

Vision

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

Values

Customer satisfaction	Reliability	Environmental awareness
Dedication	Improvement	Teamwork

Mission

- To provide a reliable and adequate supply of wholesome potable water and sea water to our customers in the most cost-effective way.
- To adopt a customer-oriented approach in our services.
- To maintain and motivate an effective, efficient and committed workforce to serve the community.
- To remain conscious of our responsibilities towards the environment.
- To make the best use of resources and technology in our striving for continuous improvement in services.

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Corporate Profile

By supplying clean and healthy drinking water, the Hong Kong SAR Government's Water Supplies Department plays a pivotal role in the life of Hong Kong people, meeting the needs of commerce and industry while managing the sustainability of the water resources for future generations.

Hong Kong's population of 7.07 million consumes on average 2.53 million cubic metres of fresh water for various uses and 0.74 million cubic metres of sea water (also referred to as "salt water" in other parts of this report) for flushing each day. In terms of fresh water supplies, 89 per cent is sourced from neighbouring Guangdong province whereas the remaining is supplemented by the yield from Hong Kong's own water gathering grounds and held in a network of reservoirs across the city in 2011.

While supplies are secure, the Department realises that as population grows, the world's demand for water also grows, requiring thoughtful use of existing resources. That's why we are looking ahead, developing alternative sources and nurturing a culture of conservation and recycling to ensure that as Hong Kong moves into the future, its population can continue to have quality water supplies.

		<i>* Water mains laid in private streets are included.</i>	
No. of Impounding Reservoirs	17 nos.	Total Storage Capacity	586.05 million cubic metres (mcm)
No. of Water Treatment Works	21 nos.	Total Daily Treatment Capacity	5.02 million cubic metres (mcm)
No. of Fresh Water Pumping Stations (including both fresh & raw water pumping stations and pump houses)	153 nos.	Total Daily Pumping Capacity	31.45 million cubic metres (mcm)
No. of Salt Water Pumping Stations (including both pumping stations and pump houses)	31 nos.	Total Daily Pumping Capacity	1.85 million cubic metres (mcm)
No. of Combined Fresh Water & Salt Water Pumping Stations	7 nos.	Total Daily Pumping Capacity	0.28 million cubic metres (mcm)
No. of Fresh Water Service Reservoirs	169 nos.	Total Storage Capacity	4.18 million cubic metres (mcm)
No. of Salt Water Service Reservoirs	49 nos.	Total Storage Capacity	0.24 million cubic metres (mcm)
Length of Fresh Water Mains (20 mm to 2 400 mm diameter)	6 493 kilometres (km)*	Length of Salt Water Mains (20 mm to 1 200 mm diameter)	1 656 kilometres (km)*

WSD Organisation Chart

Mr MA Lee Tak, JP
Director of Water Supplies

Mr CHAN Kwong Wei, JP
Deputy Director of Water Supplies

- Internal Audit Section
- General Administration Section
- Contract Advisory Unit
- Public Relations Unit

Mr CHIN Chu Sum, JP
Assistant Director/Customer Services

Customer Services Branch

- Customer Services Division
- Customer Accounts Section
- Technical Support Unit

Mr NG Mang Tung, Bobby, JP
Assistant Director/Development

Development Branch

- Development (1) Division
- Development (2) Division
- Water Science Division

Mr LEE Kwong Ming
Assistant Director/Finance & Information Technology

Finance and Information Technology Branch

- Finance Section
- Supplies Section
- Information Technology & Data Management Unit
- IT Project Management & Review Unit

Mr CHAU Chi Wai, David, JP
Assistant Director/Mechanical & Electrical

Mechanical and Electrical Branch

- Maintenance Division
- Projects Division
- M & E Administration Unit
- Safety Unit
- Training Unit

Mr Leung Wing Lim
Assistant Director/New Works

New Works Branch

- Construction Division
- Consultants Management Division
- Design Division
- Project Management Division

Mr Wong Kwok Hung
Assistant Director/Operations

Operations Branch

- Hong Kong and Islands Region
- Kowloon Region
- New Territories East Region
- New Territories West Region
- Operations Section
- Slope Safety Section

Mr LI Wan Suen, Clement
Departmental Secretary
Departmental Administration Division

Events in Brief

2011

April

Water Conservation Design Competition Awards

Launched as part of our call for greater water conservation awareness among young people, the design competition resulted in creative and award winning water conservation designs produced by many students of tertiary education institutes.

July

Promotional Movie on Water Conservation Launched

A 15-minute clip highlighting ways families can save water was broadcast publicly and later released to schools and property management companies.

August

Certificates Recognise Fresh Water Maintenance Programmes in Buildings

Certificates were presented under the Quality Water Recognition Scheme for Buildings (QWRSB) to property owners and management companies, owners corporations and management agents to recognise their efforts in the proper maintenance of fresh water plumbing systems.

September

Water Conservation Competition Launched

With a theme “Creative Water Saving Ideas to Share with Every Home”, the competition was launched on World Water Monitoring Day as part of Government’s efforts to develop a partnership with the public to achieve water conservation.

Over 100 school children participated in the ceremony at Ma On Shan Water Treatment Works where they participated in an interactive programme that included testing the raw water treated at the Works.

November

ACQWS Visit to Dongjiang Facilities

Members of the Advisory Committee on the Quality of Water Supplies (ACQWS) visited Guangdong to inspect the Dongjiang water supply system and noted that Guangdong Authorities have continued to focus their efforts on protection of Dongjiang water.

December

New Agreement on Supply of Dongjiang Water

The then Secretary for Development, Mrs Carrie Lam, signed a new agreement covering the supply of Dongjiang water to Hong Kong from 2012 to 2014 with the Director General of the Department of Water Resources, Guangdong Province, Mr Huang Boqing, in Shenzhen.

Ngau Tam Mei Water Treatment Works Open Day

The Department's volunteers guided over 1 000 visitors on a technical tour of the Ngau Tam Mei Water Treatment Works describing the treatment and water quality monitoring processes.

2012

February

Engineers participate in "Technology for Quality Living" Seminar

The Director of Water Supplies and a team of young engineers presented aspects of the Department's work at a public "Technology for Quality Living" seminar at the Hong Kong Science Museum. Members of the audience visited the Sha Tin Water Treatment Works on a guided tour after the presentation.

Lunar New Year Celebrations

Staff and their families celebrated Lunar New Year at a carnival that featured game stalls, a lion dance and performances in magic and martial arts.

March

Charter Signed to Combat Unauthorised Water Use

The Department and nine associated trade institutions committed to joining forces against unlawful water tapping by paying attention to abnormalities in the water supply systems during their work and reporting suspected illegal tapping at construction and other sites.

Urinals added to the WELS register

Urinal equipment became the fourth category of water consuming products to be added to the Water Efficiency Labelling Scheme.

Director's Statement

Fresh Water is a precious resource.

“Our steady and well-planned approach to water supplies ensures that Hong Kong will have sufficient water to meet its population growth and long term development.”

AIMING FOR RESILIENCE

With the growing demand for water resources across the Pearl River Delta, the Water Supplies Department is adopting a strategy that will ensure future supplies for Hong Kong are both stable and resilient. To achieve this, we are working closely with our Pearl River Delta neighbours and developing plans to secure a greater volume of water from domestic sources.

We promulgated the Total Water Management Strategy in 2008 to better prepare Hong Kong for uncertainties such as acute climate change and low rainfall and to enhance our role as a good partner to other municipalities in the Pearl River Delta by promoting the sustainable use of water to meet the rapid growth in water demand. The key initiatives under the strategy cover water demand management and water supply management. With good effort spent on water demand management initiatives in the first few years, we are now proceeding with water supply management initiatives. Desalination is a highlight.

Hong Kong used to obtain around 80 per cent of its fresh water resources from the Dongjiang River in Guangdong Province. The balance of our supplies comes from our own water catchments. To this home-grown supply, a proposed desalination plant, once progressively rolled out, will meet about 10 per cent of our fresh water requirements.

LATEST DONGJIANG AGREEMENT

In December 2011, we completed negotiations with the Guangdong authorities on a further three year agreement. This agreement guarantees Hong Kong a supply of up to 0.82 billion cubic metres a year from 2012 through to 2014 with the ultimate annual supply output kept at 1.1 billion cubic metres. The actual amount to be drawn will be decided on a month-by-month basis, taking into account rainfall and storage in our reservoirs.

The Guangdong authorities continue to place great emphasis on the environmental and ecological protection of the Dongjiang River ensuring the quality of water delivered to Hong Kong. Controls are in place covering Dongjiang water quality and the effluent discharged from adjoining catchments.

ALTERNATIVE WATER RESOURCES

Hong Kong, given its geography and population, cannot acquire all of its water resources locally to support growth and development. Notwithstanding, we are moving forward with viable water source alternatives that will, long term, become valuable sources of water.

In June 2012, the Legislative Council approved the funding of a feasibility study into the establishment of a desalination plant at a 10 hectare site we have earmarked in Tseung Kwan O. The technologies of desalination and the associated costs of producing desalinated water have changed considerably since Hong Kong's previous attempt at desalination in the 1970s. The technology used at the time, thermal distillation with its associated high fuel costs, made the process economically unviable. The Tseung Kwan O Plant under study is based on a technology operating successfully in Australia, the United States, Singapore and Mainland China, using the principle of reverse osmosis.

We aim to complete the feasibility study and an environmental impact assessment for the proposed desalination plant by end 2014. We will then apply to the Legislative Council for further tranches of funding which will enable us to begin detailed design and subsequently construction.

The impact of climate change on supplies of fresh water is increasingly understood by the community, from both a local and a global perspective. International water experts support our desalination project and I am confident that Hong Kong's population, with the findings of our detailed studies, will echo this support. The planned commissioning date for the plant is 2020, subject to completion of statutory and financial procedures. Its initial production capacity will be 50 million cubic metres of water per annum – equivalent to 5 per cent of Hong Kong's requirements. Upon expansion, the desalination plant will produce about 10 per cent of our requirements.

1	Ir MA Lee Tak, JP Director of Water Supplies	2	Ir CHAN Kwong Wei, JP Deputy Director of Water Supplies	3	Ir CHIN Chu Sum, JP Assistant Director/Customer Services
4	Mr LI Wan Suen, Clement Departmental Secretary	5	Ir NG Mang Tung, Bobby, JP Assistant Director/Development	6	Mr LEE Kwong Ming Assistant Director/Finance & Information Technology
7	Ir CHAU Chi Wai, David, JP Assistant Director/Mechanical & Electrical	8	Ir WONG Kwok Hung Assistant Director/Operations	9	Ir LEUNG Wing Lim Assistant Director/New Works

We are also targeting the production of reclaimed water for toilet flushing and other non-potable uses. Reclamation facilities will be built to supply the new development areas of the North East New Territories progressively after 2020.

CONTINUING FOCUS ON CONSERVATION

Conservation is a key initiative of the Total Water Management Strategy. We aim to continue achieving reductions in water consumption through public education campaigns, promotion of water saving devices and active measures to reduce water main bursts and leaks. Campaigns targeting different sectors of the community, including road shows, design competitions and a water conservation ambassador selection programme, are successfully spreading conservation messages.

In a similar way, the promotion of water saving devices and consumer awareness of the water efficiency of common household appliances is also important. The Water Efficiency Labelling Scheme, rolled out progressively since 2009, continues to gain credit. The scheme now covers shower heads, taps, washing machines and urinals.

A survey of domestic water consumption last year helped us gain a better understanding of household water use. As a result, new conservation measures and guidelines will be introduced to assist consumers to help us meet conservation goals.

In terms of our own assets, we have replaced or rehabilitated more than 60 per cent of the 3 000 kilometres of mains that require remedial work. This has resulted in a significant reduction in the incidence of water main bursts – from thousands to just a few hundred in 2011-2012. The leakage rate across all mains has been reduced from 25 per cent in 2001 to 19 per cent in 2011. Once the repair and rehabilitation programme is completed in 2015, I expect this rate to drop to just 15 per cent.

We have adopted a proactive approach to managing water loss across the mains network. This includes pressure management systems to optimise water mains pressure and, more recently, we have adopted performance-based contracts with our specialist contractors. Remuneration is based on a percentage of the cost of the water saved due to detection. This encourages contractors to apply new technology and equipment to the detection of water loss and the repair of mains.

