



# Water Services Development Plan

Executive Summary

of

City of Cape Town

Status: Comprehensive WSDP

[www.capetown.gov.za/water/wsdp](http://www.capetown.gov.za/water/wsdp)

December 2001

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## List of Abbreviations

AADD	Annual Average daily demand
AFU	Automatic Flushing Urinal
CCT	City of Cape Town
CFA	Cape Flats Aquifer
CMA	Cape Metropolitan Area
CMC	Cape Metropolitan Council
DM	Demand Management
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
GLS	Geustyn Loubser Streicher Inc
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
IMEP	Integrated Metropolitan Environmental Policy
IWRP	Integrated Water Resource Planning
MCDA	Multi-Criteria Decision Analysis
MNF	Minimum Night Flow
MLC	Metropolitan Local Council
PNE	Protected Natural Environment
PDG	Palmer Development Group
UAW	Unaccounted For Water
URV	Unit Reference Value
WC	Water Conservation
VIP	Ventilated Improved Pit Latrine
WDM	Water Demand Management
WSDP	Water Services Development Plan
WTW	Water Treatment Works
WWTW	Wastewater Treatment Works

## **EXECUTIVE SUMMARY**

## Introduction:

### Purpose of the WSDP:

With the publication of the [Water Services Act 108 of 1997](#) all water services authorities (municipalities) are required to prepare a Water Services Development Plan (WSDP).

In summary, the WSDP is a business plan setting out the way in which the water services authority plan and deliver services to individuals and businesses in its area of jurisdiction. It must also describe and analyse the current and future consumer profile, the type of services which are provided, the infrastructure requirements, a water balance, organisational and financial arrangements to be used, an assessment of the viability of the approach, and an overview of environmental issues. Following this analyses, important issues that may impact on the provision of effective and sustainable water and sanitation services need to be identified and strategies must be formulated to improve service provision. These strategic issues will form the basis for input into the Integrated Development Plan (IDP) process. The WSDP also serves as a monitoring tool for DWAF and provides important planning information to be included in a national database.

### Drafting Team and Process:

The WSDP has been drafted with the assistance of Geustyn Loubser Streicher Inc (Technical Analysis), Palmer Development (Financial analysis) and various officials and managers of the City of Cape Town (CCT). A consultative process was followed to compile the plan through a series of workshops and through the circulation of the WSDP on CD, hardcopy and on the Internet at [www.capetown.gov.za/water/wsdp](http://www.capetown.gov.za/water/wsdp) (to be published in December 2001).

Only the pertinent information and findings are included in this report. However, links have been provided to related information where applicable by "clicking" on the **GO TO** button, or follow the links to the internet for the latest information. Some of these links contain Adobe Acrobat (pdf) files. This free software can be downloaded from their website at:

<http://www.adobe.com/products/acrobat>



One of the requirements of the Act is to take the WSDP through a public participation process during which period the public, other stakeholders and water services authorities/providers can comment on the plan. It should thus be read in this context. Comments on this draft can be forwarded to Mr Michael Killick from CCT at [mkillick@cmc.gov.za](mailto:mkillick@cmc.gov.za).

## **Setting the Scene:**

### **Physical Description:**

The City of Cape Town which is one of the major metropolitan cities and tourist destinations in South Africa, is located in the Western Cape province and consists of an area of approximately 2 500 km<sup>2</sup>. For more information on the historical facts and physical attributes of CCT, go to <http://www.cmc.gov.za/history.htm>

### **Political Context of Existing Water and Wastewater Supply Situation:**

The CCT, like the rest of South Africa, has undergone significant changes in political structure over the last decade. Prior to December 2000, the area consisted of 6 Metropolitan Local Councils and the Cape Metropolitan Council (CMC) as the Bulk Water Services Provider. In December 2000, these councils were amalgamated as the CCT. The organizational and management structure of the CCT is currently in the process of transformation, but in the meantime the six former MLC's are being managed as Administrative Units within the CCT, with the CMC still active as the administrative unit in charge of bulk services.

## **Customer Profile and Service Levels:**

### **Demographics:**

The current population of the CCT is estimated at 3.2 mil with the highest population density occurring on the Cape Flats. HIV/Aids will have a significant impact on the population growth rate, i.e. it is estimated that the current growth rate of 3% will reduce to 1.2% by 2010. The economic growth rate was 2.6% during 1999-2000, which is slightly less than the current population growth rate, but greater than the national growth rate of 1,8%.

### **Current and Future Consumer Profile:**

There are approximately 530 000 consumers on formal erven and approximately 90 000 consumers on informal sites. According to 1996 census approximately 67% of consumers earn less than R2500/month. For more details on the demographics, socio-economic profile including statistics on age, gender, race, migration patterns, employment etc. refer to:

<http://www.capetown.gov.za/reports>

<http://www.cmc.gov.za/demographics.htm>

Future landuse analyses indicate that residential land (ha) will increase by 25%, business/commercial land by 125%, while vacant land will reduce by 70% over the next 20 years with the majority of development taking place in areas:

- north of Tygerberg (Durbanville);
- north of Table View;
- north and south east of Oostenberg;
- north-east of Strand in Helderberg;
- west of Strand and Somerset West.

