

可持續運作

Sustainable Operations

經驗及準確理解供水所需的條件是我們維持可持續運作的重要元素。

本署致力：

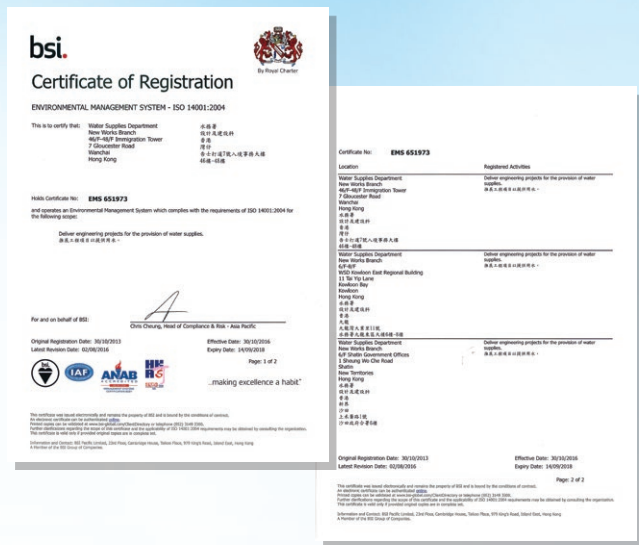
- 嚴格遵守環保規例
- 善用能源和燃料
- 限制氣體排放
- 盡量減少消耗辦公室用品
- 盡量減少在處理食水過程中使用化學品
- 盡量減少供水系統的用水流失量
- 盡量減少建築工程對環境造成的影響
- 減少化驗室、工場和濾水廠的固體、液體及化學廢物
- 盡量減少排放污水，並盡可能循環再用污水
- 減少抽水站發出的噪音
- 提倡安裝綠化屋頂
- 提倡使用再造紙
- 發展可再生能源

Experience and a precise understanding of what is required in terms of viable water supplies are key elements that enable us to operate in a sustainable manner.

WSD is committed to:

- Working in strict compliance with environmental regulations
- Optimising the use of energy and fuel consumption
- Limiting gaseous emissions
- Minimising the consumption of glossary items in offices
- Minimising the use of chemicals in the water treatment process
- Minimising water loss across the distribution system
- Minimising environmental impacts that can arise from construction work
- Reducing the quantities of solid, liquid and chemical wastes generated by our laboratories, workshops and treatment works
- Minimising the discharge of effluent and where possible recycle effluent
- Reducing noise generated from pumping stations
- Encouraging the establishment of green roofs
- Encouraging the use of recycled paper
- Developing renewable energy





使用及節約能源

作為全港其中一個最大的耗電用戶，本署在制定可行的再生能源計劃時，已推行多項措施減少消耗能源。

ISO 50001 能源管理系統

我們在二零一四年十二月獲得ISO 50001 能源管理系統認證。這標誌着一個重要的節能里程碑，見證我們在香港特別行政區整個供水鏈，包括集水、儲水、運水、濾水、分配水源及食水和海水供應方面所作的努力。我們是首個獲得此項認證的香港政府部門。我們會繼續推進多個正在實施的能源管理計劃，務求達致節能目標。舉例來說，我們把環氧樹脂塗料應用於第三批水泵外殼，令幾乎所有水泵的抽水效率均有所提高。

政府建築物的碳管理

本署將在長沙灣辦事處、龍翔道工場、九龍灣辦事處、旺角辦事處和港島及離島分署等五個每年用電量超過50萬千瓦時的水務署大樓進行碳審計，以制訂和實施相應的碳排放措施。

Energy Use and Savings

Being one of the largest electricity consumers in Hong Kong, the Department has been putting in place a myriad of measures to reduce its energy consumption while developing viable renewable energy initiatives.

