CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

WATER SERVICES DEPARTMENTAL SECTOR PLAN

FOR

CITY OF CAPE TOWN
2012/13 – 2016/17 IDP TERM

OVERVIEW PLAN

Please note that this version is a 2015/16 review which coincides with the IDP 5-year term of office plan.

Editing revision: 02 February 2015

DOCUMENT CONTROL

Version	Date	Amendment	Author	Approved By
02	2014-08-28	-	M. De Sousa-Alves	

DEFINITIONS

Term / Acronym	Definition
BWAS	Bulk Water Augmentation Scheme
CCT	City of Cape Town
DIMS	Data Information Management System
DMA	District Metered Area
DWS	Department of Water and Sanitation
EPWP	Expanded Public Works Programme
IDP	Integrated Development Plan
IWA	International Water Association
SDBIP	Service Delivery and Budget Implementation Plan
WC/WDM	Water Conservation/ Water Demand Management
WCWSS	Western Cape Water Supply System
WDM	Water Demand Management
WMD	Water Management Device
WSA	Water Services Authority
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works
TMG Aquifer	Table Mountain Group Aquifer

Table of Contents

1. CONTEXT

This sector plan executive summary forms part of the broader Water & Sanitation sector plan, which supports the City of Cape Town's Integrated Development Plan (IDP) for 2015/16. The Water and Sanitation department is the Water Services Authority (WSA) for the City of Cape Town. Sections 12 and 13 of the Water Services Act (Act No. 108 of 1997) place a duty on each Water Services Authority to prepare and maintain a Water Services Development Plan (WSDP), also known as a sector plan every 5 years, and update it annually. This sector plan is based on audited information as at June 2014, and integrates technical planning with social, institutional, financial and environmental planning, as well as aligning capital expenditure with operational and maintenance requirements.

The sector plan is structured to align with the Department of Water and Sanitation (DWS) requirements for a water services development plan, and this executive summary provides the stipulated information in the required format. As such, the sector plan provides for an integrated planning approach which includes a public participation process and is updated annually.

The WSDP consists of the following documents.

- Executive Summary document (For Council approval and Public Participation Process)
- Module 1: Overview and assessment of the status of information and strategies on a WSA level (internal use).
- Module 2: Detailed information: Enabling factors compliancy supportive information.
- Module 3: Future plans and strategic supportive information.

The Executive Summary of the WSDP was put together separately for ease of submission to Council for approval and public comment. DWS's new WSDP guidelines (October 2010) was used to compile the three Modules.

2. INTRODUCTION

The Water and Sanitation Department has made significant progress in providing water and sanitation services to the City of Cape Town (CCT) residents since the formation of one Metro administration. All formal areas are adequately provided for with water and sanitation services while services within informal settlement areas are contuinually being improved. Such improvement is predicated on how CCT can continue to overcome where possible the unique technical, density, social, political and land challenges which mostly have legal implications, these processes are led by the Department of Human Settlements. The large scale urbanisation seen in the City has led to some new developing regions, resulting in the demand potentially exceeding the installed capacity, in formal areas this is fully planned for in advance, in informal settlements it is not always fully planned to the same extent. The latter can potentially impact on the CCT's ability to improve service levels.

To ensure sustainable, fair, equitable, reliable and financially viable provision of water and sanitation services, the Department has developed and is implementing strategies that address the priorities reflected in the scorecard, represented by the Service Delivery and Budget Implementation Plan (SDBIP), to ensure effective water services management. The strategies also seek to ensure compliance with the National Water Act, Water Services Act and the related regulations, National and City Policies.

Progress on the objectives as set out in the Department of Water and Sanitation (DWS) critical policy document, the National Strategic Framework for Water Services (September 2003), was measured at a June 2014 baseline.

The growing housing challenge in the CCT has given rise to an increasing number of backyard dwellers in public rental stock. CCT has drafted a backyarder policy which will cover the supply of separate basic services such as electricity, refuse removal, water and sanitation to these residents. For water and sanitation this is taking the form of an individual metered connection via a water management device and a sewer connection within a prefabricated toilet structure. The result of backyarder residents is that the density increase in the affected areas reduces the cost of new infrastructure but increases the water demand and sewer load on existing infrastructure considerably.

The re-adjustment in base information limits the usefulness of a year-on-year comparison as required by the DWS indicators. To ensure and to measure the level of progress, internal service level targets for the CCT that exceed the national standards are in use.

Table 1: National minimum basic service standards

Service	National Standard (1)
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.
Water	A basic water supply facility within 200m of dwelling, delivering at least 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.

NOTES (1) As defined in the National Strategic Framework for Water Services, Sep-03

To achieve the improved service above the minimum basic service standard, the Department of Water and Sanitation has developed a vision which seeks to constantly explore improved and responsive approaches in the provision of these essential services.

2.1. Vision and Mission of Water and Sanitation

The vision of Water and Sanitation Services in Cape Town is: complemented by the CCT's IDP:

IDP Strategic Focus Area's are as follows:

- The Opportunity City
- The Safe City
- The Caring City
- The Inclusive City
- The Well run City

VISION STATEMENT

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:

- Employee and Leadership Development
- Infrastructure Stability
- Water Resource Adequacy
- Product Quality
- Community Sustainability
- Consumer Satisfaction
- Operational Optimisation
- Stakeholder Management and Support
- Financial Viability
- Operational Resilience

We operate within a value system aligned to Batho Pele principles:

- **Integrity**: We maintain the highest level of ethics and fairness in our interaction with each other, our customers and other stakeholders.
- **Respect**: We respect all our employees, customers and stakeholders. We have the highest regard for the dignity of all people.
- **Customer Focus**: We meet customers' needs by providing excellent service, optimal product performance and efficient support system.
- **Trust**: Our business model is based on trust and integrity as perceived by our stakeholders and customers.
- **Transparency**: We operate safely, openly, honestly and with care for the environment and the community.
- **Professionalism**: We encourage innovation, teamwork and openness among our employees and reward performance excellence.

2.2. Business Focus Area

The Water and Sanitation department has adopted the framework for effective water and wastewater utility management developed by the American Water Works Association (AWWA) as a balanced scorecard for its business management. The framework covers all aspects of the Water and Sanitation business necessary to position the department to achieving and contributing effectively and efficiently to the achievement of the City vision.

The following are the ten attributes that have been adopted:

a) **Product Quality:** looks at the ability of the department to meet the potable water quality standards licence conditions, the Department of Water Affairs' general wastewater effluent standards, environmental management requirements and ecological needs.

b) **Customer Satisfaction:** looks at the ability of the department to provide basic services to all residents in the City; sanitation and water in informal settlements at a City set targeted improved level of service, provision of affordable service, meeting Service Charter standards, level of service and standard of service. The department seeks to provide services to backyarders on a direct basis in agreement with the landowners such as the Directorate of Human Settlements and private household owners.

c) **Employee and Leadership Development:** the department has a challenge to develop and retain its employees and ensure high levels of motivation among employees. This challenge demands that the department must ensure adequate staffing levels, skills retention, succession planning and individual development of employees so that their progression into management or a specialist function is supported adequately.

d) **Operational Optimisation:** this attribute forces the department to review its business processes to ensure timely on-going cost-effective, reliable and sustainable service provision in all its operations. The department is challenged to minimise resource utilisation, losses and take advantage of technological advancement to better its efficiency levels in providing water and sanitation services.

e) **Financial Viability:** the focus is for the department to improve its collection ratios and ensure that the tariffs, charges or any levies are total cost-recovering in nature. In addition there is a need to reduce high debt levels and improve the willingness to pay by its consumers. The investment into infrastructure must also be well-timed, synchronized with mutual projects and appropriate funding explored to ensure a good return on investment. The cost of capital must be minimised and the challenge is how to achieve this given the consolidated nature of the investment decisions in the City. The department must also ensure effective utilisation and timely maintenance of its assets to sustain revenue growth levels that is in sympathy to the consumer base growth.

f) **Infrastructure Stability:** this business attribute requires the department to understand when to create and dispose of an asset, the condition of its assets, lifecycle costs, the associated costs to be incurred in unlocking asset value, to sustain the business. The department must ensure timely maintenance, repair, rehabilitation, replacement and upgrading of existing infrastructure. The lifecycle costs of the assets must be well understood and asset management plans developed. The department is currently developing asset management plans to be integrated into the SAP system modules and this process is a huge challenge that requires time and resources to complete.

g) **Operational Resilience:** this business focus area requires the department to ensure adequate risk management for its water and wastewater business. To this end the department has developed the draft Wastewater Risk Abatement Plan and the draft Water Safety Plan and the Department of Water Affairs' requirements of these plans are increasingly becoming stringent. The establishment of operational tolerance levels that ensures adequate management of the legal, regulatory, financial, environmental, safety, and national disaster risks are still to be finalised. Servitude encroachment is a risk to the department that affects the operational resilience of its service provision value chain.

h) **Community Sustainability:** this focus area ensures infrastructure investment led job creation for communities in the City of Cape Town. This will assist in improving the disposable income of households and enhance their ability to pay for water and sanitation services. The department must ensure that its operations, services output and by-products such as sludge and wastewater effluent do not harm the environment and compromise community health. Infrastructure Management and Operations must be managed to ensure efficient utilisation of water resources, energy and promote economic vitality with minimum impact on the environment. Efforts should therefore be made to ensure investments are green and climate change impact is managed.

i) **Water Resource and Demand Management:** as it is, this business attribute focuses on the ability of the department to ensure security of water supply. The department has a challenge to ensure that by 2022 a new source of water supply to the City will have been developed either directly by the department or through Department of Water and Sanitation. The department has to keep pace with future customer needs for basic services and economic expansion through long term resource planning, long term demand analysis and conservation of the existing resources.

j) **Stakeholder Management:** this attribute requires the department to identify the representatives of various stakeholders and ensure adequate engagement in issues that affect them. Satisfying differing views between interest groups, throughout the City of Cape Town, is a challenge for the department in its quest to provide the targeted improved level of service. The department must also ensure adequate engagement with the Department of and Sanitation, the Provincial Government and other directorates in the City for the purpose of optimising investments into improvement programs and risk management.

2.3. Critical Challenges

Out of the business focus areas described above, the Water and Sanitation Department has identified the following as areas of required focus as they could constitute as risks to the business, they are clustered into four categories:

(a) Financial viability:

- Collection ratio and willingness to pay for services;
- Metering and billing;
- Ensuring full cost recovery and acceptability of the tariffs by the consumers;
- Reduction in unaccounted for water;
- High financial requirements;
- High cost of doing business, and
- High debt due to non-payment.

(b) Customer satisfaction:

- Meeting Service Charter standards;
- Improved Provision in accordance with the City's own set desired target levels of basic services to Informal Settlements and Backyarders;
- Availability of services for infrastructure expansion;
- Appropriate service standards and level of service;
- Providing a targeted improved level of service, and
- Provision of affordable service.

(c) Water Resource and Demand Management:

- Achieve water demand targets through intensified WDM strategy;
- Development of additional water sources;
- Treated effluent re-use and its acceptance, and
- Provision of adequate infrastructure to meet City development/growth needs.

(d) Employee development (internal):

- Establish effective institutional arrangement;
- Sufficient staff resourcing, skills retention and development, and
- Increasing productivity, efficiency and effectiveness in the operations of the business.

(e) Operational Optimisation:

- ISO 9000 certification;
- ISO 17025 laboratory certification, and
- Processes re-engineering and right-sizing of the department.

(f) Product quality:

- Meeting the licence conditions for Wastewater Treatment Works, and
- Meeting the amended SANS 241 standards.

(g) Operational Resilience:

- Water Safety Plan development;
- Wastewater Risk Abatement Plan;
- Servitude enhancement;
- Developing and managing the Risk Register, and
- Asset Management.

The strategies to overcome these challenges are dealt with under the appropriate section of the plan that follows.

2.4. Strategic Objectives

In order to implement the business plan, goals and strategic objectives have been set as follows, with a medium-term objective target date close to or at the 2016/17 horizon - the term of the 2015/16 business and IDP plan.

Business Focus Area	Strategic Goal	Strategic Objective	Objective Target Date
Customer Satisfaction	To provide the Department's core service	To sustainably provide basic sanitation services to all residents in the city	ONGOING
	To provide the Department's core service	To sustainably provide basic water to all residents in the city	ONGOING
	To satisfy the users of the service as much as possible	To achieve 2.9, customer satisfaction levels in all our services	2016/17
Quality, Operational Optimisation	To implement an accredited Quality Management System for the Department	To implement and maintain ISO 9001 for all our services within budgetary constraints	2017/18
Quality, Environment	To achieve the best possible effluent discharge quality	To achieve 85% waste water effluent quality to National Standard	2016/17
	To reduce sewage overflows from spillages, blockages and infrastructure failure as much as possible	To minimise river systems pollution by reducing sewage overflows	2016/17
Water Resource and Demand Management	To reduce water losses as far as possible	To reduce Non-Revenue Water to 19% in the next five years	2016/17
	To ensure security of Water Supply for the City into the future, as the lifeblood for sustaining the community and enabling City Economic growth	To improve security of supply: Peak week demand - percentage of potable water production capacity. Target 90%	2016/17
	To increase effluent re-use rather than potable water, thereby reducing total potable water demand	To increase effluent re-used to 5% of potable water used	2016/17
Infrastructure Stability	To operate and maintain the infrastructure for the service sustainably	To develop Asset Management Plans for the Department	2014/15
Operational Optimisation	To consolidate all office accommodation to be less dispersed and in the best location, for closer contact with other parts of the organisation and with the customer	To improve operational efficiencies by consolidating office accommodation	2017/18
	To automate, monitor and control infrastructure as efficiently as possible	To roll out automation, remote monitoring and control systems on treatment works, pump stations and other infrastructure	2017/18
Financial Sustainability	To ensure income covers expenditure	To improve revenue collection to 89%	2016/17
Employee Development	To train all staff to discharge their functions to high standard of excellence	To develop and enhance Process Controllers through the Training Centre	2016/17

In order to achieve the above strategic objectives we have relied on our internal plans. The Integrated Planning, Strategy and Information Management Unit within the Water Demand Management and Strategy Branch has and is responsible for the development and up dating of a master plan for water and sanitation infrastructure which covers a 20 year time period.

Master planning serves as a strategic comprehensive long term plan intended to guide growth and development and is a product of land use plans. It also serves as a tool to aid in effective asset management.

Specialist modelling software is used to develop the master plan. These include Wadiso (Water) and Sewsan (Sewer). These models are calibrated using actual consumption data extracted from the internal SAP database. This raw data is cleaned and converted into a more useable format by using Swift software. Models are developed for both the future and exsting demand scenarios. The outcomes of the master plan include a clear list of priority projects which cover the water and sanitation reticulation network, bulk water and bulk waste water infrastructure requirements.

The first set of master planning reports were finalised and made available in February 2011. The updated project item list and detailed reports are expected to be fully completed by end of June 2015.

