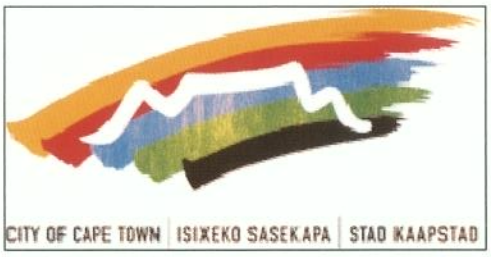


WATER SERVICES DEVELOPMENT PLAN (WSDP)

FOR

CITY OF CAPE TOWN 2011/12 – 2015/16

EXECUTIVE SUMMARY

The guiding document for the service is the WSDP of which this is the Executive Summary and which is updated annually. It is a product of the current IDP process and will become a Sector Plan of the IDP 2011/12 document.

Please note that this version is a minor update of the previous year's document. The next major update will coincide with the next IDP 5-year term of office plan.

Draft 2.4

18 February 2011

C. EXECUTIVE SUMMARY

Introduction with focus on Basic Services

The Water and Sanitation Department has made significant progress in the provision of services since the formation of one administration for the City of Cape Town (CCT), but some critical challenges remain, as summarised below.

Institutional arrangements and strategies have been put in place to overcome the challenges and to meet key policy as well as legislative requirements. Progress on the objectives as set out in DWA's critical policy document, the National Strategic Framework for Water Services (September 2003), were measured at a June 2010 baseline in Table a, to follow below.

However, following on a 2010 review of available data on the current (December 2010) number of informal settlements and the total household estimate in the City, the estimates for both these household figures have now been evaluated significantly higher. The better informal settlement count was obtained by door-to-door surveys found necessary by the Solid Waste Department, replacing the previous aerial photo count which failed to identify all the households residing under one visible roof. The conclusion is reached that previous household numbers were underestimated for the past couple of years, largely increasing the challenge for sanitation provision and to a much lesser extent for water provision.

The number of taps fitted to a single communal standpipe had to be reduced from two to one, to limit the associated problems of excessive grey-water ponding and health risks. This combined with a GPS-survey confirmation of the actual serviceable taps remaining has led to a large drop in the number of available taps, despite the number of standpipes being increased every year for several years.

The re-adjustment in base information limits the usefulness of a year-on-year comparison as required by the DWA indicators, but is nevertheless given along with the latest known information to allow forward planning as per Section C1.3 below.

TABLE a: Water and sanitation historic service provision achievements for the City of Cape Town measured against DWA National Strategic Framework

OBJECTIVE	Actual			Historic Target	Change		
	30-Jun-09	30-Jun-10	31-Dec-10	30-Jun-10	Year-on-year	6m	Actual-to-target
	(A)	(B)	(X)	(C)	(A) to (B)	(B) to (X)	(B) to (C)
1. Access for all to functioning basic water supply by 2010: Achieved in CCT in 2005/06 but lost in 2009/10							
OBJECTIVE	Actual			Historic Target	Change		
	30-Jun-09	30-Jun-10	31-Dec-10	30-Jun-10	Year-on-year	6m	Actual-to-target
(a) Access to basic level of water							
(i) % of households	100.0%	100.0%	98.0%	100.0%	0.0%	-2.0%	0.0%
(ii) % of poor households	100.0%	100.0%	99.4%	100.0%	0.0%	-0.6%	0.0%
2. Access for all to effective basic sanitation by 2010: CCT is aiming for 2015/16 due the magnitude of the requirement							
OBJECTIVE	Actual			Historic Target	Change		
	30-Jun-09	30-Jun-10	31-Dec-10	30-Jun-10	Year-on-year	6m	Actual-to-target
(a) Access to basic levels of sanitation							
(i) % of households	100.0%	100.0%	96.5%	100.0%	0.0%	-3.5%	0.0%
(ii) % of poor households	100.0%	100.0%	93.6%	100.0%	0.0%	-6.4%	0.0%
(b). Informal households ratios							
(i) The number of informal households	116 883	142 783	189 593		22.2%	32.8%	
(ii) Households-to-working taps	10.8	12.6	28.3	12.7	-14.0%	-55.6%	1.2%
(iii) Households-to-working toilets	4.7	4.9	6.3	6.2	-3.6%	-22.6%	27.1%
(iv) Approximate number of working taps	10 768	11 374	6 710	10 968	5.6%	-41.0%	3.7%
(v) Approximate number of working toilets	24 594	29 276	30 176	26 594	19.0%	3.1%	10.1%

To ensure and to measure the level of progress, internal service level targets for the City of Cape Town, over and above the national standards, are in use.

TABLE b: National and City minimum basic service standards compared

Service	National Standard (*)	City Standard
Sanitation	Easy access to a safe, reliable, private toilet facility which is protected from the weather, ventilated, low smell, hygienic, minimises the risk of spreading diseases and enables safe treatment and/or removal of human waste and wastewater in an environmentally sound manner including communicating hygiene.	Ditto but with an added minimum specification of at least 1 toilet per 5 households.
Water	A basic water supply facility within 200m of dwelling, delivering at least	Ditto but with an added

	25 l/ person/ day at a minimum flow of 10 l/min in the case of communal water points, or 6 000 litres of water per month in the case of yard or house connections.	minimum specification of at least 1 tap per 25 households.

(*) As defined in the Strategic Framework for Water Services, Sep-03

To address the backlogs indicated above, the Department of Water and Sanitation has developed a vision which seeks to position it as a leader in the provision of these essential services.

Vision

TO BE A BEACON IN AFRICA FOR THE PROVISION OF WATER AND SANITATION SERVICES

Mission Statement

WE PLEDGE TO ACHIEVE OUR VISION BY CREATING A CENTRE OF EXCELLENCE IN WATER AND SANITATION DEPARTMENT THROUGH:

- ✓ Optimizing resources
- ✓ Implementing environmentally-sustainable interventions
- ✓ Continuous improvement and knowledge management
- ✓ Good governance
- ✓ Customer satisfaction and excellent stakeholder relationships

Values

- ✓ **Integrity**: We maintain the highest level of ethics and fairness in our interaction with each other, our customers and other stakeholders.
- ✓ **Respect:** We respect each other's opinion, beliefs, position and contribution to the Department including those of our customers and other stakeholders. All employees are equal in their contributions.
- ✓ **Customer focus**: We meet customers' needs by providing excellent service, optimal product performance and efficient support system. Our customers are the reason for our existence. The environment is our silent customer who shall receive an equal share of our services.
- ✓ **Trust:** Our business model and relationship is based on trust. A "Yes" shall mean a Yes and a "No" shall mean a No. Our common purpose, integrity and honesty shall constrain us to have trust in each other. Trust shall be felt, experienced, lived and seen in our Departmental family.
- ✓ **Transparency:** We operate safely, openly, honestly and with care for the environment and the community. Transparency shall be defined by the customers and stakeholders we serve.
- ✓ **Professional:** We use the right skills or competencies to find appropriate solutions enriched with compassion, innovation, sustainability, cost-effectiveness, accountability and excellence.

TABLE c: STRATEGIC OBJECTIVES

Strategic Objectives	Target
To implement ISO 9001 for all our services in the next five years	2015/16
To achieve Green Drop status for 60% of the waste water treatment plants	2015/16
To achieve 95% waste water effluent quality	2015/16
To ensure the presence and dominance in Africa of the water-, wastewater- and air pollution-testing services	2015/16
To reduce unaccounted for water to 15% in the next five years	2015/16
To provide basic or emergency sanitation services to all residents of the city	2015/16
To provide basic water to all residents in the city	2015/16
To increase productivity levels by 15%	2015/16
To achieve 90% customer satisfaction levels in all our services	2015/16
To establish an efficient and effective asset management program for the Department	2012/13
To be the reference City for water matters in the country	2015/16
To grow the training school and achieve SETA accreditation for the training modules(e.g. process controllers, artisans)	2012/13
To minimise river systems pollution by reducing sewage overflows by 20%	2015/16
To improve revenue collection to 96%	2015/16
To construct an office block for the department	2015/16
To be information efficient	2012/13
To increase security of supply for the bulk water supply system: percentage potable water production capacity of peak week demand to120%	2016/17
To increase the effluent re-use by 15% of potable demand	2015/16
To roll out automation and remote control pilots on treatments and pump stations	2014/15

Critical challenges

As on ongoing business concern, the Department faces a number of critical challenges which can be clustered into four categories:

(a) Financial perspective

a. Sustainability of the service
b. Cost recovery
c. High financial requirements
d. High debt due to non-payment

(b) Customer perspective

a. Provide basic services expansion
b. Eradicate sanitation backlogs
c. Provide affordable service

(c) Business process perspective

a. Achieve water demand targets through intensified WDM strategy
b. Meet wastewater effluent standards
c. Provide infrastructure to meet City development/growth needs
d. Maintenance of infrastructure to sustain operation

(d) Organisation and Learning perspective (internal)

a. Establish effective institutional arrangement
b. Sufficient staff resourcing, skills retention and development
c. Increase performance and efficiency

The strategies to face these challenges are dealt with where appropriate under the following sections.

C.1 ESSENTIAL QUESTIONS

C.1.1 What is the backlog of water services?

The majority of Cape Town's population, both in formal and informal settlements, receives potable water service levels that generally meet the National minimum standards as required by the Water Services Act 108 (of 1997).

