PURPOSE

The purpose of this document is to provide context to the proposed 2018/19 water and sanitation tariffs and to explain why significant changes in both the tariff levels and structure are necessary to keep water flowing in the taps and wastewater treated in the years to come.

BACKGROUND

Under-funding. Water and Sanitation operations have been underfunded for a number of years due to approved tariffs being at levels insufficient to cover costs. This resulted in pressure on operations, lower than acceptable collection ratio, concern regarding expenditure on asset renewal and maintenance, and postponing planned augmentation. Sanitation tariffs have been linked to volume of water sales on the assumption that 70% of water used entered the sewerage system and were too low to fund operations (i.e. water subsidised sanitation). National Treasury holds that water & sanitation is a trading service that should be ring-fenced and recover full costs of these services.

Drought resilience. The current tariff structure is not resilient to drought. Having the tariff linked exclusively to the volume of water sold results in revenue falling sharply when water has to be restricted (the impact in 2017/18 is approximately R1.7bn anticipated under-recovery). A stepped volume-based tariff structure was introduced in the early 2000s to manage water demand as the cost of water increased with each step of higher use. Anticipated sales volumes in each step were balanced with the overall required revenue based on an assumption of sensitivity to pricing in steps of higher consumption where water was more expensive. To date water sold in the lower steps have always been below cost and subsidised by consumption in higher steps. Where restriction necessitates the City to sell less water, volumes in the lower steps increase resulting in most of the sales being subsidised with no revenue at higher steps available to cover the costs.

Fixed costs. While some of the costs in providing water is volume related, much of the cost is not. Allowing for users to vary their demand and pay accordingly has always been a principle of municipal service provision. With scarcity of resources, more customers make alternative service arrangements and move towards being off grid. These are generally more affluent customers which then impacts on the ability to subsidise poorer households. Losing income at the high end results in a loss of ability to subsidise the poor, thus requiring a fixed charge that is unrelated to consumption.

Subsidies. Municipal charges are generally progressive, i.e. poorer households are subsidised by more affluent customers. Losing income at the high end results in a loss of ability to subsidise the poor, thus requiring a fixed charge that is unrelated to consumption.

SUMMARY

While the proposed tariff adjustments are very significant, these are necessary to sustain the service. The alternative of not making these adjustments is far worse – an unsustainable service that would hurt poor people more than the wealthy. The reasons for the necessary large tariff adjustments (in both level and structure) are set out in summary below, and expanded in more detail in the sections that follow.

Reduced volumes. During a drought, the water usage needs to reduce but a large portion of the costs of providing the service are fixed. (The only significant costs that reduce are chemical costs and the cost of pumping – these are a small share of the total costs.) To cover the total costs of providing the service, the price of each unit of water sold must increase. The size of this adjustment is significant. For example, average water usage by the city reduced from 900 million litres per day (MLD) in February 2017 to 500 MLD in February 2018, a 45% reduction. To compensate for this reduction in the volume of water sales, the price of water sold must increase from an average of R18 to R32 per thousand litres (an 80% increase) to maintain the same revenue. Because sanitation tariffs are based on the volume of water used, large adjustments to sanitation tariffs are also necessary.

Additional costs. In addition, the city is incurring additional costs to respond to the drought in four key areas: (1) pressure management, (2) the accelerated roll out of water management devices, (3) water loss reduction, and (4) the building of the capacity to supply additional water from diverse sources. These additional costs greatly exceed the modest reduction in expenses resulting from reduced water sales.

Maintaining assets for the future. The city must also ensure that it maintains and replaces its existing assets. A recent study showed that the city needed to spend an additional R1 billion per annum on asset rehabilitation and replacement to improve the sustainability of the service which is currently threatened. This represents an increase of about 16% on the 2017/18 water and sanitation budget.

Reducing costs through improved efficiencies. The city already has much lower water losses compared to its peers in South Africa. The investments being made in response to the drought are further reducing real water losses (leaks) and accounting losses (meter faults, incomplete metering etc.). The roll out of water management devices will result in a significant improvement in cash collection efficiency over time although the short term situation is likely to worsen as a result of increasing levels of non-payment in response to the punitive drought tariffs. The increase in costs substantially outweigh the planned and potential efficiency gains to reduce costs.

Increase in the average tariff. The above factors show that very major adjustments to the average tariff level for both water and sanitation are necessary to maintain and sustain the service.

Changes in consumption patterns. Cape Town has a very progressive tariff structure with steeply inclining blocks. This means that households who use more water pay much more for the water than those who only use a little water. This has enabled the city to subsidise water for the majority of people living in Cape Town. All households who consumed less than 20 000 litres per month (667 litres per day) in the period 1 July 2016 to 30 June 2017 (FY2017) were subsidized, paying on average R8 per thousand litres, which is less than half of the actual cost of the water supplied. During that same year, the average tariff for household consumption above 20 000 litres per month was R66 per thousand litres (more than seven times the tariff for use below 20 000 litres), generating a revenue of R1.5 billion for the year, more than double the revenue from households using less than that amount.

Changes in tariff structure. The tariff structure worked well when there were no restrictions (and when restrictions were modest), but does not work in the context of severe restrictions. When households are not allowed to use more than 200 litres per day (6 kℓ per month) for a four-person household, then *all* of the revenue for higher levels of consumption disappears. The only way to compensate for this it to increase the tariff for lower levels of consumption. These adjustments have to be very significant to compensate for the very high loss of revenue from the higher tariff bands. A fixed charge increases revenue stability, reduces subsidies to high income households and reduces the impact of the adjustment on the volumetric tariff.

Alternative revenue options. A proposal to soften these very significant tariff impacts for water and sanitation by applying a property-based drought levy was retracted by the City in response to strong negative public reaction. Similarly, a proposal to soften the sanitation tariff impacts by shifting the basis for charging for sanitation away from water volume is under consideration. (There is a compelling argument to be made that the provision of sanitation services is a public good and therefore it is appropriate for the costs of sanitation to be recovered on the basis of a property rate which is used to fund other public goods. Many cities around the world apply this method of charging for sanitation.)

