20 March 2018

DISCUSSION DOCUMENT

A PROPOSAL FOR AN INCENTIVE SCHEME ON HOW TO ENHANCE THE HARVESTING OF RAINWATER IN THE KOUGA MUNICIPAL AREA

The harvesting of rainwater from the roofs of residential and commercial buildings is by far the most neglected natural way of providing clean water to the residents of the Republic of South Africa. It is a proven fact that the natural water resources of this country (excluding harvesting of rainwater from the roofs of residential and commercial buildings) can only carry a population of plus-minus 40 million whilst the population has already passed the 50 million mark.

Similar as with electricity where the "base power" comes from coal-, nuclear-, hydro-, etc. power stations and is supplemented by green power like wind, sun, etc., the base water supply comes from dams, boreholes, desalination plants, etc. and must be supplemented by the recycling of water, the harvesting of rainwater from the roofs of residential and commercial buildings, etc. We already know that the dams and boreholes in the RSA and especially in our area, are under tremendous pressure and that the water from desalination plants is expensive.

It therefore makes absolute sense to promote the harvesting of rainwater from the roofs of residential and commercial buildings to alleviate the pressure on our natural resources. It is also on the long run, the cheapest way of supplementing the other natural resources.

"Going Green" is the only way forward and the Municipality should promulgate a bylaw enforcing basic water saving measures on all new buildings immediately.

We could become very fancy and propose all sorts of incentive schemes, but we believe it should be kept simple and understandable to the public. Our proposal is based on a **200m² house** with the following assumptions and calculations:

1. The roof area of a 200m² house would be approximately 250m².

2. The average cost of the installation would be: 5 000l Jo-Jo tanks, R 4 500 (VAT incl., price for bulk supply from The KO-OP); White PVC gutters with downpipes installed, R 5 500 (VAT incl.), **Total = R 10 000**.

3. Every **20mm of rain** that falls will **produce 5 000l** or 5m³ of water. (250m² of roof X 0.02mm of rain = 5m³).

4. The **average rainfall** in the Kouga is about **500mm/annum**. That amounts to **125m3 or 25 Jo-Jo tanks** of water that can be harvested (500mm / 20mm X 5m³).

5. Unfortunately not all 125m³ can be harvested with one Jo-Jo tank as the tank will overflow from time to time and in other instances low precipitation with high winds can also result in minimum flow. We estimate the average **effectivity of harvesting** rainwater from a roof to be around **75%**.

6. The **average volume of harvested water** available for usage will therefore be: 125m³ X 75% = **94m³ per annum** or 8m³ per month.

7. The average **consumption of a 200m²** house *during times of water shortage when the situation is critical, but not an emergency (*that will most probably the norm from now onwards*),* is set to be **20kl** or 20m³ per month. Taking into account escalation in price of 10% as from the 1st of July 2018, the price for the first 12kl will be R 11.12/kl and for the 8kl thereafter, R 18.49/kl. As stated in para. 6 above, 8m³ will be harvested and available per month which means a **saving to the consumer of R 18.49 X 8 = R 148/month.**

8. The saving to the consumer is therefore R 148 X 12 = **R 1 775 per annum**

9. As a point of departure we propose that the Kouga Municipality contribute **50% to the installation costs** of R 10 000 over a **period of three**

years in the form of a **rebate** / discount of **R 1 700/ annum** on the Rates & Taxes. Based on a valuation of R 1 000 000 (200m² house X R 5 000/m²), the Rates and Taxes will be approximately R 7 800 for the year starting 1 July 2018, including an 8% escalation. In practical terms, this mean that the discount percentage over the three years will be as follow:

- Year 1 – R 1 700 / R 7 800 X 100 = 21.80%
- Year 2 – R 1 700 / R 8 424 X 100 = 20.18% (8% escalation included)
- Year 3 – R 1 700 / R 9 098 X 100 = 18.69% (8% escalation included)
- On **average a 20% discount** per annum over a **period of three years**.

10. What does this mean in practical terms:

10.1. The consumer will get his/her capital investment back within three years. In other words, the installation will cost the consumer nothing, but the best part is that the saving on water consumption will be forever.

10.2. The harvesting of rainwater from the roofs of buildings is the cheapest capital investment the Municipality can make to supplement the shortage of water for domestic use.

10.3. The Tax Rebate / discount will have to be managed by the Municipality for example by scaling down on capital projects like the drilling of more boreholes.

The project can also easily be expanded to include “low flow” shower heads as part of this scheme.

The same principles that apply to this Residential example, will also be applicable to commercial buildings, but the calculations will differ somewhat.

We are of the opinion that a Water Incentive Scheme is an absolute must to create a situation whereby future water shortages can be alleviated. We would even go one step further and propose that after a certain period of time in which consumers are given the opportunity to take part in the Incentive Scheme, a new bylaw be promulgated to enforce these “Green” measures on all relative buildings.

An aggressive marketing campaign by the Municipality will be needed to get consumers on board and wet their appetite. A buy-in by consumers in this Incentive Scheme could have a huge impact, especially if consumers would start expanding on their basic installation to enlarge the volumes that can be harvested and stored. These installations can also include the storage and recycling of grey water.

The aim should be to get this Incentive Scheme off the ground to coincide with the next financial year starting on 1 July 2018.

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