ACCESSING COMMUNITY EXPERTISE

We have also enhanced the membership and scope of the Advisory Committee on the Quality of Water Supplies (ACQWS). In the past this committee with its community members, has focused primarily on the operational aspects of the Dongjiang water transfer facilities and water quality monitoring. By enlarging its membership, we broaden our access to people with rich experience and new ideas. Under its new remit, the committee will now also look at desalination, water recycling, rainwater harvesting and the viability of other water resource options such as the extraction of deep-seated underground water resources. The committee has been renamed as the Advisory Committee on Water Resources and Quality of Water Supplies (ACRQWS). By leveraging the knowledge of experts outside the Department, we can steadily progress water policy discussions and options.

ENCOURAGING STAFF INNOVATION

Staff members of the Department have clearly taken up my earlier challenge to seek innovative ways that enable us to deliver water safely, efficiently and in a sustainable manner. We are charged with a great responsibility and I am pleased to report that the Department has received both local and global recognition for a number of initiatives. An in-line hydroelectric generator, developed by the Department in collaboration with the Hong Kong Polytechnic University, has proven to be a cost effective and convenient power source to operate in-line instruments across the distribution network in remote areas. The generator was awarded a silver medal at the Geneva Invention Expo 2012. We are continuing to use solar energy where possible and to develop wave energy driven self-cleaning devices at seafront pumping stations. We are also investigating the use of zebrafish as bio monitors to give early warning of raw water contamination. Our research projects are often conducted in partnership with Hong Kong and international universities.

We are a department that is producing motivated and talented people who, in turn, are creating a vision and taking ownership of their work. Staff members at all levels are identifying areas where they can enhance their contribution, participating in training programmes and specialising in areas of particular interest. I sincerely thank all staff, along with the community members of our advisory groups and our business and industry partners, for the work undertaken and the advice given over the past 12 months.

Number of Accounts (as at 31 March 2012)

2008	=	2 691 400
2009	=	2 727 700
2010	=	2 754 600
2011	=	2 772 000
2012	=	2 803 800

2011 Total Average Daily Water Consumption

Year	2007	2008	2009	2010	2011
Fresh Water (million litres per day)	2 605	2 612	2 608	2 564	2 530
Salt Water (million litres per day)	742	751	742	740	740
Total	3 347	3 363	3 350	3 304	3 270

Our steady and well-planned approach to the delivery of what is a critical resource ensures that Hong Kong will have sufficient water to meet its population growth and long term development. We are confident that we are achieving this goal in a manner that will be judged by future generations as both resilient and sustainable.

Ir MA Lee Tak

Director of Water Supplies

31 August 2012

Key Performance Indicators

Indicators	Financial Year (Percentage)		
	09/10	10/11	11/12
Fresh Water Quality [100% compliant with WHO's "Guideline for Drinking-water Quality"(2008 [#])]	100	100	100
Salt Water Quality [96% compliant with WSD Water Quality Objectives]	complied with	complied with	complied with
Fresh Water Supply Pressure (15 – 30 metres)	100	100	100
Salt Water Supply Pressure (15 metres)	100	100	100

Indicators	Financial Year (Percentage)		
	09/10	10/11	11/12
Response Time for Attendance to Fault Complaints			
• Fresh Water Supply Fault (within half a day)	100	100	99.2
• Others (within a working day)	100	100	99.8
Duration of Suspension of Water Supply for Planned Works (97% within 8 hours [^])	complied with	complied with	complied with
Accuracy of Water Meters [@] (inaccuracy not exceeding $\pm 3\%$)	94.2	95	95.3*
Interim Reply to Correspondence from the Public (10 Calendar Days)	98.5	98.4	98.2

[#] The 2006 version of WHO Guidelines was adopted in 2009/10 and 2010/11, while the 2008 version of WHO Guidelines was adopted in 2011/12.

[^] The target in 2009/10 was 95% within 8 hours.

[@] Water meters are deemed to register correctly if their inaccuracy does not exceed $\pm 3\%$.

^{*} The target for 2012/13 is 95.7%.

Securing Our Water Supplies

The Department continues to manage Hong Kong's demand for water to ensure that water supplies - whether collected domestically or imported from the Dongjiang - are treated to prescribed quality standards and delivered efficiently across the territory.

FRESH WATER SUPPLIES

Hong Kong's raw water supply comes from two principal sources: the Dongjiang (or East River) in Guangdong and a network of domestic rainwater catchments located across the territory's extensive country parks and rural areas. These fresh water supply sources are supplemented by sea water used for toilet flushing and, a small amount, at this stage, of recycled water used primarily for irrigation and landscaping.

In 2011, 89 per cent of Hong Kong's supply of raw water was transported by a dedicated aqueduct from the Dongjiang. Apart from the period when the aqueduct is closed for annual maintenance, the daily supply from this source is only slightly less than the city's daily consumption. Imported Dongjiang water surplus to immediate needs is stored with locally collected raw water in impounding reservoirs. Sea water is extracted by pumping stations located at various points of the seafront, treated and then supplied to 80 per cent of the population for toilet flushing.

In terms of our long term supply strategy, we are looking beyond Hong Kong's water demand to take note also of the needs of the Pearl River Delta which continues to grow in terms of both population and industry. Alternative sources of both potable and non-potable water are being explored to lessen our reliance on the Dongjiang.

DONGJIANG WATER SUPPLY

The ultimate quantity stipulated in the current water supply agreement with Guangdong means that the supply of water from the Dongjiang is sufficient to meet estimated demand of Hong Kong up to 2030 and beyond if there is no acute water shortage in the Pearl River Delta area. The actual draw off is determined on a monthly basis taking into account seasonal rainfall. This helps us to optimise the overall use of water resources. The latest three-year agreement signed at the end of 2011 sets the cost of the water at \$3,539 million for 2012, \$3,743 for 2013 and \$3,959 for 2014. The negotiated price regime takes into account the substantial appreciation of China's RMB against the Hong Kong dollar and escalating rates of inflation in Guangdong and Hong Kong. Although the purchase costs are higher than the pre-2009 charges, they have not, to date, been reflected in any increase in water charges to our consumers.

We have continued to maintain close communication with the Guangdong authorities on their provincial water requirements and have controlled storage levels in local impounding reservoirs to minimise waste and optimise pumping costs.

The Guangdong authorities have implemented measures to protect the Dongjiang's water environment and to ensure that the quality of water pumped to Hong Kong meets the relevant national environmental quality standards for surface water. These measures include new sewage treatment plants, removal of polluting

factories and building a bio-nitrification plant at the Shenzhen Reservoir. A dedicated aqueduct directly transfers river water from the Dongjiang intake to the Shenzhen Reservoir bypassing possible pollution sources along the supply route. As a result, we have been able to keep the treatment costs for fresh water supplies low while maintaining a consistently high level of water quality for consumers.

Annual Quantity of Water Supply

Year	2007	2008	2009	2010	2011
Guangdong (million cubic metres)	715	653	725	681	818
Hong Kong's Catchments (million cubic metres)	236	303	227	255	105
Total (million cubic metres)	951	956	952	936	923

Price of Guangdong Water

<u>Year</u>	<u>HK\$million</u>
2007	2,495
2008	2,495
2009	2,959
2010	3,146
2011	3,344

To maintain public confidence in the quality of the Dongjiang water, the Hong Kong and Guangdong authorities oversee together the water transfer operations with a high degree of transparency and vigilance.

Members of Hong Kong's Advisory Committee on Quality of Water Supplies (ACQWS) are invited to visit the water pollution control facilities in the Dongjiang catchment and the Dongjiang water supply system on an annual basis. Members have reported their findings and observations at media briefings held upon their return to Hong Kong.

DOMESTIC RAINWATER

Hong Kong has a network of catchments covering some 300 square kilometres. Rainwater collected from these catchments, together with the water pumped from the Dongjiang, can be stored in 17 impounding reservoirs across the territory. Although collected water is largely uncontaminated, the Department has undertaken protection measures along the collection system with regular inspections, maintenance and the removal of debris.

MAINTAINING QUALITY AND HEALTH STANDARDS

A comprehensive programme involving physical, chemical, radiological, biological and bacteriological testing is applied throughout the collection, treatment and supply processes of water, irrespective of whether it is sourced from the Dongjiang or is collected from within the territory's catchment areas. Samples are taken regularly from both pre-determined and randomly selected points along the supply chain and analysed using advanced and proven technologies with rigorous quality assurance protocols. The analytical techniques and equipment used in our laboratories are continuously enhanced and upgraded. Advances including a new collision cell technique used to detect trace metals in water and an automated imaging particle analysis system which enables us to quickly assess the algal population in water, have enhanced our ability to monitor the water quality. Details about the quality of the Dongjiang water and our drinking water supply are available for public viewing on the Department's website <http://www.wsd.gov.hk>.

An Integrated Quality Management system (IQMS) operates to cover the service quality of our supply line, from raw water collection and treatment to supply, distribution and provision of customer services. This involves monitoring of surface water, maintaining treatment targets for removal of pollutants in drinking water and enforcing pollution standards. Operating procedures are also set for maintenance of mechanical and electrical plant and equipment, supply and distribution operation, and customer services. The system has been awarded ISO (International Organisation for Standardisation) 9001:2008 certification annually since 2009.

Our on-line Water Quality Monitoring Systems installed at Muk Wu Pumping Station, Plover Cove Reservoir, Shing Mun Reservoir and Tai Lam Chung Reservoir gauge closely the quality of the water we receive from the Dongjiang and the water we store in reservoirs. In addition, our Supervisory Control and Data Acquisition (SCADA) system will be extended to include the on-line water quality analyser being set up in phases at our impounding reservoirs starting with the Shek Pik Reservoir.

No. of Samples Taken

<u>Financial Year</u>	<u>Total Nos.</u>
09/10	169 255
10/11	170 222
11/12	166 102

Average Ammoniacal Nitrogen and Manganese Levels in Dongjiang Water

<u>Financial Year</u>	<u>09/10</u>	<u>10/11</u>	<u>11/12</u>
Manganese (mg/L)	0.03	0.03	0.03
Ammoniacal Nitrogen (mg/L)	0.04	0.05	0.05

Radiological monitoring is routinely carried out to ensure the safety of our supplies of drinking water. Because it is in a constant state of emergency preparedness, the Department was able to promptly implement enhanced radiological monitoring of raw and treated water supplies between March and June 2011 following the nuclear incident at Fukushima in Japan to reassure the safety of drinking water supply. All radiological monitoring systems continue to protect the quality and safety of Hong Kong's fresh water.

The Department's Water Safety Plan applies the principle of risk management and a multiple-barrier approach to address the risk of water contamination. The plan covers the entire water supply chain from water sources through water treatment to supply and distribution. The integrated system of procedures and processes is based on the World Health Organization's (WHO) Guidelines for Drinking-water Quality which set out guideline values for individual chemicals of health significance that may be present in drinking water and outline a holistic framework to ensure the sustainable supply of safe drinking water.

To protect the quality of reservoir water, we regularly introduce fish fry into impounding reservoirs. Over the past year, about 400 000 fish fry, primarily silver carp and big head, were transferred to reservoirs at Plover Cove, Tai Lam Chung, Kowloon and Shing Mun to help maintain an ecological balance. We have also established a research project to investigate the technical feasibility of using zebra fish as a biomonitor to give an early alert of potential water quality problems.

ADOPTING FRESHWATER ALTERNATIVES

The Department continues to explore the potential of alternative sources of water suitable for potable supply and for non-potable uses such as toilet flushing and landscape irrigation. The objective is to conserve

as much fresh water as possible.

Annual Rainfall

<u>Year</u>	<u>millimetres</u>
2007	1 706.9
2008	3 066.2
2009	2 182.3
2010	2 372
2011	1 477

Annual Yield

<u>Year</u>	<u>million cubic metres</u>
2007	186.65
2008	331.96
2009	220.49
2010	228
2011	103

SEA WATER SUPPLIES

We are extending the sea water supply network and improving the existing sea water systems aiming to boost the population served with sea water for toilet flushing from 80 per cent to 85 per cent. Plans for a sea water supply system for Pok Fu Lam, Yuen Long and Tin Shui Wai are being implemented while those for an extension to the existing system in the Tung Chung area have been finalised. Wan Chai's system is also being upgraded and extended to meet the needs of the district's increasing population. A ring system is being designed for Cheung Sha Wan.

DESALINATION AS A WATER SOURCE

Desalination could be a promising new water resource in Hong Kong. We completed a pilot study in 2007 which confirmed the technical feasibility of desalination in the Hong Kong environment using reverse osmosis technology to produce potable water that complies with the WHO Guidelines for Drinking-water Quality. To cope with the continued increase of fresh water demand due to population growth and to better prepare Hong Kong for uncertainties associated with climate changes, low rainfall and increasing water demand across the Pearl River Delta Economic Zone, we need to plan ahead so that this new water resource can be readily tapped when needed. We have reserved a site of about 10 hectares at Tseung Kwan O Area 137 for the construction of a desalination plant with an initial output capacity of 50 million cubic metres per annum, with provisions for future expansion to an ultimate capacity of 90 million cubic metres per annum. This will meet about 10 per cent of Hong Kong's fresh water demand.

