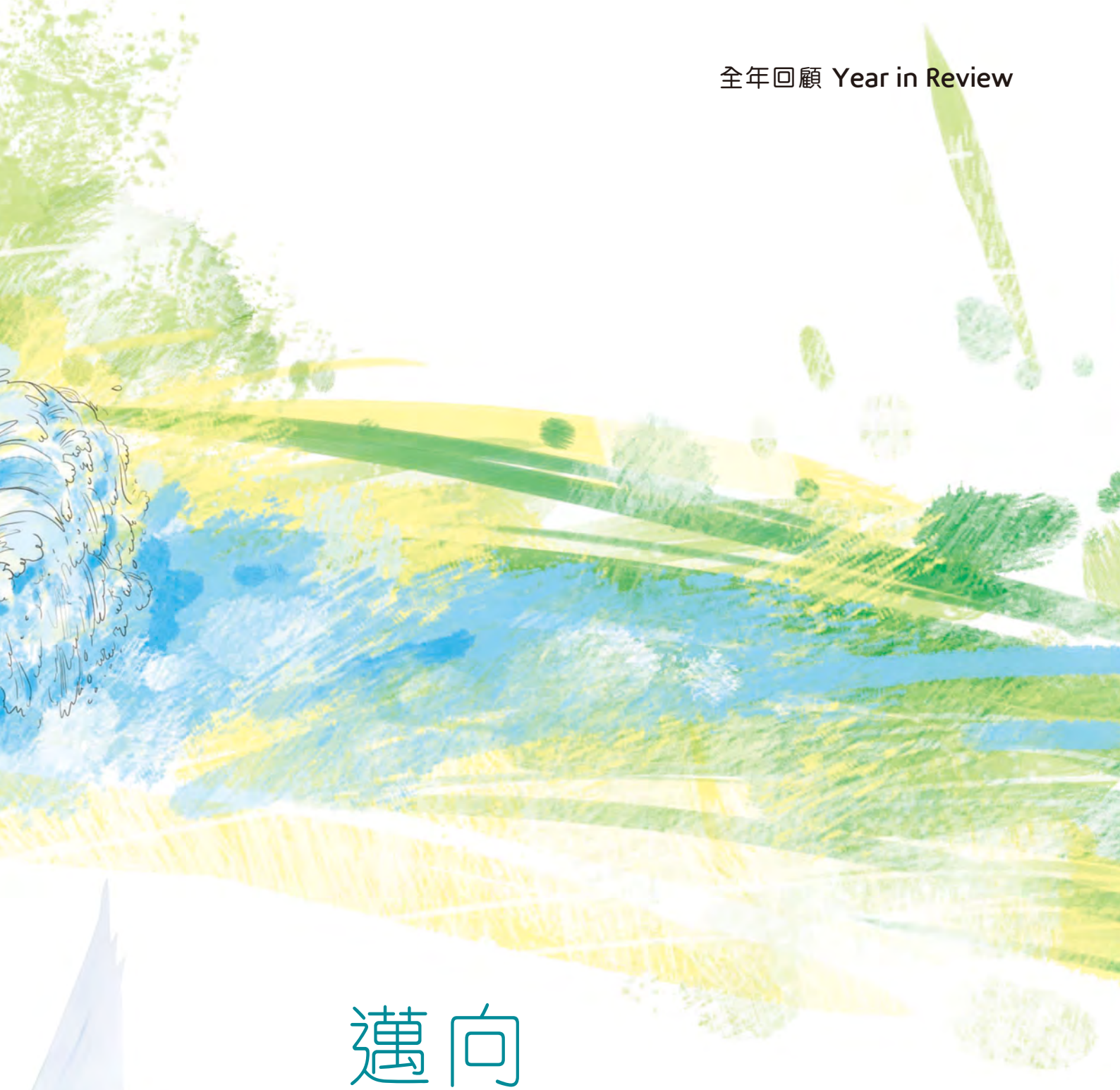


邁向
持續發展
Aiming for **Sustainability**

水是生命和健康所需。香港市民可以信賴我們，
因為我們的管理策略能有效地確保既安全又可持續的供水。
Water is necessary to life and to health. Our effective management strategies ensure a safe and sustainable water supply upon which Hong Kong's population can rely.

邁向持續發展
Aiming for Sustainability

水務署致力保障、節約和保護水資源，以致市民及未來世代皆可持續地得享其用。

本署有責任節約水資源和能源，保護環境，並與香港市民和鄰近地區携手共創「綠色」基建。

政府於二零零八年推出《全面水資源管理策略》，訂下了恆常檢討和持續監控水資源管理的基礎。我們透過預測每年的用水需求和供應量、監測氣候變化對環境造成的影響，並整理人口增長和社會經濟活動資料的記錄，從中認清用水需求的變化，以微調管理用水需求的策略。

The Water Supplies Department is committed to securing, conserving and protecting water resources for current and future generations in a sustainable manner.

It is the Department's responsibility to manage water and energy conservation, protect the environment and partner with the community of Hong Kong as well as our regional neighbours on initiatives such as 'green' infrastructure.

