

全年回顧 Year in Review

維護我們的環境 Sustaining Our Environment

把清洗蔬果的
水循環再用。
Save and reuse
water after
washing produce.





維護我們的環境 Sustaining Our Environment



設於欣澳海水抽水站的再生能源系統。
A renewable energy system is in use at Sunny Bay Salt Water Pumping Station.

水務署致力確保市民可持續地享用水資源。在供水運作上，我們意識到保護環境的需要，定必以香港社會以及我們的鄰近地區的利益為重。

環保目標

為達致環保目標，我們履行節約資源及可持續發展的政策。我們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，改善空氣排放；
- 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；
- 減少供水系統的滲漏；
- 減低建築工程對環境所造成的影響；
- 減少化驗室、工場和濾水廠的固體、液體及化學廢物；
- 減少排污量；並盡可能將洗盥污水處理，循環再用；
- 減少閒置機器的廢氣排放及抽水站的噪音。

The Water Supplies Department is committed to securing water resources for current and future generations in Hong Kong in a sustainable manner. Across our operations, we are aware of the need to protect the environment and so we are committed to operating in a manner that benefits the community of Hong Kong, as well as our regional neighbours.

Environmental Goals

Operationally we have established clear environmental goals that reflect our policies on conservation and sustainability. To this end, we commit to achieving the following objectives:

- enforce strict compliance with all environmental regulations across all aspects of our supply and demand chain;
- optimise the use of electricity and fuel consumption and limit air emissions;
- cut down the consumption of consumables in offices and the use of chemicals in water treatment;
- minimise water loss across the distribution system;
- minimise environmental impacts arising 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 grey water for reuse; and
- reduce idle engine emissions and noise from pumping operations.

本署在環境管理的卓越工作表現受到表揚，榮獲2009年香港環保卓越計劃的界別卓越獎。同時，本署在減少直接和間接廢氣排放量、探索綠色建築管理的新技術和發展可再生能源、保護自然資源，以及保存歷史水務建築方面做了大量工作，為綠色生命運動作出了巨大貢獻。

能源消耗

本署是香港電力的最大用戶之一。我們在積極推行節約能源措施之餘，更努力開發可再生能源。我們的耗電量持續下降。過去一年，總耗電量下降了0.6%。這有賴我們在辦公室採用節能設備、根據壽命週期成本原理購置資產，及使用能源效益較高的裝置。

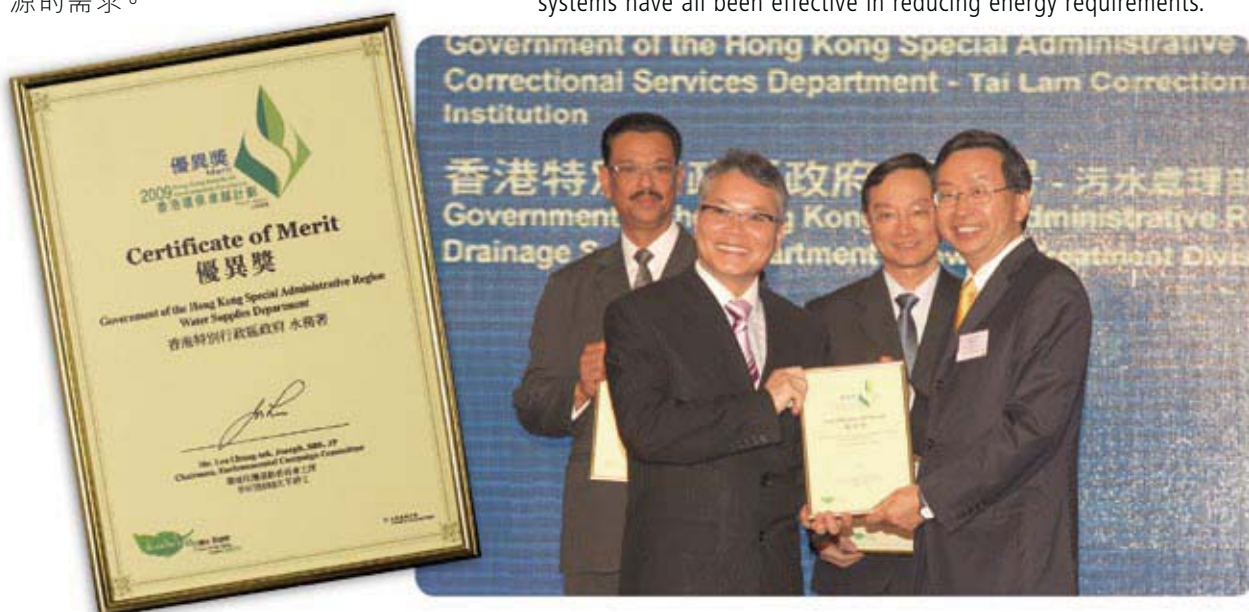
我們推行的節能措施包括：監測和審計用電量、實施以可靠性為中心的維修計劃，以及對濾水廠及水務設施的機組及裝置實施積極更換計劃。在供水系統中，我們採納減少滲漏的先進技術，包括水壓管理計劃、更換及修復水管計劃，以及強化滲漏監測管理。變速抽水、妥善編排抽水設施的運作、在線監控抽水設施等新技術，都有效地減少了對能源的需求。

