GRAVE CONCERNS ABOUT HUMAN IMPACTS ON KAMFERS DAM'S FLAMINGOS

We are gravely concerned about the current situation at Kamfers Dam, especially regarding two significant threats to the dam's population of Lesser Flamingos. Firstly, the further deterioration of the already poor water quality is apparently having negative health impacts on the dam's flamingos. Secondly, future proposed housing developments will result in additional sewage effluent, disturbance, and other anthropogenic impacts on the dam's flamingos.

We believe Kimberley's Homevale Sewerage Works has a design capacity of 30 million litres per day, however due to the failure of the majority of the plant and equipment, the effective capacity has been more than halved at below 15 million litres per day. The present raw sewage inflow from Kimberley to the plant averages between 1000 m^3/hr and 2600 m^3/hr or 43 million litres per day. It is therefore quite evident that the plant is completely hydraulically overloaded to such an extent that it is failing to achieve virtually any of its designed and desired effluent treatment capability. This has resulted in the entirely unacceptable practice of discharging mostly untreated raw and toxic sewage into the environmentally sensitive Kamfers Dam and this quagmire has become a direct threat to the survival of the now famous Kimberley flamingos and flamingo breeding island. In short an environmental catastrophe is in the making at Kamfers Dam. This catastrophe will additionally have severe consequences to human health and safety.

Despite years of negotiating with the Kimberley's municipality (the Sol Plaatje Municipality) to improve the quality of water flowing into Kamfers Dam, the water quality is deteriorating and there are consequently severe health implications for Kamfers Dam's flamingos and people living in neighbouring suburbs.

Kamfers Dam supports the largest permanent population of Lesser Flamingos in southern Africa. In 2006 Ekapa Mining constructed a flamingo breeding island at Kamfers Dam, one of only three such artificial islands in the world. The Lesser Flamingos bred successfully on the island in 2007/8, producing about 9000 chicks. This is the very first

time that Lesser Flamingos have bred in South Africa, and Kamfers Dam is now the fourth breeding locality in Africa, and the sixth in the world. The other global breeding sites are only used infrequently and, for example, Lesser Flamingos only breed successfully at Etosha Pan in Namibia every seven years. These other sites are also threatened by various anthropogenic factors, including mining, disturbance, and the construction of dams in their catchment areas.

For at least the past two years raw or partially treated sewage has found it way into Kamfers Dam from the Homevale Sewerage Works. We have photographs of the torrent of completely untreated sewerage water that is flowing into the dam. These are some of our concerns about the infrastructure deterioration and maintenance issues at the Homevale Sewerage Works:

- The sewerage works has been hydraulically overloaded for longer than four years and the problem is increasing exponentially with the resultant deterioration of the final effluent water quality. The Homevale Sewerage Works is in dire need of immediate maintenance and upgrading.
- The disinfection of final effluent via the chlorination plant is not being utilised. This process is essential to ensure that any disease forming pathogenic bacteria are eliminated.
- The maturation pond system is not optimised and as a result untreated sewage bypasses this process and ends up in Kamfers Dam.
- The anaerobic digester has not been operational for a number of years with the resultant inadequately stabilised sludge pumped to an uncontained temporary area. Little or no solids are in fact being removed at all. This in turn also results in diffused (seepage) pollution reaching Kamfers Dam. Sludge is washed into the dam during rainfall events.
- The sludge drying beds are overgrown and unused.
- The inlet system is only partially operational, with ineffective grits removal and poor screening efficiencies.
- The storm water balancing and peaking dam is no longer in use to cope with peak flow conditions. The return water pumping system is inadequate for this purpose, allowing excess raw sewage to continuously report to Kamfers Dam.

- Storm water input into the sewerage works is uncontrolled and not quantified and an estimated 40 Ml/day of Kimberley's potable water is leaking into the storm water system.

The copious quantities of raw sewage bypassing the Homevale sewerage works due to the above reasons will cause Kamfers Dam to become a disastrous festering toxic cesspool.

Earlier this year there was a severe algal bloom at Kamfers Dam, which, fortunately, only consisted of the non-toxic *Spirulina platensis*. The average chlorophyll-*a* concentration was 1,600 mg/L, higher than the upper limits of what is considered acceptable in an aquatic system. It is possible that future blooms could result in the proliferation of the toxin-producing *Microcystis* algae, which have been implicated in the mass-die offs of at times tens of thousands of Lesser Flamingos in East Africa.

Hundreds of the Lesser Flamingo chicks produced at Kamfers Dam during the recent breeding event appear to be ill. A study is currently underway to determine the causes of the swollen tibio-tarsal joints and lesions on the legs of a large number of Lesser Flamingo chicks. Local ornithologists and veterinarians, in collaboration with American veterinary pathologists and eco-toxicologists, are currently investigating these abnormalities. Histopathological, microbiological and toxicological studies are being done in order to diagnose the reasons for the observed swollen joints and lesions. The dam's heavy metal concentrations (and especially aluminum, copper and zinc) are high and above the acceptable limits for aquatic ecosystems. Heavy metal contamination has been found to be the cause of a variety of morphological and other abnormalities in various aquatic species.

Conservationists are concerned that the deteriorating water quality, and consequent impacts on the dam's flamingos, will thwart the success of the breeding island project and the resultant contribution to the population of this threatened species. The successful breeding of Lesser Flamingos at Kamfers Dam has received national and international recognition and, for example, Dr Brooks Childress, Chairman of the IUCN Flamingo Specialist Group, described the project as the most significant flamingo conservation event internationally in several years.