2.5. Aligning the WSDP and IDP

The principal challenge for the Department is to maintain an existing water and sanitation service for the city while also providing services for an ever-increasing number of households in a sustainable way. This has to be achieved in the context of providing basic needs, ensuring economic growth, maintaining an ageing infrastructure, limiting negative environmental impact, managing water resource scarcity and consolidating a transformed metro administrative infrastructure. The following matrix depicts how the IDP focus areas are accommodated in the strategic thrusts of the WSDP.

Table 2: IDP Priority Issues Relating To Water Services

Strategic Focus Area (SFA)	IDP Objective	IDP Programme	Water Services Business Elements									
			1. Socio - Economic Profile	2. Service Level Profile	3. Water Resource Profile	4. Water Conservation / Demand Management	5. Water Services Infrastructure Profile	6. Water balance	7. Water Services institutional arrangements Profile	8. Customer Service Profile	9. Financial profile	10. List of Projects
1.THE OPPORTUNITY CITY	**Objective 1.1 - Create an enabling environment to attract investment to generate economic growth and job creation**	No Direct Programme – Linked to Objective 1.2	x									
	Objective1.2 - Provide and maintain economic and social infrastructure to ensure infrastructure-led economic growth and development	P1.2(b) Maintenance of infrastructure					x					
		P1.2(c) Investing in Infrastructure					x					
		P1.2(d) Expanded Public Works Programme (EPWP)	x	x								
	Objective 1.3 – Promote a sustainable environment through efficient utilization of resources	1.3(b) Water Conservation and Water Demand Management Strategy			x	x	x	x			x	x
2.THE SAFE CITY	**No Direct Link to Water Services Objectives - The Department supports this SFA**	Water Safety Plan, Incident Management plan, Business Continuity, Emergency Management Plan, Disaster Risk Management Plan										
3. THE CARING CITY	**Objective 3.4 Provide for the needs of informal settlements and backyard residences through improved services**	P3.4(b) Service delivery programme in informal settlements		x								
		P3.4(c) Backyarder service programme		x		x						
	Objective 3.5 Provision of effective Environmental Health services.	P 3.5(a) Environmental Health Care Programme			x	x						x
4.THE INCLUSIVE CITY	**Objective 4.1 Ensure responsiveness by creating an environment where citizens can communicate with and be responded to.**	P4.1(a) Managing service delivery through the service management process (C3 notification responsiveness)		x		x				x		

Strategic Focus Area (SFA)	IDP Objective	IDP Programme	Water Services Business Elements									
			1. Socio - Economic Profile	2. Service Level Profile	3. Water Resource Profile	4. Water Conservation / Demand Management	5. Water Services Infrastructure Profile	6. Water balance	7. Water Services institutional arrangements Profile	8. Customer Service Profile	9. Financial profile	10. List of Projects
5.THE WELL-RUN CITY	**Objective 5.2 Establish an efficient and productive administration that prioritises delivery**	Some of the Programmes have no direct link to Water Services. It is supported by Water and Sanitation Department. P5.2 (a) HR, Talent Management, Skills Development programme (Integrated Talent management Approach)							x			
		Some of the Programmes have no direct link to Water Services. It is supported by Water and Sanitation Department. P5.2 (c) Annual Community Satisfaction Survey							x			
	5.3 Ensure financial prudence with clean audits by the Auditor-General	Some of the Programmes have no direct link to Water Services. It is supported by Water and Sanitation Department. P5.3(a)Financial management programme							x			
		Some of the Programmes have no direct link to Water Services. It is supported by Water and Sanitation Department. P5.3 (b) Internal management processes programme							x			

3. WATER SERVICES BUSINESS ELEMENT SUMMARY

3.1. Socio-Economic Profile

3.1.3. Situation assessment

In 2013 the mid-year population of Cape Town was estimated to be approximately 3 860 000 obtained from Strategic Development Information and GIS Department (2013). In terms of population trends, the average annual growth rate is estimated at approximately 2.9%. This projection will be used to project future growth.

Table 3: Labour Force Statistics

		2008 Average	2009 Average	2010 Average	2011 Average	2012 Average
Employed	Number	1 206 334	1 215 837	1 165 014	1 268 283	1 246 416
	%	54.10%	52.50%	50.70%	51.70%	51.20%
Unemployed	Number	295 087	358 036	386 053	396 692	424 530
	%	13.20%	15.40%	16.80%	16.20%	17.50%
Labour Force	Number	**1 501 421**	**1 573 873**	**1 551 067**	**1 664 975**	**1 670 946**
	%	67.30%	67.90%	67.40%	67.90%	68.70%
Not Economically Active	Number	729 641	743 885	748 901	787 145	761 509
	%	32.70%	32.10%	32.60%	32.10%	31.30%
Labour Market	Number	**2 231 062**	**2 317 758**	**2 299 968**	**2 452 120**	**2 432 454**
(all aged 15-64 years)	%	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Source: Strategic Development Information and GIS Department

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 households living in informal settlements and backyards has been growing due to urbanisation, natural growth and changes in household size, however the percentage residing in informal settings has decreased.

3.2. Future Trends, Strategic Gaps and Implementation Strategies

3.2.3. Strategic gaps and strategies:

It is important for the CCT to apply labour intensive construction methods such as Expanded Public Works Programmes (EPWP), where applicable, to new projects. This will aid in alleviating poverty through job creation. Number of opportunities requires a performance stretch with budget and process adjustments implications. The achievement of targets is therefore subject to operational considerations. With regards to the number of job opportunities created through the Expanded Public Works Programme (EPWP), the Water and Sanitation Department is constantly contributing to job creation. In 2011/12 a total of 1 539 opportunities were created by the Department. In the next financial year (2012/13) 3 870 EPWP opportunities were initiated.

And then in 2013/14, against a baseline of 3 870 and a target of 4 500, the Department showed that it is serious about playing a positive role in supporting the Government's ideals and contributing to the wellbeing of the community by job creation through offering 4 934 EPWP job opportunities to the citizens of Cape Town. In 2014/15 the Water and Sanitation Department is setting the bar even higher with an annual target of 5 100.

If urbanisation continues at high levels it is likely that more residents will enter the indigent bracket. This in turn means more and more people could fall within the CCT's subsidised or emergency housing programme which creates implications for growth of the City and its infrastructure.

Infrastructure investment creates an environment for economic growth and is important for sustainable growth. Failure to improve the current state of infrastructure possesses a serious threat to the local economy. In order to ensure medium to long-term sustainability of the existing infrastructure, proactive rehabilitation and maintenance of the infrastructure is being and will continue to to be implemented. 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 sustained national electricity tariff increases, is making it extremely difficult for the City to address all needs.

3.2.4. Implementation strategies

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 registered indigent households receive the first 10.5kℓ of water for free, this is an additional 4.5kℓ's to what all households receive. The total number of indigent households qualifying for the Indigent grant 30 June 2014 is 288 724.

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 the concerned 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 (WMD's) 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. WMD's are being installed across a range of household's income groups to the same end goal. A total of 17 989 WDM devices were installed for 2013/14.

Due to National Government having very broad guidelines in regards to the provision of water and sanitation, the City has been developing its own guidelines to ensure we continue to strive for and provide the best service levels possible .

4. SERVICE LEVEL PROFILE

4.1. Situation Assessment

The 2014 mid-year estimate household figure (Census 2011 as the basis for the estimate) is 1 122 880 households. The 2014 mid-year estimates, per dwelling type, were not available at the time of this report. However, with respect to domestic consumers, the latest Census of 2011 indicates a total of 1 068 575 households including 143 823 (Census 2011) in informal settlements, while the remainder of 912 491 in the formal sector included at least 74 958 (Census 2011) backyard dwellers and 12 261 households classified as other.

Across all formal registered consumer categories the City's billing system (SAP) shows 634 071 consumers (water connections) as at June 2014 (refer to Table 4Table 4: No. of Formal Sector Consumer Units within each Consumer category (as at June 2014)).

Table 4: No. of Formal Sector Consumer Units within each Consumer category (as at June 2014)

CCT Consumer units	
Commercial	13094
Government	313
Industrial	4 460
Miscellaneous (incl. Homeless Shelters)	5 878
School-Sportfields	1 739
Domestic Cluster	6 427
Domestic single residential	589 041
Departmental Cluster	2543
Municipal Water	9 837
	633 332
External consumer units	
Bulk & Other	739
Total consumer units	634 071

Source of Consumer Unit breakdown: Billing system (SAP)

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 (excluding a few with septic tank facilities) having flush sanitation on site.

4.2. Targeted Improved Level of Water and Sanitation Services

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

The City provides various different types of alternative sanitation options to the full flush toilet, this in order to overcome, as far as possible, the challenges described in the Introduction, whilst some of these alternative sanitation options are seen as a top up service, or a 1-on-1 provision and some can service more than one household. In terms of meeting the National Guidelines of adequate sanitation the City fully complies, however, with the City's own set targets and commitment to overcoming the challenges laid out in the Introduction, as at June 2014 the City aims to rollout additional toilets (of various typologies and therefore servicing ratios).

The maintenance of these sanitation services often carries high cost due to frequent cleaning, servicing and repair or replacement due to vandalism. It causes heavey contraints on the departments finance and reuires a national initative to be implemented or a significant improvement in the level of funding received from the equitable share. In the case of the City of Cape Town, the cost of these services is to a large extent being cross- subsidised by rates and tarrifs from customers. The total number of toilets installed as at 2013/14 financial year was 45 370 units.

4.3. Financial Implications in order to Achieve the Targeted Improved Level of Service

To achieve the City's own desired improved service levels and service the increased number of households in informal settlements, the Water and Sanitation Department is implementing a service provision program that is integrally tied to the 10-year Housing Plan.

The total capital requirement over a 5 year period (from 2012/13 to 2016/17), to primarily cover sanitation service provision is estimated at R247 million including allowance for a 5% household growth.

R9.0 million is required to achieve the City own set targeted improved water service level and provide for the anticipated growth in demand.

The improved level of service that the City has set as its own target is defined as a minimum ratio of 1 tap to 25 households. Ideally water and sanitation would like to achieve improved service levels within five years. Water and Sanitation aims to deliver approximately 2800 sanitation units per annum, a target which was exceeded in 2013/14 where the total provision was over 5 916 (this includes backyarders and Informal Settlement households). This should be contextualised to the latest census of 2011 indicating an informal settlements household average growth of 3 371 households per annum, which means further installations and provisions are required but in turn densities will increase.

In terms of access to water, the City has steadily improved its service provision per year against the new SDBIP annual target of 600 additional taps. This target has been exceeded by a large margin in 2013/14 with 1 438 new taps provided to customers in informal areas alone. This brings the cumulative number of taps provided in informal settlements to 9 547 (by June 2014).

The challenge to delivery in these areas is amplified by;

- lack of space and the extreme densities of settlements
- resistance from the community
- Grey water ponding problems
- settlements located on private land, closed landfill sites or other unsuitable land
- the level of community acceptance of non-waterborne sanitation.

The Backyarder policy introduced in 2012, will initially be focused on public rental stock backyarders and with the following estimated basic cost:

Item Description	Cost Estimate per Installation
Water connection, Sewer connection and top structure (including meter)	R13 000

The backyarder programme commenced in 2012 as a pilot project to provide services (water, sanitation, electricity and a wheelie bin) to backyarders residing on city owned rental stock property. The three areas targeted under the pilot programme was Hanover Park, Factreton and Langa. Factreton and Hanover Park has been completed except for a few obstacles.

The implementing agent was the Utilities Directorate, Water and Sanitation, but the programme is now being rolled out by Human Settlements. Water and Sanitation will still have to plan and allow for the basic free and indigent component of the service. Table 5 represents the planned additional areas for implementation. It is anticipated that the installations will be completed by June 2015.

Table 5: Location of Backyarders in City Rental Stock

AREA	No. of beneficiaries	No. of planned backyard installations
Bonteheuwel	739	412
Valhalla Park	786	231
Scottsdene	748	439
Uitsig/Elsiesrivier	222	222
Grassy Park & Lotus River	451	147
Gugulethu	702	254
Heideveld	1252	417
Atlantis	140	47
Parkwood	675	161
Eastridge	193	175
Woodlands	101	100

The pilot studies performed have shown that the complexity of doing backyarder servicing can vary from area to area. In some cases where there is good organization, information, and good community participation, stakeholder buy-in can happen fairly quickly, in the order of one to three months. In other cases, where substantially more ground work is required the buy-in and overcoming other social challenges can take a lot of time. Thereafter delivery of at least ten units per week is possible. Water and Sanitation will be responsible for the service connection to the property.

The City's Housing programme is funded through National grants. Service provision within informal settlements is funded by the Water and Sanitation Department with partial recovery of cost from the national Equitable Share. The overcoming of challenges faced and speed at which Human Settlements are able to implement the Uprgade of informal settlement projects, site and service projects and new housing developments, amongst others,will inform how best to manage water and sanitation provisions and if necessary how to adapt it.

4.4. Strategy to Provide an Improved Level of Service

With all formal households having individual and direct water and sanitation provisions the strategy for improving water and sanitation services is directed entirely at informal settlements and backyard residents.

Backyarder policy:
A policy for the provision of services to backyarders has been finalised. The pilot project on Council-owned rental stock includes for the provision of backyarders with a metered water standpipe and sewer connection. The service is provided in the form of a concrete structure housing a water borne (flush) toilet on the inside, with a washing trough and tap fixed to the outside of the structure, being placed in the backyard where informal dwellings are in place .The water is connected through a water management device and a tag is allocated to each household to dispense the water. A free allocation of 6kl per month of water is supplied to each backyard family. The supply to this unit will be taken off the main house supply, and all of the free portions, together with the main dwelling's free portion will be deducted from the account rendered to the main dwelling. Registered backyarders will be listed as indigent and therefore entitled to the free services that the City provides. This will put more users onto the billing system. This solution is intended to provide such households with a higher level of service. At this stage, the Backyarder policy as envisaged will only be on Council owned public rental stock.

Informal Settlements Strategy:
A revised and rationalised Informal Settlement Servicing Strategy is under development. Up to and including 2014, the strategy has been to provide an improved level of service above the National Standard . Going forward it is the intention to achieve an enhanced service that reduces the ratio of households to water and sanitation services..

The viable technology choices and level of desired service to be provided in informal settlements as described in the Introduction creates challenges. The Informal Settlements Strategy provides the Department with a point of departure to work towards overcoming these challenges. In this strategy, all informal settlements are classified into categories of appropriate service standard, determined by the availability and status of land, existing infrastructure, hydrology of area, community participation and economics of providing a sustainable service. It is summarised in Table 6:

Table 6: Servicing Strategy Categories within the City of Cape Town

Category	Land Type	Bulk infrastructure	Distributed space available within settlement	Service Standard
A1	Government owned land, occupation permitted	Available within economical distance.	Adequate	1
			Inadequate	2
		Not available within economical distance	Adequate	3
			Inadequate	4
A2	Private land, occupation permitted	NA (No investment on private land allowed)	Adequate	3
			Inadequate	4
B	Adverse physical conditions, temporary occupation	NA	Adequate	3
			Inadequate	4
C	Occupation prohibited	NA	Adequate	3
			Inadequate	4

No.	City Set Targeted Desired Improved Service Level (over and above National Government Guidelines)
1	Waterborne sanitation 1:5; taps 1:25
2	Managed all-in-one waterborne ablution facility with janitorial service, supplemented by portable flush toilets 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 portable flush toilets 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 DWS’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 a per “the water ladder’ concept, it is also extending the coverage and density of services in each settlement beyond the basic level as funds allow.

