基建維修 Maintaining Infrastructure

徐競麟先生(左)和陳達興先生(右)都是在測漏組工作的資深監工。測漏是富挑戰性的工作，因為地下設施的滲漏現象在地面上多數是不可以用肉眼見到的。因此，他們最大的工作滿足感就是能夠準確地找到水管滲漏的位置，然後將它修理好。

Mr K L TSUI (left) and Mr T H CHAN (right) are experienced works supervisors working in the Leak Detection Unit. Leak detection is challenging as one can hardly find any visual sign of leak from the underground installations concerned. It is therefore their greatest job satisfaction to have the water leak accurately located and then repaired subsequently.


AM 4712

在龍翔道機電工場內為水泵的電動機進行維修。
Staff performing maintenance work on electric pump motor at Lung Cheung Road Mechanical and Electrical Workshop.

我們的挑戰

確保我們的基建設施及資產，可為客戶提供可靠有效的供水服務。

我們的方案

擬定詳細的工程計劃，更換或修復地面和地下的資產。

OUR CHALLENGE

Ensuring our infrastructure and assets can deliver reliable supplies of water to our customers efficiently.

OUR SOLUTION

A detailed programme of work that involves the replacement or rehabilitation of both above ground and underground assets.

保養、管理及品質

在進行中的地下資產更換及修復工程方面，本署縮短計劃時間，確保可於二零一五年或以前竣工。計劃涵蓋約3 000公里水管，工程完成後，可減少水管爆裂及滲漏事故，從而大幅節省耗水。因水管爆裂而引起的交通阻塞及暫停供水的情況，亦會相應減少。

我們致力於品質保證，並會繼續參與包涵各個主要運作項目的品質保證計劃。年內，員工參與了相關的培訓課程。

「組織架構及效率檢討工作小組」所定下的目標，繼續為本署節省年度開支。

Maintenance, Management and Quality

Our newly compressed programme ensures that the replacement and rehabilitation work underway on our underground assets will be completed by 2015. The project involves some 3 000 kilometres of water mains and will result in significant water savings by reducing incidents of water main bursts and leakage. Traffic disruption and suspension of water supplies that are often associated with water main bursts will also be minimised.

We remain committed to the quality assurance programmes which are implemented to cover major aspects of our operations. Staff members have attended relevant training courses throughout the year.

Targets set by the Working Group on the Review of Organisational Structure and Efficiency (ROSE) continues to bring annual savings.

本署使用聲音記錄器等探測裝置，來控制供水系統滲漏的情況。水壓管理及持續監察的方案研究，已自北角和筲箕灣等區域伸延至荃灣東、九龍中及大埔等區。我們亦已於多個公共和私人屋邨安裝總水錶，以監察耗水量及檢測地下管道滲漏的情況，並已通知屋邨管理公司有關的情況及建議修補的方法。

為遏止非法取水及無記錄滲漏的情況，本署於二零零六年一月起開始推行總水錶政策，在所有大型新建樓宇安裝總水錶。

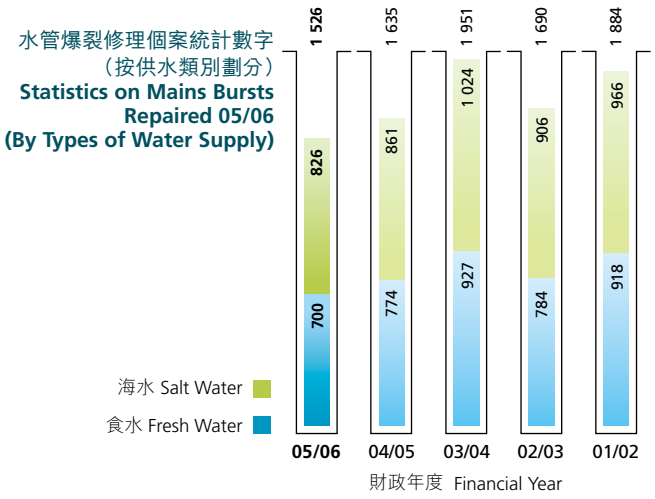
We are controlling water leaks across our supplies system by using state-of-the-art detection devices such as noise loggers. Studies on the implementation of pressure management and continuous monitoring were extended to strategic supply zones in Tsuen Wan East, Kowloon Central and Tai Po in addition to North Point and Shau Kei Wan. Bulk meters have been installed in a number of public and private housing estates to monitor water consumption and to identify underground pipe leakages. Estate management companies are notified and advised on remedial measures.