### Service Levels and Future Service Delivery Strategy:

Service levels of existing formal developed areas (excluding rural areas and informal areas) generally meets the minimum standards as required by the Water Services Act, i.e. communal standpipe within 200 m walking distance and at least a ventilated improved pit latrine (VIP) or equivalent (container toilet, formalised black bucket, communal toilet or chemical toilet). It has been assumed that all formal consumers (households) are provided with adequate services. A recent survey (May 2001) on the informal households indicated that there are approximately 92 000 informal households of which the following do not have access to at least basic water services, mainly due to the fact that they occupy land illegally.

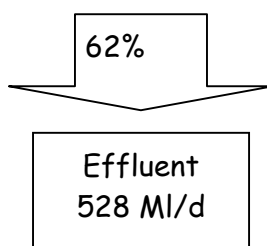
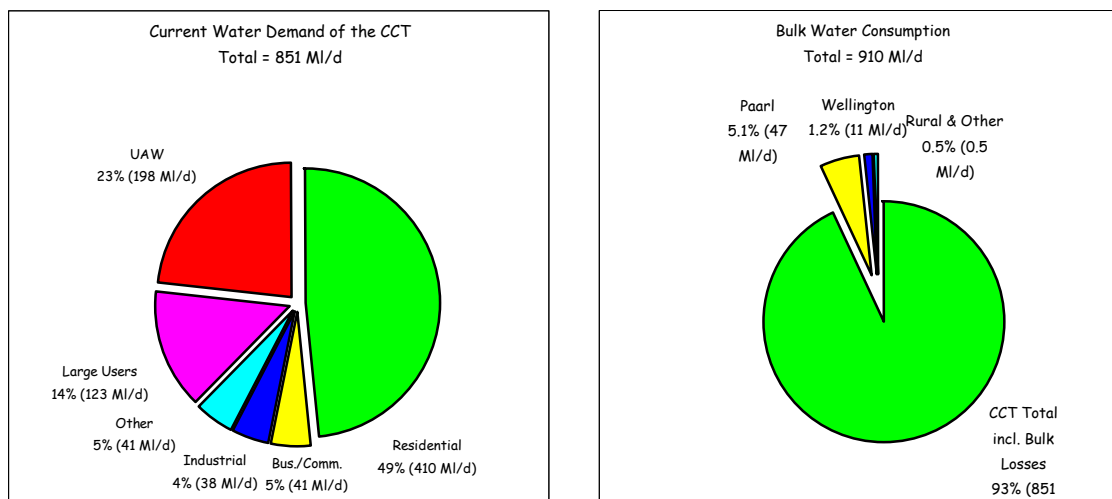
"Ownership"		Water	Sanitation
Private	No. of households	10 500	16 000
	% of informal households	11.4%	17%
	% of total no. of households	1.7%	2.5%
"Council"	No. of households	7 600	37 100
	% of informal households	8.4%	41%
	% of total no. of households	1.2%	6%
Total	No. of households	18 100	53 100
	% of informal households	20%	57.7%
	% of total no. of households	2.9%	8.5%

The CCT is committed to providing efficient, uninterrupted and affordable services, which is clean and safe to all consumers. CCT is therefore in the process of implementing the ISO 9001 Quality Management System to improve communication with consumers, revenue collection and quality management. As part of this process, the CCT has established a Customer Charter **GO TO**, which have been advertised in public papers on 7 September 2001. The CCT has also identified the need to establish a "Customer Revenue Division" to improve service delivery. One of the key issues identified in the WSDP was the need to compile a service delivery strategy to address the current backlog of consumers with inadequate water services. This process has however started through preliminary discussions and workshops during which it became apparent that the most likely service level strategy would be to provide all consumers with access to standpipes and communal (container) toilets taking cognisance of land ownership, the financial and environmental constraints.

## Water Balance, Resource Planning and Management:

### Current Water Balance:

The current water balance, demand, unaccounted-for-water (UAW) and the effluent discharged from wastewater treatment works is summarised below:



### Future Water Demand:

Based on the historic trend in the water demand between 1973 and 1997 the estimated water demand would increase to between 1020 and 1200 MI/d by 2006 by assuming the historic trend of 4%. The Integrated Water Resource Planning Study assumed that the future unconstrained growth rate for water demand would be 3%. This would translate to an estimated water demand of 1100 MI/d by 2006. The implementation of the recommendations contained in the Integrated Water Resource Planning (IWRP) study, which include inter alia pressure management, user education, elimination of automatic flushing urinals, leakage repair, tariffs, metering and credit control, could reduce this water demand to an estimated 940 MI/d. The IWRP study is further discussed in section 4.2 of this report.