Table 7: Sanitation Service Profile of all Domestic consumers, as at June 2014

TOILET TYPE	COUNT	HH SERVICED
INFORMAL SETTLEMENTS		
Chemical Toilets	5 816	29 080
Container Toilets	5 678	28 390
25l Black Buckets *	377	377
Portable Flush Toilets	19 828	19 828
Un-ventilated Pit Toilets	312	1 560
Urine Diversion (Mobisan)	187	935
Pour Flush Toilets	370	1 850
Dehydration (Enviroloo)	165	660
Modified Afrisan Afrisan	450	450
Anaerobic Toilets	48	96
Full Flush Toilets	12 139	60 695
TOTAL	**45 370**	**143 921**
FORMAL PROPERTIES (incl. Backyarders)	**924 725**	**924 725**

(*)The City, as at June 2014, is servicing around 377 ‘buckets’ in the City. These are all in the Boystown and KTC area. All the residents who are using these 377 ‘bucket system’ toilets have been offered a portable flush toilet but have declined it, despite the City wanting to eradicate these remaning ‘bucket system toilets’. The City cannot force anyone to not use it. These areas are currently part of a Human Settlements development and therefore these buckets will be eradicated as the residents are absorbed into the project

Informal settlements mostly have communal taps and sanitation, in all all cases services are provided for free. Key tasks, are in providing communal or shared sanitation points, are repairs, maintenance and cleaning, which the City shares with various other stakeholders.

4.5. Future Trends and Goals

4.5.1. Residential consumer units

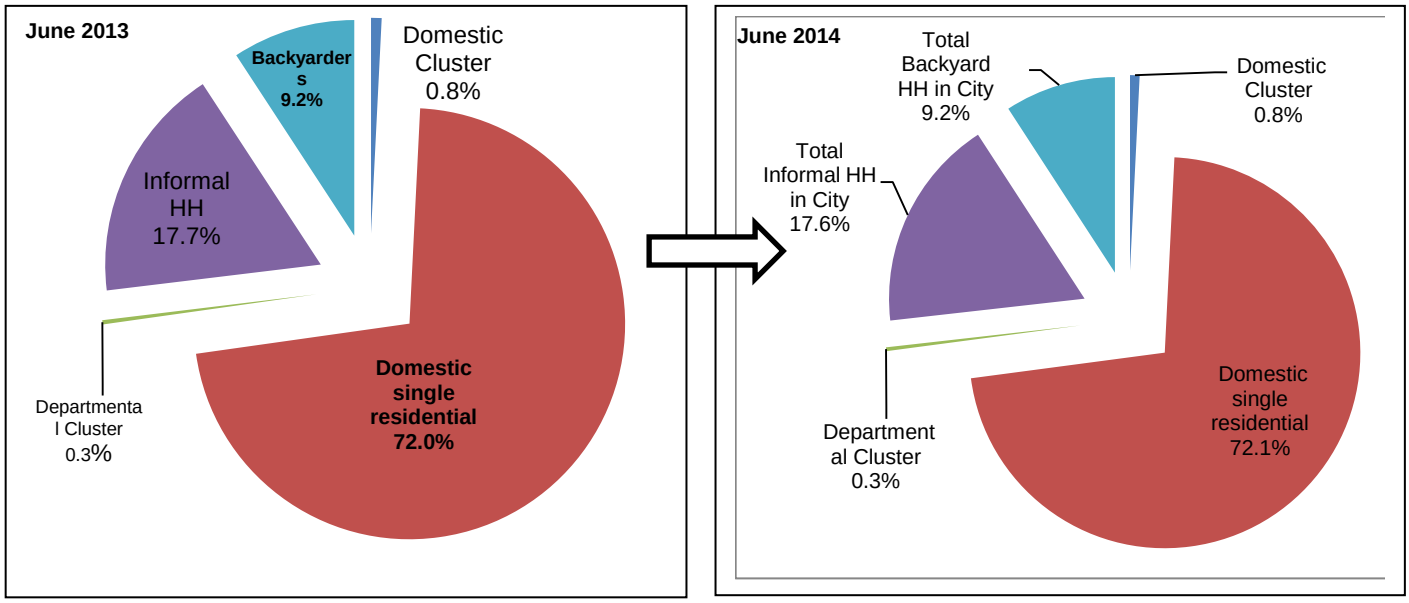


Figure 1: Breakdown of residential consumer units (a) as at June 2013 and (b) as at June 2014

This breakdown in residential consumers emphasises why the City is focussed on improving provisions to informal settlements and backyard residents. According to the figures provided above the total informal total informal households make up 17.7% of the residential customer base, as at June 2013, this is very similar to the percentage informal households, at 17.6% as at June 2014. The above diagram highlights that the proportion of people within various forms of housing is dynamic. This has implications for our water and sanitation services.

4.5.2. Public institutions (associated services) and 'dry' industries, wet industries and industrial consumer units

All the schools, hospitals and clinics in the CCT have adequate water and sanitation services. In addition, all 'dry' industries, wet industries and industrial consumer units have adequate water and sanitation services.

4.5.3. Strategic gaps

- The need for an improved level of service with informal settlements and backyarders, and
- The expertise and experience of internal staff with regard to the rollout and maintenance of alternative sanitation technologies needs to be further developed to fast track service delivery and sustain technology lifecycle maintenance.

- Successful piloting of alternative sanitation technologies.
- Supply Chain Management approved delivery and maintenance contracts differ from the standard formal gravitational sanitation services and needs to be consistently maintained to ensure sustainable service delivery within informal areas.
- 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.

4.5.4. Implementation strategies

- Residential consumer units: Water & Sanitation's informal settlement programme aims to provide an improved level of water and sanitation service and maintain a minimum level of service to poorer households, and
- 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.
- Informal Settlements: Future sanitation technology rollouts should continue to include combinations of onsite containment technologies and waterborne sanitation. In addition, the installation of sealed VIP's to be considered in sandy areas with high water tables and the use of small bore (settled sewer) sewer lines to be investigated. The suitability of bio-digesters for the on-site treatment of human waste with the added benefit of energy generation to also be investigated.

.

5. WATER RESOURCE PROFILE

5.1. Situation Assessment

5.1.1. 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, DWS and Eskom.

The CCT and DWS operate the WCWSS in an integrated manner to ensure that the storage of water is maximized and spillage is minimized during current and future hydrological years. The annual yield of the WCWSS, including the 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 DWS, and the Wemmershoek and Steenbras Schemes, owned and operated by the City of Cape Town. The total storage capacity of the six major dams of WCWSS as at June 2014 is 898.3 million kℓ.

Table 8: Major Dam Levels

MAJOR DAMS (99.6% of total capacity)	**BULK STORAGE ON 30 JUNE 2010 – 2014**						
	CAPACITY Ml	**CAP. LESS DEAD STORAGE**	**% 2010**	**% 2011**	**% 2012**	**% 2013**	**% 2014**
Wemmershoek	58 644	58 544	70.1	74.6	51.6	91.9	91.8
Steenbras Lower	33 517	33 517	61.4	60.3	54.8	77.4	76.8
Steenbras Upper	31 767	29 267	80.7	75.2	77.2	87.4	100.7
Voëlvlei	164 122	156 022	82.5	67.5	51.5	74.5	84.0
Theewaterskloof	480 250	432 250	85.8	74.2	61.0	84.9	100.6
Berg River	130 000	125 800	100.1	82.6	77.2	97.4	100.5
TOTAL STORED			764 828	662 215	550 940	764 355	863 277
TOTAL STORAGE	898 300	835 400	768 300	898 300	898 300	898 300	898 300
% STORAGE			85.1	73.7	61.3	85.1	96.1

The six major dams comprise 99.6% of the total system capacity. The percentages in the above table include “dead storage” (water that is not available for use). The approximate dead storage for each dam is indicated in Table 8.

Table 9: Minor Dam Levels supplying City of Cape Town

MINOR DAMS (0.4% of Total System Capacity)	**CAPACITY** **Ml**	**% on** **30 JUNE 2014**
Dams supplying Kloof Nek WTW:		
Hely Hutchinson	925	92.8
Woodhead	954	49.3
Dams supplying Constantia Nek WTW:		
Victoria	128	101.2
Alexandra	126	100.0
De Villiers	243	100.3
Dams supplying Brooklands WTW:		
Kleinplaats	1 368	95.3
Lewis Gay	182	93.1

The minor dams owned and operated by the City of Cape Town comprise 0.4% of the total system capacity.

The minor dams in the table above are grouped by systems: Hely Hutchinson and Woodhead Dams supply Kloof Nek WTP; Victoria, Alexandra and De Villiers Dams supply Constantia Nek WTP; and the Kleinplaats and Lewis Gay Dams supply Brooklands WTP.

A long-term 16 year record of the storage level of the WCWSS is shown below in Figure 2.

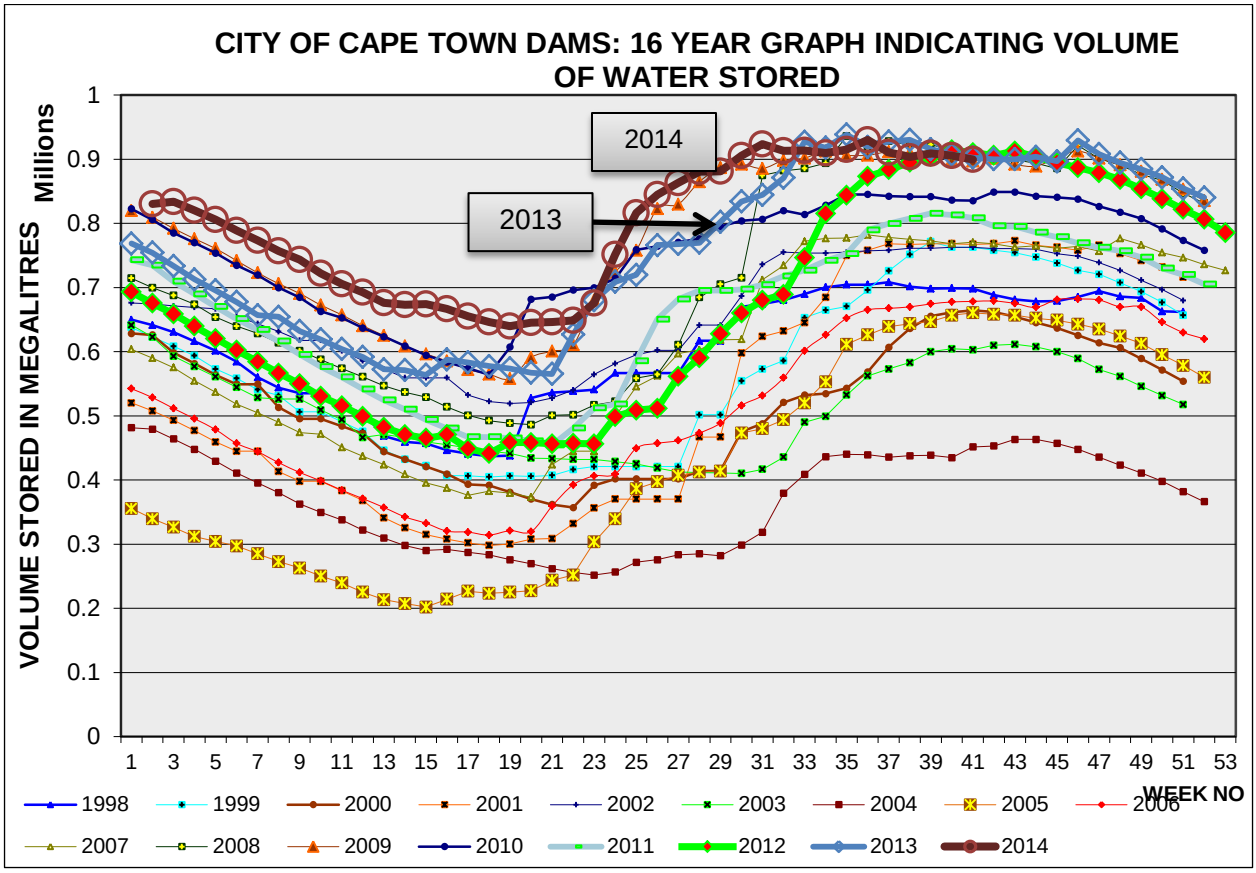


Figure 2: 16 year long term history of reservoir storage capacity

5.1.2. 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 73% of its allocated water from DWS 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 10. The CCT produced 314.77 million kℓ of potable water during the 2013/14 financial year.

5.1.3. 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 10: Cape Town's allocation from the WCWSS

	Volume (Million kℓ/annum)	% of Total
DWS Owned Schemes		
Theewaterskloof	118	29.6%
Voëlvlei	70.4	17.7%
Palmiet	22.5	5.6%
Berg River	81	20.3%
Subtotal DWS Schemes	**291.9**	**73.2%**
CCT Owned Schemes		
Wemmershoek	54	13.5%
Steenbras	40	10.0%
Lewis Gay and Kleinplaats 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**	

5.2. Quality of Water

The quality of water produced at the CCT's water treatment plants is strictly monitored on a continual operational basis by the Bulk Water Branch to ensure compliance with the South African National Standard (SANS 241:2011) on drinking water quality. The Scientific Services Branch also conducts routine sampling and analysis of potable water produced at all water treatment plants, as well as inspection of treatment processes.

ISO 17025 accreditation for the laboratory quality testing has been attained in September 2011. Building expansion of the laboratory is a necessity for improving its capability to undertake a wide spectrum of tests. Scientific Services are currently within the planning stages of the building expansion proposal.

The water quality report below indicates the analytical data and approximate distribution for Cape Town drinking water for June 2014 (refer to Table 11). The SANS Specification is also stipulated on this report. Water Compliance has exceeded the target of 98% at 99.1% (4th Quarter SDBIP, 13/14).

Table 11: Class 1: Drinking Water Quality for June 2014 (SANS 241 requirements per population size; 1 sample: 20 000 population)

Water Supply Outlets	Sample Points Per Water Supply Outlet	Sample Points Sampled	Number of Samples taken for June		% Compliance SANS 241			
					June Month		12 Month Rolling Average	
			Chemical	Micro-biological	Chemical	Micro-biological	Chemical	Micro-biological
Water Treatment Plants	10	10	41	39	99	100	99	100
Reservoir	24	23	91	102	100	100	100	100
Distribution	132	123	530	558	100	99	100	100
Total	**166**	**156**	**662**	**699**	**99.7**	**99.7**	**99.7**	**100**

5.3. Future Trends and Goals

The Department will continue to take steps in order to meet the requirements for any future water quality standard increases. The international and national specifications for drinking water are changing all the time with specifications becoming more stringent and with new ones being added such as for possible future water analysis for radioactivity, viruses or EDC's. Necessary measures may include the purchase of new specialized analytical equipment to perform these measurements or stricter process control at the water treatment plants. With proper coordination within the Department, these future water quality requirements can be met.