The Total Water Management strategy, announced by the Government in 2008, forms the foundation for continuous reviews and on-going monitoring of water resources management. These reviews are conducted based on annual forecasts of water demand and supply, the impacts of climate change on our environment, population and economic growth and social and economic activities. Through this process , we identify changes in the demand profile and fine-tune our water management tactics accordingly.

除了供水服務，為達致環保目標，我們履行節約資源及可持續發展的政策。本署將貫徹達成下列目標：

- 在供水服務的各個層面嚴謹遵行各項環保規例；
- 善用電力和燃料，限制氣體排放；
- 減少辦公室用品的消耗，在食水處理過程中減少使用化學品；
- 把供水系統的水流失減至最低；
- 把建築工程對環境所造成的影響減至最低；
- 減少化驗室、工場和濾水廠的固體、液體及化學廢物；
- 把排污量減至最低；並盡可能將污水處理，循環再用；
- 減少抽水運作所發出的噪音。

Operationally, apart from provision of water supplies, our goals reflect our policies on conservation and sustainability. In this particular aspect, the Department is committed to the following objectives:

- throughout our supply chain, we strictly enforce compliance with all environmental regulations;
- optimise the use of electricity and fuel consumption and limit gaseous emissions;
- cut down the consumption of glossary items in offices and the use of chemicals in water treatment;
- minimise water loss across the distribution system;
- minimise environmental impacts that can arise from construction work;
- reduce the quantities of solid, liquid and chemical wastes from our laboratories, workshops and treatment installations;
- minimise the discharge of effluent and where possible, recycle effluent as reclaimed water; and
- reduce noise from pumping operations.

屯門濾水廠內清水池的綠化屋頂。
The green roof of the clear water tank in Tuen Mun Water Treatment Works.

能源消耗

本署是香港電力的最大用戶之一。我們正積極推行節約能源措施，並同時努力開發可再生能源。

節約成效

過去一年，濾水廠和抽水站的總耗電量下降了0.45%，辦公室的電力使用也減少了1.5%。在過去五年累積減少了2.1%總耗電量，這是繼二零零三至零六年間節省了10.1%後的額外減幅。

「綠色」基建

持續的改善措施，使濾水廠運作效率日趨完善。我們亦著重把愛護環境的文化及意識融入辦公室和供水系統的日常業務中。此外，在持續發展原則下，我們與工作伙伴致力把環保元素引入水務基礎設施內，務求減低能源的消耗，從而減少碳足印。節水裝置的推廣和使用，以及社會對節約用水和節約能源的意識日增，都有助我們達致節省能源的目的。

Energy Consumption

As one of the largest consumers of electricity in Hong Kong, the Department is implementing all measures to reduce its energy consumption while developing viable renewable energy options.

Energy Saving Achievements

Over the past year, we have reduced electricity consumption in water treatment and pumping operations by 0.45 per cent while electricity use in offices was cut by 1.5 per cent. Accumulatively we have reduced our electricity consumption over the past five years by 2.1 per cent, on top of the 10.1 per cent reduction achieved from 2003 to 2006.

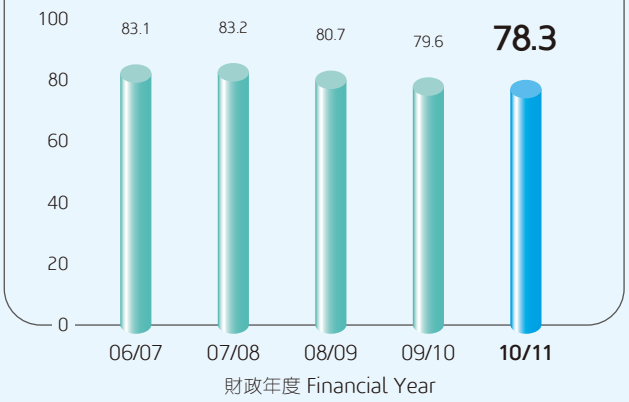
'Green' Infrastructure

On-going improvements have been made to the efficiency of water treatment facilities. An emphasis has been placed on 'green' housekeeping in the everyday management of offices and water supply installations. We have also made a concerted effort with our business partners to enhance the sustainability of all waterworks infrastructure by incorporating green features that consume less energy and thus have low carbon footprints. The promotion and use of water saving equipment and an increasing awareness of the need for water and energy conservation within the community have also helped us meet our energy saving objectives.

把環保元素引入水務設施，減低能源消耗。
Incorporating green features in waterworks infrastructure to reduce the energy consumption.