ISO 50001 Energy Management System

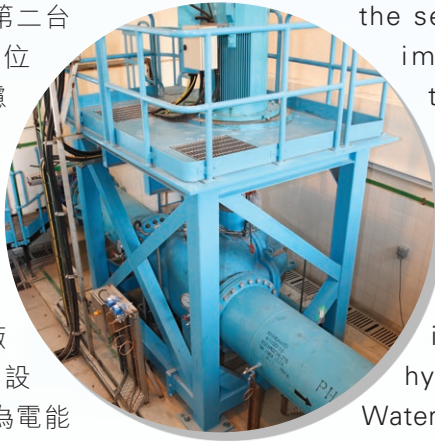
The award of the ISO50001 Energy Management System certification in December 2014 marked an important milestone for WSD's energy conservation efforts over the whole water supply chain including the collection, storage, transfer, treatment, distribution and supply of fresh water and sea water within the Hong Kong SAR. WSD was the first Government Department in Hong Kong to have received the certificate. We have continued to apply a host of on-going energy management programmes to help achieve our energy saving objectives and targets. As an example, ceramic epoxy coating was applied to the third batch of pump casings and the efficiency of nearly all such pumps had found to be improved after then.

Carbon Management in Government Buildings

The Department will conduct carbon audit in five WSD buildings, namely Cheung Sha Wan Office, Lung Cheung Road Workshop, Kowloon Bay Office, Mong Kok Office, and Hong Kong and Islands Regional Office, with annual electricity consumption over 500,000 kWh with a view to mapping out and implementing the corresponding carbon measures.

水力發電站

我們已於二零一七年二月成功為屯門濾水廠第二期工程安裝第二台水力發電機，把水流的位能轉化為電能，為屯門濾水廠的運作提供電力。此外，我們亦會在二零一九年或之前在沙田濾水廠重置工程中安裝另一個水力發電站。我們也已展開在馬鞍山濾水廠的入水口安裝水力發電設施，把水流的能量轉化為電能的可行性研究。



Hydropower Generation Plant

Phase II of the Tuen Mun Hydropower project to install the second generator at the site was successfully implemented in February 2017 to harvest the potential energy of flowing water into electrical power for operation of Tuen Mun Water Treatment Works. Moreover, another hydropower plant in the reprovisioning project of Sha Tin Water Treatment Works will be installed by 2019. A planning study has been initiated to investigate the feasibility of applying hydropower facilities at the inlet of Ma On Shan Water Treatment Works for harvesting electricity from the water inflow.

內聯閉式水力發電裝置

兩個適用於250毫米口徑水管的發電裝置原型已通過嚴格的操作測試。這些發電裝置將會為本署九龍區智管網水壓管理區／監測區域的裝置提供電力，以實時監測該區域，管理供水水壓及檢測區域內水管是否存在滲漏。

In-line Hydropower Harnessing Devices

Two in-line hydropower harnessing devices prototypes suitable for use in the 250mm diameter pipes have passed vigorous running tests. The units will be deployed to power the instruments in the pressure management areas (PMA)/district metering areas (DMA) of the WSD's Water Intelligent Network at Kowloon Region, for real-time monitoring of the PMA/DMA in order to manage water supply pressure and detect water leakage in the pipework in the PMA/DMA.



內聯閉式水力發電系統的模型。
The model of inline hydroelectric generating system in confined condition.

實行變速抽水

實行變速抽水是改善現有及新建抽水站抽水效率的其中一項重要措施。除了在華富海水抽水站進行的試驗計劃之外，本署亦計劃在龍鼓上灘食水泵房的提升工程和小西灣海水抽水站等新建設備採用類似設計。

Implementation of Variable Speed Pumping

Variable speed pump operation is one of the key initiatives that can improve the pumping efficiency for both existing and new pumping stations. In addition to the pilot scheme at Wah Fu Salt Water Pumping Station, a similar design has been adopted for uprating of Lung Kwu Sheung Tan Fresh Water Pump House and new installations such as Siu Sai Wan Salt Water Pumping Station.