5.3.1. Strategic gap analysis

The WCWSS Reconciliation Strategy included recommendations of interventions, listed in Table 12 below, that needed to be implemented or studied further to ensure that potential schemes could be implemented in future when required.

Table 12: 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
Desalination Feasibility Study	Feasibility	CCT
TMG Aquifer Regional Monitoring	Monitoring	DWS
Invasive alien plant clearance	Ongoing	DWS
Voëlvlei Augmentation Phase 1	UFeasibility	DWS
Mitchell's Pass Diversion	Feasibility	DWS
Raising Steenbras Lower Dam	Pre-feasibility	DWS/CCT
Water Re-use for Potable Use Feasibility Study	Feasibility	DWS/CCT
Future Studies Required		
Newlands Aquifer	Pre-feasibility	CCT
Cape Flats Aquifer	Feasibility	CCT
Lourens River Diversion Scheme	Pre-feasibility	CCT

The timing of the development of the required bulk water infrastructure is dependent on the growth in water demand and the effectiveness of the Water Conservation and Water Demand Management (WC/WDM) Strategy. To ensure security of supply, the City of Cape Town, in consultation with the Department of Water and Sanitation (DWS), is exploring the next water resource scheme to be developed by 2022. The schemes being considered include the the Voëlvlei Augmentation Phase 1 (by the DWS), water reclamation for potable use, groundwater from the TMG Aquifer and sea water desalination. The sea water desalination and water reclamation, for potable use, feasibility studies are currently underway. The City is planning to commence with the extended exploration of, and pump testing from, the TMG Aquifer. In addition, the City of Cape Town will increase the treatment and conveyance capacity of the bulk water supply system by implementing the Bulk Water Augmentation Scheme (BWAS), which comprises the proposed Muldersvlei Water Treatment Plant (500 Ml/day), two bulk water reservoirs (2 x 300Ml) and conveyance bulk pipelines (56km). The planning and design of Phase 1 of the BWAS has commenced.

5.4. Regulation

5.4.1. Situation assessment

The Water Pollution Control Inspectorate's function is the protection of municipal infrastructure and the environment against pollution. Most of the inspectors are Peace officers, who regulate public institutions and the industrial/commercial sector.

For the 2013/2014 financial year a total of 230 dischargers were monitored on a monthly basis. A total of 30 fines were issued for the same period. These fines include those who have contravened the Treated Effluent and The Wastewater & Industrial effluent by-law, but recently spot fines have recently been approved by the Magistrate committee and effective immediately. A process has been developed, approved and implemented to handle section 54 and 56 notices issued under the criminal procedure Act. This will enhance the enforcement arm of the unit.

5.5. Future Trends and Goals

5.5.1. Strategic gap

With respect to the effluent discharged from Industrial sites, non-complying and polluting trade industrial effluent occasionally impacts heavily on the wastewater treatment processes serving the catchment and as a result, poor quality effluent ends up being discharged into our rivers. Parameters of concern in the sewer system include fats, other foreign objects (sand, tools, tyres, rags, etc.), toxic substances and storm water ingress. In the case of the storm water system, the common offence is mainly polluted wash water containing oils, silt and grease from vehicle washing.

5.5.2. Implementation strategies

- The inspectorate is using an engaging/ cooperative approach with consumers through education and awareness, reviewing of by-laws, as well as frequent compliance monitoring inspections and enforcement measures, in the form of administrative and criminal, and last but not least, incentives. This approach is crucial in achieving our goal to improve the quality of final effluent discharged back into the river system, reduce water wastage and promote environmental protection by influencing a change in behaviour. Other strategies implemented in an effort to promote water by-laws compliance include, but not limited to the following:

- A new Wastewater & Industrial effluent by-law has been promulgated on 7 February 2014 and new spot fines have consequently been submitted to and approved the Chief Magistrate.

- The sewer blockages awareness campaign continues to be rolled out in phases in other parts of the City of Cape Town. The focus being on understanding the sewer system, causes and the negative impacts of sewer blockages on the environment, how to prevent or reduce sewer blockages. In the 2013/14 year the areas covered include: Gugulethu, Bonteheuwel, Macassar, Delft, Bishop Lavis, Netreg/Charlesville, Delft South, Strand, Durbanville, Phillipi, Dunoon, Bellville, Khayelitsha, Parow, Mitchells Plain, Grassy Park, Kraaifontein, Ottery, Parkwood, Goodwood and Elsies River.

- In an effort to enhance compliance monitoring and enforcement, a pilot project was initiated and the contractor has been appointed to install an automated inline monitoring system in the identified areas/catchments. The pilot is ongoing and data is constantly recorded and analysed.

- The storm water ingress program.

- Camera surveys to determine the integrity of the sewer lines and smoke detectors mainly used to detect cross connections/storm water ingress are being utilised

- The water and the treated effluent re-use by-laws, which will enhance compliance on use of potable water as well as that of treated effluent, are in the process of amendment.

6. WATER CONSERVATION AND DEMAND MANAGEMENT

6.1. Water Demand Management Interventions

6.1.1. Situation assessment

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 (WC/WDM Strategy).

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

The City of Cape Town has already started implementing the water balance as per the International Water Association (IWA standard) (refer to Table 16). CCT is in the process of defining various District Metered Areas (DMA's). Once the proposed DMA's have been finalised and then implemented, the water balance model will then be developed at the zone (DMA) level.

The City has identified a list of priority areas to be targeted for active leak detection and repair. This list is based on areas in which pressure management has been implemented but the minimum night flows remain higher than expected. The Water Demand Management and Operations internal team started with leak detection in July 2013, in the Kuilsriver area where two zones were identified, namely; Highbury and Highbury Park. The team successfully completed the leak detection and repairs within these two zones

6.1.2. Trends and goals

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 2022 can be achieved. According to the Water Reconcilation Strategy it is anticipated that the next augmentation scheme will be required by 2022 with construction commencing by 2015. In the 2013/14 financial year, a number of successful WC/WDM projects were implemented, of which notable projects were:

- Pressure Management was successfully installed in Melkbos, Brakloof, Dennehoek, Mountainside, Lynns View, Pelikan Park. Savings achieved from these interventions is still being monitored but is anticipated to be in the region of 2.23 million m^3 per annum.
- Water meters replaced 3 450
- Water meters re-fixed/relocated 2 206
- WDM Devices installed 17 989
- Leak detection survey 58.64km main line surveyed within 5 406 properties

6.1.3. Strategic gaps and goals

Table 13: Strategic Gaps

Resources	Constraints on financial resources
	Constraints on human resources to implement WC/WDM strategy
Technical capacity and tools	Management information and monitoring systems needing updgrading
	Demand measurement systems and tools needing development
	A detection programme needs to be put in place to identify water leaks before they become bursts
	Water balance model not yet developed to level of all water supply zones (DMA's)

Demand reduction has been planned for a level of no more the 2% growth. This target has been far exceeded by a measured -1.92% for 2013/14 financial year. The decrease in water treated (demand) is lower than the previous decrease in demand of -2.8% in 2012/13 (negative growth/reduction in water demand; 320.92 million m^3 (12/13) to 314.77 million m^3 (13/14)). The funding of the WDM programme needs to continue to be prioritised in order to enable plans and keep up with economic growth and consumer behaviour.

6.1.4. Implementation strategy

WC/WDM Strategy: The Water Conservation and Water Demand Management Strategy is being followed in order to budget for and implement several initiatives in parallel. The Strategy is currently being reviewed in terms of its level of success and updated accordingly. Various projects and programmes have been identified to reduce and improve the overall efficient use of water. These include creation and analysis of District Metered Areas (DMA's), pressure management, treated effluent re-use, leak detection and repair, plumbing retrofitting and education and awareness programmes, amongst others. In July 2013, CCT has commenced with their advanced leak detection programme and still continues with the programme according to a prioritized schedule.

Demand Management Devices: Further the rollout of further Water Demand Management Devices on a prioritised basis.

Pressure Management: Further pressure reduction schemes are being designed for implementation. Final proposed list of the DMA's to be prioritised has been compiled based on a combination of the pressure management infrastructure analysis as well as the financial analysis.

Water Balance: See Chapter 8: Water Balance.

Treated Effluent: Identify additional end-users for treated effluent.

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

7. WATER SERVICES INFRASTRUCTURE PROFILE

7.1. Infrastructure Profile

7.1.1. Situation assessment

The Financial or "book" value of the water and sewer infrastructure stood at R4.92 billion as at 30 June 2014. However, the Replacement Value is estimated considerably higher, escalated at CPIX rates.

Table 14: Infrastructure of Water and Sanitation Services -Estimated Replacement cost

Description	Asset Count	Replacement Value (R M)	Annual Maintenance Norm	Annual Maint. req, Bulk Water separate (R M)
Dams	11	R 1 839	0.50%	R 3.32
Bulk Pipelines	658.5 (km)	R 8 644		R 6.91
Bulk Reservoirs	24	R 1 748		R 5.62
Water Treatment Plants & Wellfields	12	R 2 077	1% Civil, 4% Mech/Elec	R 22.70
Bulk Pump Stations	24	R 374		R 6.57
Other (Canals, Tunnels, Meter, etc.)	-	R 127		R 1.65
Waste Water Treatment Works incl three Sea Outfalls and two oxidation ponds	27	R 7 600	1% Civil, 4% Mech/Elec	R 380.00
Water Reticulation (as at end of June 2014)	10353.31 (km)	R 12 480	1%	R 124.80
Sewer Reticulation (as end of June 2014)	8970.84 (km)	R 15 593	1%	R 155.93
Depots	37	R 63	0.50%	R 0.31
Water Pump Stations	82	R 640	0.5% Civil, 4% Mech/Elec	R 28.80
Sewer Pump Stations	386	R 1 135	0.5% Civil, 4% Mech/Elec	R 51.08
Reticulation tanks	108	R 1 218	0.50%	R 6.09
		53 536.1		**793.8**

The water supply and wastewater reticulation networks jointly account for 52% of the total replacement value.

7.1.2. Status of All Water and Sanitation Infrastructure

Exisitng infastrucutre has a finite life span and it is essential that it is maintained, upgraded and replaced within the relevant time frames to ensure the sustainability of the City's water and sanitation services. Particular emphasis has been put on this over the last few years and the current year in this regards. However, these are usually very expensive exercises and budget in this regard is constrained.

An estimated minimum of R150 million/annum (2012/13 - 2016/17) and R 84 million/annum is required for water pipe replacement and sewer pipe replacement respectively, including for Bulk lines. For reticulation water mains the aim is to achieve an acceptable burst rate of less than 10 bursts/100km/ 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

Department has developed an Infrastructure Master Plan that identifies the Water and Sewer upgrading requirements for all development areas.

It is projected that the bulk water supply system in the north eastern and north western corridors of the City will come under increasing stress in the future due to the growth of these areas. Augmentation of the bulk water system will be required to ensure that supply capacity can meet the future demand for water. The proposed Bulk Water Augmentation Scheme, comprising a 500 Ml/day water treatment works, two 300 Ml bulk reservoirs and bulk water conveyance pipelines, will increase the overall capacity of the bulk water supply system, as well as increased supply capacity to the northern areas of the city.

7.1.3. Trends and goals

The number of burst mains in the first eleven months of each year has steadily decreased: 4 085 in 2011/12, 3 306 in 2012/13 and 3 313 in 2013/14. The corresponding rate of bursts per 100 km per year is as follows: 40 in 2011/12, 32 in 2012/13 and 31 in 2013/14. Approximately 55.4 km of water mains were replaced during the 2013/14 financial year.

7.1.4. Strategic gaps

Historically, maintenance of infrastructure was mostly reactive. This is why the Department is investing in proactive measures.

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), and
- Maccassar / AECI development node.

The strong growth trend in the City puts pressure on the balance between maintaining exisiting and providing new infrastructure.

7.1.5. 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 an Asset 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, and
- 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, and
- Provide sufficient funding to address the backlog in WWTW capacity and provide for growth.

The Water and Sanitation Department is focusing on growing its 'asset management maturity' with the implementation of a Strategic Municipal Asset Management (SMAM) programme. This is facilitated through reliability engineering (formerly known as an Asset Care Centre or ACC).

To ensure long term sustainability, Water and Sanitation Services had 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.

In line with the IDP Focus Area of infrastructure led development and economic growth the WSDP will:

- Focus on maintaining and replacing aging existing infrastructure;
- Improve delivery of services to informal areas, and
- Promote efforts to densify the city by reviewing and upgrading infrastructure to accommodate higher residential density.

Among others, the following major WWTW upgrade projects will be undertaken during the next five years:

Project Description	Progress
Athlone – 15 Ml/day capacity extension	Still in EIA Phase.
Wesfleur – increase capacity	Depending on capacity, ROD issued.
Macassar extension	Still in EIA Phase
Cape Flats - refurbish various structures	In Progress , several mechanical and Civil tenders awarded.
Potsdam extension	Tender documentation for Professional Services Consultant being prepared , aiming for award in July 2015.
Zandvliet extension	18Ml/d in design phase going out to construction tenders in early 2015 and 30 Ml/d upgrade. Still in EIA Phase
Greenpoint Sea Outfall - investigation into need for flow attenuation	Investigation revealed that the Greenpoint Outfall has sufficient capacity. No immediate intervention is needed
Kraaifontein, Philedelphia, Klipheuwal, Melkbostrand,	Still in EIA Phase
Mitchells Plain, Cape Flats, Borchards Quarry – EIA for Treated Effluent Re-use	Consultants appointed, in design phase.

For the reticulation network of both water and sanitation, the following network upgrades will inter alia be undertaken during the next five years:

Water Network

- Replacement of and upgrades to the water network citywide, and
- Informal settlement water installations.

Sanitation Network

- Khayelitsha sewerage network upgrades, and
- Rehabilitation of outfall sewers in Pentz Drive and Sandrift.
- Cape Flats (No. 1 and 2) sewer rehabilitation
- Replacement and upgrade of sewer network citywide
- Informal settlement sanitation installations and provisions.

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.

