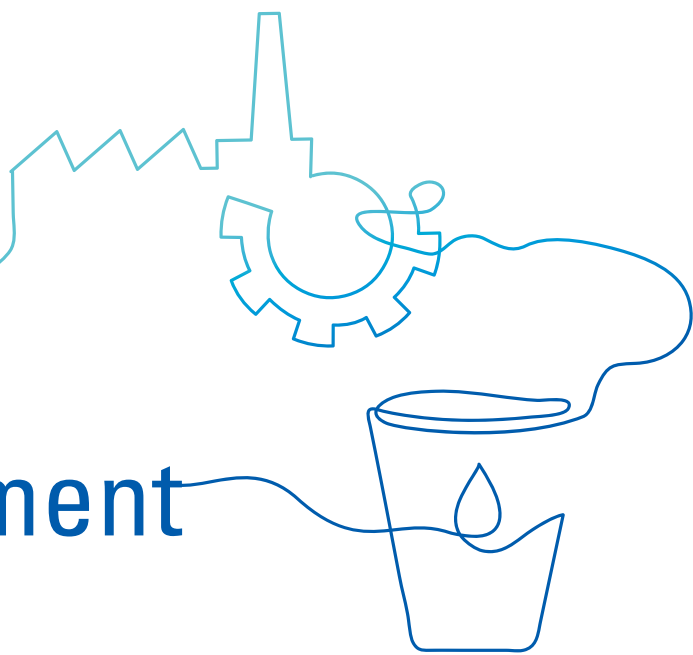


供水管理

Water Supply

Management





供水管理

Water Supply Management



深知氣候變化對本港水資源所造成的挑戰，本署積極推動各項水資源管理措施，加強我們的應變能力和作好準備。

WSD fully recognises the challenges to our local water resources due to climate change. We have been taking various water management initiatives to strengthen our resilience and preparedness.

全面水資源管理

於二〇〇八年發佈的「全面水資源管理策略」(「策略」)為我們持續使用珍貴的水資源定下堅實基礎。「策略」強調制約用水需求增長，並開拓新水源，令香港能應付未來的供水挑戰。用水需求管理方面，我們一直多管齊下，採取「軟硬兼備」的策略，包括在軟件方面宣傳節約用水以及在硬件方面推廣使用節水裝置。此外，透過完成長達三千公里的老化水管更換及修復計劃，政府水管滲漏情況已大幅改善。我們現正逐步建立「智管網」持續監測食水管網中的

Total Water Management

The Total Water Management (TWM) Strategy promulgated in 2008 laid a firm foundation to move towards sustainable use of our precious water resources. This strategy places emphasis on containing the growth of water demand and exploiting new water resources to better prepare Hong Kong for future challenges in water supplies. For containing water demand growth, we have been adopting a multi-pronged approach with a “Soft and Hard” strategy, including promotion of water conservation on the software side and use of water-saving devices on the hardware side. Moreover, upon the completion of the replacement and rehabilitation for 3,000 kilometres of aged water mains, the government water main leakage has been significantly reduced. We are progressively establishing

每個監測區域的失水狀況，從而推行有效的用水流失管理措施。我們亦會推出針對私人水管滲漏的措施。

策略檢討

「策略」已推行數年，為更好地應對氣候變化、人口和經濟增長，以及廣東省多個城市對東江水的殷切需求所帶來的挑戰，本署現正就「策略」進行檢討。是次檢討旨在評估現有水資源管理措施的成效，預測至二〇四〇年的用水需求及供應情況，如有需要，並會制定新的水資源管理措施。

完善供水結構

目前，香港供水系統包括本地集水區收集的雨水、從廣東省輸入的東江水及沖廁用的海水。二〇一七年的總耗水量（包括沖廁用水）為12.58億立方米，其中26%為雨水、52%為東江水及22%為沖廁海水。憑藉這三個水源，香港多年來一直享有可靠的供水。

除繼續善用上述水資源外，本署亦同時致力探索不受氣候影響的其他水源，以建設更完善的供水結構，包括現有水資源（即本地集水、輸入的東江水及沖廁用海水），以及新增水源（即海水化淡、再造水和重用中水及回收雨水）。這些水資源將成為提升香港供水安全及應變能力的重要支柱。

the Water Intelligent Network (WIN) to continuously monitor the water loss in individual District Metering Areas (DMA) of the fresh water supply networks for implementing effective water loss management actions. We will also take specific measures to deal with the leakage problem at private water mains.

