



Hermanus water conservation programme

J.A. van der Linde, South Africa



The Greater Hermanus Water Conservation Programme is the result of a combined effort between the Department of Water Affairs and Forestry (DWAF), the Greater Hermanus Local Authority (GHLA) and the people of Greater Hermanus. When it became clear that the annual water allocation of 2,8 million cubic metres from the De Bos Dam to this popular seaside resort would be exceeded in 1995 with only 8000 of the 11 500 demarcated sites developed, the GHLA was faced with two options:

- To put a moratorium on the development of additional sites until an additional sustainable water source was found.
- To opt for a comprehensive water conservation programme as a long term investment.

Although Greater Hermanus always has good winter rainfall (760mm per year), it is the seasonal influx of holiday makers that puts more strain on the existing water source and infrastructure. During summer holidays the population increases from 19 000 to 65 000. The water conservation programme was therefore not implemented to overcome a short term drought period, but aims rather for a long term sustainable solution, which could also serve as a model for an urban water management programme.

In September 1996 the GHLA became the first local authority in South Africa to accept a comprehensive 12-point water conservation programme. The aim of this programme is to reduce water consumption by 30 per cent over the next 3 years through the implementation of the different sections of the programme. In order to achieve

this, the total revenue from water sales must also be increased by 15 per cent to fund the programme.

The 12-point conservation plan

The 12-point conservation plan of the programme is as follows:

Assurance of supply tariff

This is a basic monthly tariff for the privilege of having clean water delivered on site. Due to the nature of Greater Hermanus as a holiday resort, with approximately 35 per cent of the housing units unoccupied for most of the year, it is very important to have a sustainable income (with regards to the water account) which is not dependent on the amount of water sold. This tariff also makes provision for three different economic groups, viz R2 for the indigent group (with an income of less than R800 per month), R10 for the sub-economic group (with an income of less than R1500 per month) and R40 for the economic group (with an income higher than R1500 per month).

Escalating block rate tariff

This tariff structure is fixed and applicable to all consumers of all economic groups, as well as businesses, industries and all other large consumers. The block tariffs begin at a rate of 30 cents per kl for the first 5 kl per month. The cost per kiloliter then gradually increases in 11 steps to R10-00 per kiloliter for consumption above 100kl per month. This tariff structure, whereby the more you use the more you pay, is the fairest approach for Greater Hermanus with its huge difference in consumption between mid summer and mid winter. Those who are driving the cost of water (i.e. expansions to the infrastructure and the source) are now contributing a fair share towards these expansions. The average and low level consumers are no longer subsidising the high level consumers. (With this escalating tariff structure it is imperative that the individual water meters are all read strictly on a monthly basis.)

With this new tariff structure the choice always lies with the consumer to decide what his budget for water consumption for that month should be. To accommodate the non-resident high consumers e.g. industries, businesses, multiple unit buildings, retirement villages, schools, guest houses, etc. in this tariff structure, a method of *residential unit equivalents (Rue's)* was used to evaluate the monthly consumption of each consumer was. An optimum number of *Rue's* were then allocated to that consumer. The assurance of supply and the block tariff structure are applicable to each *Rue*.