In June 2012, the Finance Committee of the Legislative Council approved the funding of \$34.3 million for the planning and investigation study for the construction of the desalination plant and the associated fresh water transfer facilities. We plan to engage consultants to commence the study by late 2012 and target completion by the end of 2014. Subject to the findings and recommendations of the study, we plan to seek further funding for detailed investigation, design and subsequent construction of the desalination plant at a time that will be dictated by demand and supply trends. Given the current situation, we envisage an earliest commissioning date of 2020.

WATER RECLAMATION AND RAINWATER HARVESTING

Water reclamation targets the use of recycled water to replace high quality fresh water in toilet flushing, street cleaning, car washing and landscape irrigation. In Hong Kong, we are studying the treatment of municipal wastewater and harvested rainwater. The treated water can be used as either potable or non-potable water, depending on the extent of treatment. This process is in use or under consideration in many countries and cities as an answer to water shortages. Lower quality water, referred to as grey water, can be collected from baths, showers, wash basins and kitchen sinks, treated, and then reused. The Department has commissioned a consultancy study to review the quality standard for the reuse of grey water recycling and rainwater harvesting with a view to developing a code of practice and guidelines for its use in Hong Kong. Relevant stakeholders were consulted on the study's recommendation in January 2012.

The pilot schemes for the recycling of treated effluent in Ngong Ping and Shek Wu Hui Sewage Treatment Works have demonstrated that the use of reclaimed water for non-potable applications is technically feasible in Hong Kong. We have formed an inter-departmental working group that will explore the details of producing and supplying reclaimed water. We anticipate providing this water to residents in the Sheung Shui, Fanling and the North East New Territories New Development Areas for toilet flushing and other non-potable uses. Apart from this, we are also liaising with other departments to implement trial schemes on recycling of grey water and harvesting rainwater under their projects.

Fresh Water Demand Forecast Projection 2011-2030

Year	Actual Consumption (million cubic metres)	2010 Forecast (million cubic metres)	2009 Forecast (million cubic metres)
2009	952		
2010	936		
2011		940	950
2012		941	949
2013		939	949
2014		941	951
2015		944	950
2016		952	959
2017		959	972
2018		978	993

2019		997	1014
2020		1019	1035
2021		1037	1053
2022		1057	1071
2023		1077	1092
2024		1099	1113
2025		1117	1135
2026		1138	1156
2027		1160	1177
2028		1185	1198
2029		1203	1220
2030		1225	

Annual Fresh Water Consumption (by sectors)

Year	2007	2008	2009	2010	2011	%
Domestic (million cubic metres)	509	519	524	509	498	54.1
Industrial (million cubic metres)	64	59	55	57	58	6.3
Service Trades (million cubic metres)	242	241	238	237	236	25.6
Government Establishments (million cubic metres)	44	45	44	42	41	4.5
Construction & Shipping (million cubic metres)	12	11	11	12	14	1.5
Flushing (million cubic metres)	80	81	80	79	76	8.0

Delivering Water Efficiently

The Water Supplies Department is constantly working to improve impounding reservoirs, fresh and sea water treatment facilities and the infrastructure that forms Hong Kong's extensive supply and distribution network.

IMPROVING THE SUPPLY NETWORK

Our 15-year phased programme of replacing and rehabilitating 3 000 km of water mains, many more than 30 years old, began in 2000 and is now in its final stages. As at 31 August 2012, we had completed work on 1 894 km of water mains, ensuring greater supply reliability. Water mains bursts, sudden drops in pressure and other incidents can disrupt water supplies and, in many cases, cause traffic and transport disruptions. The replacement and rehabilitation programme, expected to be completed by 2015, will go a long way to enhance system reliability and minimise disruption to daily life.

The programme involves advanced construction methods and technologies. Where necessary, we use trenchless construction methods including close fit lining of existing mains, cure in-place pipes, pipe jacking and horizontal directional drilling to reduce on the ground construction and lessen inconvenience caused to the public.

In addition to the urban work currently being undertaken, we are planning to replace a submarine pipeline from Lantau Island to Cheung Chau. A horizontal directional drilling method will be used to lay the new submarine pipeline to minimise the impact of the work on the environment, nearby marine and terrestrial archaeological sites and marine traffic.

Statistics of Leak Detection (2011/12)

Fresh Water

Tests Conducted Per Financial Year

Financial Year	2007/08	2008/09	2009/10	2010/11	2011/12
No. of Minimum Night Flow Tests	291	278	276	241	174
No. of Step Tests (or Leakage Tests)	57	65	30	27	25
No. of Sounding & Visual Inspections	4 220	4 438	4 914	3 177	3 221
No. of Leaks Detected	2 998	2 598	2 563	1 846	2 006
Estimated Quantity of Fresh Water Saved (cubic metres/day)	126 019	127 244	93 731	75 299	79 531

Sea Water

Tests Conducted Per Financial Year

Financial Year	2007/08	2008/09	2009/10	2010/11	2011/12
No. of Minimum Night Flow Tests	0	0	0	0	0
No. of Step Tests (or Leakage Tests)	3	2	2	0	0
No. of Sounding & Visual Inspections	222	207	155	304	532
No. of Leaks Detected	161	153	154	124	154
Estimated Quantity of Sea Water Saved (cubic metres/day)	45 592	113 201	18 204	29 918	21 719

REDUCING LOSS THROUGH LEAKAGE

We conduct routine minimum night flow tests, step tests, sounding and visual inspections for leak detection. The control of water loss has also been strengthened through the wide application of district monitoring and pressure management technologies. We endeavor to identify suspected leaks early so remedial action can be taken quickly. Pressure reducing valves are being installed to lower the pressure in the distribution network and more effectively reduce pipe failures and control water losses. We are concentrating on areas where the distribution network can absorb a reduction in pressure. Electromagnetic flow meters and noise loggers are being installed along the water supply network to monitor performance and identify leakage and other irregularities in the system. We are exploring a suite of technologies to apply to different mains across the supply network. These technologies will identify leaks and enable us to implement repairs. We have also adopted performance-based contracts with specialist contractors, to encourage the detection of leaks with accuracy.

EXTENDING THE NETWORK

The installation of a cross-harbour fresh water submarine pipeline, 1 200 mm in diameter and 2.1 kilometres in length, under the western part of Victoria Harbour between West Kowloon and Sai Ying Pun, has been completed. It will be commissioned in December 2012 once the associated land mains and the submarine water transfer system are completed.

We are constantly looking at ways to generate more water from our existing resources and catchments. In conjunction with Drainage Services Department's flood control strategy for West Kowloon, we plan to implement a proposal for an Inter-reservoirs Transfer Scheme which will connect the Kowloon Group of reservoirs with Lower Shing Mun Reservoir using a raw water transfer tunnel. Flood water, instead of being discharged into Victoria Harbour, will be carried through a tunnel and along an existing transfer system to the Sha Tin Water Treatment Works where it will be treated for supply. The project is expected to generate an additional 2.5 million cubic metres to the local yield annually.

Improvements will be made to catchwaters to further ensure the safe and efficient collection of surface water. The first of these projects will involve improvements to 26 kilometres of catchwaters in the Shing Mun, Beacon Hill, Golden Hill and Tai Lam Chung catchwater systems.

EXPANDING THE SUPPLY SYSTEM

As part of our initiative to conserve fresh water, we are extending or upgrading facilities to supply sea water for flushing. A new system is being built for the Pok Fu Lam area involving a seafront salt water pumping station at Telegraph Bay and an associated sea water intake culvert, two sea water service reservoirs at Wah Fu and Pok Fu Lam and a pumping station at Wah Fu with associated water mains. Construction is in good progress and all facilities will be commissioned in 2013 to meet the area's daily demand for sea water of 15 100 cubic metres a day, for a population of 85 000 people. To enhance the reliability of both fresh and sea water supply systems to Central mid-level and high-level areas, three new fresh water reservoirs at Hatton Road and the Peak, and a new fresh water pumping station Kotewall Road are being built. An existing fresh water pumping station at the peak will be relocated while pumps at the existing Western Fresh and Salt Water Pumping Station will be upgraded. Associated water mains are also being laid in the area. The overall project will be completed in early 2013.

Sha Tin's sea water supply system is being upgraded to meet an increase in demand from new housing developments in the area. The upgrade includes a new sea front pumping station and two service reservoirs at Ma On Shan and To Shek as well as an associated mains system. A sea water supply system is being built to serve the North West New Territories which has been relying on fresh water for flushing. The work includes 67 kilometres of salt water mains from Lok On Pai to Yuen Long and Tin Shui Wai, a sea water pumping station at Lok On Pai and a service reservoir at Tan Kwai Tsuen.

To meet the increased demand for flushing water in Wan Chai, Central and Mid-level areas, the sea water supply system is being upgraded with a reprovisioned sea water pumping station, a new service reservoir at Magazine Gap Road, an additional pumping station on Bowen Drive and 7 kilometres of new salt water mains.

Capital Investment

<u>Financial Year</u>	<u>\$million</u>
07/08	2,100
08/09	2,672
09/10	3,924
10/11	4,380
11/12	4,054

Statistics on Mains Bursts Repaired

<u>Financial Year</u>	<u>07/08</u>	<u>08/09</u>	<u>09/10</u>	<u>10/11</u>	<u>11/12</u>
Fresh Water	920	655	447	323	170
Salt Water	897	668	541	287	147
Total	1 817	1 323	988	610	317

SECURING TREATMENT CAPACITIES

The Sha Tin Water Treatment Works and the Tai Po Water Treatment Works are two major facilities used to treat raw water. The Sha Tin plant is entering a major reprovioning phase while the Tai Po plant is being expanded. Both projects will ensure that we continue to have adequate capacity to treat raw water to current drinking water standards, with a provision to meet higher standards in the future. The phasing of works is carefully planned so that at all stages of construction, the treatment capacities of the two facilities will complement each other to produce an overall output that meets the required aggregate demand.

The capacity of the Tai Po Water Treatment Works will be increased from 250 000 cubic metres per day to 800 000 cubic metres per day in two parts at a cost of \$5.6 billion. Part 1, taking the treatment capacity up to 400 000 cubic metres per day, was completed in 2011. With this additional capacity, the south works of the Sha Tin Water Treatment Works can be shut down for in-situ reprovioning while the north works will remain in operation. The reprovioned south works at the Sha Tin Water Treatment Works is scheduled for commissioning in 2019. Part 2 of the Tai Po Water Treatment Works expansion will increase the capacity of the works to 800 000 cubic metres per day and construction is scheduled to begin in 2013 for commissioning in 2017.

IMPROVING OPERATIONAL EFFICIENCY

We have been upgrading our regional SCADA system which is used to oversee facilities such as pumping stations and service reservoirs. The enhanced system will operate from four centralised control centres to improve the operational efficiency of territory-wide water supply networks. Control systems at water treatment works at Ma On Shan, Pak Kong, Sheung Shui and Tsuen Wan have also been upgraded and similar upgrade programmes are underway at Yau Kom Tau and Tuen Mun Water Treatment Works to ensure reliable and effective operations. In line with Reliability-centered Maintenance (RCM) and on-condition monitoring studies, we are continuing to improve the performance of plant equipment. A web-based management system to monitor pumping efficiency has been successfully tested and will be rolled out at 10 pumping stations.

To facilitate maintenance without causing supply interruption, we are adding compartment walls to sea water service reservoirs which currently operate with just single compartments.

When there is an emergency situation such as a main burst, we will first maintain an uninterrupted supply by “shifting the water supply zone”¹ wherever possible. If shifting of the supply zone is not possible, we will provide a temporary fresh water supply to customers to meet their basic need should they face a temporary suspension of supplies due to an emergency which is expected to last for more than three hours. Emergency temporary fresh water supplies will be provided through standpipes, water wagons or water tanks as appropriate. To enhance the service, we are increasing our fleet of water wagons and, by 2013, we will have five additional wagons, doubling our fleet size.

MANAGING ASSETS

We rely on our physical infrastructure to collect, treat and deliver water to the community. Our goal is to manage the life cycle of these assets to achieve a desired level of service cost-effectively and within an acceptable risk framework.

¹ “Shifting the water supply zone” refers to the changes of the zonal boundaries of adjoining supply zones so that the affected area can be supplied by an adjoining source of supply.

