趨勢

因住宅及服務業的用水量繼續攀升，抵銷了工業用水量的持續跌勢，所以食水總用量有輕微增幅。

在二零零一年，食水的每日平均用量為 257 萬立方米，而沖廁用海水的每日平均用量為 65 萬立方米。

## 需求預測

我們預測未來五年的食水用量相較於二零零一年的 9.4 億立方米用水量而言，平均每年會有 0.6% 的增幅。鑑於該段期間所預計的人口增長，住宅及服務業這兩個主要用水類別預料每年會分別增加 2.1% 及 1.1%。另一方面，由於大量用水的工業日漸式微，同期間的每年平均工業用水量會持續下降 5.5%。

全年食水耗水量（按用水類別劃分）  
Annual Fresh Water Consumption (By Sectors)

百萬立方米 Million cubic metres

年份 Year	住宅用水 Domestic	工業用水 Industries	服務業及 商業用水 Service Trade	免費供水 Free Supply	建築及 船舶用水 Construction & Shipping	臨時 淡水沖廁 TMF	食水 總耗水量 Total Fresh Water Consumption
1992	325	225	188	44	16	91	889
1993	349	208	199	45	16	98	915
1994	370	171	216	40	20	106	923
1995	383	145	221	44	23	103	919
1996	406	137	229	44	28	84	928
1997	419	120	228	40	28	78	913
1998	436	104	232	41	25	78	916
1999	441	95	235	43	24	73	911
2000	447	91	241	43	28	74	924
<b>2001</b>	<b>468</b>	<b>83</b>	<b>242</b>	<b>43</b>	<b>27</b>	<b>77</b>	<b>940</b>

註：以上所列的耗水量，均包括流失的水量在內。

Notes: All consumption figures include unaccounted-for water.

TMF – Temporary Mains Flushing

In keeping with our mission to provide a continuous and reliable supply of potable water and sea water for flushing purposes, we continued to achieve a high level of performance by meeting all our targets in the year. For the purpose of exploring alternative renewable water sources to ensure a stable and sustainable long-term water supply, we have carried out feasibility studies on various alternatives including desalination, wastewater recycling and expansion of catchment areas.

## CONSUMPTION TREND

Continued increase in domestic and service use of fresh water has more than offset further decline for industrial use resulting in a slight increase in overall fresh water consumption.

In 2001, the average daily consumption of fresh water was 2.57 million cubic metres and of sea water for flushing was 0.65 million cubic metres.

## DEMAND PROJECTION

For the next five years, the annual fresh water consumption is projected to increase at an average of 0.6 per cent a year over the 940 million cubic metres consumed in 2001. Based on the projected population growth over the period, the major components of domestic consumption and services consumption are expected to increase at 2.1 per cent and 1.1 per cent a year respectively. Industrial use, on the other hand, will continue to decrease at an average rate of 5.5 per cent over the same period due to the decline in water-intensive industries.

## SERVICE COVERAGE

At present, about 99.9 per cent of the population receives piped fresh water. The only areas yet to receive piped fresh water are largely in the remotest villages. Work is being carried out to supply metered fresh water to more villages in remote areas by stages.

Sea water is now supplied to about 80 per cent of the population for flushing. Mains fresh water is still used in places that are not close to the sea front or where the population is scattered and sparse. These areas include the Peak, part of Southern District, Sai Kung, Outlying Islands, North District, Tin Shui Wai and Yuen Long. Studies are being undertaken in the possibility of providing sea water to some of these areas, but the option for the use of treated sewage effluent for flushing in specific areas is kept open.



蝴蝶谷食水主配水庫。  
*Butterfly Valley Fresh Water Primary Service Reservoir.*

## 供水範圍

目前，全港約 99.9% 人口獲自來水供應。還未獲自來水供應地區大多位於十分偏遠的村落。本署現正為更多偏遠村落分階段進行供水工程。

全港約有八成人口現時獲供應沖廁用海水。若干遠離海邊或人口較少的地區，仍然採用食水沖廁。這些地區包括山頂、南區部分地方、西貢、離島、北區、天水圍及元朗。我們正研究在這些部分地區供應海水沖廁的可行性。而在個別地區利用經處理的污水作沖廁用途的方案仍在考慮之列。



輸送東江原水的大直徑水管。  
*Large diameter pipelines for transferring Dongjiang water.*

## 雨量

年內，香港的雨水較平常為多，總降雨量為 3 092 毫米，比長期平均降雨量 2 214 毫米高出四成。

## 原水供應

廣東省是本港原水主要的供應來源。根據一九九八年對港供水補充協議，二零零一年的原水年供水量為 7.9 億立方米，然後逐年遞增 1 000 萬立方米，至二零零四年的 8.2 億立方米。至於二零零四年後的供水量，我們會與廣東省當局再作磋商。

在二零零一年，香港從廣東方面實際接收的原水量為 7.29 億立方米，相當於本港用水需求量的八成左右，餘額則來自本港集水區。

有關水價、水質保證、具彈性的供水安排、密封式輸水管道的工程進度，以及在新供水協議內引入懲罰性條款的可能性等事項，仍在繼續商討。我們已與廣東省當局達成協議，二零零零年採用一九九九年的單位水價，即每立方米 3.085 元，而二零零一年與零二年亦暫時採用這單位水價，實際的水價仍有待進一步磋商。

雙方亦就運作事宜舉行了多次會議，所討論事項包括粵方供水系統的運行管理、每年停水期的策劃與實施安排，以及水質監察事宜等。

## 海水化淡

本署曾就其他地方採用的各種海水化淡程序進行研究，以確定其是否適用於香港。研究結果顯示，即使近年採用逆滲透程序把海水化淡成本大大降低，但與從廣東輸入原水比較，成本方面仍屬偏高。然而，本署會繼續密切注視海水化淡方面的成本趨勢及科技發展情況。