Our achievements were recognised during the year with an award of the Certificate of Merit in the Sector Awards of the 2009 Hong Kong Awards for Environmental Excellence. We have also made a significant contribution to the Green Life Campaign by reducing direct and indirect emissions, exploring new technologies for green building management and developing renewable energy, conserving natural resources and preserving historic waterworks structures.

Energy Consumption

As one of the largest consumers of electricity in Hong Kong, we are aware of the need to continue reducing energy consumptions whilst developing renewable energy initiatives. We continue to reduce power consumption. Over the past year, the overall electricity consumption dropped by 0.6 per cent. This is primarily as a result of green housekeeping in offices, the procurement of assets based on life-cycle costing and the use of energy efficient equipment.

Our ongoing measures include monitoring and auditing of electricity use, adopting reliability-centred maintenance schemes and implementing a proactive replacement programme for plant and installations. We have been pursuing new initiatives to reduce water loss in distribution system including implementation of pressure management schemes, rehabilitation and replacement of aged mains and enhancement in leakage detection management. Latest technology involving variable speed pumping, intelligent scheduling of pump operations, online monitoring and control of pumping systems have all been effective in reducing energy requirements.



本署獲頒2009年香港環保卓越計劃的界別卓越獎。

The Department was awarded the Certificate of Merit in the Sector Awards of the 2009 Hong Kong Awards for Environmental Excellence.



屯門濾水廠水力發電設施的設計模型。
The design model of a hydro-electricity plant to be installed at Tuen Mun Water Treatment Works.

可再生能源措施

我們不斷探討及引進海內外的再生能源技術。欣澳海水抽水站已建造了聯網太陽能及風力混合發電機組，配備2.5千瓦的風力渦輪發電機和八個1.5千瓦的追日太陽能板。在二零零九年十一月建成後，首五個月發電量為5 480千瓦時；大約相當於一個同樣等級的抽水站6%的用電量。本署預計，此發電機組聯同其他20個已投入使用的發電機組，能有效減少每年燃燒化石燃料時，釋放的二氧化碳達21.8噸之多。

此外，屯門濾水廠裝置的水力發電設施的設計已經完成。作為香港第一個相類工程，這個裝置每年可貢獻1 500兆瓦時的環保電量。我們還計劃在分別位於馬己仙峽道和渣甸山的海水和食水配水庫，試行總功率為1千瓦的微型水力發電機，為配水庫內的電力裝置直接供電。此外，本署與香港理工大學合作，設計了液壓驅動裝置，能為供水網絡的監測和控制設備提供數十瓦特的電源動力。

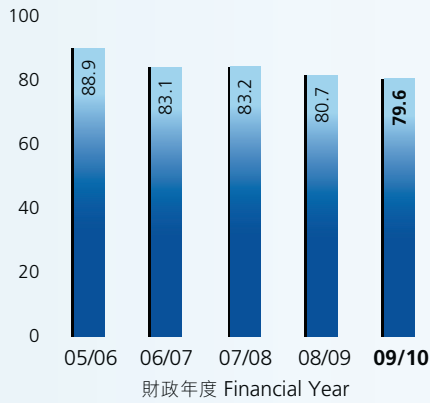
Renewable Energy Initiatives

We are mindful of the developments in renewable energy technologies, both in Hong Kong and internationally, and their adoption in the Department. A grid-connected solar-wind power hybrid system including a 2.5 kilowatt wind turbine generator and eight 1.5 kilowatt sun-tracking photovoltaic panels has been installed at Sunny Bay Salt Water Pumping Station. Commissioned in November 2009, the system generated 5 480 kilowatt-hour of electricity in its first five months of operations. This is roughly equivalent to some 6 per cent of the electricity normally used at a pumping station of this size. We have estimated that this installation, along with 20 others already in use across the system, effectively reduces CO₂ emissions produced by burning fossil fuels for electricity generation by 21.8 tonnes a year.