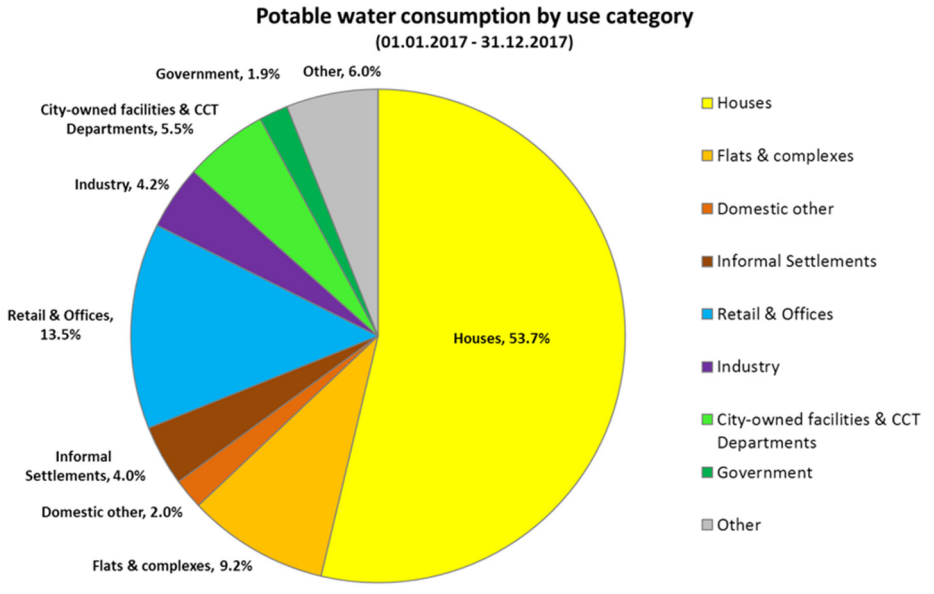
Short-term savings. The city has implemented measures to shift expenditure priorities to achieve and reallocate savings during this financial year. However, these short term measures are not sustainable and cannot be relied upon going forward.

A balanced budget. The City is legally required to balance its budget. Its only options are reducing expenditure, achieving savings, improving efficiencies, increasing rates and/or adjusting tariffs. The scope of these have been briefly described. Because of the size of the required adjustments, the City has no choice but to make major adjustments to the water and sanitation tariffs. These adjustments, although painful in the short term, will support the long term sustainability of the service.

1. SECTION 1: CHANGES IN THE VOLUME OF WATER SALES

1.1 Structure of demand

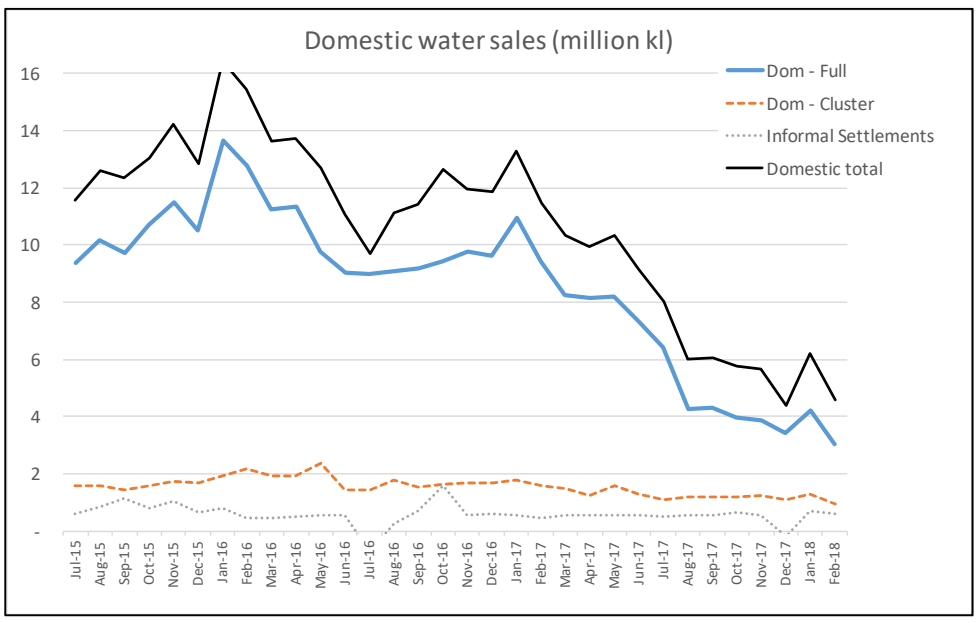
Domestic use accounted for 70% of water use during 2017, commercial use 13.5% and industry 4.2%. The major scope for demand reduction therefore lies with domestic customers.



Massive reduction in usages achieved by domestic customers

The reduction in water use by domestic customers has been remarkable, reducing from a peak of over 15 million kilolitres in February 2016 to below 5 million in February 2018, a reduction of over 66%. Most of this was achieved by households with a metered house connection. (The spike in consumption

in January 2018 is a result of estimations based on the previous year's average and is corrected in the February figures.)



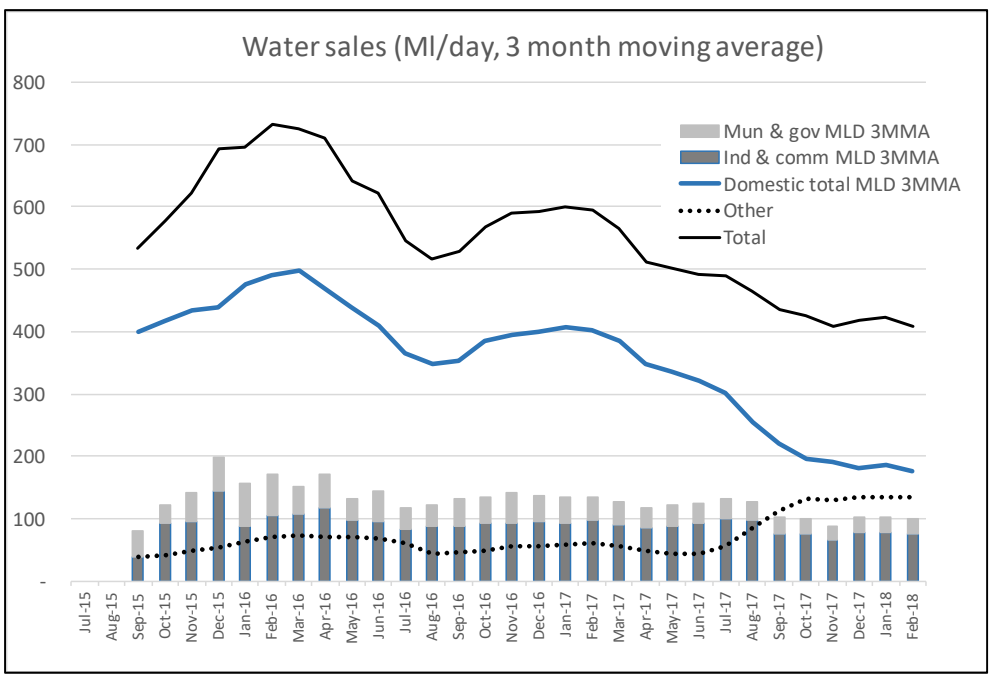
Informal settlements accounted for only 4% of use during 2017, whereas the number of households living in these settlements was more than 12% of the total households living in Cape Town. The demand reduction is all the more impressive in the context of the ongoing growth in the number of people living in Cape Town.

