

滿足用水需求 Meeting Demand for Water

達致可持續使用我們的水資源，是指需求和供應兩方面取得最理想的平衡，並可應付今天的需要，同時能保護我們後代的資源。

Achieving sustainable use of our water resources means optimising the balance between demand and supply and meeting today's needs whilst safeguarding resources for future generations.



實例 Living Example

用水對整個珠江三角洲可持續發展是必不可少的。我們與廣東省當局簽訂最新協議，保證粵方按我們的需要供水，而全面水資源管理策略會使我們作好準備，以應付與氣候急速變化有關的不明朗因素，以及加強香港與區內用水需求急增的城市成為良好夥伴的角色。

Water is integral to sustainable development across the entire Pearl River Delta. Our latest agreement with the Guangdong authorities guarantees an as-needs supply of water while our Total Water Management Strategy will better prepare Hong Kong for uncertainties associated with acute climate change and enhance our role as a good partner to regional municipalities who face rapid growth in demand for water.



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滿足用水需求

Meeting Demand for Water

香

港擁有全球其中一個最安全可靠的供水系統。隨著人口不斷增加，對優質供水的需求亦隨之而上升。透過提升供水系統，以盡力增加供水用途及減少浪費，是本署面臨的一大挑戰。

本港的供水有兩個主要來源：分別是廣東的東江及遍佈本港的郊野公園及鄉郊地區的降雨集水區網絡。本港平均七至八成用水由東江輸入特別行政區（特區）。除了每年的暫停對港供水期外，每日供水量約相當於本港的每日食水耗用量。輸入的原水若有剩餘，便會貯存於本港的水塘。此外，食水供應亦輔以海水作沖廁用途。為節約食水，本署繼續拓展飲用水及非飲用水的其他供水來源。

H

ong Kong enjoys one of the safest and most reliable water supply systems in the world. With a growing population, the demand for quality water supplies increases. The Department's challenge is to maximise the use of supplies and minimise wastage by improving delivery systems.

Hong Kong's water supply comes from two main sources: the Dongjiang (or East River) in Guangdong and a network of domestic rainwater catchments that are located across the city's extensive country parks and rural areas. On average, between 70 per cent and 80 per cent of Hong Kong's water is piped into the Special Administrative Region (SAR) from the Dongjiang. Except for the annual shutdown period, the daily supply rate roughly equals the city's daily consumption. The daily surplus of the imported water, if any, will be stored in the city's fresh water impounding reservoirs. Fresh water supply is complimented by sea water for flushing. To conserve fresh water supplies, the Department continues to develop alternative sources for both drinking water and non-potable water.



東江供水

最新的東江水輸港協議於二零零八年十二月十一日簽訂，協議規定按香港的實際需要，以彈性方式長期向本港供水。最終的每年供水量定為11億立方米，並保證這供水量將有效至二零三零年。協議使本署可更有效地控制水塘存水量，既可減少浪費，亦能確保用於調配運水的費用至理想水平。

根據該協議，香港於二零零九年、二零一零年及二零一一年每年就東江水支付的費用分別定為29.59億元、31.46億元及33.44億元。有關費用已計算自二零零六年以來錄得的人民幣兌港元匯率大幅升值，以及通脹率不斷上升所帶來的影響。對本署用戶而言，購水成本上升不會對本港的水費造成即時影響。

至於水質方面，廣東省當局已承諾繼續致力保護東江水的水源環境，並確保供港東江水的水質達到國家地表水環境品質標準。這樣，本港處理食水的成本便可維持在低廉水平。

Dongjiang Water Supply

The new Dongjiang Water Supply Agreement was signed on 11 December 2008. It provides a flexible long term supply of water to Hong Kong that will precisely meet the city's needs. The ultimate annual supply rate is fixed at 1 100 million cubic metres. This rate is guaranteed through to 2030. It enables the Department to better control storage levels in reservoirs, minimising waste and ensuring optimal pumping costs.