**Existing Water Resources:**

One of the major issues facing CCT in the future is the limited water resources. This has been the cause, coupled with low rainfall figures for 1999/2000, that low-level water restrictions have been imposed in an effort to reduce the water demand. The CCT currently makes use of 5 large storage dams (Theewaterskloof, Voëlvlei, Wemmershoek, Steenbras Upper and Steenbras Lower) which has a total capacity of approximately 780 M m<sup>3</sup> and a number of smaller dams. These surface water resources are augmented from the Atlantis Aquifer borehole scheme and the Albion Spring. [GO TO](#)

**Integrated Water Resource Planning and Demand Management:**

Current resources cannot meet the 98% assurance supply level, which implies that the development of additional water resources is a matter of urgency. The CCT therefore commissioned an Integrated Water Resource Planning Study [GO TO](#) during which various alternatives to augment the water supply were investigated. Apart from the implementation of the Skuifraam Dam located in the Berg River near Franschoek (estimated implementation date of 2006/2007), three logical "packages" have been identified including:

- Package 1: Pressure control, removal of automatic flushing urinals, user education, tariffs metering and credit control, leakage repair.
- Package 2: Private borehole, waterefficient fittings and grey water recycling.
- Package 3: Voëlvlei Augmentation Scheme, Table Mountain Group Aquifer pilot project.

Emphasis was placed on strategies that can be implemented swiftly in order to reduce the chances of having to impose water restrictions prior to the yield from the Skuifraam Dam becoming available. This study focussed on the identification of water demand management projects to reduce the water demand. Alternative water resources were also investigated and prioritised with the results indicating that the Voëlvlei Augmentation scheme should proceed, recycling of treated wastewater for local urban irrigation and industrial use, the Cape Flats aquifer, the Eerste River Diversion, treated wastewater reclaimed to potable standard, desalination of sea water and Lourens River Diversion. The Table Mountain Group aquifer located near Franshoek, has also been identified as a potential valuable water resource. It has been recommended that the potential yield and environmental impacts should be determined through a pilot study. Based on "Package 1 & 2", the CCT has formulated and accepted a water demand management (WDM) policy and strategy with the main objectives as summarised below:

**WDM Policy [GO TO](#)**

- Equity, Sustainability and Affordability;
- Reduce the projected demand for water by 20% by the year 2010;
- Encourage, educate and promote the optimal use of water.
- Maximise the use of alternative sources such as wastewater effluent, boreholes etc;
- Minimise the loss of water.

**WDM Strategy [GO TO](#):**

- Identify "Champions" for WDM amongst Politicians;
- Raise the profile and priority of WDM;
- Prepare comprehensive Business Plans for each of the Water Divisions;
- Develop an appropriate Water Services Bylaw for optimal water usage;
- Leakage and waste management;
- Promote the optimal use of water by consumers;
- Remove and prohibit all Automatic Flushing Urinals;
- Minimize water losses in low-income housing;
- Continually optimise tariff structures, ensure universal metering and billing and a rate of payment which makes financial viability certain.
- Maximize the use of alternative sources of water;
- Make strong representations to the SABS to draft a National Performance Standard for water fittings, appliances and devices.

For the Draft 5 year WDM Programme refer to the document entitled "WDM\_Prog" [GO TO](#) .

**Description of Existing Water Services Infrastructure:**

A detailed description of the water services infrastructure is not pertinent to the WSDP. Only a summary of the existing infrastructure is herewith provided (Table 1). For a full inventory of the main infrastructure refer to the infrastructure database [GO TO](#) or the related documents "Bulk Water Supply Infrastructure" [GO TO](#) and "Bulk Wastewater Infrastructure" [GO TO](#).

Other issues that were identified are:

- Inadequacy of current preventative maintenance / pipe replacement programs including the rehabilitation of pitch fibre sewers
- Stormwater / groundwater infiltration in sewers

Major bulk water and wastewater infrastructure requirements

<b>Water Supply Infrastructure</b>	No	Quantity	Replacement Value Rm
Water Treatment	13	1672 MI/d	697
Reservoirs	131	3539 MI	887
Pump Stations	367	Unknown	234
Pipe Length		9058 km	5459
Major Storage Dams	5	780 Mm <sup>3</sup>	unknown
<b>Sub Total</b>			<b>7277</b>
<b>Wastewater Infrastructure</b>			
WW treatment works	20	620 MI/d	620
Pump Stations	320	190 kW	536
Pipe Length		8549 km	2498
<b>Sub Total</b>			<b>3655</b>
<b>Total</b>			<b>10932</b>

## **Environmental and Stormwater Management Issues:**

### **Environmental Acts and Standards:**

The CCT have implemented a number of initiatives including the *State of the Environment Report* <http://www.cmc.gov.za/soe> to monitor the environmental status, protect the environment and set standards in accordance with the relevant Acts and Regulations including:

- National Environmental Management Act;
- Water Services Act and associate Regulations passed under the Act;
- Environmental Conservation Act;
- The Occupational Health and Safety Act;
- Water Act; and
- CCT's Integrated Metropolitan Environmental Policy (IMEP)

The Water and Wastewater Departments of the former CMC have developed a protocol to determine whether their proposed capital projects would have any environmental impacts. This checklist is then discussed with the CMC's Environmental Management Department.