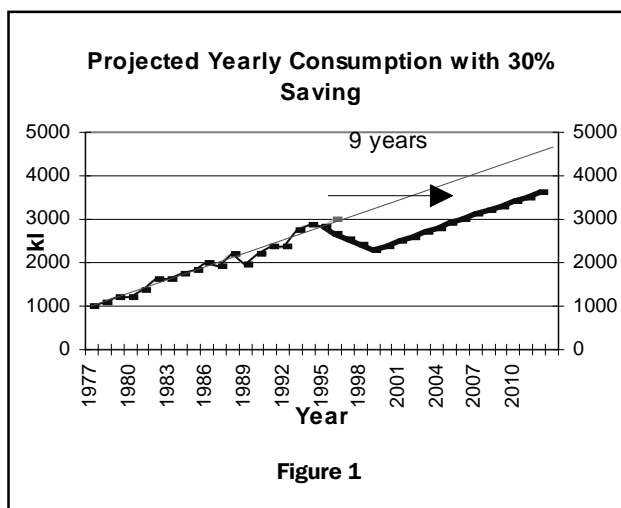
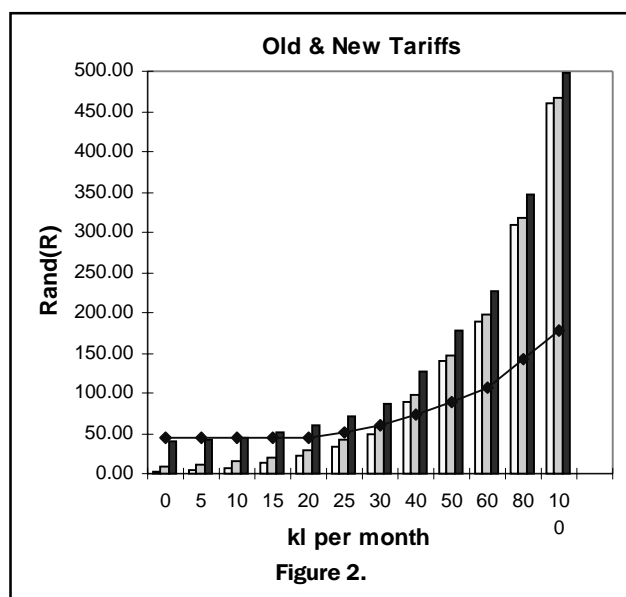


Figure 1



Informative billing

The informative billing system was overwhelming accepted by the public of Greater Hermanus. This project takes water demand management right into the homes of all consumers. It informs every consumer clearly what his monthly water consumption pattern is. The graphic display of the monthly water consumption of the past 13 months assists the consumer to “budget” for his water consumption. This project has already proved that the uncontrolled wasting of water, which will stand out as above average peaks on the graph, will be eliminated if the consumer is aware of it. Over irrigation of the gardens is the main cause of such peaks.

Water wise gardening

Poor gardening practises and over/unnecessary irrigation can be major factors in a high water bill. Demonstration gardens have been set up to encourage owners to plant indigenous plants and to plan gardens in a water-wise manner.

Water-wise food production

The potential use of “grey water” (water already used in the home, such as in baths and showers) for certain food production is encouraged.

Water loss management

Although the unaccounted water in Hermanus is 18 per cent, the aim of the project is to bring it down to ± 5 per cent. The long narrow layout of the town with 11 reservoir supply areas is ideal for water audits of the respective areas.

National water regulations

The proposed new regulations have already been accepted in principle by the Greater Hermanus Local Authority.

Retrofitting of water saving devices

The aim of this project is to retrofit all existing housing units in Greater Hermanus (approximately 8500 units)

with approved water saving devices such as dual flush toilet mechanisms, low flow shower heads, tap aerators and flow restrictors. The additional revenue from water sales due to the increased tariffs will be used to fund this project.

Security meter

Security/communication/pre-paid meters with panic buttons will be installed at 400 houses in a specific reservoir supply area in Greater Hermanus as a pilot study to combat crime and non-payment.

Alien vegetation clearing

The clearing of alien vegetation in the catchment area of the De Bos Dam, also referred to as the *Working for Water* project, will ensure that the yield of the catchment area and the run-off into the dam is sustainable.

School water audits

The eight schools in Greater Hermanus are actively involved in the water conservation awareness campaign, and the auditing of water use at the schools.

Communication

An intensive communication action is used to keep the consumer informed about the programme. This includes press releases, talks with ratepayers and interested groups, displays, a monthly newsletter and a hot-line telephone facility during specific hours. The reverse side of the informative billing was also used to communicate water saving tips to consumers.