## 廢水回收

另外一項研究顯示，把處理過的污水循環再供飲用雖然較海水化淡便宜，成本方面仍然高昂。我們考慮的一個重要因素是，這種技術必須能夠持久生產合標準的食水。我們會繼續監察廢水回收作飲用及非飲用用途的發展情況，並檢討其在本港應用的可行性。

## 降雨量及集水量 Annual Rainfall and Yield

降雨量 Annual Rainfall		集水量 Annual Yield	
毫米 Millimetres		百萬立方米 Million cubic metres	
年份 Year		年份 Year	
2001	3,091.8	2001	301.464
2000	2,752.3	2000	260.758
1999	2,129.1	1999	106.367
1998	2,564.6	1998	237.933
1997	3,343.0	1997	224.239
1996	2,249.1	1996	187.659
1995	2,754.4	1995	302.481
1994	2,725.6	1994	276.925
1993	2,343.9	1993	360.228
1992	2,678.8	1992	363.687

### RAINFALL YIELD

The year was wetter than usual, with total rainfall amounting to 3 092 mm. This was 40 per cent above the long-term mean of 2 214 mm.

### RAW WATER SUPPLY

The supply from Guangdong is the major source of raw water. Under the Supplementary Supply Agreement in 1998, the annual supply quantity of raw water for 2001 was 790 million cubic metres with an annual increase of 10 million cubic metres up to 820 million cubic metres in 2004. Further negotiation will be made with the Guangdong authorities on the supply quantity beyond 2004.



悉心保護的集水區美景。  
Scenic and well-preserved catchment areas.

The actual quantity of raw water received from Guangdong in 2001 was 729 million cubic metres amounting to nearly 80 per cent of Hong Kong' need. The rest of the raw water comes from the local gathering grounds.

Discussions continued to be held on matters of price, quality assurance, flexibility of supply, and progress in the work on the closed aqueduct, and on possible penalty clauses in the new arrangements. Agreement has been reached with the Guangdong authorities that the unit water price for 1999, i.e. \$3.085 per cubic metre would be adopted for 2000 and tentatively for 2001 and 2002 subject to further negotiation.

Operations meetings were also held to discuss matters of management and operations of the Guangdong systems, planning and implementation of annual shutdown and quality monitoring.

廣東省對港年供水量 Annual Quantity of Guangdong Water Supply			
百萬立方米 Million cubic metres			
年份 Year	香港供水量 Hong Kong Water	廣東省供水量 Guangdong Water	
2001	211	729	940
2000	218	706	924
1999	173	738	911
1998	156	760	916
1997	215	698	913
1996	208	720	928
1995	229	690	919
1994	240	683	923
1993	288	627	915
1992	225	664	889

## 集水區

由於擴大集水區的成本非常昂貴，本署暫時不考慮這個方案。

## 聯機監察引水道

為減低大雨時引水道溢流的危險，我們在大欖涌引水道安裝了聯機儀器，以密切監察引水道的水流速度及深度。

## 海水供應系統

本署正採取措施改良海水沖廁供應系統。我們要把現時的單線管網改為環形管網，以便在其中管段進行維修或發生爆裂或滲漏時，沖廁水供應亦不會中斷。

## 修訂水務設施條例及規例

我們已把有關規例修改，容許使用沖水量少於 7.5 公升的沖廁裝置、閘式沖廁水箱、雙沖式水箱、沖廁閘及感應式等沖廁裝置。這些較小的裝置預期會在新建樓宇內廣泛使用，導致沖廁用水量下降。

## 水冷式空調

水務署繼續參與政府進行的更廣泛地使用水冷式空調系統研究，我們亦加入了一項試驗計劃，在 17 個選定試驗地區供應食水給非住宅空調系統使用。

## **DESALINATION**

Various desalination processes in use elsewhere were studied to determine their suitability for Hong Kong. The study revealed that even though the cost of desalination has dropped significantly in recent years with the use of Reverse Osmosis process, the cost is still high compared with that of raw water from Guangdong. A close watch will, however, be kept on the cost trend and technological developments of desalination.

## **EFFLUENT RECYCLING**

Another study showed that although cheaper than desalination, the cost of recycling treated sewage effluent for potable use is still costly. An important consideration is that the technology is able to produce fresh water consistently to the required standard. We will continue to monitor the development of effluent recycling for potable and non-potable uses and review the applicability in Hong Kong.

## **GATHERING GROUNDS**

Due to the very high cost of developing more gathering grounds, consideration of this alternative will be set aside for the time being.

## **ONLINE MONITORING OF CATCHWATERS**

To mitigate the risk of catchwater overflow during heavy rain, online instruments have been installed at Tai Lam Chung Catchwater to closely monitor the flow rate and flow depth in the catchwater.

## **SEA WATER SYSTEM**

Steps are being taken to improve on the sea water flushing supply system. This entails changing it from the existing single-line to a ring configuration, which will allow for an uninterrupted supply even during maintenance work or mains bursts or leaks.

## **AMENDMENT OF WATERWORKS ORDINANCE AND REGULATIONS**

The relevant Regulation has been amended to allow for the use of flushing apparatuses with flushing volume of less than 7.5 litres, valve-type flushing cisterns, dual-flush cisterns, flushing valves and sensor-activated flushing apparatuses. These smaller apparatuses are expected to be widely used in new buildings and will lead to lower consumption of flushing water.

## **AIR CONDITIONING**

WSD continued to provide input into a government study being carried out for the wider use of water-cooled air conditioning systems. WSD also took part in a pilot scheme being carried out on the use of fresh water supplies for such systems for non-domestic use in 17 selected scheme areas.