

# 優質服務 Resourceful Output

提升運作效率，節省  
更多營運開支

Operational efficiency  
results in greater cost  
savings

- 提升效率  
Enhancing efficiency

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- 自動化的效益  
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- 資訊科技計劃  
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- 品質保證計劃  
Quality plan







### 提升效率

我們正按照管職雙方代表所組成的工作小組的建議，實施多項提升運作效率的措施，在來年可再節省2.8%的營運開支。

綜合上述節省開支比率及原定的1%節流目標，二零零四／零五年度合共可節省3.8%開支，亦即1.1億元。我們主要會透過精簡整體工作程序，以及在提供卓越服務的同時致力減省開支，去達到這個節流目標。獲通過的建議正根據經修訂的「營運開支封套」，分階段付諸實行。

上述建議措施，是「組織架構及效率檢討工作小組」提出的大約40項新措施的一部分。

此外，自二零零零年展開「善用資源研究」至今，濾水廠及使用人手操控的抽水站的操作人員總數減省了8至17%。

### 自動化的效益

本署更廣泛使用「監控及資料收集系統」，以自動化方式遙遠監控供水網絡的設施，包括濾水廠、抽水站及配水庫，因而進一步提高了生產力。

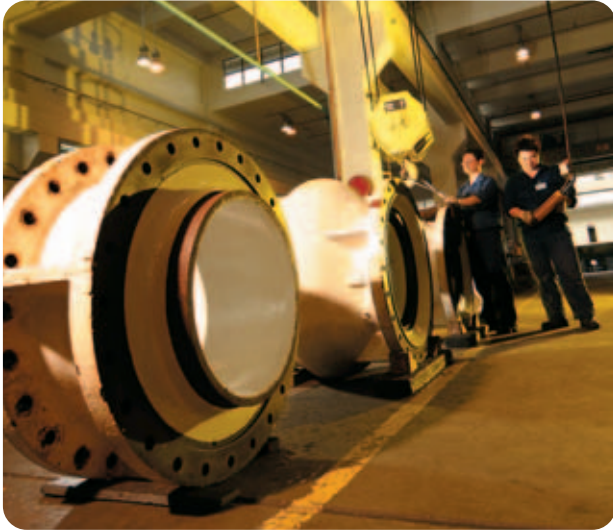
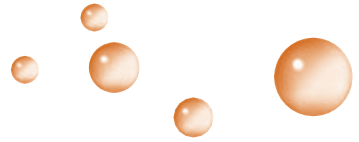
我們更採用「遙遠視像監察系統」和成立流動視察隊，使水務設施可用無人操控方式運作，節省了大量人力資源，其中以抽水站方面的成效尤為明顯。

我們又在「監控及資料收集系統」內開發了一套資訊系統，讓辦公室人員可經由本署電腦網絡存取運作資料，在網上進行監察、資源規劃及數據分析，從而提升工作效率。

### 資訊科技計劃

資訊系統策略計劃的第一階段工作，是設立「客戶服務及發單系

▲ 為新客戶服務及發單系統進行用戶驗受測試的一角落。  
A corner for carrying out Users Acceptance Test for Customer Care and Billing System.



### Enhancing efficiency

Steps being taken to improve operational efficiency in line with proposals made by a working group drawn from management and staff will result in further savings of 2.8 per cent of operating expenditure for the coming year.

These savings, added to an original target of one per cent, bring the total to 3.8 per cent, or \$110 million for the 2004/05 year, and will be achieved largely through overall streamlining of work, combining efforts for excellence in all aspects of service with cost-savings targets. The endorsed proposals are being introduced in phases under a revised Operating Expenditure Envelope – OEE.

The proposals were among some 40 initiatives raised by the Working

Group on the Review of the Organisational Structure and Efficiency – ROSE.

Meanwhile, savings of 8 to 17 per cent in total operational staff strength in treatment works as well as manned pumping stations were achieved from the Optimal Utilization of Resources study – OUR – started in 2000.

### Automation benefits

Adding to productivity benefits has been the wider use of automation under the Supervisory Control and Data Acquisition (SCADA) system for remote monitoring and control of installations in the water supply network covering water treatment works, pumping stations and service reservoirs.

By enabling unmanned operations with the further aid of Remote Video Surveillance System (RVSS) and the setting up of mobile inspection teams, significant manpower savings were brought about especially in pumping stations.

An information system has also been developed under SCADA to allow office staff to access the operational data via the corporate computer network for on-line monitoring, resources planning and data analyses to improve operational efficiency.

