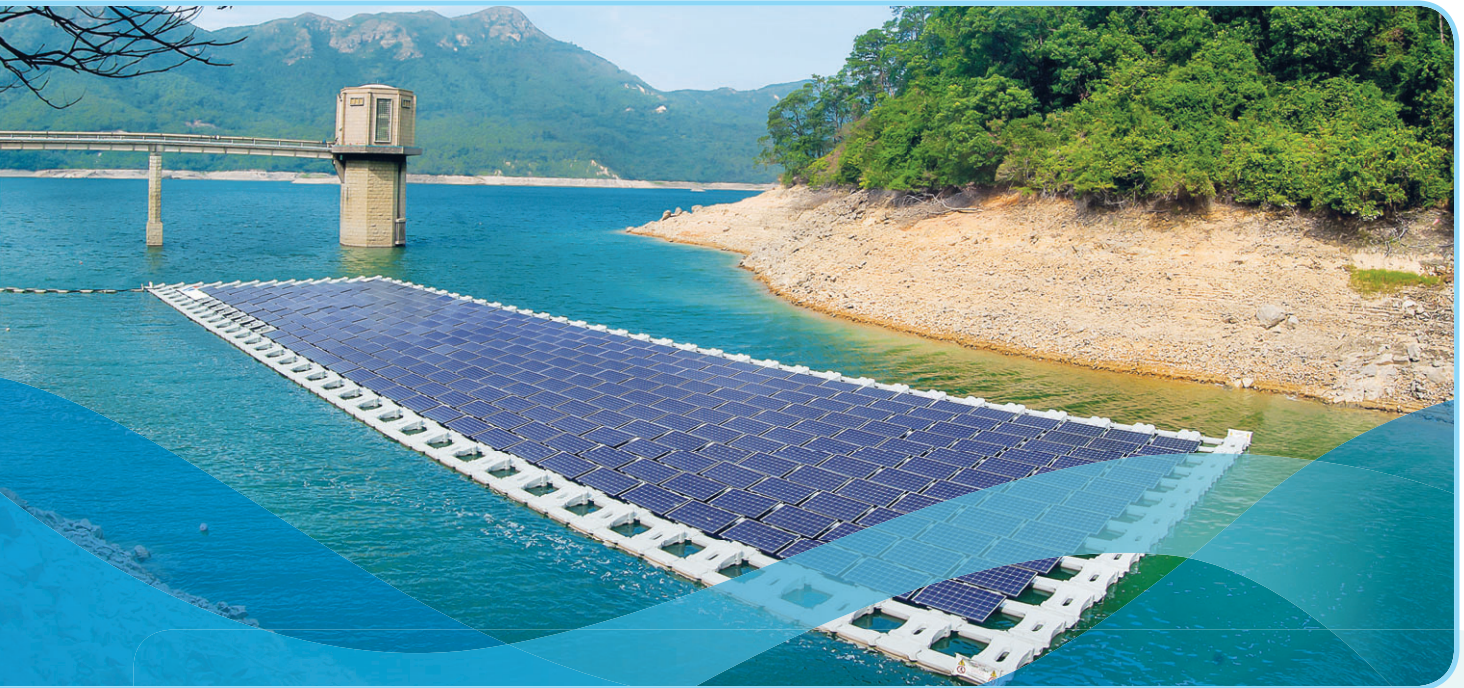


可持續運作

Sustainable Operations



我們在提供優質供水服務的同時，致力推行可持續運作。

We are committed to sustainable operations while providing high quality water supplies.

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
- 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

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 water supply 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
- 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，本署在研究可行的再生能源計劃的同時，仍不斷實行各項能源管理計劃以減少消耗能源。

ISO 50001能源管理系統

在二〇一四年十二月，本署成為首個獲得ISO 50001:2011能源管理系統認證的香港政府部門，認證涵蓋整個供水鏈包括集水、儲水、運水、濾水，以及供應和分配水源及食水和海水。新版的能源管理系統預計將於二〇一八年年底正式出版，本署會著手過渡至新版的ISO 50001認證。

政府建築物的碳管理

今年本署首次在長沙灣辦事處、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。隨著收集更多數據，我們將確定相應的碳減排措施，以盡可能減少溫室氣體排放。

Energy Use and Savings

As one of the largest consumers of electricity in Hong Kong, WSD is implementing a host of on-going energy management programmes to reduce energy consumption whilst exploring viable renewable energy initiatives.