Other water conservation initiatives include the removal of alien vegetation in the catchment areas of the dams and an Environmental Management System (EMS) to protect the Atlantis Aquifer System.

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**Water Quality Issues:**

Potable water quality is strictly monitored/controlled by the Water Treatment Division according to SABS 241 (1984) and other standards. The Scientific Services Department conduct weekly visits to each WTP to retrieve various samples, analyse them and complete weekly reports based on the results.

One of the major challenges pertaining to potable water quality is the implementation of fluoridation as imposed by regulations in terms of the Health Act 63 of 1977, which requires that potable water needs to be fluoridated to obtain a concentration of 0.7 mg/l for the purposes of reducing dental problems. Fluoridation is complex, expensive and a potentially hazardous undertaking and requires the implementation of new infrastructure by September 2003 at an estimated cost of R11 mil, since the natural concentration of fluoride in CCT's water resources is insufficient. The running cost of fluoridation is estimated at R10mil per annum. Skilled operators are required to manage the fluoride concentration. Training of additional staff is required, since not enough skilled operators are available. For more details on fluoridation refer to a document tabled to the Trading Services Portfolio committee [GO TO](#).

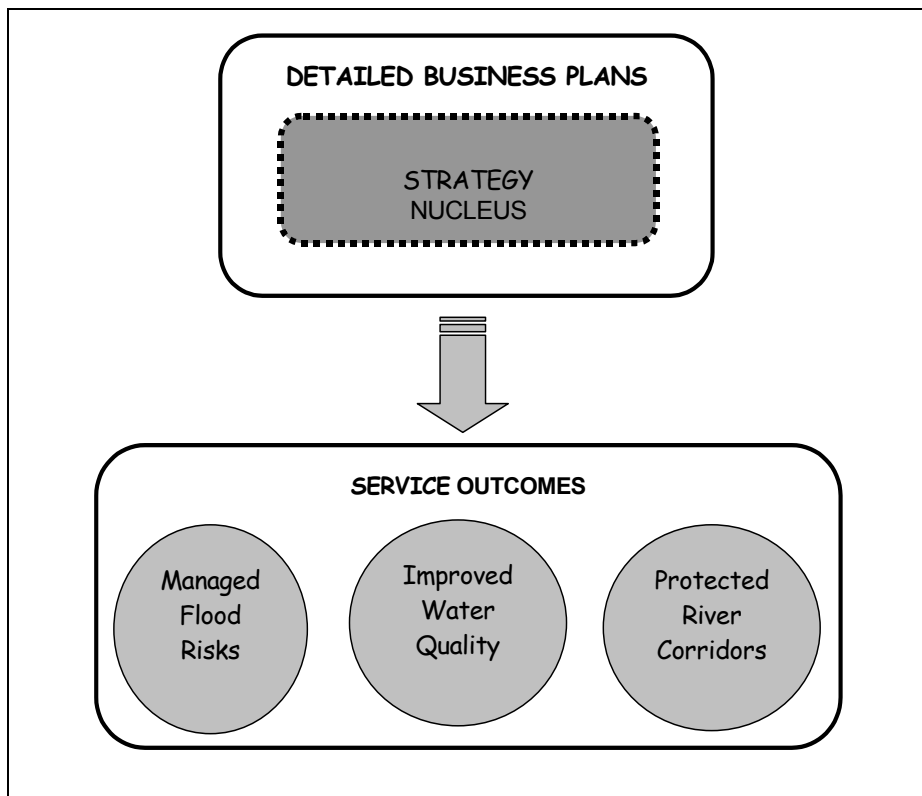
Another major issue pertaining to water quality is the implementation of new treated effluent standards as imposed by DWAF. Wastewater treatment works would require upgrading with a total estimated cost of R1.5 billion in order to comply with these standards and to accommodate future growth.

**Stormwater Management (Incorporating Catchment and River Management):**

The various water related services such as water supply, sanitation and stormwater management are inextricably linked and greater emphasis will be placed within the foreseeable future in optimising and managing their interactions in keeping with the principles of Integrated Water Resource Management. These interactions include direct connectivity between systems in the case of sewer overflows, effluent discharges to watercourses forming the bulk drainage system and abstraction of water from surface and sub-surface resources within the metropolitan area. Whilst the Stormwater Management service currently falls within the Transport, Roads and Stormwater Department of the City of Cape Town, concerted efforts are being made to ensure close co-operation with Water Services for the benefit of the city's residents and visitors.