### IT plan

The first stage of an Information System Strategy Plan, dealing with customer care and billing is scheduled to commence roll-out later in 2004. Contracts have been awarded for the second and third

▲ 在工場內維修水泵。  
Maintenance of pumpset at workshop.

▲ 利用最先進的地下管探測儀找尋水管位置，為供水網絡進行主動監測。  
Using advanced pipe locator for active leakage detection.

統]，預計於二零零四年稍後時間陸續推出投入服務。我們已就該計劃的第二及第三階段批出合約，有關工作包括設立化驗室資訊管理、數據基礎設施及維修工程的系統，預計於二零零六年年底完成。有關第四階段的計劃正在草擬中。

### 保管資產

保持地面及地下資產(包括水管、水閘及電纜)狀況良好，以便提供妥善的供水服務，所牽涉的工作極為繁重。地面資產包括水塘、配水庫、濾水廠、抽水站、隧道及樓宇。

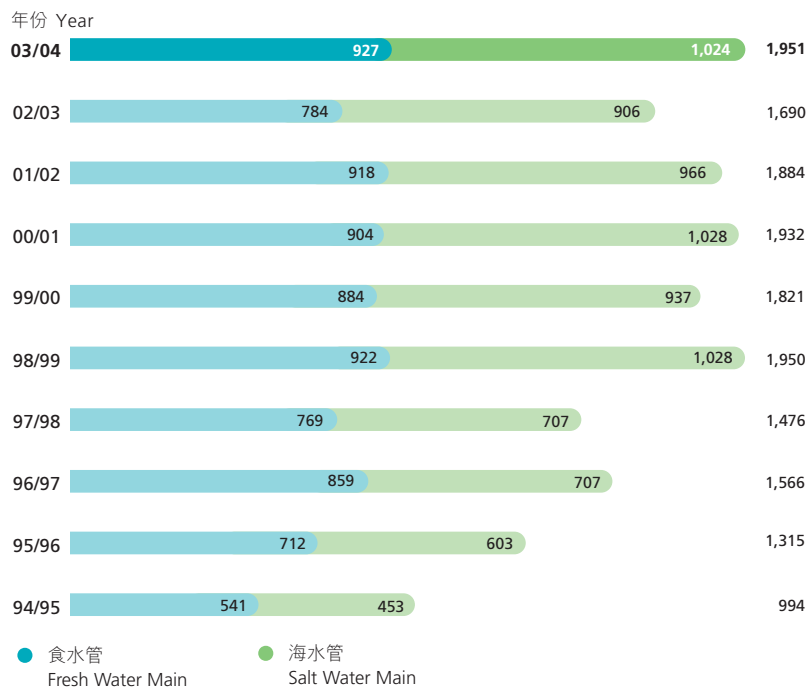
本署將於二零零四年年底前開始使用地面資產登記冊，並展開地面資產管理計劃，同時亦會擬定為期20年的地面資產更新計劃。

我們使用數碼繪圖系統管理資產記錄後，挖掘工程造成損毀的風險已大大減低。這套精密的繪圖系統於二零零二年提升效能後，我們現在可透過電腦，與進行挖掘或建築工程的公用事業機構和其他政府部門，即時交換資產記錄。從更廣闊的層面來看，這亦有助提升本署日常運作及提供客戶服務的效率。

年內，大口環食水抽水站和鰂魚涌海水抽水站的水泵更換工程已告完成。為28座水務設施更換水泵以提高能源效益的工程，現正繼續進行。土木工程設施如配水庫、斜

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

由定期合約承辦商修理的水管爆裂個案數目  
No. of Mains Bursts Repaired by Term Contractors



坡、通道等的修葺及維修工程，亦按原定計劃進行。

另一方面，我們已為大約58 000部機電和儀器設備進行了保養或維修工程，並為水塘、配水庫、灌溉水庫及本署轄下約6 000個斜坡進行了接近1 500次安全檢查。

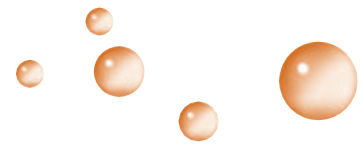
### 水管爆裂

本署積極推行水管更換及修復計劃，務求減少未來水管爆裂次數。此外，由於採取了更有效的程序，

我們也縮短了關水閘和恢復供水所需時間。

### 滲漏控制

本署採用了主動測漏及水壓管理方面的最新科技後，因水管滲漏而流失的水量已減低。有關的防漏管理策略包括裝設新式流量調控減壓閘，以及對供水網絡進行持續監測。為提升效率，我們已把本署部分水管測漏工作，納入現行和日後生效的土木工程設施定期保養合約內。