Table 15: Automation, monitoring and technology Framework plan

ACTION	PROGRESS	TIMEFRAME	IMPLEMENTATION COST
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 Pump Stations are not yet upgrade. Currently in the process of developing a periodic tender for supply of SCADA licenses.	Ongoing	R10M for current Reticulation system phase. Full system scope being developed.
Bulk & Zone meter automation	Further zones delineated (201) and zone meters installed. Currently there are 44 zones (District metered Areas) that have been effectively setup over and above the macro zones of bulk water and the reticulation which is able to provide a macro water balance. Over the past 2 years an average of 7 to 8 DMA's established per year. This was done as per budget allowance and Reticulation Branch requirements. The setting of discrete zones (DMA) are proving to be time consuming as well as need to resolve reticulation operational issue for DMA to remain discrete.	Budget allowing the targeted date for completion is 2022. In the interim the water balance accuracy will progressively improve as well as operation and management of district level zones. It should be noted as the city expands and densities increase additional zones will have to be created and selected existing one's reconfigured.	With an annual budget allocation R5M a year an estimated cost R 40 M to meet 2022 target
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. No firm decision backed by a budget has been made for further rollout. Currently reviving the pilot by putting a period tender in place to maintain the system and get regular readings for data presentation on DIMS. A RFQ is also been done for some training, data analysis and transfer. Although the pilot has shown the best benefit to the city will be for larger industrial water users no decision has been made to rollout. Currently a maintenance and skills transfer tender is being evaluated to keep the system running and to maximise the benefits of the data through a skills transfer programme.	AMR Phased rollout planned in priority industrial or commercial areas over a multi-year timeframe (2020) for entire City. Decision to rollout not taken as yet. A term Tender is being evaluated to maintain the pilot and do skills transfer over 2 years and 6 months. .	R1.5M pilot phase. R50M excluding meter replacement.
Integrated Information System	DIMS development (Danish Hydraulic Institute) with major DWS grant completed. Integrates key major Water and Sanitation information systems in browser map-based dashboards. Maintenance and enhancement of the system is	July 2014 – June 2017	R146,200.00 per annum

ACTION	PROGRESS	TIMEFRAME	IMPLEMENTATION COST
	progressing well, ensuring information shown is current		
Integrated Master Planning: A tender evaluation is currently underway to appoint a service provider who transfers skills to City of Cape Town staff. An appointment is expected to be made within the next 4 weeks and the appointment is intended to cover 3 financial years	Training and skills transfer in the practical updating of the IMP is expected to be completed by June 2015 GLS is in the process of finalising the first cycle model update of water and sewer at the end of October.	The tender was designed as a rates only tender but the estimated cost for the project is between 10 and 13 million over the 3year period	-
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. Tender in place for the procurement of RTUs Factory Acceptance Test complete snag list being resolved. Test RTU in field trials. • Central SCADA system installed - complete • 500 RTUs procured under a tender – installation ongoing • 153 Installed, 90 commissioned and handed over	On-going (update can be provide every six months)	SCADA/Telemetry masterplan
Training Centre: Development and enhancement of Process Controllers	Water and Sanitation Technical Training Centre appointed a service provider to up-skill and provide the RPL qualification for Superintendents/Supervisors and Principal /Senior Process Controllers in the field of Water & Wastewater Treatment Process Control Supervision Training NQF 4, in order to comply with DWS regulation 17 for the Classification of process controllers. A total of sixteen (16) candidates had been selected for this project. However, only eleven (11) candidates availed themselves for the pre-assessment.	2015/16	R5 987 038

ACTION	PROGRESS	TIMEFRAME	IMPLEMENTATION COST
	The first part of the programme was the assessment which was done by the facilitator and there competency gaps identified and the top up training of three weeks was arranged to close those gaps. One delegate dropped out of the programme and they cited operational requirements as the reason for dropping out of the programme. Delegates then compiled Portfolios of Evidence and these were submitted to the EWSETA Exit moderation reports has been received from the EWSETA and all the ten delegates that completed the programme have been found competent. Certificates of competence are still awaited from the service provider. The following are the Learnership Programme for the Process Controllers: 1) National Certificate: Water and wastewater treatment process operations (NQF 2) • 30 Learners of which 20 Employed with the City of Cape Town and • 10 Unemployed youth. • All completed the Learnership • Unemployed learners to be appointed in permanent positions by February 2015. o 2 of 10 Unemployed Learners placed in permanent positions within Wastewater branch. • EWSETA certificates outstanding – Learnership ended in March 2014. 2) National Certificate: Water and wastewater Process Control (NQF3) • 30 Employed staff of Wastewater and Water Purification Plants on Learnership • All completed Learnership • EWSETA certificates outstanding – Learnership ended in March 2014.		

8. WATER BALANCE

8.1. Water Losses and Non-Revenue Water

8.1.1. Situation assessment

Using water and billing figures, the Water Losses (or unaccounted-for water (UAW)) and Non-Revenue Water (NRW) for the overall supply system from Bulk Water Treated to end consumer billing is 14.7% and 21.8% respectively (2013/14).

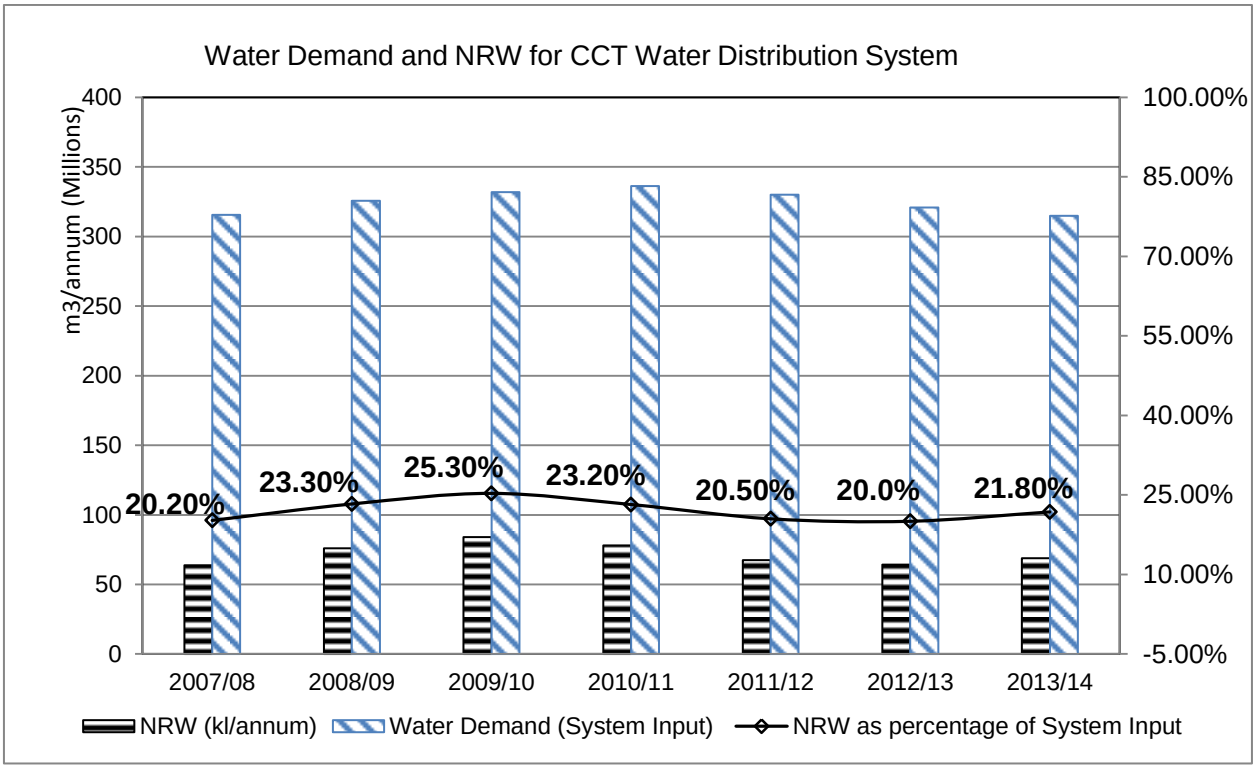


Figure 3: Water Demand and Non-Revenue Water for the City of Cape Town

The Non-Revenue Water (NRW) is defined as the volume of water used by the municipality for which no income is received where revenue water includes Free Basic water which is billed at a zero rate (Wegelin *et al*). Table 16 below provides the Non-revenue Water balance according to IWA standard.

8.1.2. 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.

8.1.3. Strategic gap analysis

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

Table 16: Non-revenue water demand, 2013/14 Financial Year

<table>
<tr><td rowspan="5">(A)
System Input
314 773 795

100%</td><td rowspan="3">(B)
Authorised
268 467 785
85.3%</td><td rowspan="3">(D)
Billed
246 017 052</td><td rowspan="2">(H) metered
246 017 052</td><td>External Customers</td><td>32 573 237</td><td rowspan="2">(Q)
Revenue Water
246 017 052
78.2%</td></tr>
<tr><td>Internal Customers</td><td>213 443 815</td></tr>
<tr><td>(I) Unmetered</td><td colspan="2">0</td></tr>
<tr><td rowspan="3">(E)
Unbilled
22 450 733</td><td>(J) Metered
13 630 733</td><td>Informal Settlements</td><td>11 283 893</td><td rowspan="4">(R)
NRW
68 756 744
21.8%</td></tr>
<tr><td>Formal Metered Unbilled</td><td>2 346 840</td></tr>
<tr><td>(K) Unmetered
8 820 000</td><td>Formal Unmetered</td><td>8 820 000</td></tr>
<tr><td rowspan="4">(C)
Losses (UAW)
46 306 011
14.7%</td><td rowspan="2">(F)
Apparent Losses
21 734 923</td><td>(L) Unauthorised</td><td colspan="2">2 685 121</td></tr>
<tr><td>(M) Meter Inaccuracies</td><td colspan="2">19 049 802</td></tr>
<tr><td rowspan="3">(G)
Real Losses
24 571 088</td><td>(N) Mains</td><td colspan="2">13 743 334</td></tr>
<tr><td>(O) Storage</td><td colspan="2">665 100</td></tr>
<tr><td>(P) Connections</td><td colspan="2">10 162 654</td></tr>
</table>

Note: Free basic water (as part of the Revenue Water) equates to 133.77Ml/day as at 2013/14 financial year (billed at a zero rate).

8.1.4. 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 the 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 individual properties that can be used to derive water and sanitation demands. The first comprehensive and reliable dataset became available in January 2010. This data updated regularly, 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.

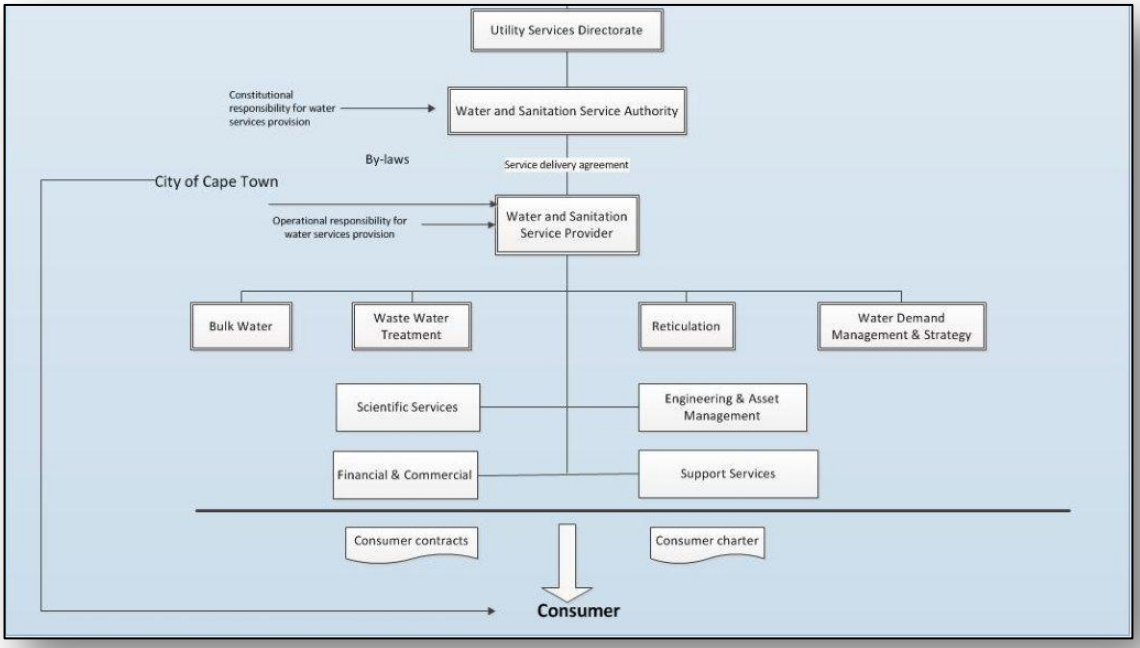
The Data Information Management System (DIMS) project recently implemented has, as a focus area, the reporting of the latest Demand and Loss information as per the IWA standard.

9. WATER SERVICES INSTITUTIONAL ARRANGEMENTS

9.1. 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 17: Water Service Institutional Arrangements



Source: Water Demand Management Strategy

On 28 November 2001, Council authorized Water and Sanitation Services as it was called then 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 and the service is now housed in the Utility Services Directorate as the Water and Sanitation Department.

9.2. Improved Administrative Management

The Department is committed to consistently 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.

The Quality Management System has been successfully developed throughout the department according to the requirements of ISO 9001:2008 Standards:

- Scientific Services Branch has achieved ISO 17025 SANAS Accreditation in August 2011 for Chemistry and Hydrobiological methods. The Microbiology Lab was recommended for Accreditation during the February 2012 surveillance audit by SANAS, the schedule of Accreditation was then issued on the 25 April 2012 confirming the Accreditation for Microbiology.

- The Technical Operating Centre (TOC) has achieved a certification on SANS 990 and ISO 9001:2008. This is a great achievement for the City of Cape Town as it is the first Call Centre in Africa to be certified on SANS 990.

- Bulk Water has achieved certification for all 23 sites on ISO 9001:2008.

- Water Demand Management & Strategy has achieved the certification on ISO 9001:2008 Standard for all of its four sections and workplaces.

- Water and Sanitation Training Centre has achieved its SETA accreditation in October 2012 and is currently implementing ISO 9001:2008 Standard.

The following business improvements initiatives are receiving focused attention:

A service provider was employed to assist the department in developing line managers to be coaches who will support shift workers to cope with a changing environment.

A communication protocol which addresses the communication needs with both internal and external customers has been developed and it is currently at the implementation stages.

Scientific Services has developed productivity standards for the Sampling Laboratory and it is the objective of the Business Development section to determine productivity standards across the entire department.

9.3. Risk and Safety Management

The Department is committed to integrated risk and safety management in order to ensure consistency, legal compliance, continuous improvement and the effective management of risk.

The aim is to proactively mitigate (avoid, prevent or minimize) any condition, event or situation which could impact on Safety, Health, Risk, Environment or Quality or which has already resulted in injury, death or disease to person/s; loss or damage to Council or Third Party property; misuse or abuse of Council resources; impairment of the environment; statutory non-compliance; or which could negatively influence the achievement of Council objectives.

- A Disaster Risk Management Plan is in place for the Department, supported by detailed protocols for different scenarios and individual site emergency management plans, with various simulated emergency exercises being held on a regular basis for readiness and improvement purposes.

- A comprehensive Workplace Health and Safety Committee structure is are in place for the Department. These committees also report to their respective Branch Risk and Safety Committee, which in turn reports to the Departmental Risk and Safety Committee who reports to the newly established Central Health & Safety Committee of the City.

- To assist the Section 16(2) Appointees for the Department with employer management responsibilities as required by the OHS Act, the necessary responsibilities have been assigned to operational management where the specialised nature of operational activities requires it.

- To increase machinery safety supervision, a system has been developed to expand on Employer Appointees in terms of General Machinery Regulations 2(1) and 2(7) and which is in the process of being implemented.

- All departmental sites are assessed at least once annually in terms of Health and Safety Compliance, Machinery Safety Compliance and Operational Systems Compliance in order to identify non-compliances and to implement appropriate corrective action.