在水塘鋪設浮動太陽能板發電系統

在石壁水塘的首個具約100千瓦容量的試驗浮動太陽能板發電系統已於二零一七年二月竣工。在船灣淡水湖建造容量相若的試驗浮動太陽能板發電系統工程也正在進行，預計於二零一七年十月完成。除了發電外，浮動太陽能發電系統還有助減少水塘的水份蒸發，抑制藻類生長，提高水質。這些試驗項目有助我們評估浮動太陽能板發電系統的技術性能、可能出現的環境問題及公眾的反應。就此，我們已委託顧問就大規模在香港水塘安裝浮動太陽能板發電系統進行可行性研究、評估試驗系統並將其表現與海外設施的表現作比較，以及制訂長遠的公眾參與計劃和項目實施策略。

嶄新技術和設備

熱成像安全監測系統

熱成像安全監測系統試驗項目已在北港濾水廠成功推行，我們希望在沙田濾水廠(南廠)項目等其他設施應用該系統。該系統有助減少水務設施內保安和區域照明裝置的耗電量，同時盡量減輕光污染對附近居民的滋擾。

Floating Solar Power Systems at Impounding Reservoirs

The first pilot floating solar system of about 100kW capacity at Shek Pik Reservoir was completed in February 2017. Another pilot with similar capacity at Plover Cove Reservoir is under construction for completion by October 2017. In addition to power generation, the floating solar system will also help reduce water evaporation of reservoirs and improve water quality by inhibiting algae growth. These pilot projects will enable the evaluation of the technical performance of the floating PV power systems, as well as the potential environmental issues and public reaction. In this connection, we have commissioned a consultant to conduct a feasibility study on the large scale implementation of floating PV solar systems in Hong Kong reservoirs, evaluate the pilot systems, benchmark their performance with overseas installations and work out a long-term public engagement and project implementation strategies.

New Technology and Equipment

Thermal Vision-based Security Surveillance System

With the successful implementation of the pilot thermal vision-based security surveillance system at Pak Kong Water Treatment Works, we are looking to apply this system at other installations such as the Sha Tin Water Treatment Works (South Works) project. The system reduces electrical consumption of the security and area lighting of waterworks installations as well as helps minimise the nuisance of light pollution to residents living nearby.

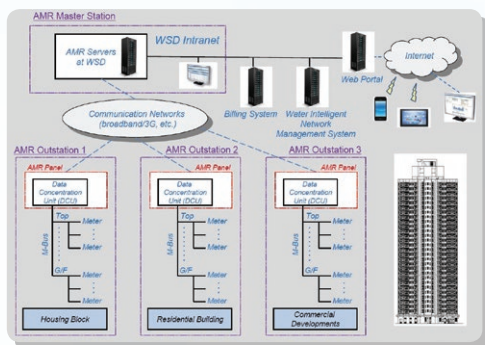


在屯門濾水廠安裝的水力發電機，把水流的位能轉化為電能，為屯門濾水廠的運作提供電力。

The hydropower generator installed in Tuen Mun Water Treatment Works enable harvesting of the potential energy of flowing water into electrical power for operation of the water treatment works.

推行自動讀錶，發展智慧城市

為配合政府發展智慧城市的計劃，我們其中一項的智能水務措施就是在東九龍及安達臣道石礦場用地發展區推行自動讀錶系統計劃。由二零一八／一九年度起，我們會逐步為這些發展區的新建私人及公共發展項目，分階段安裝約55,000個智能水錶。截至二零一七年二月，九龍東有六個私人發展項目和八個公共發展項目已納入安裝智能自動讀錶系統的規劃內。智能自動讀錶系統除了讓用戶遙距讀錶外，還可向用戶提供適時的用水數據和相關的資訊，以提升用戶節約用水的意識。



自動讀錶系統示意圖。

Schematic diagram of the Automatic Meter Reading System.

Automatic Meter Reading for Smart City

To support the Government's initiative to forge smart cities, a large scale Automatic Meter Reading (AMR) project will be implemented at the Development of Kowloon East and Anderson Road Quarry Development Site as one of our smart water initiatives. New private and public developments at these development areas will be installed with around 55,000 smart water meters progressively starting from 2018/19. As of February 2017, there are six projects in private sector and eight projects in public sector at Kowloon East being planned to install AMR system. In addition to remote reading of water meters, the AMR system can provide timely water consumption data and related information to customers to raise their awareness about water conservation.