Based on previous informal settlement household estimates, the % households with access to sanitation as monitored on a quarterly basis along with other Key Performance Indicators for the Departmental Scorecard, appeared to exceed 100% at June 2010.

The drastically revised household estimate does mean that the backlog in sanitation provision to a minimum standard of 1 toilet per 5 households has grown again to approximately 38 753 households. With the revised number of households, the % with access to sanitation still translates to 96.5%

However it is acknowledged that many of the toilet types cannot comfortably sustain use by more than 3 households while others work best for only 1 household. Taking these variable servicing ratios and the variation in density of service points from settlement to settlement into account, it is estimated that approximately 88 305 households still need a better service.

Table a shows the large number of toilets installed during the 2009/10 financial year but much work remains. The growing density in many informal settlements constrains Water and Sanitation's ability to adequately provide further sanitation services.

The revised household estimates combined with the necessitated policy change to only use 1 tap per standpipe also mean that the 100% score for households having access to potable water already attained several years ago, has been lost. At the maximum ratio of 25 informal households per tap (a standard set by the City of Cape Town), and with the number of serviceable taps in use confirmed by GPS survey, a backlog of approximately 21 843 is indicated at December 2010. The %

of all households serviced is back at 98.0% while 15.2% of all households in the city are supplied from standpipes.

The maintenance of these temporary services often carry high maintenance cost due to frequent cleaning and frequent repair or replacement due to vandalism. It is not financially sustainable and requires a National initiative or at the very least an order of magnitude improvement in the level of funding from the Equitable Share grant. The cost of these services is to a large extent being subsidised by the formal sector.

C.1.2 What is the status of supply to higher levels of service?

Service levels to all formal developed areas are, as far as can be determined, at the highest level of service: a flush toilet and water connection in-house or yard. This constitutes 82.8% of the consumer households.

C1.3 Cost of eradicating backlogs

To eradicate the sanitation service backlog and service the influx of people in informal settlements, the Water and Sanitation Department is implementing a service provision program that is integral to the 10-year Housing Plan.

The total capital requirement over the next 5 years from 2010/11 to 2015/16 to primarily cover sanitation backlog eradication is estimated at R432.5 M including allowing for a 5% household growth. Part of the funding is also required for the replacement of black buckets as well as to cater for additional service demand growth in informal settlements due to the influx of people.

R12.8M is required to resolve the water backlog and provide for the anticipated growth in demand.

The proposed programme for eradicating the backlog according to the Strategic Objective target of 2015/16 is listed in the following table.

TABLE C1.3 Proposed backlog eradication programme

SANITATION	Baseline Dec10	Gap	Step	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	Total cost (R M)
% all HH served	92.0%	8.0%	1.5%	92.7%	94.2%	95.6%	97.1%	98.5%	100.0%	
% Poor HH served	85.4%	14.6%	2.7%	86.7%	89.4%	92.0%	94.7%	97.3%	100.0%	
% Informal settlement HH served	53.4%	47%	8%	57.7%	66.1%	74.6%	83.1%	91.5%	100.0%	
Toilets needed (Backlog)	30 176	25 972	4 722	32 537	37 259	41 981	46 704	51 426	56 148	
With additional toilets (influx)				33 341	40 088	47 428	55 400	64 052	73 430	
Capital Requirement (R M)	*@ R10 000 per toilet average*			31.6	67.5	73.4	79.7	86.5	93.8	432.54
WATER	**Baseline Dec10**	**Gap**	**Step**	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**Total cost (R M)**
% all HH served	98.0%	2.0%	0.4%	98.2%	98.6%	98.9%	99.3%	99.6%	100.0%	
% Poor HH served	99.4%	0.6%	0.1%	99.4%	99.5%	99.7%	99.8%	99.9%	100.0%	
% Informal settlement HH served	99.4%	11.5%	2.1%	89.5%	91.6%	93.7%	95.8%	97.9%	100.0%	
Taps needed	6710	874	159	6 789	6 948	7 107	7 266	7 425	7 584	
With additional taps (influx)				6 957	7 476	8 029	8 619	9 248	9 918	
Capital Requirement (R M)	*@R4 000 per tap average*			1.0	2.1	2.2	2.4	2.5	2.7	12.83

The City's Housing programme is funded through National grants. Servicing of the informal settlements is funded by the Water and Sanitation department with partial recovery of cost from the national Equitable Share. Depending on the speed of implementing this programme, as for in-situ upgrading or the "decanting" of such settlements to developed formal areas, the informal settlement programme needs to adapt.

C1.4 What is the strategy to eradicate backlogs?

Up to and including 2010, the strategy has been to provide a basic level of service such that at most 5 informal households on average share one toilet. Going forward it is the intention to achieve a more desirable minimum convenience ratio for each type of toilet. For example, some toilet types can only sustainably support 1 household each, while others can service more.

A revised and rationalised Informal Settlement Servicing Strategy is under development, made all the more challenging by the updated larger number of households having to be serviced.

The technology choice and level of service to be provided in informal settlements remains a challenge. In this strategy, the Department has divided all informal settlements into categories of appropriate service standard determined by the availability and status of land, existing infrastructure, hydrology of area and economics of providing a sustainable service as summarised in the following table:

TABLE C1.4a: Servicing Strategy Categories

Cat	Land type	Bulk Infrastructure	Distributed space available within settlement	Service Standard
A1	Govt owned land, occupation permitted	Available within economical distance	Adequate	
			Inadequate	
		Not available within economical distance	Adequate	
			Inadequate	
A2	Private land, occupation permitted	NA (No investment on private land allowed)	Adequate	
			Inadequate	
B	Adverse physical conditions, temporary occupation	NA	Adequate	
			Inadequate	
C	Occupation prohibited	NA	Adequate	
			Inadequate	

No	Service standard target
1	Waterborne sanitation 1:5, taps to 1:25
2	Managed all-in-one waterborne ablution facility with janitorial service, supplemented by porta-pottis on demand. Incorporates taps and basins to 1:25
3	Container or dry sanitation to technology-specific household ratio. Taps to 1:25
4	Managed all-in-one conservancy tank ablution facility with janitorial service, supplemented by porta-pottis on demand. Incorporates taps and basins to 1:25
Note	All service points to be within 100m walking distance of households served

Water and Sanitation Services are ideally opting for dehydration or flush toilets. A promising new prefabricated unit which can serve up to 17 households is being piloted, excellent for the managed ablution facility proposed. The use of pour-flush alternative technology is being discontinued due to operational problems. "Greenfields" housing projects are undertaken by the Housing Department to receive residents moved from land that cannot be developed.

The City subscribes to "the water ladder" concept (as proposed in DWA's "Strategic Framework for Water Services, September 2003"). Whereas the City's priority is to first provide an emergency level of service to households in all settlements, it is also extending the coverage and density of services in each settlement beyond the basic level as funds allow.

TABLE C1.4b: Profile of all Domestic consumers, December 2010

	Consumers with:	No of households
1	Bucket system (Informal settlements)	3 915 (at 1hh/toilet)
2	Consumer installations: Wet (Septic tank, digester or tanker desludge or effluent discharge to an oxidation pond at Works. Also pitliners, chemical toilets, container toilets or porta-potties)	59 122 (at either 1, 2 or 5 hh/toilet)
	Consumer installations: Dry (including VIP toilets, Urine Diversion, composting systems)	1 031 (at either 2 or 5 hh/toilet)
3	Intermediate or Full waterborne (Informal Settlements)	37 220 (at 5 hh/toilet)
4	Full waterborne (Formal developments)	913 589
5	**Total serviced**	**1 014 877**
6	Total population	1 103 182

C1.5 What is the status of all water and sanitation infrastructure?

The existing infrastructure condition is deteriorating due to continued under-funding for essential maintenance/ replacement of aging assets over an extended period. Major pipe collapses or bursts have occurred over the past years and such pipes are in urgent need of extensive repair or even replacement.

An estimated minimum of R60M/annum is required for each of Sewer pipe replacement and Water pipe replacement including Bulk lines respectively, in the case of water pipes to achieve an acceptable burst rate of less than 10 bursts/ 100m/ yr.

Key components of existing infrastructure in rapidly-developing regions of the City do operate at peak level during periods of high demand. Capacity improvements will be required to enable development.

The bulk water system in the northern areas of the City is under increasing stress during peak periods due to the rapid growth in that area.

C.1.6 Effective management

The Department is committed to consistently and continually provide the highest quality water and sanitation services that meet and exceed the requirements and expectations of our consumers by ensuring the implementation of a Quality Management System that complies with ISO 9001:2008. To this end, both a Quality Statement and Customer Service Charter have been accepted for implementation. There is also a Department-wide ISO certification project being undertaken.

Together with the Risk Management programmes being implemented, these initiatives will ensure quality and minimise risks.

Scientific Services have embarked on a plan to achieve the ISO 17025 certification by 2010/11: a legal requirement for testing and calibration of the laboratory.

The following business improvements initiatives are receiving focused attention:

- Quality objectives established, Quality Policy documented and signed by Director.
- ISO 9001:2008 Quality structure documented within Water & Sanitation.
- Branch Quality Representatives appointed.
- Internal assessment and internal assessment training planned.
- Appointment of ISO 9001:2008 consultant underway.
- Business improvement for support service model in progress.
- Development of processes and procedures within the branches as is projects in progress
- Internal communication suggestion boxes to be roll out throughout the branches.

The following efficiency enhancements are receiving focused attention;

- Integration of Information Management Systems through development of a Data Integration and Monitoring System.
- Integration and standardisation of Automation control and monitoring of plants via Scada-telemetry.