Over the past few decades rivers have been viewed as convenient drains to convey urban waste and storm runoff. They were canalised on a large scale and many wetland areas filled-in and drained to allow for urban development, dramatically altering the natural hydrological cycle. In retrospect, this approach has inadvertently also precipitated a decline in water quality and ecological integrity of the city's rivers and vleis.

A paradigm shift in the approach to stormwater management in Cape Town has developed over the past few years, based on the philosophy of integrated catchment management. Within the metropolitan area, this was pioneered by the former Cape Metropolitan Council. A Catchment Management Department (CMD) established in 1996 was tasked with promoting 'best practice' in the management of urban rivers, wetlands, vleis and major stormwater infrastructure in partnership with the previous metropolitan local councils. A draft strategy has been formulated with the core functions as illustrated in the figure below.



In an effort to rise to these challenges, a detailed strategy comprising various priority programmes to be implemented over the next five years has recently been formulated. A draft copy is attached [GO TO](#). This strategy provides a comprehensive framework to guide management of stormwater systems for the sustained benefit of the city's residents, business concerns and visitors alike.

Various priority programmes comprising the strategy have been grouped under themes as follows:

- Integrated Planning:
- System Upgrading and Development:
- Asset Management:
- Regulation; and
- Relationship Management

For further information on the stormwater management service, refer to the website of the CDM at [www.cmc.gov.za/w&w/CatchmentMgmt](http://www.cmc.gov.za/w&w/CatchmentMgmt). Information of flood prone areas as well as associated draft development control guidelines are published at [www.capetown.gov.za](http://www.capetown.gov.za).

## **Future Infrastructure Requirements:**

### **Status of Existing Master Plans:**

A survey on the status of existing master plans indicated that not all the former administrations have a comprehensive water and sewer master plan.

### **Overview of Proposed Expansion to Bulk Infrastructure:**

#### Water:

A detailed study on the bulk water supply system entitled "Computer Model Analysis and Master Plan for Bulk Water Supply System" (March 2001) was recently performed by GLS and Ninham Shand to determine the future infrastructure requirements, phasing and costs based on a future AADD of 1850 MI/d which will be realised in 25 years time (double the current demand). **GO TO**. Three options, taking cognisance of the availability of alternative water resources have been considered, namely:

- 1) **Option 1:** Installation of 500 MI/d additional water treatment capacity at the existing Faure WTP
- 2) **Option 2:** Installation of 140 MI/d additional treatment capacity at Wemmershoek WTP and an additional 360 MI/d treatment capacity at the existing Faure WTP
- 3) **Option 3:** Installation of a new 500 MI/d WTP at a site near the proposed Skuifraam Dam

Although the options still require further investigation, Option 3 at this stage is the preferred option for the following reasons:

- A new WTP in the vicinity of Skuifraam Dam will reduce the reliance which the CCT currently places on the RSE Tunnel System (security of supply)
- A WTP near Skuifraam Dam and associated pipework could cater for the growing water demands of Paarl and Wellington and make available currently under-utilised capacity in the existing pipeline from the Wemmershoek WTP.

- The WTP could feed the areas of high growth (ie Durbanville North) directly.
- It would provide an alternate source of supply to Glen Garry Reservoir and enable the Wemmershoek WTP to be shut down for repairs or maintenance.
- Water from some of the sources could be gravitated to Glen Garry Reservoir (as opposed to Option 1 where all the water would have to be pumped to Glen Garry)
- Increased flexibility in the bulk supply system

A summary of the anticipated costs for water resource development and bulk water supply infrastructure over the next 12 to 15 years is given in the table below:

Raw water pipelines	:	R 47,4 million
Additional WTP capacity	:	R 140,2 million
Bulk system pipelines	:	R 648,2 million
Additional pump capacity	:	R 34,4 million
Additional storage capacity	:	R 213,0 million
Miscellaneous other items	:	R 29,8 million
<b>Sub-Total</b>		<b>R 1 154,3 million</b>
Water Resource Development Costs :		
(for 6 years only)		R 115,0 million
<b>Total</b>		<b>R 1 269,3 million</b>

The three year CCT bulk water capital expenditure program is also attached [GO TO](#).

#### Wastewater:

The Bulk Infrastructure Program [GO TO](#) summarises the future sewer infrastructure requirements to meet the future growth, but also to adhere to DWAF's new effluent standard requirements to be implemented by 2010. The total cost of upgrading is estimated at 1.5 billion over the next 10 years, with 66% of this capital required for upgrading of the Athlone, Milnerton and Zandvliet wastewater works.

Although it is estimated that the annual expenditure required is in the order of R145 million, it is preferred that this programme be implemented over a shorter period due to the current condition of infrastructure and the requirement for increased capacity. Therefore an expenditure of more than R100 million per annum over the next four years is required.