可持續發展

騰出分區辦事處用地，善用土地資源造福社群

我們將搬遷位於旺角洗衣街的新界西分區辦事處，以騰出土地作其他有利用途。為此，該分區辦事處將遷往天水圍。新分區辦事處樓宇的建築工程已於二零一五年八月動工，預計於二零一七年年年底竣工。建築工程正如期進行，上層建築工程現亦正全力展開。該搬遷將改善新界西分區的運作效率及水務設施的維修保養工作。

Sustainable Development

Releasing a Regional Office to Optimise Land Use for the Public's Benefit

Our New Territories West (NTW) Regional Office at Sai Yee Street, Mong Kok will be relocated to release the site for other beneficial uses. To this end, the Regional Office will be relocated to Tin Shui Wai. The construction works for the new Regional Office building began in August 2015 with completion slated for end 2017. The progress of the construction is on schedule with superstructure works now in full swing. The relocation will enhance operational efficiency and maintenance of waterworks facilities in the NTW Region.



新界西新分區辦事處
New Territories West New Regional Office

將水務設施遷往岩洞

為配合政府增加土地供應的政策，發展岩洞是滿足社會發展需要的可行方法。政府已提出方案搬遷現有設施至岩洞，從而騰出土地作房屋或其他用途，以滿足本港長遠的社會及經濟需要。鑽石山食水配水庫及鑽石山海水配水庫已確定適合搬遷至岩洞。擬議搬遷項目的可行性研究預計將於二零一七年年中完成。土地在騰出後的建議用途主要是提供房屋，以滿足社區需要，以及提供政府、機構或社區所需設施及休憩空間，以造福當地社群。

除該搬遷建議外，水務署亦正聯同有關部門，確定其他不但適宜遷往岩洞而且該搬遷具成本效益的配水庫。

延伸海水供應系統，節約寶貴食水

華貴邨和嘉隆苑的海水供應現已投入運作，而在薄扶林區將沖廁水由食水轉為海水的工程仍進行得如火如荼。

新界西北部(包括屯門東、元朗及天水圍)的新供水核心系統已於二零一五年竣工。將沖廁水由食水轉為海水的工程已於二零一六至一七年度完成。元朗屋邨的改建工程目前正在進行中，而元朗工業邨的工程將會隨後展開。

此外，東涌的新海水供應項目現處於設計階段。

Caverning of Waterworks Installations

In line with the Government's policy of increasing land supply, rock cavern expansion is a practical approach for meeting the developmental needs of our society. The Government has initiated proposals to relocate existing facilities to caverns so that the released sites can be used for housing or other uses to meet Hong Kong's long-term social and economic needs. Diamond Hill Fresh Water Service Reservoir and Diamond Hill Salt Water Service Reservoir were identified as suitable facilities for relocation to caverns. The feasibility study for the proposed relocation project is anticipated to be completed by mid-2017. The proposed land uses of the released site focus on the provision of housing in meeting the community demand and the needed facilities comprising Government, institution or community facilities and open space in serving the local community.

In addition to this relocation proposal, WSD is also working with relevant departments to identify other potential service reservoirs that may be feasible and economically viable for relocation to caverns.

Extending the Salt Water Supply System to Save Precious Fresh Water

Salt water delivery to Wah Kwai Estate and Ka Lung Court is now in operation and the conversion to salt water for flushing in Pok Fu Lam continues apace.

The new core system for water supply to the North West New Territories, serving Tuen Mun East, Yuen Long and Tin Shui Wai was completed in 2015. The conversion of flushing water supply into salt water was completed in 2016-17. Conversion works for housing estates in Yuen Long are currently in progress and the works for Yuen Long Industrial Estate will follow afterwards.

Moreover, a new salt water supply system for Tung Chung is currently in the design stage.

樹木管理及樹木風險評估

本署一向貢獻己力，努力令我們的城市變得更綠意盎然，保持水務設施及斜坡內的景觀生機處處、永續欣榮，以維持環境的原生態。為此，我們會繼續實施全面的樹木風險評估和管理計劃，確保該些存在結構或健康問題的樹木能得以識別，以及時採取減低相關風險的措施，並對有問題的樹木進行定期監測和檢查。倘若當前並無有效措施將樹木風險降至可接受水平，最後一著則只能移除樹木，並另外種植樹木，彌補景觀損失。在可行情況下，我們會對現有樹木加以保育保護，選擇及種植能保護生態和節約用水的本土樹木，並進行不同主題種植，美化景觀。



