

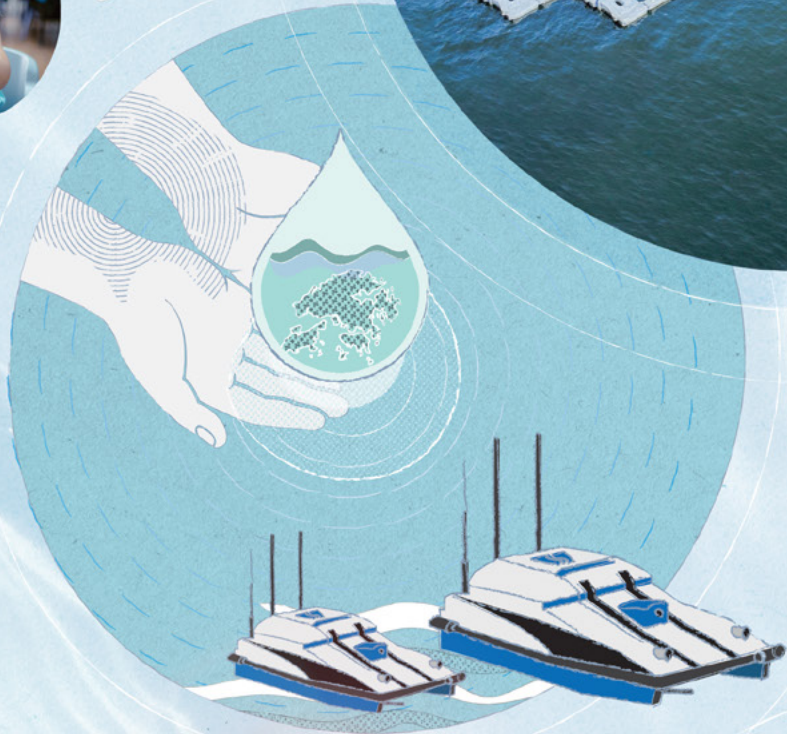


水務署

WATER SUPPLIES DEPARTMENT

Embracing Change for a Water-Wise City

匯創新 · 智惜水



年報

Annual Report 2020/21

目錄

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匯創新 · 智惜水

水務署把握變化和新趨勢帶來的機遇及動力，推動更精明的供水管理和引入創新的構思，以達致更有效率及可持續的運作，以及進一步提升客戶體驗。我們亦致力與持份者協作，促進知識共享，力求啟發行為上的轉變，凝聚員工、業界和社會大眾的力量，攜手共建香港成為智慧用水城市。

Embracing Change for a Water-Wise City

At the Water Supplies Department, we harness the power of change and emerging trends into opportunities and motivation to drive wiser water management and devise innovative solutions for more efficient and sustainable operations and enhanced customer experiences. Through fostering knowledge and stakeholder collaboration, we seek to inspire behaviour changes and empower our staff, practitioners and the wider community to build Hong Kong into a water-wise city.

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在滿足客戶對優質供水服務的需求，務求有卓越之表現。

To excel in satisfying customers' needs for the provision of quality water services.

抱負 Vision

使命 Mission

- 以最符合成本效益的方式為客戶提供可靠充足的優質食水及海水。
To provide a reliable and adequate supply of wholesome potable water and sea water to our customers in the most cost-effective way.
- 提供以客戶為本的服務。
To adopt a customer-oriented approach in our services.
- 維持及激勵一支能幹、高效率及完全投入的工作隊伍，以服務社群。
To maintain and motivate an effective, efficient and committed workforce to serve the community.
- 時刻關注對保護環境方面須負的責任。
To remain conscious of our responsibilities towards the environment.
- 善用資源和科技，力求不斷改善服務。
To make the best use of resources and technology in our striving for continuous improvement in services.

以客為本 **C**ustomer satisfaction

確保質量 **R**eliability

重視環保 **E**nvironmental awareness

竭盡所能 **D**edication

精益求精 **I**mprovement

同心協力 **T**eamwork

信念 Values

集賢匯智

水務署致力推行精明的供水管理，從策略制定和基建資產管理，以至持份者協作和客戶服務，利用創新科技以達致最佳效益，將香港打造成為智慧用水城市。

The WSD is committed to implementing wise water management, from strategy formulation and infrastructure asset management to stakeholder collaboration and customer services, with innovation and technology to achieve more with less and build Hong Kong into a water-wise city.

盧國華工程師太平紳士
水務署署長

Ir LO Kwok-wah, Kelvin, JP
Director of Water Supplies

高瞻遠矚 精心打造智慧用水城市

Building a Water-Wise City with Foresight and Dedication



署長的話

Director's Statement

於二零二零至二一年度，淨集水量較過去二十年的平均值減少17%，而人均住宅食用水量卻較二零一九年至二零年度增加約11%。面對日益加劇的氣候風險、未來持續增長的人口及經濟、前所未見的二零一九冠狀病毒病疫情爆發，以及因時而變的客戶需求，世界正急速改變，香港亦不例外。為支持香港的持續發展，我們必須確保供水長遠的可持續性、應變能力及安全性。

水務署致力推行精明的供水管理，從策略制定和基建資產管理，以至持份者協作和客戶服務，利用創新科技以達致最佳效益，將香港打造成為智慧用水城市。

實踐全面策略 善用食水資源

我們已於二零一九年修訂了「全面水資源管理策略」，將氣候變化預期所帶來的極端影響，以至二零四零年用水需求和供應的最新推算結果納入考量，並正繼續透過控制食水需求增長和利用多元化的水資源提升食水供應應變能力這雙管齊下的方式實踐策略。

用水方面，我們必須肩負起精明用水的責任，確保香港以至與我們共享東江水的廣東省各城市得以可持續地發展。為此，我們採取了三項主要措施控制食水需求增長：(一)透過公眾教育和提高用水效益的措施推廣節約用水；(二)透過一系列基建項目，擴大使用次階水作非飲用用途，包括向東涌新市鎮及其擴展區供應海水，在安達臣道石礦場發展用地供應經處理的中水，以及在新界東北地區供應循環再用水；(三)使用「智管網」及「智能管網管理電腦系統」管理用水流失。

供應方面，我們透過發展海水化淡——一種不受氣候變化影響的策略性水資源，提升食水供應的應變能力。正在興建的將軍澳

In 2020/21, we saw a 17% reduction in the net yield compared to the average over the previous 20 years while the per capita domestic fresh water consumption increased by about 11% compared to the figure in 2019/20. Ensuring the long-term sustainability, resilience and safety of water supplies is key to the continuous development of our city amidst a rapidly changing world influenced by increasing climate risks, future growing population and economies, unprecedented outbreak of the COVID-19 epidemic and evolving customer needs.

The WSD is committed to implementing wise water management, from strategy formulation and infrastructure asset management to stakeholder collaboration and customer services, with innovation and technology to achieve more with less and build Hong Kong into a water-wise city.

IMPLEMENTING HOLISTIC STRATEGY FOR WISE RESOURCES MANAGEMENT

Taken into account the anticipated extreme impacts of climate change and the latest water demand and supply projections up to 2040, we updated the Total Water Management Strategy in 2019 and continued to press ahead with a two-pronged approach which focuses on containing fresh water demand growth and building resilience in the fresh water supply with diversified water resources.

It is imperative for us to use fresh water responsibly and wisely for the sustainable development of the city, as well as the Guangdong cities that share Dongjiang water with us. To contain fresh water demand growth, we have advanced three main initiatives: (i) promoting water conservation through public education and measures on enhancing water use efficiency; (ii) expanding the use of lower grade water for non-potable purposes through a host of infrastructure projects, including the supply of salt water to Tung Chung New Town and its extension, the supply of treated grey water in the Anderson Road Quarry development site and the supply of reclaimed water in northeast New Territories; and (iii) managing water losses with the Water Intelligent Network (WIN) and the Water Intelligent Network Management System (INMS).

On the supply side, we build resilience in our fresh water supply through seawater desalination, a strategic water resource not susceptible to the impact of climate change. The first stage of the

海水化淡廠第一階段將於二零二三年啟用，其產量可滿足香港總食水用量的5%，並已預留擴展空間在未來倍增其產能。我們會一直密切監察氣候變化的影響，適時推展此擴建工程，以進一步強化氣候應變能力。

智慧綠色運作 成就卓越表現

透過最新科技，我們力求進一步完善資源和基礎設施的運用，從而提升運作的效率及可持續性。

我們成功在船灣淡水湖啟用一套無人船系統自動監測水質和取樣，從而提升水質監測的效率和緊急狀況應變能力。展望未來，我們計劃提升系統的智能，讓無人船能夠自動規劃航線，以及在錄得異常讀數的範圍自動增加監測點的密度，並計劃將無人船應用推展至其他水塘。

香港的水塘擁有龐大的塘面面積。我們把握此契機積極在水塘開發浮動太陽能板發電系統收集太陽能。隨著於石壁水塘和船灣淡水湖安裝的系統取得成功後，我們現正在大欖涌水塘安裝一組浮動太陽能板發電系統，並正研究在船灣淡水湖興建大型浮動太陽能發電場的可行性，以協助實踐提升可再生能源產能的長遠計劃，達致更可持續的運作。

通過成功獲得ISO 55001資產管理系統認證、提升ISO 50001能源管理系統認證至最近版本，以及於重點基建項目採用「建造業2.0」，我們期望能憑藉更高效率且環保的模式不斷優化運作表現。此外，我們正推行先導計劃，以期為供水系統

Tseung Kwan O Desalination Plant under construction will have the production capacity to meet 5% of Hong Kong's total fresh water consumption upon commissioning by 2023, with the provision to double its capacity in the future. We have been closely monitoring the climate change impacts with a view to bringing forward this expansion timely to further strengthening our climate resilience.

ADVANCING PERFORMANCE THROUGH SMART AND GREEN OPERATIONS

Leveraging the latest technologies, we pursue smarter utilisation of our resources and infrastructures for enhancing efficiency and sustainability in our operation.

We have successfully commissioned an unmanned surface vessel (USV) system in the Plover Cove Reservoir for automatic water quality monitoring and sampling to enhance our efficiency in water quality monitoring and emergency responsiveness. Looking ahead, we plan to enhance the intelligence of the system to enable automatic route planning of the USVs and automatic increase of monitoring points in areas with abnormal data, and extend the applications to other impounding reservoirs.

Grasping the opportunity brought by the large water surface of our impounding reservoirs, we are actively developing floating photovoltaic (FPV) systems at impounding reservoirs to harness solar energy. Following the success of the FPV systems at the Shek Pik and Plover Cove reservoirs, we are currently installing a FPV system at the Tai Lam Chung Reservoir and exploring the feasibility of a large-scale floating solar farm at the Plover Cove Reservoir as part of our long-term plan to increase the renewable energy generation capacity for more sustainable operation.

Coupled with our achievement of ISO 55001 certification in asset management system, upgrade of ISO 50001 in energy management system, as well as the adoption of "Construction 2.0" in key infrastructure projects, we look further to optimise our performance with more efficient and sustainable operation. Meanwhile, we are carrying out pilots with a view to developing digital twins of our



石壁水塘的浮動太陽能板發電系統
Floating PV System at Shek Pik Reservoir

建立「數碼分身」模型作實時監測及情景模擬。我們亦正籌建一個由數個先進運作管理中心組成的網絡，以進一步掌控運作表現及提升效率。

優化貼心服務 完善客戶體驗

我們致力不斷創新，為逾300萬客戶提供迅速、高效及以客為本的服務。

作為推動香港成為智慧城市的其中一環，我們自二零一八年起於新建公營及私人發展項目引入有線自動讀錶系統，以進一步推廣用水效益和智慧生活。除了改善讀錶的準確度和效率，我們期望透過自動讀錶系統的流動應用程式，提供客戶用水量的資訊，從而提高客戶節約用水的意識並鼓勵他們作出行為上的轉變。為擴展應用範圍至現有處所，我們在大澳試行無線自動讀錶系統，為研究無線技術在香港應用的可行性邁出一步。

為了加強在發生緊急供水暫停事故時與客戶的溝通，我們正逐步設立一套以地理訊息系統為本的「暫停供水自動通告系統」，以協助識別受水管緊急故障影響的建築物，並主動通知受影響的客戶緊急暫停供水。系統的第一階段已於二零二零年十二月推出，向大型屋苑管理處發出暫停食水供應通知。我們計劃於下一階段提升系統，將服務延伸至相關的個別客戶。

water supply system for real-time monitoring and operation scenario simulation. We are also planning to establish a network of advanced operation management centres to further master operation performance and enhance operation efficiency.

ENHANCING CUSTOMER EXPERIENCE WITH IMPROVED AND THOUGHTFUL SERVICES

We leave no stone unturned in our continuous efforts in innovating for responsive, efficient and customer-oriented service to our three million plus customers.

As part of advancing Hong Kong into a smart city, we have introduced wired Automatic Meter Reading (AMR) systems in new public and private developments since 2018 to further promote water efficiency and smart living. Besides improving accuracy and efficiency in water meter readings, we seek to inspire customers' behaviour changes to use water wisely through the provision of water consumption information via our AMR mobile app. With a view to extending the use to existing premises, we have commissioned a trial of wireless AMR solution in Tai O as our first step to investigate the viability of the wireless technology in Hong Kong context.

Striving to enhance customer communications in the event of emergency water supply suspension, we are progressively developing a geographic information system-based Water Suspension Notification System (WATSUN) which can assist to identify the buildings affected by emergency failure in water mains and proactively notify affected customers of emergency water supply suspensions. Rolled out in December 2020, the first phase of WATSUN provides fresh water supply suspension notifications to the management offices of large housing estates. Moving forward, we plan to extend such emergency notification service to individual customers in our next phase of system enhancements.



自動讀錶系統流動應用程式
AMR mobile app



職場知識共享
Fostering knowledge sharing in the workplace

凝聚各界力量 共創惜水未來

要將香港打造成智慧用水城市，我們必須凝聚各界力量，與我們的員工、業界和客戶同心協力實現這願景。

為了讓我們的員工能更全面地掌握所需的技能和知識，以應對瞬息萬變的世界所帶來的挑戰，我們正積極籌備於二零二一年九月成立虛擬學院「水務專業學院」，旨在以系統化的方式提升員工的學習經驗，並鼓勵職場知識共享。此外，我們亦致力透過參與網上會議和研討會，在疫情期間與海內外國際同業保持聯繫，以探索與精明供水管理相關的創新科技和最佳實務方案，並藉此分享心得及解決方案，與其他智慧用水城市達致優勢互補。

我們在減少用水流失方面不遺餘力，當中包括與香港建造學院等多個機構合作，為測漏從業人員建立培訓和認可資歷制度，以進一步提升他們的測漏能力。此外，我們亦致力爭取私人樓宇的業主和物業管理人的支持，透過向他們提供建議和支援，協助盡早處理私人公用水管用水流失的問題。

為鼓勵市民邁向惜水生活，我們繼續推廣節約用水文化，包括廣受歡迎的「齊來慳水十公升2.0」活動、「滴滴遊蹤深導行」參觀活動和「惜水學堂」綜合教育計劃等。透過散播惜水的種籽，我們定能善用僅有的水資源成就更多。

藉此機會，我衷心感謝我們專業的團隊在過去一年竭盡所能，以堅毅不屈的精神應對各種挑戰，努力不懈地將挑戰轉化為不斷進步的動力。

我深信在社會各界攜手努力下，我們定能共建可持續和富應變力的未來。



盧國華工程師 太平紳士
水務署署長

JOINING HANDS TO SHAPE A WATER-WISE FUTURE

It takes the collaborative actions by all parties, including our staff, practitioners and our customers, to realise the vision of building Hong Kong into a water-wise city.

To better equip our staff with the essential skills and knowledge to navigate challenges in the fast-changing world, we are progressing with the establishment of a virtual academy "WSD AQUA-DEMY" for launch in September 2021. The WSD AQUA-DEMY will provide a structured approach to enhancing our staff learning experiences and fostering knowledge sharing in the workplace. We also endeavoured to stay connected with our regional and international counterparts despite the epidemic via online participation of conferences and webinars, aspiring to explore the latest innovations, technologies and best practices of wise water management, as well as to contribute insights and solutions for adding value to the work of many other water-wise cities.

As one of our continued efforts in combating water loss, we have been working in collaboration with various institutes, including the Hong Kong Institute of Construction, in developing training and qualification system for leak detection practitioners with a view to further enhancing their capabilities in leak detection. We also enlist the support of property owners and management agents of private buildings to curb water loss in private communal water mains through providing advice and support to them for prompt rectification actions.

To effect positive changes in water-wise living among members of the public, we continue to promote water-wise culture with, inter alia, the popular "Let's Save 10L Water 2.0" Campaign, "Excursion with Water Save Dave" Visiting Programme and "Cherish Water Campus" Integrated Education Programme. Through seeding the change, we can achieve more with less water together.

Taking this opportunity, I would also like to thank our professional team for their dedication and resilience in the face of the challenges in the past year, unremittingly turning challenges into driving force for continuous improvement.

I am confident that with the concerted efforts of all, we can build a sustainable and resilient future together.

Ir LO Kwok-wah, Kelvin, JP
Director of Water Supplies

部門總覽

Corporate Profile

穩定而優質的供水，對本港居民的生活不可或缺，同時亦是支持本港可持續發展的關鍵要素。香港特別行政區政府水務署的職責是維持供水可靠優質。

本港17個水塘集水區收集的本地雨水約佔香港總食水用量20%至30%，餘下部分的原水由廣東省的東江輸入，兩者均經過嚴格處理及監測，確保食水水質符合香港食水標準。此外，自一九五零年代以來，我們充分利用香港近海的地理優勢，將海水用作沖廁用途。食水及海水由兩個完全獨立的供水系統供應，透過龐大的配水庫和水管網絡，配送至各家各戶及商用物業。

為確保香港供水穩健及具應變能力，我們繼續妥善管理水務資產以維持其健康狀況，以及透過海水化淡及中水重用等技術開拓新水源，進一步提升香港的供水保障及應對氣候變化的能力。

作為香港最大的能源用戶之一，我們已實施相關措施，透過應用創新科技、開發可再生能源及提升能源效益，致力減少碳足跡。我們亦是香港特區政府首個獲得ISO 50001:2011能源管理系統認證的部門。

我們的抱負是滿足客戶對優質供水服務的需求。為此，我們的人員致力與持份者合作及提供以客為本的服務，確保客戶獲得最具效率及優質的服務。

Reliable and quality water supplies are indispensable to the lives and livelihoods of the people in Hong Kong, and are critical for supporting the territory's sustainable development. The Water Supplies Department (WSD) of the Hong Kong SAR Government is charged with the responsibility of maintaining reliable and quality water supplies.

Approximately 20% to 30% of Hong Kong's fresh water supply comes from the local yield collected in catchment areas of the territory's 17 impounding reservoirs while the remaining raw water comes from Dongjiang in the Guangdong Province. Both the local yield and imported Dongjiang water are subject to stringent treatment and monitoring to ensure that the quality of treated water meets the Hong Kong Drinking Water Standards. Moreover, since the 1950s, we have taken full advantage of Hong Kong's geographic proximity to the ocean to adopt salt water for flushing purposes. Fresh water and salt water are supplied through two entirely separate supply systems. Our extensive array of service reservoirs and water mains provide these supplies for distribution to homes and commercial developments.

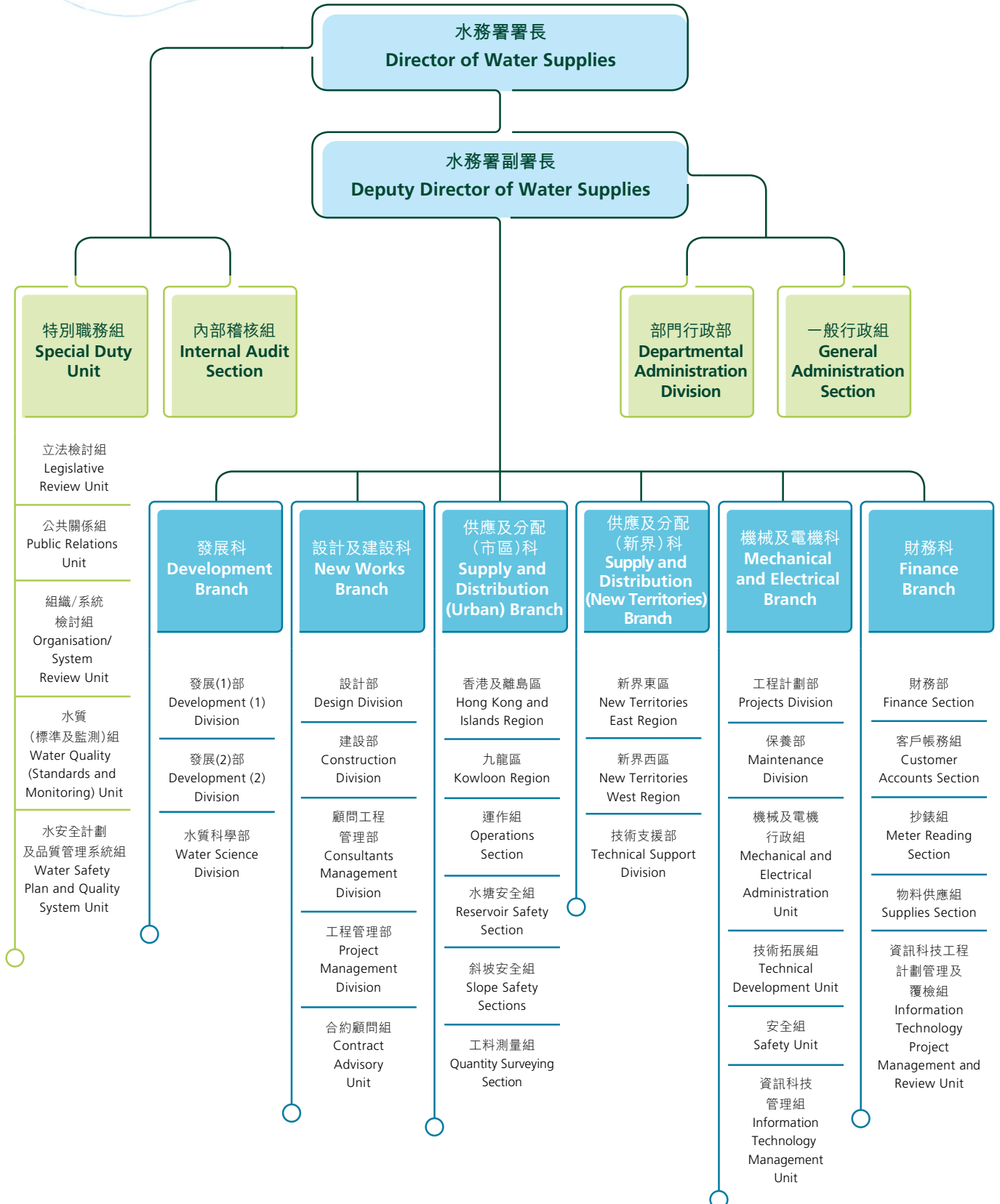
To ensure the sustainability and resilience of Hong Kong's water supplies, we continue to manage our asset to sustain their health and develop new sources of water including desalination and recycled water. These additional sources of water will give Hong Kong enhanced water security and the ability to adapt to climate change.

As one of the city's largest energy consumers, we have implemented measures to reduce our carbon footprint as much as possible by adopting innovation and technology, developing renewable energy and enhancing energy efficiency. We are the first Hong Kong SAR Government department to obtain the ISO 50001:2011 Energy Management System certification.

Our vision is to excel in meeting our customers' needs for quality water services. With this in mind, our committed workforce has collaborated with stakeholders and adopted a customer-oriented approach to ensure that our customers receive the most efficient and high-quality services.

水務署組織圖

WSD Organisation Chart



1 盧國華工程師, 太平紳士¹
Ir LO Kwok-wah, Kelvin, JP¹
水務署署長
Director of Water Supplies

2 周世威工程師, 太平紳士
Ir CHAU Sai-wai, JP
水務署副署長
Deputy Director of Water Supplies

3 彭愛玲工程師
Ir PANG Oi-ling, Irene
助理署長／設計及建設
Assistant Director/New Works

4 黃俊光先生
Mr WONG Chun-kwong
助理署長／財務
Assistant Director/Finance

5 鍾永基工程師
Ir CHUNG Wing-kee, Philip
助理署長／市區
Assistant Director/Urban

6 馬漢榮工程師²
Ir MA Hon-wing, Wilson²
署理助理署長／發展
Acting Assistant Director/Development

7 李大安工程師, 太平紳士
Ir LEE Tai-on, JP
助理署長／機械及電機
Assistant Director/Mechanical & Electrical

8 林聖傑先生
Mr LAM Saint-kit, Byron
助理署長／專責事務
Assistant Director/Special Tasks

9 勞淑儀女士
Ms LO Shuk-yi
部門秘書
Departmental Secretary

10 黃恩諾工程師
Ir WONG Yan-lok, Roger
助理署長／新界
Assistant Director/New Territories



¹ 盧工程師自二零二零年十一月四日起出任水務署署長。

¹ Ir LO was appointed Director of Water Supplies on 4 November 2020.

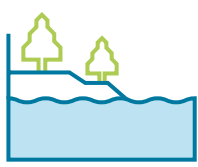
² 馬工程師自二零二一年二月十六日起出任署理助理署長／發展。

² Ir MA was appointed Acting Assistant Director/Development on 16 February 2021.



主要統計數字 (截至二零二一年三月三十一日)

Principal Statistics (as of 31 March 2021)



17

個水塘
No. of Impounding Reservoirs

586

總容量
Total Storage Capacity

百萬立方米
million m³

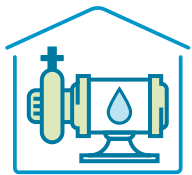
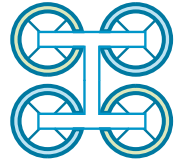
20

個濾水廠
No. of Water Treatment Works

4.7

總濾水量
Total Water Treatment Capacity

百萬立方米/日
million m³/day



151

個食水抽水站
(包括食水和原水抽水站及泵房)
No. of Fresh Water Pumping Stations
(includes fresh & raw water pumping stations and pump houses)

32.2

總抽水量
Total Pumping Capacity

百萬立方米/日
million m³/day

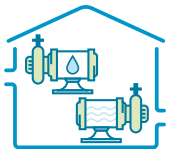
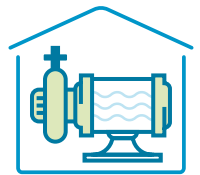
35

個海水抽水站
(包括泵房)
No. of Salt Water Pumping Stations
(includes pump houses)

2.1

總抽水量
Total Pumping Capacity

百萬立方米/日
million m³/day



7

個食水及海水抽水站
No. of Combined Fresh Water & Salt Water Pumping Stations

0.3

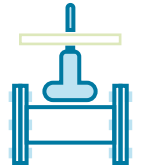
總抽水量
Total Pumping Capacity

百萬立方米/日
million m³/day

6 689

公里
km

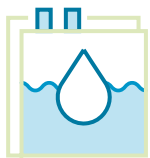
食水管長度
(直徑20毫米至2 400毫米)
Fresh Water Mains
(20 mm to 2 400 mm diameter)



1 660

公里
km

海水水管長度
(直徑20毫米至1 200毫米)
Salt Water Mains
(20 mm to 1 200 mm diameter)



178

個食水配水庫
No. of Fresh Water Service Reservoirs

4.4

總容量
Total Storage Capacity

百萬立方米
million m³

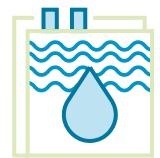
54

個海水配水庫
No. of Salt Water Service Reservoirs

0.3

總容量
Total Storage Capacity

百萬立方米
million m³



120

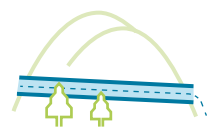
引水道長度
Length of Catchwater

公里
km

199

公里
km

輸水隧道長度
Length of Water Tunnel



主要工作表現指標

Key Performance Indicators

指標 Indicators	財政年度 Financial Year		
	2018/19	2019/20	2020/21
食水水質 100%符合香港食水標準* Fresh Water Quality 100% compliance with the Hong Kong Drinking Water Standards*	達到指標 Target achieved	達到指標 Target achieved	達到指標 Target achieved
海水水質 97%符合水務署所定的水質指標** Salt Water Quality 97% compliance with WSD Water Quality Objectives**	達到指標 Target achieved	達到指標 Target achieved	達到指標 Target achieved
食水供水水壓(15至30米)^ Fresh Water Supply Pressure (15–30 metres) ^	100%	100%	100%
海水供水水壓(15米)^ Salt Water Supply Pressure (15 metres) ^	100%	100%	100%
因預先計劃進行的工程而暫停供水的時間長度 (98%於八小時內) Water Supply Suspension Duration for Planned Work (98% within 8 hours)	達到指標 Target achieved	達到指標 Target achieved	達到指標 Target achieved
水錶準確程度 (偏差程度不超過±3%) Water Meter Accuracy (inaccuracy not exceeding ±3%)	97.7%	98.2%	97.3%

* 水務署自二零一七年九月起開始採用香港食水標準為指標，而在此之前，則一直採用世界衛生組織制訂的《飲用水水質準則》為指標。
The Hong Kong Drinking Water Standards have been adopted by WSD in the target since September 2017. Before that, the World Health Organization's Guidelines for Drinking-water Quality were adopted in the target.


** 此指標於二零一九至二零年度經修訂為「海水水質 — 97%符合水務署所定的水質指標」，二零一八至一九年度則為「海水水質—96%符合水務署所定的水質指標」，而二零一七至一八年度所採用的指標為「海水水質（供水接駁位置）— 96%符合水務署所定的水質指標」。
The target for 2019/20 has been revised as “Salt water quality – 97% compliance with WSD Water Quality Objectives”. The target for 2018/19 was “Salt water quality – 96% compliance with WSD Water Quality Objectives”. The target in 2017/18 was “Salt water quality (at connection points) – 96% compliance with WSD Water Quality Objectives”.

^ 配水系統內（不包括系統盡頭）最低的剩餘水壓。
Minimum residual pressure in the distribution systems except at their extremities.

新思睿智

Strategy Wise



The background features a light blue color palette with several overlapping circles of varying sizes and opacities. In the bottom-left corner, there is a partial view of a natural landscape with green hills and a body of water. The text is centered within the blue area.

由水資源及水質管理、水務基礎設施策劃及建造，以至水務資產管理和運作，我們致力採用更具智慧及策略性的方式，並利用嶄新科技及凝聚廣大持份者的支持，以不斷提升本港供水的可持續性、可靠性和應變能力。

From water resources and water quality management, waterworks infrastructure planning and construction, to waterworks asset management and operations, we strive to adopt a smarter and more strategic approach, and leverage the latest technologies and robust stakeholder support for continuous improvement in the sustainability, reliability and resilience of Hong Kong's water supplies.

邁向可持續且具應變力的未來

Striding towards a sustainable and resilient future

全面 水資源管理

Total Water Management



水資源於本港的未來擔當著關鍵促成的角色，它不僅滋養生命萬物，更為家庭和社會經濟提供動力。然而，隨著人口及經濟增長、氣候變化的影響，以及生活和工作模式的轉變，供水保障及應變力變得更為重要。為此，水務署制定全面的水資源管理策略，以確保本港長遠享有穩健及具應變力的供水。

Water plays a key enabling role in our city of the future. It powers homes, economies and nourishes all life. Yet with growing population and economy, climate change impacts and changing life and work styles, water security and resilience have never been more important. To this end, the WSD has formulated a holistic water management strategy to ensure the security and resilience of Hong Kong's water supplies in the long run.

全面水資源管理策略

水務署於2008年推行「全面水資源管理策略」（「策略」），為促進香港民生和經濟發展勾劃出可持續用水的藍圖。面對與日俱增的需求和氣候變化帶來的挑戰，我們聘請了國際專家和顧問公司檢討「策略」，使水資源管理得以更精明及具策略性，確保香港的供水穩定可靠和提升其應變力。「策略」檢討肯定了用水需求和供應管理方面的主要措施已達到預期的成果。

TOTAL WATER MANAGEMENT STRATEGY

Promulgated by the WSD and implemented since 2008, the Total Water Management Strategy has outlined the road map for the sustainable use of water for the social and economic development in Hong Kong. To ensure sustainability of Hong Kong's water supplies and strengthen its resilience against surging demand and challenges brought about by climate change, we have engaged international experts and consultants to conduct the Strategy review for smarter and strategic management of our water resources. The Review confirmed that the major initiatives in both water demand and supply management have achieved their respective milestones.

氣候變化和水資源預測推算

是次檢討，將氣候變化的極端影響納入考量，並更新了至二零四零年用水需求和供應的預測方法及推算。用水需求推算以政府統計處的基線人口作為估算基礎，按預期的人口增長推算，在不採取任何用水需求管理措施的情況下，香港於二零四零年的每年食水需求估計將增至11.1億立方米。

Climate Change and Water Forecast Projections

Taking into account the extreme impacts of climate change, the Review updated the forecast of water demand and supply methodologies and projections up to 2040. The water demand projection was estimated based on the baseline population projection provided by the Census and Statistics Department. Under the expected population growth scenario, the annual fresh water demand is projected to increase to 1 110 million m³ in 2040, in the absence of water demand management measures.

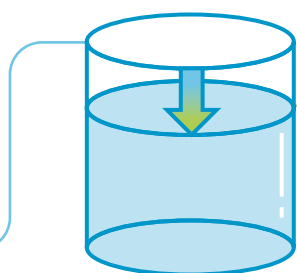
至二零四零年之全年食水需求推算

Annual Fresh Water Demand Projection by 2040

沒有用水需求管理措施的情況下：

Without demand management measures:

1 110 百萬立方米
million m³



實施用水需求管理措施的情況下：

With demand management measures:

990 百萬立方米
million m³

同心合力控制用水需求以確保
Containing water demand
together to ensure that

現時食水供應安排能應付預測需求至 2040 年
existing fresh water supply arrangements can meet
projected demand up to 2040



參與檢討「策略」的國際專家評估了目前的供水安排，並考量氣候變化導致每年降雨量減少的情況，認為在實施用水需求管理措施以減低需求至9.9億立方米的情況下，現時食水供應的安排足以應付至二零四零年的預測需求。

Having assessed the current arrangements taken into consideration the annual rainfall reductions due to climate change, the international experts confirmed that with the implementation of water demand management measures to reduce the demand to 990 million m³, the current fresh water supply arrangements will be able to meet the forecast demand up to 2040.