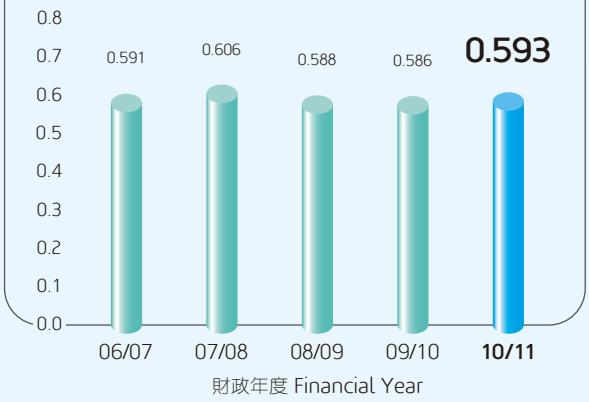
人均耗電量（食水及原水）*
Per Capita Electricity Consumption (Fresh Water and Raw Water)*

千瓦時／每人／每年 kWh/head/year



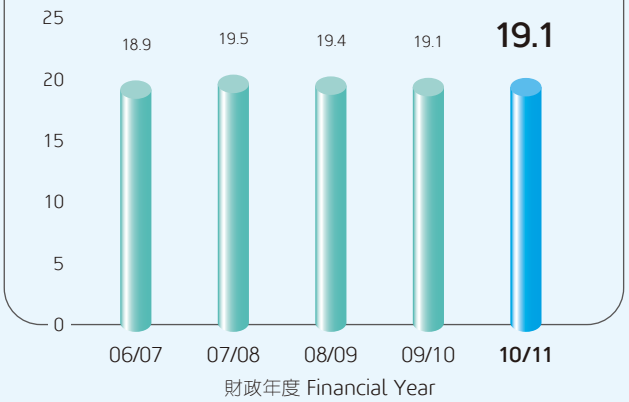
每單位耗電量（食水及原水）
Unit Electricity Consumption (Fresh Water and Raw Water)

千瓦時／立方米 kWh/m^3



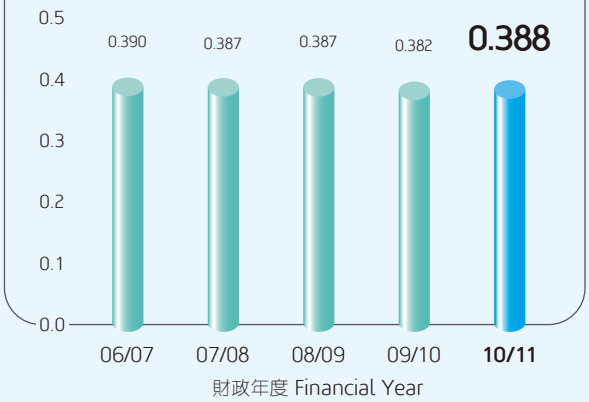
人均耗電量（海水）*
Per Capita Electricity Consumption (Sea Water)*

千瓦時／每人／每年 kWh/head/year



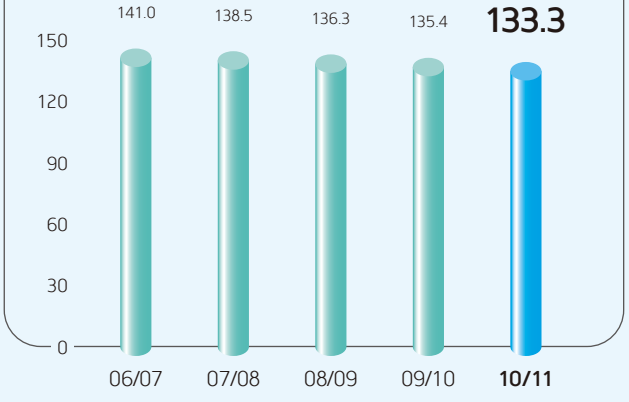
每單位耗電量（海水）
Unit Electricity Consumption (Sea Water)

千瓦時／立方米 kWh/m^3



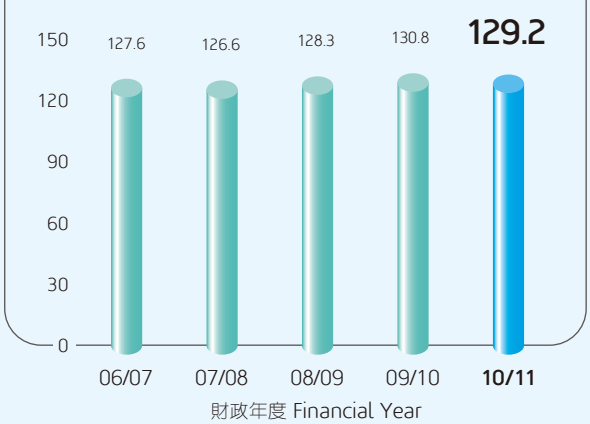
辦公室每單位樓面面積的耗電量
Office Electricity Consumption Per Unit Floor Space

千瓦時／平方米 kWh/m^3



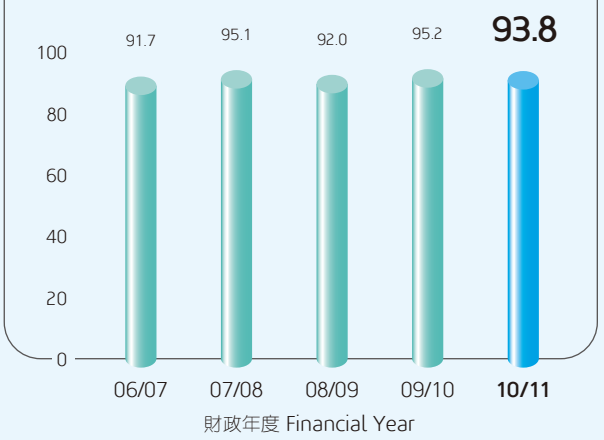
人均住宅食水耗用量 *
Per Capita Domestic Fresh Water Consumption *