Tree Management and Tree Risk Assessment

We have long contributed towards making our city greener as well as maintaining healthy and sustainable landscape within WSD's installations and slopes, to maintain a pristine environment. To this end, we have continued to implement a comprehensive tree risk assessment and management scheme to ensure that trees with structural or health problems are identified for timely risk mitigation procedures and undergoing regular monitoring and inspections. In cases where no effective measures are present to reduce tree risks to an acceptable level, tree removal is the last resort and replacement tree planting is undertaken to compensate for the landscape loss. Where practical, we incorporate existing tree preservation and protection, select and plant native species for ecological conservation and water saving, and carry out thematic planting to enhance the landscape.

關注環境

本署的抱負是致力滿足客戶對優質供水服務的需求，務求每天取得卓越表現。作為以上承諾的一部分，我們願意承擔對維持環境清潔應負的責任。為此，本署的設計及建設科肩負重任，力求確保在水務規劃、設計及建設方面，把建築工程對環境造成的影響降至最低。自二零一三年年初至今，設計及建設科一直奉行嚴格規程，作為按照ISO 14001所制訂環境管理體系的一部分。環境管理體系要求：「為已規劃及新增的工程項目、發展項目、產品及服務提供供水服務時，妥善做好環境管理工作」。於二零一三年十月，設計及建設科獲頒ISO 14001: 2004環境管理體系標準認證，此認證適用於供水工程項目交付。其後本署制訂多項環境管理計劃，並每年進行檢討，以利環境目標得以實現。

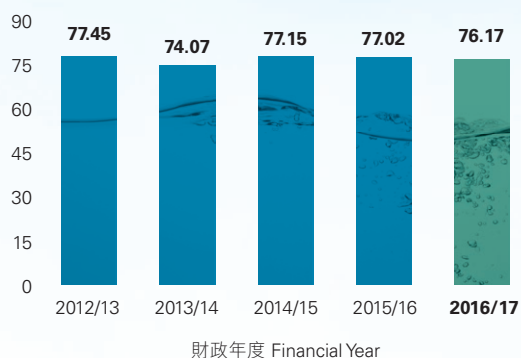
Environmental Focus

The vision of the Department is to excel each day in satisfying the need to provide quality water supply services to our customers. As part of that commitment, we fully appreciate the responsibilities we have in maintaining a clean environment. For this reason, the New Works Branch of the Department is tasked to ensure that all impacts to the environment that can arise from construction works are minimised in planning, designing and building waterworks. Since early 2013, the New Works Branch has followed a strict protocol as part of the Environmental Management System (EMS) in accordance with ISO Standard 14001. The EMS mandate is: "Environmental management while providing water supply services from planned and new engineering projects, developments, products and services". In October of 2013, the New Works Branch obtained ISO14001: 2004 Environmental Management System Standards certification applicable to the delivery of engineering projects for the provision of water supplies. A host of environmental management programmes have subsequently been developed and reviewed annually to assist in achieving our environmental objectives and targets.

人均耗電量(食水及原水)

Per Capita Electricity Consumption (Fresh Water and Raw Water)

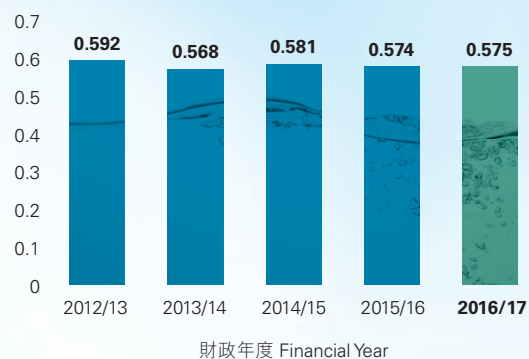
千瓦時/每人/每年 kWh/head/year



每單位耗電量(食水及原水)

Unit Electricity Consumption (Fresh Water and Raw Water)