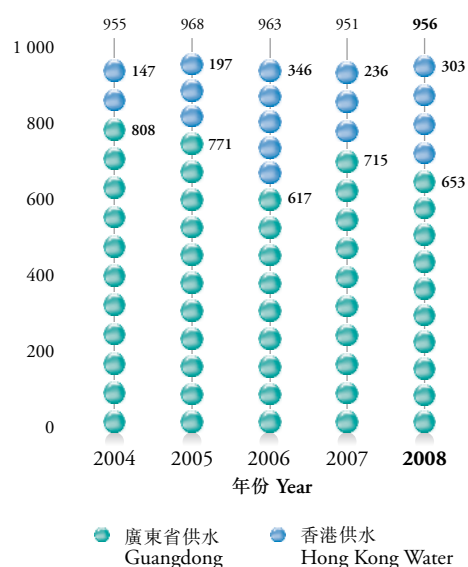
Under the agreement, the annual costs to be paid by Hong Kong for the Dongjiang water has been fixed at \$2,959 million for 2009, \$3,146 million for 2010 and \$3,344 million for 2011. These costs take into account the substantial appreciation in China's RMB against the Hong Kong dollar and escalating rates of inflation that have been recorded since 2006. As far as our customers are concerned, the increased purchase costs will not have an immediate impact on water charges in Hong Kong.

From a quality perspective, the Guangdong authorities have guaranteed continual efforts to protect the Dongjiang's environment and to ensure that the quality of water that is pumped to Hong Kong meets national environmental quality standards for surface water. This in turn, enables Hong Kong to keep the treatment costs for domestic fresh water supply low.

全年供水量

ANNUAL QUANTITY OF WATER SUPPLY

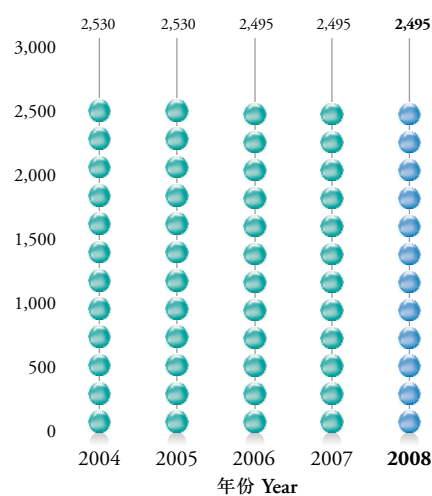
百萬立方米 million cubic metres



廣東省供水價格

PRICE OF GUANGDONG WATER

百萬元 \$ million



調配運水事宜一直具備極高透明度，本署對此亦保持高度警覺。廣東省當局每年均安排水質事務諮詢委員會進行訪問。於二零零八年十一月，委員會成員再次進行實地考察，更深入了解東江沿河地區的各项預防及控制污染措施的執行情況。各成員對所考察的範圍均表示滿意。粵港雙方將會在減少污染及提升水質方面繼續合作。

水質及品質檢定

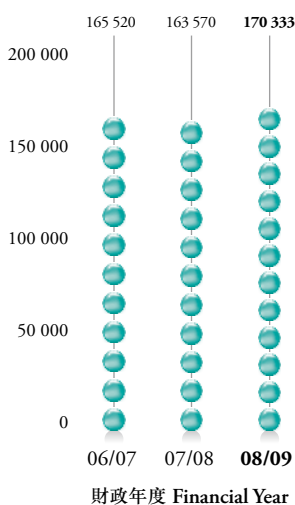
香港實行嚴格的水質監察制度，不論源自東江或香港本身集水區的原水，均會在整個食水處理及供應過程中，進行包含了物理、化學、輻射學、生物學及細菌化驗的綜合性項目。本署亦會定期在供水系統中指定及隨機的地點抽取水質樣本，並採用先進及公認的技術，按嚴格品質保證方案進行分析。品質監察計劃從化學原理上保證本地供水安全，免受賈第蟲及隱孢子蟲等有害微生物的影響。水質化驗數據會在本署網站公布，以供公眾查閱。

There is a high degree of transparency and vigilance in water transfer operations. The Guangdong authorities arrange annual visits for the Advisory Committee on the Quality of Water Supplies (ACQWS). In November 2008, members undertook another round of site inspections to better understand the implementation of various pollution prevention and control measures along the Dongjiang and expressed satisfaction with the areas inspected. Collaboration on pollution reduction and water quality enhancement between Hong Kong and Guangdong will continue.