公升／日 Litres/day



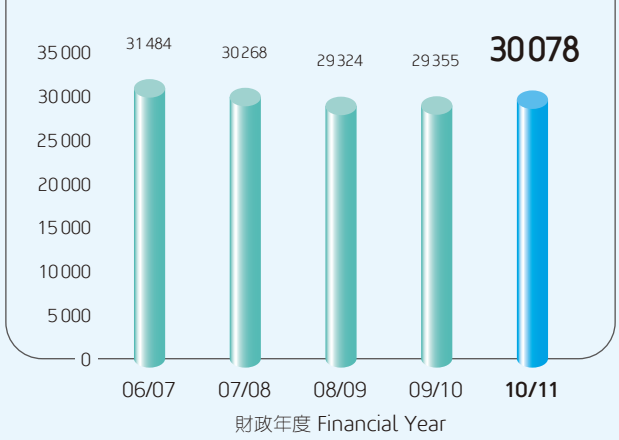
人均沖廁水耗用量(食水及海水)*
Per Capita Flushing Water Consumption (Fresh Water & Sea Water)*

公升／日 Litres/day



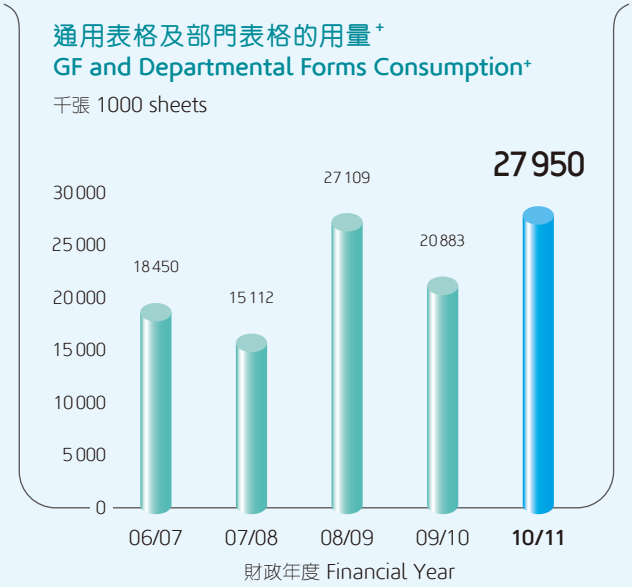
耗紙量
Paper Consumption

令 reams



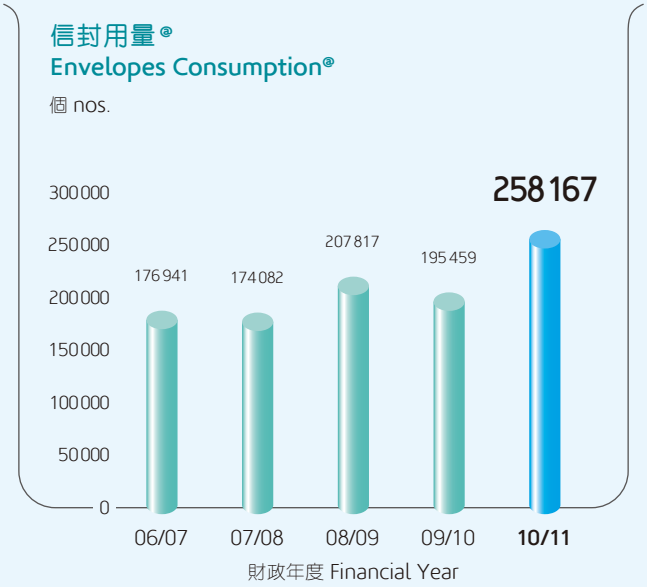
通用表格及部門表格的用量+
GF and Departmental Forms Consumption+

千張 1000 sheets



信封用量@
Envelopes Consumption@

個 nos.