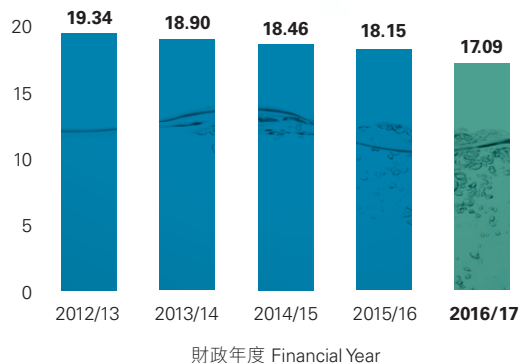
千瓦時/立方米 kWh/m³



人均耗電量(海水)

Per Capita Electricity Consumption (Sea Water)

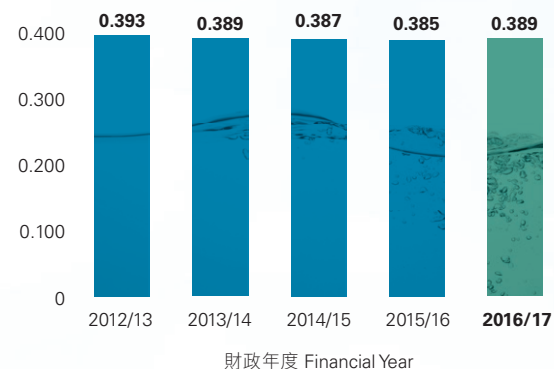
千瓦時/每人/每年 kWh/head/year



每單位耗電量(海水)

Unit Electricity Consumption (Sea Water)

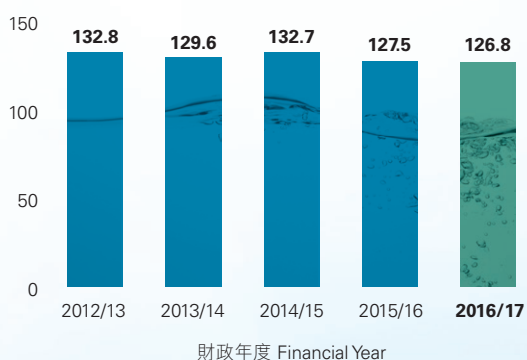
千瓦時/立方米 kWh/m³



辦公室每單位樓面面積的耗電量

Office Electricity Consumption Per Unit Floor Space

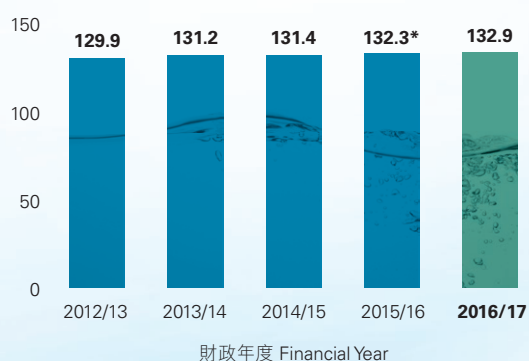
千瓦時/平方米 kWh/m²



人均住宅食水耗用量

Per Capita Domestic Fresh Water Consumption

公升/日 Litres/day

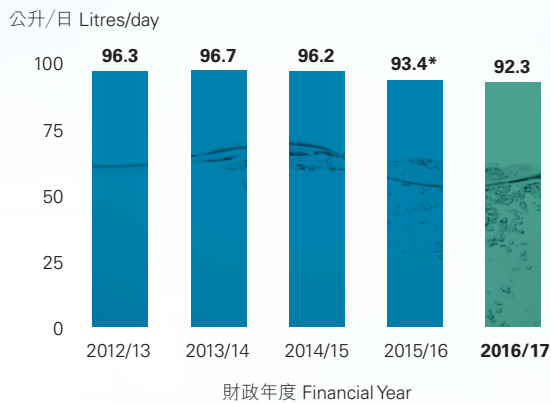


* 2015/16年度的數字經檢討後作出修訂。

* The figure in 2015-16 is restated following a review.