ISO 50001 Energy Management System

In December 2014, WSD became the first government department in Hong Kong to receive the award of the ISO 50001:2011 Energy Management System certification covering the whole water supply chain including collection, storage, transfer and treatment of raw water, and supply and distribution of fresh water and sea water. As the new version of this international Energy Management System standard will be published towards the end of 2018, we will embark on the transition to the new ISO 50001.

Carbon Management in Government Buildings

The Department has conducted its first 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, each with annual electricity consumption over 500,000 kWh. With more data collected, we would identify the corresponding carbon reduction measures with a view to reducing green house gas (GHG) emissions as far as practicable.

可持續運作 Sustainable Operations

水力發電站

除了屯門水力發電站利用進入屯門濾水廠的原水位能轉化為電能供濾水廠使用外，沙田濾水廠原地重置工程(南廠)的前期工程項目亦興建水力發電站，預計於二〇一九年完成。此外，我們亦展開了研究，探討在馬鞍山濾水廠的入水口安裝水力發電設施以利用原水剩餘位能的可行性。

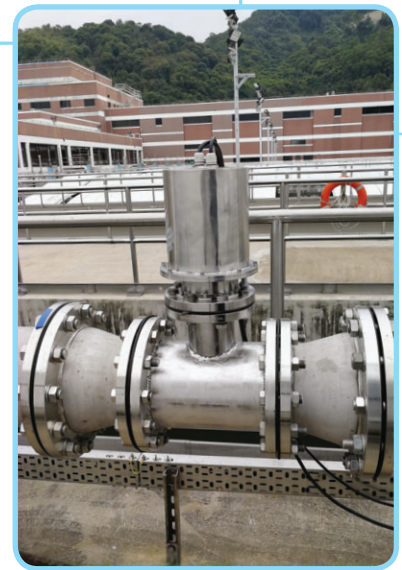


- 屯門濾水廠水力發電
Tuen Mun Hydropower Plant

Hydropower Generation Plant

Apart from Tuen Mun Hydropower Plant through which the potential energy of inflowing raw water to the Tuen Mun Water Treatment Works is converted into electrical power for use by the water treatment works, another hydropower plant is being built under the In-situ Re provisioning of Sha Tin Water Treatment Works (South Works) – Advance Works project, which is due for completion in 2019. Besides, a planning study has been initiated to investigate the feasibility of installing hydropower facilities at the inlet of Ma On Shan Water Treatment Works for harvesting the residual potential energy from the raw water inflow.

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



內聯閉式水力發電裝置

兩個適用於直徑200毫米水管的內聯閉式水力發電裝置原型，已通過嚴格的操作測試。這些發電裝置將為九龍東區智管網內監測區域的裝置提供足夠電力，以實時監測區域的狀況。

In-line Hydropower Harnessing Devices

Two sets of DN200 inline hydropower harnessing device (IHHD) prototypes have passed vigorous endurance tests. These units will be deployed to provide adequate power for the instruments in the DMAs of WIN in Kowloon East for real-time monitoring of the conditions of the DMA.



- 位於龍鼓上灘食水泵房的變速抽水機
Variable Speed Pump at Lung Kwu Sheung Tan Fresh Water Pump House