- GIS geodatabase development for effective management and planning of the infrastructure.
- Water quality management through the Laboratory Information Management System (LIMS) .
- Maintenance and life-cycle of equipment.
- Capacity building and training of staff.
- Testing the viability of Automatic Metering Reading of consumer meters (AMR): the Pilot installation and testing on 1 900 consumer meters was finalised during 2010. Its further rollout in industrial/commercial areas is being planned.
- An Integrated Asset Management Plan is being developed on a coordinated basis across directorates in the City, based on establishing an accurate infrastructure asset register, geodatabase and master data.
- Integrated Risk Management.

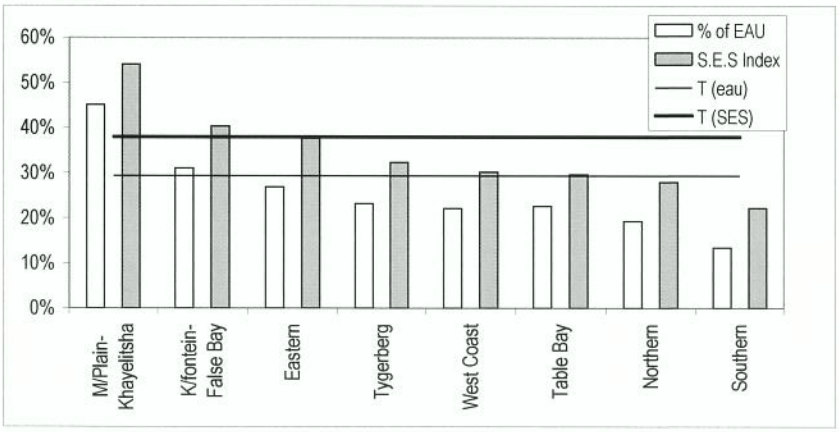
C.2 WATER SERVICES BUSINESS ELEMENT SUMMARY

C.2.1 Socio-economic profile

Situation Assessment

At present the population of the CCT is estimated at 3,7 million. The current average growth rate is 3% per annum. HIV and Aids also influence population growth, and pre-2008 trends indicate a lower mortality rate than that originally predicted. It is estimated that the previous growth rate was 36.4% for the period 1999 to 2007. The overall trend is that Cape Town's population will continue to grow each year although at a slower rate than previous years. The number of people living in informal settlements has been growing at an increasing rate and the current housing backlog is estimated at approximately 350 000 units.

Figure C.2.1: The Socio-Economic Status Index profile of Cape Town, by Health Department districts, 2008



Notes:
% of EAU - % of economically active unemployed
S.E.S - Socio-Economic Status Index
T (eau) - Total of unmployed = 29.38%
T (SES) - Total S.E.S

	% of economically active unemployed	Socio-Economic Status Index (S.E.S)	
M/Plain-Khayelitsha	45.16%	M/Plain-Khayelitsha	54.12%
K/fontein-False Bay	31.05%	K/fontein-False Bay	40.43%
Eastern	26.85%	Eastern	37.71%
Tygerberg	23.19%	Tygerberg	32.28%
West Coast	22.11%	West Coast	30.22%
Table Bay	22.67%	Table Bay	29.67%
Northern	19.26%	Northern	27.94%
Southern	13.43%	Southern	22.16%
AVERAGE	29.38%	AVERAGE	37.97%

Source: Strategic Development Information and GIS Department

Figure C.2.1 shows Cape Town's socio-economic status (S.E.S) index, a tool used to measure social and economic well-being. It incorporates the following indicators: (a) the % of households earnings less than R19 200 per annum (2001), (b) the % of adults (20+ years) with the highest educational level below matric, (c) the % of the economically active population that was employed, and (d) the % of the labour force employed in elementary/unskilled occupations.

The Mitchell's Plain/Khayelitsha Health Department district was shown to be the worst off, with the Southern Health district the best off. According to the Planning District's Socio-Economic Analysis Report of 2007, programmes to change poor socio-economic status should follow this focus.

Future trends, strategic gaps and implementation strategies

Strategic gaps:

There is a need for national guidelines on the provision of water and sanitation in the informal settlements but also to additional dwellings in backyards, for the want of which the City has developed its own.

Water and Sanitation Services aim to provide an affordable service to poor households. A free basic service is provided, in the form of the first 6 kℓ/month water supply and the first 4,2kℓ of sewerage conveyance and treatment free of charge to all consumers per month. The City is providing an indigent grant of R38/month to cover an additional water consumption of 4.5kl/month and the corresponding sewage treatment, taking the form of an account reduction to qualifying ratepayers. The number of indigent households qualifying for the Indigent grant either on a property value less than R300 000 are 211 879 currently, while another 3 044 qualify for the grant based on income level.

The Water Demand Management Integrated Leaks Repair Projects, initiated at the end of 2005 and rolled out on a phased basis since then, is a major initiative to ensure that these household's plumbing leaks are minimized and that monthly bills for these services become affordable.

With the implementation of a policy to install Water Management Devices on a prioritised basis, households defined as indigent now have a mechanism to prevent water consumption reaching unaffordable levels and also prevents leaks causing high water losses. It is being installed across a range of household's income groups to the same end goal. More than 45 000 have been installed as at the end of 2010.

In order to improve and maintain the condition of the infrastructure, there will be pressure on tariffs to increase at or above inflation over the short- to medium-term. This coupled with the extraordinary burden of very high national electricity tariff increases, is making it extremely difficult for the City to address all needs.

C2.2 Service level profile

Situation Assessment

With respect to Domestic consumers, the latest December 2010 City estimate of 1 103 182 households included 189 593 in informal settlements, while the remainder of 913 589 in the formal sector included at least 115 248 backyard dwellers.

Poor people (defined as earning a monthly income of less than R3 500) are estimated at 416 830 made up of 131 038 in Informal Settlements, 208 516 in formal households and 77 276 of the backyard dwellers.

Across all formal registered consumer categories the City's billing system (SAP) shows 604 490 consumers as at June 2010 (refer to TABLE C2.2a).

TABLE C2.2a: Demographics and Customer Profile

CCT Consumer units	
Commercial	12 537
Government	278
Industrial	4 205
Miscellaneous	5 547
School-Sportfields	1 447
Domestic Cluster	6 968
Domestic single residential	563 297
Departmental Cluster	2 970
Municipal Water	6 999
	604 248
External consumer units	
Bulk	242
Total consumer units	604 490

Source of Consumer Unit breakdown: Billing system (SAP)

There is a backlog in both Sanitation and Water services as described earlier.

The formal households and other land use categories all have a metered water connection to the house or yard, with almost all households and other land use categories (excepting a few with septic tank facilities) having flush sanitation on site.

Formal domestic consumers receive the first 6 kiloliters of water per month free as well as the corresponding 4.2 kilolitres of sanitation service. Informal areas have communal standpipes and water is provided free, as is Sanitation. Both are at a

lower-than desirable servicing ratio, with water much less of challenge to improve than sanitation.

Future Trends and goals

Residential consumer units

Public institutions and 'dry' industries; wet industries; industrial consumer units

All have connections on-site.

Strategic gaps

- The backlog in acceptable service levels of sanitation in informal settlements needs to be bridged.
- With respect to the effluent discharged from Industrial sites, non-complying and polluting trade effluent occasionally impacts heavily on the wastewater treatment process serving the catchment. The size and efficiency of the inspectorate has been increased over the past few years, while Water, Sanitation and Effluent By-laws have been consolidated and rewritten for the City. Nevertheless the challenge to obtain cooperation from consumers remains high.

Implementation strategies

- Residential consumer units: Water & Sanitation's informal settlement programme aims to eradicate the sanitation backlogs and maintain a minimum level of service to poor households.
- Industrial consumer units: The inspectorate is using an engaging, cooperative approach with consumers, more comprehensive integrated by-laws as well as more frequent inspections and measurements to improve the quality of industrial effluent, prevent pollution in a pro-active manner and reduce water wastage.

C2.3 Water resource profile

Situation Assessment

The Western Cape Water Supply System

The Western Cape Water Supply System (WCWSS), comprising raw water storage and conveyance infrastructure, supplies water to Cape Town, surrounding towns and urban areas and agriculture. The various components of the WCWSS are owned and operated by the CCT, DWA and Eskom.