* *根據二零零六年中期人口統計所得人口基準，二零零一年中至二零零六年中的人口數據已經訂。經修訂數據已計入有關人口變化的更多估計數字，而這些估計數字在編製先前人口數據時尚未能提供。因此，二零零一年以來人均耗水量數字及所服務的人口均已經修訂。*

\+ *數字變化基於採購表格的撥款。*

@ *信封用量增加基於公關宣傳的需要。*

* *Based on the population benchmark from the results of the 2006 Population By-census, the population figures from mid-2001 to mid-2006 have been revised. The revision has incorporated more estimates of population changes that were not yet available at the time when the previous population figures were prepared. Consequently, the per capita consumption figures and population served as from 2001 onwards have been revised as well.*

\+ *The fluctuation of figures was due to variations in funding for procurement of forms.*

@ *The increase in consumption of envelopes was to cater for the need of publicity programmes.*

嶄新技術

我們積極監察供水系統的耗電量，並在可行情況下制訂計劃，按照壽命週期成本原理，善用資產及其運作，以達至最佳的經濟效益。變速抽水、採用電腦智能編排抽水設施的運作、在線監控供水網絡等新科技，都有效地減少能源耗用量。

可再生能源措施

我們密切注視本港及海外的再生能源技術發展。目前，我們正尋求使用水力、風力和太陽能發電技術，而部分技術已應用在供水系統上。

在屯門濾水廠，我們正在安裝兩台180千瓦的渦輪發電機，此設備利用存水在地理位置較高所儲的位能，轉化為可供385台一匹窗口式冷氣機使用的電能，從而減輕依賴電力公司為濾水和抽水運作所提供的電力。第一台發電機將於二零一二年投入服務。待兩台發電機完全運作後，預計每年可產生2 900兆瓦時電能，相等於減少了燃燒化石燃料所排放的2 030噸二氧化碳。

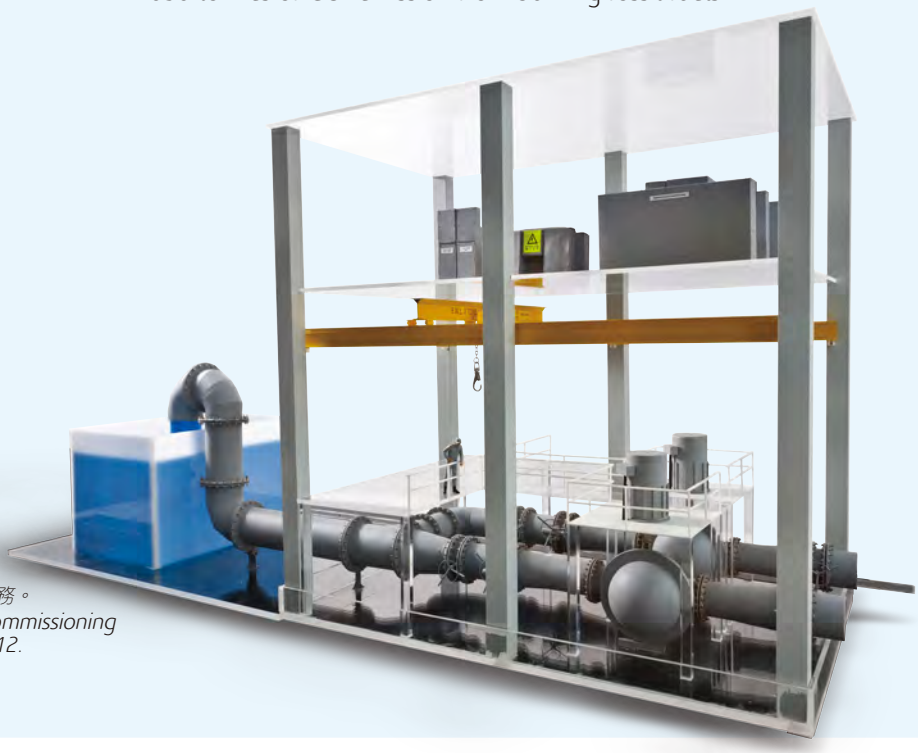
New Technology

We continue to closely monitor our electricity use along the supply chain and where possible we have established programmes that can achieve better economies in the life-cycle cost of assets and service operations. Technologies that involve variable speed pumping, intelligent scheduling of pump operations, on-line monitoring and control of the distribution network have all been effective in reducing energy consumption.

Renewable Energy Initiatives

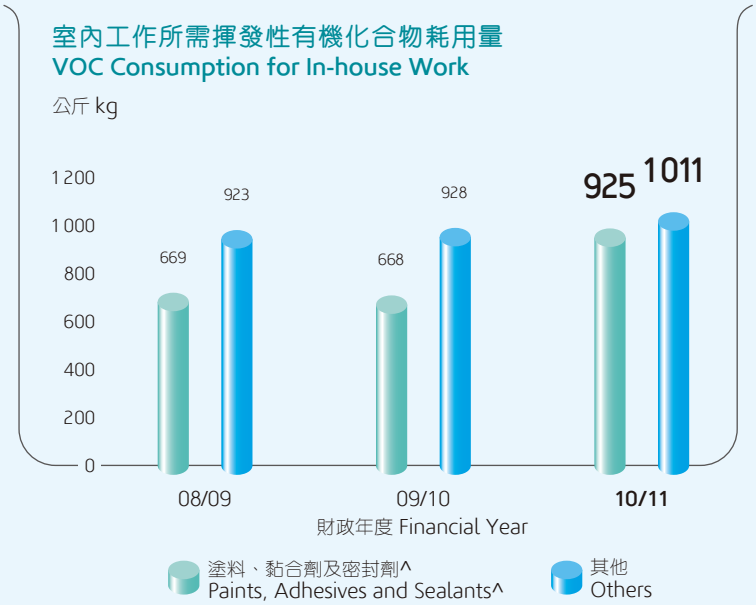
We are constantly keeping our eyes on the latest development in the renewable energy sector, both in Hong Kong and internationally. Currently we are using or pursuing the use of hydro-power as well as wind and solar energy technologies for use along the supply chain.