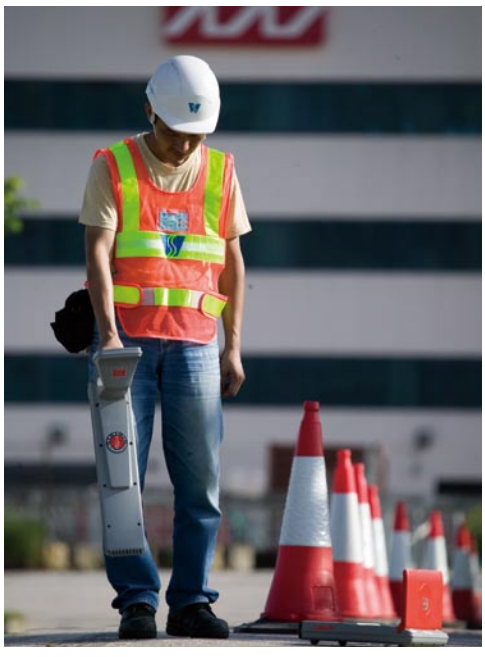
To curb unauthorised use of water and un-metered leakage within any premises, a master metering policy was introduced in January 2006. Master meters will be installed in all new major developments.

水管爆裂修理個案統計數字（按運作區域劃分）
Statistics on Mains Bursts Repaired (By Regions)

財政年度 Financial Year	香港及離島區（個案數目） HK & I (No.)	九龍區（個案數目） K (No.)	新界東區（個案數目） NTE (No.)	新界西區（個案數目） NTW (No.)	總數 Total (No.)
2005/06	**386**	**521**	**326**	**293**	**1 526**
2004/05	496	476	346	317	1 635
2003/04	513	608	507	323	1 951
2002/03	496	598	277	319	1 690
2001/02	545	617	325	397	1 884

水管爆裂修理個案統計數字（按供水類別劃分）
Statistics on Mains Bursts Repaired 05/06 (By Types of Water Supply)





使用地下管探測儀。
Staff using pipe locator.

我們的地面資產包括有水塘、配水庫、濾水廠、抽水站以及隧道和樓宇。「地面資產管理計劃」把工程按優先次序處理，確保物盡其用，並把資產保存於良好的運作狀態。

Our surface assets include impounding and service reservoirs, water treatment works and pumping stations as well as tunnels and buildings. A surface Asset Management Plan involves a strategy to prioritise work that will ensure these assets are optimised and kept in good operational order.

使用新技術

使用新技術對有效保養地下和地面資產非常重要。去年，本署已在這方面斥資建立先進且高效能的資訊科技系統。「維修工程管理系統」的推行進展順利，「人力資源管理系統」的發展工程亦已大致完成。

我們現正提升「數碼繪圖系統」，此系統利用最新的「地理資訊技術」，來收集、儲存、結合和處理數碼化的供水網絡地域空間數據。「數碼繪圖系統」網絡覆蓋本署總部及四個地區辦事處，令員工可使用現存的水管資料。藉此，部門內外〔如與公共事業機構和其他政府部門合作時〕的資訊流通將會更一致和便利。

Use of New Technology

New technology is critical to the efficient maintenance of both underground and surface assets. Substantial investment has been made in new and powerful information technology systems over the past year. Good progress was made on development work for a Maintenance Works Management System and development work is substantially completed on our Human Resource Management System.

We are currently enhancing our Digital Mapping Systems (DMS) which uses the latest Geographical Information Systems (GIS) technology to acquire, store, integrate and maintain digitised geospatial data across our water supply network. The DMS network will cover headquarters operations and operations at our four regional offices so that staff can access existing water mains data. This will enhance and consolidate the flow of information both within the Department as well as between the Department and outside parties such as utility companies and other government departments.

遙控濾水廠內設備的運作。
Performing remote plant operations at water treatment works.

使用聲音測試儀去探測漏水位置。
Using noise correlator to detect water leak.

位於牛潭尾的氧氣儲存缸。
Oxygen storage tank at Ngau Tam Mei Water Treatment Works.

除了「數碼繪圖系統」外，我們更開發新的「地理資訊技術」和網絡應用科技，此等科技容許用家以更輕易方式索取供水網絡和實地考察數據的資料，同時亦能協助我們更有效管理本署的資產。

In addition to the DMS initiatives, we are also exploring new GIS and web-enabled applications that allow improved access to water supply network and fieldwork data. The information, in turn, enables us to manage our assets with greater efficiency.