	2013/14	2014/15	2015/16	2016/17	2017/18
Estimated **population**	3 889 237	3 949 164	4 012 441	4 070 910	4 127 052
Estimated number of **households**	1 150 662	1 189 507	1 230 810	1 272 160	1 289 703
Est. households **Formal Dwellings**	921 591	958 168	997 093	1 036 436	1 050 729
Est. households in **Informal Settlements**	151 400	152 620	153 893	154 901	157 037
Est. Households Informal **Backyard Dwellings**	77 671	78 719	79 824	80 823	81 937

Source: Mid-year population estimates, 2011 Census and 2016 Community Survey data from Statistics South Africa, as reported by the City to National Treasury

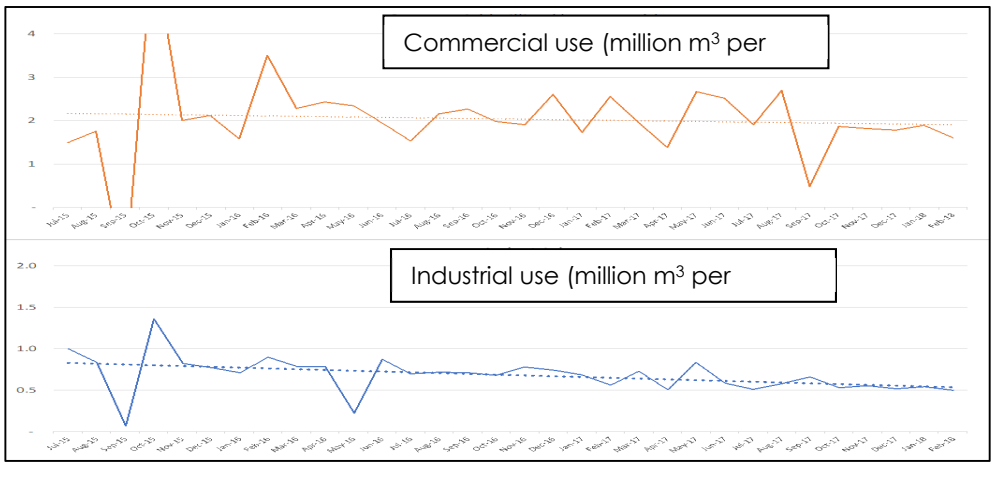
1.2 Large overall reduction in demand

The contribution of domestic demand reduction on overall demand reduction is shown below. The seasonal variation is evident in summer 2015, less so in summer 2016 and virtually non-existent in summer 2017. While the peak in summer 2015 was at ~750MLD of sales



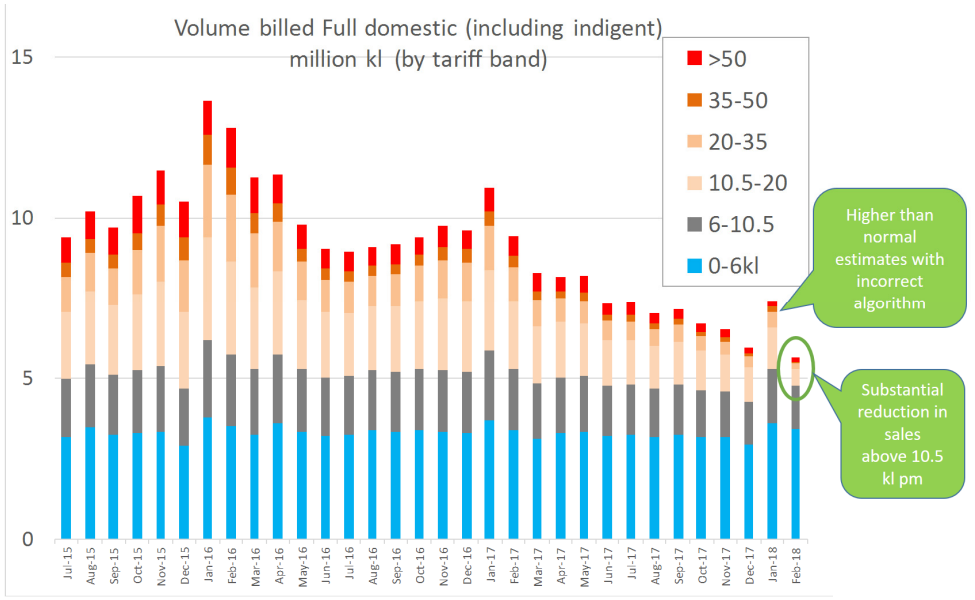
1.3 Commercial and industrial use

Reduction in usage in commerce and industry has been more modest. Consumption in commercial and industrial use have followed an overall downward trend since July 2015. (The spikes are due to billing corrections.)



1.4 A change in the structure of water usage by domestic customers

Water consumption by tariff band for domestic users is shown next. There has been a very substantial reduction in the volume of water sold in the tariff bands above 10.5 kℓ per month from over 7 million kℓ per month in February 2016 to below 1 million kℓ per month in February 2018.



2. SECTION 2: ADDITIONAL COSTS

Additional expenditure is required to implement demand management, ensure the sustainability of the assets and increase the availability of diverse water supplies.

Demand management. While demand management has been very effective, this has required significant investment and additional expenditure. Budgeted expenditure for 2018/19 is in the region of R300m.

Maintaining assets. The city must also ensure that it maintains and replaces its existing assets. A recent study on the Financial Sustainability of Utility Services showed that the city needed to spend an *additional* R1 billion per annum on asset rehabilitation and replacement to improve the sustainability of the service which is currently threatened. If this investment does not occur, the asset conditions will move past the critical tipping point on the deterioration curve and cost to ensure renewal will exponentially increase. This represents an increase of about 16% on the 2017/18 water and sanitation budget. The study also concluded that maintenance is currently under-provided for by Water and Sanitation and must be increased.