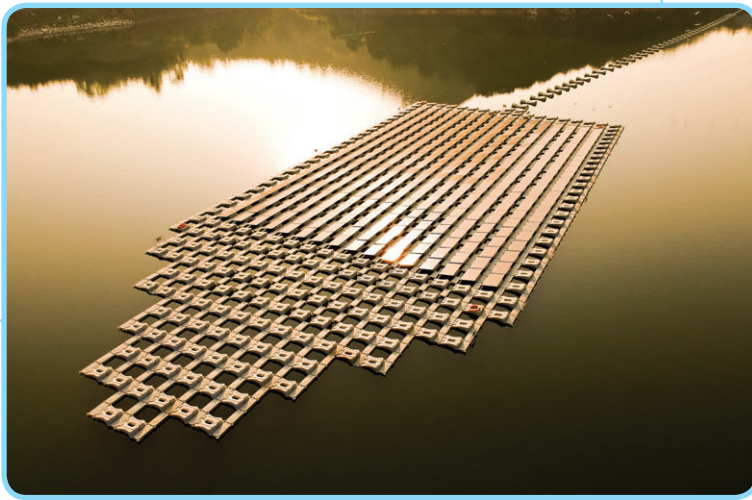
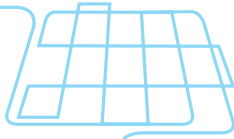
實行變速抽水

實行變速抽水可改善抽水效率。除了在華富海水抽水站進行的試驗計劃之外，本署在龍鼓上灘食水泵房的提升工程和小西灣海水抽水站的新增抽水設備也採用變速抽水機。龍鼓上灘的工程已於二〇一八年二月完成，而小西灣的工程將於二〇二〇年三月完成。

Implementation of Variable Speed Pumping

Variable speed pump operation can improve the pumping efficiency. In addition to the pilot scheme at Wah Fu Salt Water Pumping Station, variable speed pumps have been adopted for upgrading of Lung Kwu Sheung Tan Fresh Water Pump House which was completed in February 2018 and in the new pumping facilities in Siu Sai Wan Salt Water Pumping Station scheduled for completion in March 2020.

可持續運作 Sustainable Operations



- 「浮動太陽能發電系統攝影比賽」- 優異獎作品
Floating Solar Power System
Photography Competition -
Merit Award

在水塘鋪設浮動太陽能板發電系統

位於石壁水塘及船灣淡水湖，發電量各為100千瓦的試驗浮動太陽能板發電系統已分別於二〇一七年二月及十月投入運作。此外，我們亦正考慮在香港水塘安裝大型浮動太陽能發電場，並制定項目的發展策略。

Floating Solar Power Systems at Impounding Reservoirs

The pilot floating photovoltaic systems each of 100kW capacity at Shek Pik Reservoir and Plover Cove Reservoir have been put into operation since February 2017 and October 2017 respectively. Apart from that, we are considering the implementation of large-scale Floating Solar Farms in Hong Kong's impounding reservoirs and are formulating the project implementation strategies.

嶄新技術和設備

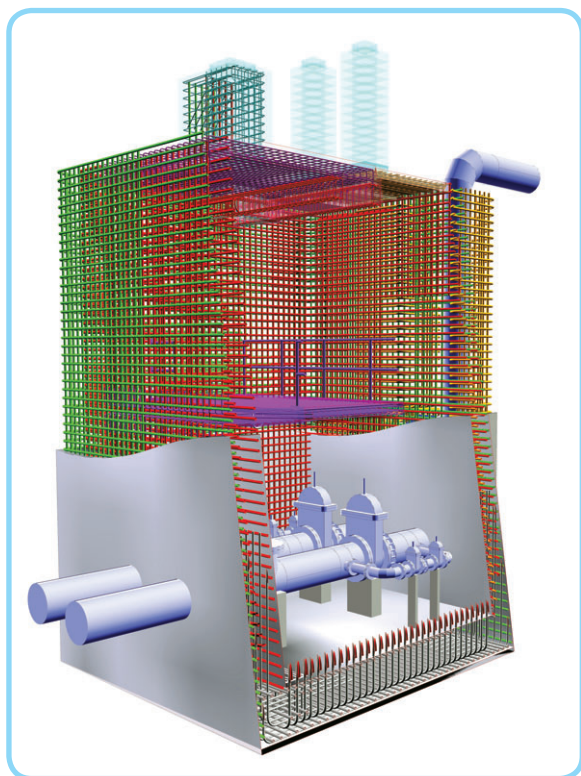
New Technology and Equipment

建築信息模擬技術

Building Information Modelling

建築信息模擬技術以數碼模式建立及管理在工程項目發展周期內各階段的數據和信息，為項目中不同專業的人員提供一個溝通平台以加強彼此協作，從而作出最佳的決定。

Building Information Modelling (BIM) is a process of generating and managing digital representation of information throughout a project lifecycle. The informative model offers a communication platform which enhances collaboration across disciplines for better decision making.