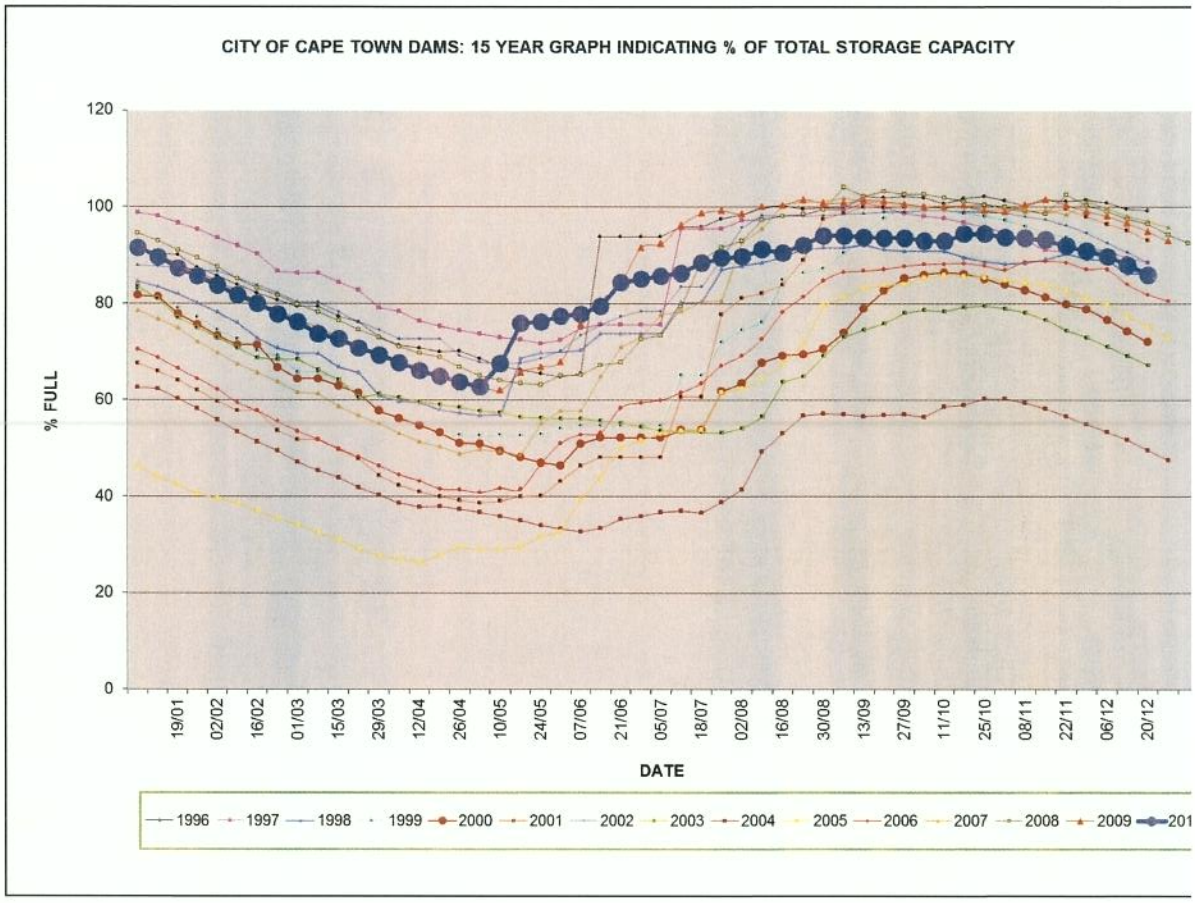
The CCT and DWA operate the WCWSS in an integrated manner to ensure that the storage of water is maximized during current and future hydrological years.

The annual yield of the WCWSS, including the recently completed Berg River scheme, is 556 million kl per annum.

The major raw water supply schemes of the WCWSS are the Riviersonderend, Voelvlei and Berg River Schemes, owned and operated by the DWA, and the Wemmershoek and Steenbras Schemes, owned and operated by the City of Cape Town. The total storage of the six major dams on December 2010 was 898 300 million kl, or 84.4% of total storage capacity.

The longer-term 13 year record is as depicted in FigureC2.3a. The 2010 trend is plotted in bold.

Figure C2.3a



Water Resources Supplying Cape Town

The CCT's allocation of water from the WCWSS, with the additional yield of the Berg River scheme, is 398 million kl per annum. Including the Berg River scheme, the CCT obtains 74% of its allocated water from DWA owned sources, with the balance of 27% from CCT owned sources. The resources supplying the CCT and its allocation from these resources are shown in Table C 2.3a.

The CCT produced 331.062 million kl of potable water during the 2009/10 financial year.

Water returned to the resource

The CCT obtains most of its raw water from mountainous catchments outside of its municipal area, and therefore most of the CCT's treated wastewater effluent is not returned to the raw water resource. A percentage of the effluent produced at the Westfleur Treatment Works at Atlantis is used to artificially recharge the aquifer from which water was abstracted for potable supply as part of the Atlantis Water Supply Scheme.

TABLE C 2.3a Cape Town's allocation from the WCWSS

	Million kl /annum	*% of Total*
DWA Owned Schemes		
Theewaterskloof	118	29.6%
Voelvlei	70.4	17.7%
Palmiet	22.5	5.6%
Berg River	81	20.3%
Subtotal DWA Schemes	**291.9**	**73.2%**
CCT Owned Schemes		
Wemmershoek	54	13.5%
Steenbras	40	10.0%
Lewis Gay and Kleinplaas Dams	1.8	0.5%
Land en Zeezicht Dam	1	0.3%
Table Mountain Dams	3.5	0.9%
Albion Springs	1.5	0.4%
Atlantis Groundwater Scheme	5	1.3%
Subtotal CCT Schemes	**106.8**	**26.8%**
TOTAL ALLOCATION	**398.7**	

Quality of water

The quality of water produced at the CCT's water treatment plants is strictly monitored on a continual basis to ensure compliance with the South African National Standard 241:2006 on drinking water quality. The Scientific Services

Branch conducts routine sampling and analysis of potable water produced at all water treatment plants, as well as inspection of treatment processes.

Efforts are at an advanced stage to acquire SANS 17025 certification for the laboratory quality testing. Expansion of the laboratory is a necessity for improving its capability to undertake a wide spectrum of tests.

The water quality report below indicates the analytical data and approximate distribution for Cape Town drinking water for the period 1 June 2007 to 31 May 2010. The South African National Standards (SANS 241:2006) Specification for a Class I and II water is also stipulated on this report. This report indicates the quality of the drinking water leaving each of the major water treatment plants and the approximate distribution areas they service.

ANALYTICAL DATA AND APPROXIMATE DISTRIBUTION FOR CAPE TOWN DRINKING WATER

Sample Period: 1 June 2007 to 31 May 2010

The City of Cape Town has been awarded the Blue Drop Certificate for Drinking Water Quality by the Department of Water Affairs (DWA). The Blue Drop Certification process is the latest intervention introduced by DWA to ensure that all Water Service Authorities comply with national legislation when providing drinking water to its consumers. This then provides the consumers the assurance that they are receiving a good quality drinking water from the supplier which in turn satisfies one of the basic components for a good quality life. It is a very dynamic process which has a very stringent set of criteria that have to be met. The City of Cape Town was awarded the Blue Drop status with 100% score, one of only three Water Service Authorities in South Africa to do so.

To qualify for the Blue Drop Certificate a Water Service Authority must comply with at least 95% of the criteria which includes the maintenance and monitoring of the catchment and storage areas and facilities, the pipeline and distribution systems and the water treatment facilities and processes. The water quality has to be monitored throughout the cycle from storage to the consumer and needs to be compliant. Adequate staffing with suitable skills coupled to a training regime also forms part of the certification process which is done annually by virtue of a physical audit conducted by DWA officials.

Below are the results for the water quality provided across the City of Cape Town for the past three years as well as the distribution areas normally linked to the Water Treatment Plants supplying the City.

PARAMETERS	SANS 241: 2006 Class I/ Class II Specs	BLACKHEATH SUPPLY Typical Analysis (400 Ml/day)	FAURE SUPPLY Typical Analysis (500 Ml/day)	KLOOF NEK SUPPLY Typical Analysis (18 Ml/day)	STEENBRAS SUPPLY Typical Analysis (150 Ml/day)	VOËLVLEI SUPPLY Typical Analysis (275 Ml/day)	WEMMERSHOEK SUPPLY Typical Analysis (270 Ml/day)	BROOKLANDS SUPPLY Typical Analysis (6 Ml/day)	SOMERSET WEST SUPPLY Typical Analysis (12 Ml/day)
PHYSICAL									
Colour mg/l Pt	<20 / 20-50	<5	<5	<5	<5	<5	<5	8	<5
Conductivity mS/m	<150 / 150-370	12.7	15.6	18.2	15.9	13.7	8.3	41.0	13.7
pH (pH units)	5.0-9.5 / 4.0-10.0	8.55	8.56	8.44	8.72	8.00	8.41	8.65	8.52
Turbidity NTU	<1 / 1-5	0.62	0.30	0.25	0.34	1.19	0.65	0.55	2.05
UV 300nm/4cm	-	0.040	0.040	0.060	0.070	0.060	0.060	0.180	0.050
ORGANIC									
PV4 mg/l	-	0.470	0.470	0.570	0.700	0.620	0.590	1.550	0.500
HARDNESS (mg/l) Hardness (Total) as $CaCO_3$	-	46	56	57	46	39	33	116	38
MINERAL									
Calcium as Ca mg/l	<150 / 150-300	16.3	20.3	20.6	16.0	12.2	11.8	39.8	12.5
Chloride as Cl mg/l	<200 / 200-600	12.5	14.8	17.8	17.9	18.7	8.1	59.1	20.9
Magnesium as Mg mg/l	<70 / 70-100	1.33	1.47	1.34	1.41	2.04	0.71	4.28	1.77
Potassium as K mg/l	<50 / 50-100	0.56	0.62	0.50	0.69	0.69	0.23	1.20	0.93
Sodium as Na mg/l	<200 / 200-400	6.0	7.2	12.8	11.3	9.0	3.8	32.3	10.1
Sulphate as SO_4 mg/l	<400 / 400-600	12.8	22.4	29.9	20.6	16.6	3.9	79.9	7.9
Alkalinity as $CaCO_3$ mg/l	-	25.4	23.9	26.3	22.4	14.9	23.9	12.6	20.9
TRACE METALS									
Aluminium as AL mg/l	<0.3 / 0.3-0.5	0.088	0.050	0.355	0.265	0.071	0.162	0.338	0.203
Iron as Fe mg/l	<0.2 / 0.2-2.0	0.029	0.040	0.018	0.017	0.082	0.084	0.022	0.106
Manganese as Mn mg/l	<0.1 / 0.1-1.0	0.005	0.002	0.008	0.009	<0.001	0.018	0.030	0.004
OTHER IONS									
Fluoride as F mg/l	<1.0 / 1.0-1.5	0.03	0.02	0.02	0.01	0.02	0.02	0.01	0.04
Silica as Si mg/l	-	0.83	-	-	-	-	1.06	-	3.53
MICRO									
E coli count/100ml	0	<1	<1	<1	<1	<1	<1	<1	

Future Trends and Goals

The Bulk Water, Reticulation and Scientific Services Branches of the City of Cape Town will have to take note of any future water quality requirements and then, as a result, put the necessary steps in place to meet these requirements. The international and national specifications for drinking water are changing all the time with specifications becoming more stringent and with new ones being added e.g. possible future water analysis for radioactivity, viruses, EDC's, etc. The City of Cape Town will have to put measures in place to meet these future requirements, e.g. purchase of new specialized analytical equipment to perform these measurements, stricter process control at the water treatment plants, etc. With proper planning between the above-mentioned Branches of the City of Cape Town, these future water quality requirements can be met.

