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## Kouga Municipality drills for water with difficulty

Kouga Municipality has been spending vast amounts of funds to try to source water for residents during the current drought - particularly in Port Elizabeth from where several towns' main water supply comes from.

In her SOMA address, Kouga's mayor, Elza van Lingen, said Kouga is currently facing its biggest challenge in 18 years because of the drought and near empty dams. Water restrictions and punitive tariffs were introduced in January 2017 and then Kouga was declared Kougala a local state of disaster on 31 May 2017. This was renewed last month.

The focus of KM has been on developing underground water resources and springs. An amount of R10.25-million was set aside to drill, test and get new boreholes into production as quickly as possible.

Two geological formations were targeted, namely the Skurweberg and Peninsula Formations of the Table Mountain Group. Three exploratory boreholes were drilled, of which two were put into production shortly after being pump tested. The first borehole was not put into production due to low yield. Two new boreholes were drilled at Jeffreys Bay in December.

The first was meant as a replacement for an existing borehole which collapsed and which used to deliver a high yield. The borehole could not be rehabilitated and a new borehole was drilled SW of the original borehole, with significant water strikes at 79 m (2.8 L/s), 141m (9.8 L/s) and then a major strike at 174 m (17.2 L/s).

The second borehole was drilled as far NW as is possible on municipal property alongside Jeffreys Bay entrance road coming from the N2 turnoff, with main water strikes being around 182m and 215m, with a potential yield of 17 L/s.

The above yields were low test yields, and the recommended abstraction yields will be confirmed via pump tests. These boreholes are being test-pumped to determine safe sustainable yields.

At the start of 2018 the water supply to Hankey

and Patensie is under severe threat and the drilling rig was shifted to the Hankey area rather than drilling at Jeffreys Bay.

The geology and hydrogeology of the Gamtoos River Basin do not support groundwater retention. Boreholes drilled in the area tend to have a relatively low yield and a high level of salinity.

The mayor said the prime groundwater targets are located approximately 10 km SW of Hankey and studies show they can possibly be accessed with deep drilling.

The KM owns a piece of land in this area at Soetkloof. The aim is to establish a high-yielding well-field, consisting of one to three boreholes, which may be sufficient to address Hankey's water requirements.

The elevation of the sites is also higher than the town, which allows for the potential to supply water to Hankey via a gravity pipeline.

At this stage this groundwater target is considered to be the best alternative for Hankey. Water can also be pumped from the Klein River, but the flow of the river has also been affected by the drought and the water quality is an ongoing concern. A Reverse Osmosis Plant will need to be rented to treat the water to a standard safe for human consumption.

The challenge at the Soetkloof site is that the groundwater target, lies at an unknown depth. Despite extensive surveys being done to establish the depth, a first attempt - drilled to a depth of 219m - delivered no yield.

The drill bit then got stuck and the hole had to be abandoned. This drill target is deep and will be difficult and expensive to drill.

While the target remains a good option, any proposed boreholes will have to be deep to reach the targeted formation.

A replacement borehole is currently being drilled next to the first borehole, but again collapsing ground is slowing progress.

In order to reach the target aquifer, it will be necessary to use a different drilling method to the air percussion used so far. The proposal is to drill as deep as possible using air percussion, and then to change to core-drilling, mud rotary and reverse circulation, all

of which are more expensive forms of drilling than the approach used to date in Oyster Bay and Jeffreys Bay and will necessitate additional funding.

As for Patensie, the mayor said the Gamtoos Irrigation Board has assured that that their balancing dam will be sufficient to meet the water requirements of the town for several months. KM is also exploring groundwater options in the vicinity.

Geophysics has been done near the Kouga Dam on land belonging to the Department of Water and Sanitation (DWS), and prospective drill sites have been identified. To date only in-principle approval has been obtained from DWS and formal approval is awaited before drilling can start.

Geophysics has also been done for the Humansdorp area and prospective drill sites identified, but drilling has not yet started in this area as the main focus is on Hankey.

The mayor said KM will be implementing water conservation and demand management measures, starting at Hankey and Patensie. The aim of the initiative will be to decrease water losses by auditing, recording and repairing water meters and internal leaks within properties.

Additional funds were earmarked on the adjustment budget, to be tabled to Council for the implementation of these measures. The process of appointing a specialist consultant to assist with the implementation of these measures is being finalised.

The mayor said the municipality is keen to explore rainwater harvesting. R500 000 has been set aside to buy and install plastic water tanks to collect rain water run-off from roofs. These tanks will be installed mainly in the Gamtoos area at strategic locations. An order has been placed for tanks and materials for installation. Implementation will start when materials have been delivered.

The mayor's office will be rolling out a special programme to install rainwater tanks at the homes of elderly and disabled residents of Hankey. This will enable vulnerable residents easier access to water during the drought, it

will also be of great value to them during Hankey's annual dry period.

The DWS has made two water tankers available to KM for the purpose of trucking in of water. This is an expensive exercise and KM prefers to avoid this option but will take this route if necessary.

KM's view is that a desalination plant is the best way to achieve water security for Kouga. A delegation from Kouga recently visited Israel to learn about desalination from leaders in this field. The process to appoint a professional service provider to assist with the implementation has started.

Long-term water security will also be the focus of a climate change partnership with Ilfeld KM. During a visit to Kouga by a team from this KM, three projects were identified for the partnership to work on: the development of the natural springs at Kruisfontein in Humansdorp, rainwater harvesting and the interlinking of Kouga's bulk supply systems. Planning and funding of the projects will, however, only be finalised for implementation in October next year.

In the meantime, there is a possibility of smaller projects, such as the development of the springs at Mostarhoek and Rebelsrus, being implemented jointly.

Meanwhile there is so much water underground in St Francis Bay, which adequately for around six decades adequately supplied the St Francis area with water, despite hiccups over season. Many St Francis Bay residents, particularly the working class, but even many well-heeled folk, are furious they have to fork out for higher water bills when there is plenty of water beneath the ground. The previous municipal government decided that it was easier to get water from the Churchill dam by pipeline than to mend broken pumps and pipes to provide underground water to St Francis residents. Now many residents in PE and locally feel that St Francis residents should use their own water and not further drain the heavily drought affected area of Nelson Mandela Bay PE.