雙管齊下

於是次檢討中，我們針對應變能力、經濟因素及可持續性三項準則評估各項水資源管理方案，並同時徵詢了水務諮詢委員會和其他持份者的意見，以修訂「全面水資源管理策略2019」（「策略2019」）。修訂後之「策略2019」採取雙管齊下的方式，著重控制食水需求增長，以及利用多元化的水資源提升食水供應的應變能力。控制食水需求的主要措施包括加強節約用水宣傳、管理用水流失和擴大使用次階水作非飲用用途。有關詳情，請參閱 [「控制食水需求增長」](#)。

除了管理食水需求外，我們亦透過利用新的水資源——淡化海水，在提升供水應變能力方面取得重大進展。淡化海水是一種不受氣候變化影響的策略性水資源。將軍澳海水化淡廠第一階段工程已展開，該廠採用最新的逆滲透技術生產食水。設施落成後，預計能應付香港約5%的食水需求。相關詳情請參閱 [「海水化淡」](#) 章節。

持續監測和檢討

為確保我們能夠應對比預期更嚴峻的情況，我們制定了一系列後備方案。其中包括興建更多海水化淡設施、擴大水塘容量和集水區、重啟已停用的濾水廠，以及增加東江水供應。若未來情況與目前的估算有偏差，我們可以按需要執行合適的後備方案。

我們亦會定期檢討並修訂「策略2019」，以適時應對用水需求變化、氣候變化對本地集水的影響，及各種水資源的成本效益、相關科技發展、可靠性及對環境的影響等。

A Two-Pronged Approach

In the Review, we have also evaluated water management options using multiple criteria of resilience, economics and sustainability and updated the Total Water Management Strategy (Strategy 2019) to adopt a two-pronged approach which has taken account of the views from the Advisory Committee on Water Supplies and other stakeholders. The updated approach places emphasis on containing fresh water demand growth and building resilience in the fresh water supply with diversified water resources. The key initiatives of containing fresh water demand include strengthening promotion of water conservation, managing water loss and expanding the use of lower grade water for non-potable purposes. See [Containing Fresh Water Demand Growth](#) for more details.

Aside from managing fresh water demands, we are making great strides in building resilience in water supply by utilising new water resources – desalinated water, which is a strategic water resource not susceptible to the effects of climate change. We have commenced the construction of the first stage of “Tseung Kwan O Desalination Plant” which uses the latest reverse osmosis technology to produce fresh water. Upon completion, it is estimated to meet around five per cent of Hong Kong’s total fresh water consumption. See [Seawater Desalination](#) for more details.

Continuous Monitoring and Review

To ensure our ability to adapt to worse-than-expected scenarios, a host of backup measures have been formulated. These include building up more desalination capacities, expanding our reservoir capacity and catchment, reactivating mothballed water treatment works and increasing Dongjiang water supply. If the future conditions deviate from our present projections, we can implement appropriate backup measures as necessary.

We will conduct regular review of the “Strategy 2019” and update it as needed to make appropriate and timely responses to changes arising from water demand, the effect of climate change on the local yield; as well as the cost-effectiveness, technological development, reliability and environmental impact of various water resources.

現有水資源

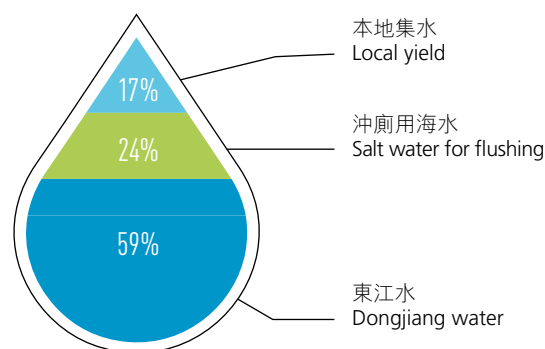
多年來，香港一直享有穩定的供水。香港水資源的三大來源為本地集水區的雨水、由廣東輸入的東江水及沖廁用海水。

EXISTING WATER RESOURCES

Over the years, Hong Kong has enjoyed a reliable water supply. Hong Kong's water resources comprise three sources: Rainwater from local catchments, imported water from Dongjiang in the Guangdong Province, and salt water for toilet flushing.

二零二零年全港總用水量 Total Water Consumption of Hong Kong in 2020

總計
Total **1 345** 百萬立方米
million m³

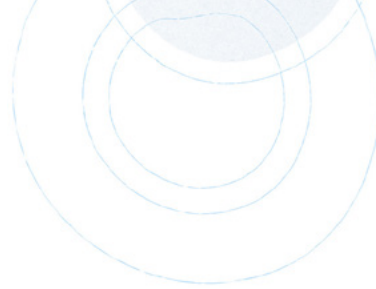


二零二零年按用水類別劃分的食水用量 Annual Fresh Water Consumption by Sector 2020

用水類別 Sector	食水用量 Fresh Water Consumption
	百萬立方米及佔總用量百分比 million m ³ and percent of total
住宅用水 Domestic	626 (61.0%)
工業用水 Industrial	53 (5.2%)
服務業及商業用水 Service Trades	222 (21.6%)
政府用水 Government Establishments	44 (4.3%)
建築及船舶用水 Construction & Shipping	19 (1.8%)
臨時淡水沖廁 Flushing	63 (6.1%)
食水總用量 Total Fresh Water Consumption	1 027 (100%)

氣候變化、人口和經濟持續增長令食水需求增加，以及珠江三角洲地區對水資源的競逐等，皆為我們帶來挑戰。為了讓香港就迎接這些挑戰做好準備，我們持續開發一些不受氣候變化影響的新水源，包括淡化海水和循環再用水（即再造水、重用中水及回收雨水）。

To better prepare Hong Kong for the challenges of climate change, the increasing demand for fresh water due to continuous population and economic growth, as well as the competition for water resources in the Pearl River Delta region, we have been developing new water sources that are not susceptible to climate change, including desalinated water and recycled water (viz reclaimed water, treated grey water and harvested rainwater).



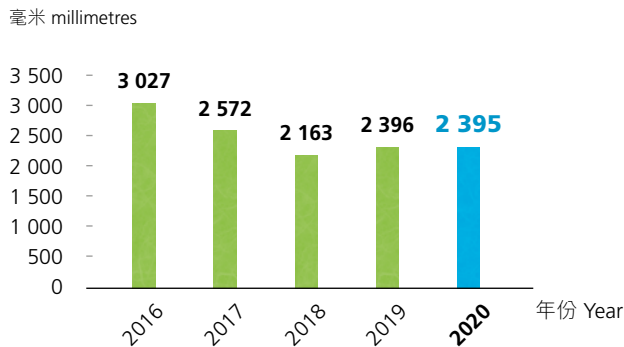
本地集水

本地集水從集水區收集而來，大部分集水區均位於受嚴格規管保護，免受污染的郊野公園內。我們採用多重屏障的原則，在各集水區監控發展、定期巡查及監測水質的情況，以確保水質安全。在集水量方面，每年的本地集水量並不穩定，加上氣候變化的影響，我們預計未來本地集水量的變動將會更大。

Local Yield

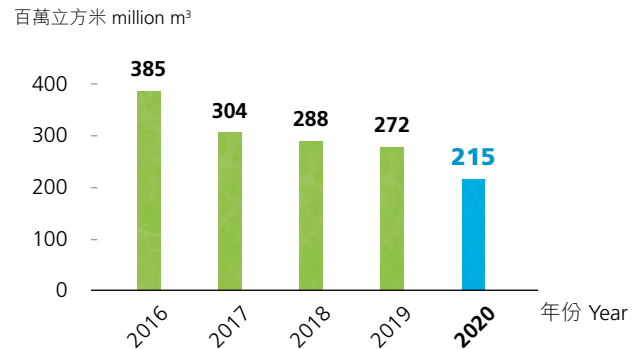
The yield is collected in catchment areas, most of which fall within country parks that are well regulated and protected from contamination. We adopt a multiple barrier approach to control development, regularly conduct inspections and monitor water quality in these areas to ensure water safety. In terms of quantity, the local yield is not stable every year, and can be subject to drastic fluctuations. Coupled with the effect of climate change, we foresee even greater fluctuations in the future.

二零一六年至二零二零年全年降雨量 Annual Rainfall 2016 – 2020



註：長期平均降雨量為2 431毫米
Note : Long-term mean rainfall is 2 431 mm

二零一六年至二零二零年全年淨集水量 Annual Net Yield 2016 – 2020



東江水

為填補香港本地集水量和用水需求的缺口，我們在粵港供水協議訂明的每年供水量上限範圍，按需要輸入東江水。在本地集水量較多的年份，我們會減少輸入東江水。這靈活彈性的供水安排既可避免浪費水資源，又可節省輸水成本。

Dongjiang Water

To fill the gap between Hong Kong's local yield and water demand, Dongjiang water is imported as needed, up to the annual supply ceiling stipulated in the supply agreement between Guangdong and Hong Kong. If more local yield is available in a particular year, less Dongjiang water will be imported. This flexible arrangement avoids wasting water resources and saves pumping costs.



東江水水管
Dongjiang water mains

新一份東江水供水協議已於二零二零年十二月簽訂，由二零二一年至二零二三年為期三年。新協議把以往採用的「統包總額」方式優化為「統包扣減」，按實際東江水取水量而扣減水價，並沿用統包方式，訂明每年供水量上限，確保香港擁有穩定而靈活的東江水供應，滿足香港的實際需要。

新協議已加入扣減水價的機制，每年按供水量上限扣除一筆款項(透過單位價格乘以供水量上限與實際供水量的差額)得出該年的實際水價。「統包扣減」方式回應了市民就東江水供水按量收費的訴求，並至少可應用至二零二九年。按二零二一年價格計算，在新協議的機制下，估計在這九年期內最高節省金額可達3.24億港元。

新協議內的每年基本水價調整增幅為每年1.33%，反映粵港兩地相關消費物價指數和人民幣兌港元匯率的變動。鑑於二零一九冠狀病毒病疫情對香港經濟環境帶來的挑戰，粵方同意將二零二一年的實際水價凍結在二零二零年水平(即48.21億港元)，而非48.86億港元，以紓緩香港的財政負擔。二零二一年，香港在東江水方面的支出預計為48.21億港元，而二零一九年和二零二零年的支出分別為48.07億港元和48.21億港元。

沖廁用海水

一九五零年代末，香港引入海水沖廁，至今仍是全球少數廣泛應用這種可持續資源沖廁的地方之一，在我們的水資源管理中發揮著舉足輕重的作用。目前，我們的海水供應網絡覆蓋全港約85%的人口，每年供應約3億立方米海水，節省了同等分量的食水，約佔總供水量的24%。

A new agreement on the supply of Dongjiang water to Hong Kong for a three-year period from 2021 to 2023 was signed in December 2020. The previously adopted “package deal lump sum” approach is enhanced to a “package deal deductible sum” approach in which the water price will be deducted according to the actual amount of Dongjiang water supplied. The continual adoption of a package deal approach to stipulate an annual supply ceiling can guarantee Hong Kong a stable yet flexible supply of Dongjiang water to meet the city's actual needs.

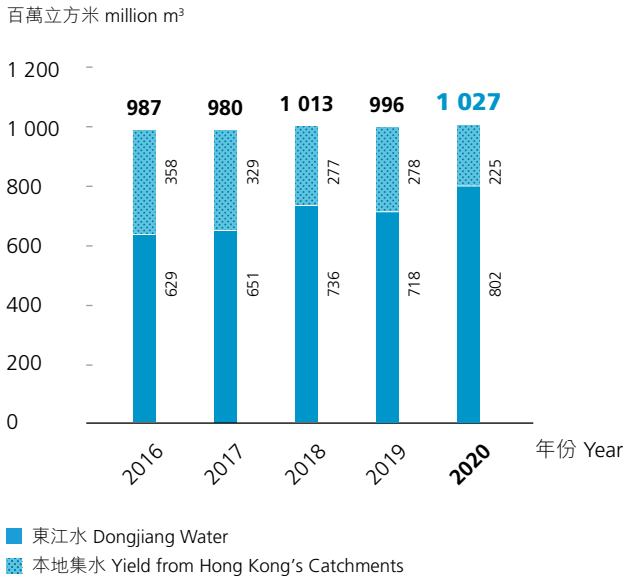
The new agreement has introduced a water price deduction mechanism under which the annual ceiling water price will be subject to the deduction of a sum (by multiplying a unit rate to the difference between the annual supply ceiling and the actual amount of water supplied) to arrive at the annual actual water price. This “package deal deductible sum” approach has addressed the requests by the public for payment based on the quantity of Dongjiang water supplied and will be maintained at least up to 2029. It is estimated that under the mechanism in the new agreement, based on the 2021 price level, the maximum saving within this nine-year period will be HK\$324 million.

The annual ceiling water prices in the new agreement will be increased by 1.33% each year, which generally reflects the changes of the relevant consumer price indices of Guangdong and Hong Kong and the exchange rate between the Renminbi and the Hong Kong dollar. In view of the prevailing challenging economic environment arising from the COVID-19 epidemic, Guangdong authorities have agreed that instead of HK\$4,886 million, the actual water price for 2021 is to be frozen at the 2020 level (i.e. HK\$4,821 million) to ease the financial burden of Hong Kong. In 2021, Hong Kong's expenditure on Dongjiang water will be HK\$4,821 million, compared to HK\$4,807 million and HK\$4,821 million paid in 2019 and 2020 respectively.

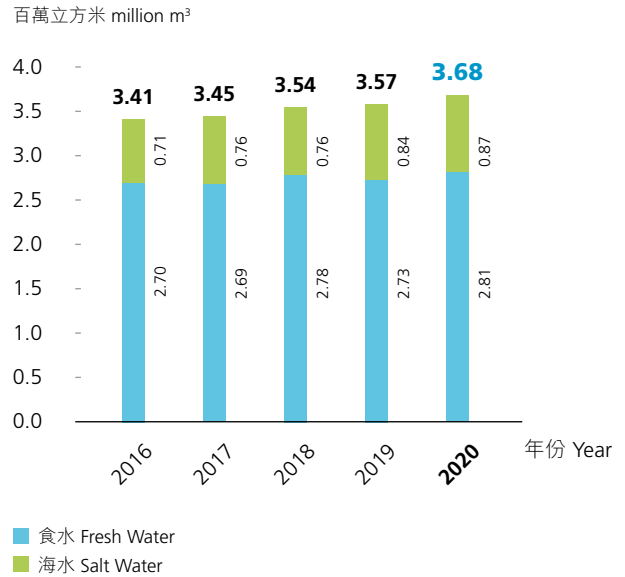
Salt Water for Flushing

In the late 1950s, salt water was introduced in Hong Kong for toilet flushing. Hong Kong is one of the few places in the world extensively applying this sustainable resource which forms an important role of our water management. Currently, our salt water supply network covers about 85% of the Hong Kong population. About 300 million m³ of seawater is supplied per annum, conserving an equivalent amount of fresh water which is about 24% of the total water supply.

二零一六年至二零二零年全年食水供應量 Annual Quantity of Fresh Water Supply 2016 – 2020



二零一六年至二零二零年日均用量(食水及海水) Total Average Daily Water Consumption (Fresh Water and Salt Water) 2016 – 2020



水資源未來的展望

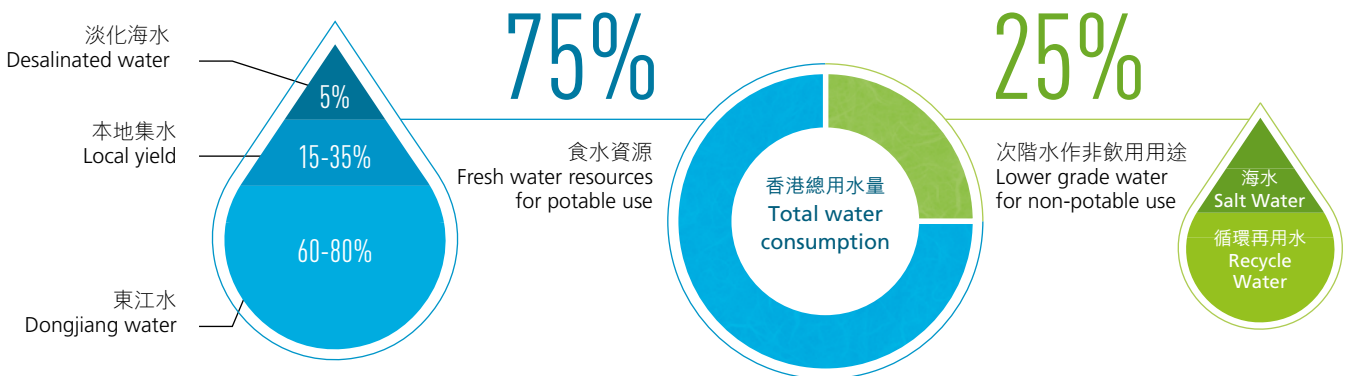
我們將繼續按照「策略2019」的建議，採取雙管齊下方式，為求在未來建立多元化的水資源組合。食水資源將約佔香港總用水量75%，而非飲用的次階水將佔其餘用水量25%。

Outlook of Future Water Resources

Following the recommended two-pronged approach under the Strategy 2019, we seek to build a diversified portfolio of water resources in future. Fresh water resources will account for about 75% of the total water consumption in Hong Kong while the lower grade water for non-potable uses will account for the remaining 25% consumption.

根據「策略2019」預計的香港水資源組合

Estimated Composition of Hong Kong's Water Sources under Strategy 2019



控制食水需求增長

根據「策略2019」，控制食水需求增長在水資源需求管理中是非常重要的。為配合本港的可持續發展，政府將根據二零一七年及二零一八年的《施政綱領》中的承諾，最早於二零三零年達致人均食水用量減少10%的目標（以二零一六年為基準年）。為達成這個目標，我們正推行三項主要用水需求管理措施，包括節約用水、管理用水流失，以及擴大使用次階水作非飲用用途。

節約用水

節約和精明用水，有助保障長遠供水。其成功的關鍵在於業界和社會大眾的共同努力和貢獻。有見及此，我們與相關持份者緊密合作，推出多項用水效益措施、宣傳活動、學校教育計劃，以及用水效益最佳實務指引，致力推動文化和行為的改變，共同應對水資源的挑戰。

水知園教育中心

為接觸更多公眾人士，提高他們對水資源的認識和節約用水的重要性，我們於二零一九年十二月於天水圍辦公大樓開設全新的水資源教育中心－「水知園」。二零二零年十月至二零二一年四月期間，我們與長春社文化古蹟資源中心合辦名為「水展」的專題展覽，藉此喚起參觀者對一九六零年代水資源匱乏的艱難歲月，從中了解有關未來水資源的挑戰，及採取即時行動以應對水資源短缺的迫切性。儘管受到二零一九冠狀病毒病疫情的影響，截至二零二一年三月，「水知園」已接待約13 000名訪客*。

* 鑑於二零一九冠狀病毒病疫情，水知園由二零一九年十二月開幕至二零二一年三月期間暫停開放約220天。

CONTAINING FRESH WATER DEMAND GROWTH

Following the Strategy Review in 2019, containing the growth of fresh water demand plays a pivotal role in water demand management. In line with the territory's sustainable development, the Government targets to reduce the average fresh water per capita consumption by 10% by 2030 at the earliest, using 2016 as the base year, as pledged in the Chief Executive's Policy Agenda in 2017 and 2018. To achieve this goal, we are taking forward three major water demand management initiatives, namely water conservation, water loss management, and expansion of use of lower-grade water for non-potable uses.

Water Conservation

Conserving water and using water wisely help secure our water supply for the long term. The success of such lies in the collaborative efforts and contributions from both industries and the wider community. With this in mind, we are working closely with relevant stakeholders and have launched various water-efficiency measures, promotional campaigns, school education programmes, as well as best practice guidelines aiming to inspire cultural and behaviour changes to address our water challenges together.

H₂OPE Centre

To reach out to the wider community and enhance their knowledge of water resources and the importance of water conservation, we opened the "H₂OPE Centre", the new Water Resources Education Centre at our Tin Shui Wai Office Building in December 2019. During the year, we collaborated with the Conservancy Association Centre for Heritage to hold a themed exhibition titled "Water Exhibition" from October 2020 to April 2021. Through the exhibition, visitors could evoke the old and difficult days of water scarcity which occurred in the 1960s for a better understanding about the future water challenges and urgency for today's actions against water scarcity. As of March 2021, H₂OPE Centre has received about 13 000 visitors* despite the impact of COVID-19 epidemic.

* The H₂OPE Centre was temporarily closed for approximately 220 days from its opening in December 2019 to March 2021 due to COVID-19 epidemic.



水知園設有十二個展區，五十多個互動展品和遊戲，提供各種與水有關的資訊，從水資源、食水水質、節約用水和循環再利用水、水務工程、用水效益，以至可持續發展措施，內容包羅萬有。

The H₂OPE Centre has 12 exhibition zones with over 50 interactive exhibits and games to provide various water-related information. These range from water resources, drinking water quality, water conservation and recycling, waterworks projects, water efficiency to sustainability initiatives.



我們與長春社文化古蹟資源中心合作舉辦「水展」，讓公眾了解未來水資源的挑戰，以及採取即時行動以應對水資源短缺的迫切性。

Collaborated with the Conservancy Association Centre for Heritage, we held the "Water Exhibition" to educate the public about the future water challenges and urgency for today's actions against water scarcity.

用水效益標籤計劃

為鼓勵客戶選用節水產品，我們於二零零九年推出「自願參與用水效益標籤計劃」。用水效益標籤說明水喉裝置及用水器具的用水量及用水效益，幫助消費者作出明智的購買選擇。計劃分階段推行，現已擴展至六種類型的水喉裝置及用水器具，包括沐浴花灑、水龍頭、洗衣機、小便器用具、節流器和水廁。

強制性「用水效益標籤計劃」亦分階段實施。自二零一八年二月一日起，所有住宅處所的廚房，以及所有處所的浴室和洗手間的訂明水管工程，均必須使用在「用水效益標籤計劃」下登記及符合指定用水效益級別的產品。為進一步提升用水效益，我們正準備修訂法例，規定在零售店出售的規定類型產品，必須已在「用水效益標籤計劃」下登記，並貼上用水效益標籤，方便消費者選擇具用水效益的產品。

Water Efficiency Labelling Scheme

Launched in 2009, our voluntary “Water Efficiency Labelling Scheme” (WELS) encourages customers to use water-saving products. The WELS label shows the level of water consumption and water efficiency of the plumbing fixtures and water-consuming devices helping consumers to make informed choices of purchase. Implemented in phases, the Scheme has now been extended to six types of plumbing fixtures and water-consuming devices, which cover showers for bathing, water taps, washing machines, urinals equipment, flow controllers and water closets.

The mandatory WELS is also implemented in stages. Since 1 February 2018, the use of WELS products of prescribed water efficiency has been required in kitchens (domestic premises), bathrooms and toilets (all premises) for prescribed plumbing works. To further enhance water use efficiency, we are progressing with legislative amendments to require registration of products of the prescribed WELS types and affixation with WELS labels for sale in retail outlets to facilitate consumers’ selection of water efficient products.



「用水效益標籤計劃」說明六種類型的水喉裝置及用水器具的用水量及用水效益，幫助消費者作出明智的購買選擇。

The Water Efficiency Labelling Scheme shows the level of water consumption and water efficiency of the six types of plumbing fixtures and water-consuming devices helping consumers to make informed choices of purchase.

用水效益最佳實務指引

為了提高各行各業的用水效益，減少非住宅用戶用水量，我們制訂了用水效益最佳實務指引，以供業界參考國際最佳實踐經驗。我們正與酒店和餐飲業的協會合作，力求在營運的不同方面提升用水效益，包括設施保養、酒店服務、廚房和樓面運作、泳池和園景管理。

我們亦鼓勵機構提高員工和客戶對節約用水的認識和參與，凝聚各界持份者作出更大的貢獻。

Best Practice Guidelines

To enhance water use efficiency across industries thereby reducing non-domestic water consumption, we have developed a set of Best Practice Guidelines to the industry practitioners taking reference of the experiences of international best practices. We are collaborating with hotel and catering associations to promote water use efficiency in different aspects of their operations, including facilities maintenance, hospitality service, kitchen and dining area operations, swimming pools and landscape management.

We also encourage organisations to raise awareness and participation from their employees and customers on water conservation with a view to gathering greater contributions from various stakeholders.



用水效益最佳實務指引
Best Practice Guidelines



飲食業節約用水貼紙
Stickers on "WATER SAVING TIPS FOR CATERING INDUSTRY"

安裝節流器

住宅用水量佔全港用水量超過一半，減少住宅用水便成為控制食水需求增長的長期措施之一。安裝節流器能有效減少水龍頭或沐浴花灑的用水量以及培養節約用水的習慣。自二零一四年起，我們便已為公共租住屋邨免費安裝節流器，藉此提升用水裝置的效益，並改變客戶的用水習慣。這個自願性計劃將於二零二二年完成。

我們於二零一九年把免費安裝節流器計劃擴展至所有私人屋苑和私立學校（包括幼稚園、小學及中學），並將其納入社區節約用水運動「齊來慳水十公升2.0」，從而發揮更大的成效。有關詳情，請參閱「共融啟智」章節的「推廣智慧用水的文化」。

Installation of Flow Controllers

One of the long-term measures to contain the growth of fresh water demand is reducing domestic consumption, which accounts for over half of the total water consumption in Hong Kong. The installation of flow controllers is an effective way to reducing water consumption from taps or showers and cultivating water conservation habits. Since 2014, we have offered free installation of flow controllers in public rental housing estates to increase efficiency of water devices and change usage habits. The programme is on voluntary basis and is scheduled to complete by 2022.

Leveraging the effectiveness of water conservation, the free installation scheme was extended in 2019 to all private housing estates and private schools (including kindergartens, primary schools and secondary schools) as part of our community water conservation campaign titled "Let's Save 10L Water 2.0". See [Promoting Water-Wise Culture in the Community Wise section](#) for more details.

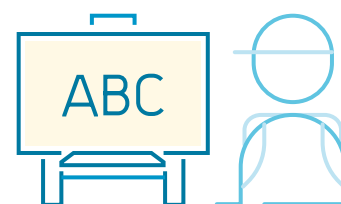
171 000

個住戶來自
households in



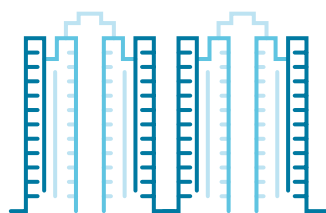
642

間幼稚園
kindergartens



148

個公共租住屋邨
public rental
housing estates



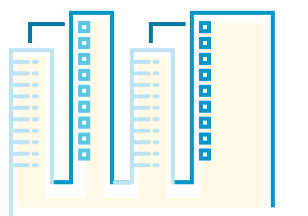
32

間私立小學
private primary
schools



912

個住戶來自私人屋苑
private estate
households



截至2021年3月已安裝節流器。
have installed flow controllers
as at March 2021.

推動精明的用水文化

我們相信，以針對性方法與持份者緊密合作來宣揚精明用水生活和貫徹惜水的行為，才能在控制食水需求增長方面，產生積極的變化。「共融啟智」章節載有水務署與社區合作推廣節約用水和精明用水文化的詳情。

管理用水流失

香港的山丘地形，加上頻密的道路工程、繁忙的交通，以及擠迫的地下公用設施，對地下水管造成各種干擾，導致水管滲漏的風險提高。為此，我們以全面的方式管理逾8 300公里的水管，並實施了一系列措施以減少用水流失。

「智管網」

在「智管網」計劃下，我們將於二零二四年前，在全港食水分配管網逐步設立監測區域，以監察用水流失的情況。「智管網」將香港的食水分配管網分為約2 400個監測區域，其中部份監測區域並將用作水壓管理區域，配有減壓裝置，將水壓調節到合適水平，以減少滲漏引致的用水流失。截至二零二零年底，我們已設立約1 440個監測區域。每個監測區域均裝有監測設備和感應器，以監測區域內用水流失的情況。

全新推出的「智能管網管理電腦系統」會協助收集各監測區域大量的管網數據，識別異常情況，並對需要跟進的監測區域進行排序，從而決定最合適和最有效的管網管理措施。這些措施包括：

- ◆ 主動探測滲漏；
- ◆ 水壓管理；
- ◆ 快速維修滲漏水管；及
- ◆ 更換及修復水管。

Promoting Water-Wise Culture

We believe a targeted approach in close collaboration with stakeholders in promoting water-wise living and sustaining water-cherishing behavior is the key to effect positive changes in containing the growth of fresh water demand. The details of the WSD's collaborative efforts with the community to promote water conservation and water-wise culture are covered in the Community Wise Section.

Water Loss Management

The hilly terrain as well as various disturbances to underground water mains in Hong Kong due to frequent roadworks, busy traffic and congested underground utilities have caused higher risk of leakage from water mains. To this end, we adopt a holistic approach in managing over 8 300km of our water mains, and have implemented a host of measures to cut down water loss.

Water Intelligent Network

Under the project "Water Intelligent Network" (WIN), we have been progressively establishing District Metering Areas (DMAs) in our fresh water distribution network across the territory by 2024 to monitor water loss. The WIN divides Hong Kong's fresh water distribution networks into about 2 400 DMAs. Some of these DMAs are also designated as Pressure Management Areas (PMAs) and equipped with pressure reduction devices that can modulate water pressure to a suitable level to reduce the quantity of water loss due to leakage. As at end 2020, we have set up about 1 440 DMAs. Monitoring and sensing equipment will be installed in each DMA to monitor water loss therein.

The newly introduced "Water Intelligent Network Management System" assists in collecting vast amount of data from these DMAs, identifying anomalies and prioritising areas for follow-up actions with the objective to determining the most suitable and effective network management measures. These measures include:

- ◆ active leakage detection;
- ◆ pressure management;
- ◆ quality and speedy repair of water main leaks; and
- ◆ replacement and rehabilitation of water mains.

於二零二零至二一年度，隨著「智管網」逐步實施，
In 2020/21, with the progressive implementation of the Water Intelligent Network,



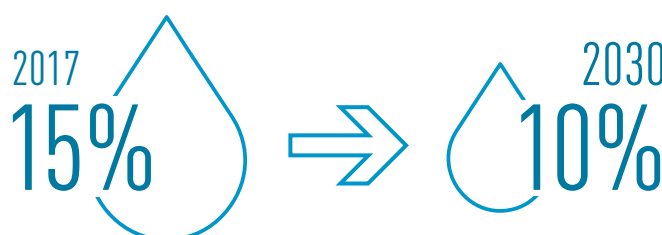
「智管網」
Water Intelligent Network

580 個滲漏點被發現並修復
leaks were identified and repaired

= 14 200 立方米
的食水
of fresh water

目標在二零三零年前，將政府水管的滲漏率從二零一七年的15%降低至10%以下。

By 2030, we aim to reduce leakage rate of government mains from 15% in 2017 to below 10%.



管理私人水管滲漏

除了管理政府水管的用水流失外，我們亦採用一系列措施，例如為私人發展項目安裝總水錶，以監察私人水管用水流失的情況。我們亦透過編制合約條款及規格範本，以及提供測漏服務供應商參考名單，為業主、物業管理人和服務供應商提供建議和支援，使他們能更方便安排測漏調查。

「智管網」的逐步推行讓我們能發現隱藏於私人水管的滲漏點。當「智管網」在某監測區域發現用水量異常，我們的負責團隊便會到場進行滲漏調查，包括目視和聽音檢查、滲漏噪聲相關測試和滲漏分段測試。若私人水管出現懷疑用水流失，我們會向相關業主和物業管理人提供建議和支援。

Managing leakage of private water mains

Apart from managing water loss from government mains, a series of measures, for example, installing master meters at private developments, have been put in place to monitor water loss. We also provide advice and support to property owners, management agents and service providers to facilitate leak investigations through publishing sample contract clauses and specifications, and providing a reference list of local leak detection service providers.

The progressive implementation of WIN also allows us to identify hidden leaks in private water mains. Once the intelligent network detects an unusual amount of water consumption in certain DMAs, our water loss management teams will assist in on-site visual and sounding inspections, leak noise correlation surveys and leak detection step tests. In case the water loss is suspected occurring in the private water mains, advice and support would be provided to the concerned property owners and management agents.

專題故事

Feature Story

提高滲漏探測的專業技能

RAISING PROFESSIONAL SKILLS IN LEAK DETECTION

加強相關從業員的知識和能力是處理用水流失的關鍵。為提升從業員的監測滲漏質素和專業技能，水務署一直與多個業界和教育機構合作，發展培訓和認可資歷，並與業界分享實踐經驗。

其中一個例子是我們與香港建造學院合作，推出地下水管測漏證書課程，用以提升從業人員的技術能力。該課程於二零一九年推出，內容包括理論、實習、撰寫檢查報告和考試，是促進持續專業發展的重要平台，同時提高香港建築物的水管規劃和管理質素。

Enhancing knowledge and capability of practitioners is the key to tackling water loss. To raise the quality of monitoring water leakage and professional skills of the practitioners, the WSD has been working with various industry and educational institutes in developing training and qualifications as well as sharing practical experiences to the industry.

One example of enhancing capability of practitioners is our collaboration with the Hong Kong Institute of Construction in developing a certificate course in leak detection on water mains. Launched in 2019 and comprising components of theory, practical training, inspection report writing and examination, the course provides a key platform for enabling continuing professional development while enhancing quality of water mains planning and management in Hong Kong buildings.



本證書課程為從事水務和樓宇管理的工作人員而設，教導地下水管測漏的理論知識及提供實習訓練，填補現時業界缺乏的基礎知識培訓，提升從業員在規劃和管理滲漏維修工程方面的知識。

This Certificate course offers both theoretical knowledge and practical training on leak detection of underground water mains, which is the most common difficulty faced by practitioners and those in the water and building management industries. The course not only helps practitioners build a solid foundation on the subject, but also enriches their knowledge on planning and managing leakage repair works.