Strategy Review

TWM has been implemented for several years to better prepare ourselves for the challenges arising from climate change, population and economic growth, as well as the keen demand for Dongjiang water from cities in Guangdong Province. The Department is conducting a comprehensive study to review TWM. The review aims to evaluate the effectiveness of existing water management measures, to forecast water demand and supply situation up to 2040, to seek feasible new water management initiatives if needed.

Enhanced Water Supply Structure

Currently, Hong Kong's water supply system, comprises rainwater from local catchments, imported water from Dongjiang in the Guangdong Province, and sea water for flushing. The total water consumption in 2017 (including flushing water) was 1,258 million cubic metres, comprising 26% from rainwater, 52% from Dongjiang water, and 22% from sea water for flushing. These water sources have provided Hong Kong with a reliable water supply over the years.

Besides continuing to use the aforementioned water resources, the Department has been exploiting alternative water sources which are not susceptible to climate change to establish an enhanced water supply structure, comprising the existing water sources, viz. local yield, imported Dongjiang water and sea water for flushing, as supplemented by the new sources, viz. desalinated water, reclaimed water, and treated grey water and harvested rainwater. These water supply sources will become the pillars supporting Hong Kong with enhanced water security and resilience.

東江水

東江水佔目前本港食水供應量約七成至八成，可彌補本地集水量的不足以應付食水需求。因此，可靠和穩定的東江水供應對本港至為重要。

自二〇〇六年起的粵港供水協議均採用「統包總額」方式，因應香港該年的本地集水量，提供可靠和具彈性的東江水供應以切合香港的實際需要，並確保供水的可靠程度達至99%，即使在百年一遇的旱情，仍能維持全日供水。採用這個方式，我們一方面可按需要輸入東江水達至供水協議所訂明每年的供水量上限；另一方面亦可在本地集水足夠時，避免浪費東江水資源以及節省輸水成本。我們已在二〇一七年十二月十四日與廣東省當局簽訂二〇一八年至二〇二〇年為期三年的新一份供水協議。根據新的供水協議，東江水價格的增幅是按照粵港兩地相關消費物價指數和人民幣兌港幣匯率的變動，每年上調0.3%。二〇一八年、二〇一九年及二〇二〇年的東江水價格分別為47.93億元、48.07億元和48.21億元。

Dongjiang Water

Dongjiang water, which now accounts for about 70% to 80% of our fresh water supply, is able to fill the gap due to insufficient local yield in meeting water demand. A reliable and stable supply of Dongjiang water is thus important to Hong Kong.

Since 2006, the “package deal lump sum” approach has been adopted in the water supply agreements between Guangdong and Hong Kong to ensure a reliable and flexible supply of Dongjiang water to meet the actual needs of Hong Kong according to the local yield collected in a particular year with 99% reliability, i.e. water supply can be maintained around the clock even under extreme drought conditions with a return period of once in 100 years. This approach enables us to import Dongjiang water as needed each year up to an annual supply ceiling stipulated in the supply agreement thereby avoiding wastage of the Dongjiang water resources and saving our pumping costs when more local yield is available in a particular year. The new water supply agreement for the three-year period between 2018 and 2020 was signed with the Guangdong authorities on 14th December 2017. Under the new three-year agreement, the increase in prices of Dongjiang water generally is based on the changes of the relevant price indices of Guangdong and Hong Kong and the exchange rate between the Renminbi and the Hong Kong dollar. The Dongjiang water prices will be increased by 0.3 percent annually to \$4,793 million, \$4,807 million and \$4,821 million for 2018, 2019 and 2020 respectively.



本地集水

香港集水區佔土地面積近三成並有17個水塘。一般而言，從集水區收集的雨水水質受到保護。然而，為確保食水安全，本署採取適當措施以進行定期巡查及檢查水質。本地集水佔總食水用量約二至三成。

Local Yield

Nearly 30% of the Territory are catchment areas and there are 17 impounding reservoirs across Hong Kong. In general, rainwater collected in catchment areas is protected from contamination. Notwithstanding this, in order to ensure water safety, the Department takes appropriate measures to conduct regular inspections and check water quality. Local yield generally accounts for about 20% to 30% of our total fresh water consumption.