危機管理

本署設有一套危機管理計劃，協助我們迅速應變。計劃清晰列明各類潛在的緊急情況、緊急調配資源的方式；及處理任何系統故障的協調行動，務求在遇到生化、幅射及核子攻擊、廣東核電廠出現故障、電力中斷及爆發傳染病時，可有應變計劃對策。

在二零零五年十二月舉行的世界貿易組織第六次部長級會議時，本署以詳細的應變計劃部署戒備。由於會議期間可能發生大型民眾活動和示威行動，本署參加了政府多機構級的模擬練習，測試對付潛在騷亂事件的準備及應變能力。政府在會議期間啟動事故協調中心，而本署有關職員亦24小時戒備，確保本港供水在此五天會議中不受影響。

Crisis Management

We have in place a crisis management plan that enables us to respond quickly to any emergency. This plan sets out clear descriptions of potential emergency situations, facilitating a rapid mobilisation of resources and co-ordinated action to deal with any system failure. Contingency plans are in place for chemical, biological, radiological and nuclear agent attacks, failure incidents at nuclear power plants in neighbouring Guangdong, power outages and pandemics.

A detailed contingency plan was executed for the World Trade Organisation's Sixth Ministerial Conference (WTO MC6) which was held in Hong Kong in December 2005. With the possibility of large-scale public activities and protests, the Department participated in a series of Government multi-agency level simulation exercises to test the overall preparedness and responsiveness to potentially disruptive events. Incident centres were activated during the conference and relevant WSD staff went on 24-hour stand-by to ensure that Hong Kong's water supplies remained uninterrupted during the five-day period of the conference.

例行巡查對維持設備良好狀況是必要措施。
Routine inspection is necessary for maintaining the well being of plant.

對設備進行測試。
Staff performing test on plant equipment.

研究和發展

我們繼續研究彈性座封閘閥在海水供應系統中的表現，預期研究於二零零七年完成。

根據在沙田濾水廠兩個澄清池內的試驗，證實斜管技術既有經濟效益，又可提升澄清池的濾水量。本署將於二零零六年底在屯門濾水廠的澄清池應用此技術。

為保證在水務設施使用高效能電動機，本署已展開一項有關低電壓電動機的最低效能研究。

我們在堅尼地城海水抽水站試用變速水泵，以探討典型供水系統中最具能源效益的泵水模式。

Research and Development

We continued our study on the performance of resilient seated gate valves for use in the salt water supply system for completion in 2007.

Trials on two clarifiers at Sha Tin Water Treatment Works showed that the inclined tube technology was cost-effective as well as viable in increasing the throughput of a clarifier. The same technology will be applied to other clarifiers at Tuen Mun Water Treatment Works by the end of 2006.

In order to ensure that high efficiency motors will be used in waterworks installations, a study on specifying the minimum efficiencies for low voltage motors has commenced.

A trial use of variable speed pumping at Kennedy Town Salt Water Pumping Station was conducted to identify the most energy-efficient pumping mode for a typical water supply system.

2005/06 年度測漏統計數字
Statistics on Leak Detection (05/06)

食水 Fresh Water					
各財政年度所進行的測漏工作 Tests Conducted Per Financial Year	2001/02	2002/03	2003/04	2004/05	**2005/06**
最低晚間流量測試次數 No. of Minimum Night Flow Tests	431	334	320	300	**304**
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	15	55	70	92	**64**
日間流量測試次數 No. of Day Flow Tests	223	845	1 361	1 838	**2 079**
音聽視察次數 No. of Sounding & Visual Inspections	3 853	3 247	3 286	3 358	**3 105**
測試及視察次數總計 Total No. of Tests & Inspections	4 522	4 481	5 037	5 586	**5 552**
經發現的滲漏個案數目 No. of Leaks Detected	5 054	3 825	3 651	4 231	**3 758**
估計每日可節省的食水量（立方米） Estimated Quantity of Fresh Water Saved (cu.m/day)	231 161	178 433	91 993	99 293	**108 090**
海水 Sea Water					
各財政年度所進行的測漏工作 Tests Conducted Per Financial Year	2001/02	2002/03	2003/04	2004/05	**2005/06**
最低晚間流量測試次數 No. of Minimum Night Flow Tests	0	0	0	8	**0**
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	4	11	8	4	**3**
日間流量測試次數 No. of Day Flow Tests	14	31	48	127	**268**
音聽視察次數 No. of Sounding & Visual Inspections	319	376	557	400	**238**
測試及視察次數總計 Total No. of Tests & Inspections	337	418	613	539	**509**
經發現的滲漏個案數目 No. of Leaks Detected	191	197	219	199	**132**
估計每日可節省的海水量（立方米） Estimated Quantity of Sea Water Saved (cu.m/day)	25 805	26 993	12 598	11 948	**40 870**