In addition, we have completed the design of a hydro-electricity plant to be installed at the Tuen Mun Water Treatment Works. This plant, the first of its kind to be built in Hong Kong, is expected to produce 1 500 megawatt-hour of green energy annually. Besides, we are planning to conduct trials of installing micro-hydropower generators of power output about 1 kilowatt at the outlet of a salt water service reservoir and a fresh water service reservoir at Magazine Gap Road and Jardine's Lookout respectively. The power generated by these micro generators will be used at the service reservoir by the electrical and instrumentation equipment installed. Furthermore, we have engaged the Hong Kong Polytechnic University to design a hydraulic power harness device that can generate several tens of watts to support monitoring and control devices in use across the water distribution network.

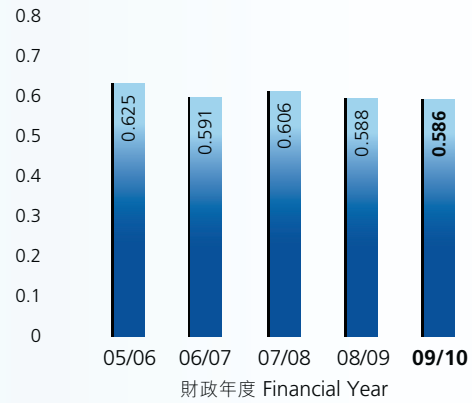
人均耗電量（食水及原水）*
Per Capita Electricity Consumption
(Fresh Water and Raw Water) *

千瓦時／每人／每年 kWh/head/year



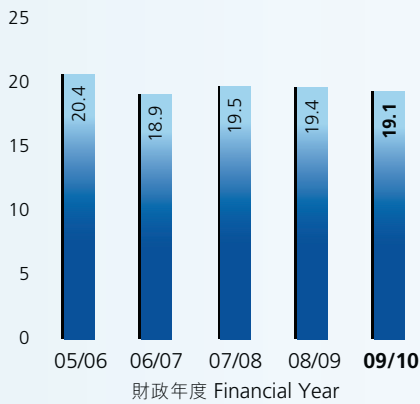
每單位耗電量（食水及原水）
Unit Electricity Consumption
(Fresh Water and Raw Water)

千瓦時／立方米 kWh/m³



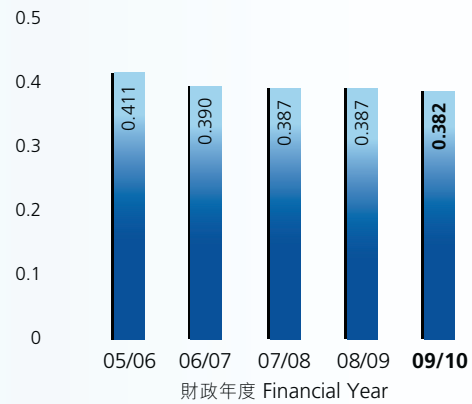
人均耗電量（海水）*
Per Capita Electricity Consumption (Sea Water)*

千瓦時／每人／每年 kWh/head/year



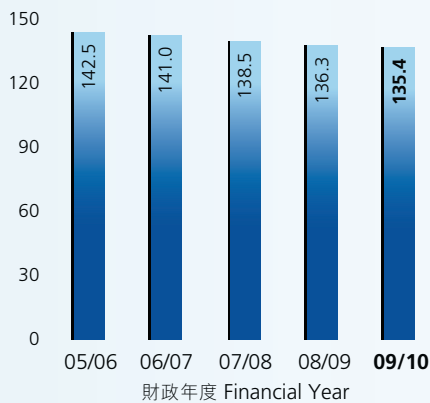
每單位耗電量（海水）
Unit Electricity Consumption (Sea Water)