We are exploring the use of GIS technology and statistical models in risk-based management of our underground assets. The condition of 900 waterworks installations have been assessed and the required improvement works will be prioritized for phased implementation. RCM studies have been completed at one water treatment works and two key pumping stations. They will form the basis of a comprehensive model of maintenance strategies for mechanical and electrical assets.

In early 2012, we rolled out an enhanced Slope Management System which aligns with the slope data and format adopted by the Civil Engineering and Development Department. The enhancement included the introduction of the “new Priority Ranking System”. This helps us to prioritise slope upgrading works more efficiently.

Construction Programmes and Progress of Works under Replacement and Rehabilitation Project

Cummulative length of water mains replaced or rehabilitated (km)

Month/Year	2000											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Cummulative Length(Actual)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cummulative Length(Target)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2001											
Cummulative Length(Actual)	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.4	3.9	4.5	5.1
Cummulative Length(Target)	0.0	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4
	2002											
Cummulative Length(Actual)	5.7	6.1	6.7	7.1	7.9	9.0	9.8	11.4	12.0	12.9	14.2	16.4
Cummulative Length(Target)	4.8	5.2	5.6	6.0	6.4	6.8	7.8	8.8	9.8	10.8	11.8	12.8
	2003											
Cummulative Length(Actual)	17.8	18.0	18.3	18.5	18.6	18.8	19.9	21.1	22.0	23.5	25.1	27.8
Cummulative Length(Target)	13.8	14.8	15.8	16.8	17.8	18.8	19.8	20.8	21.8	22.8	23.8	24.8
	2004											
Cummulative Length(Actual)	29.3	31.0	34.7	34.7	40.3	47.4	47.4	49.8	56.0	62.2	69.4	75.4
Cummulative Length(Target)	26.8	28.8	30.8	32.8	34.8	36.8	38.8	40.8	43.8	46.8	49.8	53.8

	2005											
Cummulative Length(Actual)	85.8	90.1	97.4	105.7	112.9	117.5	123.7	129.3	135.7	142.8	150.6	158.8
Cummulative Length(Target)	57.8	62.8	68.0	73.0	78.0	83.0	89.0	95.0	103.0	111.0	119.0	127.0
	2006											
Cummulative Length(Actual)	165.5	172.4	181.7	187.9	197.2	205.4	211.3	219.1	225.5	233.6	245.8	254.7
Cummulative Length(Target)	135.0	143.0	151.0	159.0	167.0	175.0	183.0	191.0	199.0	207.0	212.0	217.0
	2007											
Cummulative Length(Actual)	263.6	279.5	288.3	298.2	308.0	332.6	342.3	354.9	367.9	382.0	394.0	412.0
Cummulative Length(Target)	222.0	227.0	232.0	237.0	242.0	247.0	289.4	300.0	311.8	324.0	336.6	352.4
	2008											
Cummulative Length(Actual)	429.2	441.6	460.7	478.4	495.9	512.6	532.2	551.3	572.6	602.8	632.6	661.6
Cummulative Length(Target)	370.7	385.3	402.4	421.9	442.3	465.0	515.9	538.2	561.6	585.6	611.6	640.4
	2009											
Cummulative Length(Actual)	697.5	720.4	748.6	804.0	829.8	862.2	893.5	924.8	957.7	1002.9	1053.1	1095.6
Cummulative Length(Target)	666.5	692.6	717.5	749.9	781.8	814.3	847.9	883.2	919.0	952.5	987.5	1027.9
	2010											
Cummulative Length(Actual)	1141.6	1180.3	1225.2	1263.1	1286.4	1312.5	1339.6	1366.4	1387.9	1412.7	1444.3	1464.6
Cummulative Length(Target)	1065.4	1098.6	1133.7	1168.0	1201.7	1240.5	1279.3	1318.2	1357.1	1391.7	1422.1	1450.6
	2011											
Cummulative Length(Actual)	1487.7	1509.6	1535.2	1557.3	1578.0	1597.0	1612.5	1631.4	1649.5	1670.7	1689.1	1711.1
Cummulative Length(Target)	1477.1	1503.1	1529.3	1555.8	1579.8	1608.3	1639.1	1667.1	1696.4	1721.8	1748.4	1777.4
	2012											
Cummulative Length(Actual)	1724.2	1747.4	1770.4									
Cummulative Length(Target)	1803.2	1828.5	1855.2	1882.5	1910.9	1940.0	1970.7	2001.9	2034.1	2066.4	2098.6	2132.0
	2013											
Cummulative Length(Actual)												
Cummulative Length(Target)	2164.6	2197.2	2230.7	2262.8	2290.9	2325.1	2359.4	2393.6	2427.8	2462.1	2494.1	2526.4

	2014											
Cumulative Length(Actual)												
Cumulative Length(Target)	2557.7	2588.0	2615.7	2643.4	2671.1	2698.2	2723.4	2748.6	2773.3	2798.2	2823.0	2847.8
	2015											
Cumulative Length(Actual)												
Cumulative Length(Target)	2869.8	2890.7	2911.6	2930.7	2949.8	2966.6	2977.9	2984.8	2991.7	2996.9	2998.4	3000.0

EFFICIENCY IMPROVEMENT THROUGH IT

Information technology is the corner stone in enabling efficient and effective operations, management controls and decision makings. We will continue to maintain and upgrade our IT infrastructure and application systems and explore new IT solutions to improve efficiency and services to the public. For example, operational staff can access information on water valves and water mains using hand held mobile devices, enabling rapid on-the-spot emergency assessments.

To optimise the pumping of water within the water supply network and reduce energy and electricity cost, we have engaged specialists from the University of Exeter in the UK who with the participation of our staff, are working to develop an advanced genetic algorithm based technology for operational use by the Department. We have also continued our research into technology that can detect leakage in in-service pressurized water mains. This includes the trial use of free-swimming in-line leak detection technology.

CRISIS MANAGEMENT

The Department constantly identifies and manages risks across the entire supply system. Crisis management and the ability to maintain an uninterrupted water supply should any extraordinary event occur are ongoing challenges. A crisis management plan and various contingency plans are in place to maintain a state of preparedness for the rapid mobilisation of resources and the co-ordination of emergency actions.

In March 2012, in preparation for an inter-departmental exercise involving the Government's Daya Bay Contingency Plan, we carried out an internal drill which dealt with a hypothetical off-site incident at the Guangdong Nuclear Power Station. Both desktop and field exercises were successfully conducted to test the effectiveness of our crisis management plan in handling an emergency of this nature.

WATER METER REPLACEMENT PROGRAMME

Up to July 2012, some 1.6 million 15-mm water meters older than 12 years have been replaced. This work is part of a catch-up programme launched in 2006 to enhance the overall accuracy of water meters. Under the Waterworks regulations, a meter shall be deemed to register correctly if its inaccuracy does not exceed +/- 3%.

Finance and Water Charges

KEEPING WATER CHARGES LOW

People in Hong Kong pay less for high quality fresh water than their counterparts in most major cities around the world. The water charges have not been changed since February 1995.

SCALE OF CHARGES

Fresh water for domestic use (other than flushing) is charged per four-month period at rates set out in a four-tier system as follows.

	Charging rate per unit*
Tier 1 for the first 12 units	Free
Tier 2 for the next 31 units	\$4.16
Tier 3 for the next 19 units	\$6.45
Tier 4 for the remainder	\$9.05

* One unit = one cubic metre

Fresh water for other uses is charged at other rates as follows according to the purposes of consumption.

Purpose	Charging rate per unit
Flushing per 4 month period	
— for the first 30 units	Free
— for the remainder	\$4.58
Trade	\$4.58
Construction	\$7.11
Shipping (Non-local Vessels)	\$10.93
Shipping (Local Vessels)	\$4.58
Any purpose other than Shipping (Non-local Vessels) where payment is made against a prepaid ticket	\$4.58

Sea water for flushing is supplied free of charge.

In line with the Government’s general policy to review fees and charges periodically, the Waterworks Accounts Committee, chaired by the Permanent Secretary for Financial Services and the Treasury (Treasury), reviews the Waterworks Operating Accounts annually. The review covers both the water tariff structure and the charging level, taking into consideration a number of factors including the financial performance of waterworks operations, public acceptance and affordability, views of Legislative Council members and any other policy objectives to be pursued. Any proposal for a change of the water tariff structure and/or charging level must be taken to the Executive Council and, if approved, to the Legislative Council to go through the legislative process.

Other than water charges, there are 25 statutory fees items stipulated in the Waterworks Regulations (Cap. 102A). We have been periodically reviewing these fee items in accordance with the Government-wide “user pays” principle which aims at recovering the full cost of providing the services. In the latest fees review exercise, the revision of 24 statutory fee items has been implemented effective from 1 August 2012.

PROFILES OF THE REVENUE FROM WATER CHARGES

During the year 2011-12, some 14 per cent of domestic customers were not required to pay water charges, 41 per cent were paying up to the tier 2 rate of \$4.16 per unit, 21 per cent were paying up to the tier 3 rate of \$6.45 per unit and only 24 per cent were paying up to the tier 4 rate of \$9.05 per unit. For the 2.5 million domestic customers, the average water charge in 2011-12, including those not required to pay any charge, was \$47 per month. This was equal to about 0.3 per cent of the average monthly household expenditure.

An analysis of the water charges by sectors over the past five years is as follows.

\$M	07/08	08/09	09/10	10/11	11/12	%
Trade	890	866	876	896	913	34.4
Domestic	1,378	1,407	1,443	1,408	1,414	53.2
Government	148	159	150	163	155	5.8
Others [#]	152	155	157	160	175	6.6
Total	2,568	2,587	2,626	2,627	2,657	100

[#] including fresh water for flushing

Analysis of revenue and expenditure

The revenue collections include chargeable water supplies, fees, licences, and reimbursable work. In preparing the Waterworks Operating Accounts which present the financial results and positions on an accrual accounts basis, the revenue includes non-cash items, mainly contribution from rates, contribution from free allowance, and water supplies for government uses. The total operating costs include mainly staff cost, purchase cost of Dongjiang water, depreciation, operating, administration and other expenses. An analysis of the revenue and expenditure over the past five years is as follows.

Revenue (\$million)

Financial Year	07/08	08/09	09/10	10/11	11/12
Chargeable Supplies	2,420.1	2,428.6	2,475.8	2,463.9	2,502.6
Contribution from rates	2,593.8	2,762.0	2,771.0	2,692.3	2,947.4
Free Allowance	916.2	934.6	1,025.5	1,112.8	1,173.4
Supplies to Government Establishments	147.8	158.8	150.0	163.2	154.5
Fees and charges and others	77.6	40.7	20.7	22.3	29.0
Total	6,155.5	6,324.7	6,443.0	6,454.5	6,806.9

Distribution of Household Average Monthly Bill 2011/12

\$0 = 14%

\$1-\$25 = 32%

\$26-\$50 = 22%

\$51-\$75 = 12%

Above \$75 = 20%

Expenditure (\$million)

Financial Year	07/08	08/09	09/10	10/11	11/12
Staff cost	1,326.0	1,361.7	1,303.2	1,300.4	1,401.3
Operating, Administration & Other Expenses	1,530.3	1,520.9	1,589.3	1,635.6	1,679.7
Dongjiang water	2,494.8	2,621.4	3,010.0	3,200.0	3,397.1
Depreciation	1,112.6	1,150.3	1,189.6	1,273.8	1,353.5

Total	6,463.7	6,654.3	7,092.1	7,409.8	7,831.6
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The Department is committed to providing services as cost effectively as possible. We have made substantial investment in fixed assets, equipment, information technology and human resources to improve the operating efficiency and staff productivity, and to meet the demand for higher quality of services by the public. The additional efforts and resources we have put in have proved to be rewarding as illustrated by the achievements of our performance targets and indicators as well as the satisfaction level of our customers. To take an example on the Department's effort in enhancing meter accuracy, we have been implementing our aged meter replacement programme since 2006. Up to July 2012, some 1.6 million aged 15-mm meters have been replaced. The overall percentage of meters in the whole meter fleet that have a measurement accuracy of no more than 3 per cent deviation from the actual consumption volume has been increased from 92.8 per cent in 2006-07 to 95.3 per cent in 2011-12. We will continue the efforts in the future. Our customers and the public at large can be rest assured that we will exercise strict financial discipline and we will be cost conscientious in delivering our quality service to meet the demand of customers, a target which is our vision and accorded the first priority among our missions.

Operating in a Sustainable Manner

The Water Supplies Department is committed to securing, conserving and protecting water resources for current and future generations in a sustainable manner. We draw on our partnerships within Hong Kong as well as across the region to achieve a sustainable use of water resources, energy conservation and environmental protection.