New Water Program. The purpose of the New Water Program is to make the city more resilient to drought by making available water from new and diverse sources including ground water, wastewater reuse and desalination.

New Water Program: Capital programme for additional water 18/19:
The current planned augmentation programme will provide between 39 and 59 million cubic metres (Mm^3) of water in 2018/19 (in addition to the current restricted annual allocation to CCT which is 175 Mm^3)

- **Groundwater:** sandy aquifers (Atlantis & Cape Flats) and TMG aquifer capital budget R1.54bn and operating budget R245m. This covers the cost of drilling, connecting infrastructure, electricity and treatment into the water reticulation system as well as operating the system at each site;
- **Water re-use:** budget provision of R872m capital and R122m operational for the year which includes the temporary plant at Zandvliet, design of permanent long-term re-use as well as recharge to Cape Flats aquifer from Borcherd's Quarry, Mitchell's Plain and Cape Flats wastewater treatment plants;
- **Desalination:** The temporary desalination plants at Strandfontein, Monwabisi and V&A require an operating budget of R646m for the year, with no capital investment. Long-term desalination costs will be incurred in future years.

A significant capital programme to provide for growth and maintenance of water and sanitation infrastructure is included in previous years' medium term revenue and expenditure framework (MTREF). A number of projects have previously been postponed due to prioritisation and affordability but are critical to implement to provide a secure water future. Significant projects in the bulk water branch include the Bulk Water Augmentation scheme (BWAS) as well as the Contermanskloof reservoir. Wastewater upgrade and expansion projects include Bellville, Borcherds Quarry, Cape Flats, Macassar, Potsdam, Scottsdene, Wesfleur and Zandvliet.

In addition to this, augmentation to the system to diversify water sources in response to the drought under the new water programme adds R2.412 billion to the 2018/19 capital requirement. This will cover the cost infrastructure of groundwater extraction from the Atlantis, Cape Flats and Table Mountain Group Aquifers as well as re-charge of Cape Flats aquifer and permanent re-use from Zandvliet wastewater treatment plant. Augmentation from desalination will only incur operating expenditure in the next year.

In 2018/19, the additional operating expenditure due to the augmentation projects include R245m for groundwater extraction form the three aquifers, R122m for temporary re-use at Zandvliet and R646m for the temporary desalination plants at Monwabisi, Strandfontein and the V&A Waterfront.

CAPEX	R (million)
Bulk Water Program	
BWAS	R117
Contermanskloof Reservoir	R52
Subtotal	*R169*
Wastewater Treatment Program	
Upgrades and extensions	R740
Sludge Facility	R21
Subtotal	*R761*
Asset Replacement Program	
Capital Replacement Programme (Provision)	R555
Future Replacement Programme	R165
Acceleration in Maintenance Programs	R90
Other	R329
Subtotal	*R1 138*
WATER & SANITATION CAPITAL PROGRAM	***R2 068***
New Water Program	
Ground Water/Aquifers	R1 540
Water Re-use & aquifer recharge	R872
Subtotal	***R2 412***
TOTAL CAPITAL PROGRAM	**R4 480**

3. SECTION 3: REDUCED COSTS AND IMPROVED EFFICIENCIES

3.1 Reduction of non-revenue water and water losses

There is a difference between the volume of water "produced" (treated) and that sold. The water balance is analysed each month in line with international best practice to determine non-revenue water and water losses. The successful implementation of water demand management has resulted in a reduction in the volume of water produced. This has contributed to a slight increase in the percentage non-revenue water although the actual volume of non-revenue water has decreased.

Non-revenue water in the City was calculated to be 24.6% at the end of February compared to the national average of around 41%. Non-revenue water includes unbilled water (for example, to informal settlements) as well as real and apparent losses (also known as unaccounted-for water). Water losses in the city were 15.9% for the 12 months to February compared to the national average of 36%. Water losses include water losses through leaks, as well as water lost through theft and meter inaccuracies. Although the water loss percentage has increased slightly over the past year, this is the result of a large reduction in the denominator in the formula. The actual volume of water losses has reduced significantly due to improved management of the water network.

3.2 Anticipated improvements in cash collections

The roll out of water management devices is expected to have a positive impact on cash collections over time. In the short-term however, the punitive level 6 tariffs may reduce payment levels.

3.3 Staff productivity and other efficiency improvements

As part of the water and sanitation strategy development, the efficiency of the department will be benchmarked with international best practice with a view to identifying and implementing efficiency improvements.

4. SECTION 4: CHANGES IN TARIFF LEVEL AND STRUCTURE

4.1 Average tariff level

The average tariff level is dependent on the volume of water sold – the average tariff is determined by dividing the total cost of providing the service by the volume of water sold. To recover the cost of providing water of ~R3.75 billion, the required average tariff is approximately **R21/kℓ** with sales of 178 million kℓ (Level 1 restrictions) and **R40/kℓ** with sales of 93 million kℓ (Level 6 restrictions).

4.2 Level 6 restrictions are the likely starting point for tariffs in 2017/18

The current drought is unprecedented. The drought has been estimated as a 1 in 311-year meteorological event, with 90% confidence that it falls between 105 and 1280 years[1]. There is no guarantee of when it will start raining or how much it will rain this winter. New tariffs must be in place from 1 July 2018. It is highly likely that at that time, Level 6 restrictions will remain in place unless rainfall is unusually early and substantially higher than the long-term average. Restriction levels will be reduced as soon as dam levels and DWS restrictions allow.

4.3 Changes in the tariff structure

The following changes in the tariff structure are necessary in the light of the structural changes in demand and to make the tariff more resilient to drought events:

Domestic tariffs

1. The number of tariff steps are reduced from 6 to 4 in order to reduce complexity.
2. Subsidies for indigent households (approximately 268,000 households) are maintained. Indigent households do not pay for water where usage is maintained at a basic level (below 10.5 kl).
3. Tariffs need to recover costs in the first two steps (0-6, and 6-10.5kl) for all customers except the indigent.
4. The third step is based on the average incremental cost of providing water to ensure sustainability.
5. The fourth step is there to strongly encourage water conservation.
6. A fixed charge based on meter size is introduced to cover approximately 25% of fixed cost.

Non domestic tariffs

7. have now been consolidated into a single tariff covering industrial, commercial and all other non-domestic use, at a fixed rate per kilolitre plus the fixed charge depending on meter size.

Sanitation tariffs

8. Other options for charging for sanitation will be explored to reduce the volatility in the tariff due to its link to water volumes.