At the Tuen Mun Water Treatment Works, we are installing two 180 kilowatt turbine generator units, which can power 385 sets of 1 hp window-type air-conditioners, to generate electricity for the plant with a view to making use of the potential energy of water stored at high levels. This in turn helps us lessen our heavy reliance on the power for water treatment and pumping supplied by the power supply company. The first of these generators will be ready for commissioning in 2012. Once both generators are commissioned, the total electricity generated can reach 2 900 megawatt hours annually, which is equivalent to a reduction of 2 030 tonnes of CO_2 emission from burning fossil fuels.



水力發電機將於2012年在屯門濾水廠投入服務。
Hydro power generator will be ready for commissioning in Tuen Mun Water Treatment works in 2012.

本署工程師於英國學習水泵節能技術。
Technology that optimising the energy required in pump operations being learnt in the UK.



^ *黏合劑及密封劑耗用量增加主要基於水質測試服務和維修工程的增加。*
^ *The increase in VOC consumption was mainly due to the increase in water quality testing services and maintenance work.*

我們與香港理工大學合作，設計了液壓驅動裝置，能為缺乏供電設施或供電成本昂貴的供水網絡的監測和控制設備提供電源動力。

我們又正與香港科技大學共同發展直立風力發電設施，為紅山濾水廠的部分設備提供可再生能源，預計於二零一二年投入服務。這種風力發電設施的效能較一般風力發電機為佳，能於更廣闊的風速範圍內運作。

香港擁有為數不少的水塘，我們正探討使用創新太陽能發電器具的可能性。傳統的太陽能電池板改良後能自動跟踪太陽。此外，我們正研究把浮動的太陽能電池板置於水塘水面上，全時間收集和分配能源。

水泵在供水和配水系統中耗用大量能源，我們正與英國艾克斯特大學水系統中心及其他供水機構合作，就香港的情況進行研究和測試，並將模型、技術和已開發的軟件引入，加強香港的水泵節能技術。

An in-line hydro-power harnessing device, which was developed in collaboration with the Hong Kong Polytechnic University, has the potential to supply electricity to monitoring equipment installed in areas where existing electricity supply is either limited or cannot be delivered at economical cost.

At the Red Hill Water Treatment Works, we have engaged the Hong Kong University of Science and Technology to develop a vertical wind turbine to generate energy for use by part of the plant. This wind turbine is anticipated to be highly efficient, working over a greater wind speed range than normal wind turbines. The turbine is expected to come into operation in 2012.

With an abundance of reservoirs, we are exploring the potential use of an innovative solar energy device. Conventional solar panels have been enhanced with sun tracking devices, and we are now studying the feasibility of floating the panels on the surface of reservoirs for collecting and distributing energy throughout the day.

We are also carrying out research into technology that optimises the energy required to operate pumps throughout the supply and distribution systems. Our staff have worked with experts from the Centre for Water Systems of the University of Exeter in the UK and other water authorities to discuss, test, learn and take over models, methodology and software developed specifically for Hong Kong conditions.

公用集調車輛資料
Information on Pool Transport

	公務用車數量 No. of Government Vehicles in Operation			總燃料耗用量(公升) Total Fuel Consumption (Litres)			總車程(公里) Total mileage (km)		
	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11
柴油 Diesel	23	23	**19**	46 906	38 464	**33 756**	201 252	182 934	**227 977**
汽油 Petroleum	227	206	**205**	599 890	534 765	**517 113**	3 225 682	2 813 529	**3 605 776**
混合(汽油/電力) Hybrid (Petrol/Electric)	–	–	**20**	–	–	**50 450**	–	–	**351 783**
液化石油氣 LPG	6	6	**8**	30 965	28 326	**29 184**	93 286	81 221	**90 403**
電力 Electric	–	–	**1**	–	–	**–**	–	–	**5 709**

廢氣排放
Emissions

(以公噸計)
(Figures in Tonnes)

	二氧化碳 CO_2			二氧化硫 SO_2			氮氧化物 NO_x			可吸入懸浮粒子 RSP		
	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11	08/09	09/10	10/11
直接廢氣排放 Direct Emissions												
公務用車(柴油) Vehicle fleet (Diesel)	123	100	**88**	–	–	–	1	1	**1**	–	–	–
公務用車(汽油) Vehicle fleet (Petrol)	1 416	1 384	**1220**	–	–	–	1	1	**1**	–	–	–
公務用車(液化石油氣) Vehicle fleet (LPG)	52	47	**49**	–	–	–	–	–	**–**	–	–	–
間接廢氣排放 Indirect Emissions												
耗用電(九龍及新界) Electricity Consumed (Kowloon and New Territories)	330 023	340 733	**324 992**	443	514	220	440	452	**313**	23	26	**16**
耗用電(港島) Electricity Consumed (Hong Kong Island)	55 834	48 782	**51 179**	160	140	95	88	77	**70**	4	3	**2**
總量 Total	387 448	391 046	**377 528**	603	654	315	530	531	**385**	27	29	**18**

