

another voice

mark
anderson

The demise of Kamfers Dam



THE SAVE the Flamingo Association is very concerned that, despite a R80 million upgrade of the Homevale Waste Water Treatment Works (HWWTW), the equipment is not functioning properly.

The non-functioning of major components of the HWWTW has been evident from a number of aerial photographs taken of the sewerage works during the past few months and during a site visit on November 8 2011.

During the site visit, the Save the Flamingo Association (accompanied by a number of technical experts and engineers) assessed the functionality of the HWWTW's equipment and came to the conclusion that the sewerage works is only operating at an effective efficiency of about 33 percent of its design and required capability.

That is, although the HWWTW is processing sewage at its design volume capacity of around 35 megalitres a day, it is only partially treating the sewage to an unacceptably low quality of effluent.

The various components of the HWWTW were examined to determine what was working:

- Starting at the inlet, the two rotary screens are operational.
- The peak handling and storm water dam is out of operation and has apparently been vandalised and equipment has been stolen.

- The two de-gritters are not operational due to an electrical panel wiring problem on the clarified water transfer pumps. This results in the inability of the system to suspend and extract the grits which are then carried over to the primary settling tanks (PST). The electrical problem was claimed by the Sol Plaatje Municipality (SPM) officials at the HWWTW to be a contractor error; but it was later established that this work was in addition to the contractor scope.

The consultant was issued a Work Order for this but the matter is unresolved. Previously a fresh (potable) water supply was used to operate the de-gritters but surprisingly this was discontinued.

- The three primary settling tanks are not operational due to the excessive grit that settles in the base and stops the rakes from rotating. Two of the tanks were empty (and have been empty for some time) and the third tank is full of grits and sludge. (The plant design is for 80 percent of the sludge to be extracted at this point in the process.)

- The sludge transfer blowers required to transfer sludge from the PSTs to sludge handling tanks are partially installed. The work is being done by the SPM workshops, but is well behind schedule.

- Two of the three activated sludge reactors were operational, and two of the aerators out of service, seven running and three not being used. This is the only sludge extraction, and this sludge is pumped to the holding tank and then on to the irrigation area. On inspection, the sludge holding tank had a layer of dried sludge in its base with vegetation growing in it, indicating that it had not been used for a number of months (this is in contrast to the information given by the SPM officials who stated that the holding tank was being used).

- The two anaerobic digesters were not in use.

- The sludge drying beds have been flooded by Kamfers Dam's rising water and were not in use.

- Three of the four secondary settling tanks (SST) were in use, with the fourth tank completely caked up with dry sludge. This was also attributed to the electrical panel fault.

- The chlorinators were not inspected, but according to the SPM officials they were not working, again as a result of the electrical panel fault.

- The final effluent polishing dam had only about one-third of the HWWTW's effluent flowing through it, with the other two-thirds flowing through a makeshift temporary dam.

After the November 8 visit, the Save the Flamingo Association scored the HWWTW on whether the various components at the sewerage works were working. The HWWTW scored 33 percent.

The non-functioning of the HWWTW has been confirmed by expensive and detailed water quality analyses which have been commissioned bi-annually by the Save the Flamingo Association.

These studies have been conducted by Dr Jan Roos, a water quality expert from Bloemfontein, and the samples have been analysed at an accredited laboratory in Bloemfontein.

The main findings of the latest analyses were:

- The water quality from the sewerage works is still poor with unacceptably high ammonium and phosphate concentration, suspended solids, turbidity, bacterial counts and Chemical Oxygen Demand (COD) concentrations.

- The COD in the sewage discharge water was very high (766 mg/l) and far above the maximum limit of 75 mg/l (Department of Water Affairs (DWA) general standard), which indicates that the sewage is poorly treated and overloaded with organic matter.

- The suspended solids in the sewage discharge was very high (358 mg/l) and also exceeds the general limit of 25 mg/l, which cause a very high turbidity (269 NTU) in the water.

- The ammonium (NH₄-N) concentration in the sewage discharge water was unacceptably high (14.7 mg/l) – the maximum allowable limit is 3 mg/l (DWA general standard).

- The faecal coliforms in sewage effluent were also unacceptably high – too numerous to count (>24 190 cfu/100 ml). The general DWA limit is 1 000 cfu/100 ml.

- The average total dissolved salts (TDS) in Kamfers Dam has decreased drastically (by 73 percent) during the past six years (from 16 600 mg/l during 2005 to 4 520 mg/l in August 2011). Therefore the ionic composition and characteristics of Kamfers Dam are changing with uncertain consequences.

- The algal concentration in Kamfers Dam was relatively high (av. chlorophyll-a, 330 Dg/l), but within the acceptable range (300 to 500).

- The algal composition in Kamfers Dam was dominated by diatoms (Cyclotella sp.), but with still fairly high concentrations of Spirulina sp. (major food-source for the Lesser Flamingos).

The high water level at Kamfers Dam has resulted in the flooding of a railway line, endangering another railway line, and the flooding of the Lesser Flamingo breeding island.

From 2007 to 2010 more than 24 000 Lesser Flamingo chicks and more than 100 Greater Flamingo chicks hatched on the Kamfers Dam flamingo island. This site became the fourth breeding locality for Lesser Flamingos in Africa, and the sixth breeding site in the world. It is the only place in South Africa where Lesser Flamingos have been recorded to breed.

The Kamfers Dam project received international acclaim after the Lesser Flamingos bred on the purpose-built island, and the flooding of the island has unfortunately destroyed one of only six breeding sites internationally for this flamingo species.

The Lesser Flamingos bred during three consecutive years, and it is likely that they would breed every year. They breed irregularly at the other sites, only every 11 years at Etosha Pan, and all other breeding sites are threatened by a number of factors.

The Kamfers Dam flamingo island would have been important for the conservation of the Lesser Flamingo, a nationally and globally threatened species.

Despite extensive work and huge expense, the HWWTW is still not functioning properly. The Kimberley ratepayers' money is therefore not being effectively utilised.

As a result of the non-functioning of the HWWTW, unacceptable very poor quality water is flowing into Kamfers Dam.

There are very few flamingos at Kamfers Dam at the moment (perhaps only 500 birds, in contrast to the 80 000+ which are sometimes present), and this could be attributed to rising water levels, a deterioration in water quality and a change in the algal species composition.

Kimberley is well known for its population of Lesser Flamingos, and these birds are used in the city's marketing materials. Kimberley may, unless urgent work is done to address the water issues, lose one of its most important assets.

Taking into consideration the Save the Flamingo Association's observations at the HWWTW and the results of the water quality analyses, it is very surprising that the HWWTW received an 80 percent score in the 2010/11 Green Drop Report.

Mark Anderson
Save the Flamingo Association
(Anderson is also the CEO
of BirdLife South Africa)

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