- A Risk and Safety Performance Statistics System is in place where injury, vehicle motor, crime and public liability incidents/accidents are monitored on a monthly basis. This system also includes the monitoring of compliance in terms of H&S Committees, required legislative appointees, training required, PPE and hazards identified.

- Loss Control Systems are in place to investigate alleged misconduct within the department.

- Security assessments are done for all sites at regular intervals.

- Various action plans are in place to pro-actively manage the safety and security of staff when operating within high risk areas.

- Departmental and Branch risk registers are in place.

- Risk and safety management system procedures are reviewed annually.

- To strengthen risk and safety related systems and to complement quality objectives, where appropriate, the implementation of ISO 45001 (health and safety standards), ISO 14001 (environmental standards) and ISO 31001 (risk management standards) will be considered.

9.4. Future Trends and Goals

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

9.4.1. 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.

9.4.2. Implementation strategies

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

- Sustainable use of scarce resources such as water
- achieving operational, financial and other efficiencies which will enhance equitable, affordable and effective service delivery and sustainable development;
- Increase service provision (taps and toilets in formal settlements)

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. A strategy to hold onto staff is a talent management programme currently underway which intends to hold onto qualified and experience staff through a career development and succession plan. This effort will help to hold onto institutional knowledge.

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)
- Capacity building and training of staff
- Following the successful Automatic Metering Reading (AMR) pilot project of 1 900 consumer meters in 2010, its further rollout in industrial/commercial areas is being planned
- Adoption of an Integrated Master Plan
- 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, maintenance and life-cycle planning, geodatabase and master data
- Integrated Risk Management and development of the staffing strategy

10. CUSTOMER SERVICE PROFILE

10.1. Situation Assessment

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

The Water and Sanitation Department conducts their own customer satisfaction surveys. These surveys are undertaken on an annual basis to gauge the customer satisfaction level in formal domestic, informal domestic and business sectors and to identify specific issues of concern.

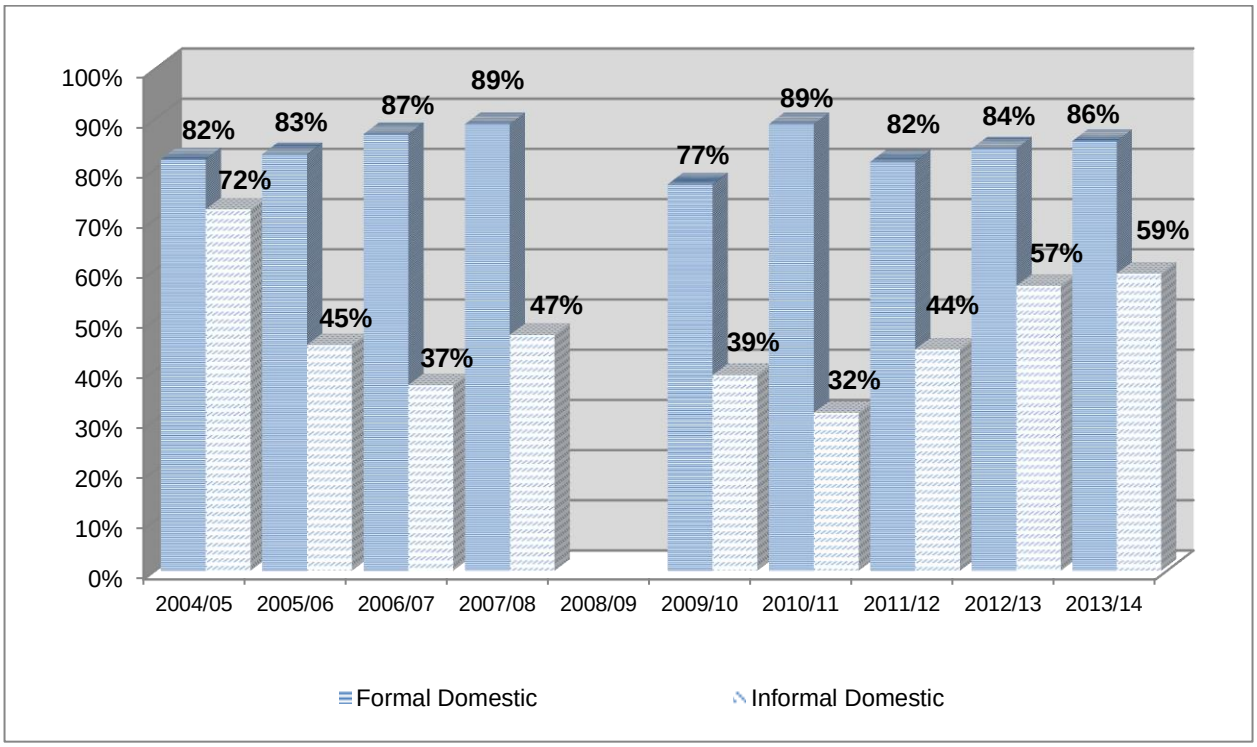


Figure 4: Customer satisfaction levels over time

The general conclusions are for the 2013/14 financial year are as follows:

- There is a very high increase in the overall satisfaction level of water availability and provision of sanitation and sewerage services as compared to 2012/2013. This shows that the Department has improved in the provision of services;

Formal Residents:

The majority of the formal residents (85.78%) were satisfied with water availability and majority (84.49%) said they water quality was good. Majority of residents (85.24% in the formal areas said they did not experience any water related problem in the last year. The majority (85.50%) of residents in the formal areas said they were satisfied with the City's sanitation or sewerage services. Most of the respondents (69.59%)

indicated they were satisfied with the City of Cape Town' billing process. The majority of respondents in the formal residential areas (87.78%) indicated that they did not have any sewerage blockage or sanitation-related problems in the past year.

Informal Areas

There has been a notable increase in the satisfaction levels of respondents within informal areas as compared to the previous survey results.

Most respondents (74.81%) in the informal areas reported that they are satisfied with water availability;

Less than half of the respondents (43.64%) mentioned that they were satisfied with the sewerage and sanitation services.

Business Areas

Majority of businesses (84.45%) were satisfied with the water services provided by the City of Cape Town. Majority of businesses (87.31%) indicated they were satisfied with the City of Cape Town's water delivery services. Majority of the businesses (86.12%) were satisfied with the billing process

City of Cape Town also performs a citywide community survey within which Water and Sanitation Departments' service delivery performance is scored. The Water and Sanitation aims to be equal or exceed the City average scores for both residential and business. We have succeeded with this aim within the residential end-user group, obtaining scores of 3.3 (2013/14) and 3.0 (2012/13) compared to the City average of 3.1 while obtaining an average of score of 3.8 for water and sanitation provision from Business end-user groups. The latter has improved from the 2012/13 score of 3.6.

A study was conducted to measure the effectiveness of the standpipe installation which is part of the Retrofit programme owned by WDM Operations. The study was conducted in Fisantekraal and Ravensmead areas with backyarders as the target population. Results showed a 96.14% percentage of satisfaction with the intervention, with dissatisfied percentage needing address. An action plan with deadlines was drawn up by the section with items that have been attended to already. It is Business Development section strategic objective to undertake such studies for all projects undertaken by the department.

10.2. Future Trends and Goals

The goal is to ensure that the percentage of customers satisfied with the service continues to increase and remains equal to or above the City average.

10.2.1. 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.

- **Customer lodging and service delivery**

The findings reveal that the Department needs to increase awareness of the customer service contacts as many seem not to know about them.

- **Water Conservation**

There is a need for consumer sensitisation to the regulatory mechanisms that control the abuse of water and sanitation services. Increase the awareness of water management devices in order to create additional awareness as most formal residents indicated they had not installed the device.

- **Awareness on sanitation environmental impact**

The Department needs to conduct an awareness campaign on change of behaviour regarding water conservation and conduct more presentations regarding sewerage blockage.

10.2.2. Implementation strategies

- Ensuring water pressure standards are maintained to improve areas of extreme high or low pressures through creation and implementation of District Metered Areas (DMA's) and advanced pressure management, and improved network operations (valve configuration)
- 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. The Drop Drop mobile app and telephonic consumer survey aims to improve consumer knowledge on how to use water more efficiently and enable the CCT enage with consumers and further determine the level of knowledge relating to water conservation techniques. Once the latter is determined, appropriate interventions will be applied
- Additional Education and Awareness presentation around blockages within sewer system needs to be implemented
- Establishment of a system at the Technical Operating Centre to ensure that customer complaints are measured and followed up to improve on overall satisfaction levels.
- The AMR project promises to bring improved customer satisfaction around metering and billing.
- Appointment of staff for critical vacancies.
- Have a public awareness on level of service and affordability
- The survey question in informal settlements should be structured differently

11. FINANCIAL PROFILE

11.1. Situation Assessment

11.1.1. Capital expenditure and sources

Capital expenditure incurred during the year 2013/14 amounted to R823.48 million with an expenditure level reached against the current budget.

Table 18: Water and Sanitation three year capital expenditure

Area (R'million)	2011/12	2012/13	2013/14
Bulk Water	17.0	28.23	39.45
Reticulation	216.3	276.42	330.13
Wastewater Treatment	223.2	164.70	160.86
Water Demand management	24.7	36.73	52.05
EAMS	62.6	49.60	75.47
Informal Settlements	28.4	12.58	20.26
Meter Replacement	12.3	11.01	103.52
Information Technology	12.7	6.53	8.68
Technical Operation Centre	2.8	0.38	7.47
Master planning	0.1	-	3.41
Other	4.9	10.47	22.18
TOTAL	**605.2**	**596.64**	**823.48**

Since 2011/12, the capital expenditure has increased by approximately 36%.

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).

11.1.2. Tariffs and charges

Tariff increases implemented have been set higher than inflation during the last number of years due to the escalated focus on repairs and maintenance of current infrastructure as well as the growth in the capacity requirement in the capital infrastructure programme. City of Cape Town's block tariff structure for the various financial years in presented on the graph below:

Table 19: Water and Sanitation tariffs trends (excl. VAT)

WATER TARIFFS (Rands)	2010/11	2011/12	2012/13	2013/14	2014/15
Domestic Full: 0-6 kℓ	-	-	-	-	-
+6-10.5 kℓ	3.99	4.32	5.83	7.60	8.75
+10.5-20 kℓ	8.51	9.22	10.60	11.61	12.54
+20-35 kℓ	12.61	13.66	15.70	17.20	18.58
+35-50 kℓ	15.58	16.87	19.40	21.24	22.94
+50 kℓ	20.55	22.25	25.58	28.02	30.27
Domestic cluster:>6kℓ	8.62	9.33	na	na	na
+6-20 kℓ	na	na	9.07	na	na
+6-10.5kℓ	na	na	na	9.93	10.72
+10.5-20 kℓ	na	na	17.55	11.61	12.54
+20-35 kℓ	na	na	na	17.20	18.58
+35-50 kℓ	na	na	na	21.24	22.94
+50 kℓ	na	na	na	28.02	30.27
Commercial	9.18	9.93	11.42	12.51	13.51
Industrial	9.18	9.93	11.42	12.51	13.51
Schools/sport	8.11	8.78	10.09	11.06	11.94
Government	8.71	9.43	10.85	11.88	12.83
Municipality	8.11	8.78	10.09	11.06	11.94
Miscellaneous	8.71	9.43	10.85	11.88	12.83
Misc. (external)	10.41	11.27	12.96	14.19	15.33
Bulk Tariff	2.85	3.02	3.22	3.42	3.49
SANITATION TARIFF (RANDS)	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**
Domestic Full:0-4.2 kℓ					
+4.2-7.35 kℓ	na	na	5.81	7.20	8.25
+8.4-14 kℓ	4.67	5.05	na	na	na
+7.35-14 kℓ	na	na	12.38	13.56	14.64
+14-28 kℓ	9.94	10.76	na	na	na
+14-24.5 kℓ	na	na	13.53	14.83	16.01
+28-35 kℓ	10.87	11.77	na	na	na
+24.5-35 kℓ	na	na	14.21	15.56	16.81
Industrial & Commercial	7.05	7.63	8.78	9.62	10.39
Departmental/Municipal	6.49	7.03	8.08	8.85	9.56
Domestic Cluster (>4.2 kℓ)	-	-	-	-	-
+4.2-14 kℓ	9.65	10.45	na	na	
+4.2-7.35 kℓ	na	na	9.05	na	9.05
+7.35-14 kℓ	na	na	na	13.56	14.64
+14-35 kℓ	na	na	15.04	na	na
+14-24.5 kℓ	na	na	na	14.82	16.01
+28.≤ 35 kℓ	na	na	na	15.56	16.81

As we get closer to requiring an augmentation scheme, the tariffs will have to be reviewed in order to cover costs of augmentation. This awareness that we will constantly be faced with a decision of when, what method and cost of any scheme that will be implemented.

11.1.3. Free basic water and sanitation

The first 6 kilolitres of water supplied to all residential dwellings in the municipal area and the first 4.2 kilolitres of sewage removed from all residential dwellings in the municipal area is free. Fixed charges do not apply to dwellings occupied by domestic households. Figure 5 represents the blocked water tariff for domestic consumers.

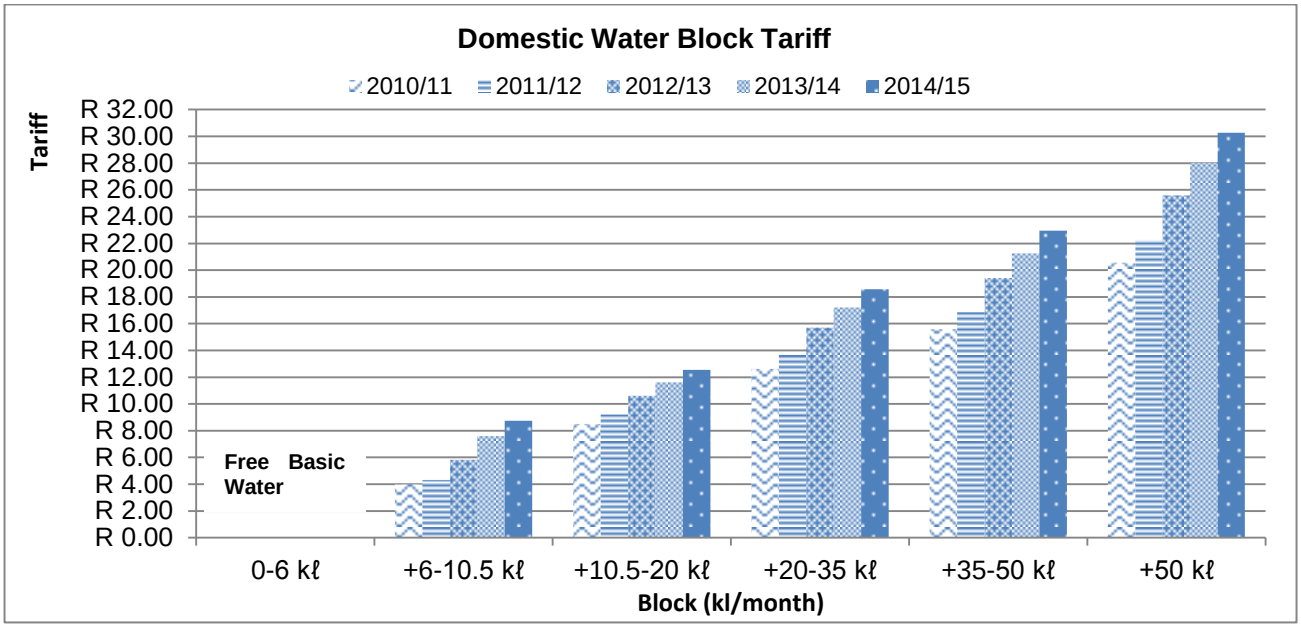


Figure 5: Block Water Tariff for Domestic Consumers

The Indigent Grant is applicable to the water and sanitation tariff for qualifying households. The net result is that an Indigent household can consume an additional 4.5kℓ water per month and can discharge an additional 3.15kℓ wastewater per month (with sewerage disposal 70% of water consumption) without attracting any charges.