- 建築信息模擬技術以三維展示鋼筋混凝土構築物
Building Information Modelling (BIM) for 3D illustration of reinforced concrete structure

為配合政府積極推動建造業廣泛應用建築信息模擬技術，我們制定了建築信息模擬技術應用路線圖，旨在加強於主要工程項目中應用建築信息模擬技術，並提供訓練以增加員工對建築信息模擬技術的認知及提升他們對相關技術的知識。

截至二〇一八年三月，我們已在本署超過20個在設計及建造階段的工程項目應用了建築信息模擬技術。與此同時，我們亦計劃把建築信息模擬技術的應用擴展至資產管理。

推行智能讀錶，提高節水意識

自動讀錶系統將有助香港發展成為智慧城市。我們會把應用自動讀錶系統的各项要求加入於私人新發展項目的土地文件的條款中，以及公營和政府新發展項目的規劃及設計範圍內。我們亦歡迎發展商以協議形式在其發展項目推行自動讀錶系統。在推行自動讀錶系統的發展內，我們會向客戶傳遞適時的用水數據和有用的資訊，以提升他們節約用水的意識。二〇一八至一九年度至二〇二七至二八年度的十年間，預計約460,000個單位將會裝有自動讀錶系統。

To align with the Government's policy to promote wider use of BIM, we have developed a BIM Adoption Roadmap, putting emphasis on applying BIM in our major projects and providing training to raise the awareness and enhance BIM knowledge of our staff in the technology.

As at March 2018, more than 20 projects of WSD at the design and construction stages have been utilising BIM. At the same time, we are planning to extend the use of BIM as a tool for asset management.

Smart Metering for Enhancing Awareness of Water Conservation

Automatic Meter Reading (AMR) helps develop Hong Kong into a smart city. The necessary requirements for implementation of AMR will be incorporated in the lease conditions of all appropriate new private developments and in the planning and design scopes of all appropriate new public and government developments. We also welcome developers' proposal for implementing AMR in their developments. For developments with AMR, we plan to disseminate timely water consumption data and useful information to the customers with a view to raising their awareness of water conservation. It is estimated that the number of housing units that will be installed with AMR in the ten-year period from 2018-19 to 2027-28 is about 460,000.

可持續運作 Sustainable Operations

可持續發展

騰出分區辦事處用地，善用土地資源

我們將於二〇一八年八月把位於旺角洗衣街的新界西分區辦事處遷往天水圍。有關辦事處搬遷後，將可改善新界西分區的運作效率及水務設施的維修保養工作。騰出的洗衣街土地將用作其他發展。

Sustainable Development

Releasing a Regional Office to Optimise Land Use

New Territories West Regional Office at Sai Yee Street, Mong Kok would be relocated to Tin Shui Wai in August 2018. The relocation will enhance operational efficiency and maintenance of waterworks facilities in the New Territories West Region. The vacated site at Sai Yee Street would be released for other developments.



- 水務署天水圍大樓
WSD Tin Shui Wai Building

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。水務署負責推展搬遷配水庫往岩洞的工程。我們已確定搬遷鑽石山食水及海水配水庫往岩洞在技術上可行，並正籌備開展搬遷的勘查研究、設計及相關的工地勘測工程。另外，水務署已在二〇一七年年尾分別就搬遷油塘食水及海水配水庫群及荃灣二號食水配水庫往岩洞開展可行性研究。

除上述搬遷建議外，水務署亦正聯同有關部門，物色在技術可行性和成本效益的考慮下具有潛力遷往岩洞的其他配水庫。

延伸海水供應系統，節約寶貴食水

薄扶林區將沖廁水轉為海水的工作仍在進行中。新界西北部(包括屯門東、元朗及天水圍)的新海水供應核心系統已於二〇一五年竣工。將天水圍及元朗工業邨轉為海水沖廁的工作已分別於二〇一六至一七年度及二〇一七至一八年度完成。而元朗的轉換工作目前正在進行中，屯門東的轉換工作將會隨後展開。