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## Financial and Institutional Aspects:

The following section deals with the financial and institutional challenges facing the CCT. For more details on the current tariffs and policies refer to the following documentation:

[GO TO](#) Sanitation Tariffs

[GO TO](#) Bulk Water and Reticulation Tariffs

[GO TO](#) Bulk Water Tariff Policy

[GO TO](#) Consumptive Water Tariff Policy

[GO TO](#) Sanitation Tariff Policy

[GO TO](#) 2001/2002 Capital Budget for Water Services

### The challenges of institutional reform:

The City of Cape Town faces significant challenges to transform water services into a world class water services provider which is customer friendly, efficient and sustainable. These challenges include the formation of a single operational entity, providing adequate services to informal settlements, undertaking a very significant capital investment programme, and improving operational efficiencies, customer relations, revenue management and the management of assets.

In a short space of time significant progress has been made, including the successful implementation of free basic water for all, the establishment of a customer charter and a recent decision to form a ring-fenced business unit. Nevertheless much remains to be done. In view of this context, the institutional and financial plan should be viewed more as a strategic document mapping the way ahead rather than a detailed plan with specific financial and tariff commitments.

It is the intention of the city to separate the roles and responsibilities of the service authority and service provider more clearly as provided for in the Water Services Act (Act 108 of 1997). The details of this relationship still need to be worked out.

An assessment carried out in terms of section 78 of the Municipal Systems Act indicated that "the best internal mechanism ... is for the provider to be structured into an Autonomous Ring-fenced Business Unit." In the context of the proposed restructuring of water services, the concept of a ring-fenced business unit is understood to mean the following: clearly defined and separate cost and income centres, clearly defined and substantiated cost allocations, full operating income statement in compliance with GAMAP, full asset register, full responsibility for long term asset management, full responsibility for income and for customer management.

At present, support services (such as finance, billing, information technology and human resources) are rendered by other departments in the city administration. Although ring-fencing as defined above would seem to imply that all of these support services should now be housed within the ring-fenced unit, this is not necessarily the case. The water services unit will need to embark on a process of negotiation with the "corporate centre" as to the best arrangements for the city as a whole for the allocation of these support functions. One option which will be explored is that of a "shared service centre". The policies, strategies and details of these arrangements are being investigated by the city and it is too soon to report on likely outcomes from this process.

An area delivery model is being developed for the city as a whole. The relationship between this and a ring-fenced water services unit is still in the process of being defined.

The respective roles of the ring-fenced water business unit vis-à-vis other trading services, a "shared service centre" and the "corporate centre" for the interface between the Council and citizens/customers are still in the process of being defined. To enhance the world class status of the water services unit, it is the plan that bulk water and reticulation will achieve ISO 9002 accreditation by 30 June 2002 with the wastewater treatment plants following by 30 June 2003.

#### **Financial planning in the context of uncertainty:**

The water services development plan has identified the capital expenditure requirements over the next five to ten years. Detailed financial modelling has been undertaken to ascertain the implications of this capital expenditure for the sustainability and viability of the service. It is important to understand that any financing forecasts in the present context are subject to significant levels of uncertainty for the following reasons:

There is considerable uncertainty related to the data requirements for financial modelling and forecasting in the following areas: the value of the assets, the true operating costs, water sales for the base year. There is uncertainty in the policy arena in the following key areas: sanitation tariff policy and the detailed implications of the introduction of *GAMAP* as well as the practical issues of moving from the present system of municipal accounting to *GAMAP*.

The water services is in the process of fundamental transformation. Many of the broad issues related to this reform still need to be defined and strategies chosen. Key uncertainties relate to the future of support services and the management of the customer interface, including revenue collection and debt management.

**Investment requirements:**

The capital expenditure needs is in excess of R2 billion over the next 5 years. This is likely to require significant increases in tariffs in real terms in order to ensure the financial viability and sustainability of the service. The following strategic issues have been identified:

All existing formal houses have adequate water and sanitation services but the planned provision of formal houses is inadequate to reduce the housing backlog. Provision of basic services to households living in informal housing is expected to require an expenditure of about R5 million per annum. (There are approximately 18 100 households without adequate water services and 53 100 households without adequate sanitation services at present.) The City intends to provide at least basic water and sanitation services to all households within the City subject to legal constraints (many informal settlements are situated on private land). The actual investment requirement is subject to change due to the dynamic nature of informal settlements - with changes in location and anticipated growth in informal settlements due to the housing backlog. A realist programme for the renewal of existing assets needs to be investigated and developed. The bulk wastewater capital expenditure estimates are subject to a strategic review which is currently in progress, addressing the impact of the DWAF 2010 standards, stormwater ingress and growth in wastewater effluent.

**Financing of the investment programme:**

The current average cost of existing capital debt is estimated to be 15.5% per annum, which is high relative to the current market interest rates (one could expect the cost of borrowing for a well run and financially viable metropolitan water utility to be in the region of prime to prime less 2). Total outstanding debt is estimated to be R1.2 billion representing a debt to equity ratio of 0.14 (assuming a revalued asset value of R10 billion). This indicates that water services is considerable under-gearred at present.