The Department is committed to the following objectives to:

- maintain strict compliance with environmental regulations
- optimise the use of electricity and fuels
- limit gaseous emissions
- minimise the consumption of glossary items in offices and the use of chemicals in the water treatment processes
- reduce water loss across the distribution system
- minimise environmental impacts that can arise from construction work
- reduce the quantities of solid, liquid and chemical wastes generated by our laboratories, workshops and plant installations
- encourage water conservation and, where possible, recycle effluent as reclaimed water
- reduce noise generated by pumping operations
- encourage green roof designs

ENERGY CONSUMPTION

As one of Hong Kong's largest consumers of electricity, we are focusing on measures to reduce our energy consumption and developing viable renewable energy options.

ENERGY SAVING ACHIEVEMENTS

Over the past year, we have succeeded in reducing energy consumption in offices by 3.2 per cent. On the other hand, as the rainfall in 2011 was lower-than-average, more energy was required to transfer water by pumping. This applied both to water from Dongjiang and water collected locally within the territory. Against such a background, ongoing energy conservation measures have been vigilantly taken through meticulous water supply planning and plant operations. Strong emphasis has been placed on 'green' housekeeping across all installations. We succeeded in keeping the increase in total energy consumption to only slightly higher than that of a normal year.

We have also made a concerted effort with our business partners to enhance the sustainability of all water works infrastructure. The promotion and use of water saving equipment and an increasing awareness of the need for water and energy conservation within the community has also helped us meet our energy saving objectives.

Per Capita Electricity Consumption (Fresh Water and Raw Water)*

<u>Financial Year</u>	<u>kWh/head/year</u>
07/08	83.2
08/09	80.7
09/10	79.64
10/11	78.33
11/12	82.44

Unit Electricity Consumption (Fresh Water and Raw Water)

<u>Financial Year</u>	<u>kWh/m³</u>
07/08	0.606
08/09	0.588
09/10	0.586
10/11	0.593
11/12	0.629

Per Capita Electricity Consumption (Sea Water)*

<u>Financial Year</u>	<u>kWh/head/year</u>
07/08	19.5
08/09	19.4
09/10	19.1
10/11	19.1
11/12	19.48

Unit Electricity Consumption (Sea Water)

<u>Financial Year</u>	<u>kWh/m³</u>
07/08	0.387
08/09	0.387
09/10	0.382
10/11	0.388
11/12	0.396

Office Electricity Consumption Per Unit Floor Space

<u>Financial Year</u>	<u>kWh/m²</u>
07/08	138.5
08/09	136.3
09/10	135.4
10/11	133.3
11/12	129.1

Per Capita Domestic Fresh Water Consumption *

<u>Financial Year</u>	<u>Litres/day</u>
07/08	127.1
08/09	129.1
09/10	131.4
10/11	128.9
11/12	129.6

Per Capita Flushing Water Consumption (Fresh Water & Sea Water)*

<u>Financial Year</u>	<u>Litres/day</u>
07/08	95.4
08/09	92.6
09/10	95.6
10/11	94.7
11/12	95.5

Paper Consumption

<u>Financial Year</u>	<u>Reams</u>
07/08	30 268
08/09	29 324
09/10	29 355
10/11	30 078
11/12	29 129

GF and Departmental Forms Consumption

<u>Financial Year</u>	<u>1 000 sheets</u>
07/08	15 112
08/09	27 109
09/10	20 883
10/11	27 950
11/12	27 311

Envelopes Consumption

<u>Financial Year</u>	<u>Envelopes</u>
07/08	174 082
08/09	207 817
09/10	195 459
10/11	258 167
11/12	156 040

* Based on the population benchmark from the results of the 2011 Population Census, the population figures from mid-2007 to mid-2011 have been revised. The revision has incorporated more estimates of population changes that were not yet available at the time when the previous population figures were prepared. Consequently, the per capita consumption figures and population served as from 2007 onwards have been revised as well.

NEW TECHNOLOGY AND EQUIPMENT

Where possible we have established programmes along the supply chain to produce better economies in the life-cycle cost of assets and service operations. Technology that involves variable speed pumping, intelligent scheduling of pump operations and online monitoring and control of the distribution network have all effectively reduced energy requirements. Siphon inlet pipes are being developed for service reservoirs, replacing inlet mains which require a higher level of energy to operate.

RENEWABLE ENERGY INITIATIVES

Currently we are pursuing the development of hydropower and wind and solar energy technologies for use along the supply chain. At the Tuen Mun Water Treatment Works we are installing two 180kW turbine generator units to generate electricity for use at the plant. The first of these generators will be ready for commissioning in 2013 to harvest 1 450 megawatt hours of electricity from renewable energy annually, which is equivalent to a reduction of 1 000 tonnes of CO₂ emissions from burning fossil fuels.

An in-line hydro power harnessing device was developed jointly with the Hong Kong Polytechnic University to supply electricity to monitoring equipment installed in areas where existing electricity supplies cannot be delivered readily. A patent was granted by the Intellectual Property Department in December 2011 and a Silver Medal was awarded at the Geneva Invention Expo 2012 in recognition of this innovative design.

At the Red Hill Water Treatment Works, we are testing a new design for a vertical wind turbine to complement the conventional wind turbines and solar panels that have been used in various waterworks installations.

Technologies that optimise the energy required to operate pumps throughout the supply and distribution systems are being studied. We continue to work with experts from the Centre for Water Systems at the University of Exeter in the UK and the local engineering sector to test the intelligent methodology of on-line pump control systems under Hong Kong conditions. We are also exploring the opportunities of using variable speed pumps to reduce energy consumption in both existing and new pumping plants.

VOC Consumption for In-house Work

Financial Year	09/10	10/11	11/12
Paints, Adhesives and Sealants (kg)	668	925	649
Others (kg)	928	1 011	903

INFORMATION ON POOL TRANSPORT

	No. of Government Vehicles in Operation			Total Fuel Consumption (Litres)			Total Mileage (km)		
	09/10	10/11	11/12	09/10	10/11	11/12	09/10	10/11	11/12
Diesel	23	19	18	38 464	33 756	30 619	182 934	227 977	209 738
Petroleum	206	205	196	534 765	517 113	461 144	2 813 529	3 605 776	3 255 439
Hybrid (Petrol/Electric)	–	20	21	–	50 450	53 834	–	351 783	376 407
LPG	6	8	8	28 326	29 184	36 171	81 221	90 403	115 208
Electricity	–	1	3	–	–	–	–	5 709	16 437

EMISSIONS

(Figures in Tonnes)	CO ₂			SO ₂			NO _x			RSP		
	09/10	10/11	11/12	09/10	10/11	11/12	09/10	10/11	11/12	09/10	10/11	11/12
Direct Emissions												
Vehicle fleet (Diesel)	100	88	80	-	-	-		1	1	-	-	-
Vehicle fleet (Petrol)	1 384	1 220	1 215	-	-	-		1	1	-	-	-
Vehicle fleet (LPG)	47	49	61	-	-	-	-	-	-	-	-	-
Indirect Emissions												
Electricity Consumed (Kowloon and New Territories)		324 992	368 802		220	181		313	363		16	14
Electricity Consumed (Hong Kong Island)		51 179	56 179		95	27		70	58		2	1
Total	391 046	377 528	426 337		315	208		385	423	29	18	15

CLEAN AIR CHARTER COMMITMENTS

Air emission levels at all water treatment works and pumping stations have improved and by limiting where possible our use of electricity from the city grid and using alternative energy sources, we have indirectly assisted in the reduction of general emissions.

We are equally vigilant about the sources of direct emissions arising from our vehicle fleet by strictly controlling the use of vehicles and replacing petrol driven vehicles with hybrid and electric cars to reduce fuel consumption. By replacing diesel fuel with LPG, our transport fleet has also reduced its emissions on a kilometric basis.

In the award of contracts for the design and construction of facilities, we look for design elements, materials and work processes that, where practical, limit environmental impacts. The use of materials and chemicals containing volatile organic compounds is closely monitored.

Internally, our culture of environmental care and awareness is reflected in our day to day business from electronic communications and documentation in offices through to aspects of operations within the supply chain. Data loggers and other electronic devices have resulted in an information system that is reliable, easily accessible and paperless.

GREENING THE ENVIRONMENT

Across catchments and around reservoirs and treatment facilities, we have continued to implement a programme of environmental protection and enhancement. Our Landscape Services Unit cares for almost 50 000 trees which have been planted in or around water works installations and facilities. An emphasis has been placed on native trees and careful tree management. In line with Government guidelines, we have

carried out a comprehensive tree risk assessment identifying trees with possible structural or health problems. These trees will be monitored and mitigation measures taken if required.

At the same time, environmental design is being increasingly incorporated into facilities. About 30 rooftops at offices and water supply installations have been covered with top soil and planted in 15 colourful plant species. This enhances the energy performance of the buildings while creating a rooftop surface that is often enjoyed by staff.

MAINTAINING QUALITY FROM SOURCE TO TAP

Public confidence in the quality of drinking water is critical. Hong Kong's treated fresh water is produced in accordance with international guidelines. However, ensuring that the same quality of water emerges from the taps of homes, offices or other places of work or recreation, places a responsibility on others as well. Building owners need to maintain and manage the operation of their private plumbing systems.

The Department's Quality Water Recognition Scheme for Buildings now covers 1 080 000 domestic households with 3 400 gold, silver and blue certificates issued last year in recognition of the efforts paid by the participants in maintaining the plumbing systems inside buildings properly for safe upkeeping of quality water up to the consumer's taps. Over the past years, the Department also worked closely with the Housing Authority on the introduction of a twin-tank water supply system for buildings. The system, which is basically a two-compartment roof tank design, facilitates cleansing of one compartment whilst maintaining water supply to residents through the other compartment. It is an enhancement of the conventional one-compartment design by the addition of a central partition wall and some ancillary pipeworks and equipment at a minimal extra cost. With such a design in place, cleansing of water tanks to improve water quality in buildings can be carried out as and when required without sacrificing the convenience of customers' daily life.

Encouraging Conservation

We actively strive to contain water demand through conservation. This is achieved primarily through upgrades to our distribution system to prevent water loss and through community-related water conservation measures that are introduced in a phased manner.

The domestic water consumption study involving more than 1 000 homes has given us a clearer understanding of water consumption habits in households and the effectiveness of our water conservation programmes. A series of conservation and awareness initiatives for households will be prepared based on the survey findings.

STEMMING WATER LOSS

In addition to new technologies introduced to lessen water loss from the supply network, we have conducted water efficiency audits to study water use practices in selected public facilities and developed best water efficiency practice guidelines for them. The objective is to reduce overall water consumption in Government owned facilities. The review began with our own installations and was extended this year to the parks and swimming pools operated by the Leisure and Cultural Services Department. The process enables us to develop water saving guidelines without compromising the level of services provided to the public. The review exercise will be extended to other major water users within Government.

ILLEGAL WATER USE

It is an offence under the Waterworks Ordinance (WWO) to draw water illegally from the waterworks without a metered measurement by the Water Authority. The Department is responsible for administering the Ordinance and for taking enforcement action against infringements. Bulk meters have been installed at some existing large housing estates and in rural villages to monitor consumption and identify leakage and unauthorised use. Over the past 12 months, the Department's Prosecution Unit instituted 89 prosecutions against illegal use of water, resulting in convictions in all cases. Publicity and education programmes on the prevention of illegal water use have been stepped up in parallel with the Department's extensive water conservation promotion activities. We have also set the following performance targets for 2012/13:

<u>Actions</u>	<u>Targets</u>
Time for initiating an investigation after receiving a complaint on suspected unauthorised water consumption:	80% within 1 working day
Publicity campaigns and seminars for promotion of combating unauthorised water consumption:	60 nos.
Training sessions for officers of WSD and other departments on detecting and reporting unlawful water taking activities:	15 nos.

DOMESTIC WATER SAVING EQUIPMENT

The Water Efficiency Labelling Scheme (WELS) was introduced in 2009 to encourage consumers to use appliances and equipment that conserve water. The scheme began with labels for water efficient shower heads and has since been extended to include labels for water efficient taps, washing machines and urinal equipment. A consultancy study launched to review overseas standards on water saving devices and to develop a technical standard for Hong Kong is nearing completion. This technical standard will apply to all Government projects with the aim of reducing water consumption.

Private developers are also being encouraged to give priority to the use of water saving devices and water conservation features in both new developments and renovation projects. Working with the Hong Kong Green Building Council, and the Building Environmental Assessment Method Plus Scheme, credits will be awarded to designs that contain conservation features. We have continued implementing our programme of retrofitting plumbing fixtures with water saving devices in government buildings and schools.