This subsidy would be ineffective without the ongoing 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.)

11.2. Trends

11.2.1. Operating Budget

The Operating budget will increase in line with the City's Medium-Term Revenue and Expenditure Framework (MTREF). This reflects the need for increasing demands to repair and maintain current infrastructure and the requirement of resources to operate new infrastructure. Consequently, there is pressure on annual tariffs increases.

Table 20: Prior Years Operating Budget

	Prior Year Outcomes			
	Budget 2012/13	**Actual Expenditure 2012/13**	**Budget 2013/14 Final**	**Adjustment Budget 2013/14 Final**
Operating Expenditure	R 5 490 332 757	R 5 476 269 207	R 5 829 671 690	R 5 416 482 728
% Spent		99.7%		92.9%

Table 21: Medium Term Operating Expenditure

2014/2015 Medium Term Expenditure Framework		
Adjustment Budget Aug 2014/15	**Approved Budget 2015/16**	**Approved Budget 2016/17**
R 6 322 119 774	R 6 864 128 569	R 7 532 007 964

11.2.2. Capital Budget

The Department conforms to the City's financial budgeting process forming part of the IDP and basis its budget formulation on some key Strategic plans. The Department plans ahead on a 10 year budget estimate, which is based on identifying current and potential future requirements for that period or beyond. The budget schedule contains 3 years of rolling approved budget projected to 5 years, plus another 5 years based on forward planning.

The Water and Sanitation Integrated Master Plan frames infrastructure requirements to provide capacity for an "ultimate land use development" scenario of more than 20 years. This planning is well-integrated with other Departments of the City, primarily Spatial Planning and its Spatial Development Framework, Human Settlements and Transport for Cape Town.

The Asset Management Plans of the Branches guide priorities for replacement, refurbishment and maintenance projects and programmes. Projects are developed, services are procured and projects are implemented with emphasis on best practice project management and engineering.

The medium-term (3 year approved) budget is summarised in Table 22. This 3 year budget includes infrastructure and non-infrastructure related capital expenditure

Table 22: *Summary of Medium-Term Approved Capital Budget by Branch

Branch Category	FY2014/15	FY2015/16	FY2016/17	MTEF Total
	Value (R'1000)	Value (R'1000)	Value (R'1000)	**Value (R'000)**
Bulk Water	R 100 226.1	R 166 300.0	R 251 700.0	R 518 226.1
Reticulation	R 500 609.1	R 387 510.0	R 302 490.0	R 1 190 609.1
Wastewater	R 248 104.7	R 369 310.0	R 289 210.0	R 906 624.6
WDM & Strategy	R 50 100.0	R 59 100.0	R 50 100.0	R 159 300.0
EAM	R 59 842.5	R 37 400.0	R 41 500.0	R 138 742.5
Other Branches	R 201 124.0	R 302 400.0	R 369 900.0	R 873 424.0
Total	R 1 160 006.5	R 1 322 019.9	R 1 304 900.0	R 3 786 926.4

*August 2014 Budget

The above table can be further broken down into capital investment relating to water and sanitation projects only (i.e. does not include non-infrastructure projects)

Table 23: Summary of Medium-Term Capital Expenditure Framework

Project Main Category	FY2014/15		FY2015/16		FY2016/17		MTEF Total	
	Nr.	Value (R'1000)	Nr.	Value (R'1000)	Nr.	Value (R'1000)	**Nr**	**Value (R'000)**
Water Projects	38	R 457 589.0	30	R 564 375.7	22	R 623 640.0	90	R 1 645 604.8
Sanitation Projects	40	R 617 774.9	44	R 630 044.2	29	R 525 160.0	113	R 1 772 979.1
Total	78	R 1 075 364.0	74	R 1 194 419.9	51	R 1 148 800.0	203	R 3 418 583.9

Additionally, the long-term proposed Capital Budget requirement is summarised in

Table 24.

Table 24: Long-term Proposed Capital Requirement for 10 years from 2015/16

R (million)	Proposed Provision 2017/18	Proposed Provision 2018/19	Proposed Provision 2019/20	Proposed Provision 2020/21	Proposed Provision 2021/22	Proposed Provision 2022/23	Proposed Provision 2023/24	Proposed Provision 2024/25
Bulk Water	496	730	594	768	396	278	278	271
Reticulation	269	234	280	299	312	281	289	300
Wastewater	283	381	454	615	655	494	132	50
WDM & Strategy	50	50	52	77	55	54	52	52
EAM	37	42	49	48	50	53	54	54
Other Branches	331	316	259	261	261	261	261	261
Total	**1 465**	**1 753**	**1 687**	**2 067**	**1 728**	**1 421**	**1 066**	**988**
New Infrastructure	669	910	688	815	446	302	301	324
Replacement Infrastructure	400	459	444	499	509	479	489	469
New Plant	32	37	47	49	51	54	55	55
Upgrade	257	277	432	605	645	509	147	65
Other	58	20	25	23	23	23	23	23
Water Demand	50	50	52	77	55	54	52	52
Total	**1 465**	**1 753**	**1 687**	**2 067**	**1 728**	**1 421**	**1 066**	**988**

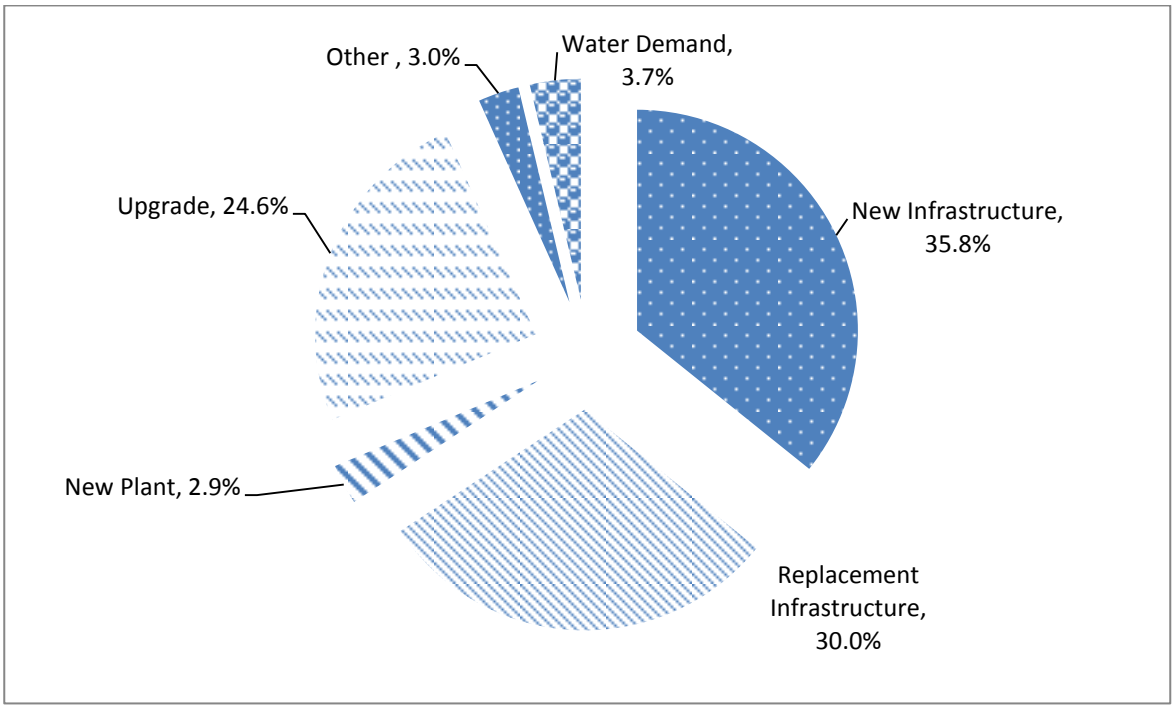


Figure 6: Long-term capital requirement by Investment Category

From Figure 6 it can be noted that 35.8% financial investment is on new infrastructure. When one considers Figure 7, one can ascertain that the majority of this capital investment for new infrastructure is within the bulk water system and waste water treatement works. This is inline with the IDP Strategic Focus Area, The Opportunity City relating to infrastructure investment to aid social and economic growth.

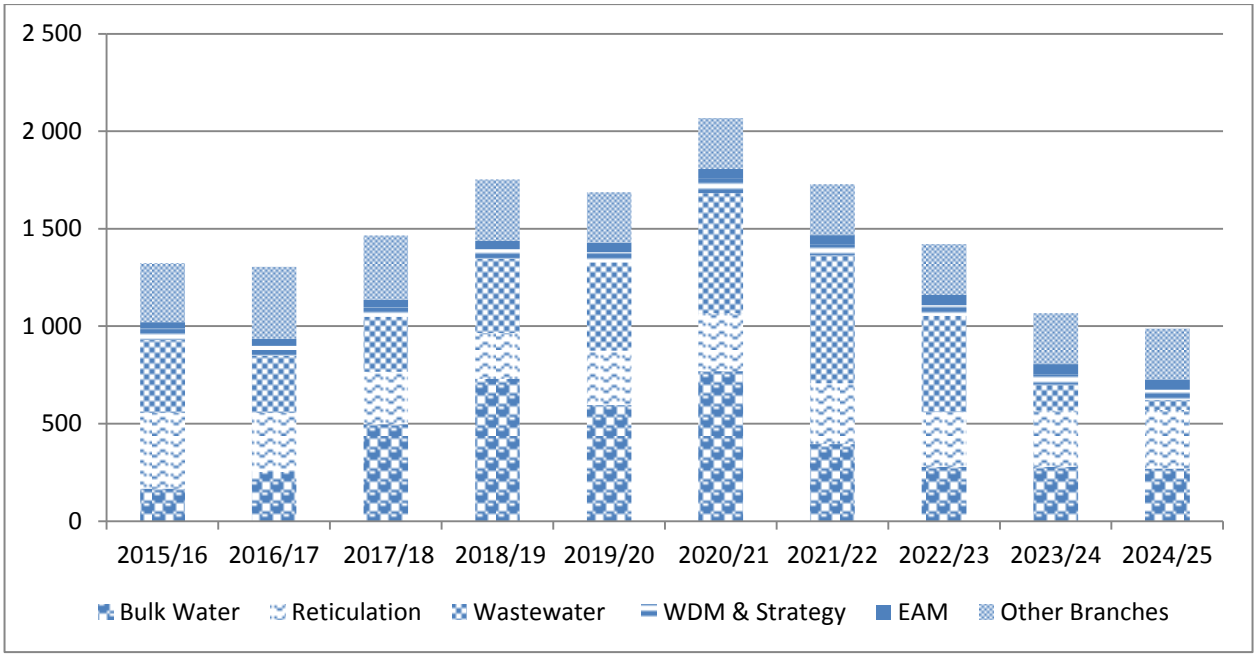


Figure 7: Long-term capital requirement by Branch

11.2.3. Strategic gaps

Capital budget: The high requirement for necessary infrastructure is driven largely by growth and economic development as well as the refurbishment of current infrastructure which 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 difficult economic conditions.

11.2.4. Implementation strategies

To achieve the required Capital Budget, it is necessary to maximise the use of Grant funding and to make optimal use of the Capital Replacement Reserve (CRR) within the financial constraints.

The pressure on the operating budget needs to be addressed via possible above-inflation tariff increases and initiatives to ensure that money due to the City is collected. There is a 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 targeted improved level of service in the free basic service.
- Further relief to the poor via assistance to indigent customers.
- Investigation and debate into the use of Smart meters.
- Escalated focus on the collection of debt by increasing the capacity.
- Escalated focus on revenue protection and metering efficiency.
- Ensuring that adequate cash reserves are maintained to cover legislated funds.

12. NEEDS DEVELOPMENT PLAN

Branch	WBS Element	WBS Element Description	Adj Budget 2014/15	Adj Budget 2015/16	Adj Budget 2016/17
Bulk Water	C15.86043-F1	Additional Resources Desalination Reclai	R 0.00	R 0.00	R 20.00
Bulk Water	C11.86077-F1	Bulk Water Augmentation Scheme	R 28.33	R 20.00	R 40.00
Bulk Water	C11.86077-F2	Bulk Water Augmentation Scheme	R 0.00	R 27.80	R 44.20
Bulk Water	C11.86077-F4	Bulk Water Augmentation Scheme	R 7.83	R 17.00	R 0.00
Bulk Water	CPX.0001867-F1	BW Infrastructure Replace/Refurb 16/17	R 0.00	R 0.00	R 22.00
Bulk Water	C15.86041-F1	BW Infrastructure Replacement 14/15	R 20.44	R 0.00	R 0.00
Bulk Water	C16.86010-F1	BW Infrastructure Replacement 15/16	R 0.00	R 20.00	R 0.00
Bulk Water	CPX.0003851-F1	Contermanskloof Reservoir	R 3.20	R 49.00	R 18.44
Bulk Water	CPX.0003851-F2	Contermanskloof Reservoir	R 4.80	R 0.00	R 0.00
Bulk Water	CPX.0001787-F1	Develop of Add Infrastruc 16/17	R 0.00	R 0.00	R 31.56
Bulk Water	C14.86055-F2	Development of Additional Infrastructure	R 1.36	R 0.00	R 0.00
Bulk Water	C15.86036-F1	Development of Additional Infrastructure	R 5.00	R 0.00	R 0.00
Bulk Water	C16.86009-F1	Development of Additional Infrastructure	R 0.00	R 5.00	R 0.00
Bulk Water	CPX.0004095-F1	Energy Efficiency & Demand Side Manageme	R 6.00	R 0.00	R 0.00
Bulk Water	CPX.0003893-F1	OSEC (Electrolytic Chlorination Infr)	R 11.00	R 9.00	R 24.00
Bulk Water	CPX.0003893-F2	OSEC (Electrolytic Chlorination Infr)	R 14.52	R 0.00	R 0.00
Bulk Water	CPX.0003895-F1	Steenbras Reservoir	R 0.01	R 2.00	R 44.00
Bulk Water	C12.86019-F2	TMS Aquifer Deep Borehole	R 3.00	R 15.00	R 6.00
			R 105.48	**R 164.80**	**R 250.20**