香港建造學院建造專業進修院校校長(署任)趙家信先生

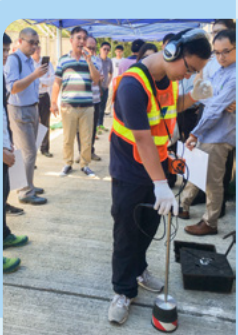
Mr CHIU Ka-shun, Daniel - Principal (Acting), School of Professional Development in Construction of Hong Kong Institute of Construction

課程旨在提高從業員在測漏工作方面的技能和質素。從業員和有關業界能透過參加本課程接受實習訓練，學習使用各種最新的測漏儀器，及多種地下水管測漏和滲漏點定位的方法。我們相信透過參加此課程，從業員能提供既有效又高效率的測漏工作，將有助及時定位和修復滲漏喉管，減少政府供水管網和私人處所的地下水管的用水流失。

Practitioners and relevant sectors will receive practical training in the use of various and latest leak detection equipment and methods to detect and locate water leaks at underground water mains through participating in this course. The course aims at enhancing their skill and quality of leak detection work. Through this course, we believe that practitioners can become more effective and efficient in leak detection, facilitating timely locating and repairing the leak points. This will help reduce water loss in underground water mains within both government networks and private premises.

水務署發展(一)部水管測漏組總水務督察李達斌先生

Mr LI Tat-pun - Chief Waterworks Inspector of Leak Detection Unit, Development (1) Division, WSD



自動讀錶系統

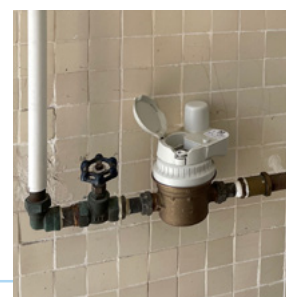
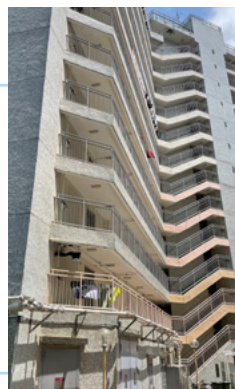
作為推動香港成為智慧城市的一部分，我們從二零一八年起，於新建公營及私人發展項目引入智能水錶系統——自動讀錶系統，以進一步促進社區的用水效益和智能生活。除了改善讀錶的準確度和效率，我們期望透過自動讀錶系統的流動應用程式，提供客戶用水量的資訊，從而提高客戶節約用水的意識並鼓勵他們作出行為上的轉變。此外，當水管滲漏或滴漏的水龍頭導致異常的用水量時，系統會適時發出警報，使客戶能作出滲漏檢測和水管維修。

為擴展自動讀錶系統的應用至現有處所，我們正研究採用無線技術的可行性。由於大澳不僅遠離高層建築物，而且適合無線電網關通訊，我們選擇了它為首個無線自動讀錶系統的試點，以提升用水效益和客戶服務。試驗已於年內初步完成，結果令人滿意。我們於二零二一年安裝了共500個智能水錶。我們將進一步研究無線技術的可行性。

Automatic Meter Reading System

As part of advancing Hong Kong into a smart city, we have introduced a smart water meter system — Automatic Meter Reading (AMR) since 2018 in new public and private developments to further promote water efficiency and smart living in the community. Besides improving accuracy and efficiency in water meter readings, we seek to raise customer awareness of water conservation and inspiring their behaviour changes through the provision of water consumption information via the AMR mobile app. The AMR system also helps in enabling leakage detection and repair of water mains through timely alerts on unusual consumption due to water seepage or dripping taps.

With a view to extending the use of AMR to existing premises, we are assessing the feasibility of adopting wireless technology. Due to its remoteness from high-rise buildings and suitability for radio gateway telecommunications, Tai O is selected as the first trial of our wireless AMR solution to improving efficiency and customer service. During the year, the trial was initially completed with satisfactory results and a total of 500 smart water meters were installed in 2021. We will further investigate the viability of the wireless technology.



為改善讀錶的效率及準確度，我們目前正於漁村棚屋、村屋、公共屋邨和政府設施測試無線自動讀錶系統。

Wireless AMR system is currently being tested in fishermen's huts, village houses, public housing estates and government facilities with a view to improving efficiency and accuracy in water meter readings.

次階水

我們利用先進技術，致力擴大使用次階水，包括海水及循環再用水（即再造水、重用中水及回收雨水），用於沖廁、園景灌溉和清潔街道等非飲用用途，務求節省食水資源。

Lower Grade Water

Leveraging advanced technologies, we have been actively expanding the use of lower grade water, which includes salt water and recycled water (i.e. reclaimed water and treated grey water and harvested rainwater) for non-potable uses, for example, toilet flushing, landscape irrigation and street cleansing to help conserve fresh water resources.

長遠而言，我們的目標是擴展次階水用於沖廁和其他非飲用用途的供應網絡覆蓋範圍，由香港總人口的85%增加至90%，並著重新發展地區和現時使用淡水沖廁的地區。

海水供應網絡

為進一步降低食水用量，我們繼續擴大使用海水沖廁的範圍。我們現正為東涌新市鎮建造海水供應系統，以替換區內目前使用的淡水沖廁系統。有關工程預計於二零二三年竣工，供應海水至東涌新市鎮及其擴展區。

供應再造水

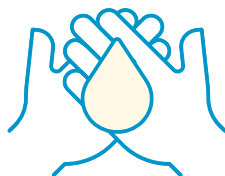
石湖墟污水處理廠目前正進行工程，以升格為具備三級污水處理水平的淨水設施。工程除了可提升該廠處理來自上水、粉嶺及周邊發展區污水的能力外，經淨水設施處理的排放水更可用作生產再造水作沖廁及其他非飲用用途。此舉不但可節省珍貴的食水資源，還能減少經處理的排放水被排放至受納水體。這個再造水供應系統，每年可處理的總水量高達2 200萬立方米，覆蓋約 50 萬人口，因此每年可節省同等分量的食水供應。

我們已於二零一七年四月開始興建配水庫及敷設輸水幹管，為上水及粉嶺等新界東北部供應再造水做好準備。再造水生產設施、抽水系統及分配水管等餘下工程的設計已大致完成，並計劃於二零二一年五月向立法會財務委員會申請撥款。建造工程計劃於二零二一年第三季度動工，並於二零二四年在上水和粉嶺率先供應再造水，隨後陸續供應新界東北的新發展區。

供應再造水後， The supply of reclaimed water will

每年可節省食水
save fresh water each year

約 about **22** 百萬立方米
million m³



覆蓋約
covering about

500 000 人口
people



We aim to expand the network coverage for supplying lower grade water from 85% to 90% of Hong Kong's total population for flushing and other non-potable uses in the long run with the focus on the new development areas and those areas currently being supplied with fresh water for flushing.

Salt Water Supply Network

To further reduce the fresh water consumption, we continue to expand the use of salt water for flushing. The Tung Chung New Town is currently being supplied with fresh water for flushing. We are building a replacement salt water supply system that will be completed in 2023 to supply salt water to the Tung Chung New Town and its extension for flushing.

Supply of Reclaimed Water

The Shek Wu Hui Sewage Treatment Works is being upgraded to an Effluent Polishing Plant (EPP) with tertiary treatment process. This will increase its capacity for treating sewage from Sheung Shui, Fanling and adjacent development areas, and allow us to produce reclaimed water by further processing the EPP's treated effluent. Using reclaimed water for flushing and other non-potable purposes not only saves our precious fresh water resources, but also reduces the amount of treated effluent discharge to the receiving water bodies. The reclaimed water supply system is capable of processing a total volume of up to 22 million m³ per year with a coverage of about 500 000 people, hence saving an equivalent amount of our fresh water supply each year.

In April 2017, we began to construct a service reservoir and lay trunk water mains to pave the way for the supply of reclaimed water to the northeast New Territories, including Sheung Shui and Fanling. The design of the remaining works, including water reclamation facilities, a pumping system and local distribution mains, has been substantially completed and we aimed to seek the funding approval from the Legislative Council Finance Committee in May 2021. The construction works are scheduled to commence in the third quarter of 2021 and the supply of reclaimed water will be first commissioned in Sheung Shui and Fanling in 2024 to be followed by new development areas in the North-east New Territories progressively.

中水重用及雨水回收

從住宅和工業收集的中水和回收的雨水，經處理後可重新用於非飲用用途，從而減少食水用量。我們於二零二零年九月開始，在安達臣道石礦場用地發展項目中，興建一套每日可處理最高達3 300立方米的中水重用系統。系統將於二零二三年投入服務，以配合區內人口發展。

中央中水重用系統包括中水處理廠、抽水系統、貯存經處理中水的配水庫，及用於收集中水和向該發展區輸送經處理的中水作沖廁及其他非飲用用途的管道。

政府牽頭推動中水重用及雨水回收系統，更頒布內部指引，在新的政府工程項目採用這些循環再用水設施。在此倡議下，截至二零二一年三月，約有115個政府工程項目中的新建大樓已配備中水重用及/或雨水回收系統。水務署天水圍大樓是支持相關倡議的政府工程項目之一。

Grey Water Recycling and Rainwater Harvesting

Grey water collected from households and industries as well as rainwater harvested can be treated and reused for non-potable uses thereby reducing fresh water consumption. From September 2020, we began the construction of a grey water recycling system with a maximum treatment capacity of 3 300 m³ per day at the Anderson Road Quarry Site Development. The supply of grey water will commence in 2023 to tie in with the population intake of the development.

The centralised grey water recycling system consists of a grey water treatment plant, a pumping system, a service reservoir for storing treated grey water, and water mains for grey water collection and distribution of the treated grey water within the development for flushing and other non-potable uses.

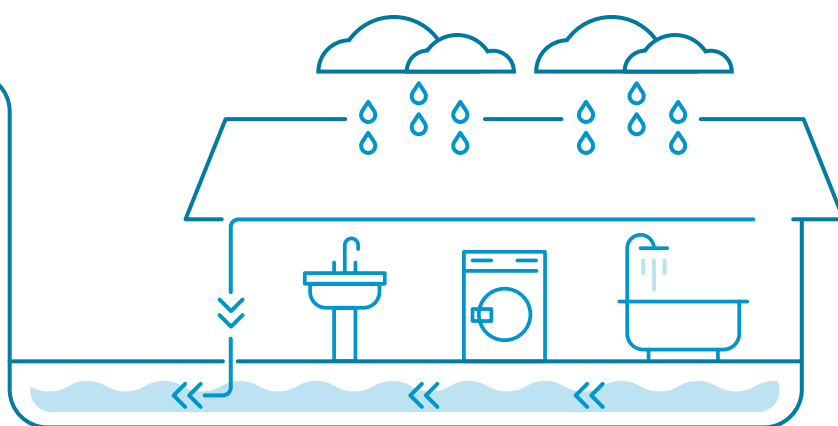
The Government is leading by example in adopting grey water recycling and rainwater harvesting systems with the promulgation of internal guidelines for installing these water recycling facilities in new government projects. Following this initiative, new buildings of approximately 115 government projects have been equipped with grey water recycling and/or rainwater harvesting systems as at March 2021. The WSD Tin Shui Wai Building is one of these government projects supporting the relevant initiative.

截至二零二一年三月，約
As at March 2021, about

115 個政府工程項目
government projects'

的新建大樓已配備中水重用及/或雨水回收系統。

new buildings have been equipped with grey water recycling and/or rainwater harvesting systems.



為推動私營企業採用中水重用和雨水回收，我們在香港綠色建築議會的綠建環評新建建築2.0版提出新規定，藉以鼓勵發展商在新發展項目中採用中水重用和雨水回收系統。截至二零二一年三月，約60個獲得綠建環評新建建築1.2或2.0版認證的項目已採用循環再用水設施。

To advance adoption of grey water recycling and rainwater harvesting in the private sector, we have proposed new provisions in the Hong Kong Green Building Council's Building Environmental Assessment Method (BEAM) Plus New Buildings Assessment Tool Version 2.0 to incentivise project owners to adopt grey water recycling and rainwater harvesting systems in their new development projects. As at March 2021, about 60 certified projects under BEAM Plus New Buildings Assessment Tool v1.2 and v2.0 have initiated efforts in adopting water recycling facilities.

專題故事

Feature Story

提升食水供應的應變力

BUILDING RESILIENCE IN FRESH WATER SUPPLY

海水化淡

為應對氣候變化對本地集水帶來的極端影響，我們正發展海水化淡這種策略性的水資源，興建將軍澳海水化淡廠第一階段，以加強香港食水供應的應變力。

香港作為沿海城市，海水供應充足，為發展海水化淡工程提供了有利的條件。將軍澳海水化淡廠第一階段採用先進的逆滲透技術，生產的食水符合香港食水標準。該廠的年產量為5 000萬立方米，未來更可擴展至每年1億立方米。

佔地8公頃的海水化淡廠毗鄰大廟灣，計劃於二零二三年啟用。我們致力將可持續的環保特色融入於化淡廠的設計、建造和保養工作中，包括採用可再生能源和低耗能工序、雨水回收作灌溉用途、智慧燈柱、屋頂和牆身的綠化，務求將碳足跡減至最低，並提升能源效益。我們力求打造頂級的環保基礎設施，使化淡廠的卓越建築表現獲得「綠建環評」新建建築鉑金級認證。

在興建過程中，我們響應發展局推行的「建造業2.0」，引入多項促進創新、專業化和年輕化的措施。例如，我們使用建築信息模擬(BIM)技術、可供製造及裝配的設計(DfMA)、組裝合成建築法(MiC)、數碼工程監督系統(DWSS)和智慧安全裝置，以提高項目效率及地盤安全。

Seawater Desalination

To cope with the extreme impacts of climate change on the local yield, we are developing desalination which is a strategic fresh water resource and building the first stage of the Tseung Kwan O Desalination Plant to strengthen resilience for fresh water supply in Hong Kong.

As a coastal city, Hong Kong enjoys an abundant supply of seawater providing a favourable condition for supplying desalinated water. Using the latest reverse osmosis technology, the first stage of the Tseung Kwan O Desalination Plant will produce potable water in compliance with the "Hong Kong Drinking Water Standards" (HKDWS). It will have an annual production capacity of 50 million cubic metres with the provision to double its capacity to 100 million cubic metres per annum in the future.

Located on an 8-hectare site which is adjacent to Joss House Bay (also known as Tai Mui Wan), the desalination plant is scheduled to be commissioned in 2023. We strive to integrate sustainable green features into the design, construction and maintenance of the plant. These include the adoption of renewable energies and low-energy consumption processes, rainwater harvesting for irrigation, smart street lighting poles, green roofs and walls to minimise carbon footprint while enhancing energy efficiency. We seek to build a top-class green infrastructure and achieve the top BEAM Plus New Buildings Platinum accreditation for its outstanding building performance.

In the course of construction, we have incorporated a number of measures to promote innovation, professionalism and revitalisation under the initiative of "Construction 2.0" as advocated by the Development Bureau. For example, we have used Building Information Modelling (BIM), Design for Manufacture and Assembly (DfMA), Modular Integrated Construction (MiC), Digital Works Supervision System (DWSS) and smart safety devices for enhancing project efficiency as well as improving site safety.

憑藉將軍澳海水化淡廠第一階段的創新設計、配以高效的BIM技術應用，以及氣候抵禦力高的基礎設施，項目於二零二零年榮獲多個重要的行業獎項，包括：

- ◆ 2020香港建築信息模擬學會大獎銀獎
- ◆ 在建造業議會舉辦的2020建築信息模擬成就嘉許禮上榮獲「2020建築信息模擬項目」
- ◆ Silver Award at the Hong Kong Institute of Building Information Modelling (HKIBIM) Awards 2020
- ◆ “BIM Projects 2020” in the Celebration of BIM Achievement 2020 organised by Construction Industry Council



將軍澳海水化淡廠第一階段不僅能開拓生產可靠的食水資源，同時將可持續的環保特色融入化淡廠的設計、建造和保養工作中。

The First Stage of Tseung Kwan O Desalination Plant produces a reliable source of potable water while integrating sustainable green features into the design, construction and maintenance of the plant.

食水安全及 供水可靠性

Water Safety and Reliability



水務署致力透過持續水質監測、全面的水安全計劃、法例規管、優質資產管理和策略性優化供水設施，為香港提供安全和可靠的供水。

At the WSD, we strive to provide Hong Kong with safe and reliable water supplies through routine water quality monitoring, comprehensive water safety plans, legislative regulation, quality asset management and strategic enhancements in water supply infrastructure.

食水安全

香港是全球其中一個擁有最安全食水供應的城市。為保障公眾健康，我們制定了一套綜合食水水質管理系統，監測從源頭到用戶水龍頭的水質，確保食水水質完全符合香港食水標準——一套參考世界衛生組織（世衛）出版的《飲用水水質準則》及其他國際經驗而制定的標準。

WATER SAFETY

Hong Kong enjoys one of the safest water supplies in the world. We have developed an integrated Drinking Water Quality Management System to monitor water quality from sources to consumers' taps and ensure that the quality fully complies with the Hong Kong Drinking Water Standards (HKDWS) for the protection of public health. The HKDWS was established with reference to the Guidelines for Drinking-water Quality published by the World Health Organization (WHO) and other international practices.

水質監測

水質監測是確保水資源得以妥善保護和管理的基本工作。我們開展全面的計劃，對原水*和食水樣本進行一系列的物理、化學、細菌、生物和輻射檢測，以監測整個供水系統的水質。樣本收集範圍包括木湖抽水站的東江水接收點、集水區與

Water Quality Monitoring

Water quality monitoring is a fundamental tool to ensuring our freshwater resources are properly protected and managed. We undertake comprehensive programmes through a series of physical, chemical, bacteriological, biological and radiological examinations of our raw water* and drinking water samples to monitor water quality in the entire water supply system. These range from the

* 原水包括東江水和本地集水區收集的雨水

* Raw water includes Dongjiang water and rainwater collected from local water gathering grounds.

相關設施、水塘、濾水廠、配水庫、分配系統和用戶水龍頭。本年內共收集及檢測超過16萬個樣本。

reception point of Dongjiang water at the Muk Wu Raw Water Pumping Stations, catchment areas and related facilities, impounding reservoirs, water treatment works, service reservoirs, distribution systems and consumers' taps. During the year, more than 160 000 samples were collected and tested.

食水樣本 Drinking Water Samples

財政年度 Financial Year	食水樣本總數 No. of Drinking Water Samples
2016/17	84 089
2017/18	82 389
2018/19	82 717
2019/20	81 221
2020/21	74 411

註： 以上的食水樣本是從濾水廠、配水庫、供水接駁點及公眾可達的用戶水龍頭抽取。

Note: The above drinking water samples were taken at water treatment works, service reservoirs, connection points and publicly accessible consumer taps.

確保東江水水質

根據現行的《東江供水協議》，廣東省當局致力維持輸港東江水水質符合國家《地表水環境質量標準》(GB 3838-2002) 第II類水的標準，此標準為適用作生活飲用水的地表水的最高國家標準。為防止輸港東江水受到污染，當局更採取了一系列措施和工程：

- ◆ 於深圳水庫設立生物硝化站；
- ◆ 興建東深專用輸水管道；
- ◆ 進行河流污水分流工程和污染防治；
- ◆ 設立東江流域水量水質監測和控制系統；以及
- ◆ 完成沙灣河水環境綜合整治工程。

Maintaining Dongjiang Water Quality

Under the current Dongjiang Water Supply Agreement, the Guangdong authorities ensure the quality of Dongjiang water delivered to Hong Kong meets the national standard for Type II water in the "Environmental Quality Standards for Surface Waters" (GB3838-2002), which is the highest national standard applicable to surface water abstracted for human consumption. A series of measures and projects have been adopted to prevent the contamination of Dongjiang water delivered to Hong Kong:

- ◆ provision of a bio-nitrification plant at the Shenzhen Reservoir;
- ◆ construction of dedicated aqueduct from Dongjiang to Shenzhen Reservoir;
- ◆ undertaking of river sewage diversion works and pollution prevention;
- ◆ implementation of the Dongjiang Basin Water Quantity and Quality Monitoring and Control System; and
- ◆ completion of the comprehensive remediation project for the water environment of the Sha Wan River Basin.

我們在接收東江水的木湖抽水站設置在線水質監測系統，對東江水水質進行24小時監測。我們亦定期於木湖抽水站抽取東江水樣本作詳細分析，確保供應香港的東江水符合GB3838-2002中的第II類水的國家標準。

Via our online water quality monitoring system, we monitor the quality of Dongjiang water round the clock at the Muk Wu Raw Water Pumping Stations, where the Dongjiang water is received in Hong Kong. Dongjiang water samples are also collected regularly at the Muk Wu Raw Water Pumping Stations for conducting detailed analysis to ensure that the Dongjiang water supplied to Hong Kong complies with the national standard for Type II water in the GB3838-2002.

東江水的平均氨氮及錳水平

Average Ammoniacal Nitrogen and Manganese Levels in Dongjiang Water

	單位 Unit	財政年度 Financial Year			GB3838-2002第II類標準值 GB3838-2002 Type II Standard Value
		2018/19	2019/20	2020/21	
氨氮 Ammoniacal Nitrogen	毫克/公升 mg/L	0.04	0.03	0.03	≤0.5
錳 Manganese	毫克/公升 mg/L	0.03	0.03	0.02	≤0.1

優化食水水質監測

多年來，我們實施一套食水水質監測計劃，於濾水廠、配水庫、供水接駁點和公眾可達用戶水龍頭(例如商場、診所、社區設施、運動場、街市、政府辦事處及屋邨管理處等地方的水龍頭)抽取食水樣本，以監測食水水質，並建立全港食水水質數據庫以檢討香港食水標準。

我們於二零一七年十二月推出「水質監測優化計劃」，藉此加強水質監測範圍至用戶水龍頭，透過隨機抽取處所用戶水龍頭的食水樣本，檢測可能在內部供水系統出現的六種金屬，即銻、鎘、鉻、銅、鉛和鎳。

Enhancing Drinking Water Quality Monitoring

Over the years, we have implemented a drinking water quality monitoring programme to collect drinking water samples from water treatment works, service reservoirs, connection points and publicly accessible consumers' taps (such as those in shopping centres, clinics, community facilities, sports grounds, markets, government offices and estate management offices) to monitor the quality of drinking water and facilitate the creation of a territory-wide database for reviewing the HKDWS.

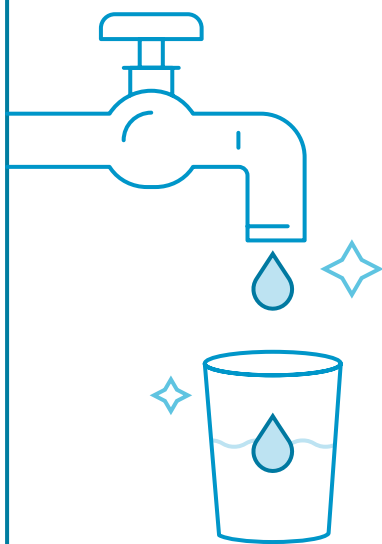
In December 2017, we launched the "Enhanced Water Quality Monitoring Programme" ("Enhanced Programme") to strengthen our water quality monitoring at consumers' taps in randomly selected premises in Hong Kong, and collect drinking water samples from these drinking taps for testing six metals, namely antimony, cadmium, chromium, copper, lead and nickel that could be present in internal plumbing systems.

點滴話你知

Did You Know?

政府不時檢討香港食水標準，以確保食水水質和安全。將於二零二一年四月發布的最新香港食水標準，包含了60個水質參數。政府亦參考了世界衛生組織的指引，在最新的香港食水標準中，採用了對氯酸鹽和二氯乙酸鹽更嚴格的標準。

The Hong Kong Drinking Water Standards (HKDWS) is reviewed from time to time by the Government to ensure our drinking water quality and safety. In the latest HKDWS to be released in April 2021, 60 parameters are included. With reference to the WHO's Guidelines, the Government has adopted more stringent standards for chlorate and dichloroacetate in the latest HKDWS.



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專題故事

Feature Story

擁抱創新，提升水質監測表現

EMBRACING INNOVATION FOR RAISING WATER QUALITY MONITORING PERFORMANCE

以無人船系統監測水質和取樣

水塘的原水是香港的主要食水來源之一。水務署定期監測水塘的水質和抽取樣本，以便有效控制下游濾水廠的食水處理過程，確保食水安全。

為提升水塘水質監測，水務署近年引入了嶄新的無人船系統，在水塘自動監測水質和取樣，透過採用創新科技，提升緊急狀況應變能力和運作效率。

為提升效率和緊急狀況應變能力，無人船船隊在船灣淡水湖執行自動水質監測和取樣。

The USV fleet performs automatic water quality monitoring and sampling at the Plover Cove Reservoir enhancing efficiency and emergency response.

Unmanned surface vessel system deployed in water quality monitoring and sampling

Raw water in impounding reservoirs is one of the major drinking water sources in Hong Kong. The WSD monitors the water quality and collects water samples in impounding reservoirs on a regular basis which facilitate effective control of water treatment process at downstream water treatment works to ensure the safety of drinking water.

To advance water quality monitoring, the WSD has introduced a new unmanned surface vessel (USV) system in recent years to perform automatic water quality monitoring and sampling in impounding reservoirs, boosting emergency responsiveness and operational efficiency through the adoption of innovation and technology.



無人船收集溫度、導電率、混濁度、溶解氧、酸鹼值、葉綠素-a、藍綠藻等數據，並發送至基站電腦進行實時分析。

The USV system collects and sends data of temperature, conductivity, turbidity, dissolved oxygen, pH, chlorophyll-a and blue green algae to the base station computer for real-time analysis.

無人船系統由可再生能源驅動，可連續運作約3至4小時，航程為11至14公里。

Powered by renewable energy, the USVs can continuously operate for about three to four hours for a distance of 11km to 14km.



提高應變能力

目前，香港有17個水塘儲存原水。水塘水質有時會受到自然環境或突發事件影響，例如天氣變化可能導致藻類過度生長，令水質改變。水務署引入無人船「船隊」，主要在全港面積最大的水塘——船灣淡水湖進行水質監測，以掌握水質情況，並於緊急情況下採取適當的行動。

配備監測和自動導航系統

無人船系統由一個基站電腦和四艘電動無人船組成。每艘無人船均配置了水質監測裝置，用於監測溫度、導電率、混濁度、溶解氧、酸鹼值、葉綠素-a和藍綠藻。每艘無人船上的取水裝置都連接船底的水管，直接將水抽進樣本箱內。

無人船還配備了自動導航系統和避障系統，在運行時能繞過障礙物。水務署人員可通過基站電腦遙距控制無人船，讓船隻沿預設路線自動導航、監測水質並在水塘的指定位置取樣。收集得到的水質數據將實時發送至基站電腦，迅速分析並製成水塘表面水質數據分布圖，顯示水質變化較大的區域，以便評估和採取適當的跟進行動。

Enhancing emergency responsiveness

Currently, there are 17 impounding reservoirs for raw water storage in Hong Kong. The water quality of impounding reservoirs may be sometimes affected by the natural environmental conditions or unexpected incidents. For instance, a change of weather may lead to excessive growth of algae thereby causing an impact on water quality. The USV "fleet" introduced by the WSD mainly conducts water quality monitoring at the Plover Cove Reservoir, Hong Kong's impounding reservoir with the largest surface area, to keep track of water quality and initiate appropriate action in case of emergency.

Equipped with monitoring and auto-navigation systems

The USV system consists of a base station computer and four electric USVs. Each USV is equipped with a water quality monitoring unit to monitor temperature, conductivity, turbidity, dissolved oxygen, pH, chlorophyll-a and blue green algae. The water sampling unit on each vessel is connected to a pipe underneath, pumping water into the water sampling tank directly.

The USVs are also equipped with auto-navigation system and obstacle avoidance system for navigating around obstacles during operation. By using the base station computer, the WSD staff can remotely control the USVs to navigate automatically along a pre-set route, monitor water quality and conduct sampling at designated locations within the reservoir. The water quality data collected will be sent to the base station computer in real time for timely analysis and generation of a surface water quality profile indicating areas with significant variations in water quality to facilitate evaluation and appropriate follow-up.

擴展到其他地點和應用

Scaling up to other locations and applications

經過船灣淡水湖的成功實踐後，我們計劃將無人船船隊分階段推展至其他水塘，以提升水質監測的成效。

水務署團隊將繼續嘗試提升系統對實時水質數據的應對能力。例如，當記錄到較高的葉綠素讀數時，無人船能自動增加監測點的密度，以收集更多數據和樣本，供實驗室詳細分析藻類的數量和品種。

Leveraging the successful implementation at the Plover Cove Reservoir, we plan to roll out the USV fleet in phases at other impounding reservoirs for enhancing performance of water quality monitoring.

The WSD team will continue to make attempts at upgrading the system response capability to real-time water quality data. For example, when a higher chlorophyll reading is recorded, the USVs will automatically respond by increasing the number of monitoring points for more data and sample collection to facilitate detailed analysis on the quantity and species of algae in the laboratory.



水務署水務化驗師鄧浩維先生

Mr TANG Ho-wai, Waterworks Chemist, WSD

無人船系統的優點

與使用傳統載人船隻監測水質比較，新引進的無人船系統具有以下優點：

- ◆ **更容易調配人手：**無人船可由已受訓的技術人員操作，而傳統船隻則需由持牌船員駕駛。
- ◆ **可於淺水運作：**無人船船身較小，能行駛到水塘較狹窄或淺水的區域，擴大監測範圍。
- ◆ **製作圖像報告：**無人船系統可參照水塘地形製作水質圖像報告，令工作人員更容易判斷水質數據的分布和趨勢。
- ◆ **應變行動：**無人船系統易於調動和運輸，遇上緊急水質狀況時，如有需要，可以調配到不同水塘工作。
- ◆ **太陽能供電：**無人船由可再生能源供電。水務署已在無人船的儲存室外，安裝太陽能板發電系統，產生電能供給無人船使用。

Benefits of the USV system

Compared with water quality monitoring by the traditional manned vessels, the newly introduced USV system has the following advantages:

- ◆ **Ease of deployment:** The USVs can be operated by a trained technician, whereas traditional vessels have to be operated by a licensed vessel operator.
- ◆ **Shallow water applications:** The USVs can travel to relatively narrow or shallow areas in impounding reservoirs due to smaller in size and therefore potential to broaden the areas of monitoring.
- ◆ **Graphic report generation:** The USV system can generate water quality graphical reports with reference to the map of the impounding reservoirs. This makes it easier for the staff to diagnose the distribution and trends of water quality data.
- ◆ **Emergency operation:** With ease of deployment and transportation, the USV system can be deployed at various impounding reservoirs in the event of water quality emergencies if necessary.
- ◆ **Solar-powered:** The USVs are powered by renewable energy. The WSD has installed a solar panel system outside the USV storage house for generating electricity to the USVs.

水安全計劃

我們採取風險為本和多重屏障的原則，確保食水安全。我們希望透過與各界別持份者通力合作，有效實施水安全計劃，從源頭至用戶水龍頭確保食水水質，以保障公眾健康。

自二零零七年起，我們根據世衛在二零零四年推出的《飲用水水質準則》，制訂和實施水安全計劃。

食水水質管理系統

我們於二零一七年檢討了水安全計劃，並參考國際專家的建議及西澳洲的實踐經驗，通過健康目標、水質政策、水安全計劃的系統評估和監測、監督、溝通、培訓和公眾教育等元素，制定了一套綜合的食水水質管理系統。

作為持續改進的一部分，我們參考內部和第三方審核的結果及建議，加上海外和本地水質管理的經驗，定期檢討工作流程和運作程序。為提高成效，我們於二零二零年六月更新了食水水質管理系統，其中包括加強配水庫翻新工程的風險評估。

建築物水安全計劃

建築物的食水水質可受其內部供水系統的多個因素影響，有機會受到微生物或化學污染。水務署致力推行建築物水安全計劃，以保障香港建築物的食水水質。

我們按照世衛的建議及水務諮詢委員會的意見，推出「大廈優質供水認可計劃－食水（管理系統）」，透過這項水質管理獎勵計劃，鼓勵業主和物業管理人，在其處所實施建築物水安全計劃。

Water Safety Plan

We have taken a risk-based and multiple barrier approach to ensuring the safety of our drinking water supply. Through the effective implementation of Water Safety Plan (WSP), in joint collaboration with various stakeholders, we hope to ensure drinking water quality from source to consumers' taps for the protection of public health.

Since 2007, we have developed and implemented our WSP based on the 2004 Guidelines for Drinking-water Quality from the WHO.

Drinking Water Quality Management System

In 2017, we reviewed and enhanced our WSP by developing an integrated Drinking Water Quality Management System (DWQMS) via health-based targets, water quality policy, system assessment and monitoring of WSP, surveillance arrangements, communications, training and public education, in accordance with the recommendations of international experts as well as overseas practices in Western Australia.

As part of ongoing improvements, we conduct regular reviews of our practices and operational procedures taking reference from the findings and recommendations of internal and third-party audits; as well as overseas and local experiences in water quality management. With a view to enhancing its effectiveness, we updated the DWQMS in June 2020 with, among others, enhancement in the risk assessment on renovation works of service reservoirs.

Water Safety Plan for Buildings

Numerous factors of a building's internal plumbing systems influence the quality of drinking water and may result in microbial or chemical contamination of drinking water. The WSD is committed to promoting the implementation of Water Safety Plan for Buildings (WSPB) to safeguard drinking water quality in the buildings in Hong Kong.

Following the recommendations of the WHO, in consultation with the Advisory Committee on Water Supplies, we have launched the "Quality Water Supply Scheme for Buildings – Fresh Water (Management System)", a fresh water quality management cum recognition scheme to provide incentives for participation by property owners and management agents to implement the WSPB at their premises.