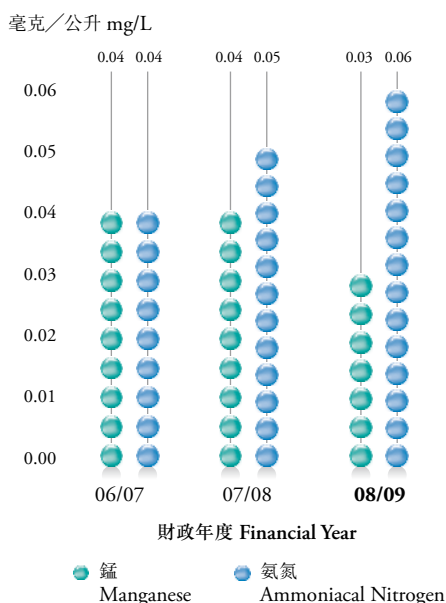
Water Quality and Compliance

A strict water quality monitoring regime is practised in Hong Kong. Irrespective of whether the water is sourced from the Dongjiang or within Hong Kong's own catchments, comprehensive programmes involving physical, chemical, radiological, biological and bacteriological testing are implemented throughout the treatment and supply process. Water samples are taken regularly from both selected and randomly determined points along the supply chain and analysed using advanced and proven technology that conforms to rigorous quality assurance protocols. Compliance monitoring programmes in particular confirm that the treated water is chemically safe and free of harmful organisms such as Giardia and Cryptosporidium. The test data of water quality are available to the public on the Department's website.

化驗樣本總數
NO. OF SAMPLES TAKEN



東江原水內平均氨氮及錳水平
AVERAGE AMMONIACAL NITROGEN AND MANGANESE LEVELS IN DONGJIANG WATER





我們有嚴格的監察和檢定制度，確保本地食水水質符合世界衛生組織二零零六年所定的標準。
Strict monitoring and verification system is in place to ensure that the local water quality complies with World Health Organization Guidelines for Drinking Quality 2006.

與此同時，為測量東江水的水質，本署在木湖抽水站及船灣淡水湖安裝了聯機水質監察系統，現已投入運作。該計劃的下一階段，包括於配水系統內的指定地點安裝聯機氯分析儀，以提升本署監察濾水水質的能力。

水質事務諮詢委員會在諮詢及監察水質方面，繼續擔當重要角色。去年，委員會研究了若干特定議題，包括樓宇水質、其他水源及公眾教育項目。委員會代表團更參觀了深圳水庫和惠州市梅湖水質淨化中心，考察廣東省當局的保護環境及供水措施。委員會對東江水的水質及所採取的污染控制措施感到相當滿意。

At the same time, our on-line Water Quality Monitoring System for gauging the quality of Dongjiang water at Muk Wu pumping station and Plover Cove Reservoir has been installed and put into service. The next phase of this programme will involve the installation of on-line chlorine analysers in selected points of the distribution system to enhance our monitoring capability for the quality of treated water.

The ACQWS continues to play an important role in terms of advising and monitoring the quality of water supplies. Specific issues studied by the committee over the past year include water quality in buildings, alternative water resources and public education programmes. A delegation from the committee visited the Shenzhen Reservoir and the Huizhou Mei Lake Purification Centre to study the environmental and supply protection efforts undertaken by the Guangdong authorities. The committee was impressed with the quality of Dongjiang water and the anti-pollution measures that were in place.



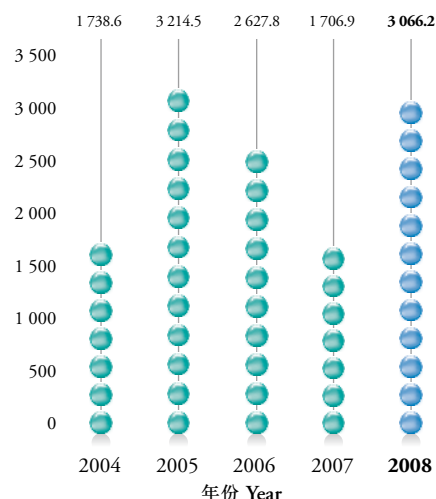
化驗室備有先進的儀器化驗和分析水質，有關數據會定期在本署網站公布。

Our laboratories are equipped with advanced equipment for testing and analysis of water quality. The results will be announced at our website on a regular basis.

全年降雨量

ANNUAL RAINFALL

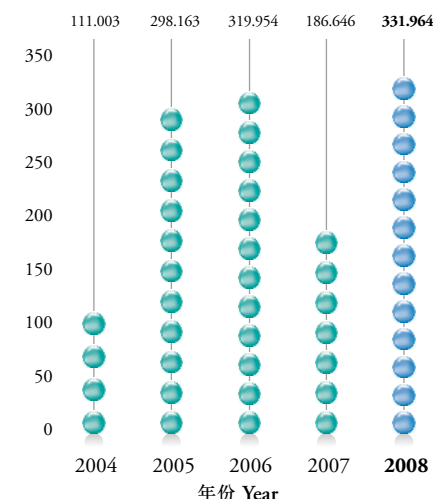
毫米 millimetres



全年集水量

ANNUAL YIELD

百萬立方米 million cubic metres



本署定期就水質及服務質素對用戶進行意見調查。根據一項住宅用戶及物業管理公司的意見調查顯示，大多數用戶對自來水的水質持正面評價。

與此同時，本港於二零零七年實施水安全計劃。該計劃是根據國際認可指引制定，當中包括世界衛生組織頒佈的指引，從而繼續加強本署於所有情況（包括緊急情況）下，為用戶提供安全食水的能力。