沖廁用海水

海水沖廁已被廣泛採用以節省食水資源。現時沖廁用海水的供水管網覆蓋約八成半的人口。海水供水管網已擴展至薄扶林及新界西北（包括屯門東、元朗及天水圍），而為該些地區的樓宇轉換海水沖廁的工作正分階段進行。在薄扶林及新界西北的第一期轉換工作已大致完成，包括鋼線灣、華富、天水圍和元朗工業邨等。餘下的轉換工作亦將繼續。

Sea Water for Flushing

Sea water for flushing has been widely adopted to save fresh water resources. At present, the network coverage of sea water for flushing is approximately 85% of the population. The sea water supply network has been extended to Pok Fu Lam and North West New Territories (including Tuen Mun East, Yuen Long and Tin Shui Wai), conversion of flushing supply to sea water in their buildings is being carried out in stages. Phase one conversion work in Pok Fu Lam and North West New Territories which include Telegraph Bay, Wah Fu, Tin Shui Wai and Yuen Long Industrial Estate etc has been substantially completed. Remaining phases of conversion work will follow.

供水管理 Water Supply Management



海水化淡

為使香港供水穩定以應付氣候變化帶來的影響，我們一直都在開拓不受氣候變化影響的新水源。我們將在將軍澳興建海水化淡廠，並採用先進的逆滲透技術。我們正準備於二〇一八年中為海水化淡廠的第一階段「設計－建造－運作」合約進行招標，我們會要求投標者在使用可再生能源、建築特色、減低環境影響，消耗較少能源的水處理過程，令海水化淡廠能與未來周邊發展協調，以及對環境的影響減至最低等方面建議合適的創新設計。

將軍澳海水化淡廠第一階段工程預計在二〇二二年底落成，其每日食水產量為十三萬五千立方米，足以應付本港約百分之五的食水用量。我們會預留空間以便日後在有需要時擴建，把食水產量增加至最終每日二十七萬立方米。

再造水

為上水、粉嶺及鄰近發展地區處理污水的石湖墟污水處理廠將提升為淨水設施，將淨化級別由二級提升至三級水平，並增加處理量。我們計劃利用經石湖墟淨水設施三級處理的排放水生產再造水，供應新界東北部地區包括上水及粉嶺，作沖廁及其他非飲用用途。除了節省供應至該區的食

Sea Water Desalination

To enhance the resilience of our water sources to cope with the impact of climate change, we have been developing a new water source that is immune to climate change. We will embark on the construction of a desalination plant in Tseung Kwan O, using advanced reverse osmosis technology. We are preparing to invite tenders in mid 2018 for the Design-Build-Operate contract for the plant and will require the tenderers to propose suitable innovative designs in terms of renewable energy usage, architectural features, minimization of environmental impacts, and water treatment processes that require less energy consumption, for blending the plant with future surrounding development coherently as well as having least impact on the environment.

The first stage of Tseung Kwan O desalination plant is anticipated for commissioning by end of 2022. It will have a water production capacity of 135,000 m³ per day to meet about 5 percent of fresh water demand in Hong Kong. We will make provision for future expansion when necessary to attain ultimate water production capacity of 270,000 m³ per day.

Water Reclamation

The Shek Wu Hui (SWH) Sewage Treatment Works will be evolved into an Effluent Polishing Plant (EPP) by upgrading the treatment level from secondary to tertiary treatment with an increase in the treatment capacity for treating sewage from Sheung Shui, Fanling and adjacent development areas. In this regard, we plan to further process the tertiary treated effluent from the SWHEPP for production of reclaimed water as the