千瓦時／立方米 kWh/m³



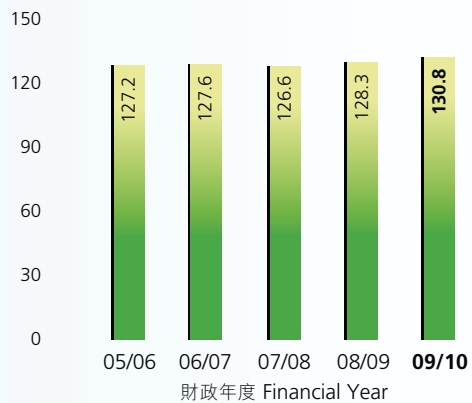
辦公室每單位樓面面積的耗電量
Office Electricity Consumption Per Unit Floor Space

千瓦時／平方米 kWh/m²

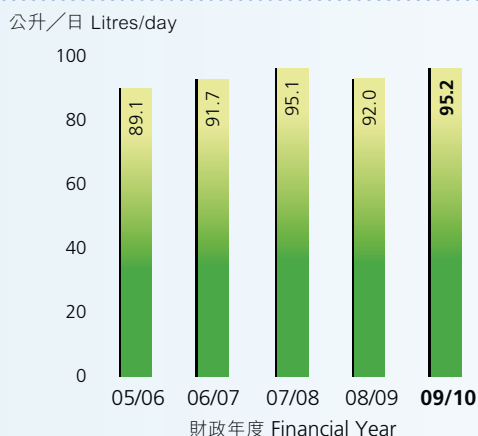


人均住宅食水耗用量*
Per Capita Domestic Fresh Water Consumption *

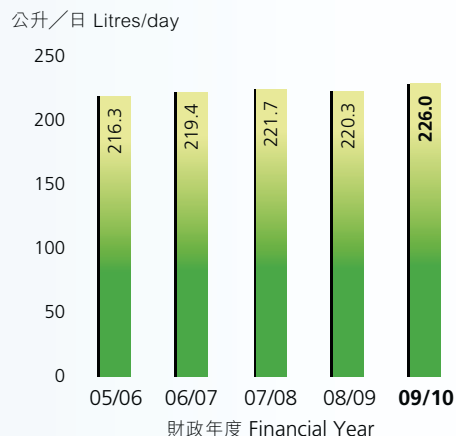
公升／日 Litres/day



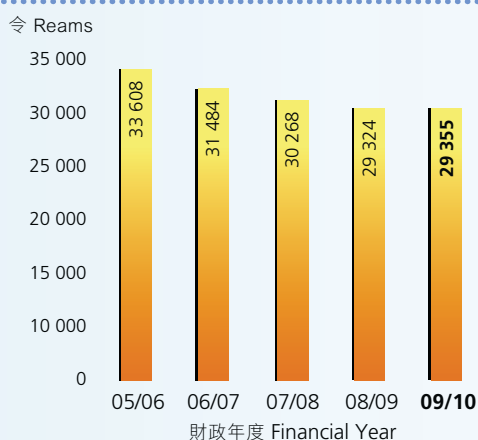
人均沖廁水耗用量 (食水及海水) *
Per Capita Flushing Water Consumption
(Fresh Water & Sea Water)*



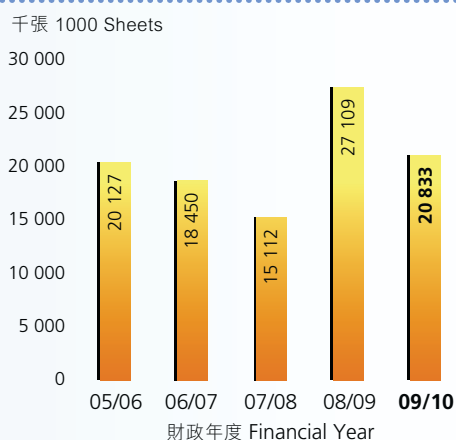
總人均耗水量 (住宅及沖廁) *
Total Per Capita Water Consumption
(Domestic & Flushing) *



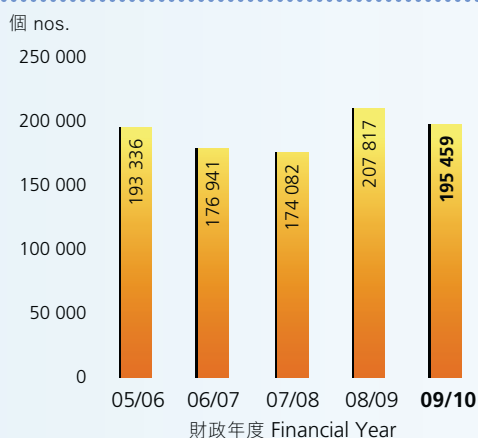
耗紙量
Paper Consumption



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



信封用量
Envelopes Consumption



附註:

* 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修訂。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。

Note:

* 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.