去年，本署推出了以生物發光技術為基礎的全新測試系統，藉此能夠迅速檢測各類水污染物。該系統通過採用精密儀器，提供快捷、簡便及費用較為低廉的水質分析，亦可在任何污染或緊急情況下，提供快捷有效的供水安全評估。

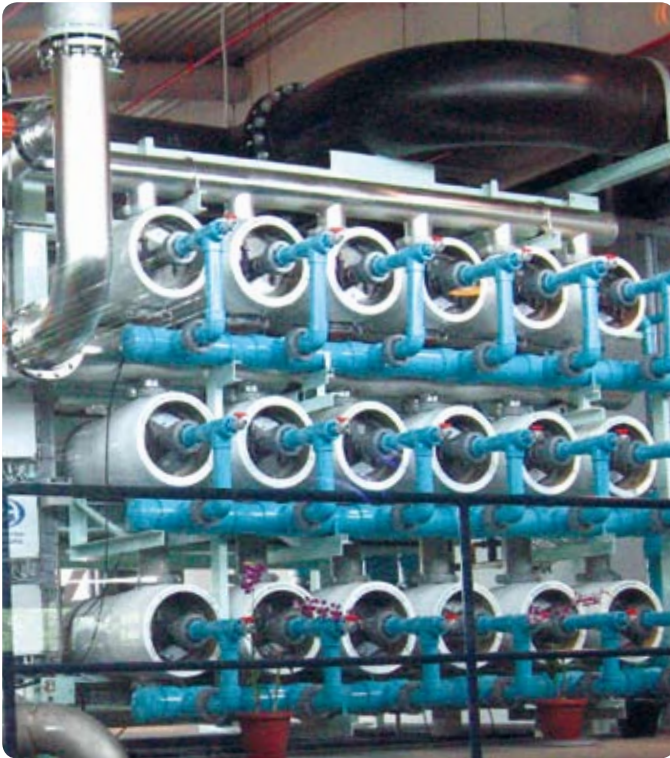
水質管理亦涉及維持水體生態平衡。為確保本署達致這一目標，本署去年把180 000尾魚苗（主要是鯪魚及大頭魚）放養於船灣淡水湖、大欖涌、九龍及下城門等水塘。本署亦會根據水塘的生態狀況，定期實施魚苗放養計劃。

The Department's customers are regularly surveyed for their opinion on water quality and service delivery. A customer opinion survey of domestic customers and property management companies found that most clients have a positive perception of the quality of the city's tap water.

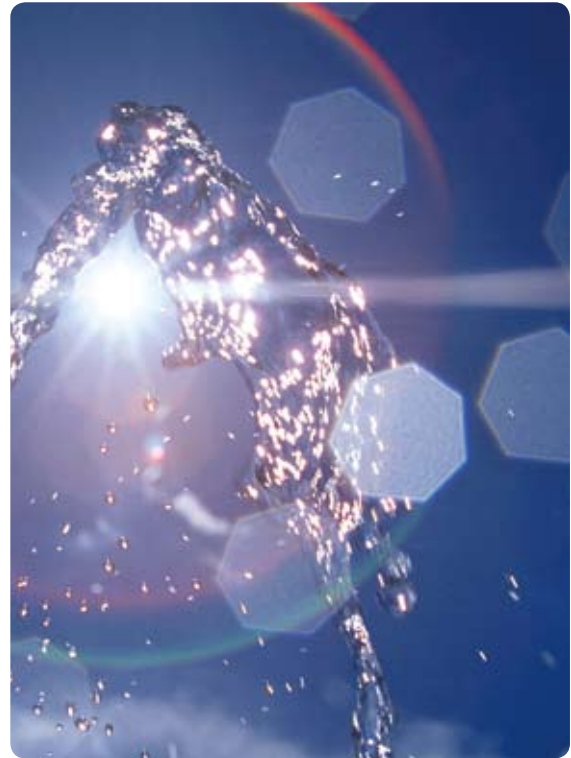
At the same time, the city's Water Safety Plan, implemented in 2007 and based on internationally accepted guidelines, including those of the World Health Organization (WHO), continues to strengthen the Department's ability to deliver a safe water supply to customers under all conditions, including emergency situations that may occur.