Many eco-tourists travel to Kenya and Tanzania to observe the masses of flamingos at the Great Rift Valley Lakes, but these sites are not that accessible, the flamingo numbers are declining, mass die-offs leave thousands of dead flamingos littered along the shoreline, and security issues in Kenya all have an affect on flamingo-watching in East Africa.
Kamfers Dam provides unique opportunities for flamingo-watching, particularly because of the dam's accessibility and its proximity to Kimberley. Kamfers Dam and it flamingos could, through ecotourism, result in significant economic spin-offs for Kimberley.

It is not only the flamingos, but we also believe that the people of Kimberley are being affected by Kamfers Dam's deteriorating water quality. According to the Constitution of South Africa, the people of Kimberley are entitled to a healthy environment, but this may not be so:

- At times, the residents of some Kimberley suburbs in the near vicinity of Kamfers Dam (especially Homestead, Floors, Colville and Ashburnham) have to endure unbearable rotten egg smells (hydrogen sulphide produced as the algae rots). The hydrogen sulphide emissions, although not toxic, are extremely unpleasant and affect the quality of life of neighbouring communities.
- Visitors to the Road Lodge and the Flamingo Casino, which are located south of the dam, are also affected by these unpleasant smells. Motorists entering or leaving Kimberley on the N12 are left with a decidedly unpleasant memory of the diamond city.
- "Partially treated" water from the Homevale Water Treatment Works is used to irrigate municipal parks and gardens in Kimberley, and children who use these facilities may be exposed to harmful pathogens and chemicals.

The Sol Plaatje Municipality is responsible for management of the Homevale Sewerage Works and the supply of infrastructure and services around Kimberley. As a land user and land owner it is bound by various laws to ensure responsible use of our natural resources and sustainable development. Section 24 of the Constitution gives us the right to (a) an environment that is not harmful to our health and well-being and (b) to have the environment protected for the benefit of the present and future generations. Furthermore,

the stated environmental right in our Constitution is there to ensure that the country's resources are developed in an 'orderly and ecologically sustainable manner while promoting justifiable social and economic development.'

The National Environmental Management Act (1998) (NEMA) sets out a number of principles to give guidance to developers, private land owners, members of public, and authorities, on how these items in the constitution should be applied. Section 28 of NEMA places a duty of care on everyone to prevent, contain and remedy significant pollution or degrading of the environment. The Sol Plaatje Municipality has to comply with these national laws. Furthermore, the Municipal Systems Act, Act 32 of 2000, and the Integrated Development Plan, of which the Spatial Development Framework forms part, bind the municipality in the exercising of its executive authority. Under this act, a municipality and officials within that municipality can be prosecuted for maladministration, fraud or malpractice should it be found that the municipality or an official has not conformed to the statutory obligation imposed therein.

In the 2008-2012 Spatial Development Framework for the Sol Plaatje Municipality, Kamfers Dam with a buffer zone has been earmarked as a flamingo conservancy area where no development is permitted (sub-area 31 in the Spatial Development Framework). On the western outskirts of this area (sub-area 32) only tourism and hospitality related developments in support of the Kamfers Dam Flamingo Conservancy may take place. Also, since 2004 no development will be approved beyond the Urban Edge delineation unless the Urban Edge has been amended through a Spatial Development Framework review process, and the conservancy lies outside the Urban Edge. The Sol Plaatje Municipality must implement this plan and base their decision-making on developments on these guidelines to ensure that this sensitive and globally important area is protected and urban development is environmentally, socially and economically sustainable. Therefore, if the Sol Plaatje Municipality approves any business, residential and small holding developments within sub-area 31 and 32, then they are contravening the SDF and the Municipal Systems Act and can be prosecuted.

We believe that extremely urgent attention needs to be given to:

- The Homevale Water Treatment Works should be repaired and maintained to run effectively and treat all sewage properly and upgraded immediately to cope with the rapidly increasing production of sewage effluent in Kimberley. Storm water input into the Homevale Water Treatment Works also needs to be controlled and effective monitoring and water testing must take place.
- We suggest that the Sol Plaatje Municipality outsource the management of the city's sewage treatment works to a qualified management company answerable to a steering committee consisting of relevant role-players.

The following also needs attention:

- It has been estimated that as much as 40% of Kimberley's potable water is lost through leaking pipes of which a great portion is collected in the city's sewerage network, further increasing the sewerage volume beyond the capacity of Kimberley's sewerage works. This is of major concern, especially in an arid environment where water resources are scarce. Urgent attention needs to be given to repairing these leaks.
- Kimberley needs to make more efficient use of its water resources by, for example, promoting dual toilet flushing systems, encouraging indigenous gardening, and using grey water systems. This can only be achieved through an efficient water use strategy.
- If treated to acceptable levels, greater use can be made of sewage water to irrigate Kimberley's gardens, parks and sports fields.
- In the new development plans (Spatial Development Framework) for the Kimberley area, Kamfers Dam and a surrounding buffer zone has been earmarked as a flamingo conservancy area where no development is permitted. On the western outskirts of this area only tourism and hospitality related developments in support of the Kamfers Dam Flamingo Conservancy may take place. The Sol Plaatje Municipality should comply with this plan and only allow appropriate development to ensure that this sensitive and globally important area is protected and urban development is environmentally, socially and economically sustainable.

These issues are being widely publicised in the press and via the Save the Flamingo campaign website (www.savetheflamingo.co.za). The petition on the website is receiving massive local and international endorsement including support from various environmental and conservation organizations.

"Save the Flamingo" campaign
www.savetheflamingo.co.za