履行《清新空氣約章》

本署嚴格履行《清新空氣約章》，並大量降低全港濾水廠和抽水站的廢氣排放。同時，本署盡量減少使用城市網絡內的電力，及開發替代能源，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廢氣排放量。車輛的使用量受嚴密監察，並逐步以液化石油氣車取代柴油車，減少耗油量。透過以液化石油氣替代柴油，本署車隊每公里廢氣排放量已經減少。長遠而言，本署將把電動車列入我們的車隊。

Clean Air Charter Commitments

We take Hong Kong's Clean Air Charter seriously and have significantly improved emission levels at all water treatment works and pumping stations in Hong Kong. At the same time, by limiting, where possible, our use of electricity from the city grid and through the development of alternative 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 by strictly controlling the use of vehicles and constantly replacing petrol driven vehicles with hybrid cars to reduce fuel consumption. By replacing diesel fuel with LPG, our transport fleet has reduced its emissions on a kilometric basis. In the long term, we hope to include electric cars in our future fleets.



本署正試行使用電動電單車，並廣泛使用歐盟四型水車及混燃車。
The Department is experimenting with electric motorcycles and widely using Euro IV water wagons and hybrid vehicles.

愛護環境

在批出設計和建造各項設施的合約時，我們會考慮到投標書在切實可行的範圍內，其設計元素、選材和工作流程，是否已顧及並盡量減低對環境造成的影響。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。

本署在內部亦致力培育愛護環境的文化及意識。這種文化已在我們日常業務的所有層面上反映出來，電子方式的溝通和文件編撰已在辦公室推行，濾水廠的運作亦經已電子化，辦公室和濾水廠之間的文書通訊大多由電子通訊所替代。精密的資料記錄儀和其他電子設備都確保了一個可靠、方便使用和無紙化資訊系統。

Environmental Friendliness

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

Internally, our culture of environmental care and awareness is reflected in our day-to-day business from electronic communications and documentation in offices through to aspects of operations within the water treatment works. Electronic communication has replaced much of the paper work communication between offices and water treatment works. Sophisticated data loggers and other electronic devices have resulted in an information system that is reliable, easily accessible and paperless.



鳥瞰大潭篤水塘主壩，風景如畫。
An aerial view of the scenic Tai Tam Tuk Reservoir Main Dam.



讓大眾認識香港供水發展歷史。
Promoting the history of Hong Kong's water supply system.

保育歷史建築

我們的供水系統已有接近160年歷史，在多方面見證了香港演變為國際大都會的歷程。許多舊有的供水系統至今仍屹立不搖，大多還在繼續運作。二零零九年九月，古物事務監督宣布把41項水務設施構築，包括水壩、記錄儀器房、輸水道和石橋等列為法定古蹟。名為《百載·流傳》的紀念特刊標誌了每座設施的結構特式和歷史意義。我們又製作了導賞地圖，讓市民和遊客在遊覽郊野公園徑，欣賞這些歷史建築物時，有更深刻的體會。

Preserving Historic Sites

Our water supply system of almost 160 years of age in many ways reflects the evolution of Hong Kong as an international city. A number of original waterworks structures still stand today and many of them remain operational. In September 2009, the Antiquities Authority declared 41 of these structures ranging from dams, recorder houses, aqueducts and bridges, as historic monuments. A book, *Stream of Memories*, has been produced, identifying each structure and its role in history. A separate guide map has also been published and is used by both local people and visitors alike. The majority of the structures are located in country parks close to designated walking trails and they are proving an additional attraction to hikers.