履行《清新空氣約章》

我們嚴格履行《清新空氣約章》，並持之以恆地大幅度降低濾水廠和抽水站的廢氣排放水平。同時，我們盡量減少使用城市網絡內的電力，及開發可再生能源，間接減少整體廢氣排放量。

我們繼續保持高度警覺，嚴格控制本署車隊的直接廢氣排放量。車輛的使用量受嚴密監察，並逐步以混合汽車和電能車取代汽油驅動車輛，減少耗油量。以液化石油氣車取代柴油車，同樣有助車隊減少廢氣排放量。

在設計和建造各項供水設施時，我們會盡量採納有助減少對環境造成影響的設計元素、材料和工作流程。我們會密切監管涉及使用含有揮發性的有機化合物的材料及化學品。

Clean Air Charter Commitments

We take Hong Kong's Clean Air Charter seriously and have continued to significantly reduce emission levels at all treatment and pumping stations. At the same time, by reducing where possible our use of electricity from the city grid through the development of renewable energy sources, we have indirectly assisted in the reduction of general emissions.

We are equally vigilant about the sources of direct emissions arising from our vehicle fleet. We take measures to optimise the use of vehicles and replace petrol-driven vehicles with hybrid and electric cars, thereby reducing the overall fuel consumption. By replacing diesel fuel with LPG, our transport fleet has also been able to reduce emissions.

In the design and construction of waterworks, we look for design elements, materials and work processes that, where practical, minimise environmental impacts. The use of materials and chemicals containing volatile organic compounds is closely monitored.

水務署首架電能車。
The first electric vehicle of WSD.

本署致力在內部培育愛護環境的文化及意識。這種文化在我們日常業務當中，隨處可見。現時辦公室已落實以電子方式溝通和文件編撰，甚至濾水廠的運作亦日趨電子化。可靠、方便使用和無紙化的數據記錄儀與及其他電子設備，令我們得以廣泛地使用資訊系統。

Internally, our culture of environmental care and awareness is reflected in our day-to-day business from electronic communications and documentation in offices to aspects of operations within the water treatment works. We also make wide use of information systems with data loggers and other electronic devices as they are reliable, easily accessible and paperless.

節約用水

在香港，我們積極地以節約用水來減少用水需求。要達到預期效果，我們須按部就班，推廣一系列與社區有密切關係的節約用水措施。通過節約用水，用水的需求及能源的耗用量也相應減低。

Water Conservation

In Hong Kong, we actively contain water demand through conservation. This is achieved through a series of community-related water conservation measures that are introduced in a phased manner. By reducing water demand and hence supply, the energy consumption can also be reduced.

節水產品

用水效益標籤計劃於二零零九年推出，旨在鼓勵消費者選用節水產品。計劃推行的首批節水產品是沐浴花灑，去年計劃延伸至水龍頭和洗衣機。在二零一一至一二年，尿廁將納入計劃之內。此外，我們又已委聘顧問，參考外地節水器具的規格，制定本港適用的標準，以應用在所有政府工程項目中，減少耗水量。

Water Saving Equipment

The Water Efficiency Labelling Scheme (WELS) was introduced in 2009 to encourage consumers to use appliances and equipment that conserve water. The scheme began with labels for water efficient shower heads and was extended last year to include labels for water efficient taps and washing machines. We plan to further extend WELS in 2011/12 to cover urinals. A consultancy study has been launched to review overseas standards on water saving devices and to develop technical standards for Hong Kong. These technical standards will apply to all government projects in a bid to reduce water consumption.

用水效益標籤有助消費者選擇節水器具。
Water Efficiency Labels can help consumers in selection of water-saving appliances.

呼籲大專生、物業管理公司及飲食業參與節約用水設計比賽。
Engaging the participation of college students, property management sector and catering services industry in Water Conservation Design Competition.

本署亦鼓勵私人發展商在新建或翻修的工程計劃中，優先使用節水器具和節約用水的設施。我們與香港綠色建築議會攜手，並參照建築環境評審法計劃，對包含節水特色的樓宇設計給予獎勵。與此同時，我們繼續為政府樓宇及學校的水喉潔具進行更新計劃，安裝節水設備。

公共宣傳

在未來數月，適逢香港供水服務160年，我們將籌辦一連串的宣傳活動，推廣節約用水。一套介紹各種節約用水好習慣的15分鐘宣傳短片已完成製作。另外，本署的網站也提升了功能，加入與節約用水相關的項目，以及世界各地缺水的資訊。

濾水廠開放日讓市民加深了解香港供水系統的運作。在公共交通工具上放影的宣傳資訊亦有助吸引乘客關注節約用水。

二零一零年九月，我們推出節約用水設計比賽，徵集大專學生別具創意的節約用水設計，及來自物業管理和飲食行業的良好用水措施。

Private developers are also being encouraged to give priority to the use of water saving devices and water conservation features in both new developments and renovation projects. Working with the Hong Kong Green Building Council, and in line with the Building Environmental Assessment Method Scheme, we award credits to designs that contain water saving features. We have also implemented our own programme of retrofitting plumbing fixtures with water saving devices in government buildings and schools.