此外，我們亦根據風險管理的原則，制定了一套適用於一般建築物以及學校、安老院舍和醫院等特定建築物的指引和範本。

水務署的風險管理指引和範本，獲認可為其中一項最能夠促進建築物水安全計劃的實踐模式，並已上存至世衛和國際水協會共同管理的網站，供國際參考。

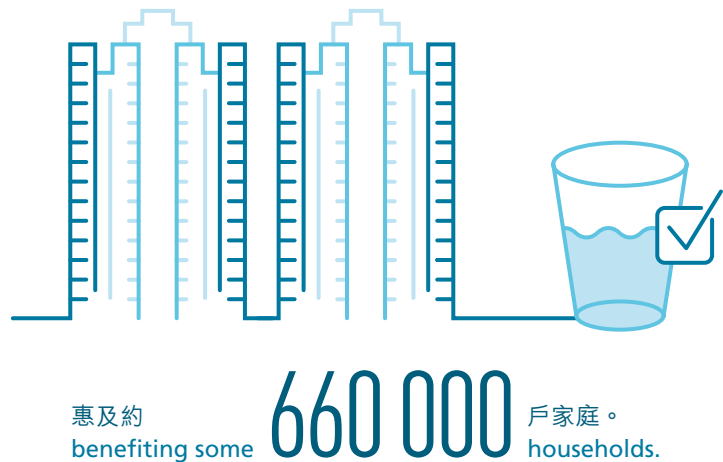
為促進計劃的推展，我們還在網站上載《小型樓宇的食水安全小貼士》和《已接受有關建築物水安全計劃培訓的合資格人士名單》，供公眾查閱。

A set of risk management-based guidelines and templates have also been developed to cater for the application by general buildings, as well as specific buildings such as schools, residential care homes for the elderly and hospitals.

The WSD's risk management-based guidelines and templates are considered among the best practices in promoting the implementation of the WSPB, which are being archived in a website jointly managed by the WHO and the International Water Association for international reference.

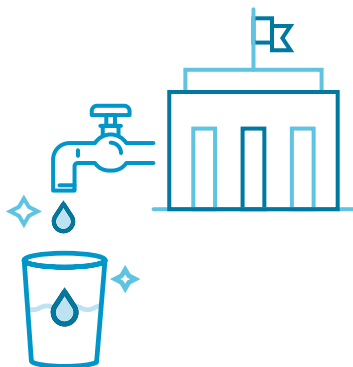
To facilitate implementation, we have also published "Drinking Water Safety Tips for Small Buildings" and the "List of Qualified Persons Trained in WSPB" on the website for public access.

自推出以來，約有 **2 000** 座建築物
Since its launch, about **2 000** buildings
已實施建築物水安全計劃並加入相關的「大廈優質供水認可計劃－食水(管理系統)」，
have implemented the Water Safety Plan for Buildings and joined the associated Quality Water Supply Scheme for Buildings – Fresh Water (Management System),



此外，政府已率先在轄下處所實施建築物水安全計劃，並計劃於二零二七年上半年前，在所有政府大樓全面推行。而香港房屋委員會亦已承諾自二零一八年第四季度起，於四年內在轄下所有公共租住屋邨實施有關計劃。計劃將惠及全港約73萬戶的公共租住房屋住戶（佔香港總住戶數目28%）。

In addition, the Government has taken the lead in implementing the WSPB on its premises. By the first half of 2027, the WSPB will be implemented in all government buildings. The Hong Kong Housing Authority has made commitment to implementing the WSPB in all of its public rental housing estates within four years since the fourth quarter of 2018. The plan will benefit about 730 000 households (28% of Hong Kong's total households) across all public rental housing estates.



於二零二七年上半年前，所有政府大樓中將實施建築物水安全計劃。

By the first half of 2027, the WSPB will be implemented in all government buildings.

專題故事

Feature Story

攜手向前邁步，確保建築物水安全

ENABLING JOINT EFFORTS FOR WATER SAFETY IN BUILDINGS

要全面實施建築物水安全計劃，有賴業主和物業管理人的齊心協力、財政資源配合、對建築物內部供水系統的認識，以及向公眾教育和宣傳。

為鼓勵採用建築物水安全計劃，行政長官於二零一九年施政報告中宣布，推出「水安全計劃資助計劃」，為合資格的私人樓宇業主或物業管理人，提供財政資助以實施建築物水安全計劃，進一步保障食水安全。

計劃獲撥款4億4千萬港元，於五年內資助合資格業主或物業管理人進行各項相關評估和實施控制措施，包括為樓宇內部供水系統進行水安全風險評估，以及根據水安全風險評估的建議進行維修工程以控制水安全風險。計劃自二零二零年七月起開始接受申請。

為提高公眾對計劃的了解及鼓勵申請，我們舉辦了一系列的公眾講座和宣傳活動，以推廣建築物水安全計劃的優點和講解「水安全計劃資助計劃」的申請程序。

The implementation of Water Safety Plan for Buildings (WSPB) requires long-term coordinated efforts of property owners and management agents, financial resources, technical knowledge of the building's internal plumbing system, as well as public education and promotion.

To encourage the adoption of the WSPB in buildings, the Chief Executive announced the launch of the "Water Safety Plan Subsidy Scheme" (WSPSS) in the 2019 Policy Address providing eligible property owners or management agents of private buildings with financial assistance to initiate the implementation of the WSPB at their premises with a view to further safeguarding the safety of drinking water.

A funding HK\$440 million has been allocated over five years to subsidise eligible property owners or management agents to carry out various assessment and control measures. These include water safety risk assessment on the internal plumbing system of the building for formulating the WSPB and rectification works for controlling the risk(s) as recommended in the water safety risk assessment. From July 2020, the Scheme began accepting applications.

To facilitate public understanding and encourage applications, we have organised a series of public talks and promotional campaigns to promote the benefits of the WSPB and the application procedures of the WSPSS.



政府將以身作則在所有政府大樓實施建築物水安全計劃。水務署會為該計劃提供技術支援，協助相關決策局/部門在轄下建築物制定水安全計劃。

To lead by example, there is a new policy for all Government buildings to implement the WSPB. The WSD is responsible to provide technical assistance to the relevant bureaux/departments in the formulation of the WSPB for their buildings.

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加強規管水喉物料及使用規定

為加強內部供水系統的食水安全，自二零一五年起，更為嚴格的水喉物料、設計、建造和新啟用供水系統的管制措施和指引已經執行。

水務署設有「一般認可」系統，預先批核符合《水務設施規例》規定技術要求的水喉產品。為加強監察「一般認可」的產品，水務署於二零一七年設立監察系統及於二零一八年設立物料測試所，亦於二零二零年推出自願性參與「《認可水喉產品》銷售商」計劃，讓市民識別在零售市場可購買的「一般認可」產品。這些產品的銷售商，必須為所有「一般認可」產品，貼上由水務署簽發的標籤，讓顧客可掃描標籤上的二維碼，查閱有關「一般認可」產品的有用資訊，包括原產地、質量保證資料、有效期等。為保障顧客，所有「一般認可」產品的銷售商，發出的正式銷售收據上均印有「一般認可」產品的參考編號。已註冊成為「一般認可」銷售商的商店名單，已上載於水務署網站。此外，所有已註冊的銷售商，都必須在當眼位置貼上「《認可水喉產品》銷售商」標籤，讓市民易於識別。

此外，水務署亦接納持有由獨立認可認證機構發出的「產品認證」證書的水喉產品。「產品認證」透過上游控制和持續監察工廠生產過程，促使產業質量的提升，從而確保產品品質穩定並符合認可標準。水務署於二零一九年推出計劃，免除對持有「產品認證」證書的水喉產品的監察要求，以鼓勵更多此類產品加入「一般認可」產品的行列。

法例檢討

檢討水務法例提升食水安全

我們繼續全面檢討《水務設施條例》(第102章)和《水務設施規例》(第102A章)，並於二零二零年十一月就有關法例修訂建議，展開為期90天的公眾諮詢。其中包括水管工程規管、水喉物料管制、飲水罐及飲水機管制、保障用戶水龍頭供應的食水安全、強制性「用水效益標籤計劃」，以及加強對內部水喉滲漏的規管。

Enhancing Plumbing Material Control and Commissioning Requirements

Since 2015, more stringent control measures and guidelines on plumbing materials, design, construction and commissioning of new plumbing systems have been enforced to strengthen drinking water safety in inside service.

The WSD has a General Acceptance (GA) system in place to pre-approve plumbing products in compliance with the technical requirements set out in the Waterworks Regulations. Apart from setting up the surveillance system in 2017 and the Material Testing Laboratory in 2018 for enhancing the conformity of GA products, the WSD launched a Voluntary GA Product Shop Scheme in 2020 to promote accessibility of GA products for the public in the retail market. In a GA Product Shop, all GA products are affixed with labels issued by the WSD. By scanning the QR code on the label, customers can retrieve useful information about the GA product including its country of origin, quality assurance status, expiry date, etc. To provide better customer protection, all official sale receipts issued by the GA Product Shops for GA products are also imprinted with corresponding GA Reference Numbers. The list of registered GA Product Shops can be found in the WSD's website. Besides, all registered shops are required to have GA Product Shop Labels affixed at prominent locations for convenient identification of the public.

Plumbing products with product certificates of independent accredited certification body are also acceptable to the WSD. The benefits of product certification are to promote industrial quality through control at the upstream, continuous surveillance of production process in factory to ensure consistent production quality and compliance with the recognised standards. In 2019, the WSD introduced a scheme to waive surveillance requirements for product certification scheme plumbing products so as to promote inclusion of more of these products into the GA portfolio.

Legislative Review

Legislative Review for Enhancing Drinking Water Safety

We continued our holistic review of the Waterworks Ordinance (Cap.102) and Waterworks Regulations (Cap.102A) and launched a 90-day public consultation in November 2020 on the proposed legislative amendments. These include the regulation of plumbing works, control of plumbing materials, control of drinking water dispensers and fountains, safeguarding drinking water safety at consumers' taps, mandatory water efficiency labelling scheme, and enhancing regulatory control of inside service leakage.

我們於二零二零年十二月舉辦了兩次網上公眾諮詢會，約150人參加。我們現正檢視公眾諮詢所收集的意見，並適時展開相應的法案草擬工作。

In December 2020, we held two online public forums participated by about 150 persons. We are currently reviewing the views collected from the public consultation and will proceed with the corresponding law drafting work as appropriate.



供水可靠性

資產管理

水務設施資產管理

為優化水務設施的表現，同時降低成本及減少故障風險，我們致力在水務設施的維修保養及管理上達致世界級水平。

我們分階段實施符合ISO 55001的資產管理系統來管理所有水務資產。此系統採用「生命週期」方式來籌劃、設計、興建、建造、運作、維修保養、更新以至棄置所有資產，讓我們作出適當的決策，以應對未來的挑戰，確保符合可持續發展，並提高運作可靠性和效率。此外，系統亦讓我們能夠管理故障風險，同時保持優質的服務水平，並根據風險分析調配資源和釐定行事的優次。

我們為水塘、濾水廠、抽水站、配水庫和斜坡等水務設施建立的資產管理系統，已於二零二零年底獲得ISO 55001認證。我們計劃在未來將認證範圍擴展到其餘的水務資產。

Following the achievement of the ISO 55001 certification for our asset management system for impounding reservoirs, water treatment works, pumping stations, service reservoirs, slopes, etc. in end 2020, we aim to extend the certification scope to the remaining waterworks assets in future.

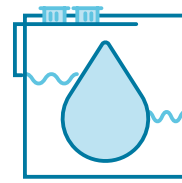
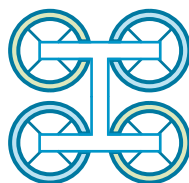
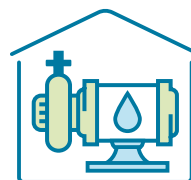
WATER RELIABILITY

Asset Management

Waterworks Asset Management

To optimise the performance of our waterworks while minimising costs and failure risks, we strive to attain the world-class quality for waterworks maintenance and management.

We have implemented the ISO 55001-compliant Asset Management System in stages to manage all of our waterworks assets. This system uses a “life-cycle” approach that encompasses planning, design, development, construction, operation, maintenance, renewal and disposal of all assets, allowing us to make appropriate decisions to meet future challenges, ensure sustainability and improve our operational reliability and efficiency. In addition, it allows us to manage risks of failure whilst maintaining a high level of service, and to allocate resources and priorities for the various kinds of work required according to risk analysis.



詳細及獨立的水塘視察

Detailed and independent reservoir inspections

鑑於二零一九冠狀病毒病疫情，我們外聘的海外專家顧問未能到訪香港作實地視察。在繼續由內部人員進行視察和風險評估的同時，我們致力在技術上尋求有效和可行的安排，使外聘專家顧問的獨立視察得以在疫情期間進行。年內，我們安排身在海外的專家顧問以遙距方式進行了17次水塘視察。我們將在可行的情況下恢復海外專家顧問來港作實地視察的安排。

Due to the COVID-19 epidemic, our external expert advisors from overseas could not visit Hong Kong to conduct onsite inspections. While the in-house inspections and risk assessment continue to operate, we sought to explore effective and technically practicable arrangements to resume independent inspections by them under epidemic condition. During the year, we made arrangements to enable our advisors to conduct at their home countries 17 remote inspections of our reservoirs. Where conditions permit, we would seize opportunity in allowing advisors to inspect in a usual manner.

在二零二零至二一年度，我們為水塘及配水庫進行了以下視察：
In 2020/21, we conducted the following inspections of our impounding and service reservoirs:



84 次由水務署人員進行的詳細視察
detailed inspections
conducted by internal staff

17 次由外聘專家顧問進行的遙距獨立視察
remote independent
inspections conducted by
external expert advisors

斜坡維修及鞏固

Slopes Maintenance and Upgrades

我們定期為轄下斜坡進行維修及鞏固工程，包括打泥釘、加固斜坡表面、在斜坡底部建造矮牆以栽種植物、改善排水系統、栽種一般植被、提供安全通道走廊等，大幅降低發生山泥傾瀉的風險，以及減少對公眾、水務人員和設施所構成的威脅。

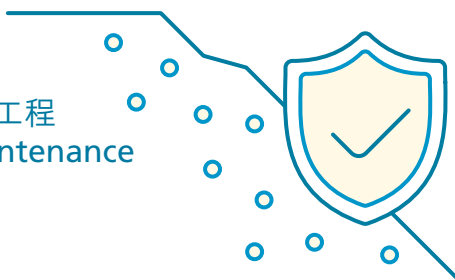
We regularly maintain and upgrade the slopes under our purview via soil-nailing, stabilisation of slope surface, construction of toe planter wall, improvement in drainage system, general planting, provision of safe access corridor and so forth. These efforts significantly decrease the risk of slope failure and the corresponding danger it can pose to the public, our staff and waterworks installations.

在二零二零至二一年度，
我們負責保養約
In 2020/21, we oversee
approximately

6 500 幅斜坡
slopes

並為其中 **47** 幅斜坡
Of these, 47 slopes

進行了預防性維修或鞏固工程
received preventive maintenance
or upgrades



提升水管資產管理

我們致力提升管理龐大水管資產的質素。水管爆裂的個案數字一直維持在低水平，在二零二零年亦只有約40宗。我們將繼續推行以風險為本的水管資產管理策略，以維持政府供水網絡的健康狀況，減低水管爆裂或滲漏的風險。

我們會根據水管爆裂或滲漏的後果、水管使用年期和物料、過往爆裂或滲漏記錄、周邊環境等各項因素，為高風險的水管優先進行改善工程，包括進行更換或修復水管，以減低水管爆裂或滲漏的風險。此外，我們亦會為位於「爆喉熱點」（即重複出現水管爆裂的段落）的水管進行改善工程。

提升供水可靠性

沙田濾水廠原地重置工程（南廠）

此項目旨在確保提供足夠的優質食水予由將相繼落成的公私營住宅發展所帶來的額外食水需求。

Enhancing Water Main Asset Management

We are committed to enhancing the management of our huge water main assets. Water main burst cases remain at a relatively low level. In 2020, about 40 main burst cases were recorded. We will continue to implement a risk-based water main asset management strategy to maintain the healthiness of the government water supply networks and to reduce the risk of water main bursts or leaks.

Taking into account various factors including the consequences of bursts or leaks, ages and materials of the water mains, past records of bursts or leaks, surrounding environment, etc., we accord priorities for improvement works to those water mains assessed with high risk, including replacement or rehabilitation to reduce the risk of water main bursts or leaks. In addition, we will carry out improvement works to water mains in “main burst hot spots” (i.e. sections with repeated water main bursts).

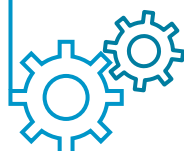
Enhancing Water Supply Reliability

In-Situ Re provisioning of Sha Tin Water Treatment Works (South Works)

The project aims to ensure an adequate supply of quality potable water to meet the anticipated increase in fresh water demand due to the progressive implementation of new public and private housing developments.

主項工程動工
Main works commenced

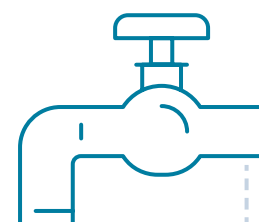
於八月
in August 2020



預計於
Scheduled in

2026 第一季
First quarter

全面投入運作
Full facility commissioning



為提高生產力、促進地盤安全和增強環保表現，項目採用了創新的施工方法和技術，當中包括BIM、DWSS和MiC等。特別一提，BIM增強了項目的設計、施工和工程管理，並藉著提供立體模擬環境及可分享數據的高效數碼單一工作平台，令將興建的各部分呈現在參與者的眼前，讓他們識別到潛藏的設計不協調、施工或運作問題。竣工後，BIM模型所包含的竣工資產資料，將用於設施管理(包括運作和安排維修保養)，以優化成本及效率。

項目已採用可持續建築設計，冀以卓越建築表現，獲取「綠建環評」新建建築最高級別的鉑金評級。

To improve productivity, promote site safety and enhance environmental performance, the project incorporates innovative construction methods and technology, including BIM, DWSS and MiC. In particular, BIM enhances the design, construction and project management, and enables all parties to visualise what is to be built in a simulated 3D environment to identify any potential design clashes, construction or operational issues via an efficient single digital working platform for relevant modelling works and data sharing. After completion, the asset information contained in the as-built BIM models would be used for facility management including operation and scheduling of future maintenance which optimise cost and efficiency.

Sustainable building design features has been adopted throughout the project with a view to achieving the top BEAM Plus New Buildings Platinum accreditation for its outstanding building performance.



採用可持續建築設計的沙田濾水廠原地重置工程(南廠)項目將增強供水可靠性。

In-Situ Reprovisioning of Sha Tin Water Treatment Works (South Works), with sustainable building design features, will enhance water supply reliability.

小蠔灣濾水廠擴展工程

為滿足北大嶼山將來的發展需要，我們必須擴建小蠔灣濾水廠，將其濾水量倍增。工程預計於二零二二年第一季度展開，並於二零二八年完成。此項目從設計階段已廣泛採用BIM技術。作為我們對可持續發展承諾的一部分，我們的目標是憑藉此項目的建築表現，獲取「綠建環評」新建建築最高級別的鉑金評級。

Siu Ho Wan Water Treatment Works Extension

To cope with North Lantau's future development, it is required to construct Siu Ho Wan Water Treatment Works extension to double its current water treatment capacity. Construction works are anticipated to commence in the first quarter of 2022 for completion in 2028. Starting from the design stage, we have adopted the BIM extensively in this project. As part of our commitment to sustainable development, our goal is to achieve the top BEAM Plus New Buildings Platinum accreditation for its building performance for this project.

從2028年起，
每日濾水量將由
From 2028, the daily
water treatment capacity
will be doubled from

150 000 立方米
m³



倍增至
to

300 000 立方米
m³

配合新發展區的供水

為應付新界西北部(包括元朗南、洪水橋/廈村、橫洲、丹桂村及朗邊)發展計劃所帶來的用水需求增長,我們計劃擴建牛潭尾濾水廠,增加其每日濾水量至44萬立方米。我們已聘請顧問為擴建項目進行勘查研究工作。

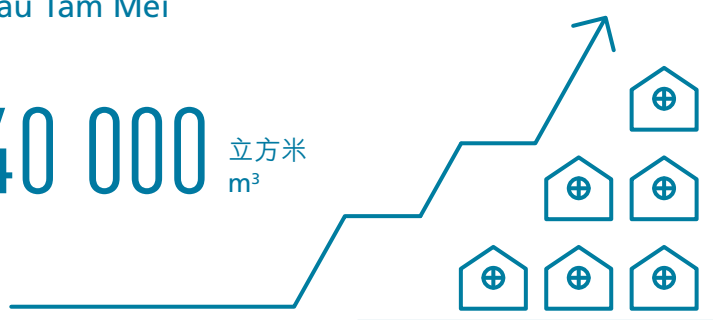
Facilitating Water Supply in New Development Areas

To meet the growth in water demand arising from the planned developments in the Northwest New Territories, including Yuen Long South, the Hung Shui Kiu/Ha Tsuen, Wang Chau, Tan Kwai Tsuen and Long Bin, we will extend the Ngau Tam Mei Water Treatment Works to increase its daily water treatment capacity to 440 000 m³. We have engaged consultants to carry out investigation works for the extension project.

牛潭尾濾水廠的每日濾水量將由
The daily water treatment capacity of Ngau Tam Mei Water Treatment Works will extend from

230 000 立方米 m³ 增至 to 440 000 立方米 m³

以滿足與日俱增的食水需求。
to meet increasing fresh water demand.



東江水水管改善工程

為了持續地確保東江水供應的可靠性及靈活性,我們已於二零二零年九月展開工程,更換東江水P4水管已老化的玻璃纖維強化塑膠管部分。

Dongjiang Water Main Improvements

As part of our ongoing efforts to ensure a reliable and flexible supply of Dongjiang water, we commenced a project to replace the aged glass reinforced plastic section of the P4 Dongjiang water mains in September 2020.

在設計和建造階段,我們採用BIM技術,提高此工程的質素及效率。

Throughout the design and construction stage, we have adopted the BIM technology to enhance the quality and efficiency of this project.



透過無人機攝影測量法獲取的點雲記錄
Point cloud records taken by unmanned aerial vehicle photogrammetry.

可持續 運作

Operational Sustainability



我們一直致力透過節約能源、發展可再生能源及減低環境影響等多項環保措施，在運作中實踐保護環境及減緩氣候變化的理念。

We are dedicated to protecting our environment as well as mitigating climate change in our operations through an array of green initiatives on energy conservation, renewable energy development and environmental mitigation.

節約能源與發展可再生能源

ENERGY CONSERVATION AND RENEWABLE ENERGY DEVELOPMENT

能源管理系統

Energy Management System

我們致力在水務設施的管理和運作當中，實施一系列的節能措施，使水務設施的效能得以持續提升。

We strive for continuous improvement in our plant performance by implementing a series of energy conservation measures over a broad spectrum of water utility management and operations.

為展現我們實施有效能源管理的承擔，我們已於二零二零年十月，成功提升我們的能源管理系統認證至ISO 50001的最新版本。該認證覆蓋整個供水鏈，包括收集、貯存、輸送及原水處理、以及食水與海水的供應及分配。

To demonstrate our commitment to effective energy management, we have successfully upgraded our ISO 50001 certification to the latest version in October 2020. This certification covers the entire water supply chain, from collection, storage, transfer and treatment of raw water to the supply and distribution of fresh water and salt water.

次氯酸鈉液體投放系統

Sodium Hypochlorite Dosing Systems

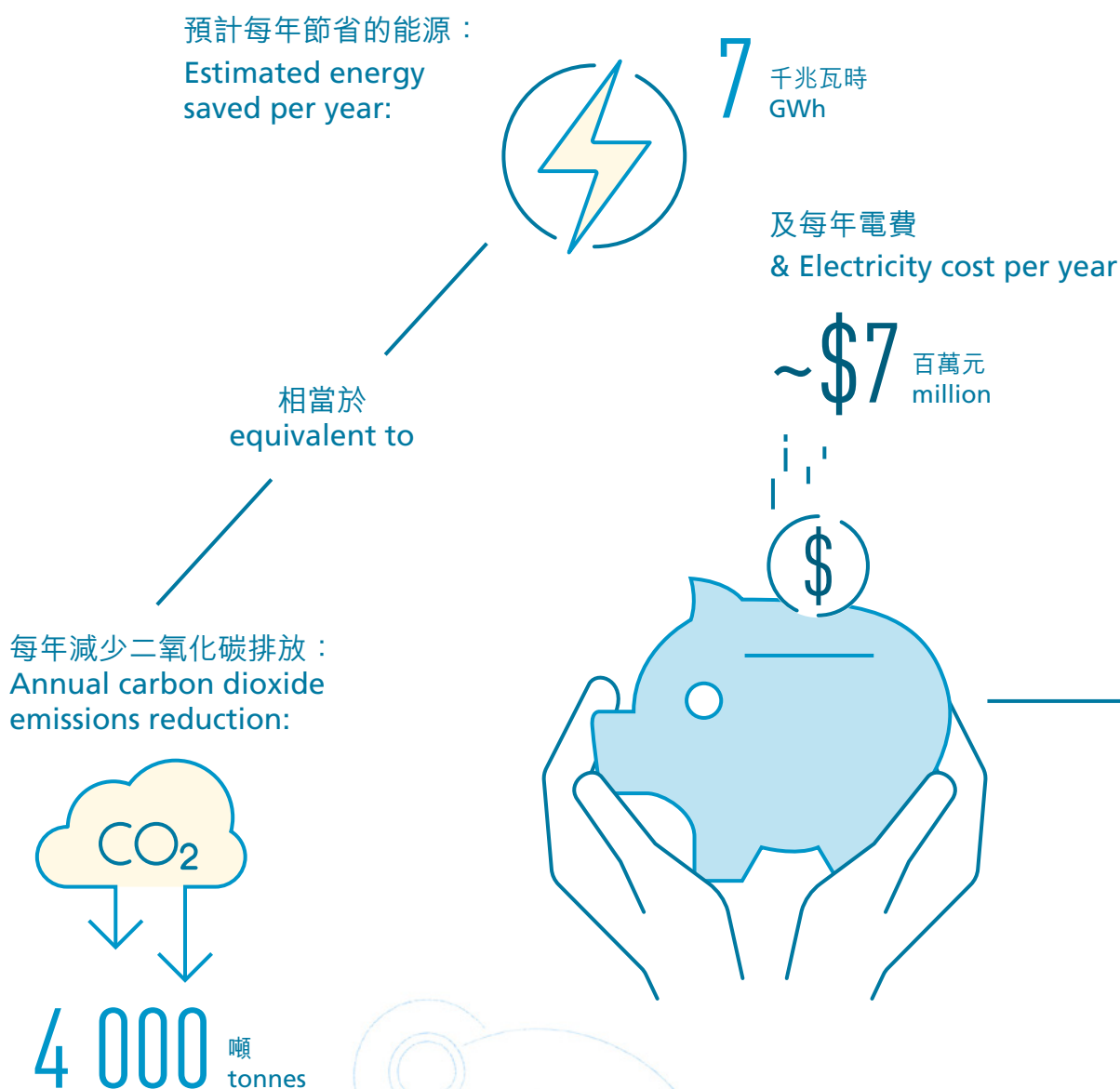
目前，我們營運22個海傍海水抽水站，為香港近85%的人口平均每日供應76萬立方米的沖廁用海水。我們一般使用電解氯化設備將海水電解以製造次氯酸鈉溶液，為海水進行消毒。為了節省更多能源，我們計劃在海傍海水抽水站安裝更節能的次氯酸鈉液體投放系統。

Currently, we operate 22 seafront salt water pumping stations, which supply an average of 760 000 m³ of salt water per day for toilet flushing to nearly 85% of Hong Kong's population. Electrochlorination plants have conventionally been used to produce sodium hypochlorite solution through the electrolysis of salt water to disinfect salt water. In order to achieve saving in energy, we have planned to install more energy-efficient sodium hypochlorite dosing systems (SHDS) in the seafront salt water pumping stations.

到目前為止，將軍澳海水抽水站和小西灣海水抽水站的次氯酸鈉液體投放系統已投入使用。我們正計劃在九龍南二號海水抽水站、荃灣海水抽水站、屯門海水抽水站、沙田海濱海水抽水站和沙田海濱二號海水抽水站安裝次氯酸鈉液體投放系統，目標於二零二三年底到二零二四年中分階段完成。

So far, SHDS have been put into operation at Tseung Kwan O Salt Water Pumping Station (SWPS) and Siu Sai Wan SWPS. At present, we are planning for the provision of SHDS at Kowloon South No.2 SWPS, Tsuen Wan SWPS, Tuen Mun SWPS, Sha Tin Seafont SWPS and Sha Tin Seafont No.2 SWPS. We target to complete the installation in stages from late 2023 to mid-2024.

全面使用次氯酸鈉液體投放系統後，
Upon the full replacement of sodium hypochlorite solution dosing systems,



減少碳足跡

我們已經完成五座辦公室大樓的碳審計工作。隨著節能措施相繼實施，例如在部分辦公室大樓以更高能源效益的水冷式冷氣設備取代風冷式冷氣設備，減少整體溫室氣體排放量。

以下設施已完成碳審計工作：

- ◆ 長沙灣大樓
- ◆ 九龍灣大樓
- ◆ 北角大樓
- ◆ 天水圍大樓
- ◆ 龍翔道機電工場

浮動太陽能板發電系統

隨著於石壁水塘和船灣淡水湖的先導項目取得成功後，我們目前正在大欖涌水塘安裝一組100千瓦的浮動太陽能板發電系統。長遠而言，我們計劃在香港水塘逐步發展大型浮動太陽能板發電場。我們亦正研究轄下各項設施使用可再生能源的可行性。

浮於水面上的浮動太陽能板發電系統可以自然冷卻太陽能電池板，以提高整體發電效能。每組100千瓦的浮動太陽能板發電系統能產生相當於36個普通家庭一年的耗電量，同時減少84噸二氧化碳排放。

Carbon Footprint Reduction

We have completed carbon audits for five of our office buildings. With the implementation of energy-saving measures, such as the replacement of air-cooled chiller plant with higher energy-efficient water-cooled chiller plant in some of our office buildings, the overall greenhouse gas emission was reduced.

Carbon audits have been completed for:

- ◆ *Cheung Sha Wan Building*
- ◆ *Kowloon Bay Building*
- ◆ *North Point Building*
- ◆ *Tin Shui Wai Building*
- ◆ *Lung Cheung Road Mechanical and Electrical Workshop*

Floating Photovoltaic Systems

Following the success of our pilot projects at the Shek Pik and Plover Cove reservoirs, we are currently implementing a 100kW-capacity floating photovoltaic (FPV) system at the Tai Lam Chung Reservoir. Our long-term plan is to progressively implement large-scale FPV farms on reservoirs in Hong Kong. We are also exploring the application of renewable energy in various facilities.

The FPV systems on the water surface can naturally cool the solar panels to enhance the overall efficiency in electricity generation. The amount of electricity generated from each 100kW-capacity FPV system is equivalent to the annual electricity consumption of 36 average households with a reduction of 84 tonnes of carbon dioxide emission.



船灣淡水湖的浮動太陽能板發電系統
Floating PV System at Plover Cove Reservoir

了解更多
Read more



點滴話你知 Did You Know?

除了從太陽能中採集可再生能源外，在水塘上安裝浮動太陽能板發電系統還有其他好處，包括減少水蒸發、抑制藻類生長、節省寶貴的土地資源，以及提高太陽能電池板的發電效能。每組浮動太陽能板發電系統，每年能產生約12萬千瓦時電力，為附近的抽水站或水塘的空氣壓縮機房供電。

Apart from harvesting renewable energy from the sun, there are additional benefits of installing floating photovoltaic systems (FPVs) over the reservoir surface, which include reducing water evaporation, suppressing algae growth, saving precious land resources and yielding a higher solar panel power generation efficiency. Each FPV system generates about 120 000kWh of electricity annually which will be used to power nearby pumping station or air compressor house of the reservoir.

水力發電廠

繼香港首個水力發電站在屯門濾水廠落成後，位於沙田濾水廠的第二個水力發電站亦已竣工，並於二零二零年第三季開始投入使用。而位於馬鞍山濾水廠的水力發電站的設計工作亦已完成，預計於二零二四年投入運作。

Hydropower Generation Plants

Following the establishment of Hong Kong's first hydropower plant at Tuen Mun Water Treatment Works, we completed the construction of a second hydropower plant at Sha Tin Water Treatment Works, and its operations began in the third quarter of 2020. The design for the hydropower plant at Ma On Shan Water Treatment Works was completed which will be commissioned in 2024.



沙田濾水廠的水力發電站
Hydropower Plant at Sha Tin Water Treatment Works

了解更多
Read more



點滴話你知

Did You Know?



屯門水力發電廠不單是香港獨有的創舉，更是全球首個在濾水廠興建的500千瓦水力發電設施。系統每年發電約3千兆瓦時，相當於每年可減少約2 000 噸二氧化碳排放。

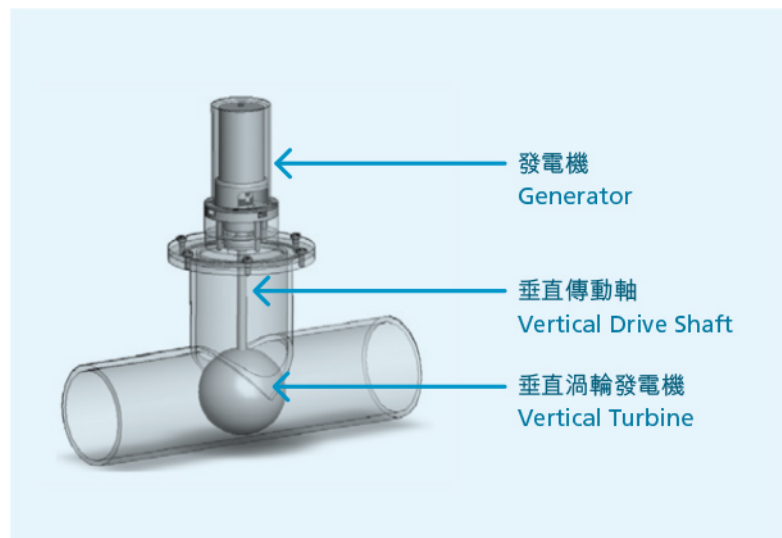
First of its kind in Hong Kong, the hydropower plant at Tuen Mun is a pioneer in the world to construct 500kW hydropower facilities at a water treatment works. The hydropower system can generate up to about 3 GWh of electricity annually (equivalent to the potential reduction of about 2 000 tonnes of carbon dioxide emissions each year).