此外，東涌的新海水供應系統項目現處於設計階段。

Relocation of Waterworks Installations to Caverns

In line with the Government's policy of increasing land supply, rock cavern development 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. WSD is responsible for the relocation of some service reservoirs to caverns. We have confirmed the technical feasibility of relocating Diamond Hill Fresh Water and Salt Water Service Reservoirs to caverns, and are preparing for the investigation study, design and the associated site investigation works for the relocation. Besides, WSD commenced in late 2017 the feasibility studies for the relocation of Yau Tong Group Fresh Water and Salt Water Service Reservoirs, and Tsuen Wan No. 2 Fresh Water Service Reservoir to caverns.

In addition to the above-mentioned relocation proposals, WSD is also working with relevant departments to identify other potential service reservoirs that may be technically feasible and economically viable for relocation to caverns.

Extending the Salt Water Supply System to Save Precious Fresh Water

The conversion to salt water for flushing in Pok Fu Lam continues. The salt water supply system for the North West New Territories, serving Tuen Mun East, Yuen Long and Tin Shui Wai has been completed in 2015. The conversion to salt water flushing for Tin Shui Wai and Yuen Long Industrial Estate has been completed in 2016-17 and 2017-18 respectively. Conversion for Yuen Long are currently in progress and that for Tuen Mun East Estate will follow afterwards.

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

可持續運作 Sustainable Operations

樹木管理及樹木風險評估

我們一直努力令我們的城市變得更綠意盎然，以及保持水務設施及斜坡內的園林景觀生機處處，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，定期監測和檢查樹木，確保一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。

Tree Management and Tree Risk Assessment 2018

We have long contributed towards making our city greener as well as maintaining healthy 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 for regular monitoring and inspection of trees to ensure that trees with structural or health problems are identified for timely risk mitigation measures.



- 推動全面綠化方針，包括優質園境設計及妥善植物護養工作，並以保障公眾安全為首要考慮因素。
Holistic greening approach embracing quality landscape design and proper vegetation maintenance, with public safety as a priority consideration.

我們在二〇一七至一八年度度的樹木風險評估和管理工作涵蓋了超過7,300棵樹木。在雨季前，斜坡安全組的園林單位亦確保已及時採取適當的預防措施，例如清除懸掛的樹枝及不穩定的樹木，加固樹木或圍封有待處理的樹木，以減低樹木倒塌風險。

There are over 7,300 number of trees covered in our annual Tree Risk Assessment and Management exercise (TRAM) in 2018. Landscape Service Unit of the Slope Safety Section, has been ensuring appropriate precautionary measures, such as removing hanging branches, and unstable trees, guying or cordoning off trees pending remedial works are carried out to minimise tree failure risks before the rainy season.

倘若當前並無有效措施將樹木風險降至可接受水平，我們只能移除樹木，並會另外種植樹木，彌補景觀損失。我們會選擇及種植合適樹木品種，例如低保養要求、耗水量低、具生態價值的本土樹木，以提升生物多樣性。

In cases where no effective measures are available to reduce tree risks to an acceptable level, tree removal is the last resort, with replacement planting to compensate for the landscape loss. Suitable vegetation species, such as low maintenance, low water consumption, native species with ecological value, are chosen in order to enhance the biodiversity.

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。我們預計設計及建設科於二〇一八年六月，可獲頒ISO 14001: 2015環境管理體系標準認證，此認證將適用於供水工程項目。其後本署會制訂多項環境管理計劃，並每年進行檢討，以實現我們的環境目標。