PUBLICITY AND EDUCATION

We have stepped up our water conservation public education and promotional work. Water Resources Education Centre will be established in our new regional office in the New Territories West areas. The centre will have different exhibition zones focusing on the water cycle, fresh water resources in Hong Kong and other part of the world, our water supply history, water treatment, new water sources, water conservation and total water management. A temporary centre is being set up at the Department's Mongkok office initially before the new regional office and the main centre is in place.

Open days at water treatment facilities during the year continued to help people understand the operational aspects of Hong Kong's supply system while travelling road shows in different schools focused on the water cycle, water treatment and the scarcity of water in many parts of the world.

Our design competitions with conservation as a theme are attracting interest. The Water Conservation Design Competition resulted in creative designs with strong conservation messages produced by students at tertiary education institutes, and staff within the property management sector and the catering services industry. Winning entries were displayed at the Sha Tin Town hall and various other venues in a roving exhibition of the designs around Hong Kong.

Another competition "Creative Water Saving Ideas to Share with Every Home" was launched in September 2011 on World Water Monitoring Day. This competition aims to gather creative water saving ideas from households and secondary school students.

SCHOOL PROGRAMMES

We target many of our messages and programmes at the younger generation. During the year we distributed "School Water Audit" teaching kits to all primary schools. The kits encourage students to collect and analyse water consumption information at their school, examine areas where water conservation is possible and suggest appropriate measures. The kits include teaching guides, presentation materials, demonstration videos, work sheets, games and practical water saving tips. They also help schools conduct their own water audits.

Our Water Conservation Ambassador Selection Scheme continues to go from strength to strength. Over the past year, it attracted 3 400 participating students from 49 schools to take part. Almost 600 students were selected as ambassadors to spread water conservation messages to their peers and families. The scheme assesses students according to their personal water consumption levels. Those who can show low levels of consumption or have saved water are selected to be ambassadors.

Another education tool is a teaching kit on water supplies distributed to secondary schools as supplementary reference to their liberal studies curriculum. More than 800 sets of the five-book kit which offers an in depth understanding of Hong Kong's water supply have been distributed to schools and public libraries over the past year.

Focusing on Service

We have developed a capable and committed workforce across all disciplines within the Department. In depth training programmes for our 4 404 staff ensure we continue to meet the needs of customers effectively.

INVESTING IN TRAINING

Increased training opportunities to upgrade technical knowledge and management skills, particularly in the area of water treatment, safety and emergency handling, have strengthened operations and day-to-day management. Our \$2.9 million budget produced 9 143 training man-days. In addition to professional development work, this also included vocational and language training for artisans.

Our partnerships with academic institutions and private sector companies on research and development projects has led to collaboration on technological developments and newly created applications. Our culture of innovation has strengthened confidence at all levels and many ideas proffered by staff during the year to improve aspects of our work have been explored and, where practical, introduced.

A training group, formed in 2010 to facilitate the transfer of technology from our consultants to the Department, has held 15 seminars on the planning, design, treatment processes, operation and maintenance of water treatment works. Workshops held by customer service staff successfully enhanced work knowledge and skills amongst staff members who have a direct interface with the public.

A programme involving the voluntary cross-posting of engineers between the Department and other related departments of the Government continues to broaden staff exposure to the work of others and enrich professional experience. A review of the programme was conducted early in 2012 and feedback from participating engineers and their peers was generally positive.

TEAM BUILDING

More than 500 staff participated in a range of sports events held during the year to foster work-life balance. These events, together with inter-departmental tournaments and events held by industry partners, continue to help build a cohesive team. To celebrate 160 years of public water supplies in Hong Kong, the Department also organised a 10 kilometres run at Plover Cove Reservoir in late 2011. More than 400 elite athletes from Government departments and our partner organisations participated.

VOLUNTARY WORK

Staff volunteers continued to show their commitment to the community by participating in more than 130 charitable events during the year including fund raising, visits to homes of the elderly and assisting the disabled. A record number of service hours were recorded and 11 staff members received individual gold, silver and bronze awards in recognition of their work.

Training Man-days

<u>Financial Year</u>	<u>Man-days</u>
07/08	9 929
08/09	6 789
09/10	12 932
10/11	8 626
11/12	9 143

Staff Establishment

Financial Year	Professional Staff	Inspectorate & Technical Staff	General & Common Grade Staff	Junior Staff	Total
07/08	334	1 860	1 674	614	4 482
08/09	337	1 914	1 663	568	4 482
09/10	344	1 949	1 619	530	4 442
10/11	345	1 956	1 621	506	4 428
11/12	349	1 957	1 619	479	4 404

CUSTOMER SERVICE

Over the past year, we have undertaken a range of opinion surveys to better understand the needs of our customers.

A survey on the quality of water in buildings revealed that 92.8 per cent of domestic customers are satisfied with the quality of tap water while private property management companies surveyed believe that 97.9 per cent and 94.1 per cent of their clients and residents in residential and non-residential buildings respectively have similar levels of satisfaction. Almost all domestic customers understood the importance of cleaning water tanks regularly and to replace deteriorating water supply installations and facilities.

No. of Man-hours for WSD Volunteers

<u>Financial Year</u>	<u>Man-hours</u>
07/08	760
08/09	941
09/10	882
10/11	2 101
11/12	2 957

Our Quality Water Recognition Scheme for Buildings was well supported by domestic customers and there was a general acknowledgement that the scheme could improve or maintain water quality.

The Customer Telephone Enquiry Centre continued to provide a 24 hour hotline service. Customers can choose to speak with a customer service officer, listen to prerecorded messages and information or obtain application forms, duplicate water bills and information on certain topics by fax. Customer service officers are available for direct contact both on-line and by telephone during office hours and water meter readings can be logged in through a hotline.

Reporting Month	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
Monthly Average Overall	0.17	0.55	0.40	0.21	0.09	0.23
3 Months Moving Average Overall	0.28	0.33	0.38	0.40	0.24	0.18
12 Months Moving Average Overall	0.21	0.23	0.24	0.25	0.24	0.25
Safety Limit for PWP Contracts	0.60	0.60	0.60	0.60	0.60	0.60

AWARDS AND RECOGNITION

Awards received by the Water Supplies Department in 2011-2012 include:

1. The Ombudsman's Awards 2011 for Officers of Public Organisations – Waterworks Inspector/Customer Services, Ng Sik Wah
2. Civil Service Outstanding Service Award Scheme 2011: Inter-departmental Partnership Award – Gold Prize for the entry “Promoting Inter-departmental Cooperative Water Saving Project”; and Team Award (Internal Service) – Bronze Prize for the entry “On-line Water Monitoring System”
3. Social Welfare Department's Gold Award for Volunteer Service – WSD Volunteer Team
4. Hong Kong Council of Social Services' Caring Organisation 2011-2012 logo
5. The Community Chest Corporate & Employee Contribution Programme: Outstanding Award
6. 25th International ARC Awards Bronze Award (non-profit making and governmental organisation) – WSD Annual Report 2009/10
7. 2011 Hong Kong Awards for Environmental Excellence (Public Organisation and Utilities) – Certificate of Merit
8. The Community Chest Corporate & Employee Contribution Programme: CARE Scheme (Civil Service Category) – 3rd Highest Donation

Appendices and Annexes

APPENDICES

- I Annual Fresh Water Consumption and Per Capita Consumption
- II Population in Hong Kong and Population Served with Fresh Water
- III Annual Sea Water Consumption and Population Served with Sea Water
- IV Statistics on Customer Enquiries and Requests for Services
- V Statistics on Customer Complaints
- VI Statistics on Mode of Payment 2011/12

ANNEXES

- I List of WSD Publications available to the Public
- II Customer Enquiry Centres
- III Drinking Water Quality
- IV Operating Accounts*

* The figures for 2011/12 are provisional only and are subject to endorsement by the Waterworks Accounts Committee. The finalised Water Authority Operating Accounts for the year ended 31.3.2012 will be posted on WSD's website upon endorsement by the Waterworks Accounts Committee.

Appendices

APPENDIX I

Annual Fresh Water Consumption and Per Capita Consumption*

Annual Fresh Water Consumption

<u>Year</u>	<u>million cubic metres</u>
2007	951
2008	956
2009	952
2010	936
2011	923

Per Capita Consumption

<u>Year</u>	<u>cubic metres per year</u>
2007	137
2008	137
2009	136
2010	132
2011	131

APPENDIX II

Population in Hong Kong and Population Served with Fresh Water*

Population in Hong Kong

<u>Year</u>	<u>million</u>
2007	6.92
2008	6.96
2009	6.97
2010	7.02
2011	7.07

Population Served with Fresh Water

<u>Year</u>	<u>million</u>
2007	6.91
2008	6.95
2009	6.96
2010	7.01
2011	7.06

APPENDIX III

Annual Sea Water Consumption and Population Served with Sea Water*

Annual Sea Water Consumption

<u>Year</u>	<u>million cubic metres</u>
2007	271
2008	275
2009	271
2010	270
2011	270

Population Served with Sea Water

<u>Year</u>	<u>million</u>
2007	5.43
2008	5.46
2009	5.47
2010	5.51
2011	5.55

* Based on the population benchmark from the results of the 2011 Population Census, the population figures from mid-2007 to mid-2011 have been revised. The revision has incorporated more estimates of population changes that were not yet available at the time when the previous population figures were prepared. Consequently, the per capita consumption figures and population served as from 2007 onwards have been accordingly revised as well.

APPENDIX IV

Statistics on Customer Enquiries and Requests for Services

<u>Year</u>	2007	2008	2009	2010	2011
Letter	265 935	280 055	261 347	279 676	318 986
Telephone	852 526	826 043	902 314	888 857	901 758
Counter	358 909	360 747	384 348	348 988	398 985
Total	1 477 370	1 470 845	1 548 009	1 517 521	1 619 729

APPENDIX V

Statistics on Customer Complaints

<u>Year</u>	2007	2008	2009	2010	2011
Account-Related [#]	51	58	71	78	92
Non-Account-Related	7 789	9 179	8 517	7 763	7 169
Total	7 840	9 237	8 588	7 841	7 261

[#] Account-related complaints from District Councils, LegCo and Ombudsman.

APPENDIX VI

Statistics on Mode of Payment 2011/12

<u>Mode</u>	<u>Total No. of Transactions</u>	<u>Percentage (%)</u>
In Person	3 183 100	45.3
By Post	134 100	1.9
Autopay	831 800	11.9
Payment by Phone	915 000	13.0
ATM	588 000	8.4
Internet	1 372 300	19.5
Total	7 024 300	100.0

Annexes

ANNEX I

LIST OF WSD PUBLICATIONS AVAILABLE TO THE PUBLIC

All publications are available on the WSD homepage and in both English and Chinese except where indicated.