Publicity Campaigns

We have prepared a range of publicity tools promoting water conservation messages to be launched over the coming months, coinciding with 160 years of public water supply in Hong Kong. A 15-minute video has been produced highlighting water saving habits and our website has been revamped with key conservation-related topics as well as information about water scarcity faced in countries around the world.

Open days at water treatment works continue to serve the purpose of educating people on the operation of Hong Kong's supply system. Promotional TV road shows broadcast on public transports have helped draw passengers' attention to water conservation.

In September 2010, we launched a Water Conservation Design Competition inviting creative designs from tertiary education institutes and good water conservation practices from the property management sector and the catering services industry.

水質事務諮詢委員會主席何建宗教授與保護水資源大使。
Prof HO Kin Chung, the chairman of ACQWS, and the Water Conservation Ambassadors.

學校教育

我們在全港小學進行了超過二百次「節約用水，從家開始」宣傳活動。活動旨在向學生宣揚節約用水，和協助他們養成節約用水的生活習慣。巡迴路演和展覽的焦點乃水循環、濾水過程和世界各地食水短缺情況。展示香港市民過去經歷制水之苦的紀錄片，有助年輕一代了解到香港食水得來不易。

超過400名小學生年內於節約用水方面表現優異，因而獲委任為保護水資源大使。當中50位學生更在二零一零年九月「世界水監測日」擔任記者，相關文章和圖畫已上載到本署網頁。此外，校園用水考察的先導計劃也在進行中，藉以鼓勵教師和學生努力在日常生活中節約用水，分享節水心得。

課程重點

我們相信，年青人可以把節約用水的觀念和良好措施有效地在他們家庭和身邊的群體傳揚開去。因此，我們將會繼續在學校推行宣

School Programmes

We have conducted over 200 promotional sessions at primary schools as part of our 'Water Conservation Starts from Home' school campaign. The campaign aims to impress students on the importance of water conservation, helping them to develop life-long water saving habits. Road shows and exhibitions focus on the water cycle, water treatment processes and the scarcity of water in many parts of the world. A documentary which illustrates water restrictions faced by Hong Kong people in the past has been produced to help young people understand that drinking water has not always been easily accessible in Hong Kong.

Of the over 400 primary school students named as Water Conservation Ambassadors for their successful water saving practices and influence during the year, 50 students served as reporters on the World Water Monitoring Day in September 2010. Their articles and drawings can be seen on our website. In addition, a pilot scheme involving school water audits is under way for encouraging teachers and students to work together to identify areas where water conservation measures can be applied and to make suggestions on appropriate water saving practices.

Curriculum Focus

We believe that young people can successfully convey conservation messages and good practices to families and others around them.

傳工作。我們將在二零一一年為中學教師和學生製備有關供水的教材套，作為通識科目的一部分。教材套包括的輔助教學的資料，能加深學生瞭解有關供水的問題、持續發展的重要、以及節約用水在香港經濟、環境和社會發展中所擔當的角色。

綠化環境

我們恆常地在集水區、水塘和濾水設施進行環境保護的改善工作。

美化地貌景觀

綠化水務設施的措施繼續擴展，我們在供水系統和水務設施附近種植了近五萬棵樹。保育原生樹和周詳的樹木管理是發展計劃的重點。

與此同時，在設計新裝置和改善現有裝置時，改善環境是一個須考慮的元素。食水配水庫上蓋鋪上表層土和草坪，並種植灌木。我們會研究能否透過綠化抽水站的混凝土上蓋，加強建築物的節能效果。

As a result, we continue to arrange many of our campaigns in schools. A key tool is a teaching kit on water supplies which will be issued in 2011 to secondary school teachers and students as part of Hong Kong's liberal studies curriculum. This kit contains supplementary teaching material that offers students an in-depth understanding of water supply issues, the importance of sustainability and the role water conservation plays in Hong Kong's economic, environmental and social progress.

Greening the Environment

Across catchments and around reservoirs and treatment facilities, we continue to implement a programme of environmental protection and enhancement.

Landscape Initiatives

We have extended our programme of greening waterworks infrastructure. We take care of almost 50 000 trees which have been planted in or around supply installations and waterworks facilities. Emphases have been placed on native trees and careful tree management.

At the same time, enhancement of the environment is a factor taken in the design of new installations and modification of existing installations. Rooftops of fresh water service reservoirs have been covered with top soil and planted with turf and shrubs. We are looking at the potential of greening the concrete roofs of pumping stations to enhance the energy performance of the buildings themselves.

到訪各間學校宣傳節水訊息。
To publicise the importance of water conservation in school visits.