Environmental Focus

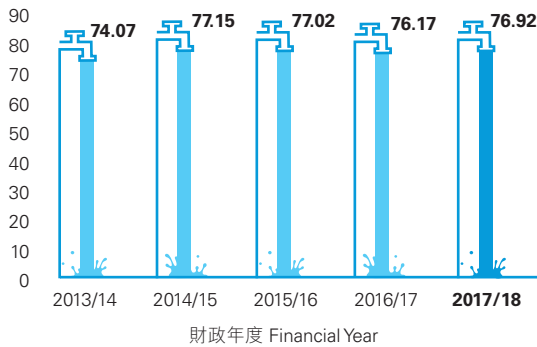
The vision of the Department is to excel in satisfying the need to provide quality water supply services to our customers. As part of that commitment, we fully appreciate the responsibilities we have in maintaining the environment. For this reason, the New Works Branch of the Department is tasked to ensure that all impacts to the environment that can arise from construction works are minimised in planning, designing and building waterworks. In June of 2018, the New Works Branch is expected to obtain ISO 14001: 2015 Environmental Management System Standards certification applicable to the delivery of engineering projects for the provision of water supplies. A host of environmental management programmes will subsequently be developed and reviewed annually to assist in achieving our environmental objectives and targets.

可持續運作 Sustainable Operations

人均耗電量(食水及原水)

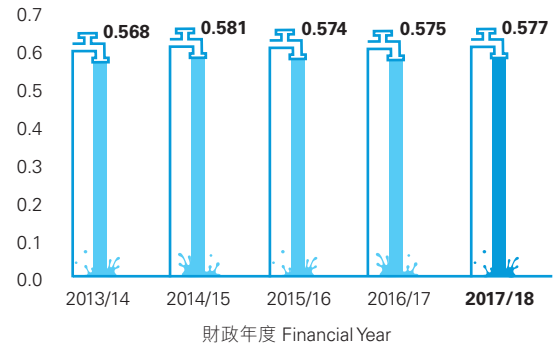
Per Capita Electricity Consumption (Fresh Water and Raw Water)

千瓦時／每人／每年 kWh/head/year



每單位耗電量(食水及原水)

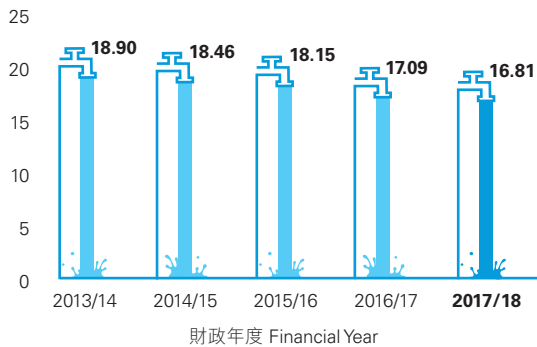
Unit Electricity Consumption (Fresh Water and Raw Water)

千瓦時／立方米 kWh/m³

人均耗電量(海水)

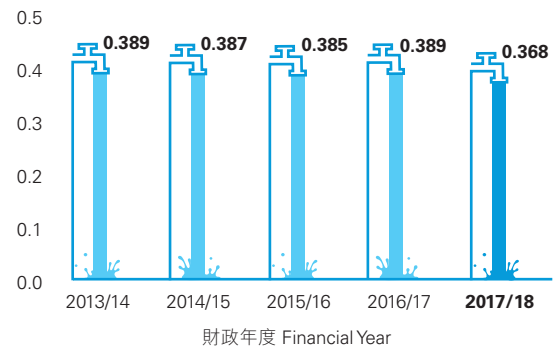
Per Capita Electricity Consumption (Sea Water)

千瓦時／每人／每年 kWh/head/year



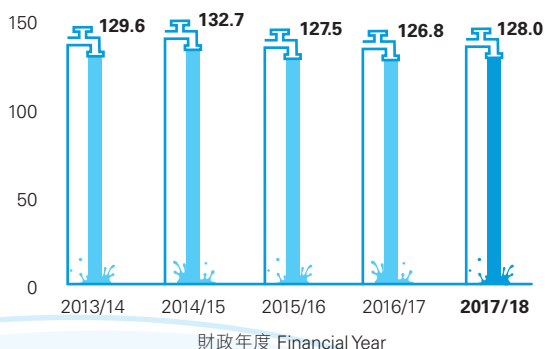
每單位耗電量(海水)