Strategic gap analysis

The WCWSS Reconciliation Strategy included recommendations of interventions that needed to be implemented or studied further to ensure that potential schemes could be implemented in future when required. Table C2.3b summarises these interventions being implemented or studied further.

Table C 2.3b: Interventions to be implemented or studied further

Intervention	Study Level Required	Responsibility
Existing Feasibility Studies in Progress		
Water Demand Management	Intervention to be implemented	CCT
TMG Aquifer Feasibility Study	Feasibility	CCT
Pilot Desalination Plant	Feasibility	CCT
TMG Regional Monitoring	Monitoring	DWA
Invasive alien plant clearance	Ongoing	DWA
Voelvlei Phase 1	Update feasibility	DWA
Mitchell's Pass Diversion	Pre-feasibility/feasibility	DWA
Upper Wit River Diversion	Pre-feasibility	DWA

Raising Steenbras Lower Dam	Pre-feasibility	DWA
Upper Molenaars Diversion	Pre-feasibility	DWA
Water Re-use	Pre-feasibility	DWA/CCT
Future Studies Required		
Newlands Aquifer	Pre-feasibility	CCT
Cape Flats Aquifer	Feasibility	CCT
Lourens River Diversion Scheme	Pre-feasibility	CCT

C2.4 Water conservation and demand management

Situation assessment

Water Demand Management Interventions

The efficient use of scarce water resources for the City of Cape Town's growing needs and the aim to maximize on the use of existing infrastructure are critical factors that drive the Water Demand Management and Water Conservation Strategy.

Water and Sanitation Services are applying the resources required to implement water demand management interventions, including: (a) reduction of non-revenue water, (b) reduction of high pressure, minimum night flow for residential consumers, (c) education programmes, (d) plumbing leak and meter repair programmes, (e) pipe replacement, effluent re-use, water restrictions and stepped tariffs.

Trends and goals

Water Demand Management Interventions

Water demand management is an essential core requirement for sustainability of water supply to the City. In circumstance where water consumption is controlled to the levels expected in the Water Conservation and Water Demand Management strategy, deferment of the next water resource scheme to approximately 2029 can be achieved.

In the last four years a number of successful WC/WDM projects were implemented of which notable projects were:

- the Mfuleni (completed June 2006) and Protea Park (completed August 2007) Integrated Leak Repair Projects,
- the Fixit Project in a range of poor suburbs,
- the education campaigns,
- treated effluent recycling,
- extensive rollout of individual consumer Water Demand Management Devices allowing full flow of a daily allocation based on at least 350 litres,

set higher by agreement with the consumer. More than 45 000 such devices have been installed. Organised rejection of the devices in some communities have occurred but is being dealt with responsibly.

- Pressure Management - 2009/2010 achieved water savings are 7440.36 Ml/ year equivalent to R46 M/year.

The focus on these projects has reduced non-revenue demand. In addition the consumer contracts for treated effluent re-use were rationalised to generate additional income. The average savings for Mfuleni and Protea Park are 7.5 and 21.625 kl/ household/ month respectively.

Strategic gaps and goals

TABLE C.2.4a: Strategic gaps

Resources	Inadequate financial resources
	Inadequate human resources to implement WC/WDM strategy
	Water balance not developed to IWA standard.
Technical capacity and tools	Ineffective management information and monitoring systems
	Inadequate demand measurement systems and tools
	No detection programme in place to identify water leaks before they become bursts

The levels of demand reduction planned for to a levelling out at 0% growth has unfortunately not yet been reached. If funding on WDM is not continually prioritised to enable the planned programmes, the factors of economic growth and consumer behaviour will outstrip the gains made.

Implementation Strategy

The Water Conservation and Water Demand Management Strategy are being followed in order to budget for and implement several initiatives in parallel.

Top priorities are the rollout of further Water Demand Management Devices on a prioritised suburb-by-suburb basis.

Further pressure reduction schemes are being designed for implementation.

The Automated Meter Reading Pilot installation on consumer meters has been finalised. Decisions on future roll-out options City-wide will follow and be considered for future budgets on a priority basis. Advantages indicated by preliminary evaluation include:

- synchronised simultaneous reading for an entire suburb
- more reliable readings with far fewer estimations
- Immediate loss detection at a consumer
- Immediate knowledge of a meter failure or tampering
- the ability to analyse water balance and losses by individual supply zones

The Strategy is currently being reviewed in terms of its level of success and updated accordingly.

C2.5 Water services Infrastructure profile

Situation assessment

The Financial "book" value of the water and sewer infrastructure stood at R2.2 billion at 30 June 2010. However, the Replacement Value is estimated considerably higher, escalated at CPIX rates from a 2003 Independent Auditing evaluation.

TABLE C.2.5a: Infrastructure of Water and Sanitation Services -Estimated Replacement cost

Description	Asset Count	Repl Value (R M)	Annual Maint Norm	Annual Maint req, Bulk Water seperate(R M)
Bulk Water (including water pump stations, water retic and reservoirs)				68.9
Dams and Catchments	12 No	1 322.5	0.50%	6.7
Water Treatment Works	13 No	1 449.0	1% Civil, 4% Mech/Elec	30.2
Waste Water Treatment Works incl Sea Outfalls	23 No	2 014.4	1% Civil, 4% Mech/Elec	41.8
Water Reticulation (incl Bulk Lines) (length escalated from 2003)	10 438	12 896.0	1%	58.6
Sewer Reticulation (length escalated from 2003)	9 021	6 643.9	1%	59.0
Depots	21 No	83.4	0.50%	0.4
Water Pump Stations	108 No	445.6	0.5% Civil, 4% Mech/Elec	7.1
Sewer Pump Stations	377 No	403.3	0.5% Civil, 4% Mech/Elec	10.5
Reservoirs	138 No	1 799.1	0.50%	3.7
		27 057.2		**287.0**

The City's water supply infrastructure has 12 dams, 13 water supply treatments works and a water supply reticulation network that is 10400 kilometres long. There are 108 water pump stations, 138 water reservoirs and 21 depots. The wastewater infrastructure has 26 wastewater treatment works, a 9 000 kilometre sewer reticulation network, 377 sewer pump stations and 21 depots.

Trends and goals

The water supply and wastewater reticulation networks jointly account for 72% of the total replacement value. The water distribution networks experienced 6 169 bursts to water mains in 2009/10 compared to 5 237 in 2008/09.

Strategic gaps

Historically, maintenance of infrastructure was mostly reactive. This is evidenced by the backlog of overdue maintenance and replacement projects.

Especially in the City's growth areas the water and sewer infrastructure are severely stressed:

- West Coast / Parklands development corridor
- De Grendel / N7 development node
- Northern development/Fisantekraal corridor
- Bottelary development corridor
- Fast-track housing projects (e.g. N2 Gateway)
- Maccassar / AECI development node

The strong growth trend in the City is making it difficult to maintain a balance between requirements and available resources.

Implementation strategies

The City has undertaken an accelerated programme to improve the replacement of water distribution network mains, especially in areas that experience a high incidence of bursts, such as the Tygerberg district. More importantly, Water and Sanitation Services is implementing anAsset Management Programme (AMP). This will ensure that:

- Assets are maintained proactively rather than reactively,
- The total asset lifecycle is managed to maximise life of asset,
- Maintenance work is effectively coordinated,
- Operational downtime is significantly reduced.

The strategies for ensuring that wastewater treatment capacity is maintained include:

- Integrate planning for new works and extensions with the other branches and ensure that additional wastewater treatment capacity is provided where needed at the right time,
- Provide sufficient funding (EFF and MIG funds) to address the backlog in WWTW capacity and provide for growth.

To ensure long term sustainability, Water and Sanitation Services has by 2010 developed an Integrated Master Plan. The objectives of the master planning process are:

- To balance demand and capacity, all water and sanitation branches will use the same base data, assumptions and design parameters to ensure consistency,
- Infrastructure plans within Water and Sanitation Services are fully aligned,
- Alignment with the City's Spatial planning and IDP strategies are achieved,
- To provide sound information on which capital budgets for future years can be improved, and
- The plan is kept up to date annually to ensure reliable planning based on it.