與公眾攜手合作

我們致力和公眾建立伙伴關係，務求達成可持續地運用水資源的目標。我們期望與市民攜手合作，在香港發展一種新文化：讓我們明智地、可持續地運用珍貴的水資源。我們設計教材套，把節約用水的資訊融入學校課程。此外，通過節水比賽和大使計劃，約450位學生獲選拔為保護水資源大使。他們將成為榜樣，推動朋輩和家庭成員珍惜食水，從而令節約用水的信息在社區間廣傳。

我們製作電視記錄片及網頁，向公眾介紹節約用水的方法，以及有關世界各地水資源匱乏的資訊。透過用水效益標籤計劃的宣傳刊物，讓消費者瞭解水管裝置及器具的耗水量及用水效益。

除此以外，本署將繼續預測每年的水需求和供應量。我們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。通過分析這些資料，可讓我們更認清香港用水需求的變化。



同學們實地考察和分析校園的耗水量。
Students analyse water consumption on school campus.

Partnership with the Public

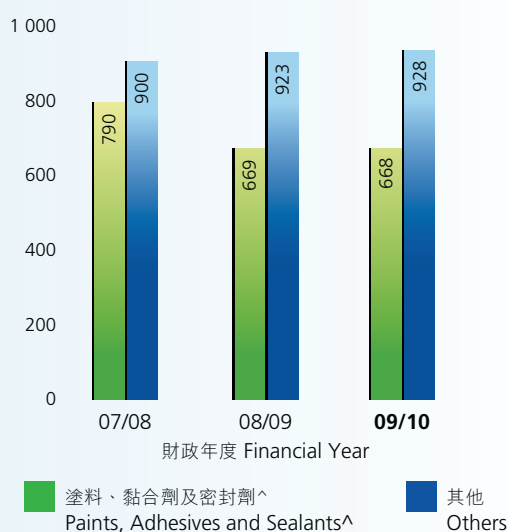
We are committed to partnership with the public in terms of environmentally conscious water management policies. High on this list is the development of a new culture of using water resources wisely and in a sustainable manner. We have targeted, in particular, young people through educational packages that are integrated into their school curriculum. Conservation competitions and ambassador programmes have already resulted in about 450 children being named water conservation ambassadors. We are confident that strong conservation messages pass quickly from children to other family members and through to the community.

Television documentaries and web sites have been launched introducing to the public key topics on water conservation, as well as information about water scarcity across the world. Publicity associated with the Water Efficiency Labelling Scheme informs consumers about levels of water consumption and the efficiency of plumbing fixtures and appliances.

Besides, the Department will continue to produce annual forecasts of water demand and supply. We monitor the impacts of climate change on our environment and develop records based on population growth and socio-economic activities. Analysing this data helps us better identify changes in Hong Kong's water needs profile.

室內工作所需揮發性有機化合物耗用量 VOC Consumption for In-house Work

公斤 kg



[^] 黏合劑及密封劑耗用量於二零零七／零八年度並無量度。
[^] Adhesives and sealants were not measured in 2007/08.



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)		
	07/08	08/09	09/10	07/08	08/09	09/10	07/08	08/09	09/10
	柴油 Diesel	22	23	23	50 118	46 906	38 464	215 033	201 252
汽油 Petroleum	216	227	206	592 347	599 890	534 765	3 185 123	3 225 682	2 813 529
液化石油氣 LPG	6	6	6	30 309	30 965	28 326	91 310	93 286	81 221

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		
	07/08	08/09	09/10	07/08	08/09	09/10	07/08	08/09	09/10	07/08	08/09	09/10
直接廢氣排放 Direct Emissions												
公務用車 (柴油) Vehicle fleet (Diesel)	131	123	100	-	-	-	1	1	1	-	-	-
公務用車 (汽油) Vehicle fleet (Petrol)	1 398	1 416	1 384	-	-	-	1	1	1	-	-	-
公務用車 (液化石油氣) Vehicle fleet (LPG)	51	52	47	-	-	-	-	-	-	-	-	-
間接廢氣排放 Indirect Emissions												
耗用電 (九龍及新界) Electricity Consumed (Kowloon and New Territories)	355 725	330 023	340 733	644	443	514	560	440	452	28	23	26
耗用電 (港島) Electricity Consumed (Hong Kong Island)	55 126	55 834	48 782	154	160	140	87	88	77	3	4	3
總量Total	412 431	387 448	391 046	798	603	654	649	530	531	31	27	29