Results and discussion

The first four months: A 25 per cent saving

Only a few of the sections of the 12-point plan have been implemented to date. Of those not yet being implemented, the *retrofitting of water saving devices*, the *water loss management programme* and the *water-wise gardening project* (by the local authority) are expected to reduce the level of consumption significantly in the future. Below is a comparison between bulk water use figures for the first four months of the programme i.e. from November 1996 to February 1997, and the average of those for the same

Table 1.

<i>Nov/Dec Jan/Feb</i>	<i>Kl /day</i>	<i>Litres/ erf/day</i>	<i>Rainfall</i>
1993/4	11 900 kl/d	1 506 litres	140 mm
1994/5	12 075 kl/d	1 473 litres	120 mm
1995/6	10 842 kl/d	1 261 litres	192 mm
Average	11 606 kl/d	1 410 litres	151 mm
1996/7	9 000 kl/d	960 litres	168 mm
Savings	25,5%	31,9%	(11,3%)

Informative billing sheet

Table 2. Water tariffs for Greater Hermanus for 1996/97

> 0 to 5 kl				R0-30 for each additional kl	plus assurance of supply	plus 14% VAT
> 5 to 10 kl	1 st	5kl@R 1-50	plus	R0-70 for each additional kl	plus assurance of supply	plus 14% VAT
>10 to 15 kl	1 st	10kl@R 5-00	plus	R1-20 for each additional kl	plus assurance of supply	plus 14% VAT
>15 to 20 kl	1 st	15kl@R 11-00	plus	R1-80 for each additional kl	plus assurance of supply	plus 14% VAT
>20 to 25 kl	1 st	20kl@R 20-00	plus	R2-40 for each additional kl	plus assurance of supply	plus 14% VAT
>25 to 30 kl	1 st	25kl@R 32-00	plus	R3-00 for each additional kl	plus assurance of supply	plus 14% VAT
>30 to 40 kl	1 st	30kl@R 47-00	plus	R4-00 for each additional kl	plus assurance of supply	plus 14% VAT
>40 to 60kl	1 st	40kl@R 87-00	plus	R5-00 for each additional kl	plus assurance of supply	plus 14% VAT
>60 to 80kl	1 st	60kl@R187-00	plus	R6-00 for each additional kl	plus assurance of supply	plus 14% VAT
>80 to 100kl	1 st	80kl@R307-00	plus	R7-50 for each additional kl	plus assurance of supply	plus 14% VAT
>100l	1 st	100kl@R457-00	plus	R10-00 for each additional kl	plus assurance of supply	plus 14% VAT

Appendix: R1.00 = US\$0.2219 (16.05.1997)

four months during 1993/94, 1994/95 and 1995/6. The average growth rate in new housing units over the past 3 years was 9 per cent per year. Also included is total rainfall for the specific period for the respective years.

The results of this programme after four months are an incredible saving of 25 per cent over this period.

If one adds the growth rate of 9 per cent per annum over the last 3 years, then the relative saving is calculated as 32 per cent (in terms of litres per erf per day). Estimated savings over the first six months (summer time) are 22 per cent, and a saving of 18- 20 per cent is expected over 12 months. The direct consequence to Greater Hermanus is that the development of additional water sources can be postponed for approximately 9 years, as shown on the graph on page 1.

The implications of Hermanus' 25 per cent reduction in water demand are enormous. As an example, were greater Cape Town to achieve this (and there is no reason why it should not), it could save 80 million kiloliter per year. This would enable it to postpone the building of its next dam by 7 years, thereby saving R780 million in interest payments.

Such water savings for Gauteng would run into billions of rand - money that could be put to more profitable use.

Conclusion

The backbone of this water conservation programme is the increasing block rate tariff structure.

An intensive communication campaign is essential to ensure co-operation and participation from the community.

Water demand management must be taken into the homes of consumers.

Water conservation must become a way of life, and not only during periods of draught.

If water is valued as a scarce commodity by a community, there will be **Water for all for ever.**

JAMES VAN DER LINDE, Town Engineer, Greater Hermanus Municipality.