內聯閉式水力發電裝置

在線監測儀器和無線數據傳輸器是管理現代供水網絡的重要工具。我們正著手於在「智管網」的部分監測區域安裝內聯閉式水力發電裝置，為感應及監測設備和數據傳輸裝置提供電力。在創新及科技局的科技統籌（整體撥款）計劃資助下，我們已從香港理工大學採購了20套內聯閉式水力發電裝置，其中四套已於「智管網」的站點試行，表現令人滿意。

In-line Hydropower Harnessing Devices

Online monitoring instruments and wireless data transmitters are important tools for the management of a modern water supply network. We are installing in-line hydropower harnessing devices (IHHD) in some of the District Metering Areas (DMAs) that we are establishing under the Water Intelligent Network (WIN) to power sensing and monitoring equipment and data transmission devices. We have procured 20 sets of IHHD from the Hong Kong Polytechnic University, funded by the Innovation and Technology Bureau's TechConnect Block Vote, and have deployed four IHHD sets to the WIN sites as a trial with promising performance.



內聯閉式水力發電裝置，為「智管網」的監測和數據傳輸設備提供電力，以達至實現遙距監測的目標。

In-line hydropower harnessing devices provide power supply to the monitoring and data transmission equipment of the Water Intelligent Network for real-time remote monitoring purposes.

減低環境影響

現場生產氯氣

我們繼續為十間主要濾水廠升級消毒設施，並預計於二零二一年底起陸續完成。完成後，現場氯氣生產設施將投入使用，因而避免運輸及儲存液態氯氣過程中洩漏氯氣的風險。

減低建造工程的影響

我們的設計及建設科竭力於水務工程中的規劃、設計及建造等各個環節，盡量降低工程對環境造成的影響。每年，我們均會參照《ISO14001:2015環境管理體系》認證訂立新方向和目標，不斷提升我們在環境管理體系及環保方面的表現。

提高生物多樣性

為確保城市的可持續發展，社會各界需同心協力保護生物多樣性。水務署響應參與由環境局制定的香港首份城市級《生物多樣性策略及行動計劃2016-2021》，與其他政府部門攜手合作，力求透過改良維修工作的流程及減少相關工作對生態環境的影響，優化天然溪澗和引水道的保育。

ENVIRONMENTAL MITIGATION

On-site Chlorine Generation

We continue to upgrade the disinfection facilities of 10 of our major Water Treatment Works, which will be completed progressively from end 2021. Upon completion, the on-site chlorine generation facilities will be commissioned, therefore eliminating the risks of chlorine leakage during the transportation and storage of liquid chlorine.

Minimising Construction Impacts

Our New Works Branch strives to minimise the environmental impacts arising from our waterworks construction throughout the planning, design and construction processes. Each year, we establish new objectives and targets under the ISO 14001:2015 Environmental Management System (EMS) to continually improve our EMS and environmental performance.

Enhancing Biodiversity

Concerted efforts across the society to conserving biodiversity is essential to ensuring the city's sustainable development. The WSD has participated in Hong Kong's first city-level "Biodiversity Strategy and Action Plan 2016-2021" (BSAP) formulated by the Environment Bureau. Joining hands with other government departments, we are contributing efforts to enhance conservation of natural streams and catchwaters by improving practices in and minimising ecological impacts from our maintenance works.

在引水道範圍試行多項
野生動物友善措施
Trials of adopting
wildlife-friendly
measures in
catchwater areas

與環保團體合作
Collaboration with
green groups

於灌溉水塘開展多項生
物多樣性試點計劃
Pilot biodiversity
initiatives in irrigation
reservoirs

將收集到的部分雨水分
流給東涌河
Trial to discharge part
of the local yield to
Tung Chung River

在漁農自然護理署的支持下，我們在引水道範圍試行多項野生動物友善措施，包括於改善工程中增設動物逃生通道和採用保護生態的物料。我們亦與環保團體合作，嘗試將收集到的部分雨水分流給下游的大嶼山東涌河，支持其生態研究。試點計劃有助恢復下游淡水生物棲息地，成果令人鼓舞。

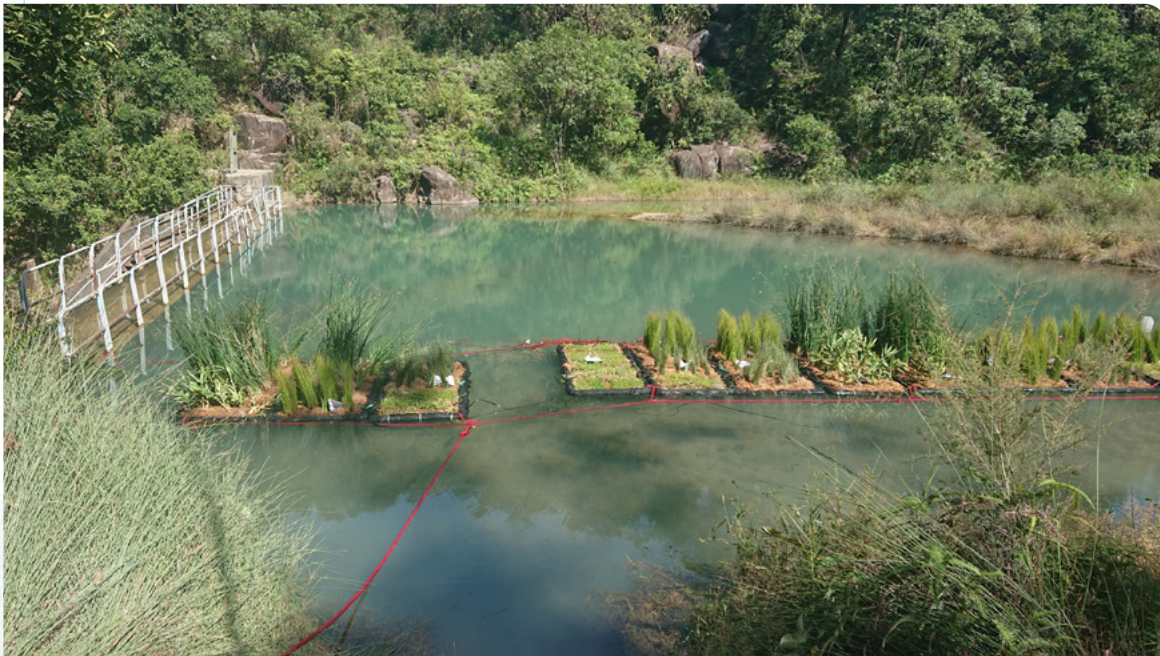
為加強於水務設施的生物多樣性，我們正與多個環保團體合作，於灌溉水塘開展多項生物多樣性試點計劃。其中包括在洪水坑灌溉水塘試行生態浮島和展開生態調查。

我們會繼續尋找機遇，配合政府的生物多樣性保育工作和國家生物多樣性策略及行動計劃，同時提高公眾意識及鼓勵社區參與。

With the support of the Agriculture, Fisheries and Conservation Department, we carried out trials of adopting wildlife-friendly measures in catchwater areas, including installing animal escape routes and using ecologically friendly materials in our improvement works. In collaboration with green groups, we have also commenced a trial to discharge part of the local yield to Tung Chung River in Lantau to support their ecological study. This pilot initiative has demonstrated encouraging results in helping to revitalise freshwater habitats downstream.

With a view to enhancing biodiversity in waterworks, we are collaborating with various green groups on various pilot biodiversity initiatives in irrigation reservoirs. These include the ecological enhancement of Hung Shui Hang Irrigation Reservoir through pilot ecological floating platforms and an ecological survey.

We will continue seeking opportunities to contribute to government's efforts on biodiversity conservation and to China's national BSAP while promoting public awareness and community involvement.

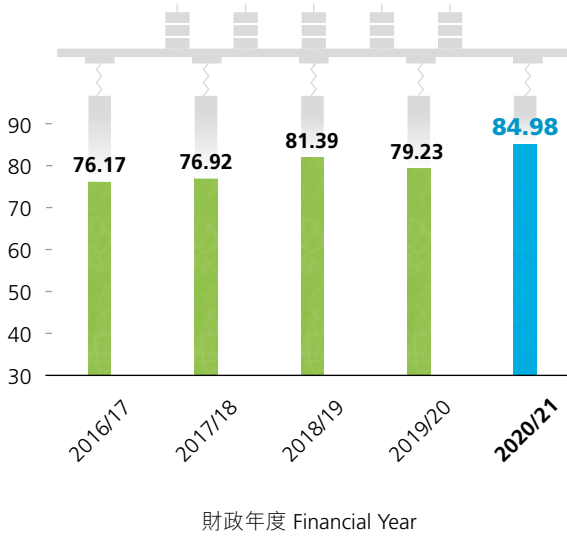


洪水坑灌溉水塘試行生態浮島，以加強生物多樣性。

Pilot ecological floating platform at Hung Shui Hang Irrigation Reservoir in enhancing biodiversity.

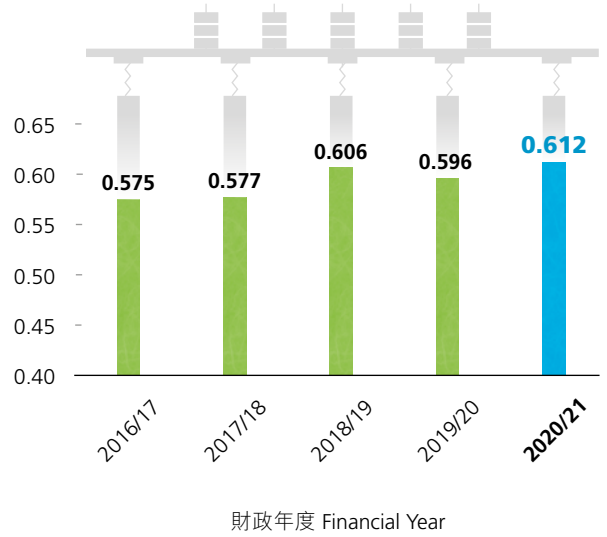
人均耗電量(食水及原水) Per Capita Electricity Consumption (Fresh Water and Raw Water)

千瓦時/每人/每年 kWh/head/year



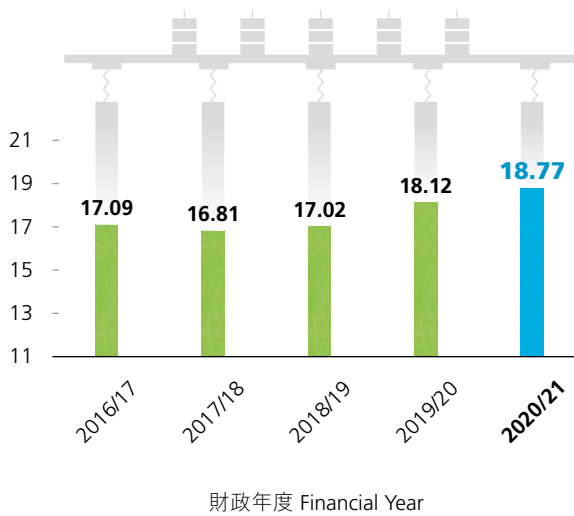
每單位耗電量(食水及原水) Unit Electricity Consumption (Fresh Water and Raw Water)

千瓦時/立方米 kWh/m³



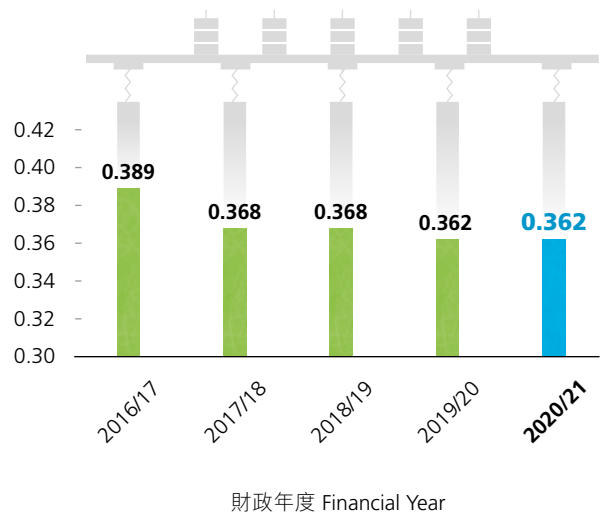
人均耗電量(海水) Per Capita Electricity Consumption (Salt Water)

千瓦時/每人/每年 kWh/head/year

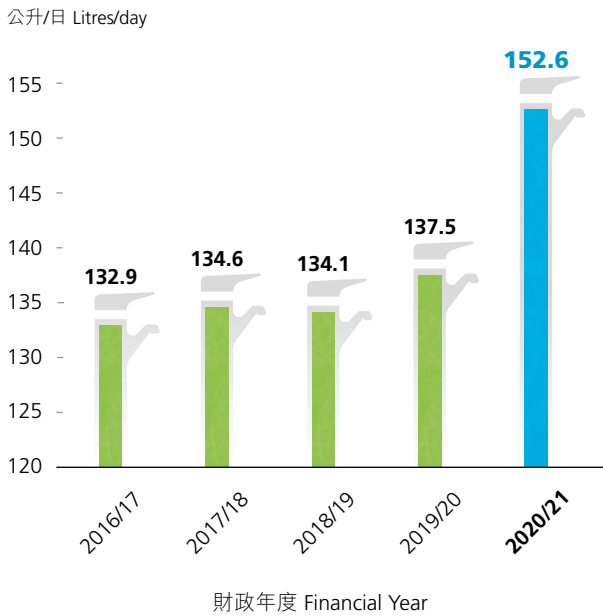


每單位耗電量(海水) Unit Electricity Consumption (Salt Water)

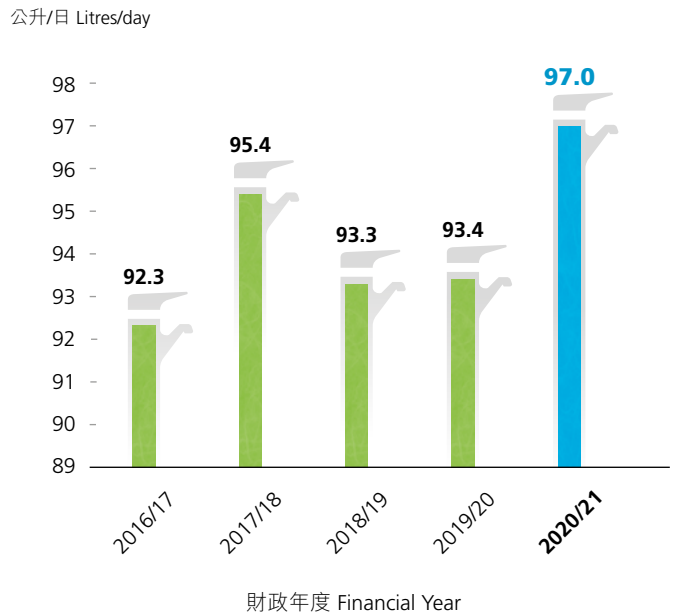
千瓦時/立方米 kWh/m³



人均住宅食水用量 Per Capita Domestic Fresh Water Consumption

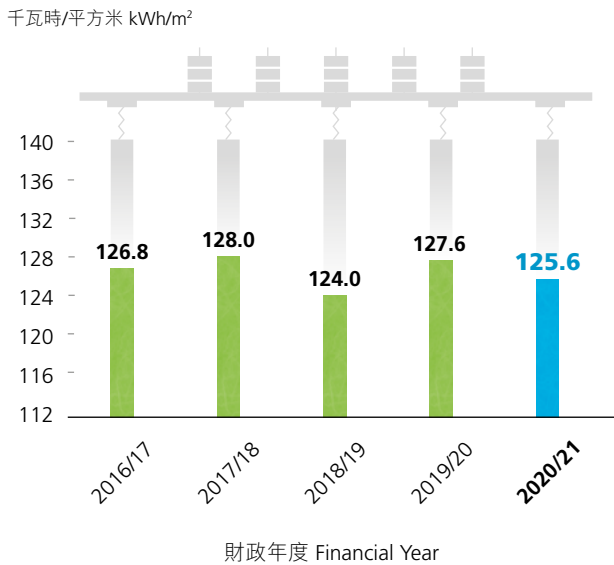


人均沖廁水用量(食水及海水) Per Capita Flushing Water Consumption (Fresh Water and Salt Water)

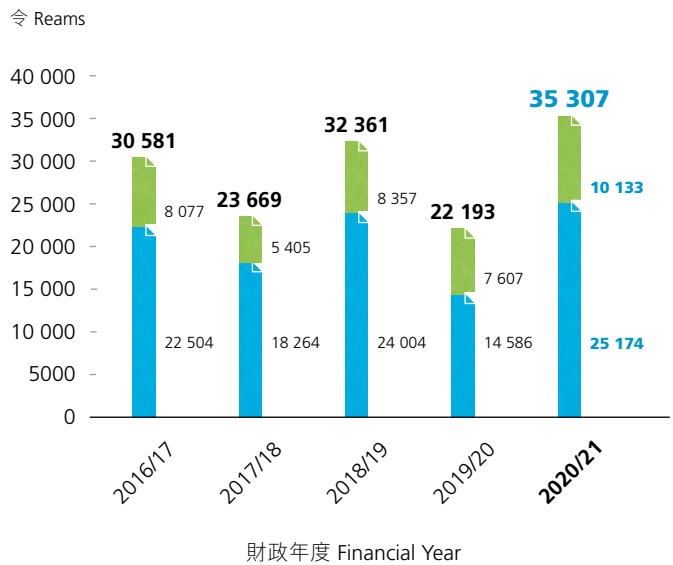


註：人均沖廁水用量(食水及海水)是根據本港的沖廁水總用量計算而得。
Note: Per Capita Flushing Water Consumption (Fresh Water and Salt Water) is based on Hong Kong's total flushing water consumption.

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



耗紙量 Paper Consumption

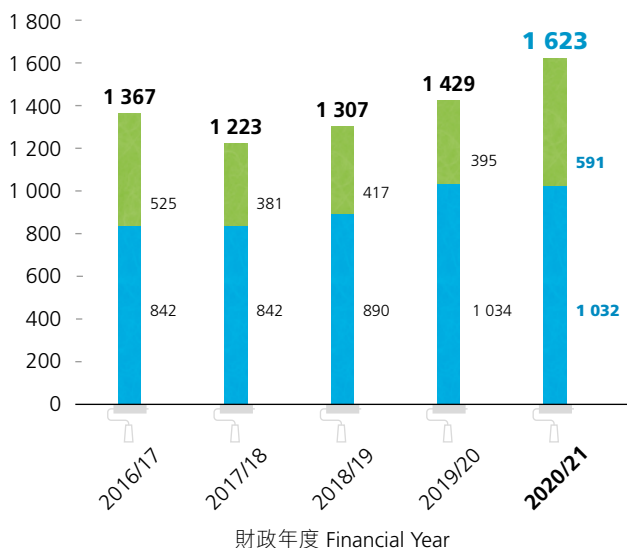


■ 無木漿紙張 Wood-free Paper ■ 再造紙張 Recycled Paper

註：由於在二零二零年第一季度實施的特別上班安排，原定預計於二零一九至二零年度訂購的1 752令無木漿紙張和5 442令再造紙張延遲至二零二零至二一年度。
Note: 1 752 reams of wood-free paper and 5 442 reams of recycled paper originally planned to be ordered in 2019/20 was deferred to 2020/21 due to the special work arrangements implemented in the first quarter of 2020.

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



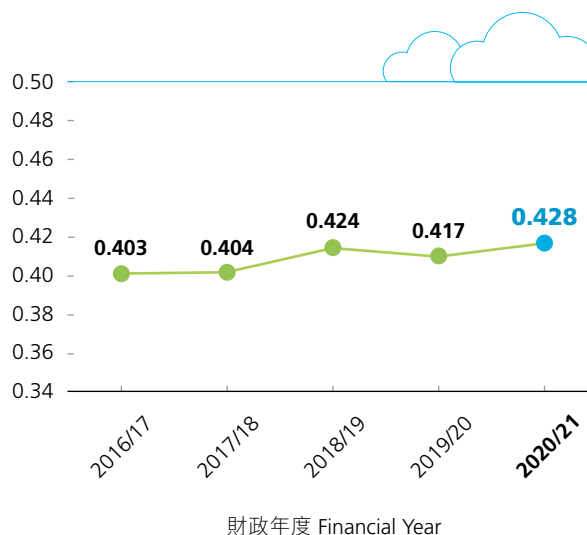
塗料、黏合劑及密封劑
Paints, Adhesives and Sealants

其他
Others

VOC：揮發性有機化合物 Volatile organic compound

水務署因使用電力處理食水而出現的溫室氣體排放 Green House Gas Emissions Due to Electricity Used for Fresh Water Processing by the WSD

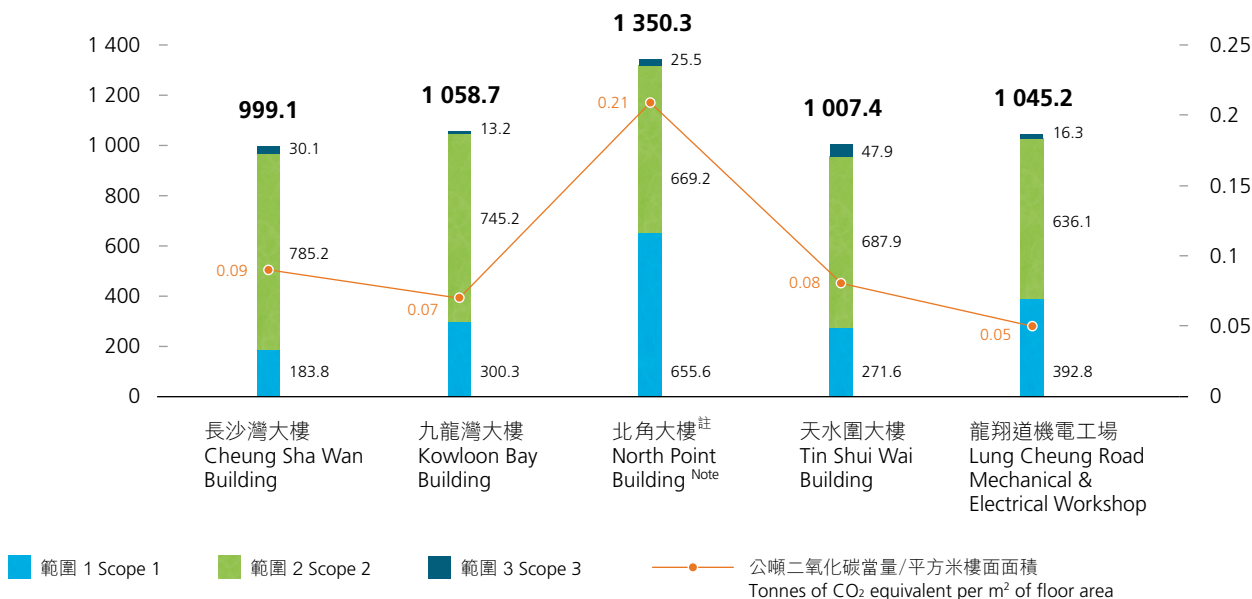
千克二氧化碳/立方米 kg CO₂/m³



碳審計報告 Carbon Audit Report

公噸二氧化碳當量
Tonnes of CO₂ equivalent

公噸二氧化碳當量/平方米樓面面積
Tonnes of CO₂ equivalent per m² of floor area



範圍1 – 直接溫室氣體排放量
Scope 1 – Direct Greenhouse Gas (GHG) Emissions

範圍2 – 使用能源間接引致的溫室氣體排放量
Scope 2 – Energy Indirect GHG Emissions

範圍3 – 其他間接溫室氣體排放量
Scope 3 – Other Indirect GHG Emissions

註：北角大樓於二零二零至二一年度內進行了涉及製冷劑替換的空調系統維修工程，導致約360公噸二氧化碳當量（或約0.05公噸二氧化碳當量/平方米樓面面積）的溫室氣體排放。
Note: Repair of the air-conditioning system in the North Point Building involving replacement of refrigerant was conducted in 2020/21, which resulted in about 360 tonnes of CO₂ equivalent (or about 0.05 tonnes of CO₂ equivalent per m² of floor area) of GHG emissions.

可再生能源產量 Renewable Energy Generated

財政年度 Financial Year	2016/17	2017/18	2018/19	2019/20	2020/21
水務設施中的太陽能板發電系統的發電量(千瓦時) (見下面的註釋) Renewable Energy (RE) Generated by Land-based Photovoltaic (PV) Panels in Waterworks Installations (kWh) (see Note below)	29 430	33 397	29 437	28 940	230 257
水塘浮動太陽能板發電系統的發電量(千瓦時) RE Generated by Floating PV Systems in Impounding Reservoirs (kWh)	N/A	134 857	131 328	200 428	209 007
濾水廠中的水力發電系統的發電量(千瓦時) Generated by Hydropower Plant at Water Treatment Works (kWh)	61 173	133 078	311 587	1 491 819	1 478 767
總量(千瓦時) Total (kWh)	90 603	301 332	472 352	1 721 187	1 918 031
減少二氧化碳排放當量(公斤) 【全港性的溫室氣體排放系數預設值為0.7公斤/千瓦時】 Equivalent Reduction in CO ₂ Emission (kg) [The territory-wide default value of the emission factor is 0.7 kg/kWh]	63 422	210 932	330 646	1 204 831	1 342 622

註： 欣澳海水抽水站的再生能源發電系統的發電量，為12千瓦太陽能板發電系統和2.5千瓦風力發電系統的總和。

Note: The RE generated from Sunny Bay Salt Water Pumping Station is the summation of both 12kW PV system and 2.5kW wind turbine system.

公用集調車輛資料 Information on Vehicle Pool Transport

財政年度 Financial Year	投入運作的政府車輛 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)		
	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
柴油 Diesel	85	86	90	144 386	199 676	220 661	771 660	1 062 437	1 112 553
汽油 Petroleum	123	116	112	398 065	313 666	285 478	1 997 606	1 599 969	1 513 801
混合(汽油/電力) Hybrid (Petrol/Electric)	3	1	1	2 067	298	671	38 858	6 439	13 903
液化石油氣 LPG	11	11	11	43 503	49 097	47 122	121 690	135 514	126 774
電力 Electricity	15	13	13	—	—	—	122 293	81 510	65 975

註： 2019/20年度汽油政府車輛總車程由1 345 504公里更正為1 599 969公里。

Note: Total mileage of petroleum government vehicles in 2019/20 has been rectified from 1 345 504 km to 1 599 969 km.

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		
	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
財政年度 Financial Year	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
直接廢氣排放 Direct Emissions												
車輛(柴油) Vehicle fleet (Diesel)	347	522	536	-	-	-	4	1	1	-	-	-
車輛(汽油) Vehicle fleet (Petrol)	899	741	565	-	-	-	1	1	1	-	-	-
車輛 (液化石油氣) Vehicle fleet (LPG)	73	82	77	-	-	-	-	-	-	-	-	-
間接廢氣排放 Indirect Emissions												
耗用電 (九龍及新界) Electricity Consumed (Kowloon and New Territories)	342 785	322 807	255 372	94	65	30	310	297	170	8	8	6
耗用電(港島) Electricity Consumed (Hong Kong Island)	54 533	53 632	50 053	19	12	8	51	48	38	1	1	1
總量 Total	398 637	377 784	306 603	113	77	38	366	347	210	10	9	7

共融啟智

我們致力透過傳承知識和建構能力，賦能予員工、家庭、企業和廣大社群，共同建設香港成為智慧用水城市。我們發展多個合作項目，同時為不同計劃提供支援，當中包括進一步加強節約用水、培育惜水大使、提高專業和服務水平，以及增加大眾對水務署工作的認識。我們相信透過散播惜水的種籽，將可推動行為上的轉變，以有限的水資源成就更多。

We are empowering staff, homes, businesses and the wider community to contribute to building Hong Kong into a water-wise city. We foster knowledge and build competencies, as well as develop collaborations and provide support on a wide range of initiatives. These include improving water conservation, nurturing ambassadors, raising professional and service standards, as well as promoting awareness of the WSD's work and contributions. Through seeding the change, we believe we can achieve more with less water together.

啟發新思新行 構建智慧用水城市

Inspiring knowledge and behaviour changes for a water-wise city



我們的員工

Our People



賦予能力，服務更佳

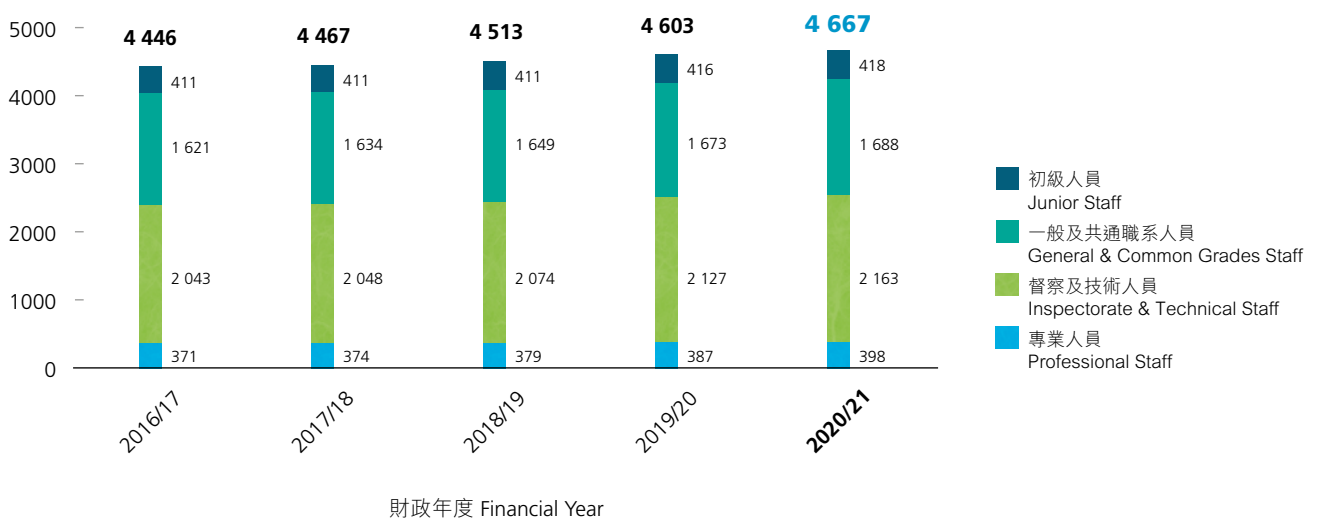
水務署相信提升員工的知識、技能、安全和健康水平是提供卓越服務的開端。現今世界中，氣候變化、科技發展或客戶期望均瞬息萬變。我們透過傳承知識、鼓勵協作和推動學習文化來迎接及適應轉變，從而不斷提升服務質素，並讓員工發揮潛能、成就更多。

EMPOWERING OUR PEOPLE TO SERVE BETTER

At the WSD, we believe the provision of outstanding service starts with empowering our staff with enhanced knowledge, skills, safety and wellness. Today, major changes in climate, technology or customer expectations can literally occur in the space of a few hours. Through fostering knowledge, collaboration and learning culture, we are embracing and adapting to changes more to continuously enhance our services, as well as enable our staff to flourish and achieve greater success.

人員編制

Staff Establishment



專題故事

Feature Story

培養知識和學習文化園地—「水務專業學院」

FOSTER KNOWLEDGE AND LEARNING CULTURE WITH THE WSD AQUA-DEMY

世界萬變不息。科技發展日新月異、人口和經濟持續增長，客戶的期望亦不斷在變。根據領英的研究，當今需求殷切的技能，逾半於三年前仍未列榜上。因此，我們有需要不斷優化流程和服務質素，並提升學習及適應能力，以迅速成長和調整技能和想法，達致與時並進。

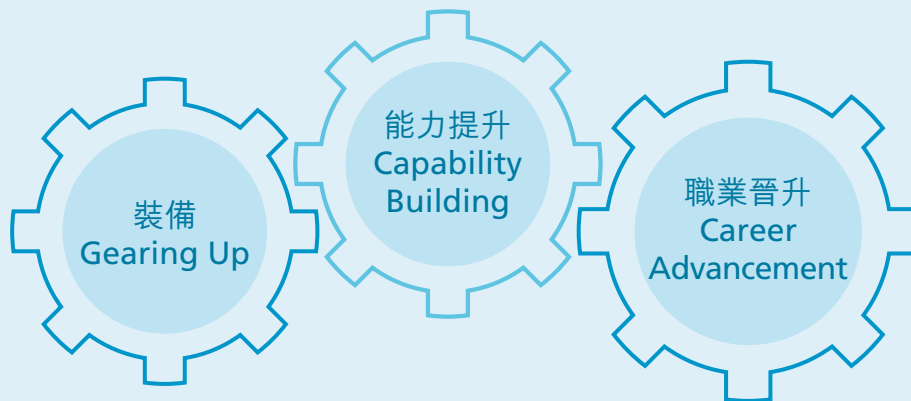
本年度，我們開展了一項全新措施，計劃透過成立虛擬學院「水務專業學院」，培養和提升我們學習環境。我們計劃於二零二一年九月成立此學院，期望學院能推動學習文化，使其成為員工個人發展和專業發展的重心，並鼓勵職場知識共享，實現卓越的運作表現和促進員工參與。

「水務專業學院」分為三個主要部分：系統化課程、知識共享計劃和培訓活動管理系統，以有系統的方式提升學習體驗。

The world is in constant flux with rapid technological advances, growing populations and economies, and transforming customer expectations. Research from LinkedIn has shown that half of today's most in-demand skills were not even on the list three years ago. There is a need for constant process and service improvement, and an increasing ability to quickly grow and adapt one's skill set and perspectives.

During the year, we have embarked on a new initiative to cultivate and enhance our learning environment with the establishment of a virtual academy "WSD AQUA-DEMY". Targeted to be launched in September 2021, the Academy seeks to make learning a key part of personal and professional development for our staff and improve knowledge sharing in the workplace with a view to achieving operational excellence and promoting staff engagement.