Accounting

9. Revenue from the water & sanitation tariffs are now to be separately accounted for.
10. The cost of the subsidy for indigent households will be funded through a transfer from the rates account. Accounts for the cost of supplying indigent households will not be raised – a zero tariff will be applied to indigent use below 10.5 kl per month.

4.4 Basis of calculation of water and sanitation tariffs

Domestic water tariff will be calculated as follows:

New 4 Step Tariff Structure (Water)	Tariff set at:
Basic Usage Water = 0 – 6kℓ Sanitation = 0 - 4.2kℓ	a function of the *average cost of water* (cost/volume)
Basic Usage Water = 6 – 10.5kℓ Sanitation = 4.2 - 7.35kℓ	a function of the *average cost of water* (cost/volume)
Above Basic Usage Water = 10.5 – 35kℓ Sanitation = 7.35 - 24.5kℓ	a function of *future incremental marginal cost* (additional cost to expand output from additional water sources)
Use jeopardising water conservation Water = > 35kℓ Sanitation = 24.5 - 35kℓ	*Punitive Charge* to deter high water usage

4.5 Basis of calculation of fixed charge

A fixed charge has been introduced which is linked to the size of the metered connection which translates to the demand put on the system. The formula for calculation of the monthly charge is based on the square of the radius of the connection (the volume supplied is directly related to the area where: Area = π x radius^2 or = π x (diameter/2) ^{2}

It should be noted that there are very few large meters in the network – 95% of meters are 20mm or less, 98% are 25mm or smaller and 99% of meters are 40mm or smaller.

Size (mm)	Number of meters	% of meters	Monthly Charge (incl VAT)
15	367,516	56.0 %	R 64.40
20	254,025	38.7 %	R 115.00
25	20,388	3.1 %	R 179.40
40	4,516	0.7 %	R 460.00
50	4,986	0.8 %	R 718.72
80	1,843	0.3 %	R 1,840.00
100	2,344	0.4 %	R 2,875.00
> 150	471	0.1 %	varies

4.6 Monthly account for Steps 1 and 2

ACCOUNT FOR WATER & SANITATION (Domestic 15mm connection, incl. VAT)

The monthly increase at Step 1 & 2 at Level 6 is substantial, given the need to cover the actual cost based on the low volumes. Remaining at **Level 6** restrictions, the increase will have the following impact:

6kl Current: R 374 — 6kl from 1 July: R 654 (75%)
10.5kl Current: R1,034 — 10.5kl from 1 July: R1,677 (62%)

If restrictions are reduced during the year, significant relief will be provided by the tariffs at lower levels. For example, should we return to **Level 4,** indicative monthly costs are:

6kl Current: R 374 — 6kl from 1 July: R 281 (-25%)
10.5kl Current: R1,034 — 10.5kl from 1 July: R 633 (-39%)

4.7 Sanitation tariffs

In the current tariff structure, revenue from water and sanitation is combined to cover the costs of both services. Over time, the revenue from sanitation tariffs fell short of covering costs to the extent that water revenue buffered sanitation costs. With the drought reducing water volumes so dramatically, it is necessary to separate water and sanitation costs and revenues. It is therefore necessary that individually each service is cost reflective i.e. revenue equals expenditure.

DOMESTIC FULL - STANDARD - NON INDIGENT	UNIT	2018/19 EXCL. VAT	2018/19 INCL. VAT
Step 1 (0 ≤ 4.2 kℓ)	Per kℓ	R40.21	R46.24
Step 2 (>4.2 ≤ 7.35 kℓ)	Per kℓ	R53.62	R61.66
Step 3 (>7.35 ≤ 24.5 kℓ)	Per kℓ	R128.34	R147.59
Step 4 (>24.5 ≤ 35 kℓ)	Per kℓ	R128.34	R147.59

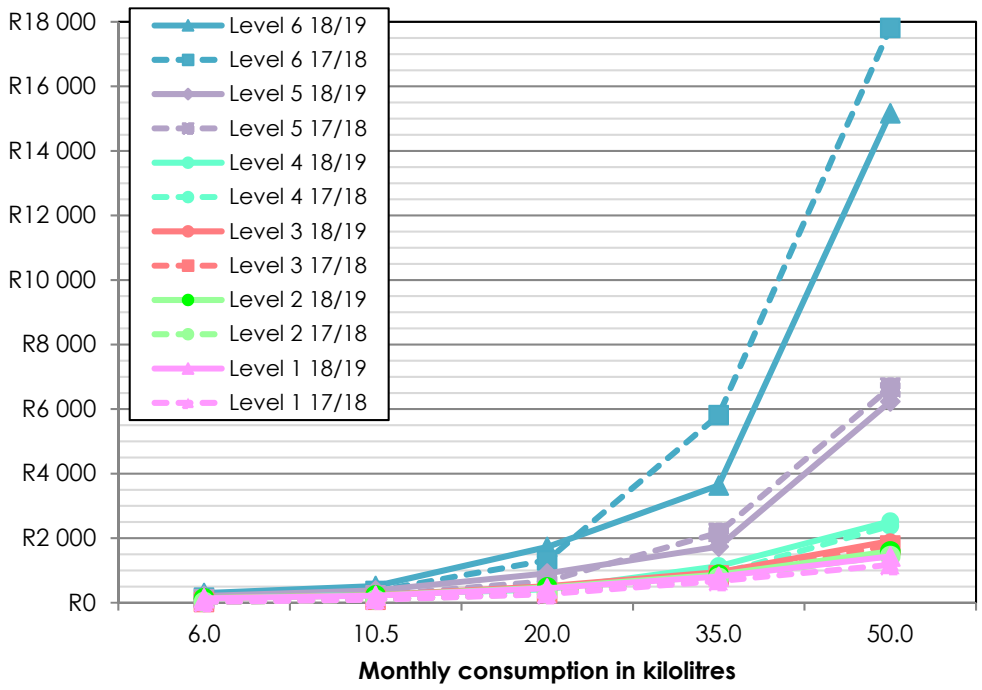
The sanitation tariff has thus also been significantly increased in the draft budget although the tariff structure has changed less substantially than that of water. The tariff is still charged on 70% of water consumption to a maximum of 35kℓ of sewerage per month. The sanitation tariff structure is not resilient as the tariff is linked to the volume of water metered to a property. With the drought, many households have moved to using ground water to flush toilets for example. This means that the volume of water entering the sewerage system is not necessarily linked to the volume of municipal water supplied.