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

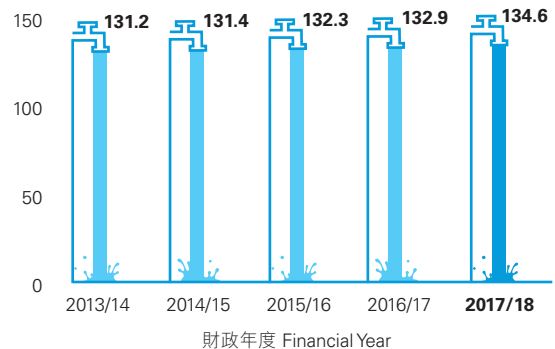
Office Electricity Consumption Per Unit Floor Space

千瓦時／立方米 kWh/m³

人均住宅食水用量

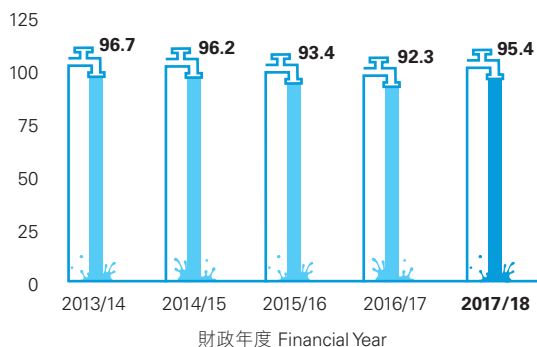
Per Capita Domestic Fresh Water Consumption