An automation, monitoring and technology programme is being driven in the department towards achieving maximum efficiency and optimum utilisation of staff resources in a "smart" way. To this end, cooperation has been pursued with leaders in the field such as the Norwegian Oslo Waterworks and the Danish Hydraulic Institute.

The following framework plan indicates progress and future plans.

TABLE C.2.5b: Automation, monitoring and technology Framework plan

ACTION	PROGRESS	TIMEFRAME	IMPLEMENTATION COS
Plant SCADA upgrades. (Bulk, Wastewater, Pump stations).	SCADA upgrades completed at Atlantis, Blackheath and Steenbras WTP. Visnet implemented Software and partial commissioning at Wildevoelvlei WWTW Additional license required and connection to corporate network. And Wemmershoek Dam WTW. Complete	5 years (2014)	R10M for curre Reticulation system phas Full system scope beir developed.
Bulk & Zone meter automation	Further zones delineated (201) and zone meters installed.	All Water Zone meters logged by 2014.	

Customer meter automation	AMR pilot installation completed May 2010. Extensive evaluation undertaken in N2 Gateway, SunsetBeach and Epping Industria. Various technical, meter supply and process issues addressed. Prepayment meters to be investigated and piloted.	AMR Phased rollout planned in priority industrial or commercial areas over a multi-year timeframe (2020) for entire City. Prepayment pilot 2011.	R1.5M pilot phase. R50M excluding met replacement.
Integrated Information System	DIMS development (Danish Hydraulic Institute) with major DWA grant completed. Integrates key major Water and Sanitation information systems in browser map-based dashboards.	Completed and handover October 2010	R7M (R5M DWA grant)
Integrated Master Planning	Integrated Master Planning project completed. Skills transfer and software rollout to all users as well as central server installation underway.	Handover completed New tender to be awarded 2011	R14.5M
Technical Operating Centre process improvements	SAP-GIS Integration being implemented under control of SAP. Includes: GIS & SCADA integration in SAP, C3 Notifications, Tetra Radio comms and spatial tracking, Mobile Asset Management.	2011	R10M.
SCADA/Telemetry masterplan	Contract has been awarded to develop a new master station for all reservoirs and pump stations, including the supply of RTU's. Also included is the development of data from the new telemetry system to the database that DIMS will harvest. Master plan completed Tender in place for the procurement of RTUs Factory Acceptance Test complete snag list being resolved. Test	2011	

	RTU in field trials.		
Automated Water Analysis	Process lab Units already installed at 9 Bulk Water Depots. Installation of 8 computers and Connectivity testing to be in March 2010.	Completion end March 2010.	R693 000
Air Quality Monitoring System (Service provider to Health Dept.)	Tender awarded April 2010.	Completed 2010	R1.3 Million

C2.6 Water balance

Situation assessment

Using water and billing figures, the unaccounted-for water (UAW) for the overall supply system from Bulk Water Treated to end consumer billing is 22.7% on a 12-month moving average basis (50 200 327 kl) to December 2010. The Bulk Water portion versus the Reticulation portion are indicated as 5.1% (11 384 431 kl) and 20.5% (39 023 321 kl) respectively. 5 246 827 kl of the latter figure is estimated to represent consumption in the informal settlements, deemed as authorised but unbilled.

The industry-standard norm of using the smoothing 12-month average and not the month-on-month data is that meter readings billed in a particular month do not necessarily reflect outflows in the same period that the inflow occurred; depending on what day meters were read, billing adjustments and the duration of storage of potable water before consumption. This methodology is being used for reporting purposes until the envisaged more accurate water audit study is completed during 2010/11.

TABLE C.2.6a: Non-revenue water demand, 2009/10 Financial Year

Figures for 2009/10 Financial year [kl/year]:

Bulk Water Treated	Potable water supplied by Bulk	Potable water supplied to Reticulation	Reticulation end consumers sold
331 062 488	304 647 063	275 321 246	218 462 107
			Reticulation UAW 56 859 139
		Potable water supplied to external customers 29 325 817	
	Bulk UAW 26 415 425		

Future trends and goals

The City has in principle adopted international best practice with respect to reporting on water balance and will stop reporting on UAW as soon as more accurate data is available.

Strategic gap analysis

The SABS 0306:1999 standard discourages the use of percentage losses to quantify water losses in the distribution network.

Implementation strategies

A very high priority is being given to a comprehensive Water loss reduction strategy with detail action plans being developed for each of Technical losses (Pipe bursts, Leakage, Treatment losses, System losses), Apparent losses (illegal connections, metering inefficiencies, unmetered authorised consumption, unauthorised consumption, Billing/accounting, meter reading).

Phased Installation of more zone- and bulk supply meters are being implemented as well as automated remote logging thereof to accurately measure input into water supply zones.

An added benefit of the Integrated Master Plan project is the creation of an accurate and up-to-date historic record of consumption by Ervin that can be used to derive water and sanitation demands. The first comprehensive and reliable dataset became available in January 2010. This data will be used together with zone meters and bulk meters to achieve a water balance based on smaller pressure zones. This will enable losses to be pinpointed and reduced or eliminated.

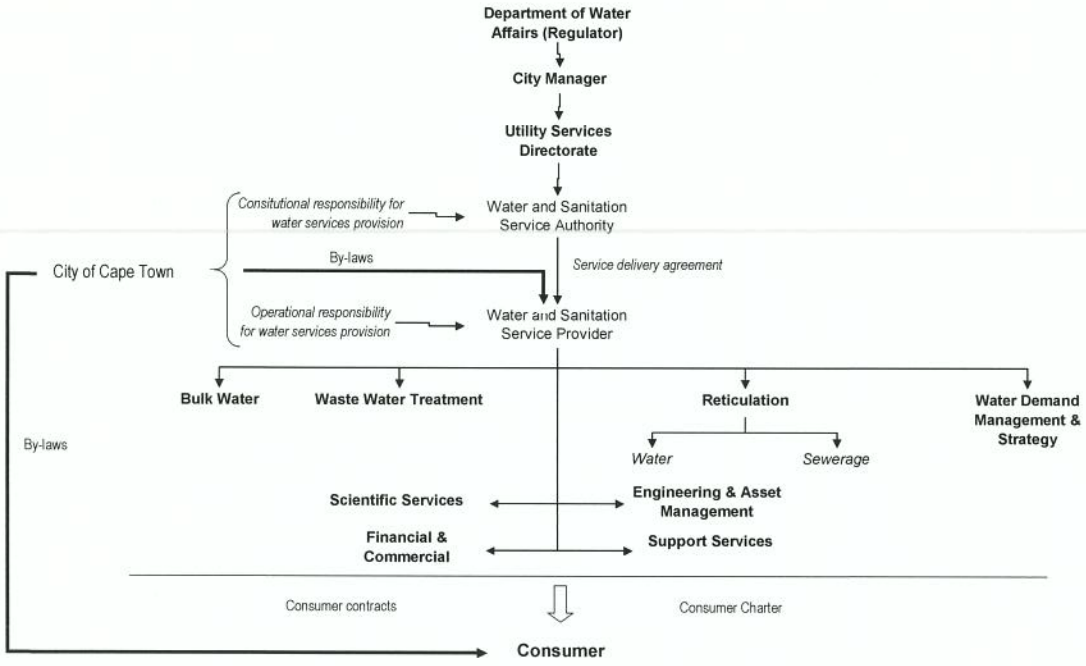
The DIMS project recently implemented has as a focus area the reporting of the latest Demand and Loss information to the IWA standard.

C2.7 Water services institutional arrangements

Situation assessment

The new City of Cape Town and the Water and Sanitation Services entity was formed with the amalgamation of the Cape Metropolitan Council and the 6 metropolitan local councils in December 2000.

TABLE C.2.7: Water Service Institutional Arrangements



Source: Water Demand Management Strategy

On 28 November 2001, Council authorized Water and Sanitation Services to operate as fully-fledged and functional internal business unit in order to ensure maximum independence and minimum constraints. In practice this has not been implemented further.

Risk Management: Work has started on an Integrated Risk Management Programme with the appointment of a Risk Manager and the development of a strategy. attached Risk Register has been developed.

Safety: All procedures were reviewed and risks still need to be identified.

Future trends and goals

The appointment and retention of technical staff (engineers, scientists and IT personnel) remains a high priority.

Strategic gap analysis

The City of Cape Town is currently undertaking the constitutional responsibility for water service provision (as the Water Services Authority (WSA)) as well as the operational responsibility (as the Water Service Provider (WSP)). The City has not separated the service authority and service provision function to establish a municipal entity, preferring to operate the service as an internal ring-fenced department. At the moment, there is no service delivery agreement between WSA and WSP in place.

Implementation strategies

Institutional reform: The City's strategic intent, aligned with the national agenda and as stated in the IDP, is:

- universal access to basic services;
- achieving operational, financial and other efficiencies which will enhance equitable, affordable and effective service delivery and sustainable development;
- the separation of WSA/WSP Powers and functions.

Human resources: It is the City's strategic intent to develop and retain a skilled and motivated staff according to the Staffing Strategy and the Workplace Skills Plan.