4.8 Section 5: Level 6 Tariff – An Extreme Tariff

Restriction tariffs are part of managing demand in times of drought. For many years, the City had 3 restriction levels, providing for a saving in consumption of 10%, 20% and 30% (or Level 1, 2 & 3). In the 2017/18 budget process, the City added Level 4 restriction tariff to be introduced from 1 July 2017. At the time it was not foreseen that further restriction tariffs would be required. As the rainfall of 2017 was at a record low, further restriction tariffs proved to be required and Level 5, 6 & 7 were introduced at Council at the end of January 2018 in line with a special directive from the Minister of Finance.

When Level 4 was introduced from 1 July 2017, the first 6kℓ was priced at a subsidised cost of R4 across all restriction levels. Prior to this, all households received 6kℓ at no cost. Now the average household of 4 should use no more than 6kℓ, with the result of there being a deficit in higher step tariff income to subsidise the bulk of domestic consumption. The increase at Levels 1-4 would have resulted in a far smaller shortfall if 2017 had seen average rainfall but the persistent drought has resulted in structural change to the tariff being urgently needed, specifically having the first step (0-6kℓ) cost reflective. The increase by volume (including the fixed charge for a 15mm connection) is shown in the graphs.

Domestic Monthly Water bill - Increase 17/18 to 18/19, Level 1-6

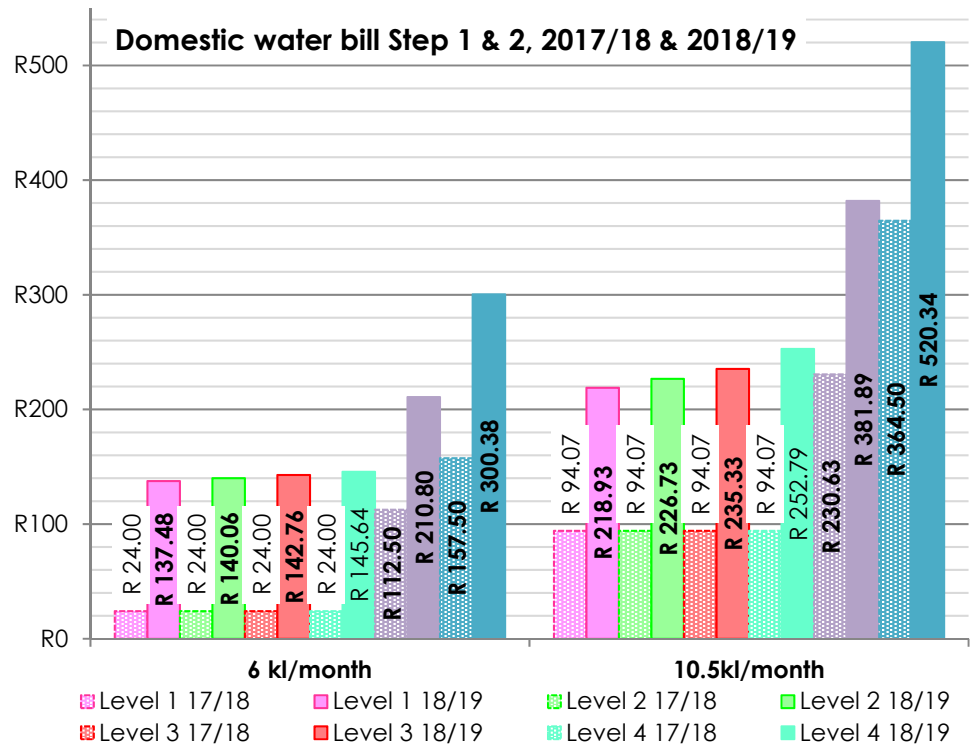


At excessive volumes of water use (>35kℓ per month), permanent behaviour change is expected to reduce volumes sold even if dams reach levels sufficient to return to restriction Level 1. This can be attributed to fixing of leaks, installation of alternative water sources at domestic level and overall awareness amongst others.

Under Level 6, households may be restricted from using more than 10.5kℓ/month. Using 6kℓ (ex VAT) currently costs R157.50, which will increase to R300.38 while 10.5kℓ will increase from R364.50 to R520.34. The percentage increase is significant but is necessary to cover the cost of provision of water.

Level 6 tariff is essential now to ensure that the region manages to stretch the available water through winter. The City is obligated to achieve 45% savings due to the DWS restriction. DWS has indicated that restrictions will be lifted if dams should reach 85% before 31 October 2018. The City will continue to work with DWS throughout the year to assess restrictions with changing dam levels.

In the chart, it is clear that the Step 1 & 2 tariff was heavily subsidised for the first 4 restriction levels in 2017/18. In 2018/19, the cost reflective tariff increases marginally between Levels 1-4, and more dramatically in Levels 5 & 6.



While the drought persists, everyone will need to contribute not only to water savings but also towards the sustainability of the service by paying more for water to be available, and the volume used. Indigent households will still receive Step 1& 2 water and sanitation at no charge.

4.9 Section 6: Non-Domestic Tariffs

Non domestic tariffs have now been consolidated into a single tariff covering industrial, commercial and all other non-domestic use, at a fixed rate per kilolitre plus the fixed charge depending on meter size. The draft tariff for supplying water at restriction Level 6 to premises predominantly of a commercial or industrial nature is R45.75 per kℓ (R52.61 incl. VAT) while for sanitation it is R46.18 per kℓ (R53.11 incl. VAT).

Level 7 tariffs have been increased to balance the volume of sales anticipated as people are likely to increase their consumption at work once supply to households has been curtailed. Non-domestic customers will need to ensure that the volumes consumed do not jeopardise the disaster plan which is premised on a volume of supply of 350MLD for an extended period. Domestic users no longer provided with household water supply will be charged a flat monthly rate in an effort to provide financial sustainability to the water service.