Over the past year we have launched a new testing system based on bioluminescence techniques that is capable of detecting a wide range of water contaminants quickly. This system offers speed, simplicity and a relatively low cost analysis of water using sophisticated instruments. It also provides a quick and effective assessment of the safety of the water supply in the event of any contamination or emergency.

Water quality management is also about maintaining an ecological balance of water bodies. To help ensure we achieve this, 180 000 fish fry – mainly silver carp and big head – were introduced into our impounding reservoirs at Plover Cove, Tai Lam Chung, Kowloon and Lower Shing Mun over the past year. The Department operates a regular fish fry stocking programme with reference to the ecological status in reservoirs.



海水化淡會是擴大供水量的首選方案。
Desalination is our most favoured solution to expanding long term water supplies.



水是珍貴資源。
Water is a scarce resource.

尋找其他水源

一如世界上許多城市，香港亦不斷尋找其他水源以補充本地供水。海水是重要的替代水源，亦是商業及住宅樓宇沖廁用水的主要水源。本署於海傍抽水站對海水進行隔濾及消毒，以符合有關的水質指標，隨後將其輸送到用戶樓宇作為沖廁用水，或貯存於鹹水配水庫。

現時，本港約八成人口使用鹹水沖廁。本署已獲准實施一系列基礎建設系統改善工程，以進一步拓展沖廁用的鹹水供應系統。主要工程項目包括薄扶林、元朗及天水圍地區的全新鹹水供應系統。與此同時，本署將在長沙灣設置環形水管系統，並會更新灣仔的鹹水供應系統。

本署繼續於貯存鹹水的露天配水庫採取適當措施，以免海藻滋生。本署按水質指標定期測試鹹水水質，以確保符合有關指標。

Looking for Alternatives

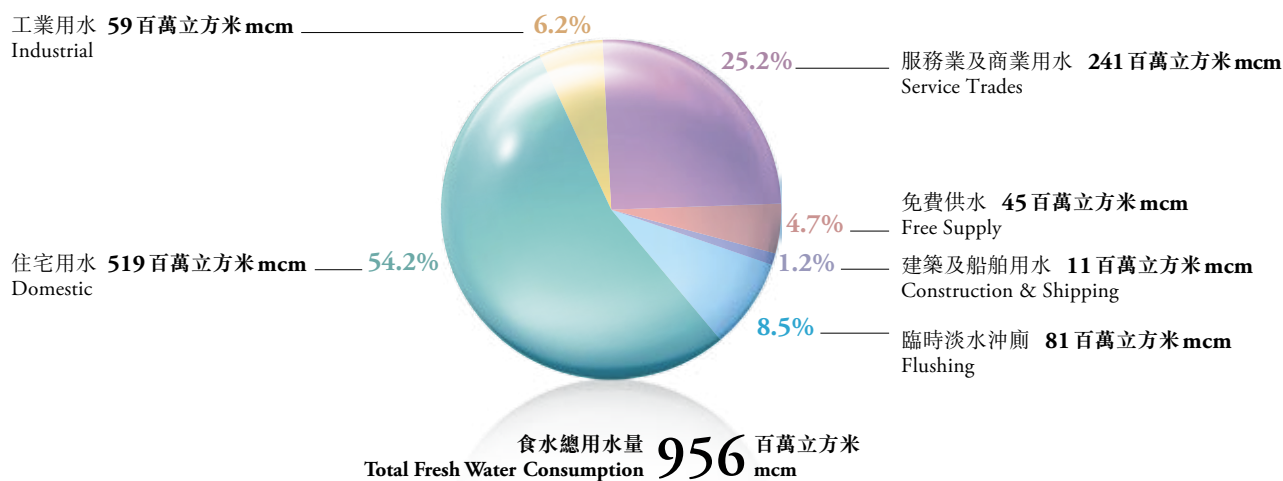
Hong Kong, like many cities around the world, is constantly looking for alternative sources of water to supplement its domestic supplies. Sea water is a key alternative and is an important source of flushing water for commercial and residential buildings. Sea water, screened and disinfected at seafront pumping stations to meet water quality objectives, is piped as flushing water to end-user buildings or into salt water service reservoirs for storage.

Currently, about 80 per cent of Hong Kong's population uses salt water for flushing purposes. The Department has been given the go ahead to undertake a programme of capital works for system improvements and extensions to the salt water supply system for flushing. Major projects include new salt water supply systems to service Pok Fu Lam, Yuen Long and Tin Shui Wai. A ring main system will be implemented for Cheung Sha Wan and Wan Chai's salt water supply system will be upgraded.

Steps continue to be taken to prevent algal growth in the open service reservoirs that store salt water. The water itself is regularly measured against water quality objectives to ensure compliance.