The ring-fencing of the water service operations creates an opportunity for the business to develop a new financing strategy. This strategy should comprise the following: re-negotiation of outstanding loan conditions with the city to realise a more market-related interest rate, raising loans from banks at competitive interest rates, consideration of the placement of bonds for the raising of finance and consideration of private financing arrangements through, for example, build-operate-transfer contracts for lumpy investments such as new wastewater treatment plants.

#### **Financial implications of investment programme:**

Given the uncertainty in the base data, the policy uncertainty and institutional uncertainty, the detailed financial modelling undertaken should not be used to make commitments to financial and tariff targets. The financial analysis has revealed the following strategic issues: operating costs are likely to increase in future in real terms (though not significantly), the practical implications of GAMAP need to be investigated in more detail, the sanitation tariff policy needs to be finalised and implemented, tariffs will need to increase in real terms in the next few years though it is not possible to say by how much until many of the significant uncertainties identified above have been resolved. The affordability analysis shows that overall household affordability is constrained, that there are limits to the extent to which cross-subsidies are sustainable, and that it is not possible to increase tariffs significantly without addressing the issue of affordability, indigent policy and subsidies (including the equitable share) in a more systematic and considered manner than has been possible to date in the current context of institutional uncertainty.

#### **Tariffs:**

Future water and wastewater tariffs are dependent on a number of factors, including: sanitation tariff policy, level of capital expenditure, sources of finance and cost of capital, value of assets and depreciation policy, rate of collections and provision for bad debts and actual water sales. For the reasons already identified, a significant degree of uncertainty is attached to all of these factors. Therefore, it would be unwise to predict future water and wastewater tariffs into the future at this stage. Nevertheless, based on the detailed financial analysis undertaken to date using both "business as usual" and "strategic" financial models, and subject to the limitations already expressed, it may be concluded that it is highly likely that tariffs will need to increase in real terms significantly during the next three to five years in order to ensure that the water services unit is financial viable and sustainable.

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**Improving customer and revenue management:**

Current water customer debt is about R460 million, representing 8 months of sales. Revenue collection needs to be improved and non-payment reduced. The following strategies have been identified: implementation of credit control policy, implementation of indigent policy, resolution of customer management responsibilities within Council, implementation of universal metering and billing, implementation of informative billing, improved customer education and improved accessibility of payment facilities.

**Summary of Key Issues Affecting Water Services and Strategic Recommendations**

A summary of the "issues" that influence the provision of water and sanitation services in the City of Cape Town area is herewith provided (refer to attached Table A). Strategic recommendations and a program are also proposed.

**Key Performance Indicators Affecting Water Services and Service Delivery**

City of Cape Town is in the process of implementing a number of important Key Performance Indicators (KPI's) to improve and monitor service delivery in its area of jurisdiction (refer to attached Table B).