The WSD AQUA-DEMY will provide a structured approach to enhancing learning experiences via three key components: structured curriculum, knowledge sharing programme and a training activity management system.



系統化課程

為滿足員工不同的學習需要，我們將「水務專業學院」設計成一套系統化課程，適合不同專業（「土木」、「機電」和「水質科學」）和職系（專業和技術）。此外，課程提供三個學習階梯，分別為「裝備」、「能力提升」和「職業晉升」，以切合不同階段的專業發展。

Structured Curriculum

To address different learning needs of our staff, the WSD AQUA-DEMY is designed with a structured curriculum catered for different disciplines ("civil", "mechanical and electrical" and "water science") and grades (professional and technical). In addition, it provides three tiers of learning, namely "Gearing Up", "Capability Building" and "Career Advancement" to meet different stages of professional development.

知識分享計劃

我們亦定期舉辦主題活動和論壇，促進職場知識和經驗分享。我們推出了「知識管理茶座」，由內部或外部專家分享不同主題，啟發創新和促進協作。其中包括介紹將軍澳海水化淡廠項目中採用的最新技術，以及由香港申訴專員公署舉辦的投訴調查個案分享會。過去一年，我們共舉辦12場「知識管理茶座」，透過在多個辦事處實時直播，吸引近1 000人次參與。

Knowledge Sharing Programme

We also promote knowledge and experience sharing in the workplace through regular themed events and forums. We have introduced “Knowledge Management (KM) Cafes” with various topics presented by internal or external experts to inspire innovation and collaboration. These include an introduction of the latest technologies adopted in the Tseung Kwan O Desalination Plant project and a case sharing session on complaint investigation from the Office of The Ombudsman Hong Kong. Broadcast in real-time to also include our out-stationed offices, 12 KM Cafes were held in the past year with nearly 1 000 man-times participated.



過去一年，我們共舉辦12場「知識管理茶座」，透過在多個辦事處實時直播，吸引近

Broadcast in real-time to also include our out-stationed offices, 12 KM Cafes were held in the past year with nearly

1 000 人次參與。
man-times participated.



個人化培訓管理

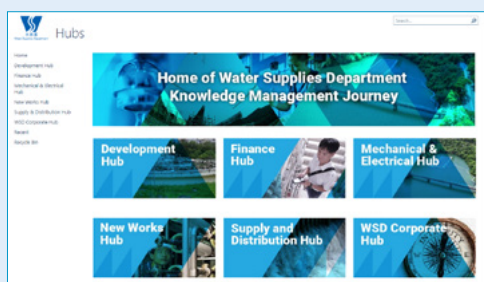
為了培養持續進修的文化，我們開設了專門的培訓頻道，並納入於一站式「點點」知識管理平台中。頻道整合所有即將舉行的培訓活動和課程，讓有志發展其專業的員工報名參加。我們亦正開發全新的培訓活動管理系統，方便員工檢索個人培訓記錄，並提供證書即將到期和更新的提示。新系統及其功能有助員工有效規劃自己的學習旅程。

Personalised Training Management

To foster a culture of continuous learning, we have developed the dedicated training channel which is incorporated into the one-stop “Knowledge Management Portal”. The Channel consolidates all upcoming training events and courses allowing staff to enrol for their professional development. We are also developing a new training activity management system which will facilitate the retrieval of personal training records and provide reminders on certificate expiry and renewal. The new system and its features will enable our staff to effectively plan for their learning journey.

一站式平台 推動持續進修

我們的內部知識管理平台「點聚」，集中存放大量水務相關資訊、學習資源、研究資料，以及最新科技發展和最佳實務方案的檔案及影片，為員工提供各種工具，輕易獲得最新資訊和共享訊息。這個知識共享平台能協助員工學習新知識和技能從而提升工作表現，並透過與同事和團隊分享工作經驗和見解，促進緊密合作和提高生產力。



A One-Stop Platform for Continuous Improvement

The one-stop "Knowledge Management Portal" is our centralised repository featuring a large array of waterworks related information, resources, research, technology trends and best practices in the form of documents and videos, and providing our staff with various engaging tools for easy updates, sharing and access. This knowledge sharing platform enables the learning of new knowledge and skills for enhanced performance; as well as the sharing of experiences and insights to peers and teams for closer collaboration and increased productivity.

員工培訓

STAFF TRAINING

二零二零至二一年度，我們提供了 **5 532*** 個員工培訓工日
 In 2020/21, we provided **5 532*** Man-days of training



* 在二零一九冠狀病毒病疫情期間，面授培訓課程人數受限或長時間暫停。
 amidst the COVID-19 epidemic in which in-person training courses were highly restricted or suspended for a prolonged period.



培訓工日 Training Man-days

財政年度 Financial Year	2018/19	2019/20	2020/21
培訓工日 Training Man-days	8 483	8 666	5 532*

*在二零一九冠狀病毒病疫情下，面授培訓課程人數受限或長時間暫停。
 *In-person training courses were highly restricted or suspended for a prolonged period during the COVID-19 pandemic.

職業健康及安全

我們致力保障員工和工人在職場的健康和安全，並按需要採取措施提高安全標準。

我們定期舉行會議，討論與職業健康和安全的議題，並舉辦宣傳活動，推廣健康和愉快的工作環境。例如，我們簽署了《好心情@健康工作間約章》，並向員工宣傳「健康飲食」、「體能活動」和「心理健康」等健康資訊。

我們的水務工程合約意外率一直遠低於政府就工務工程合約規定的上限，對此我們感到十分自豪。展望將來，我們將致力進一步降低意外率。

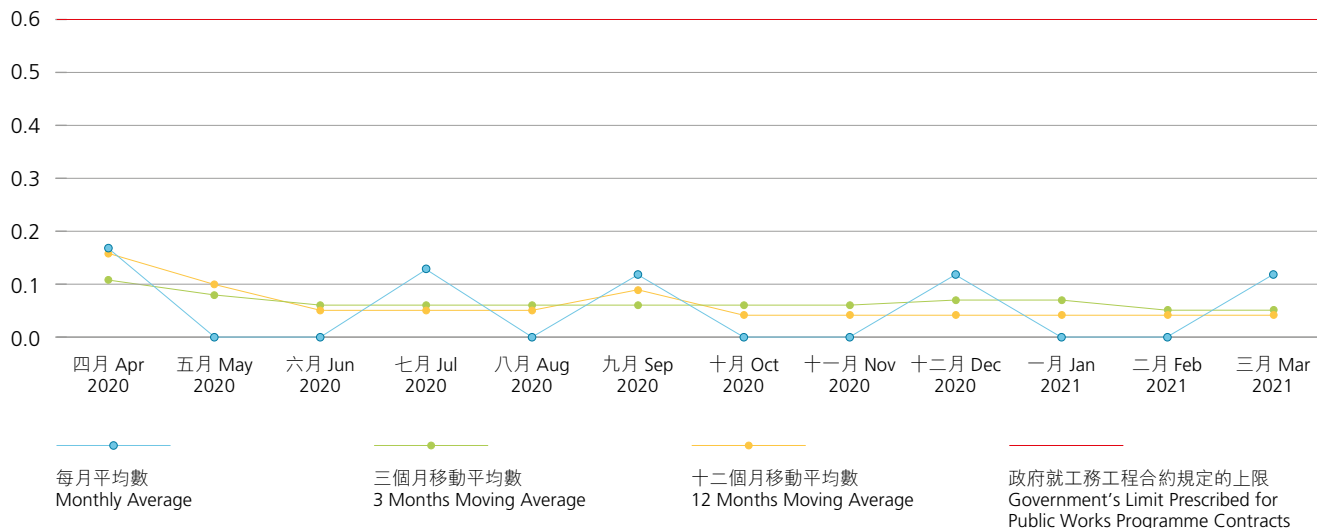
OCCUPATIONAL HEALTH AND SAFETY

We are committed to protecting the health and safety of our staff and workers in the workplace and introducing measures to enhance safety standards where needed.

We hold meetings on a regular basis to discuss matters of concern relating to occupational health and safety (OSH), and organise awareness campaigns to promote a healthy and joyful workplace. For example, we have signed the Charter of Joyful@Healthy Workplace and developed communications to promote “Healthy Eating”, “Physical Activity” as well as “Mental Well-being” health messages to our staff.

We take pride in our consistently low accident rate in our waterworks projects compared to the Government Limit prescribed for Public Works Programme contracts. We are dedicated to lowering the accident rate even further in future.

二零二零至二一年度水務工程合約意外率 Accident Rate in Waterworks Contracts 2020/21



註：意外率是指每十萬工時的意外數目。政府為工務工程合約規定的意外率為 0.60，相等於每年每 1 000 名員工發生 22 宗意外。
Note: The accident rate represents the number of accidents per 100 000 man-hours worked. The Government Limit prescribed for Public Works Programme contracts is an accident rate of 0.60, equivalent to 22 accidents per 1 000 workers per year.

服務社區

積極保持工作與生活平衡是水務署文化的核心。我們鼓勵和支持員工參與體育活動，以及社區和慈善項目。

SERVING THE COMMUNITY

At the WSD, maintaining a positive work-life balance is central to our culture. We encourage and support staff participation in sports activities as well as community and charitable causes.

水務署義工隊於二零零二年成立，鼓勵員工積極參與各項社區和慈善活動，包括探訪和服務弱勢社群、清潔海灘、電話輔導和外展服務支援、籌款等。

儘管二零一九冠狀病毒病疫情帶來挑戰，我們的義工隊對社區的承諾和關懷毫不間斷，包括探訪長者和殘疾人士、透過互聯網和電話提供服務與支援、協助籌集善款，以及支援政府採取防疫措施，於本年共貢獻了1 000小時的義工服務。

過去一年，我們的義工隊榮獲多個獎項，包括：

- ◆ 我們的義工獲社會福利署推廣義工服務督導委員會頒發金、銀、銅三個獎項
- ◆ 我們的其中一項義工服務項目，榮獲建造業義工獎勵計劃2021頒發金獎

The WSD Volunteer Team was established in 2002 to encourage staff to make active contributions to various community and charitable causes, ranging from visits and services to vulnerable groups, beach cleaning to lifeline and outreach services support, fundraising and so forth.

Despite the challenges posed by the COVID-19 epidemic, our Volunteer Team continued our commitment and care for our community by conducting visits to the elderly and disabled, providing services and support through the internet or telephone, helping with fundraising, as well as supporting the Government in epidemic prevention measures. During the year, a total of 1 000 man-hours of volunteer work were contributed.

During the past year, our Volunteer Team have received a number of award recognitions including:

- ◆ Gold, Silver and Bronze Awards presented to our volunteers by the Social Welfare Department's Steering Committee on the Promotion of Volunteer Service
- ◆ One of our volunteer service projects recognised with Gold Award at the Construction Industry Volunteer Award Scheme 2021

二零二零至二一年度員工義工服務 Staff Volunteer Service in 2020/21



員工義工服務(時數) Staff Volunteer Service (Man-hours)

財政年度 Financial Year	2016 /17	2017/18	2018/19	2019/20	2020/21
	4 930	4 902	5 217	3 153*	1 000*

*註：鑑於二零一九冠狀病毒病疫情，二零二零年年初起有多項活動被取消。
*Note: A lot of activities were cancelled since early 2020 due to the COVID-19 epidemic.

員工嘉許認可

獎項和嘉許印證我們的出色表現，鼓舞團隊再接再厲，再下一城。今年，我們的員工和工程項目繼往開來，員工出眾的表現和水務署對建造業的專業貢獻再次受到嘉許，得獎如下：

- ◆ 申訴專員公署頒發之**申訴專員嘉許獎(公營機構獎)**及2位同事榮獲**申訴專員嘉許獎(公職人員獎)**



STAFF RECOGNITION

Award and appreciation are a testament to our outstanding performance boosting our motivation and inspiring team for further success. This year, our staff and projects were once again commended for their outstanding performance and professional contributions to the industry. These include the following:

- ◆ **Ombudsman's Awards 2020 for Public Organisations** and two of our officers were given **Individual Awards**

- ◆ **NEC 2020年度大獎**：獎項表揚世界各地機構以夥伴合作方式推動工程項目的優秀表現及實踐典範。

項目 上水及粉嶺供水改善計劃

獎項 NEC 2020年度水利工程項目 – 高度讚許

- ◆ **NEC Awards 2020**: This award recognises excellence in project delivery and showcases examples of good practice through collaboration from across the world.

Project Improvement of Water Supply to Sheung Shui and Fanling

Award NEC Water Project of the Year 2020 – Highly Commended



「上水及粉嶺供水改善計劃」在BIM應用、環境保護、安全和項目管理方面的最佳實踐，均獲得本地和國際讚譽。

The "Improvement of Water Supply to Sheung Shui and Fanling" project also received other local and international accolades on its best practices covering Building Information Modelling (BIM), environmental protection, safety and project management.



◆ **建造業議會可持續建築大獎2020**：獎項旨在表揚機構和從業者，尤其是建造業年輕一代，在可持續發展方面的最佳實務方案。

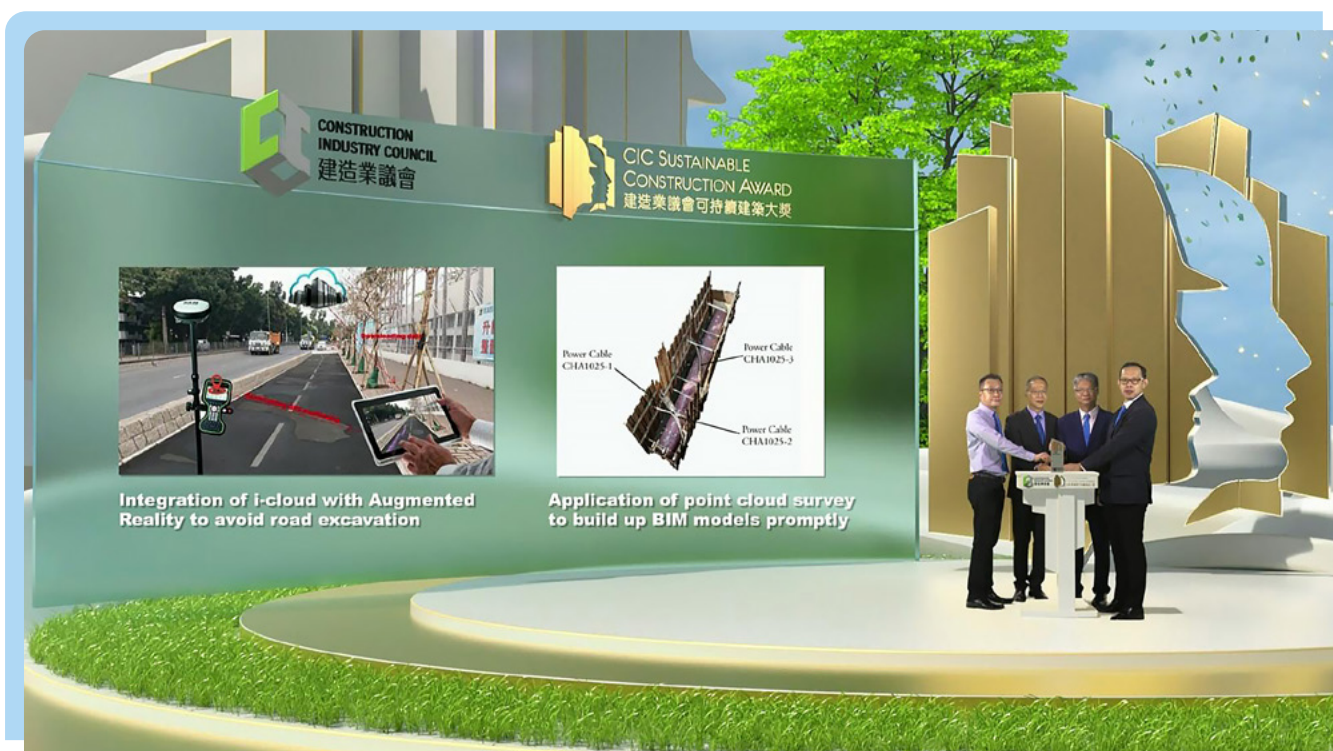
項目 上水、粉嶺和鄰近新發展區的再造水供應工程

獎項 項目業主（公營機構）類別—銀獎
業界從業員類別——年青從業員傑出獎
見習土木工程師蕭濠傑先生

◆ **Construction Industry Council Sustainable Construction Award 2020**: The Award aims to recognise sustainability best practices among organisations and practitioners, in particular the young generation of the construction industry.

Project Infrastructures for Supply of Reclaimed Water in Sheung Shui, Fanling and adjoining new development areas

Award Silver Award in Public Owner (Public Sector) Category
Outstanding Award of Young Practitioner in Industry Practitioners Category
Mr SIU Ho-kit, Civil Engineering Graduate



「再造水供應工程」項目利用BIM、無人機、虛擬實景（VR）和擴增實景（AR）等先進技術，提高施工效率。例如，項目團隊使用AR技術，不需要開挖道路，亦能確定水管的位置。

The “Infrastructures for Supply of Reclaimed Water” project leverages advanced technologies such as BIM, Drone, Virtual Reality (VR) and Augmented Reality (AR) to improve construction efficiency. For example, the use of AR enables the project team to locate water mains without the need of road excavation.



見習土木工程師蕭濠傑先生榮獲業界從業員類別——年青從業員傑出獎

Mr SIU Ho-kit, Civil Engineering Graduate, received the Outstanding Award of Young Practitioner in Industry Practitioners Category

我們的社區

Our Community



共建智慧用水城市

COLLABORATING FOR OUR WATER-WISE CITY

提升服務質素 應付客戶增長

ENHANCING SERVICES TO MEET CUSTOMER GROWTH

我們一直秉承以客為本的核心理念，竭誠提供適時、高效、貼心的服務。我們不斷探索嶄新和有效措施，滿足客戶增長所致的各種需求，同時促進經濟繁榮。

As part of our core values, we strive to enhance customer satisfaction in delivering responsive, efficient and customer-oriented services. We are constantly exploring new and effective ways to meet diverse needs of our increasing customers while underpinning a thriving economy.

隨著資訊和通訊科技的迅速發展，我們以方便、靈活和高效為本，完善了多項服務。

With the advanced development in information and communication technology, we have implemented a number of service enhancements to provide convenience, flexibility and efficiency.

客戶數目 Number of Customer Accounts

財政年度 Financial Year	2016 /17	2017/18	2018/19	2019/20	2020/21
	2 955 400	2 988 700	3 042 700	3 077 800	3 115 900

多元化的付款方法

為進一步方便客戶，我們提供更多元的繳費方式，當中包自動轉賬、自動提款機轉賬、繳費靈、轉數快、支票、電話和網上繳費。我們將繼續了解客戶需求的變化，適時調整安排。

電子賬單服務

為了向客戶提供更方便和環保的賬單管理服務，我們推出了電子賬單服務，提供多項增值服務，例如即時以電郵接收最新賬單、繳費提示電郵，以及查閱過去兩年的用水和繳費記錄等。截至二零二一年三月三十一日，超過135 700名客戶已選用電子賬單。

Diversified Payment Options

To bring greater convenience to customers, we provide diversified payment options for water bills. These include autopay, ATM, PPS, FPS (Faster Payment System), cheque, phone and internet banking. We will continue to gauge the emerging needs of our customers for appropriate and timely arrangement.

E-Bill Service

To offer customers a more convenient and environmentally friendly billing management service, we have launched e-bill service with value-added benefits, such as instantly receiving new bills by email, getting email payment reminders, and viewing water consumption records and payment history for the last two years. As at 31 March 2021, over 135 700 customers have switched to electronic billing.



名客戶已選用電子賬單
customers have switched to electronic billing

水務署流動應用程式

「水務署流動應用程式」為用戶提供實用功能，可用於查閱賬單摘要、催繳通知，以及有關水務署的計劃和服務的最新資訊。此外，用戶也可以利用應用程式：

- 以二維碼於便利店繳付帳單，無須出示實體水費單。
- 接收來自452個區議會劃分選區的暫停供水通告。
- 獲取水務署「一般認可」水管及配件的產品資料。

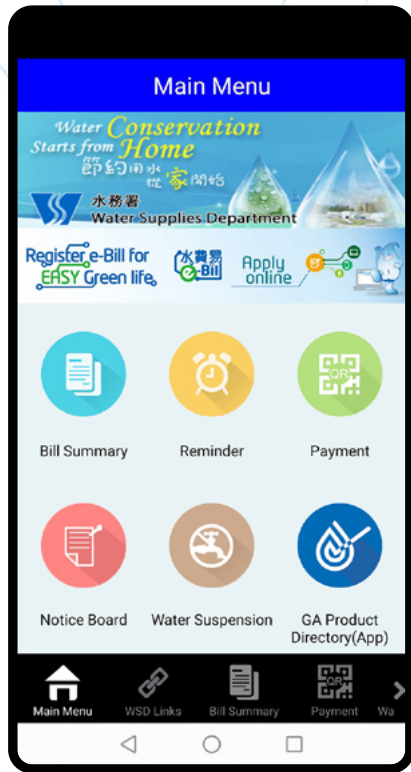
我們期望透過展示用水量的即時摘要，提高客戶精明用水的意識，從而推動行為改變，實現節約資源和成本。

WSD Mobile App

Our mobile application “WSD Mobile App” provides a useful tool for users to view bill summary, reminders as well as the latest news about the WSD’s initiatives and services. In addition, users can make use of the app to conduct the following:

- make payments at convenience stores by using the QR code provided without the need to present paper water bills.
- receive water suspension notices from among 452 sub-districts according to the District Council Election Constituencies.
- obtain product information of water supply pipes and fittings with general acceptance of the WSD.

Through presenting an instant overview of water consumption, we hope to raise customer awareness of using our water wisely and inspire their behaviour changes to achieve resource and cost saving.



iOS版本
iOS version



Android版本
Android version

免費下載「水務署流動應用程式」
Download the WSD Mobile App for free

提升供水申請服務

儘管我們計劃於二零二三年底，方開始接受以電子方式申請供水，但我們在可行的情況下致力推展該計劃，以盡早方便水喉業界和市民大眾。

繼去年為村屋提供電子遞交申請服務後，我們由二零二零年八月開始，將此服務擴展至簡單的水管工程，包括特定行業如飲食業、理髮店、美容店和洗衣店，及申請分拆水錶等。

此外，為方便水喉業界查閱有關水管工程及提交申請的最新指示和指引，我們推出了《樓宇水管工程技術要求》和《申請供水指引》，並從二零一八年開始，每年會檢視和更新這兩份刊物。於更新相隔期間，所有新政策和指引都將透過通函發布。此外，我們亦透過季度會議與業界分享相關資訊。

Service Enhancement for Applications for Water Supply

While our target is to accept applications for water supply through electronic channel by end 2023, we have endeavoured to bring this convenience to the plumbing trade and members of the general public as early as practicable.

Further to our provision of the electronic submission channel for village-type houses last year, we have extended this service to simple plumbing cases including selected business trades such as food business, barber & beauty shops and laundries, and separate meters since August 2020.

In addition, in order to facilitate easy reference for the plumbing trade to identify the latest instructions and guidelines on the requirements on plumbing works and submissions, we have promulgated “Technical Requirements for Plumbing Works in Buildings” and “Guide to Application for Water Supply” since 2018, and both publications will be reviewed and updated annually. In between two updates, any new policies and guidelines will be promulgated by means of Circular Letters. Moreover, we have established a sharing platform with the trade through quarterly meetings.

自二零二零年八月起，電子遞交申請服務擴展至

Since August 2020, electronic submission service extended to



飲食業 Food Business

美容店 Barber & Beauty Shops

洗衣店 Laundries

暫停供水自動通告系統

為加強與客戶溝通，我們正逐步設立一套以地理訊息系統為本的「暫停供水自動通知系統」，特別是在緊急情況下，主動通知受影響的客戶緊急暫停食水供應。在水管發生緊急故障時，該系統能協助我們確定因緊急維修而需要關閉的閘門和暫停使用的水管段，從而識別供水受影響的建築物並通知有關方面。

第一階段「暫停供水自動通知系統」已於二零二零年十二月推出，向大型屋苑（即不少於1 000個住宅單位的屋苑）管理處發出暫停食水供應通知。我們計劃於下一階段提升系統，將緊急暫停供水通告發送給相關用戶。

Water Suspension Notification System

To enhance customer communications, particularly in the event of emergency, we are progressively developing a geographic information system (GIS)-based Water Suspension Notification System ("WATSUN") to proactively notify affected customers of emergency suspension of fresh water supply. At times of emergency failure in water mains, the WATSUN could assist to identify the valves to be closed and the sections of water mains to be isolated for emergency repair works, thereby identifying the buildings to be affected and notifying the concerned parties.

The Phase 1 development of WATSUN was rolled out in December 2020 providing fresh water suspension notifications to the management offices of large housing estates (with residential units not less than 1 000). We are planning to extend such emergency notification service to individual consumers in our next phase of system enhancements.

「暫停供水自動通知系統」服務覆蓋範圍

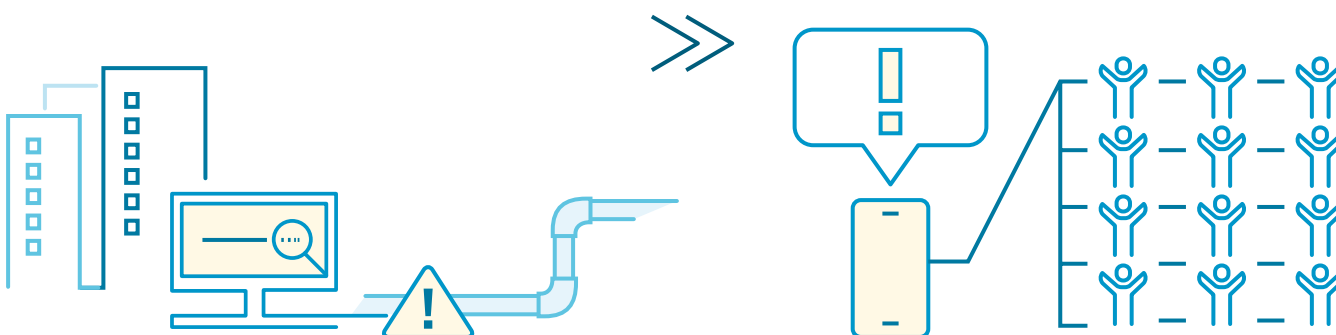
Service coverage of WATSUN

第一階段 （已於二零二零年十二月推出）
Phase 1 (rolled out in December 2020)

大型屋苑的管理處
Management Office of Large Housing Estates

第二階段
Phase 2

將擴展至相關用戶
To be extended to Individual Consumers



推廣智慧用水的文化

為保持市民惜水的習慣，及在控制食水需求增長方面帶來積極影響，我們透過公眾教育活動，並以目標為本的方針來與社區密切合作，務求推動公眾支持，提高活動的成效。

PROMOTING WATER-WISE CULTURE

To sustain water-cherishing behaviour and effect positive changes in containing the growth of fresh water demand, we leverage both public education campaigns as well as a targeted approach in close collaboration with the local communities to mobilise support and enhance effectiveness.

「齊來慳水十公升2.0」活動 Let's Save 10L Water 2.0 Campaign

「齊來慳水十公升2.0」活動的目標，是向不同界別推廣惜水文化，並鼓勵社區將每日節省最少10公升用水量。活動包括「為私人屋苑和私立學校免費安裝節流器」、「創新節水花灑頭設計比賽」、「挑戰沖涼4分鐘」、「慳水比賽」等一系列活動。其中，「挑戰沖涼4分鐘」和「慳水比賽」分別暫定於二零二一年中和二零二二年初舉行。



這些活動旨在培養節約用水的習慣，並呼籲全民承諾珍惜水資源。

The “Let’s Save 10L Water 2.0” Campaign is designed to promote water-cherishing culture to all walks of life and encourage the community to reduce daily water consumption by 10 litres or more. It consists of a series of activities including the “Free installation of flow controllers at private housing estates and private schools”, “Innovative Water Efficient Showerhead Design Competition”, the “4-minute Shower Challenge” and the “Water Saving Competition”, of which the latter two initiatives are tentatively scheduled in mid-2021 and early 2022 respectively.

These initiatives seek to cultivate water-saving habits and call for collective commitment in cherishing water.

創新花灑頭設計比賽 Innovative Water Efficient Showerhead Design Competition

沐浴佔生活用水量的比例甚高。設計淋浴花灑頭時如能融入環保功能，可有效減少用水和能源消耗。是次比賽收到來自學界和專業組別150多份參賽作品，匯集眾多創新的淋浴花灑頭設計。優勝作品巡迴展暫定於二零二二年上半年舉行，目的是提高公眾對節約用水的意識，並推廣善用節水器具。



Bathing accounts for a large proportion of domestic water consumption. Integrating eco-friendly features in designing showerheads is effective in reducing both water and energy consumption. Over 150 entries from both academic and professional sections gathering innovative showerhead designs were received in the competition. Roving exhibitions of winning entries are tentatively scheduled for the first half of 2022, which aims to raise public awareness of water conservation and promote the use of water-saving devices.



中學及大專生組金獎林桂好女士

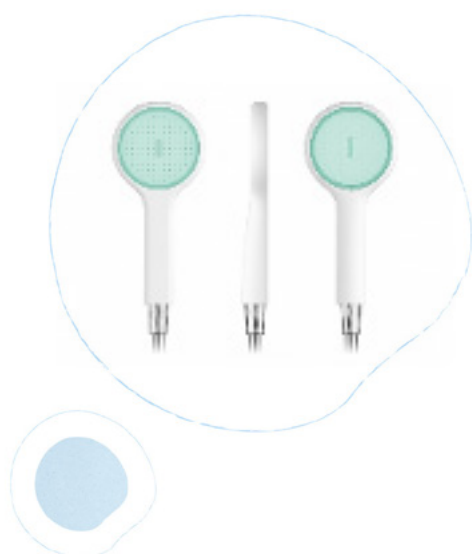
節約用水：5分鐘節約用水沙漏花灑

花灑手柄內置5分鐘沙漏倒數計時器，非使用時倒掛。當用家提起花灑開始淋浴時，沙漏隨即倒數計時。本設計旨在鼓勵用家在5分鐘內完成淋浴，以達致節約用水的效果。

Gold Award winner, Academic Section – Ms LAM Kwai-ho

Save water: Five-minute hourglass in showerhead

A five-minute countdown hourglass is embedded into the handle of this showerhead and is being hung upside down when not in use. Once users begin showering and raise the showerhead, the hourglass operates and counts down straightway, which aims to encourage users to complete shower within five minutes with a view to achieving water conservation.



專業組金獎高儀香港有限公司

GENIE手握花灑

本產品具備多個特點，包括出水穩定、易清潔及輕巧等。半透明的彩色花灑面讓用家能輕易了解花灑內部的衛生狀況，利用硬幣打開背後的花灑蓋板便可清潔。花灑每分鐘出水量為8.4公升，並獲得水務署一級用水效益標籤。

Gold Award winner, Professional Section – Grohe Hong Kong Limited

GENIE Hand Shower

This product has the features of stable water flow, easy cleaning and light in weight. With the transparent coloured spray face, users are able to view the internal hygiene condition of the hand shower with ease. The back part features a simple opening system that allows users to easily open the back cover with a coin and remove it to clean the inside. Its water flow rate is 8.4 L/min with WELS Certificate Grade 1 registered by the WSD.

抽水俠Ben Sir醒你慳水小貼士 Water Saving tips from Word Jacker (Ben Sir)

為使節約用水的訊息更具吸引力，提高市民的慳水意識，名人歐陽偉豪博士 (Ben Sir) 寓教於樂，設計一系列可應用於日常生活的節水小貼士，並透過社交媒體、網站、出版物和戶外場地等不同渠道推廣，以不同的媒介傳揚節約用水的訊息。

To enhance the appeal of the water-saving messages and raise public awareness of water conservation, a suite of water-saving tips for different daily life applications using edutainment approach are designed and promoted by the popular celebrity Dr AU YEUNG Wai-hoo (Ben Sir). The following features the highlights of various water conservation messages in multimedia formats that are broadcast in different communications channels covering social media, website, publications and outdoor spots.



「滴滴遊蹤深導行」參觀活動 "Excursion with Water Save Dave" Visiting Programme

自二零一九年舉辦「滴滴遊蹤深導行」參觀活動以來，活動致力讓公眾透過導賞團形式到訪水務署水塘和濾水廠等不同水務設施，加深公眾對水資源的認識，鼓勵大家響應共同保障後代獲得水資源的機會。

今年，我們增設大埔濾水廠為參觀地點之一，使活動內容更豐富。導賞團共設三個主題，共七個參觀點，藉此讓參加者以互動的方式，更了解水務署的日常運作、供水基礎設施的錯綜複雜的動態，以及個人和集體為何須要節約用水的原因。基於二零一九冠狀病毒病疫情的限制和具挑戰的情況下，我們取消了二零二零至二一年度的所有個人和團體導賞團。

Established since 2019, the "Excursion with Water Save Dave" Visiting Programme aims to raise public knowledge about water resources and encourage their collective efforts to protecting our water resources for future generations via a guided tour of the WSD's various waterworks facilities including reservoirs and water treatment works.

This year we enhanced our programme with an additional visiting location of our Tai Po Water Treatment Works. Under the Programme which comprises of three thematic topics with a total of seven visiting locations, participants could learn more through an interactive mode about the daily operations of the WSD, the complex dynamics of our water supply infrastructure, as well as the reason for conserving water both at individual and collective levels. With the restrictions and challenging environment due to the COVID-19 epidemic, all the guided individual and group tours were cancelled in 2020/21.