二零零八年按用水類別劃分的食水用量 (百萬立方米) (及佔總量百分比)

ANNUAL FRESH WATER CONSUMPTION 2008 BY SECTORS IN MILLION CUBIC METRES (MCM) (AND PERCENTAGE OF TOTAL)



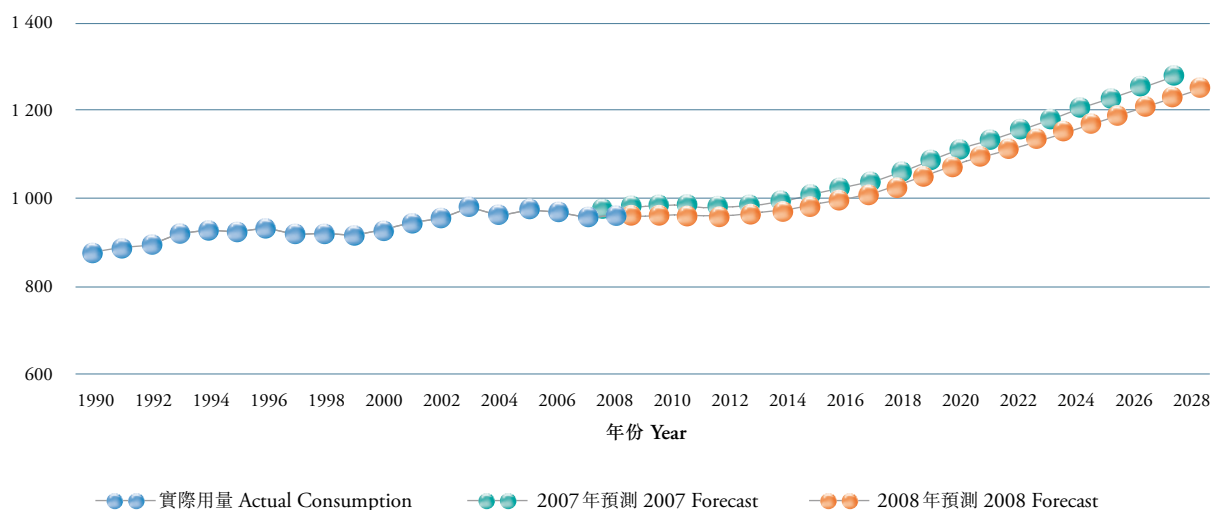
全年食水用水量 (按用水類別劃分)

ANNUAL WATER CONSUMPTION (BY SECTORS)

百萬立方米 million cubic metres

	2004	2005	2006	2007	2008
住宅用水 Domestic	493	512	513	509	519
工業用水 Industrial	75	72	69	64	59
服務業及商業用水 Service Trades	245	244	243	242	241
免費供水 Free Supply	42	44	43	44	45
建築及船舶用水 Construction & Shipping	16	14	13	12	11
臨時淡水沖廁 Flushing	84	82	82	80	81
食水總用水量 Total Fresh Water Consumption	955	968	963	951	956

二零零八年至二零二八年食水需求預測 FRESH WATER DEMAND FORECAST PROJECTION 2008 -2028



實施中的再造水項目繼續取得正面成效，把經污水處理廠處理後排出的水進一步淨化，然後將其循環再用，以作為沖廁用水及其他非飲用用途。現時，本署正計劃發展將再造水用於上水及粉嶺地區的沖廁及其他非飲用用途上。

與此同時，本署正與其他政府部門及私營公司攜手合作，試行循環再用洗滌污水及集蓄雨水的措施。然而，本署擴大長遠供水量的首選方案依然是海水化淡，而本署將繼續留意並研究這方面的技術發展。

節約用水

本署繼續完善及落實全面水資源管理策略，從香港以至更廣泛的珠江三角洲的需求環境下，全方位管理本港的水資源。該策略旨在令本港可以作出充分準備，以面對在氣候急劇變化及降雨量不足時，所帶來的潛在負面影響。配合本署與珠江三角洲其他城市的夥伴角色，特別是在用水需求急劇增長的環境下，本署將與有關地區的市政府攜手，促進可持續使用水資源。

Water reclamation projects that reclaim water from sewage treatment schemes and recycle it as toilet flushing water and other non-potable uses continue to produce positive results. The Department plans to develop the use of reclaimed water in the Sheung Shui and Fanling areas as toilet flushing water or water for non-potable usage.

At the same time, we are continuing to work with other Government departments as well as private sector companies in trial grey water re-use and rainwater harvesting measures. Desalination remains our most favoured solution to expanding long term water supplies and we continue to monitor and study technological developments in this area.