水，同時亦減少經處理污水的排放量。根據我們初步估算，計劃全面落實後可提供再造水給上述地區(包括上水、粉嶺及鄰近發展地區)約五十萬人作沖廁用途，每年最終可以節省二千一百萬立方米的食水，約佔全港每年食水總用水量的百分之二。我們已於二〇一七年四月動工建造配水庫及輸水幹管為供應再造水作準備，而相關的石湖墟淨水設施提升淨化級別工程亦正在進行中，我們會適時展開餘下工程，包括生產再造水設施、抽水系統及分配水管，預計於二〇二二年開始逐步向上水和粉嶺供應再造水作沖廁用途。

supply for flushing and other non-potable uses in the north-eastern part of the New Territories including Sheung Shui and Fanling. The use of reclaimed water for flushing does not only save fresh water for flushing being supplied in these areas, but also reduces the amount of treated effluent discharge. According to our initial estimate, around 500,000 people will have access to the full-fledged reclaimed water supply for flushing in the above areas (including Sheung Shui, Fanling and adjacent development areas), and the use of reclaimed water for flushing will ultimately save up to 21 million cubic metres of fresh water each year. This will be equivalent to about 2% of the total annual fresh water consumption in Hong Kong. Whilst the project for upgrading SWHEPP is being implemented, the construction of a service reservoir and laying of trunk water mains to prepare for the supply of reclaimed water commenced in April 2017. We will also start the construction of the remaining works in a timely manner, including facilities for production of reclaimed water, a pumping system and the local distribution mains. The supply of reclaimed water for flushing in Sheung Shui and Fanling will be effected in phases starting from 2022 onwards.



中水重用及雨水回收

水務署將在安達臣道石礦場用地發展項目中興建一套中央中水重用系統。該系統由政府負責運作，處理在該發展區內收集到的中水，用作沖廁及其他非飲用用途。該系統將包括中水處理廠、抽水系統、貯存經處理中水的配水庫，以及收集中水和供應經處理中水的管道。獲委聘的顧問公司正為中水處理廠進行詳細設計，該廠的處理量將為每日三千三百立方米，而建造工程預計於二〇一九年年底展開，並於二〇二二年完成。

Grey Water Recycling and Rainwater Harvesting

WSD will construct a centralised grey water recycling system at the Anderson Road Quarry Site Development, which is a government-operated system treating grey water collected from within the development for flushing and other non-potable uses. This system comprises a grey water treatment plant, a pumping system, a service reservoir for storage of treated grey water, and pipes for grey water collection and supply of the treated grey water to the customers. The consultant engaged for the proposed grey water treatment plant is conducting detailed design of the plant for a treatment capacity of 3,300 m³ per day. Construction works are planned to commence by end of 2019 for completion in 2022.

供水管理 Water Supply Management

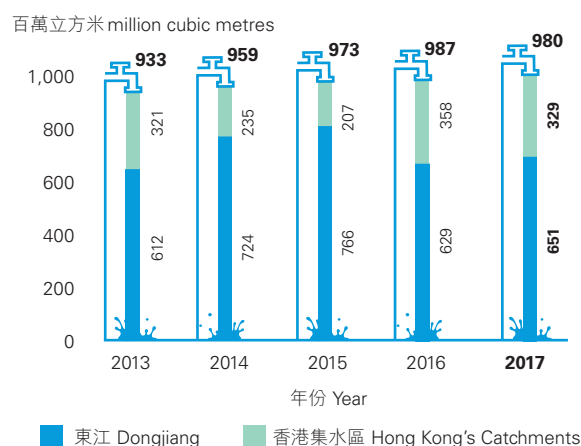
本署一直推動在合適的新政府項目中更廣泛地應用中水重用及雨水回收系統。發展局和環境局在關於環保政府樓宇的聯合技術通告已羅列詳細指引，讓新建政府項目盡可能安裝有關處理和循環再用設施，以減少非飲用用途的食水用量。本署新界西新分區辦事處配備的中水重用及雨水回收系統便是其中的一個例子。

就私人樓宇而言，除了在二〇一六年三月推出的「綠建環評既有建築2.0版」的評審標準中，提高樓宇使用中水重用及雨水回收系統的得分外，我們正為香港綠色建築議會對「綠建環評新建建築」的檢討提供意見，以鼓勵發展商提供有關設施減少使用食水作非飲用用途。