導賞主題：

Guided tour themes:

- ◆ 我們的水資源
Our Water Resources and Nature
- ◆ 水務文物徑
Waterworks Heritage Trails
- ◆ 食水處理與質量控制
Fresh Water Treatment and Quality Control

參觀地點：

Visiting locations:

- ◆ 船灣淡水湖
Plover Cove Reservoir
- ◆ 萬宜水庫
High Island Reservoir
- ◆ 大潭水務文物徑
Tai Tam Waterworks Heritage Trail
- ◆ 九龍水務文物徑
Kowloon Waterworks Heritage Trail
- ◆ 牛潭尾濾水廠
Ngau Tam Mei Water Treatment Works
- ◆ 馬鞍山濾水廠
Ma On Shan Water Treatment Works
- ◆ 大埔濾水廠
Tai Po Water Treatment Works



惜水運動

除了提高市民的節約意識和智慧用水的生活外，我們亦與學校和企業等目標群組合作，提高節約用水的成效。

二零一五年至一六年度推出了專門為小學而設的「惜水校園」綜合教育計劃，以培養年輕一代良好的節約用水習慣。計劃結合理論與實踐，輔以多元化的教材，拓寬學生對水資源的認識，並提高他們對節約用水和可持續發展的認識。憑藉計劃在小學取得的成功，計劃於二零一八年至一九年度擴展至幼稚園。

二零二零年八月，「惜水學堂」更為小學教師推出網上教師專區，以便利老師的節水教學和提升教學體驗。遊戲特區的五個遊戲亦經過更新，並於二零二零至二一新學年開始，借予小學和教育團體。

為進一步加強推廣，我們將在「惜水校園」計劃下，舉辦「節約用水周2021」，透過一系列比賽和活動，向小學和幼稚園學生宣傳惜水的重要性。

CHERISH WATER PROGRAMME AND CAMPAIGNS

Apart from promoting conservation awareness and water-wise living among members of the public, we have also collaborated with targeted groups such as schools and enterprises to enhance effectiveness in conserving water.

A dedicated “**Cherish Water Campus**” Integrated Education Programme for primary schools was launched in 2015/16 to nurture good water-saving habits amongst the younger generation. The Programme aims to broaden students’ knowledge about water resources and raise their awareness about water conservation and sustainability by integrating theory with practice with the aid of diversified teaching materials. Riding on the success of the programme in primary schools, the programme was then extended to kindergartens in 2018/19.

In August 2020, the online “Cherish Water Campus” Teacher’s Portal for Primary School was launched to facilitate water conservation education and enhance teaching experience. Five game booths were also revamped and made available for lending to primary schools as well as education groups in the new academic year 2020/21.

To step up our promotion, we are planning to organise the “Water Conservation Week 2021” under the “Cherish Water Campus” Programme to disseminate the importance of cherishing water among primary schools and kindergarten students via a series of competitions and activities.

參與「惜水校園綜合教育計劃」的學校數目：

Number of schools participated in the “Cherish Water Campus” Integrated Education Programme:

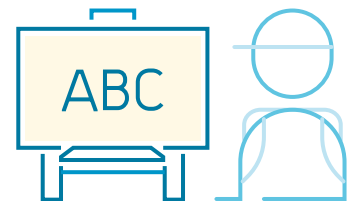
330

間小學
primary schools



340

間幼稚園
kindergartens



海報設計大賽，是「惜水學堂」綜合教育計劃的重點推介活動之一。活動以「節約用水」、「防止滲水」、「循環再用水」、「珍惜水資源」、「水與生命」、「惜水校園」等主題，鼓勵參賽學校自行舉辦比賽，藉以教育學生珍惜水資源和節約用水。以下是幾張從參與學校收集而來極具創意的參賽海報作品。

The poster design competition is one of the suggested activities under the “Cherish Water Campus” Integrated Education Programme focusing on themes such as “Water Conservation”, “Prevention of Leakage”, “Recycled Water”, “Conservation of Water Resources”, “Water and Life”, “Cherish Water Campus” etc. Participating schools are encouraged to organise competitions to educate students about water resources and water conservation. The following entries are examples of creative poster designs collected from the participating schools.



我校所舉辦的「惜水學堂」活動，涵蓋探索、實踐和延伸部分。各級學生除了在校內透過課堂互動活動和主題講座來認識水資源外，他們更在家居、商場和食肆實地考察，分析收集得來的用水數據和其他相關資料，反思節水的重要性。

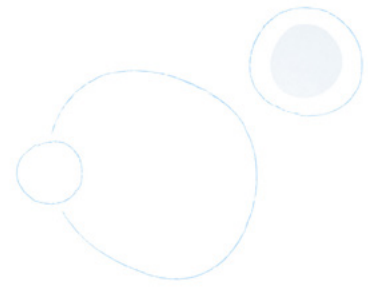
The activities organised by our school have incorporated exploration, practice and other learning experiences. Through the programme, students from different grades learn more about water resources by completing interactive activities in class and participating in themed talks. They have also performed research at homes, shopping centres and restaurants to collect and analyse water usage data, which enabled them to reflect on the importance of water conservation.

新界婦孺福利會基督教銘恩小學 - 潘卓賢老師

Mr POON Cheuk-yin, Teacher of NTWJWA Christian Remembrance of Grace Primary School

除了幼稚園和小學，我們也鼓勵全民參與，管理及減少用水和用水流失，並且身體力行，教育年輕一代及其家人（包括外籍家庭傭工）節約用水，帶領智慧用水的生活模式。

Apart from kindergartens and primary schools, we encourage every citizen to manage and reduce water use and loss, and join our cause in educating the younger generation and their families (including foreign domestic helpers) in conserving water and leading a water-wise lifestyle.



同心協心 推動行動

要推動精明利用水資源，以及應對與日俱增之水資源風險，同心協力是當中的重要關鍵。在這一年裡，我們與不同團體建立合作關係，支持各大社區活動，使節約和安全用水的訊息能深入社會每個角落。

活水健步行 2020 Walk for Living Water 2020

我們今年與愛德基金會(香港)攜手合作，舉辦第十屆「活水健步行」。參加者可自己選擇適合的時間和地點，邁步健行。活動籌集逾47萬港元善款，用於為尼泊爾、緬甸和斯里蘭卡農村的乾旱地區，建設安全食水和衛生設施。正值二零一九冠狀病毒病疫情爆發的情況下，這些必要設施更能發揮作用。

Co-organised with the Amity Foundation for the 10th year, this year's event was conducted with participants arranging their own walks at time and place of their choice. Over HK\$470,000 was raised to build safe drinking water and sanitation facilities for rural water-deprived regions in Nepal, Myanmar and Sri Lanka, which are most needed in light of the COVID-19 epidemic.



FOSTERING SYNERGIES TO INSPIRE ACTION

Concerted efforts and collaboration are critical drivers to inspiring wise use of our water resources and addressing the growing water risks. During the year, we built partnerships and provided support in various community activities to widen our reach to all walks of life and amplify our messages on water conservation and safety.

2020 國際環保博覽 Eco Expo Asia 2020

由香港貿易發展局主辦的國際環保博覽，主題為「創科減碳·共建循環經濟」，我們透過網上展覽攤位介紹水塘的浮動太陽能板發電系統。

Organised by the Hong Kong Trade Development Council with the theme "Green Innovation for a Circular Economy", the initiative was supported by us with a virtual exhibition booth introducing our floating solar power system at impounding reservoirs.



創新科技嘉年華 2020 InnoCarnival 2020

我們參與由創新科技署舉辦的「創新科技嘉年華2020」，推廣「智管網」和「自動讀錶系統」的智慧供水基礎設施，以鼓勵公眾一起應對用水流失問題。

We participated in the InnoCarnival 2020 organised by the Innovation and Technology Commission and promoted our smart water supply infrastructure “Water Intelligent Network and Automatic Meter Reading System” with a view to encouraging the public to jointly tackle the water loss problem.



Information



Brochures



Social Media



Links

香港綠色日 2020 Hong Kong Green Day 2020

我們加入成為環保促進會的支持機構，致力提倡綠色生活。約80個品牌以「綠色商店」或「綠色食肆」的身份參與其中。另有160多家企業簽署「綠色承諾」，在辦公室和工作場所實施綠色措施。

Participating as a supporting organisation, we joined the Green Council to advocate green living. Approximately 80 brands participated as “Green Shops” or “Green Restaurants”, and over 160 corporates joined the “Green Pledge” to implement green measures at offices and workplaces.



放眼世界

Our Global Network



合作推進水務管理

為香港提供優質且可持續的供水服務是我們一直秉承的抱負。為此，我們投入參與國際性水務專業團體，並與海內外國際同業緊密合作，以探索與水務管理相關的創新科技和最佳實務方案、提升實力，以及分享我們的見解及解決方案，與其他智慧用水的城市優勢互補。

水務署投入參與以下世界頂尖的水務公用事業網絡和知識平台，以汲取可持續和智慧水務管理的實踐和創新資訊，並連繫水務行業具影響力的領導者：

- ◆ 國際水協會
- ◆ 國際海水化淡協會*
- ◆ 國際公用事業專業網絡*
- ◆ 國際水利與環境工程學會
- ◆ 美國水務協會*
- ◆ 智能供水網絡論壇*

*註：中文譯名

今年我們參加了多個地區性及國際性會議，學習和分享水務管理的見解、最佳實務方案和未來趨勢。當中包括：

PARTNERING FOR ADVANCING WATER MANAGEMENT

As part of our vision to excel in providing quality and sustainable water supply in Hong Kong, we join the global knowledge hubs for water professionals and work in close collaboration with our regional and international counterparts. We seek to explore the latest innovations, technologies and best practices of water management; build capacity; as well as contribute insights and solutions adding value to the work of many other water-wise cities.

The WSD joins the following international leading water utility networks and knowledge hubs to access sustainable and smart water practices and innovations, and collaborate with thought leaders of the water sector:

- ◆ International Water Association (IWA)
- ◆ International Desalination Association
- ◆ Leading Utilities of the World
- ◆ International Association for Hydro-Environment Engineering and Research (IAHR)
- ◆ American Water Works Association
- ◆ Smart Water Networks Forum

During the year, we participated in various conferences for learning as well as sharing water management insights, best practices and future trends. These include:

第二屆粵港澳大灣區水務論壇

這一年一度的論壇，為大灣區的水務企業提供交流平台，藉以探索合作機會，並交流供水和污水管理方面的創新理念和最新技術，以促進大灣區水務行業的持續發展。

論壇於二零二零年十一月十七至十九日於廣州舉行，主題為「創新·發展·共贏」。我們的團隊在論壇上分享如何以「設計思維」構建節約用水策略、BIM技術在工程生命周期的應用，以及水質管理和用水流失管理。

國際水利與環境工程學會85周年峰會

此峰會於二零二零年十二月十四至十七日在北京及線上同步舉行，逾80位具份量的專家出席，內容包括具前瞻性的講座、主題演講和技術報告分享。水務署副署長周世威工程師在峰會上分享香港的可持續水資源管理策略。

國際水協會二零一九冠狀病毒病網上研討會

二零一九冠狀病毒病疫情對水務機構構成的壓力日益增加，影響其供水服務、污水處理及排放服務，以及為濾水設施運作帶來風險。

水務署副署長周世威工程師於二零二零年四月二十九日應邀出席網上研討會「二零一九冠狀病毒病：監管機構的回應」，分享在疫情下水務署如何確保可靠及優質的供水，以及對未來緊急應變準備和規劃的看法。

這個由國際水協會舉辦的網上研討會吸引了來自世界各地的監管機構、研究和科學團體的水務專業人士參與。



周世威工程師在國際性會議上分享經驗。
Ir CHAU Sai-wai shared experience in international events.

2nd Guangdong-Hong Kong-Macao Greater Bay Area Water Forum

This annual forum provided a common platform for water utilities in the Greater Bay Area (GBA) to explore collaboration opportunities, exchange innovative ideas and the latest technologies in water and wastewater management, and foster the continued development of the GBA's water sector.

The forum was held in Guangzhou from 17 to 19 November 2020, under the theme "Innovation • Development • Success". Our team participated in sharing our experience in adopting design thinking approach to develop water conservation strategy, and integrating Building Information Modelling (BIM) technology into project lifecycle, water quality management and water loss management.

IAHR 85th Anniversary Summit

Over 80 respected experts attended this summit held physically in Beijing as well as virtually from 14 to 17 December 2020 to give vision talks, keynote lectures and technical reports. Ir CHAU Sai-wai, Deputy Director of Water Supplies shared in the global summit about Hong Kong's sustainable water management initiatives.

IWA COVID-19 Webinar

The COVID-19 pandemic has posed increasing pressure on the ability of water utilities to provide water and wastewater services as well as risk to water treatment operation.

Invited as the key speaker in the webinar held on 29 April 2020 themed "COVID-19: The Regulators' Response", Ir CHAU Sai-wai, Deputy Director of Water Supplies shared the WSD's experience in ensuring reliable and quality water supplies during the crisis and his views on the readiness and planning of contingency response in future.

Organised by the IWA, the webinar was attended by water professionals from regulatory agencies, industry research and science communities across the world.



財務及水費

Finance and Water Charges

水費

與世界其他主要城市相比，香港客戶為優質食水所繳付的費用相對低廉。除了一九九六年七月修訂的非本地船隻用水收費外，水費自一九九五年二月至今亦一直維持不變。

收費幅度

住宅用戶的食水水費（沖廁用水除外）按以下四級制，以四個月為期計算：

WATER CHARGES

Customers in Hong Kong pay less for high-quality fresh water than their counterparts in most major cities around the world. Water charges have not been revised since February 1995 (other than the charge for non-local vessels, which was last revised in July 1996).

SCALE OF CHARGES

Fresh water for domestic use (other than flushing) is charged by four-month periods, with rates set out in a four-tier system as follows:



每單位 (1立方米) 收費 Charging rate per unit of one cubic metre

第一級 — 首12個單位 Tier 1 for the first 12 units	免費 Free
第二級 — 繼後的31個單位 Tier 2 for the next 31 units	\$4.16 (註一)(Note 1)
第三級 — 再繼後的19個單位 Tier 3 for the next 19 units	\$6.45 (註二)(Note 2)
第四級 — 餘下單位 Tier 4 for the remainder	\$9.05 (註三)(Note 3)

作其他用途的食水，會根據其用途按下表所列收費：

Fresh water for other uses is charged at different rates as follows, based on the purpose of consumption:

用途 Purpose	每單位 (1立方米) 收費 Charging rate per unit of one cubic metre
商業 Trade	\$4.58 (註四)(Note 4)
建築 Construction	\$7.11 (註五)(Note 5)
航運 (非本地船隻) Shipping (Non-local Vessels)	\$10.93 (註六)(Note 6)
航運 (本地船隻) Shipping (Local Vessels)	\$4.58 (註七)(Note 7)
航運以外用途 (非本地船隻)，並以預付票繳交水費 Any purpose other than Shipping (Non-local Vessels) where payment is made against a prepaid ticket	\$4.58 (註七)(Note 7)
沖廁水每四個月的收費率 Flushing per four-month period	
— 首30個單位 for the first 30 units	免費 Free
— 餘下單位 for the remainder	\$4.58 (註七)(Note 7)

海水沖廁費用全免。

Sea water for flushing is supplied free of charge.

註一：一九七九年推出水費分級制度時，第二級收費的目標是大致收回每單位的淨生產成本，即按照水錶記錄的耗水量計算每單位的總生產成本（包括固定資產平均淨值的目標回報率）減去每單位的差餉補貼。於二零二零至二一年度，每單位的淨生產成本為12.2元，遠超4.16元的收費水平，主要因為水費自一九九五年起並無任何變動。

註二：一九七九年推出水費分級制度時，第三級收費的目標是大致收回每單位的總生產成本，即按照水錶記錄的耗水量計算每單位的平均生產成本（包括固定資產平均淨值的目標回報率）。於二零二零至二一年度，每單位的總生產成本為17.6元，遠超6.45元的收費水平，主要因為水費自一九九五年起並無任何變動。

註三：第四級收費定價比第三級收費高出約40%，以阻止過量及浪費用水。

註四：一九九二年前，商業用途的收費與住宅用戶第二級收費相同。自一九九二年起，商業用途的收費修訂至高於住宅用戶第二級收費水平，旨在減少對非住宅用戶的補貼。

註五：一九九二年前，建築用途的收費與住宅用戶第三級收費相同。自一九九二年起，建築用途的收費修訂至高於住宅用戶第三級收費水平，旨在減少對非住宅用戶的補貼。

註六：航運（非本地船隻）收費於一九九六年作出修訂，當時收費水平訂為高於每單位總生產成本的40%，目的是阻止非本地船隻在香港取水。

註七：此等收費與商業用途收費相同。

Note 1. When the tariff structure was introduced in 1979, the charge for the second tier was to recover approximately the net unit production cost, which meant the full unit production cost (including a target rate of return on average net fixed assets (ANFA)) less the average contribution from rates per unit, calculated based on the quantity of the metered consumption. In 2020-21, the net unit production cost is \$12.2, which is materially higher than the charging rate of \$4.16, mainly because water tariffs have not been changed since 1995.

Note 2. When the tariff structure was introduced in 1979, the charge for the third tier was to recover approximately the full unit production cost, which meant the average production cost per unit (including a target rate of return on ANFA), calculated based on the quantity of the metered consumption. In 2020-21, the full unit production cost is \$17.6, which is materially higher than the charging rate of \$6.45, mainly because water tariffs have not been changed since 1995.

Note 3. The fourth tier is set about 40% higher than the third tier to discourage extravagant and wasteful use of water.

Note 4. Prior to 1992, the charging rate for trade purposes was equal to the second-tier rate for domestic purposes. Commencing from 1992, the charging rate for trade purposes was set higher than the second-tier rate for domestic purposes mainly to reduce the subsidy to non-domestic consumers.

Note 5. Prior to 1992, the charging rate for construction purposes was equal to the third-tier rate for domestic purposes. Commencing from 1992, the charging rate for construction purposes was set higher than the third-tier rate for domestic purposes mainly to reduce the subsidy to non-domestic consumers.

Note 6. The charging rate for shipping (non-local vessels) was last revised in 1996. At that time, it was set at 40% above the full unit production cost to discourage the taking of water in Hong Kong.

Note 7. These charging rates were set at the rate equal to the charging rate for trade purposes.

自一九九八至九九年度起，水務經營帳目包括各項補貼收入後仍錄得虧損，需依靠政府一般收入補助。二零二零至二一年度錄得虧損18.251億元，成本回收率為84.1%。政府會繼續定期檢討水費，審慎考慮各項因素，包括承擔能力、水務設施的財政表現、當時的經濟形勢，以及立法會議員的意見。

除水費外，《水務設施規例》(第102A章)亦列明25項法定收費項目。我們一直遵照政府的「用者自付」原則檢討這些收費項目，旨在悉數收回提供服務的成本。於二零一八至一九年度，25項法定收費項目已作調整，修訂自二零一九年三月二十九日起生效。

水費收入總覽

於二零二零至二一年度，約14%住宅用戶毋須支付任何水費；38%達到第二級水費，需繳付每單位4.16元水費；20%需繳付第三級水費，即每單位6.45元；餘下28%需繳付第四級水費，即每單位9.05元的水費。於二零二零至二一年度，280萬住宅用戶(包括無須繳付水費之用戶)每月平均水費為55元。根據政府統計處的住戶開支統計調查，水費及排污費開支約相等於住戶每月平均開支的0.3%。

水費收入(按用戶類別劃分)

過去五年按用戶類別劃分的水費收入分析如下：

用戶類別 Sector	財政年度(百萬元) Financial Year (\$million)					% (20/21)
	2016/17	2017/18	2018/19	2019/20	2020/21	
商業 Trade	946	970	974	727 (905)	277 (828)	11.5 (27.4)
住宅 Domestic	1,518	1,552	1,556	1,643 (1,643)	1,867 (1,867)	77.2 (61.8)
政府 Government	156	156	164	172 (172)	148 (148)	6.1 (4.9)
其他# Others#	211	195	187	165 (182)	125 (177)	5.2 (5.9)
總收入 Total	2,831	2,873	2,881	2,707 (2,902)	2,417 (3,020)	100.0 (100.0)

括號內數字為實際水費收入加上水費寬減額。

Figures in brackets are actual water charges received plus concession.

包括沖廁用淡水

Includes fresh water for flushing

Waterworks operations, after including revenue from various contributors, have seen deficits since 1998-99, and thus are subsidised by general Government revenues. In 2020-21, the deficit was \$1,825.1M and the cost recovery rate was 84.1%. The Government continues to review the water tariff periodically, taking into consideration a number of factors, including affordability, financial performance of waterworks operations, the prevailing economic situation, and the views of Legislative Council members.

Other than water charges, there are 25 statutory fee items stipulated in the Waterworks Regulations (Cap. 102A). The WSD periodically review these fee items in accordance with the Government-wide "user pays" principle, which aims to recover the full cost of providing services. During the year 2018-19, 25 statutory fee items have been revised effective from 29 March 2019.

PROFILES OF THE REVENUE FROM WATER CHARGES

During this financial year, about 14% of domestic customers were not required to pay water charges, 38% paid up to the tier 2 rate of \$4.16 per unit, 20% paid up to the tier 3 rate of \$6.45 per unit, and 28% paid up to the tier 4 rate of \$9.05 per unit. For the WSD's 2.8 million domestic customers, the average water charge in 2020-21, including those not required to pay any charge, was \$55 per month. According to the Census & Statistics Department household expenditure survey, the water and sewage charges amount to about 0.3% of the average monthly household expenditure.

WATER CHARGES (BY SECTOR)

An analysis of the water charges by sector over the past five years is outlined as follows:

收入及開支分析

水費收入包括一般水費、各項收費、牌費，以及可收回支出的工程費用。在編製水務賬目時，會以應計賬目基準呈列財務表現及狀況，其中包括各項非現金收入項目，主要為差餉補貼、免費用水補貼及政府用水。總運作成本主要包括員工開支、購買東江水的成本、折舊、運作及行政開支。過去五年的收入及開支分析如下：

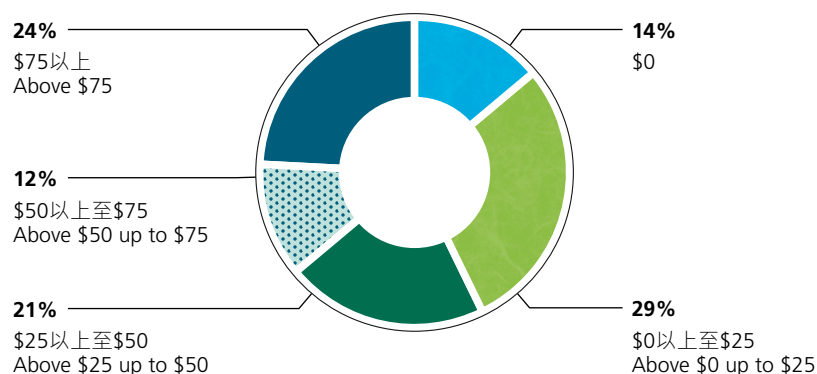
ANALYSIS OF REVENUE AND EXPENDITURE

Revenue collections include chargeable water supplies, fees, licences, and reimbursable works. In preparing the Waterworks Operating Accounts which present the WSD's financial results and positions on an accrual accounting basis, the revenues include non-cash items, mainly contributions from rates, contributions on free allowance, and water supplies to Government establishments. The total operating costs include mainly staff costs, Dongjiang water purchase costs, depreciation, operating and administration expenses. An analysis of the revenue and expenditure over the past five years is as follows:

收入 (百萬元) Revenue (\$million)

財政年度 Financial Year	2016/17	2017/18	2018/19	2019/20	2020/21
一般水費 Chargeable Supplies	2,674.9	2,716.9	2,717.2	2,534.8	2,268.5
差餉補貼 Contribution from Rates	3,187.1	3,330.1	2,574.8	3,146.7	2,856.4
差餉寬減補貼 Contribution on Concession of Rates	1,576.1	1,611.9	2,665.0	2,340.3	2,622.2
水費寬減補貼 Contribution on Concession of Water Charges	-	-	-	195.2	603.3
免費用水補貼 Contribution on Free Allowance	1,067.4	1,048.6	1,055.0	1,083.3	1,129.8
政府用水 Supplies to Government Establishments	156.4	156.0	163.8	172.0	148.3
各項收費、存款利息及其他 Fees, charges, interest from deposits and others	44.5	42.6	60.3	72.6	35.4
總額 Total	8,706.4	8,906.1	9,236.1	9,544.9	9,663.9

二零二零/二一年度住宅用戶每月水費分佈圖
Distribution of Household Average Monthly Bills 2020/21



開支 (百萬元)
Expenditures (\$million)

財政年度 Financial Year	2016/17	2017/18	2018/19	2019/20	2020/21
員工開支 Staff costs	1,729.6	1,917.1	2,077.9	2,195.0	2,042.7
運作及行政開支 Operating and administration expenses	1,948.7	2,024.1	2,023.6	2,094.1	2,453.7
購買東江水的成本 Purchase cost of Dongjiang water	4,569.7	4,782.2	4,796.5	4,810.9	4,821.4
折舊 Depreciation	1,815.7	1,917.1	2,013.6	2,120.5	2,171.2
總額 Total	10,063.7	10,640.5	10,911.6	11,220.5	11,489.0

本署致力以符合成本效益的方式提供服務，並在固定資產、設備、資訊科技及人力資源方面投入大量資源，藉此提高運作效益及員工生產力，務求滿足市民對更優質服務的需求。社會大眾以及我們的用戶可以放心，我們會實行嚴謹的財務紀律，在提供優質服務滿足用戶需要之餘，不忘提升成本效益。這是我們實現抱負和使命的基本法則。

The WSD is committed to providing services as cost effectively as possible, and has made substantial investments in fixed assets, equipment, information technology and human resources to improve operational efficiency and staff productivity to meet the public's demand for a higher quality of services. Our customers and the public at large can rest assured that the WSD will exercise strict financial discipline and be very cost conscientious in delivering quality services to meet customer demands. This is the WSD's underlying approach to achieve its vision and missions.

水務 - 經營帳目

WATERWORKS – OPERATING ACCOUNTS

二零二零 / 二零二一年度回顧

REVIEW OF THE YEAR 2020-21

截至二零二一年三月三十一日止的財政年度

For the year ended 31 March 2021

工作方面	Activities
按照水錶記錄的淡水耗水量上升1.3%至6.76億立方米	Metered fresh water consumption increased by 1.3% to 676 million cubic metres
財務表現	Financial Performance
收入上升1.2%	Revenue increased by 1.2%
開支上升2.4%	Expenditure increased by 2.4%
稅後虧損由二零一九 / 二零年度的16.756億元升至二零二零 / 二一年度的18.251億元	Deficit after taxation increased from \$1,675.6 million in 2019-20 to \$1,825.1 million in 2020-21
按固定資產平均淨值計算的回報率由二零一九 / 二零年度的-2.6%增至二零二零 / 二一年度的-2.7%	Return on Average Net Fixed Assets decreased from -2.6% in 2019-20 to -2.7% in 2020-21

經營帳目

OPERATING ACCOUNT

截至二零二一年三月三十一日止的財政年度

For the year ended 31 March 2021

		註 Note	2021 (百萬元) \$M	2020 (百萬元) \$M
收入	Revenue	2	9,663.9	9,544.9
開支	Expenditure	3	11,489.0	11,220.5
稅前虧損	Deficit before taxation		(1,825.1)	(1,675.6)
稅項	Taxation	1(e), 1(f), 4	-	-
稅後虧損	Deficit after taxation	1(j)	(1,825.1)	(1,675.6)

附註為這帳目的一部分。

The annexed notes form part of these accounts.

衡量財務表現的指標

FINANCIAL PERFORMANCE MEASURES

截至二零二一年三月三十一日止的財政年度

For the year ended 31 March 2021

		註 Note	2021 (百萬元) \$M	2020 (百萬元) \$M
固定資產平均淨值	Average net fixed assets (ANFA)	1(i), 5	67,001.5	64,793.4
實際回報額	Actual return		(1,825.1)	(1,675.6)
目標回報額	Target return		1,742.0	1,684.6
按固定資產平均淨值計算的 實際回報率	Actual return as % of ANFA	1(h)	(2.7%)	(2.6%)
按固定資產平均淨值計算的 目標回報率	Target return as % of ANFA		2.6%	2.6%

附註為這帳目的一部分。
The annexed notes form part of these accounts.

財務狀況表

STATEMENT OF FINANCIAL POSITION

截至二零二一年三月三十一日止的財政年度

For the year ended 31 March 2021

		註 Note	2021 (百萬元) \$M	2020 (百萬元) \$M
可動用淨資產	Net assets employed			
固定資產	Fixed assets	1(b),1(c), 5	68,366.2	65,636.8
流動資產	Current assets	1(d), 6	2,915.4	2,995.2
流動負債	Current liabilities	7	(2,819.3)	(2,768.0)
流動資產淨值	Net current assets		96.1	227.2
			68,462.3	65,864.0
財政來源	Financed by			
公共資本帳目	Public capital account	1(j), 8	68,462.3	65,864.0

附註為這帳目的一部分。
The annexed notes form part of these accounts.

帳目附註

1. 會計政策

(a) 會計基礎

此帳目是根據歷史成本基礎來制定，並略加修訂以包括名義的收支。

(b) 固定資產

- (i) 除政府收回的土地外，固定資產不包括水務設施和集水區位處的土地。至於政府收回的土地，其收回成本已包括在有關的工程成本內。
- (ii) 至於工程項目，成本包括實際直接開支，和施工期間有關設計、規劃和監督等的員工開支。
- (iii) 所有其他固定資產，除了建造中的資產以成本值計算外，均以其成本值減去累積折舊列出。

(c) 折舊

- (i) 折舊是根據固定資產成本值減去使用期末的剩餘值，採用直線攤銷法按其預計使用年期分期攤銷。每年折舊率為：

隧道、堤壩、收回土地及造林等	1%
土木工程	2%
喉管 — 淡水	2%
— 海水	5%
機電工程、機器及設備	4%-20%
水錶	8.33%
電腦硬件、軟件及系統	10%-33.33%
車輛	10%-20%

- (ii) 建造中的資產並沒有折舊撥備。

(d) 現有存貨

現有存貨是以加權平均法，按成本值計值。

Notes to the Accounts

1. Accounting Policies

(a) Basis of Accounting

The accounts have been prepared on the historical cost basis of accounting, modified to include notional receipts and payments.

(b) Fixed Assets

- (i) No cost is included for land which is occupied by installations or sterilised by catchment areas except that, where it has been resumed, the cost of resumption has been included in the capital cost of the project concerned.
- (ii) For capital projects, the costs include the actual direct expenditure and staff costs for design, planning and supervision during the construction period.
- (iii) All other fixed assets are stated at cost less accumulated depreciation except assets under construction which are stated at cost.

(c) Depreciation

- (i) Depreciation is provided on a straight-line basis to amortise the cost of fixed assets less residual value over their estimated useful lives. The annual rates of depreciation used are:

Tunnels, dams, resumption and afforestation, etc.	1%
Civil engineering works	2%
Water mains – fresh	2%
– salt	5%
Mechanical/electrical works, plant and machinery	4%-20%
Meters	8.33%
Computer hardware, software and system	10%-33.33%
Motor vehicles	10%-20%

- (ii) No depreciation is provided on assets under construction.

(d) Stocks in Hand

Stocks in Hand are valued at cost using the weighted average cost method to the extent that it is material.

(e) 稅項

名義利得稅乃按年度預期的應課溢利，以報告期末日期的現行稅率，及過往年度的應付稅項調整而作出所需要的撥備。由於這項公用事業於本年度沒有應課稅溢利，因此無需在帳目上作出名義利得稅的撥備。

(f) 遞延稅項

遞延稅項指就資產及負債帳面值與計算應課稅溢利所用相應稅基間之所有重大暫時差額而作出的適當確認。遞延稅項資產則於應課稅溢利有可能抵銷可扣稅暫時差額時予以確認。由於這項公用事業沒有應課稅溢利可用作抵銷可扣稅暫時差額，因此無需在帳目上就所有重大暫時差額作出遞延稅項撥備。

(g) 僱員福利

僱員福利（包括薪金、酬金、退休金、房屋津貼和年假）會被確認為對僱員當年度所提供之相關服務而列作應計開支。

(h) 按固定資產平均淨值計算的實際回報率

按稅後溢利或虧損與固定資產平均淨值的比率計算。

(i) 固定資產平均淨值

固定資產平均淨值是指總固定資產值減去累積折舊在期初及期末兩項數值的簡單平均數。

(j) 虧損

由於水務監督沒有獨立的法定身份，其財政資源或虧損均視為政府一般收入的一部分。而有關虧損亦會於這項公共資本帳目中調節。

(e) Taxation

Notional profits tax is provided, where necessary, based on the expected taxable surplus for the year, using the tax rates prevailing at the reporting period end date, and any adjustment to tax payable in respect of previous years. No provision for notional profits tax has been made in the accounts, as the utility has no taxable surplus for the year.

(f) Deferred Tax

Deferred tax is recognised, where appropriate, for all material temporary differences between the tax bases of assets and liabilities and their carrying amounts in the accounts. Deferred tax assets are recognised to the extent that it is probable that taxable surplus will be available against which the temporary differences can be utilised. No provision for deferred tax in respect to all material temporary differences has been made in the accounts, as the utility has no taxable surplus against which the temporary differences can be utilised.

(g) Employee Benefits

Employee benefits, including salaries, gratuities, pensions, housing benefits and annual leave, are accrued and recognised as an expense in the year in which the associated services are rendered by employees.

(h) Actual Return on ANFA

This is calculated as a percentage of surplus/deficit after taxation to average net fixed assets (ANFA).

(i) Average Net Fixed Assets

The average net fixed assets (ANFA) represents the simple average of the opening and closing value of total fixed assets less accumulated depreciation.

(j) Deficit

Since the Water Authority does not have a separate legal identity, its financial resources form part of the General Revenue. All deficits are deemed to be financed by the General Revenue and adjusted to the Public Capital Account of the utility.