Water Conservation

We continue to implement and refine the Total Water Management Strategy to manage all aspects of our water resources in both the Hong Kong context and in the broader context of the Pearl River Delta's needs. The strategy aims to prepare the city for potential adverse impacts on supplies caused by acute climate change and low rainfall. In our partnership role with other cities across the delta, we also work with municipalities to promote sustainable uses of water resources, particularly in an environment of rapid growth in demand.



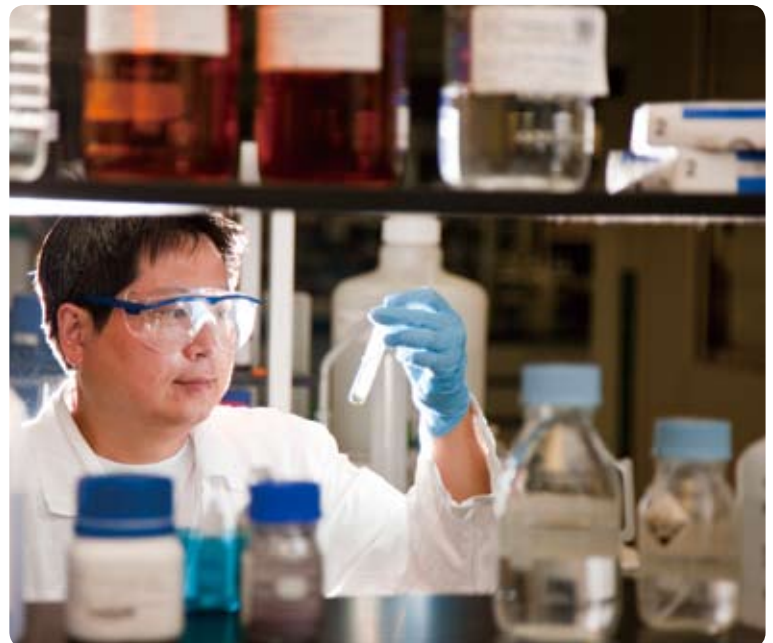
水質化驗人員以離子色譜儀測試水質樣本。
Using ion chromatograph to test water sample.

該策略源於政府的一系列廣泛研究，旨在以全方位、多界別及可持續的方式管理用水需求。整體而言，該策略包括四個主要元素：開拓新水源、再造使用、節約用水及保護和管理水資源。

在用水的需求管理方面，本署的策略是以透過節約用水來遏制用水需求增長為理念。以「節約用水」為主題的公眾教育活動經已展開，重點在於推廣節水設備及節水效益標籤計劃。在未來一年，本署將進一步宣傳及推廣公眾教育，特別是針對年輕一代。今年推出的「節約用水 從家開始」活動，正正加強本署在學校方面的推廣計劃。

The strategy that has emerged from wide ranging Government studies aims to proactively manage both the demand and supply of water in an integrated, multi-sectoral and sustainable manner. Broadly speaking, it covers four key elements: new water resources, reclamation, water conservation and the protection and management of water resources.

Our demand management strategy is based on the premise that we need to contain growth in demand through conservation. Public education campaigns focusing on water conservation have been launched, targeting in particular water saving devices and a Water Efficiency Labelling Scheme. Publicity and public education programmes will be stepped up over the coming year, targeting in particular the younger generation. School programmes are being enhanced with the launch of the 'Water Conservation Starts from Home' campaign this year.



化驗室人員仔細進行水質化驗。
Laboratory staff performing water analyses.



東江水質聯機監測系統。
Dongjiang Water Quality Online Monitoring System.

本署鼓勵用戶更換傳統喉具，並以節水設備取而代之，例如低流量式水龍頭及花灑頭、雙掣式沖廁水箱及節流器。其中一項主要倡議是制定節水效益標籤計劃。該計劃類似電器設備的能源效益標籤計劃，將分階段逐步推行，令用戶了解喉具和器具的耗水量及用水效益，藉此提升用戶的節水意識。與此同時，本署正為政府樓宇及學校的喉具裝置節水設備。

Customers are encouraged to replace conventional plumbing fixtures with water saving devices such as low flow taps and shower heads, dual flush cisterns and flow restrictors. A key initiative is to develop a voluntary Water Efficiency Labelling Scheme (WELS), similar to the Energy Efficiency Labelling Scheme for electrical appliances. WELS will inform consumers of the level of consumption and the efficiency of plumbing fixtures and appliances promoting a culture of conservation awareness among purchasers. The scheme will have a phased introduction. At the same time, the Department is retrofitting plumbing fixtures with water saving devices in Government buildings and schools.