ACCOUNT FOR WATER & SANITATION
(non-domestic, incl. VAT, excluding fixed charge as connection size varies)

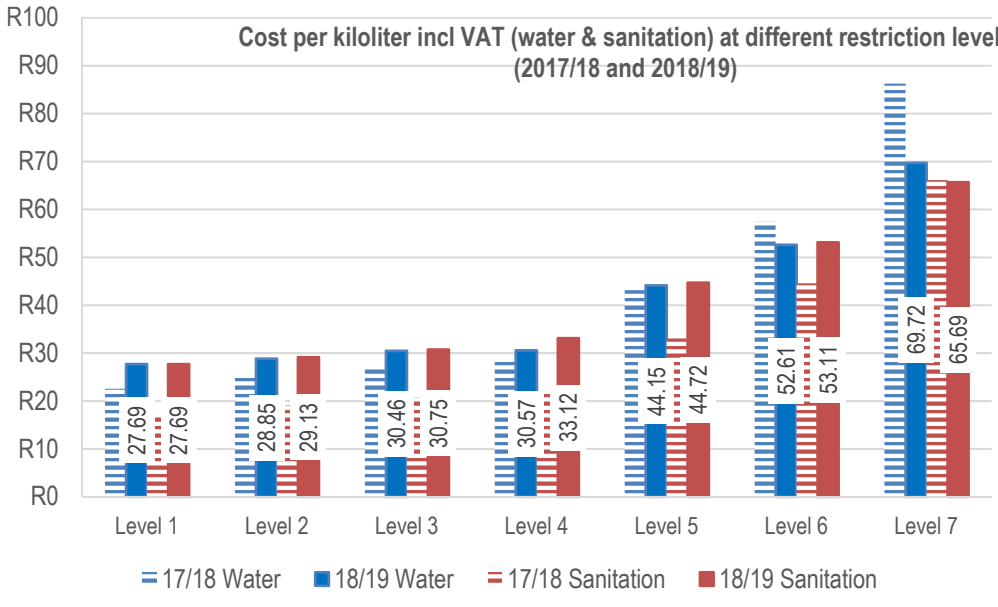
The monthly increase at Level 6 is substantial, given the need to cover the actual cost based on the low volumes. Remaining at **Level 6** restrictions, the increase will have the following impact:

50kl Current:	R 4,343	from 1 July:	R 4,489 (1%)
100kl Current:	R 8,869	from 1 July:	R 8,979 (1%)

If restrictions are reduced during the year, significant relief will be provided by the tariffs at lower levels. For example, should we return to **Level 4,** indicative monthly costs are:

50kl Current:	R 4,343	from 1 July:	R 2,687 (-39%)
100kl Current:	R 8,869	from 1 July:	R 5,375 (-39%)

Without the fixed connection charge added (as meter sizes & costs vary from premises to premises), the account for non-domestic use increases marginally (by approximately 1%) at Level 6 tariffs. If, due to DWS and good rainfall, restrictions should be reduced for example to Level 4, water accounts will reduce by approximately 39%.



4.10 Comparison with other metros

National Treasury benchmarks the 8 metropolitan municipalities budgets annually, which includes tariff increases and the costs of basic services as well as free services provided to indigent households. In scale, Cape Town is comparable to Johannesburg, Ekhurleni, Tshwane and eThekwini. All cities operate in accordance to their personal circumstances and direct comparisons are often not possible. For example, the City of Johannesburg has established Joburg Water as a municipal entity responsible for provision of water and is not included in the comparison of the large municipalities below. The comparative tariffs for the 2017/18 budget year is shown here in cents per kilolitre.

2017/18 Domestic Water tariffs	Ekurhuleni	Tshwane	eThekwini	Cape Town
Water usage - flat rate tariff (c/kl)	13 429.00			
Water usage - life line tariff			1 619.24	
Water usage - Block 1 (c/kl)	1 489.00	954.00	1 913.90	400.00
Water usage - Block 2 (c/kl)	1 824.00	1 362.00	2 548.56	1 557.00
Water usage - Block 3 (c/kl)	2 269.00	1 789.00	3 929.80	2 278.00
Water usage - Block 4 (c/kl)	2 798.00	2 070.00	4 323.63	3 832.00
Other	2 798.00			

The blocks do not directly correspond to our volumetric steps but reflect similar inclining block tariff structure. The prevailing restriction level is used in budget calculations thus Cape Town figures correspond to the Western Cape drought restriction levels whereas other metros may not be restricted. Gauteng water restrictions were lifted in March 2017). Municipalities vary their structure and tariff according to individual circumstances, but what is evident from the budget figures is that CCT is reasonably aligned in their domestic tariff with other metros despite the severe drought. 2018/19 figures will be compared when data becomes available.

GLOSSARY

LEVEL: **Restriction Levels** refer to the saving required in reducing volume to meet DWS restrictions in times of drought. When a Level is approved in the budget, the city can move between the levels as required by the restriction imposed by DWS in response to the drought:
Level 1: requires a saving of 10%;
Level 2: requires a saving of 20%;
Level 3: requires a saving of 30%;
Level 4: allows for an urban demand of 600MLD
Level 5: allows for an urban demand of 500MLD
Level 6: allows for an urban demand of 450MLD
Level 7: allows for an urban demand of 350MLD (collected at PODs)
No higher restriction levels are foreseen.
This document does not include analysis for domestic households at Level 7. Level 7 tariffs will only apply to those households which are still provided with piped water due to their location with respect to points of distribution.

STEP: The tariff consists of a number of consumption steps which are provided for each restriction level. Using a certain volume of water results in a certain price to be paid for each unit. The historical structure had 6 steps:

Step 1: 0-6kℓ,
Step 2: 6-10.5kℓ,
Step 3: 10.5-20kℓ,
Step 4: 20-35kℓ,
Step 5: 35-50kℓ and
Step 6: over 50kℓ.

In 2018/19 we are reducing the number of steps to 4:

Step 1: 0-6kℓ,
Step 2: 6-10.5kℓ,
Step 3: 10.5-35kℓ,
Step 4: over 35kℓ.

The steps were reduced in line with recovering costs, providing resilience and to simplify the tariff to what is necessary.

SUMMARY SHEET: significant tariff increases are proposed in the 2018/19 draft budget for two reasons:

1) Dramatic reduction in revenue
2) Substantial increase in costs

1) Dramatic REDUCTION IN REVENUE is driven by:

- Substantial drop in water sales by volume (average city demand down from 900 million liters per day (MLD) in Feb 2017 to 500 MLD in Feb 2018 – reduction of ~45%) and needs to reduce further (Level 6 restrictions). This translates to a shortfall in revenue of nearly R2 billion in the current year. The City has cut other programmes and services to cover the gap in the current & next year but cannot afford to cover an even larger anticipated shortfall of revenue in 2018/19;
- The stepped tariff structure has always subsidized use at lower volumes of consumption (tariff far below cost) through high costs at high volumetric use and must be changed to be more resilient to drought.