人均沖廁水耗用量(食水及海水)

Per Capita Flushing Water Consumption (Fresh Water & Sea Water)



註：人均沖廁水耗用量(食水及海水)是根據本港的沖廁用水總量計算而得。

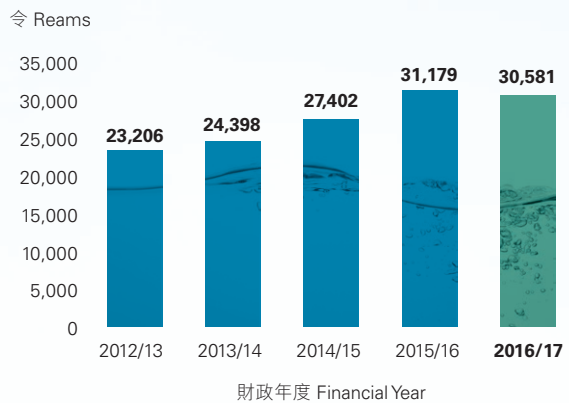
* 2015/16年度的數字經檢討後作出修訂。

Note: Per Capita Flushing Water Consumption (Fresh Water & Sea Water) is based on the total flushing water consumption in Hong Kong.

* The figure in 2015-16 is restated following a review.

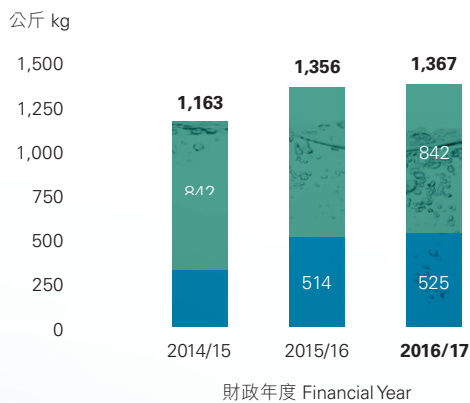
耗紙量

Paper Consumption



內部工作所需揮發性有機化合物耗用量

VOC Consumption for In-house Work

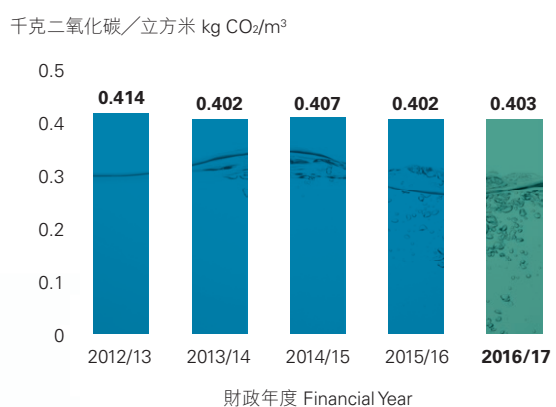


塗料、黏合劑及密封劑 Paints, Adhesives and Sealants

其他 Others

水務署因使用電力處理食水而出現的溫室氣體排放

GHG Emissions due to Electricity Used for Fresh Water Processing by WSD



公用集調車輛資料

Information on Vehicle Pool Transport

財政年度 Financial Year	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)		
	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17
柴油 Diesel	16	19	28	18,581	23,386	34,554	85,058	117,327	163,522
汽油 Petroleum	186	181	163	534,440	497,598	511,092	2,641,642	2,287,717	2,424,315
混合(汽油／電力) Hybrid (Petrol/Electric)	18	18	16	14,920	12,435	11,678	239,631	204,159	189,569
液化石油氣 LPG	13	13	11	53,802	57,218	55,940	157,962	165,590	160,744
電力 Electricity	13	15	20	—	—	—	82,740	97,188	101,237

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		
財政年度 Financial Year	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17	14/15	15/16	16/17
直接廢氣排放 Direct Emissions												
公務用車(柴油) Vehicle fleet (Diesel)	48	55	82	—	—	—	—	1	1	—	—	—
公務用車(汽油) Vehicle fleet (Petrol)	1,216	1,114	1,129	—	—	—	1	1	1	—	—	—
公務用車(液化石油氣) Vehicle fleet (LPG)	88	85	93	—	—	—	—	—	—	—	—	—
間接廢氣排放 Indirect Emissions												
耗用電(九龍及新界) Electricity Consumed (Kowloon and New Territories)	391,276	332,732	320,938	250	78	91	482	313	293	15	7	6
耗用電(港島) Electricity Consumed (Hong Kong Island)	51,587	50,737	50,886	17	18	16	56	52	52	1	1	1
總量 Total	444,215	384,723	373,128	267	96	107	539	366	346	16	8	8