我們透過不同的檢測來監察水質。
Monitoring of water quality through various tests.



全港第二大濾水廠 — 北港濾水廠。

The second largest water treatment works in Hong Kong – Pak Kong Water Treatment Works.

偵測並控制供水系統的滲漏是節水的首要課題。為此，本署在進行的更換及修復老化水管計劃時，亦同時提升所有的滲漏偵測控制系統。為提升監察配水網絡運行狀況的能力，本署已在選定的供水區內的策略性位置安裝流量計及數據記錄儀。水壓及流量數據每日自動傳輸至中央監察電腦，員工隨後分析這些數據，將有助辨別懷疑滲漏的初步跡象，並可根據有關結果及時安排維修。

本署現正於兩個主要的供水區內試行水壓管理計劃，力謀藉此減少水管滲漏，同時亦維持足夠及穩定的水壓。

Detecting and controlling leaks along the supply chain is a conservation priority with all systems upgraded in parallel with the Department's ongoing replacement and rehabilitation programme for aged water mains. To enhance our ability to monitor the performance of our distribution networks, we have installed flow meters and data loggers at strategic locations in selected supply zones. Pressure and flow data are sent automatically to centralised monitoring computers. Subsequent data analysis will help staff identify early signs of suspected leakage whereby remedial works can be timely arranged.

Pressure management schemes which aim to reduce water mains leakage whilst maintaining adequate and stable pressure are being implemented on a trial basis across two major supply zones.



本署推行全面水資源管理策略，致力實現可持續發展的抱負。
The Department's Total Water Management Strategy aims at achieving the vision of sustainable development.

非法用水

根據《水務設施條例》的規定，未經水務監督的水錶量度而從水務設施取水即屬違法。本署負責有關條例的行政工作，並對違例者採取法律行動。在過去十二個月內，本署檢控組聯同其他執法部門，成功開展多項針對非法取水的聯合執法行動。

在一些現有大型屋邨及鄉郊地區安裝的總水錶，繼續協助本署監察耗水量，並偵查滲漏和非法用水的情況。此外，現時政府強制規定，本港的新建發展項目必須安裝總水錶。

Illegal Water Use

It is an offence under the Waterworks Ordinance (WVO) to draw water illegally from the waterworks without a metered measurement by the Water Authority. The Department is responsible for administering the Ordinance and for taking enforcement action against infringements. Over the past 12 months, our Prosecution Unit has successfully conducted several joint enforcement operations with other departments against the illegal taking of water.

Master meters installed at some existing large housing estates and rural villages continue to help monitoring water consumption and identifying problems of leakage as well as unauthorised use of water. In addition, master meters are now mandatory installations in new and large developments.

測漏統計數字 (零八／零九年度)
STATISTICS OF LEAK DETECTION (08/09)

食水 Fresh Water

各財政年度所進行的測漏工作
TESTS CONDUCTED PER FINANCIAL YEAR

	2004/05	2005/06	2006/07	2007/08	2008/09
最低晚間流量測試次數 No. of Minimum Night Flow Tests	300	304	292	291	278
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	92	64	60	57	65
日間流量測試次數 No. of Day Flow Tests	1 838	2 079	2 354	2 429	2 793
音聽視察次數 No. of Sounding & Visual Inspections	3 358	3 105	3 238	4 220	4 438
測試及視察次數總計 Total No. of Tests & Inspections	5 586	5 552	5 944	6 997	7 574
經發現的滲漏個案數目 No. of Leaks Detected	4 231	3 758	3 107	2 998	2 598
估計每日可節省的食水量 (立方米) Estimated Quantity of Fresh Water Saved (cubic metres/day)	99 293	108 090	109 817	126 019	127 244

海水 Sea Water

各財政年度所進行的測漏工作
TESTS CONDUCTED PER FINANCIAL YEAR

	2004/05	2005/06	2006/07	2007/08	2008/09
最低晚間流量測試次數 No. of Minimum Night Flow Tests	8	0	0	0	0
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	4	3	3	3	2
日間流量測試次數 No. of Day Flow Tests	127	268	332	336	325
音聽視察次數 No. of Sounding & Visual Inspections	400	238	153	222	207
測試及視察次數總計 Total No. of Tests & Inspections	539	509	488	561	534
經發現的滲漏個案數目 No. of Leaks Detected	199	132	116	161	153
估計每日可節省的食水量 (立方米) Estimated Quantity of Fresh Water Saved (cubic metres/day)	11 948	40 870	30 642	45 592	113 201