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

由定期合約承辦商修理的食水管及海水管爆裂個案數目  
No. of (F.W. & S.W.) Mains Bursts Repaired by Term Contractors

運作區 Region

財政年度 Financial Year	香港及離島區 (個案數目) HK & I (No.)	新界東區 (個案數目) NTE (No.)	新界西區 (個案數目) NTW (No.)	九龍區 (個案數目) K (No.)	總數 Total (No.)
1994/95	243	148	244	359	994
1995/96	334	170	382	429	1,315
1996/97	358	154	451	603	1,566
1997/98	323	168	402	583	1,476
1998/99	394	336	462	758	1,950
1999/00	564	297	429	531	1,821
2000/01	583	306	388	655	1,932
2001/02	545	325	397	617	1,884
2002/03	496	277	319	598	1,690
<b>2003/04</b>	<b>513</b>	<b>507</b>	<b>323</b>	<b>608</b>	<b>1,951</b>

stages dealing with laboratory information management, data infrastructure and maintenance works. These are due for completion by 2006. A plan for the fourth stage is being drawn up.

### Care of assets

A great deal of work is involved in keeping the surface and underground assets — comprising mains, valves and cables — in

good condition for the smooth flow of the water supply. Included in surface assets are such things as impounding and service reservoirs, water treatment works, pumping stations, tunnels and buildings.

A Surface Assets Register and a Management Plan will be put into operation by the end of 2004. Together with this, a 20-year plan will be developed for replacement of surface assets.

By the use of a computerized Digital Mapping System for managing the record of assets, the risk of damage caused by excavation work is greatly reduced. Starting from 2002, this sophisticated mapping system has been enhanced such that asset records can now be exchanged instantly by computers with utility undertakers and other government departments that engage in excavation and construction work.



### 總水錶

為減少流失水量，我們正推行一項計劃，利用總水錶監察大型屋邨及新界一些村落的用水量。

### 研究及發展

我們最近在牛潭尾濾水廠安裝了一個超濾裝置，操作該裝置所得資料，會在設計新濾水廠或把現有設施現代化時，用作參考。

根據年內進行測試的結果顯示，遙控清潔器可有效消除配水庫的沉澱物，使配水庫清洗時無須排走存水。

利用斜管技術提高濾水效率的試驗計劃，已在沙田濾水廠成功推行，不但使濾水量提高20%以上，而且大大改善了水質。

我們會推廣這種新技術，應用於沙田濾水廠其他澄清池及屯門濾水廠。

### 品質保證計劃

按照本署的品質保證計劃，機械及電機科保養部的工地保養工作已取得ISO 9001:2000認證資格。

此外，顧問研究管理、設計及建設工作的品質管理系統，已成功由ISO 9000:1994認證資格提升至ISO 9000:2000認證資格。

### 危機管理

我們實施了一項危機管理計劃，以加快處理緊急事故。這項計劃清晰列明各類緊急情況，確保在發生系統故障或重大事故時，可迅速調動資源並協調各項應急行動。



- ▲ 署長接受由香港品質保證局陳錦新先生頒發的ISO:9001二千年版品質管理證書。  
Director receiving ISO 9001:2000 Certification from Mr. K.S. Chan of the Hong Kong Quality Assurance Association.

- ▲ 預備出動執行分配管網系統內的工作。  
Ready to start off for work on water distribution system.
- ▲ 香港服務業獎：生產力獎  
The Hong Kong Award for Services : Productivity.



On a broader scale, it will also help enhance efficiency of daily operations and delivery of customer services.

With the completion during the year of work on the replacement of the pumping plant for Sandy Bay Fresh Water Pumping Station and Quarry Bay Salt Water Pumping Station, work is continuing on replacement of pumping plants for 28 installations to improve energy efficiency. Work is also being carried out on the programmed maintenance and renovation of civil structures, including service reservoirs, slopes and access roads.

In other areas of work, repair or maintenance of some 58 000 items of mechanical, electrical and

instrumentation equipment was carried out and nearly 1 500 safety inspections were conducted at impounding, service and irrigation reservoirs, and some 6 000 slopes in WSD's care.