Branch	WBS Element	WBS Element Description	Adj Budget 2014/15	Adj Budget 2015/16	Adj Budget 2016/17
Reticulation	C16.86015-F2	Bardale upgrade sewers	R 0.00	R 1.25	R 0.00
Reticulation	CPX.0004174-F1	Bloekombos Sewer Pumpstation	R 4.90	R 0.00	R 0.00
Reticulation	C15.86040-F1	Bulk Sewer (Housing Projects)	R 5.00	R 0.00	R 0.00
Reticulation	CPX.0002489-F1	Bulk Sewer (Housing Projects)	R 0.00	R 3.50	R 3.50
Reticulation	C15.86061-F1	Bulk Water (Housing Projects)	R 8.27	R 0.00	R 0.00
Reticulation	C16.86034-F1	Bulk Water (Housing Projects)	R 0.00	R 3.00	R 0.00
Reticulation	CPX.0003985-F1	Bulk Water (Housing Projects)	R 0.00	R 0.00	R 3.00
Reticulation	C13.86053-F1	Completion of Cape Flats III Bulk Sewer	R 40.00	R 30.73	R 0.00
Reticulation	C13.86053-F2	Completion of Cape Flats III Bulk Sewer	R 28.00	R 56.00	R 26.00
Reticulation	C12.86084-F1	Completion of Langa Collector Sewer	R 0.30	R 0.00	R 0.00
Reticulation	C08.86023-F1	De Gendel Reservoir Link	R 0.18	R 0.00	R 0.00
Reticulation	C08.00214-F1	De Grendel Reservoir	R 0.94	R 0.00	R 0.00
Reticulation	CPX.0003956-F1	District Six Cape Town-Sewer	R 0.00	R 0.00	R 0.30
Reticulation	CPX.0003955-F1	District Six Cape Town-Water	R 0.00	R 0.00	R 0.94
Reticulation	C14.86074-F1	Fisantekraal Housing Garden City - Sewer	R 14.38	R 0.61	R 0.00
Reticulation	C14.86073-F1	Fisantekraal Housing Garden City - Water	R 9.57	R 0.30	R 0.00
Reticulation	C15.86023-F1	Informal Settlements Sanitation Installa	R 20.00	R 0.00	R 0.00
Reticulation	C16.86037-F1	Informal Settlements Sanitation Installa	R 0.00	R 20.00	R 0.00
Reticulation	CPX.0003988-F1	Informal Settlements Sanitation Installa	R 0.00	R 0.00	R 20.00
Reticulation	C15.86028-F1	Informal settlements water installations	R 3.00	R 0.00	R 0.00
Reticulation	C16.86041-F1	Informal settlements water installations	R 0.00	R 3.00	R 0.00
Reticulation	C08.86038-F1	Main Rd Upgrade M/Berg to Clovelly Rehab	R 12.00	R 17.00	R 0.00
Reticulation	C15.86044-F1	Mfuleni: Upgrade Outfall Sewer P/station	R 0.00	R 0.25	R 6.75
Reticulation	C12.86083-F1	New Rest Reticulation Rectification	R 11.24	R 0.00	R 0.00
Reticulation	C07.00407-F1	Northern Area Sewer Thornton	R 70.00	R 0.00	R 0.00
Reticulation	C14.86001-F1	Penhill Sewer Installation	R 1.00	R 5.00	R 0.00
Reticulation	C11.86060-F1	Philippi Collector Sewer	R 0.00	R 2.00	R 10.00
Reticulation	C11.86060-F3	Philippi Collector Sewer	R 0.00	R 5.00	R 64.50
Reticulation	C09.86014-F1	Pump Station & Rising Main Du Noon	R 8.35	R 0.00	R 0.00
Reticulation	C15.86029-F1	Rehab of Sewer Network (USDG Citywide)	R 5.00	R 0.00	R 0.00
Reticulation	C16.86042-F1	Rehab of Sewer Network (USDG Citywide)	R 0.00	R 5.00	R 0.00
Reticulation	C16.86043-F1	Rehab of Water Network (USDG Citywide)	R 0.00	R 3.00	R 0.00
Reticulation	C09.86015-F1	Rehab Outfall Sewers Pentz Sandrift m/qu	R 31.50	R 12.00	R 10.00
Reticulation	C10.86132-F1	Remove midblock water network-Bishop Lav	R 2.50	R 0.00	R 0.00
Reticulation	CPX.0002760-F1	Repl & Upgr Sew Pumpstn FY2016(Citywide)	R 0.00	R 5.00	R 0.00
Reticulation	CPX.0002895-F1	Repl & Upgr Sew Pumpstn FY2016(Citywide)	R 0.00	R 2.00	R 0.00
Reticulation	CPX.0002892-F1	Repl & Upgr Sew Pumpstn FY2017(Citywide)	R 0.00	R 0.00	R 5.00
Reticulation	CPX.0002896-F1	Repl & Upgr Sew Pumpstn FY2017(Citywide)	R 0.00	R 0.00	R 0.50
Reticulation	CPX.0001915-F2	Repl & Upgr Water NetW FY2018(Citywide)	R 0.00	R 0.00	R 2.00

Branch	WBS Element	WBS Element Description	Adj Budget 2014/15	Adj Budget 2015/16	Adj Budget 2016/17
Reticulation	C15.86026-F1	Replace & Upgr Sew Pumpstation(Citywide)	R 16.94	R 0.00	R 0.00
Reticulation	C15.86026-F2	Replace & Upgr Sew Pumpstation(Citywide)	R 14.00	R 0.00	R 0.00
Reticulation	CPX.0003848-F1	Replace & Upgr Sewer City wide (FY2017)	R 0.00	R 0.00	R 40.00
Reticulation	C15.86024-F1	Replace & Upgr Sewer Network (Citywide)	R 50.86	R 0.00	R 0.00
Reticulation	C16.86038-F1	Replace & Upgr Sewer Network (Citywide)	R 0.00	R 45.00	R 0.00
Reticulation	C16.86039-F1	Replace & Upgr Water Network (Citywide)	R 0.00	R 50.00	R 0.00
Reticulation	CPX.0003866-F1	Replace & Upgr Water Network FY2015	R 46.02	R 0.00	R 0.00
Reticulation	CPX.0003866-F2	Replace & Upgr Water Network FY2015	R 5.00	R 0.00	R 0.00
Reticulation	CPX.0003896-F1	Replace & Upgrade Water Network FY16/17	R 0.00	R 0.00	R 49.00
Reticulation	C15.86045-F1	Rietvlei P/Station, R/Main Bottelary	R 0.00	R 20.00	R 12.00
Reticulation	C09.86008-F1	Ruyterwacht Midblock Water Pipes	R 2.50	R 0.00	R 0.00
Reticulation	C15.86058-F1	Sewer Projects as per Master Plan	R 1.50	R 0.00	R 0.00
Reticulation	C16.86031-F1	Sewer Projects as per Master Plan	R 0.00	R 5.00	R 0.00
Reticulation	CPX.0003966-F1	Sewer Projects as per Master Plan	R 0.00	R 0.00	R 5.00
Reticulation	C08.86027-F1	Somerset West Bus. Park Main sewer	R 40.00	R 20.00	R 0.00
Reticulation	C14.86056-F1	Spes Bona Reservoir 35 Ml	R 0.05	R 14.00	R 0.00
Reticulation	C14.86056-F2	Spes Bona Reservoir 35 Ml	R 4.00	R 12.00	R 0.00
Reticulation	C14.86056-F3	Spes Bona Reservoir 35 Ml	R 4.00	R 6.00	R 0.00
Reticulation	CPX.0002111-F1	Telemetry Automation (Retic)	R 2.50	R 0.00	R 0.00
Reticulation	CPX.0002122-F1	Telemetry Automation (Retic)	R 0.00	R 3.00	R 0.00
Reticulation	CPX.0002123-F1	Telemetry Automation (Retic)	R 0.00	R 0.00	R 3.00
Reticulation	C15.86060-F1	TOC Infrastructure Development	R 2.50	R 0.00	R 0.00
Reticulation	C16.86033-F1	TOC Infrastructure Development	R 0.00	R 2.00	R 0.00
Reticulation	CPX.0003982-F1	TOC Infrastructure Development	R 0.00	R 0.00	R 1.50
Reticulation	C08.11114-F1	Trappies Sewerage System	R 0.00	R 10.00	R 30.00
Reticulation	CPX.0004140-F1	Upgrade Reservoirs City Wide	R 3.00	R 0.00	R 0.00
Reticulation	C15.86059-F1	Water Projects as per Master Plan	R 1.00	R 0.00	R 0.00
Reticulation	C16.86032-F1	Water Projects as per Master Plan	R 0.00	R 2.00	R 0.00
Reticulation	CPX.0003969-F1	Water Projects as per Master Plan	R 0.00	R 0.00	R 3.00
Reticulation	C16.86014-F1	Water retic at Macassar Housing Dev Area	R 0.00	R 0.38	R 0.00
Reticulation	C12.86082-F1	Water Supply at Baden Powell Dr to Khaye	R 2.00	R 6.50	R 6.50
Reticulation	C15.86046-F1	West Beach S/Pumpstation and rising Main	R 0.50	R 10.00	R 0.00
Reticulation	C14.86059-F1	Zevenwacht Reservoir and Network	R 0.50	R 0.00	R 0.00
			R 473.01	**R 380.51**	**R 302.49**

Branch	WBS Element	WBS Element Description	Adj Budget 2014/15_Aug	Adj Budget 2015/16_Aug	Adj Budget 2016/17_Aug
WWTW	C13.86081-F2	Athlone WWTW-Capacity Extension-phase 1	R 0.00	R 0.50	R 20.00
WWTW	C06.30170-F1	Bellville Wastewater Treatment Works	R 7.00	R 0.00	R 0.00
WWTW	CPX.0002284-F1	Bellville WWTW-Replace Screw Pump	R 1.50	R 0.00	R 0.00
WWTW	C12.86091-F1	Borchards Quarry WWTW	R 15.00	R 0.00	R 0.00
WWTW	C13.86005-F1	Cape Flats WWTW-Refurbish various struct	R 14.00	R 17.00	R 0.00
WWTW	C06.01613-F2	Expansion of WWTW	R 5.70	R 0.00	R 0.00
WWTW	C15.86027-F1	Infrastructure Replace/Refurbish - WWTW	R 44.32	R 0.00	R 0.00
WWTW	C15.86027-F2	Infrastructure Replace/Refurbish - WWTW	R 42.00	R 0.00	R 0.00
WWTW	C16.86040-F1	Infrastructure Replace/Refurbish - WWTW	R 0.00	R 33.90	R 0.00
WWTW	CPX.0002289-F1	Infrastructure Replace/Refurbish - WWTW	R 0.00	R 0.00	R 13.11
WWTW	C06.30147-F1	Kraaifontein Wastewater Treatment Works	R 0.00	R 3.00	R 3.00
WWTW	C12.86059-F1	Macassar WWTW-extension	R 0.00	R 5.00	R 5.00
WWTW	C14.86043-F1	Melkbos WWTW-Effluent Disinfection	R 0.30	R 12.00	R 10.00
WWTW	C06.30148-F1	Mitchells Plain Wastewater Treatment Wor	R 0.00	R 4.10	R 0.00
WWTW	C06.30148-F3	Mitchells Plain Wastewater Treatment Wor	R 42.57	R 45.91	R 0.00
WWTW	C13.86010-F1	Mitchells Plain WWTW-Improvements Phase2	R 6.90	R 13.00	R 13.00
WWTW	C13.86010-F2	Mitchells Plain WWTW-Improvements Phase2	R 5.50	R 5.50	R 5.50
WWTW	C15.86047-F1	Mobile Belt Press Various Works	R 13.00	R 0.00	R 0.00
WWTW	C12.86075-F1	Northern Regional Sludge Facility	R 0.00	R 10.00	R 47.00
WWTW	C12.86075-F2	Northern Regional Sludge Facility	R 5.00	R 15.00	R 40.00
WWTW	C12.86053-F1	On-line effluent monitoring at all WWTW	R 1.00	R 1.00	R 1.00
WWTW	C13.86044-F1	Philadelphia WWTW-Improvement	R 0.50	R 0.80	R 0.00
WWTW	C11.86063-F1	Potsdam WWTW - Extension	R 0.00	R 40.00	R 30.00
WWTW	C11.86063-F3	Potsdam WWTW - Extension	R 0.00	R 40.30	R 41.00
WWTW	C11.86063-F4	Potsdam WWTW - Extension	R 3.01	R 0.00	R 0.00
WWTW	C13.86003-F1	Replacement Blowers - Bellville WWTW	R 0.00	R 20.00	R 0.00
WWTW	C12.86094-F1	Scottsdene WWTW	R 1.50	R 0.00	R 0.00
WWTW	C13.86002-F1	Upgrade clarifiers - Bellville WWTW	R 0.00	R 5.00	R 10.00
WWTW	C14.86044-F2	Wesfleur WWTW-Capacity Extension USDG	R 0.00	R 5.00	R 0.00
WWTW	C10.86030-F1	Wildevoelvlei WWTW-Upgrade dewatering	R 0.00	R 10.00	R 0.00
WWTW	C10.86033-F1	Zandvliet WWTW-Extension	R 15.00	R 15.00	R 0.00
WWTW	C10.86033-F3	Zandvliet WWTW-Extension	R 29.00	R 52.00	R 50.00
			R 252.80	**R 354.01**	**R 288.61**

12.1. Strategic gaps

CCT's key capital infrastructure projects for the next three years are as follows:

- Upgrading / Replacement of the existing water and sewer networks, rising mains and pump stations
- Additional reservoir storage capacity
- Augmentation of the water sources and bulk water supply
- Upgrading and extension of various WWTW's
- Rehabilitation and maintenance of the existing water and sanitation infrastructure
- There is a constant need to reinforce and update the Master Plan so that it realistically reflects the individual Branch plans.

12.2. Implementation Strategies

CCT's implementation strategies, with regard to new water and sanitation infrastructure, are as follows:

- Take the recommended projects, as identified through the Water and Sewer Master Plans and the WSDP, into account during the planning and prioritization process for new infrastructure. Prioritize from the desired list, those items which can be implemented from available funding in the particular financial year.
- To update the existing Water and Sanitation Master Plans and to undertake revised master planning as often as reasonably possible and to apply the items identified through the master plan as a desired infrastructure requirements
- Assign a high priority to the provision of basic water and sanitation services in the informal areas.
- High priority needs to be assigned to the implementation of CCT's WCWDM Strategy, which is currently being successfully implemented throughout the city. This is necessary in order to postpone additional capital investment for as long as possible.
- Planning for land-use and developments (within the Spatial Development Framework (SDF) and Growth Management Strategy) needs to be balanced with respect to the availability of water and WTW's and WWTW's capacity (for both current and future capacity).

APPROVED BY:	*MANAGER: WATER DEMAND MANAGEMENT & STRATEGY*		
Name & Surname:	***Zolile Basholo***	Signature:	
Date:		Comment:	
APPROVED BY:	*DIRECTOR*		
Name & Surname:	***Peter Flower***	Signature:	
Date:		Comment:	
APPROVED BY:	*EXECUTIVE DIRECTOR*		
Name & Surname:	***Gisela Kaiser***	Signature:	
Date:			