PUBLICATIONS

Available at the online Government Bookstore

- Hong Kong's Water
- Waterworks Ordinance and Regulations

PAMPHLETS/LEAFLETS/BOOKLETS

Available free at all Customer Enquiry Centres

- Employment of Licensed Plumbers
- A Guide to Cleansing of Fresh Water Storage Tanks
- Proper Use of Fire Fighting Hose Reels in Buildings
- How to Apply for Water Supply
- Installation of Electric Thermal Storage Type Water Heater for Domestic Purpose
- Maintenance of Water Supply Systems in Private Housing Estates/Buildings
- Performance Pledge
- Waterlink Newsletter
- Consumer Guide Book
- Fun of Fishing
- Quality Water Recognition Scheme for Buildings Brief Introduction
- Fresh Water Plumbing Maintenance Guide
- Electronic Services
- Effect of Red Tides on Seawater for Toilet Flushing
- Unlawful Taking of Water Is Prohibited
- Departmental Leaflet
- Meter Testing Laboratory
- Advice for Consumers on High Consumption
- Water Treatment and Quality Control in Hong Kong
- Water Supply Technical Fault Complaints
- Consumer's Responsibility
- Guidelines on Water Supply Application for Food Business (Restaurant/Kitchen)

AVAILABLE UPON REQUEST OR AVAILABLE AT WSD HEADQUARTERS

- Total Water Management in Hong Kong
- Key Facts
- Au Tau Water Treatment Works
- Sha Tin Water Treatment Works
- Ma On Shan Water Treatment Works
- Pak Kong Water Treatment Works
- Ngau Tam Mei Water Treatment Works
- Tai Po Water Treatment Works
- Siu Ho Wan Water Treatment Works
- Tai Tam Waterworks Heritage Trail
- Tai Tam Tuk Raw Water Pumping Station
- Hong Kong: The Facts (Water, Power and Gas Supplies)
- Leaflet on “Little Drop’s Marvellous Journey”
- Warning Sticker – Misuse of Flushing Water
- Warning Sticker – Misuse of Fire Services Water
- Sticker – “Treasure every drop”
- Poster on “Water Conservation Starts from Home” in 5 Languages (Chinese/English/Indonesian/Tagalog/Thai)
- Poster on “Inspect and maintain plumbing regularly to prevent water leaks”
- Poster on “Quality Water Recognition Scheme for Buildings”
- Poster on “Save Water for the Future Every Drop Counts”
- Poster on “Save Water Take Shorter Showers”
- Leaflet to Trade on “Water Efficiency Labelling Scheme – Showers for Bathing”
- Leaflet to Public on “Water Efficiency Labelling Scheme – Showers for Bathing”
- Leaflet to Trade on “Water Efficiency Labelling Scheme – Water Taps”
- Leaflet to Public on “Water Efficiency Labelling Scheme – Water Taps”
- Leaflet to Trade on “Water Efficiency Labelling Scheme – Washing Machines”
- Leaflet on “Water Conservation Starts from Home” (Chinese/English/Indonesian/Tagalog/Thai)
- Annual Report – Water Supplies Department 2010 – 2011
- Annual Report – Water Supplies Department 2009 – 2010
- Annual Report – Water Supplies Department 2008 – 2009
- Annual Report – Water Supplies Department 2007 – 2008
- Annual Report – Water Supplies Department 2006 – 2007
- Annual Report – Water Supplies Department 2005 – 2006
- Annual Report – Water Supplies Department 2004 – 2005
- Annual Report – Water Supplies Department 2003 – 2004
- Annual Report – Water Supplies Department 2002 – 2003
- Annual Report – Water Supplies Department 2001 – 2002
- Annual Report – Water Supplies Department 2000 – 2001
- Annual Report – Water Supplies Department 1999 – 2000
- Annual Report – Water Supplies Department 1998 – 1999

- Annual Report – Water Supplies Department 1997 – 1998*
- Annual Report – Water Supplies Department 1996 – 1997*

AVAILABLE ON WSD HOMEPAGE ONLY

- General Information on the Use of Different Types of (Corrosion Resistant Pipe) Materials as Inside Service in Buildings
- Installation Notes of Different Types of Corrosion Resistant Pipe Materials as Inside Service in Buildings
- Hong Kong Waterworks Standard Requirements for Plumbing Installation in Buildings
- WSD Circular Letters Issued to Licensed Plumbers and Authorised Persons
- Handbook on Plumbing Installation for Buildings

ANNEX II

CUSTOMER ENQUIRY CENTRES

Hong Kong

- Wan Chai Customer Enquiry Centre
1/F Immigration Tower, 7 Gloucester Road, Wan Chai

Kowloon

- Mong Kok Customer Enquiry Centre
G/F 128 Sai Yee Street, Mong Kok

New Territories

- Tai Po Customer Enquiry Centre
4/F Tai Po Government Offices, 1 Ting Kok Road, Tai Po Market
- 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

ANNEX III

DRINKING WATER QUALITY FOR THE PERIOD OF APRIL 2011 – MARCH 2012

Part A. Microbiological quality

General Points

- Hong Kong enjoys one of the safest water supplies in the world. We monitored the quality of our drinking water according to the World Health Organization's (WHO) Guidelines for Drinking-water Quality (2008). The WHO recommends a set of Guideline Values (GVs) representing the concentration of constituents in drinking water that will not result in any significant health risk to a consumer weighing 60 kg over a lifetime consumption of 2 litres per day for 70 years.
- In extreme cases of contamination, we will take concerted actions with the Department of Health. The public will be informed to take appropriate measures if necessary.
- Samples were taken at water treatment works, service reservoirs, connection points and consumer taps and analysed at site and in WSD's laboratories by WSD's qualified staff.
- During this period, over 26,000 treated water samples were taken for microbiological analyses.
- The drinking water quality for this period fully complied with the World Health Organization's Guidelines for Drinking-water Quality (2008).
- Compliance is based on the annual average of monitoring data in accordance with international practice.

Parameter	Unit	WHO 2008 Guideline Value	Monitoring Data (04/2011 – 03/2012)			Compliance
			Minimum	Maximum	Average	
E. coli	cfu* per 100mL	0	0	0	0	✓
Total Coliforms [#]	cfu* per 100mL	–	0	0	0	–
Cryptosporidium [@]	no. of oocyst per L	–	0.00	0.00	0.00	–
Giardia [@]	no. of cyst per L	–	0.00	0.00	0.00	–

* colony forming unit (cfu)

WHO 2008 has not established health-related GV for Total Coliforms.

@ Although the WHO has not established any health-related GV for Cryptosporidium or Giardia in drinking water, we also monitor Cryptosporidium and Giardia in our drinking water. The monitoring data of 0.00 per litre represents no oocyst or cyst detected in a volume of not less than 100 litres of treated water sample.

Part B. Chemicals of health significance as described by World Health Organization's Guidelines for Drinking-water Quality 2008

General Points

- Hong Kong enjoys one of the safest water supplies in the world. We monitored the quality of our drinking water according to the World Health Organization's (WHO) Guidelines for Drinking-water Quality (2008). The WHO recommends a set of Guideline Values (GVs) representing the concentration of constituents in drinking water that will not result in any significant health risk to a consumer weighing 60 kg over a lifetime consumption of 2 litres per day for 70 years.
- Some GV's are recommended by WHO as provisional GV's where available health effect information is limited.
- Occasional deviations above the WHO GV's do not mean that the water is unsuitable for consumption. Large safety margins have been allowed for in the derivation of the GV's.
- In extreme cases of contamination, we will take concerted actions with the Department of Health. The public will be informed to take appropriate measures if necessary.
- Samples were taken at water treatment works, service reservoirs, connection points and consumer taps and analysed at site and in WSD's laboratories by WSD's qualified staff.
- The drinking water quality for this period fully complied with the World Health Organization's Guidelines for Drinking-water Quality (2008).
- Compliance is based on the annual average of monitoring data in accordance with international practice.

Parameter	Unit	WHO 2008	Monitoring Data (04/2011 – 03/2012)			Compliance
		Guideline Value	Minimum	Maximum	Average	
Acrylamide	µg/L	0.5	< 0.4	< 0.4	< 0.4	✓
Alachlor	µg/L	20	< 5.0	< 5.0	< 5.0	✓
Aldicarb	µg/L	10	< 2.5	< 2.5	< 2.5	✓
Aldrin and Dieldrin	µg/L	0.03	< 0.008	< 0.008	< 0.008	✓
Antimony	mg/L	0.02	< 0.001	< 0.001	< 0.001	✓
Arsenic	mg/L	0.01(P)	< 0.001	< 0.001	< 0.001	✓
Atrazine	µg/L	2	< 0.50	< 0.50	< 0.50	✓

Parameter	Unit	WHO 2008	Monitoring Data (04/2011 – 03/2012)			Compliance
		Guideline Value	Minimum	Maximum	Average	
Barium	mg/L	0.7	0.004	0.031	0.019	✓
Benzene	µg/L	10	< 2.5	< 2.5	< 2.5	✓
Benzo(a)pyrene	µg/L	0.7	< 0.0020	< 0.0020	< 0.0020	✓
Boron	mg/L	0.5 (T)	< 0.02	0.04	0.02	✓
Bromate	µg/L	10 (A,T)	< 2.5	< 2.5	< 2.5	✓
Bromodichloromethane	µg/L	60	< 15	20	< 15	✓
Bromoform	µg/L	100	< 25	< 25	< 25	✓
Cadmium	mg/L	0.003	< 0.001	< 0.001	< 0.001	✓
Carbofuran	µg/L	7	< 1.2	< 1.2	< 1.2	✓
Carbon tetrachloride	µg/L	4	< 0.50	< 0.50	< 0.50	✓
Chlorate	µg/L	700 (D)	< 175	< 175	< 175	✓
Chlordane	µg/L	0.2	< 0.050	< 0.050	< 0.050	✓
Chlorine	mg/L	5 (C)	< 0.1	1.4	0.6	✓
Chlorite	µg/L	700 (D)	< 50	< 50	< 50	✓
Chloroform	µg/L	300	< 50	60	< 50	✓
Chlorotoluron	µg/L	30	< 7.5	< 7.5	< 7.5	✓
Chlorpyrifos	µg/L	30	< 7.5	< 7.5	< 7.5	✓
Chromium	mg/L	0.05 (P)	< 0.001	< 0.001	< 0.001	✓
Copper	mg/L	2	< 0.003	0.048	< 0.003	✓
Cyanazine	µg/L	0.6	< 0.15	< 0.15	< 0.15	✓
Cyanide	mg/L	0.07	< 0.01	< 0.01	< 0.01	✓
Cyanogen chloride (as CN)	mg/L	0.07	< 0.02	< 0.02	< 0.02	✓
2,4-D (or 2,4-dichlorophenoxyacetic acid)	µg/L	30	< 7.5	< 7.5	< 7.5	✓
(or 4-(2,4-dichlorophenoxy) butyric acid)	µg/L	90	< 22	< 22	< 22	✓
DDT and metabolites	µg/L	1	< 0.50	< 0.50	< 0.50	✓
Di(2-ethylhexyl)phthalate	µg/L	8	< 2	< 2	< 2	✓
Dibromoacetonitrile	µg/L	70	< 25	< 25	< 25	✓

Parameter	Unit	WHO 2008 Guideline Value	Monitoring Data (04/2011 – 03/2012)			Compliance
			Minimum	Maximum	Average	
Dibromochloromethane	µg/L	100	< 25	< 25	< 25	✓
1,2-Dibromo-3-chloropropane	µg/L	1	< 0.25	< 0.25	< 0.25	✓
1,2-Dibromoethane	µg/L	0.4 (P)	< 0.10	< 0.10	< 0.10	✓
Dichloroacetate	µg/L	50 (T,D)	< 12	18	< 12	✓
Dichloroacetonitrile	µg/L	20 (P)	< 5.0	< 5.0	< 5.0	✓
1,2-Dichlorobenzene	µg/L	1000 (C)	< 250	< 250	< 250	✓
1,4-Dichlorobenzene	µg/L	300 (C)	< 75	< 75	< 75	✓
1,2-Dichloroethane	µg/L	30	< 7.5	< 7.5	< 7.5	✓
1,2-Dichloroethene	µg/L	50	< 12	< 12	< 12	✓
Dichloromethane	µg/L	20	< 5.0	< 5.0	< 5.0	✓
1,2-Dichloropropane	µg/L	40 (P)	< 5.0	< 5.0	< 5.0	✓
1,3-Dichloropropene	µg/L	20	< 5.0	< 5.0	< 5.0	✓
Dichlorprop (or 2,4-DP)	µg/L	100	< 25	< 25	< 25	✓
Dimethoate	µg/L	6	< 1.5	< 1.5	< 1.5	✓
1,4-Dioxane	µg/L	50	< 12.5	< 12.5	< 12.5	✓
Edetic acid (EDTA)	µg/L	600	< 50	< 50	< 50	✓
Endrin	µg/L	0.6	< 0.15	< 0.15	< 0.15	✓
Epichlorohydrin	µg/L	0.4 (P)	< 0.4	< 0.4	< 0.4	✓
Ethylbenzene	µg/L	300 (C)	< 75	< 75	< 75	✓
Fenoprop (or 2,4,5-TP)	µg/L	9	< 2.2	< 2.2	< 2.2	✓
Fluoride	mg/L	1.5	0.11	0.70	0.49	✓
Hexachlorobutadiene	µg/L	0.6	< 0.15	< 0.15	< 0.15	✓
Isoproturon	µg/L	9	< 2.2	< 2.2	< 2.2	✓
Lead	mg/L	0.01	< 0.001	0.003	< 0.001	✓
Lindane	µg/L	2	< 0.50	< 0.50	< 0.50	✓
Manganese	mg/L	0.4 (C)	< 0.01	0.04	< 0.01	✓
MCPA (or 4-(2-methyl-4-chlorophenoxy) acetic acid)	µg/L	2	< 2.0	< 2.0	< 2.0	✓