### Main bursts

Resulting from an active replacement and maintenance programme for water mains, we strive to decrease the number of main bursts in the years to come. More effective procedures in use have also helped reduce the time taken for isolating main bursts and restoring supply interruptions.

### Leakage control

Adoption of the latest technologies in proactive leak detection and

pressure management has helped reduce water loss through mains leakage. Leakage management strategy includes the use of advanced flow-modulated pressure reducing valves and continuous monitoring of the water supply network. For greater efficiency, a part of the in-house leak detection works has been included in the current and future term contracts for civil maintenance work.

### Bulk meters

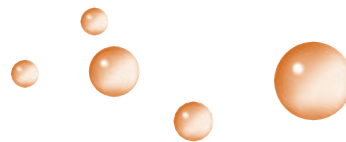
In the effort to reduce unaccounted-for water, a programme is being carried out to use bulk meters in large housing estates and some New Territories villages to monitor water consumption.

▲ 工作人員正在透過「監控及資料收集系統」在一濾水廠控制室內遙遠監控設備的運作。  
Performing remote monitoring and control of plant operation through SCADA system in the control room of a water treatment works.

▲ 使用滲漏測試及控制的設備。  
Working with leak detection and control equipment.



測漏統計數字 Statistics on Waste Detection									
食水 Fresh Water									
各財政年度所進行的測漏工作 Tests Conducted Per Financial Year	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
最低晚間流量測試次數 No. of Minimum Night Flow Tests	411	396	410	443	495	487	431	334	320
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	72	69	72	77	46	43	15	55	70
日間流量測試次數 No. of Day Flow Tests	65	88	100	124	200	217	223	845	1361
音聽視察次數 No. of Sounding & Visual Inspections	1,975	3,423	3,545	4,169	4,045	4,438	3,853	3,247	3,286
測試及視察次數總計 Total No. of Tests & Inspections	2,523	3,976	4,127	4,813	4,786	5,185	4,522	4,481	5,037
經發現的滲漏個案數目 No. of Leaks Detected	1,910	2,829	3,287	4,868	5,353	5,714	5,054	3,825	3,651
估計每日可節省的水量(立方米) Estimated Quantity of Fresh Water Saved (cu.m/day)	193,826	209,820	203,998	249,615	254,623	290,940	231,161	178,433	91,993
海水 Sea Water									
各財政年度所進行的測漏工作 Tests Conducted Per Financial Year	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
最低晚間流量測試次數 No. of Minimum Night Flow Tests	6	19	23	3	6	5	0	0	0
分段流量測漏次數 No. of Step Tests (or Leakage Tests)	0	1	1	0	0	1	4	11	8
日間流量測試次數 No. of Day Flow Tests	3	4	11	10	20	23	14	31	48
音聽視察次數 No. of Sounding & Visual Inspections	208	177	211	171	284	312	319	376	557
測試及視察次數總計 Total No. of Tests & Inspections	217	201	246	184	310	341	337	418	613
經發現的滲漏個案數目 No. of Leaks Detected	66	127	156	208	216	254	191	197	219
估計每日可節省的海水量(立方米) Estimated Quantity of Sea Water Saved (cu.m/day)	10,416	14,511	11,543	23,430	25,532	41,895	25,805	26,993	12,598



## Research & Development

Information derived from the recent installation of an ultra-filtration plant at Ngau Tam Mei Water Treatment Works will be used in designing new works or modernising existing facilities.

Meanwhile, results of test carried out during the year have shown the effectiveness of remotely controlled cleaners in removing the deposit in service reservoirs so as to avoid having to drain them down for cleaning.

A pilot scheme using inclined tube technology to improve the efficiency of the water treatment process has been successfully carried out at Sha Tin Water Treatment Works, increasing the throughput by more than 20 per cent and also greatly improving water quality.

The new technology will be applied to other clarifiers at the Sha Tin and Tuen Mun Water Treatment Works as well.

## Quality plan

The site maintenance function of the Mechanical and Electrical Maintenance Division has achieved ISO 9001:2000 certification, in line with our Quality Assurance Plan.

At the same time migration from ISO 9000:1994 to the 2000 version was successfully effected for the



consultants management, design and construction functions.

## Crisis control

For crisis control, a plan has been put in place to speed up response to any emergency. It sets out clear

descriptions of emergency situations, thereby facilitating rapid mobilization of resources and co-ordinated action to be taken to deal with any system failure or major event.

▲ 檢查高電壓電動機繞組。  
Inspecting winding of a high voltage motor.