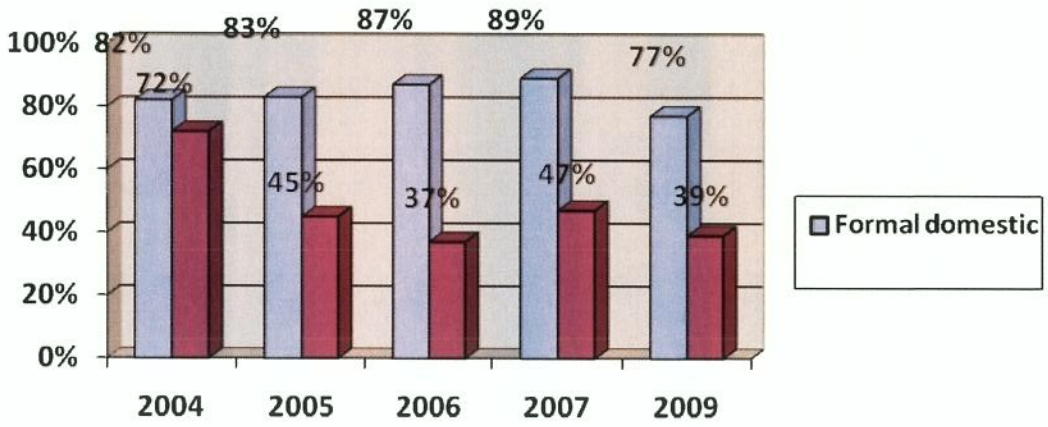
C2.8 Customer service profile

Situation assessment

Although under stress in certain regions, necessary infrastructure is in place to ensure an adequate quality of service to formal households. All customers receive water that is fully treated. There are mechanisms in place to attend to customer complaints and queries.

A survey is undertaken on an annual basis to gauge the customer satisfaction in formal domestic, informal domestic and business sectors and to identify specific issues of concern. Recent stats will be available once the census has taken place in 2011.

Figure C2.8: Customer satisfaction levels over time



The general conclusions are:

- The increasing satisfaction level for respondents living in formal residential areas has shown a downturn.
- Respondents living in informal residential areas are generally dissatisfied.
- 82% of business respondents are satisfied.

Future Trends and goals

The goal is to ensure that the percentage of customers satisfied with the service continues to increase and reaches 95% within the next 5 years.

Strategic gap analysis

There is no consolidated information on response times to complaints and queries and to repairing water and sewer mains. An integrated information system dealing with these matters is under development by the Technical Operating Centre.

Implementation strategies

- Ensuring water pressure standards are maintained to improve areas of extreme high or low pressures.
- The Education and Awareness Campaign will be extended to affect behaviour change in residential customers towards reducing water consumption, and that all customers have a better knowledge of water efficient fittings.
- Establishment of a system at the Technical Operating Centre to ensure that customer complaints are measured and followed up.
- The AMR project promises to bring improved customer satisfaction around metering and billing.
- Appointment of staff for critical vacancies.

C2.9 Financial profile

Situation assessment

Capital expenditure and sources

Capital expenditure incurred during the year amounted to R552.50 million with an expenditure level of 85.9% original budget reached.

Figure C2.9a: Water and Sanitation capital expenditure2009/10

Area (R'million)	2005/6	2006/7	2007/08	2008/09	2009/10
Bulk Water	27.3	16.3	17.0	35.3	24.30
Reticulation	239.4	76.6	232.3	290.5	212.00
Wastewater Treatment	78.7	206.5	123.4	253.4	233.40
Water Demand management	12.3	9.5	17.4	44.5	8.60
EAMS	10.1	14.1	45.4	20.3	26.20
Informal Settlements	25.1	16.7	13.2	18.0	17.50
Meter Replacement	0.5	13.8	14.6	7.1	9.90
Information Technology	4.0	2.5	5.2	7.8	8.90
Technical Operation Centre	0.0	0		1.0	5.90
Masterplanning	1.0	0	1.0	2.0	3.90
Other	3.0	4.6	6.4	4.4	1.90
TOTAL	401.4	360.6	475.9	684.3	552.50

Capital expenditure is financed from

(i) CRR (Capital Replacement Reserve) a fund replenished from surplus in previous financial year,

(ii) EFF (External Financing Funds) loans obtained by the City, attracting interest and depreciation charges and having a direct impact on the tariffs or

(iii) CGD (Capital Grants & Donations).

Operating Costs and income

In 2009/10 operating costs amounted to approximately R4,0 billion, equivalent to approximately R3 600 per household per annum.

Tariffs and Charges

TableC2.9b: Water and Sanitation tariffs trends

WATER TARIFFS (Rands)	2006/07	2007/08	2008/09	2009/10	2010/11
0-6 kℓ	-	-	-	-	-
+6-12 kℓ	2.56	3.05	3.33	3.66	na
+6-10.5 kl	na	na	na	na	3.99
+12-20 kℓ	5.46	6.50	7.10	7.81	na
+10.5-20 kl	na	na	na	na	8.51
+20-40 kℓ	8.08	9.63	10.52	11.57	na
+20-35 kl	na	na	na	na	12.61
+40-50 kℓ	9.98	11.90	12.99	14.29	na
+35-50 kl	na	na	na	na	15.58
+50 kℓ	13.17	15.70	17.14	18.85	20.55
Domestic cluster	5.47	6.52	7.12	7.83	8.62
Commercial	5.83	6.52	7.59	7.83	8.62
Industrial	5.83	6.52	7.59	8.35	9.18
Schools/sport	5.15	6.14	6.70	7.37	8.11
Government	5.53	6.59	7.20	7.92	8.71
Municipality	5.15	6.14	6.70	7.37	8.11
Miscellaneous	5.53	6.59	7.20	7.92	8.71
Misc (external)	6.61	7.88	8.60	9.46	10.41
Bulk Tariff	2.21	2.37	2.59	2.59	2.85
SANITATION TARIFFS (Rands)					
0-4.2 kℓ	-	-	-	-	-
+4.2-8.4 kℓ	1.68	3.78	4.01	4.29	na
+4.2-7.35 kl	na	na	na	na	4.67
+8.4-14 kℓ	4.10	8.04	8.52	9.12	na
+7.35-14 kl	na	na	na	na	9.94
+14-28 kl	na	8.79	9.32	9.97	na
+14-24.5 kl	na	na	na	na	10.87
+28-35 kℓ	n/a	9.23	9.78	10.46	na
+24.5-35 kl	na	na	na	na	11.41
Industrial & Commercial	2.51	5.65	5.99	6.41	7.05
Departmental/Municipal	2.31	5.20	5.51	5.90	6.49
Domestic Cluster (>4.2 kℓ)	4.04	9.10	9.65	9.65	9.65
TARIFF ANALYSIS (Rands)					
Overall average	**4.82**	**6.60**	**7.18**	**8.12**	**8.85**
Year-on-year growth	2.3%	37.0%	8.8%	13.1%	9.0%
Water average	5.77	6.80	7.49	8.77	9.61
Year-on-year growth	-0.9%	17.9%	10.1%	17.1%	9.6%
Sanitation average	2.44	6.22	6.60	6.98	7.51

Tariff increases has been set higher than inflation during the last number of years due to increasing pressure from repairs and maintenance, increasing staff

capacity as well as the capital programme resulting from the upkeep of current infrastructure and the growth in the capacity requirement.

Free Basic water and sanitation

The first 6 kilolitres of water supplied to all residential dwellings in the municipal area is free. There is no fixed charge. A R38 Indigent Grant is applicable to the water tariff for qualifying households. The net result is that an Indigent household can consume an additional 4.5kl per month without attracting any charges.

This subsidy would be ineffective without the on going Integrated Leaks Repair and Fixit Projects aimed at repairing leaks, reducing consumption, reducing monthly bills and eliminating arrears of properties occupied by Indigent households. Refer to the Water Conservation and Demand Management Strategy.

The first 4.2 kilolitres of sewerage removed from all residential dwellings in the municipal area is free. The fixed charge does not apply to dwellings occupied by Indigent households. The net result is that an Indigent household can discharge an additional 3.15 kilolitres per month (with sewerage disposal 70% of water consumption) without attracting any charges.

Trends

The Operating budget will increase in line with the City's Medium-Term Revenue and Expenditure Framework (MTREF)

There is pressure on annual tariffs increases to exceed inflation.

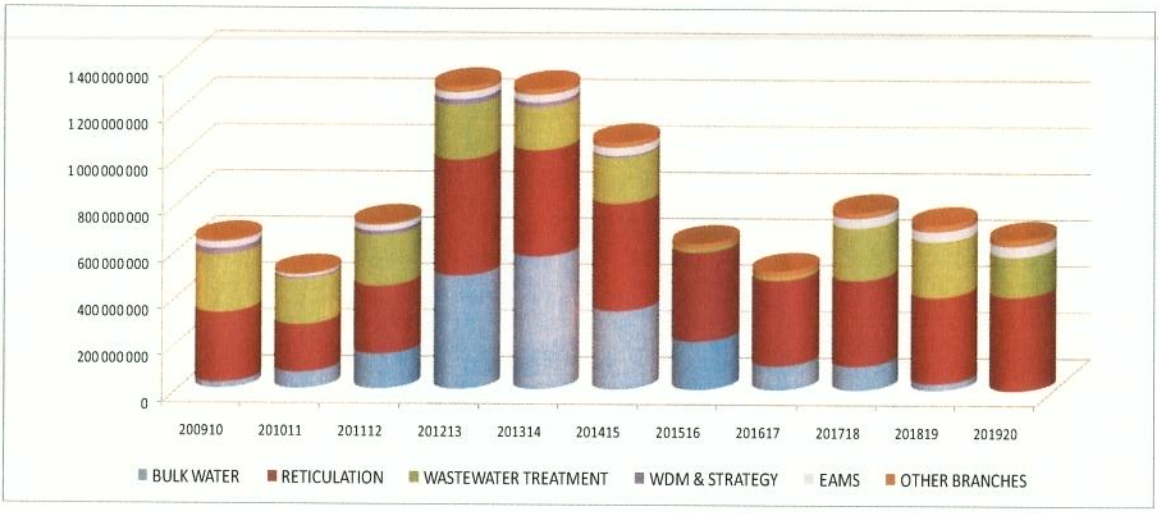
Increasing demands to supply new infrastructure and the resources to maintain and operate them are necessary

The long-term Capital budget requirement is summarised in Table 2.9c. The average annual requirement is about R745 million.