Level 6 restrictions & the Drought:

- The current drought is unprecedented – not only do we need to reduce demand, but the tariff requirement is vastly inflated due to the lower volumes of water available;
- *The best estimate of the return interval of the meteorological drought in the region of WCWSS dams is 311 years, with 90% confidence that it actually falls between 105 and 1280 years[1];*
- There is no guarantee of when it will start raining or how much it will rain this winter. New tariffs must be in place from 1 July 2018. It is highly likely that at that time, Level 6 restrictions will remain in place;
- Restriction levels will be reduced as soon as dam levels and DWS restrictions allow.

Change in structure:

- Tariff based on recovery of cost in the first two steps (<10.5kl), additional water sources costs included in step 3, and punitive in step 4;
- Maintain provision to indigent households (~268,000 households) at no charge;
- Introduce a fixed charge based on meter size to cover ~25% of fixed cost;
- Simplify from 6 to 4 volumetric steps;
- Revenue from Water & Sanitation tariff has previously been accounted for combined – in future they will be individually accounted for.

Water: Fixed charge based on meter size (95% of households R115/mth or less):

Size (mm)	Number of meters	% of meters	Monthly Charge (incl. VAT)
15	367,516	56.0 %	R 64.40
20	254,025	38.7 %	R 115.00
25	20,388	3.1 %	R 179.40
40	4,516	0.7 %	R 460.00
50	4,986	0.8 %	R 718.72
80	1,843	0.3 %	R 1,840.00
100	2,344	0.4 %	R 2,875.00
> 150	471	0.1 %	varies

Domestic water tariff simplified to 4 steps, with tariffs calculated as below:

***New* 4 Step Tariff Structure (Water)**	**Tariff set at:**
Basic Usage Water = 0 – 6kℓ Sanitation = 0 - 4.2kℓ	a function of the *average cost of water* (cost/volume)
Basic Usage Water = 6 – 10.5kℓ Sanitation = 4.2 - 7.35kℓ	a function of the *average cost of water* (cost/volume)
Above Basic Usage Water = 10.5 – 35kℓ Sanitation = 7.35 - 24.5kℓ	a function of *future incremental marginal cost* (additional cost to expand output from additional water sources)
Use jeopardising water conservation Water = > 35kℓ Sanitation = 24.5 - 35kℓ	*Punitive Charge* to deter high water usage

ACCOUNT FOR WATER & SANITATION (Domestic 15mm connection, incl. VAT)
The monthly increase at Step 1 & 2 at Level 6 is substantial, given the need to cover the actual cost based on the low volumes. Remaining at **Level 6** restrictions, the increase will have the following impact:

6kl Current: R 374 — 6kl from 1 July: R 654 (75%)
10.5kl Current: R1,034 — 10.5kl from 1 July: R1,677 (62%)

If restrictions are reduced during the year, significant relief will be provided by the tariffs at lower levels. For example, should we return to **Level 4,** indicative monthly costs are:

6kl Current: R 374 — 6kl from 1 July: R 281 (-25%)
10.5kl Current: R1,034 — 10.5kl from 1 July: R 633 (-39%)

2) Substantial INCREASE IN COST driven by:

- The tariff must reflect the value of water & sanitation accurately while the Collection ratio must reflect actual payment patterns – it has historically been underfunded resulting in an annual shortfall;
- Funding capital program for diversified water sources (New Water Program extra R2.4bn Capex, R1bn Opex);
- Water Demand Management initiatives must continue for the supply system including Cape Town to get through the drought;
- Assets must be protected through proper renewal and maintenance investment.

Accurate value of water & sanitation service

- The tariff is determined by dividing the total cost of provision by the volume sold. To recover the cost of providing water of ~R3.75bn, the anticipated sales volume at Level 1 determines a cost of **R21.45/kl** while the reduced volume under Level 6 determines a cost of **R39.82/kl.**

Need to DIVERSIFY WATER SUPPLY

- "Surface Water only" no longer viable option to prevent repeated disaster management scenarios;
- Impact on economy / business / tourism/ etc. – reliance only on surface water is stifling economic growth.

Funding capital programme for ADDITIONAL WATER 18/19:
The current planned augmentation programme will provide between 39 and 59 million cubic metres ($Mm^{3)}$ of water in 2018/19 (additional to the current restricted annual allocation to CCT is 175Mm^3);

- **Groundwater:** sandy aquifers (Atlantis & Cape Flats) and TMG aquifer capital budget R1.54bn and operating budget R245m. This covers the cost of drilling, connecting infrastructure, electricity and treatment into the water reticulation system as well as operating the system at each site;
- **Water re-use:** budget provision of R872m capital and R122m operational for the year which includes the temporary plant at Zandvliet, design of permanent long-term re-use as well as recharge to Cape Flats aquifer from Borcherd's Quarry, Mitchell's Plein and Cape Flats wastewater treatment plants;
- **Desalination:** The temporary desalination plants at Strandfontein, Monwabisi and V&A require an operating budget of R646m for the year, with no capital investment. Long-term desalination costs will be incurred in future years.

Demand management & protection of assets

- Demand management initiatives such as investing in the reticulation network, reducing pressure and rapidly fixing leaks;
- Investment needs to continue for growth, renewal and asset replacement over and above specific drought-related infrastructure.

SUMMARY FACTS:

- We need to increase the tariff substantially to be able to continue supplying water & providing sanitation service;
- We do not make a profit on sale of water but we have to recover the full cost;
- We must have a balanced budget, and ensure provision of basic services;
- Level 6 is extreme to respond to the drought crisis, at Level 7 households will be disconnected and have to collect water;
- The required *revenue* increase is 27%. Due to significant decrease in volume, the tariff increase at Step 6 is mostly higher than 27% (as less water will be sold, higher tariff required to achieve a 27% revenue increase);
- Due to the major impact of the drought, we need to invest in other water sources due to low (and unreliable) rainfall;
- Cost of supply has greatly increased over the years due to growth in city, aging infrastructure etc. and the tariff has historically been too low;
- The old stepped tariff structure is not resilient to drought: all water sold below 10.5kl/month has been heavily subsidized (which means middle and high income households have been subsidized). Now we nearly *ONLY* sell water below 10.5kl, with no other revenue to subsidise the shortfall;
- Indigent households are and will always have to be supported;
- The increase is worst at Level 6 restriction. We will want to reduce the restriction as soon as possible, depending on winter rainfall and DWS;
- The cost of operating water and sanitation networks does not decrease in proportion to the amount of usage;
- Even during times of reduced water consumption the same operations and repairs and maintenance programmes are necessary to keep water & sewerage flowing reliably;
- Tariff structure requires higher level of "certain" income not dependant on volumetric usage i.e. a fixed charge component.