**Table A: Strategic Issues Affecting Water Services Delivery and Proposed Strategies**

Issue	Strategy	2002	2003	2004	2005	2006	Comments
<b>Customer and Revenue Management:</b>	. Implement the Credit Control Policy						
In order to curb non-payment and increase the revenue, meter reading, billing and credit control of 7 previous Administrations under "Water Services" need to be consolidated	. Implement Indigent Policy						
	. Establish a "Customer and Revenue Management" Section in order to facilitate customer/client relations, as well as improve customer focus						
	. Ensure universal metering and billing						
	. Implement informative billing						
<b>Future Infrastructure Requirements:</b>	. Ongoing analysis of financial affordability and sustainability						
Water Services envisages spending in excess of R1 billion in capital expenditure over the next 10 years	. Investigate alternative funding mechanisms						
	. Ensure adequate resources planning						
<b>Financial Modelling and Tariff setting:</b>	. Strategic issues covered in financial component of WSDP to be addressed						
The water tariffs of the former MLC's have been converged, but the sustainability and impact of major capital infrastructure needs to be confirmed. Sanitation tariffs have not yet been consolidated	. Financial Modelling						
	. Formulate a sanitation tariff policy and set tariffs						
<b>Wastewater Treatment:</b>	. Upgrade existing wastewater treatment facilities at an estimated investment of R1,5 billion						
CCT need to comply with the DWAF's 2010 effluent standards for discharge of treated wastewater into a river	. Investigate alternate means to facilitate the upgrading						
	. Improve systems and processes for increased efficiency						
	. Investigate affordability of 2010 Standards						
	. Review Strategic Wastewater Plan						
<b>Integrated Water Resource Planning</b>	. Implement the recommendations contained in the Integrated Water Resource Planning Study						
	. In order to ensure a sustainable water supply for the future, the CCT has to aggressively implement its Water Demand Management Policy and Strategy to reduce projected water demand by 20% by 2010						
	. Monitor the 5 year implementation program						
<b>Water a Scarce Source</b>	. Develop additional water resource schemes						
Water Demand currently exceeds available water supply (at a 98% level of assurance). The average historic growth in water demand for the Cape Metropolitan Area has been between 3% to 4% per annum	. Investigate the siting of future water treatment plants						
	. Obtain confirmation from DWAF on the availability of future water resources						
<b>Stormwater Infiltration into Sewer Systems:</b>	. Commission a study to determine the extent and priorities (ingress management plan).						
Stormwater infiltration into the sewer system is a major problem, especially in the Cape Flats area, which affects the available capacity of wastewater treatment works	. Aggressively implement an ingress management plan						
	. Compile a 5 year service delivery program for basic services in compliance with the Water Services Act						
<b>Service Delivery:</b>	. Extend water services as rapidly as possible to all potential customers						
The CCT has a responsibility in terms of the Water Services Act to supply the people in its area of jurisdiction with basic water supply and sanitation services	. Draft consolidated Water Bylaws in terms of the Water Services Act						
	. Implement Asset Management System						
<b>Asset Management:</b>	. Ensure capital expenditure for adequate infrastructure replacement						
Currently inadequate preventative maintenance is being done on existing Water Services infrastructure, which will cause major capital requirements in future	. Establish Water Master Plan for areas which currently do not have comprehensive master plans						
	. Establish Sewer Master Plan for areas which currently do not have comprehensive sewer plans						
	. Establish a data management bureau						
<b>Fluoridation of Potable Water:</b>	. Compile an implementation program for fluoridation						
Fluoridation of drinking water at a dosage of 0,7 mg/l is required according to the Regulations in terms of Health Act 63 of 1977 to reduce dental problems. These regulations not only have major implications on the current operation of treatment works and staff requirements, but also require a capital investment of R11 mil and a running cost of R10 mil per annum							
<b>Organisational Transformation:</b>	. Complete macro and micro design						
	. Establish ring fenced business units						
	. Implement Enterprise Resource Planning (ERP) System						
	. Draft a Service Level Agreement (SLA) between Water Service authority and Water Service Provider						
	. Draft SLAs for internal service provision						
	. Performance Management Systems (including bench marking)						
	. ISO certification						
<b>Water Quality:</b>	. Continual monitoring of water quality I.e. resource, potable water and discharges						
Monitoring of water quality							

**Table B: Provisional List of Key Performance Indicators (where available, base data still need to be inserted)**

No	KPI	Unit	2001	2002	2003	2004	2005	Target
<b>1</b>	<b>Consumer Profile</b>							
1.1	Consumers with at least basic Water Services	%	99	100	100	100	100	100
1.2	Consumers with at least basic Sanitation Services	%	94	96	98	100	100	100
<b>2</b>	<b>Quality of Service</b>							
2.1	Water Continuity (Unplanned Interruptions Repaired within 6 hours)	%						95
2.2	Water Continuity (Consumer Notification of Planned Interruptions within 48 hours)	%						98
2.3	Water Pressure (Consumers with at least 2.4 bar pressure)	%						98
2.4	Effluent Removal (Interruptions repaired within 6 hours)	%						95
2.5	Response to verbal customer queries within 2 days	%						100
2.6	Burst Pipelines shut down within 1 hour	%						98
2.7	Collapsed/blocked sewer pipelines made safe within 1 hour	%						98
<b>3</b>	<b>Water Demand Management</b>							
3.1	Bulk water supply target	MI (*10 <sup>3</sup> )		347	341	339	340	N/A
3.2	Reduction of Per Capita Consumption	l/c/d						
3.3	UAW (reticulation)	%	23	21	19	17	17	17%
3.4	Effluent Re-cycled	%						
<b>4</b>	<b>Water Quality Samples Complying with Standards/Guidelines</b>							
4.1	Potable Water (% compliance with standards)	%						100
4.3	Effluent (COD, Ammonia, Suspended Solids, E-coli) (% compliance with standards)	%						99
4.4	Rivers & Water Bodies	%						
4.5	Coastal	%						
<b>5</b>	<b>Billing and Credit Control</b>							
5.2	Payment	%	90	92	94	96	98	98
<b>6</b>	<b>Asset Maintenance</b>							
6.1	Water pipelines replaced	%						
6.2	No of water pipeline bursts per 100 km per annum	No.						
6.3	Sewer pipelines replaced	%						
6.4	No of sewer collapses per 100km per annum	No.						
<b>7</b>	<b>Financial KPI's</b>							
7.1	Cost of Bulk Water	R/kl	1.31					
7.2	Cost of potable water - average historic cost	R/kl	approx 2.95					
7.3	Cost of effluent (conveyance and treatment) - average historic cost	R/kl						
7.4	Cost of Bulk Wastewater treated - average historic cost	R/kl						