Parameter	Unit	WHO 2008	Monitoring Data (04/2011 – 03/2012)			Compliance
		Guideline Value	Minimum	Maximum	Average	
Mecoprop (or MCPPE)	µg/L	10	< 2.5	< 2.5	< 2.5	✓
Mercury	mg/L	0.006	< 0.00005	< 0.00005	< 0.00005	✓
Methoxychlor	µg/L	20	< 5.0	< 5.0	< 5.0	✓
Metolachlor	µg/L	10	< 2.5	< 2.5	< 2.5	✓
Microcystin-LR (total)	µg/L	1 (P)	< 0.5	< 0.5	< 0.5	✓
Molinate	µg/L	6	< 1.5	< 1.5	< 1.5	✓
Molybdenum	mg/L	0.07	< 0.0005	0.0019	0.0006	✓
Monochloramine	mg/L	3	< 1.0	< 1.0	< 1.0	✓
Monochloroacetate	µg/L	20	< 10	< 10	< 10	✓
Nickel	mg/L	0.07	< 0.001	0.011	0.003	✓
Nitrate (as NO ₃ ⁻)	mg/L	50	< 2.5	14	5.9	✓
Nitrilotriacetic acid	µg/L	200	< 50	< 50	< 50	✓
Nitrite (as NO ₂ ⁻)	mg/L	3	< 0.004	0.010	< 0.004	✓
N-Nitrosodimethylamine	µg/L	0.1	< 0.025	< 0.025	< 0.025	✓
Pendimethalin	µg/L	20	< 5.0	< 5.0	< 5.0	✓
Pentachlorophenol	µg/L	9 (P)	< 2.2	< 2.2	< 2.2	✓
Permethrin	µg/L	300	< 5.0	< 5.0	< 5.0	✓
Pyriproxyfen	µg/L	300	< 75	< 75	< 75	✓
Selenium	mg/L	0.01	< 0.003	< 0.003	< 0.003	✓
Simazine	µg/L	2	< 0.50	< 0.50	< 0.50	✓
Sodium dichloroisocyanurate (as cyanuric acid)	mg/L	40	< 10	< 10	< 10	✓
Styrene	µg/L	20 (C)	< 5.0	< 5.0	< 5.0	✓
2,4,5-T (or 2,4, 5-trichlorophenoxy acetic acid)	µg/L	9	< 2.2	< 2.2	< 2.2	✓
Terbutylazine	µg/L	7	< 1.8	< 1.8	< 1.8	✓
Tetrachloroethene	µg/L	40	< 10	< 10	< 10	✓
Toluene	µg/L	700 (C)	< 175	< 175	< 175	✓
Trichloroacetate	µg/L	200	< 25	< 25	< 25	✓

Parameter	Unit	WHO 2008	Monitoring Data (04/2011 – 03/2012)			Compliance
		Guideline Value	Minimum	Maximum	Average	
Trichloroethene	µg/L	20 (P)	< 18	< 18	< 18	✓
2,4,6-Trichlorophenol	µg/L	200 (C)	< 50	< 50	< 50	✓
Trifluralin	µg/L	20	< 5.0	< 5.0	< 5.0	✓
Uranium	mg/L	0.015 (P,T)	< 0.0002	0.0008	< 0.0002	✓
Vinyl chloride	µg/L	0.3	< 0.2	< 0.2	< 0.2	✓
Xylenes	µg/L	500 (C)	< 125	< 125	< 125	✓

Note:

- (1) *This is a summary report on drinking water quality.*
- (2) *All values are compiled in accordance with requirements stipulated by the current quality assurance protocol of the Water Science Division of WSD.*
- (3) *For heavy metals and trace organics, 100-300 samples per parameter have been analysed.*
- (4) *According to WHO 2008:*
 - P = provisional guideline value, the available information on health effects is limited.*
 - T = provisional guideline value as calculated guideline value is below the level that can be achieved through practical treatment methods, source protection, etc.*
 - A = provisional guideline value as calculated guideline value is below the achievable quantification level.*
 - D = provisional guideline value as disinfection may result in the guideline value being exceeded.*
 - C = concentrations of the substance at or below the health-based guideline value may affect the appearance, taste or odour of the water, leading to consumer complaints.*

Part C. Other parameters

General Points

Parameter	Unit	Monitoring Data (04/2011 – 03/2012)		
		Minimum	Maximum	Average
pH at 25°C	pH	7.0	9.3	8.5
Colour	Hazen unit	< 3	< 3	< 3
Turbidity	NTU	< 0.1	3.0	0.3
Conductivity at 25°C	µS/cm	57	218	154
Temperature	°C	13.7	34.8	24.0
Total alkalinity (as CaCO ₃)	mg/L	6	57	23
Total hardness (as CaCO ₃)	mg/L	5	68	38
Calcium	mg/L	1.2	20	13
Magnesium	mg/L	0.27	2.4	1.5
Chloride	mg/L	< 5	18	10
Sulphate	mg/L	4	24	14
Ortho-phosphates (as PO ₄)	mg/L	< 0.01	0.05	< 0.01
Iron	mg/L	< 0.01	0.23	< 0.01
Aluminium	mg/L	< 0.01	0.14	0.03
Silica (as SiO ₂)	mg/L	2.6	17	10

Note:

- (1) *This is a summary report on drinking water quality.*
- (2) *All values are compiled in accordance with requirements stipulated by the current quality assurance protocol of the Water Science Division of WSD.*

ANNEX IV

WATER AUTHORITY – OPERATING ACCOUNTS*

REVIEW OF THE YEAR 2011/12

For the year ended 31 March 2012

ACTIVITIES
Metered fresh water consumption increased by 0.8% to 626 million cubic metres
FINANCIAL PERFORMANCE
Revenue increased by 5.5%
Expenditure increased by 5.7%
The deficit increased from \$955.3 million in 2010-11 to \$1,024.7 million in 2011-12
Return on Average Net Fixed Assets remained at -2.3%.

OPERATING ACCOUNT

For the year ended 31 March 2012

			Restated
		2012	2011
	Note	\$M	\$M
Revenue	2	6,806.9	6,454.5
Expenditure	3	7,831.6	7,409.8
Deficit before taxation		(1,024.7)	(955.3)
Taxation	1(e) & (f) and 4	–	–
Deficit after taxation	1(j)	(1,024.7)	(955.3)

The annexed notes form part of these accounts.

* *The figures for 2011/12 are provisional only and are subject to endorsement by the Waterworks Accounts Committee. The finalised Water Authority Operating Accounts for the year ended 31.3.2012 will be posted on WSD's website upon endorsement by the Waterworks Accounts Committee*

FINANCIAL PERFORMANCE MEASURES

For the year ended 31 March 2012

		2012	Restated 2011
	Note	\$M	\$M
Average net fixed assets (ANFA)	1(i) and 5	44,235.0	41,352.8
Actual return		(1,024.7)	(955.3)
Target return		2,875.3	2,687.9
Actual return as % of ANFA	1(h)	(2.3%)	(2.3%)
Target return as % of ANFA		6.5%	6.5%

The annexed notes form part of these accounts.

BALANCE SHEET

As at 31 March 2012

		2012	Restated 2011
	Note	\$M	\$M
Net assets employed			
Fixed assets	1(b) & (c) and 5	45,578.6	42,891.3
Current assets	1(d) and 6	2,219.5	2,179.7
Current liabilities	7	(2,039.0)	(1,997.9)
Net current assets		180.5	181.8
		45,759.1	43,073.1
Financed by			
Public capital account	1(j) and 8	45,759.1	43,073.1

The annexed notes form part of these accounts.

NOTES ON 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 calculated to write off the cost of 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%-14.29%
Meters	8.33%
Computer hardware, software and system	10%
Motor vehicles	10%-20%

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

(d) Stocks

Stocks are stated at the lower of cost and net realisable value, using the weighted average cost method to the extent that it is material.

(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 balance sheet date, and any adjustments to tax payable in respect of previous years. No provision for notional profits tax has been made in the accounts as the Authority 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 of all material temporary differences has been made in the accounts as the Authority 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 aggregate 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 Authority.

2. Revenue

	2012	2011
	\$M	\$M
Chargeable supplies	2,502.6	2,463.9
Contribution from rates	1,458.1	1,343.2
Contribution from Government on concessions	1,489.3	1,349.1
Contribution from Government on free allowance to consumers	1,173.4	1,112.8
Supplies to Government establishments	154.5	163.2
Fees, licences and reimbursable works	24.2	18.8
Interest from deposits	4.8	3.5
	6,806.9	6,454.5

The contribution from Government on concessions is to cover the shortfall in contribution from rates resulting from the concession of rates granted during the years.

3. Expenditure

		Restated
	2012	2011
	\$M	\$M
Staff costs	1,401.3	1,300.4
Operating and administration expenses*	1,679.7	1,635.6
Purchase cost of Dongjiang water	3,397.1	3,200.0
Depreciation	1,353.5	1,273.8
	7,831.6	7,409.8

* Starting from 2011-12, the accounting policy has been changed to treat mechanical and electrical spare parts as stocks under current assets. As a result of this prior year adjustment, the total operating and administration expenses for the year ended 31.3.2011 is decreased by \$3.5 million. See also Notes 6 and 8.

4. Taxation

		Restated
	2012	2011
	\$M	\$M
Notional profits tax charge for the year	0.0	0.0
Deferred tax assets/(liabilities) not recognized in respect of:-		
Unused tax loss*	22,476.0	20,296.1
Material temporary difference arising from depreciation allowances	(15,855.2)	(14,694.2)

* As a result of the change in accounting policy mentioned under Note 3, prior year adjustment is made to decrease the unused tax loss as at 31.3.2011 by \$86.1 million.

5. Fixed Assets

	Buildings, Filters, Mains, etc.	Plant and Machinery	Computer Hardware, Software & System	Salt Water Flushing	Plover Cove	High Island	Meters	Motor Vehicles	Assets Under Construct ion	Total
	\$M	\$M	\$M	\$M	\$M	\$M	\$M	\$M	\$M	\$M
Cost										
At 1 April 2011	40,557.6	253.1	315.6	7,972.8	702.0	1,661.2	394.6	66.9	5,780.7	57,704.5
Additions	–	22.6	11.1	–	–	–	35.3	2.6	3,981.9	4,053.5
Transfers	3,050.6	–	3.0	613.0	–	–	–	2.2	(3,668.8)	–
Disposals/ Write off	(68.5)	(0.3)	(0.4)	(27.3)	–	–	(31.0)	(3.4)	–	(130.9)
At 31 March 2012	43,539.7	275.4	329.3	8,558.5	702.0	1,661.2	398.9	68.3	6,093.8	61,627.1
Aggregate Depreciation										
At 1 April 2011	10,429.0	82.6	184.5	2,535.5	392.8	983.4	173.1	32.3	–	14,813.2
Charge for the year	889.7	22.5	30.0	331.0	9.3	29.3	35.6	6.1	–	1,353.5
Written back on Disposals/ Write off	(56.3)	(0.2)	(0.4)	(27.3)	–	–	(31.0)	(3.0)	–	(118.2)
At 31 March 2012	11,262.4	104.9	214.1	2,839.2	402.1	1,012.7	177.7	35.4	–	16,048.5
Net Book Value										
At 31 March 2012	32,277.3	170.5	115.2	5,719.3	299.9	648.5	221.2	32.9	6,093.8	45,578.6
At 31 March 2011	30,128.6	170.5	131.1	5,437.3	309.2	677.8	221.5	34.6	5,780.7	42,891.3

6. Current Assets

		Restated
	2012	2011
	\$M	\$M
Stocks*	101.0	101.0
Debtors	510.0	511.4
Current account with Treasury	1,608.5	1,567.3
	2,219.5	2,179.7

* As a result of the change in accounting policy mentioned under Note 3, prior year adjustment is made to increase the Stocks balance as at 31.3.2011 by \$86.1 million.

7. Current Liabilities

		Restated
	2012	2011
	\$M	\$M
Consumers' and contractors' deposits	1,709.5	1,688.0
Creditors	329.5	309.9
	2,039.0	1,997.9

8. Public Capital Account

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

		Restated
	2012	2011
	\$M	\$M
Balance as at 1 April	43,073.1	39,898.0
Deficit for the year*	(1,024.7)	(955.3)
Prior Year Adjustment*	-	82.6
Additional cash investment by the Government	3,710.7	4,047.8
Balance as at 31 March	45,759.1	43,073.1

* As a result of the change in accounting policy mentioned under Notes 3 and 6, prior year adjustment is made to increase the Public Capital Account balance as at 31.3.2011 by \$86.1 million.

9. Capital Commitments

As at 31 March 2012, the Authority had capital commitments, so far as not provided for in the Operating Accounts, as follows:

	2012	2011
	\$M	\$M
Contracted for	8,625.6	4,159.3
Authorised but not contracted for	4,289.1	5,186.1
	12,914.7	9,345.4

10. Comparative Figures

Certain comparative figures for the year ended 31 March 2011 have been reclassified to conform with the current year's presentation.