Table 2.9c: Long-term Capital requirement for 10 years from 2010/11

	201011	201112	201213	201314	201415	201516	201617	201718	201819	201920	TOTAL
BY BRANCH											
BULK WATER	73.6	153.5	491.9	576.9	341.9	211.9	106.9	106.9	31.9	0.0	2 095.0
RETICULATION	206.6	293.8	503.6	460.4	465.7	385.4	371.1	371.8	374.7	409.3	3 842.4
WASTEWATER TREATMENT	195.7	220.6	236.9	185.0	199.6	13.7	13.7	227.2	240.1	173.1	1 705.3
WDM & STRATEGY	9.0	18.0	24.4	22.7	8.9	0.0	0.0	0.4	0.4	0.0	83.6
EAMS	9.1	23.1	29.5	31.3	33.4	0.0	0.0	40.2	42.7	45.0	254.2
OTHER BRANCHES	7.0	10.0	25.0	24.3	24.1	24.5	25.4	25.9	28.8	29.1	224.0
BY INVESTMENT CATEGORY											
New Infrastructure	328.0	461.5	859.4	847.1	646.6	304.9	189.7	357.6	319.3	311.8	4 625.8
Replacement Infrastructure	125.2	166.1	330.7	342.3	325.2	268.0	264.0	309.0	289.0	234.0	2 653.5
New Plant	1.5	13.8	31.0	21.6	14.7	11.4	12.4	16.1	14.2	12.9	149.4
Replacement Plant	24.2	46.0	64.1	65.7	67.4	36.1	36.0	74.5	81.0	82.7	577.4
Optimise Infrastructure	27.0	28.7	26.0	23.8	19.5	15.0	15.0	15.0	15.0	15.0	200.0
Admin	0.0	3.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	3.4
TOTAL	**500.9**	**719.1**	**1 311.2**	**1 300.5**	**1 073.4**	**635.4**	**517.0**	**772.2**	**718.5**	**656.4**	**8 204.5**

Figure C2.9b: Long-term capital requirement by Branch



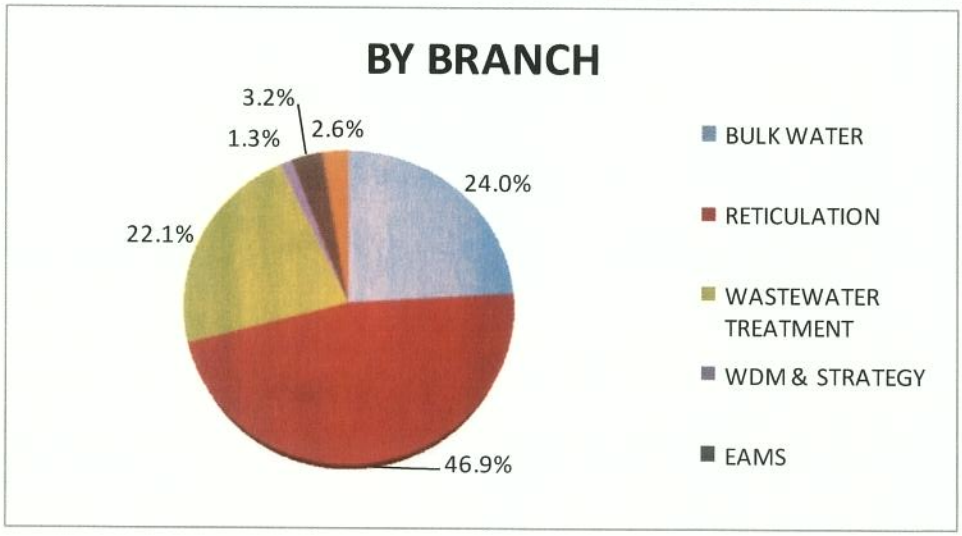
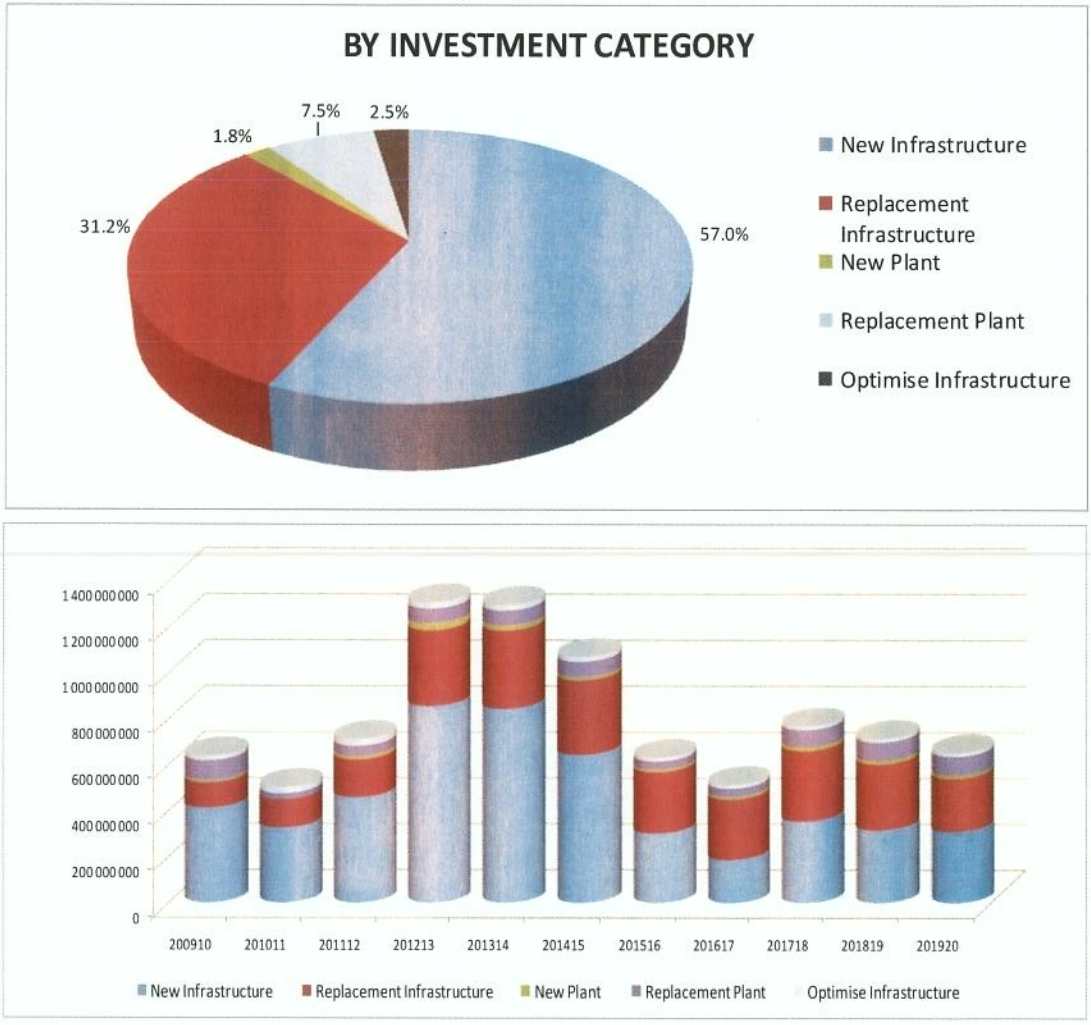


Figure C2.9c: Long-term capital requirement by Investment Category



Strategic gaps

Capital budget: The high requirement for necessary infrastructure driven largely by rapid growth and economic development as well as the refurbishment of current infrastructure places severe pressure on the City's Capital Budget.

Operating budget: It is difficult to reach optimum levels of staff, maintain acceptable levels of infrastructure maintenance and carry the impact of the capital programme within the financial constraints during troubled economic conditions.

Implementation strategies

To achieve the required Capital Budget, it is necessary to maximise the use of Grant funding and to increase the Capital Replacement Reserve (CRR) via income and expenditure interventions.

The pressure on the operating budget needs to be addressed via above-inflation tariff increases and initiatives to ensure that money due to the City is collected. There is a major benefit envisaged from the pilot Prepayment project, apart from metering efficiency gains and data purification project.

General strategies:

- Making adequate provision for the poor by maintaining a stepped tariff cross-subsidising the shortfall in the free basic service.
- Further relief to the poor via assistance to indigent customers.
- Investigation and debate into the use of Prepayment meters on the basis of its recent legal vindication.
- Ensuring that adequate cash reserves are maintained to cover legislated funds.

for 'NSDP'

DIRECTOR: WATER AND SANITATION
Mr. P. MASHOKO

DATE 16/2/11.

EXECUTIVE DIRECTOR:
UTILITY SERVICES
Mr. L DHLAMINI

DATE 21 FEBRUARY 2011