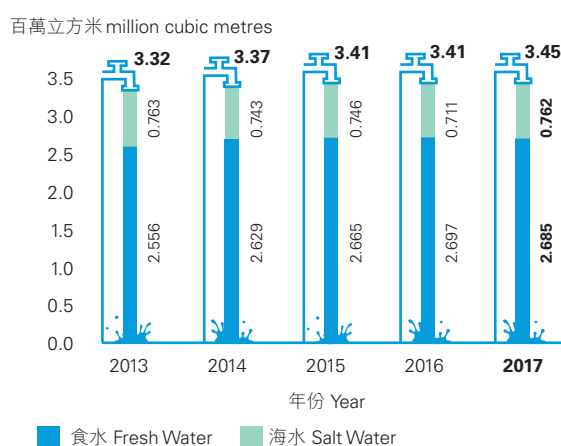
We have been promoting the wider use of grey water recycling and rainwater harvesting systems in suitable new government projects. Detailed guidelines are laid down in the Joint Development Bureau and Environment Bureau Technical Circular on Green Government Buildings so that new government projects will install the on-site treatment and recycling facilities as far as possible to reduce their fresh water demand for non-potable applications. Our New Territories West new Regional Office is one of the examples of a government building equipped with the grey water recycling and rainwater harvesting systems.

As far as private buildings are concerned, apart from increasing bonus credits awarded to buildings with grey water reuse and rainwater harvesting systems under the Building Environmental Assessment Method (BEAM) Plus for Existing Buildings Version 2.0 launched in March 2016, we are providing support to Hong Kong Green Building Council in their review of BEAM Plus for New Buildings to encourage developers to provide these facilities in reducing the use of fresh water for non-potable uses.

二〇一三年至二〇一七年全年食水供水量
Annual Quantity of Fresh Water Supply 2013 – 2017

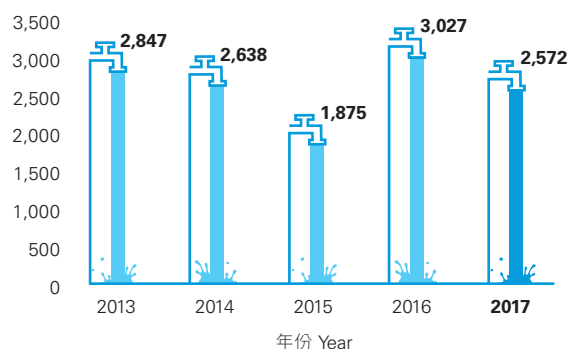


二〇一三年至二〇一七年總平均日耗水量(食水及海水)
Total Average Daily Consumption (Fresh Water and Salt Water) 2013 – 2017



二〇一三年至二〇一七年全年降雨量 Annual Rainfall 2013 – 2017

毫米 millimetres

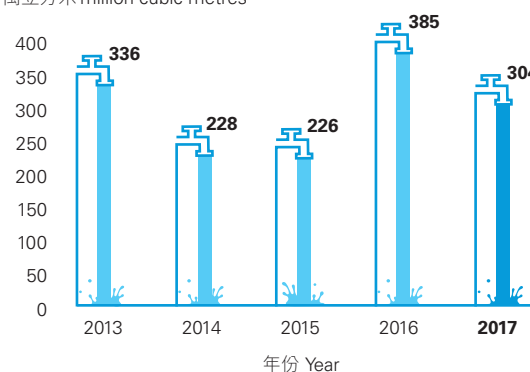


註：長期平均降雨量為2,399毫米

Note: Long Term Mean Rainfall is 2,399 millimetres

二〇一三年至二〇一七年全年集水量 Annual Yield 2013 – 2017

百萬立方米 million cubic metres



註：長期平均集水量為295百萬立方米

Note: Long Term Mean Yield is 295 million cubic metres

二〇一七年按用水類別劃分的食水用量(百萬立方米)及佔總量百分比

Annual Fresh Water Consumption (by Sector) 2017 in Million Cubic Metres and Percentage of Total

用水類別 Sector	食水用量 Fresh Water Consumption
住宅用水 Domestic	539 (55.0%)
工業用水 Industrial	60 (6.1%)
服務業及商業用水 Service Trades	250 (25.5%)
政府用水 Government Establishments	44 (4.5%)
建築及船舶用水 Construction & Shipping	21 (2.2%)
臨時淡水沖廁 Flushing	66 (6.7%)
食水總用量 Total Fresh Water Consumption	980 (100.0%)