公升／日 Litres/day



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

公升/日 Litres/day

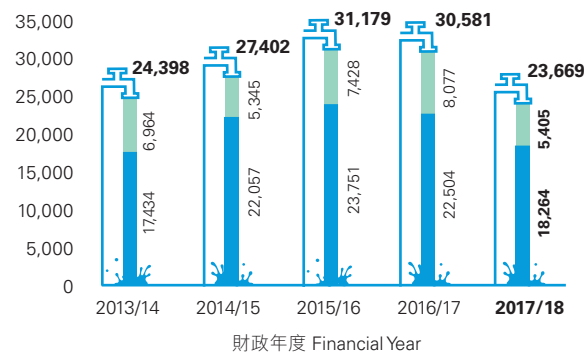


註：人均沖廁水用量(食水及海水)是根據本港的沖廁水總用量計算而得。

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

耗紙量 Paper Consumption

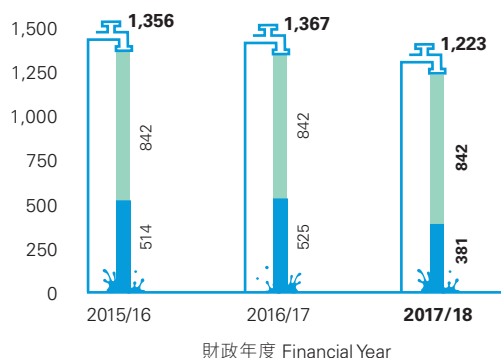
令 Reams



■ 再造紙張 Recycled Paper
■ 無木漿紙張 Woodfree Paper

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

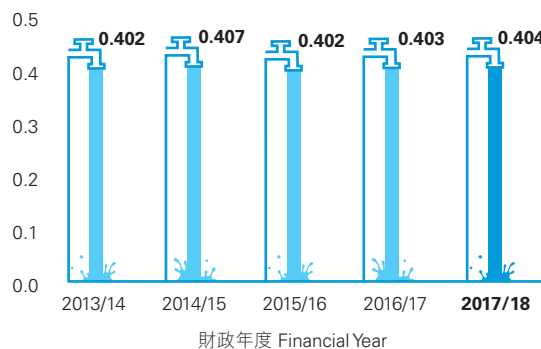
公斤 kg



■ 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

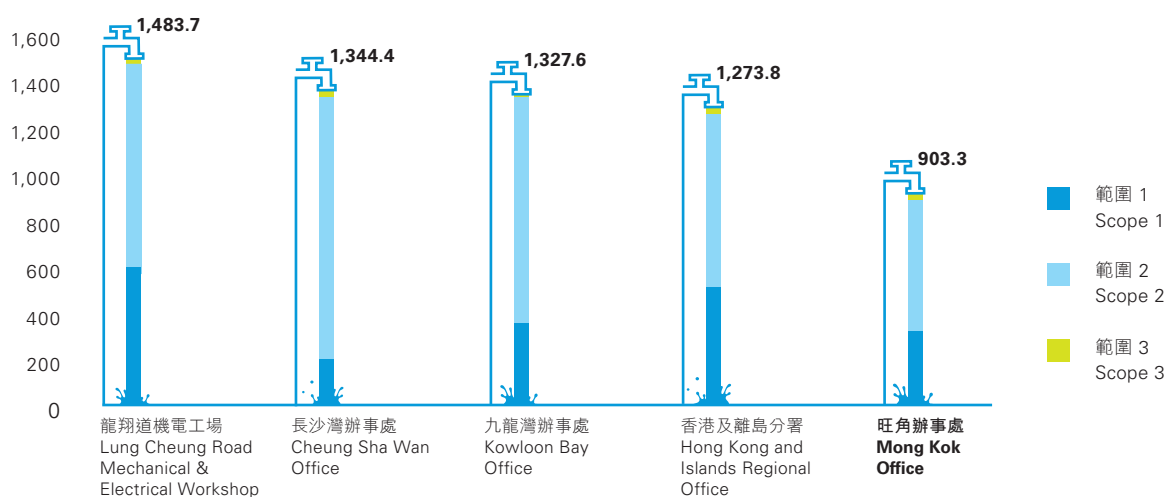
千克二氧化碳/立方米 kg CO₂/m³



可持續運作 Sustainable Operations

碳審計報告
Carbon Audit Report

	公噸二氧化碳當量 Tonnes of CO ₂ – equivalent			
	範圍1 Scope 1	範圍2 Scope 2	範圍3 Scope 3	總計 Total
龍翔道機電工場 Lung Cheung Road Mechanical & Electrical Workshop	589.5	883.8	10.4	1,483.7
長沙灣辦事處 Cheung Sha Wan Office	192.3	1,138.0	14.1	1,344.4
九龍灣辦事處 Kowloon Bay Office	350.6	975.4	1.6	1,327.6
香港及離島分署 Hong Kong and Islands Regional Office	506.0	750.4	17.4	1,273.8
旺角辦事處 Mong Kok Office	315.6	569.1	18.3	903.3



註：
 範圍1 – 直接溫室氣體總排放量
 範圍2 – 使用能源間接引致的溫室氣體總排放量
 範圍3 – 其他間接溫室氣體總排放量

Note:
 Scope 1 – Direct GHG Emission
 Scope 2 – Energy Indirect GHG Emissions
 Scope 3 – Other Indirect GHG Emissions

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)		
	15/16	16/17	17/18	15/16	16/17	17/18	15/16	16/17	17/18
柴油 Diesel	19	28	58	23,386	34,554	67,818	117,327	163,522	357,842
汽油 Petroleum	181	163	158	497,598	511,092	479,787	2,287,717	2,424,315	2,216,830
混合(汽油/電力) Hybrid (Petrol/Electric)	18	16	3	12,435	11,678	12,077	204,159	189,569	174,524
液化石油氣 LPG	13	11	11	57,218	55,940	51,379	165,590	160,744	139,457
電力 Electricity	15	20	16	-	-	-	97,188	101,237	98,845

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		
	15/16	16/17	17/18	15/16	16/17	17/18	15/16	16/17	17/18	15/16	16/17	17/18
直接廢氣排放 Direct Emissions												
公務用車(柴油) Vehicle fleet (Diesel)	55	82	154	-	-	-	1	1	2	-	-	-
公務用車(汽油) Vehicle fleet (Petrol)	1,114	1,129	1,075	-	-	-	1	1	1	-	-	-
公務用車(液化石油氣) Vehicle fleet (LPG)	85	93	97	-	-	-	-	-	-	-	-	-
間接廢氣排放 Indirect Emissions												
耗用電(九龍及新界) Electricity Consumed (Kowloon and New Territories)	332,732	320,938	315,317	78	91	86	313	293	261	7	6	8
耗用電(港島) Electricity Consumed (Hong Kong Island)	50,737	50,886	52,184	18	16	14	52	52	51	1	1	1
總量 Total	384,723	373,128	368,826	96	107	100	366	346	314	8	8	10