2. 收入

2. Revenue

		2021 (百萬元) \$M	2020 (百萬元) \$M
收費供水	Chargeable supplies	2,268.5	2,534.8
差餉補貼	Contribution from rates	2,856.4	3,146.7
政府對寬減計劃的補貼	Contribution from Government on concessions	3,225.5	2,535.5
政府為用戶提供免費用水的補貼	Contribution from Government on free allowance to consumers	1,129.8	1,083.3
政府樓宇用水	Supplies to Government establishments	148.3	172.0
收費、牌照及可收回支出的工程	Fees, licences and reimbursable works	25.3	27.4
存款利息	Interest from deposits	10.1	45.2
		9,663.9	9,544.9

政府對寬減計劃的補貼包括差餉及水費兩部分：

- (i) 政府對二零一九/二零年度及二零二零/二一年度的差餉寬減計劃的補貼分別為23.403億元及26.222億元，以彌補於該年度因實行差餉寬減措施而造成的差額。
- (ii) 政府對二零一九/二零年度及二零二零/二一年度的水費寬減計劃的補貼分別為1.952億元及6.033億元，以彌補於二零一九年十二月一日至二零二一年三月三十一日因實行非住宅用戶的淡水收費寬減措施而造成的差額。

政府為用戶提供免費用水補貼的計算方法，是把二零一九/二零年度及二零二零/二一年度分別為11.7元和12.2元的淡水每單位淨生產成本（已包括按固定資產平均淨值計算的目標回報額，在相關年度分別為每單位2.5元和2.6元），乘以按照水錶記錄淡水耗用量內的免費用水補貼用量。

The Government contribution on concessions comprises two parts:

- (i) contribution from Government on concession of rates of \$2,340.3M in 2019-20 and \$2,622.2M in 2020-21 to cover the shortfall in contribution from rates resulting from the concession of rates granted during the years; and
- (ii) contribution from Government on concession of water charges of \$195.2M in 2019-20 and \$603.3M in 2020-21 to cover the shortfall in chargeable supplies resulting from concession of water charges for fresh water consumption for non-domestic purposes from 1 December 2019 to 31 March 2021.

The calculation of Government contribution on free allowance to consumers is based on the fresh water net unit production cost of \$11.7 and \$12.2 for the years 2019-20 and 2020-21 respectively, which has included a target return on ANFA of \$2.5 and \$2.6 per unit for the respective years, multiplied by the quantity of metered fresh water consumption within the free allowance quantity.

3. 開支

3. Expenditure

		2021 (百萬元) \$M	2020 (百萬元) \$M
員工開支*	Staff costs*	2,042.7	2,195.0
運作及行政開支*	Operating and administration expenses*	2,453.7	2,094.1
購買東江水的成本	Dongjiang water purchase cost	4,821.4	4,810.9
折舊	Depreciation	2,171.2	2,120.5
		11,489.0	11,220.5

* 帳目不包括「防疫抗疫基金」撥款推行的創造職位計劃所涉及的開支。
The expenditure relating to Job Creation Scheme funded under the Anti-epidemic Fund have been excluded.

4. 稅項

4. Taxation

		2021 (百萬元) \$M	2020 (百萬元) \$M
名義利得稅	Notional profits tax charge for the year	0.0	0.0
以下項目的遞延稅項資產/(負債) 未被確認： — 未使用的稅項虧損	Deferred tax assets/(liabilities) not recognized in respect of: -Unused tax loss	46,432.0	43,215.9
由折舊免稅額所產生的重大暫時差異	Material temporary difference arising from depreciation allowances	(27,579.9)	(26,198.1)

5. 固定資產

5. Fixed Assets

		樓宇、 過濾器、 喉管等 Buildings, Filters, Mains, etc..	機器及設備 Plant and Machinery	電腦硬件、 軟件及系統 Computer Hardware, Software & System	海水沖廁 設施 Salt Water Flushing	船灣淡水湖 Plover Cove	萬宜水庫 High Island	水錶 Meters	車輛 Motor Vehicles	建造中的資產 Assets Under Construction	總額 Total
		(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M	(百萬元) \$M
成本	Cost										
二零二零年四月一日	At 1 April 2020	69,569.9	288.7	432.3	14,732.7	702.0	1,661.2	490.3	101.6	6,817.7	94,796.4
添置	Additions	-	11.1	2.6	-	-	-	-	2.6	4,887.0	4,903.3
轉發	Transfers	2,401.2	-	31.3	301.7	-	-	-	4.9	(2,739.1)	-
處置/註銷	Disposals/Write off	(2.8)	(1.5)	(3.0)	(1.0)	-	-	(16.1)	(2.9)	(0.2)	(27.5)
二零二一年三月三十一日	At 31 March 2021	71,968.3	298.3	463.2	15,033.4	702.0	1,661.2	474.2	106.2	8,965.4	99,672.2
累積折舊	Accumulated Depreciation										
二零二零年四月一日	At 1 April 2020	20,166.3	205.3	363.0	6,339.1	476.5	1,245.5	313.5	50.4	-	29,159.6
該年折舊	Charge for the year	1,480.2	18.8	15.4	574.5	9.3	28.5	34.8	9.7	-	2,171.2
處置/註銷後轉回	Written back on Disposals/Write off	(2.2)	(1.5)	(1.1)	(1.0)	-	-	(16.1)	(2.9)	-	(24.8)
二零二一年三月三十一日	At 31 March 2021	21,644.3	222.6	377.3	6,912.6	485.8	1,274.0	332.2	57.2	-	31,306.0
帳面淨值	Net Book Value										
二零二一年三月三十一日	At 31 March 2021	50,324.0	75.7	85.9	8,120.8	216.2	387.2	142.0	49.0	8,965.4	68,366.2
二零二零年三月三十一日	At 31 March 2020	49,403.6	83.4	69.3	8,393.6	225.5	415.7	176.8	51.2	6,817.7	65,636.8

帳目不包括搬遷食水及海水配水庫往岩洞工程項目的資本開支。

The capital expenditure relating to the relocation of fresh water and salt water service reservoirs into caverns has been excluded.

6. 流動資產
6. Current Assets

		2021 (百萬元) \$M	2020 (百萬元) \$M
現有存貨	Stocks in Hand	158.3	159.6
應收帳項	Debtors	424.0	549.9
與庫務署的往來帳	Current Account with Treasury	2,333.1	2,285.7
		2,915.4	2,995.2

7. 流動負債
7. Current Liabilities

		2021 (百萬元) \$M	2020 (百萬元) \$M
用戶和承建商的按金	Consumers' and contractors' deposits	2,323.1	2,275.7
應付帳項	Creditors	496.2	492.3
		2,819.3	2,768.0

8. 公共資本帳目

公共資本帳目指政府在這項公用事業的投資。

8. Public Capital Account

The Public Capital Account represents the Government's investment in this utility.

		2021 (百萬元) \$M	2020 (百萬元) \$M
四月一日結餘	Balance as of 1 April	65,864.0	64,083.7
本年度的虧損	Deficit for the year	(1,825.1)	(1,675.6)
政府的額外現金投資	Additional cash investment by the Government	4,423.4	3,455.9
三月三十一日結餘	Balance as at 31 March	68,462.3	65,864.0

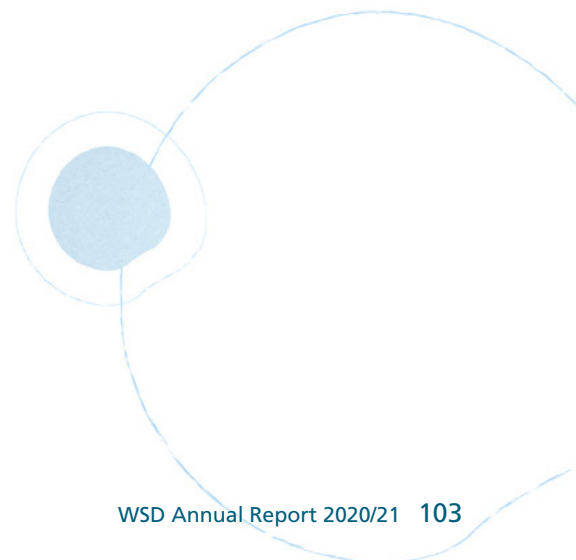
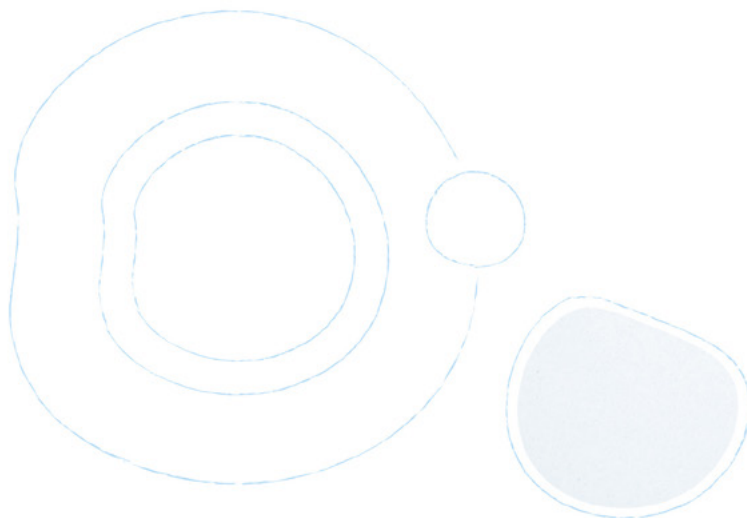
9. 承擔

於二零二一年三月三十一日及二零二零年三月三十一日，未於經營帳目作出撥備的未償還承擔如下：

9. Commitments

Outstanding commitments as of 31 March 2021 and 31 March 2020 not provided for in the operating accounts were as follows:

		2021 (百萬元) \$M	2020 (百萬元) \$M
(i) 基本工程項目、物業、機器及設備以及非經常資助金	(i) Capital works projects, property, plant and equipment and capital subvention	26,619.7	19,108.5
(ii) 非經常性開支	(ii) Non-recurrent expenditure	-	-
(iii) 投資	(iii) Investments	-	-
(iv) 貸款及非經常性撥款補助金	(iv) Loans and non-recurrent grants	-	-
三月三十一日結餘	Balance as of 31 March	26,619.7	19,108.5

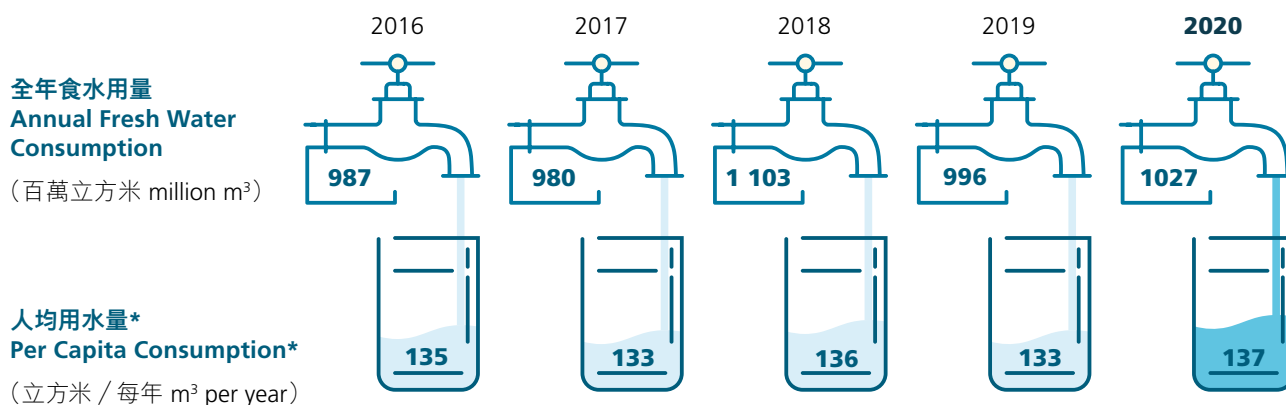


數據一覽

Data Summary

全年食水用量及人均用水量

ANNUAL FRESH WATER CONSUMPTION AND PER CAPITA CONSUMPTION



全港人口及獲食水供應人口

POPULATION IN HONG KONG AND POPULATION SERVED WITH FRESH WATER

	2016	2017	2018	2019	2020
全港人口* Population in Hong Kong* (百萬 million)	7.34	7.39	7.45	7.51	7.48
獲食水供應人口 Population Served with Fresh Water (百萬 million)	7.34 [#]	7.39 [#]	7.45 [#]	7.51 [#]	7.48[#]

* 根據政府統計處公佈的年中人口數字。
Based on the mid-year population figures released by the Census and Statistics Department.

全港超過99.9%人口獲食水供應。
Over 99.9% of the population in Hong Kong is served with fresh water.

全年海水用量及獲海水供應人口

ANNUAL SALT WATER CONSUMPTION AND POPULATION SERVED WITH SALT WATER

	2016	2017	2018	2019	2020
全年海水用量 Annual Salt Water Consumption (百萬立方米 million m ³)	260	278	279	307	318
獲海水供應人口 Population Served with Salt Water (百萬 million)	6.14	6.22	6.27	6.33	6.31*

* 在二零二零年，儘管沖廁用海水供應網絡的覆蓋率輕微上升，但由於全港人口下跌，獲海水供應人口相比二零一九年亦因而有所減少。
 In 2020, notwithstanding the slight increase in the network coverage of salt water supply for flushing, the population served with salt water is less than that in 2019 due to the decline in Hong Kong's population.

二零二零年四月至二零二一年三月的食水水質

DRINKING WATER QUALITY FOR THE PERIOD OF APRIL 2020 - MARCH 2021

注意事項：

- 所有食水樣本均從濾水廠、配水庫、供水接駁點和公眾可達的用戶水龍頭抽取。
- 在此期間抽取的食水樣本的測試結果完全符合香港食水標準。

Points to Note:

- Drinking water samples were taken at WTWs, service reservoirs, connection points and publicly accessible consumer taps.
- The testing results of the drinking water samples taken during this period fully complied with the HKDWS.

甲部：微生物參數

Part A: Microbiological parameters

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
埃希氏大腸桿菌 E. coli	菌落數/100毫升 cfu* per 100 mL	0	0	0	0	√
總大腸桿菌群 ^(註釋1) Total Coliforms ^(Note 1)	菌落數/100毫升 cfu* per 100 mL	0	0	0	-	-
隱孢子蟲 ^(註釋1) Cryptosporidium ^(Note 1)	卵囊數量/100公升 no. of oocyst per 100L	0	0	0	-	-
賈第蟲 ^(註釋1) Giardia ^(Note 1)	孢囊數量/100公升 no. of cyst per 100L	0	0	0	-	-

*Colony forming unit (cfu)

註釋：

1 雖然香港食水標準並沒有總大腸桿菌群、隱孢子蟲或賈第蟲的標準值，水務署亦有監測這些參數在食水中的含量。

Notes:

1 Although the HKDWS does not have a standard value for Total Coliforms, Cryptosporidium or Giardia, the WSD also monitors these parameters in drinking water.



乙部：化學參數
Part B: Chemical parameters

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
丙烯酰胺 Acrylamide	微克/公升 µg/L	< 0.4	< 0.4	< 0.4	≤ 0.5	✓
草不綠 Alachlor	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	✓
涕滅威 Aldicarb	微克/公升 µg/L	< 2.5	< 2.5	< 2.5	≤ 10	✓
艾氏劑和異艾氏劑 Aldrin and Dieldrin	微克/公升 µg/L	< 0.008	< 0.008	< 0.008	≤ 0.03	✓
銻 Antimony	毫克/公升 mg/L	< 0.001	< 0.001	< 0.001	≤ 0.02	✓
砷 Arsenic	毫克/公升 mg/L	< 0.001	< 0.001	< 0.001	≤ 0.01	✓
莠去津和其氯均三嗪代謝物 Atrazine and its chloro-s-triazine metabolites	微克/公升 µg/L	< 25	< 25	< 25	≤ 100	✓
鋇 Barium	毫克/公升 mg/L	0.002	0.024	0.014	≤ 0.7	✓
苯 Benzene	微克/公升 µg/L	< 2.5	< 2.5	< 2.5	≤ 10	✓
苯并(a)芘 Benzo (a) pyrene	微克/公升 µg/L	< 0.0020	< 0.0020	< 0.0020	≤ 0.7	✓
硼 Boron	毫克/公升 mg/L	< 0.02	0.07	0.03	≤ 2.4	✓
溴酸鹽 Bromate	微克/公升 µg/L	< 1.0	1.3	< 1.0	≤ 10	✓
一溴二氯甲烷 Bromodichloromethane	微克/公升 µg/L	< 15	17	< 15	≤ 60	✓
溴仿 Bromoform	微克/公升 µg/L	< 25	< 25	< 25	≤ 100	✓
鎘 Cadmium	毫克/公升 mg/L	< 0.001	< 0.001	< 0.001	≤ 0.003	✓
呋喃丹 Carbofuran	微克/公升 µg/L	< 1.2	< 1.2	< 1.2	≤ 7	✓

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
四氯化碳 Carbon tetrachloride	微克/公升 µg/L	< 0.50	< 0.50	< 0.50	≤ 4	√
氯酸鹽 Chlorate	微克/公升 µg/L	< 10	130	< 24	≤ 700	√
氯丹 Chlordane	微克/公升 µg/L	< 0.050	< 0.050	< 0.050	≤ 0.2	√
氯 Chlorine	毫克/公升 mg/L	< 0.1	1.7	0.8	≤ 5	√
亞氯酸鹽 Chlorite	微克/公升 µg/L	< 10	< 10	< 10	≤ 700	√
氯仿 Chloroform	微克/公升 µg/L	< 50	< 50	< 50	≤ 300	√
綠麥隆 Chlorotoluron	微克/公升 µg/L	< 2.5	< 2.5	< 2.5	≤ 30	√
毒死蜱 Chlorpyrifos	微克/公升 µg/L	< 7.5	< 7.5	< 7.5	≤ 30	√
鉻 Chromium	毫克/公升 mg/L	< 0.001	< 0.004	< 0.001	≤ 0.05	√
銅 Copper	毫克/公升 mg/L	< 0.003	0.050	< 0.003	≤ 2	√
青乙酰胺 Cyanazine	微克/公升 µg/L	< 0.15	< 0.15	< 0.15	≤ 0.6	√
2,4-滴 2,4-D (or 2,4-dichlorophenoxyacetic acid)	微克/公升 µg/L	< 7.5	< 7.5	< 7.5	≤ 30	√
丁基-2,4 二氯酚羥基醋酸 2,4-DB (or 4-(2,4-dichlorophenoxy) butyric acid)	微克/公升 µg/L	< 22	< 22	< 22	≤ 90	√
滴滴涕和代謝物 DDT and metabolites	微克/公升 µg/L	< 0.50	< 0.50	< 0.50	≤ 1	√
二 (2-乙基己基) 鄰苯二甲酸鹽 Di (2-ethylhexyl) phthalate	微克/公升 µg/L	< 2	< 2	< 2	≤ 8	√
二溴乙腈 Dibromoacetonitrile	微克/公升 µg/L	< 0.5	0.97	< 0.5	≤ 70	√

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
二溴一氯甲烷 Dibromochloromethane	微克/公升 µg/L	< 25	< 25	< 25	≤ 100	✓
1,2-二溴-3-氯丙烷 1,2-Dibromo-3-chloropropane	微克/公升 µg/L	< 0.25	< 0.25	< 0.25	≤ 1	✓
1,2-二溴乙烷 1,2-Dibromoethane	微克/公升 µg/L	< 0.10	< 0.10	< 0.10	≤ 0.4	✓
二氯乙酸鹽 Dichloroacetate	微克/公升 µg/L	< 2	24	6.8	≤ 50	✓
二氯乙腈 Dichloroacetonitrile	微克/公升 µg/L	< 2.5	< 3.0	< 2.5	≤ 20	✓
1,2-二氯苯 1,2-Dichlorobenzene	微克/公升 µg/L	< 250	< 250	< 250	≤ 1000	✓
1,4-二氯苯 1,4-Dichlorobenzene	微克/公升 µg/L	< 75	< 75	< 75	≤ 300	✓
1,2-二氯乙烷 1,2-Dichloroethane	微克/公升 µg/L	< 7.5	< 7.5	< 7.5	≤ 30	✓
1,2-二氯乙烯 1,2-Dichloroethene	微克/公升 µg/L	< 12	< 12	< 12	≤ 50	✓
二氯甲烷 Dichloromethane	微克/公升 µg/L	< 5.0	5.0	< 5.0	≤ 20	✓
1,2-二氯丙烷 1,2-Dichloropropane	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 40	✓
1,3-二氯丙烯 1,3-Dichloropropene	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	✓
2,4-滴丙酸 Dichlorprop (or 2,4-DP)	微克/公升 µg/L	< 25	< 25	< 25	≤ 100	✓
樂果 Dimethoate	微克/公升 µg/L	< 1.5	< 1.5	< 1.5	≤ 6	✓
1,4-二噁烷 1,4-Dioxane	微克/公升 µg/L	< 1.5	1.8	< 1.5	≤ 50	✓
乙二胺四乙酸 Edetic acid (EDTA)	微克/公升 µg/L	< 30	< 30	< 30	≤ 600	✓
異狄氏劑 Endrin	微克/公升 µg/L	< 0.15	< 0.15	< 0.15	≤ 0.6	✓

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
表氯醇 Epichlorohydrin	微克/公升 µg/L	< 0.1	< 0.1	< 0.1	≤ 0.4	√
乙苯 Ethylbenzene	微克/公升 µg/L	< 75	< 75	< 75	≤ 300	√
2,4,5-涕丙酸 Fenoprop (or 2,4,5-TP)	微克/公升 µg/L	< 2.2	< 2.2	< 2.2	≤ 9	√
氟化物 Fluoride	毫克/公升 mg/L	<0.1	0.70	0.49	≤ 1.5	√
六氯丁二烯 Hexachlorobutadiene	微克/公升 µg/L	< 0.15	< 0.15	< 0.15	≤ 0.6	√
經基化莠去津 Hydroxyatrazine	微克/公升 µg/L	< 50	< 50	< 50	≤ 200	√
異丙隆 Isoproturon	微克/公升 µg/L	< 2.0	< 2.0	< 2.0	≤ 9	√
鉛 Lead	毫克/公升 mg/L	< 0.001	< 0.001	< 0.001	≤ 0.01	√
林丹 Lindane	微克/公升 µg/L	< 0.50	< 0.50	< 0.50	≤ 2	√
2-甲基-4-氯苯氧基乙酸 MCPA (or (2-methyl-4-chlorophenoxy)acetic acid)	微克/公升 µg/L	< 2.0	< 2.0	< 2.0	≤ 2	√
2-甲基-4-氯丙酸 Mecoprop (or MCPP)	微克/公升 µg/L	< 2.5	< 2.5	< 2.5	≤ 10	√
汞 Mercury	毫克/公升 mg/L	< 0.00005	< 0.00005	< 0.00005	≤ 0.006	√
甲氧滴滴涕 Methoxychlor	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	√
甲氧毒草安 Metolachlor	微克/公升 µg/L	< 2.5	< 2.5	< 2.5	≤ 10	√
微囊藻毒素-LR(總) Microcystin-LR (total)	微克/公升 µg/L	< 0.5	< 0.5	< 0.5	≤ 1	√
禾草特 Molinate	微克/公升 µg/L	< 1.5	< 1.5	< 1.5	≤ 6	√
一氯胺 Monochloramine	毫克/公升 mg/L	< 1.0	< 1.0	< 1.0	≤ 3	√

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
一氯醋酸鹽 Monochloroacetate	微克/公升 µg/L	< 2	< 2	< 2	≤ 20	✓
鎳 Nickel	毫克/公升 mg/L	< 0.001	0.004	0.001	≤ 0.07	✓
硝酸鹽(以NO ₃ ⁻ 計) Nitrate (as NO ₃ ⁻)	毫克/公升 mg/L	< 2.5	12	4.2	≤ 50	✓
次氨基三乙酸 Nitrilotriacetic acid	微克/公升 µg/L	< 30	< 30	< 30	≤ 200	✓
亞硝酸鹽(以NO ₂ ⁻ 計) Nitrite (as NO ₂ ⁻)	毫克/公升 mg/L	< 0.004	0.007	< 0.004	≤ 3	✓
N-亞硝基二甲胺 N-Nitrosodimethylamine	微克/公升 µg/L	< 0.025	< 0.025	< 0.025	≤ 0.1	✓
二甲戊樂靈 Pendimethalin	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	✓
五氯酚 Pentachlorophenol	微克/公升 µg/L	< 2.2	< 2.2	< 2.2	≤ 9	✓
硒 Selenium	毫克/公升 mg/L	< 0.003	< 0.003	< 0.003	≤ 0.04	✓
西瑪三嗪 Simazine	微克/公升 µg/L	< 0.50	< 0.50	< 0.50	≤ 2	✓
二氯異氰尿酸鈉 (以氰尿酸計) Sodium dichloroisocyanurate (as cyanuric acid)	毫克/公升 mg/L	< 10	< 10	< 10	≤ 40	✓
苯乙烯 Styrene	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	✓
2,4,5-涕 2,4,5-T (or 2,4,5-trichlorophenoxy acetic acid)	微克/公升 µg/L	< 2.2	< 2.2	< 2.2	≤ 9	✓
特丁律 Terbutylazine	微克/公升 µg/L	< 1.8	< 1.8	< 1.8	≤ 7	✓
四氯乙烯 Tetrachloroethene	微克/公升 µg/L	< 10	< 10	< 10	≤ 40	✓
甲苯 Toluene	微克/公升 µg/L	< 175	< 175	< 175	≤ 700	✓

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 HKDWS	達標 Compliance
		最低值 Minimum	最高值 Maximum	平均值 Average		
三氯乙酸鹽 Trichloroacetate	微克/公升 µg/L	< 2	12	4.5	≤ 200	√
三氯乙烯 Trichloroethene	微克/公升 µg/L	< 18	< 18	< 18	≤ 20	√
2,4,6-三氯酚 2,4,6-Trichlorophenol	微克/公升 µg/L	< 50	< 50	< 50	≤ 200	√
氟樂靈 Trifluralin	微克/公升 µg/L	< 5.0	< 5.0	< 5.0	≤ 20	√
鈾 Uranium	毫克/公升 mg/L	< 0.0002	0.001	< 0.0002	≤ 0.03	√
氯乙烯 Vinyl chloride	微克/公升 µg/L	< 0.20	< 0.20	< 0.20	≤ 0.3	√
二甲苯 Xylenes	微克/公升 µg/L	< 125	< 125	< 125	≤ 500	√

註釋：

以上的統計數字並不包括本署自二零一七年十二月起展開的水質監測優化計劃（優化監測計劃）所收集的數據。該計劃於全港隨機抽出客戶，從他們的水龍頭收集食水樣本，檢測有可能在內部供水系統出現的六種金屬，即銻、鎘、鉻、銅、鉛和鎳，以監測客戶水龍頭的食水水質。相關監測數據的統計數字每周於本署優化監測計劃的網頁（www.wsd.gov.hk/tc/dwsewqmp）內公佈。

Notes:

The above statistics do not include the data collected under the Enhanced Water Quality Monitoring Programme ("Enhanced Programme") launched by the WSD since December 2017. The programme takes drinking water samples from consumer taps in the premises of consumers randomly selected over the territory for testing six metals, namely antimony, cadmium, chromium, copper, lead and nickel, which could be present in an internal plumbing system, to monitor the relevant drinking water quality at consumer taps. The statistics of the monitoring data of the Enhanced Programme are published on the WSD's website (www.wsd.gov.hk/en/dwsewqmp) on a weekly basis.

丙部：輻射參數

Part C: Radiological parameters

參數 Parameter	單位 Unit	監測結果 Monitoring Data			香港食水標準 篩查水平 ^(註釋1) HKDWS Screening Level ^(Note 1)	低於篩查水平 Below Screening Level
		最低值 Minimum	最高值 Maximum	平均值 Average		
總 α 活度 Gross alpha activity	貝可/公升 Bq/L	< 0.1	< 0.1	< 0.1	< 0.5	✓
總 β 活度 Gross beta activity	貝可/公升 Bq/L	< 0.2	< 0.2	< 0.2	< 1.0	✓

註釋：

1 食水中的總 α 及總 β 活度的輻射篩查水平分別為每公升0.5貝可和每公升1.0貝可。若有關放射性活度低於篩查水平，則無需調查或詳細分析個別放射性核素。

Notes:

1 The screening levels for radiation in drinking water for gross alpha activity and gross beta activity are 0.5 Bq/L and 1.0 Bq/L respectively, below which no further investigation or detailed analysis for specific radionuclides is required.

丁部：其他參數

Part D: Other parameters

參數 Parameter	單位 Unit	監測結果 Monitoring Data		
		最低值 Minimum	最高值 Maximum	平均值 Average
pH值(水溫25°C時) pH at 25 °C	pH	7.0	9.6	8.4
色度 Colour	Hazen unit	< 5	< 5	< 5
混濁度 Turbidity	NTU	< 0.1	6.2	0.2
導電率(水溫25°C時) Conductivity at 25 °C	μ S/cm	62	229	159
溫度 Temperature	°C	13.0	32.9	24.9
總鹼度(以CaCO ₃ 計) Total alkalinity (as CaCO ₃)	毫克/公升 mg/L	7	78	28
總硬度(以CaCO ₃ 計) Total hardness (as CaCO ₃)	毫克/公升 mg/L	< 5	69	40
鈣 Calcium	毫克/公升 mg/L	1.2	22	13

參數 Parameter	單位 Unit	監測結果 Monitoring Data		
		最低值 Minimum	最高值 Maximum	平均值 Average
鎂 Magnesium	毫克/公升 mg/L	0.39	2.3	1.6
氯化物 Chloride	毫克/公升 mg/L	< 5	18	11
硫酸鹽 Sulphate	毫克/公升 mg/L	5	26	15
正磷酸鹽(以PO ₄ 計) Ortho-phosphates (as PO ₄)	毫克/公升 mg/L	< 0.01	0.04	< 0.01
鐵 Iron	毫克/公升 mg/L	< 0.01	0.27	< 0.01
鋁 Aluminium	毫克/公升 mg/L	< 0.01	0.19	0.03
二氧化矽(以SiO ₂ 計) Silica (as SiO ₂)	毫克/公升 mg/L	1.1	16	10
錳 Manganese	毫克/公升 mg/L	< 0.01	0.03	< 0.01

註釋：

以上參數是有關香港食水的一般物理和化學特性。香港食水標準並不包括這些參數，因此沒有以上參數的標準值。

Notes:

The above parameters relate to the general physical and chemical properties of the drinking water in Hong Kong. The HKDWS does not include these parameters and hence there are no standard values for them.

附錄

Appendices

附錄一

APPENDIX I

客戶諮詢中心

香港區

灣仔客戶諮詢中心

灣仔告士打道7號入境事務大樓1樓

CUSTOMER ENQUIRY CENTRES

Hong Kong

Wan Chai Customer Enquiry Centre

1/F, Immigration Tower, 7 Gloucester Road, Wan Chai

九龍區

大角咀客戶諮詢中心

大角咀鐵樹街41號地下

Kowloon

Tai Kok Tsui Customer Enquiry Centre

G/F, 41 Tit Shu Street, Tai Kok Tsui

新界區

大埔客戶諮詢中心

大埔汀角路1號大埔政府合署4樓

沙田客戶諮詢中心

沙田上禾輦路1號沙田政府合署3樓

屯門客戶諮詢中心

屯門屯喜路1號屯門政府合署7樓

New Territories

Tai Po Customer Enquiry Centre

4/F, Tai Po Government Offices, 1 Ting Kok Road, Tai Po

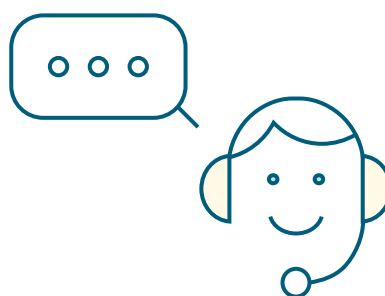
Sha Tin Customer Enquiry Centre

3/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin

Tuen Mun Customer Enquiry Centre

7/F, Tuen Mun Government Offices, 1 Tuen Hi Road, Tuen Mun

附錄二 APPENDIX II



客戶查詢及申請服務的統計數字 Statistics on Customer Enquiries and Requests for Service

個案數目 Number of Enquiries and Requests	年份 Year				
	2016	2017	2018	2019	2020
書面、傳真及電郵 Letter, Fax and Email	225 097	247 665	259 039	266 624	290 771
電話 Telephone	842 414	847 330	860 650	836 767	859 836
親身 Counter	290 368	335 271	329 551	317 921	232 078
總數 Total	1 357 879	1 430 266	1 449 240	1 421 312	1 382 685

附錄三 APPENDIX III

客戶投訴的統計數字 Statistics on Customer Complaints

投訴數目 Number of Complaints	年份 Year				
	2016	2017	2018	2019	2020
與帳戶有關的投訴# Account-Related#	142	145	138	94	679
與帳戶無關的投訴 Non-Account-Related	7 767	7 498	6 454	5 828	6 519
總數 Total	7 909	7 643	6 592	5 922	7 198

由區議會、立法會及申訴專員轉介與帳戶有關的投訴。
Account-related complaints from District Councils, Legislative Council and The Ombudsman.



附錄四 APPENDIX IV

二零二零至二一年度繳費方式的統計數字 Statistics on Mode of Payment 2020/21

繳費方式 Mode of Payment	交易數目 No. of Cases	百分比 Percentage (%)
親身繳費 In person	3 010 000	42.5
郵寄 By post	46 000	0.6
自動轉帳 Autopay	749 000	10.6
繳費靈 Payment by Phone Service (PPS)	547 000	7.7
自動櫃員機 ATM	238 000	3.3
網上繳費 Internet	2 500 000	35.3
總數 Total	7 090 000	100.0

財政年度：由每年四月一日起至翌年三月三十一日止

Financial Year: 1 April to 31 March

年份：由每年一月一日起至十二月三十一日止

Year (Calendar Year): 1 January to 31 December

匯率

除另有說明外，本年報所用「元」均指港元。自一九八三年十月十七日起，政府透過一項有關發行紙幣的措施，將港元與美元聯繫，以7.8港元兌1美元為固定匯率。

Exchange Rates

When dollars are quoted in this report, they are, unless otherwise stated, Hong Kong dollars. Since 17 October 1983, the Hong Kong dollar has been linked to the US dollar, through an arrangement in the note-issue mechanism, at a fixed rate of HK\$7.80 = US\$1.

水務署

WATER SUPPLIES DEPARTMENT

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