

No end in sight for rehabilitation of Gauteng dam

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Scientists and the Department of Water Affairs are at loggerheads over whether a rehabilitation programme being used to sort out pollution in Gauteng's Hartbeespoort Dam - *Metsi a Me* - suits South Africa's particular circumstances.

But total spending on the programme - R216.5m in 2011-12 - is to increase to R258.5m in 2013-14 and R383.3m in 2015-16, according to Water and Environmental Affairs Minister Edna Molewa's reply to a parliamentary question this month.

Hartbeespoort provides much of Gauteng's drinking water. The method for sorting out pollution is to be used as a blueprint for solving the same problems in some of South Africa's other dams.

Hartbeespoort's problem is eutrophication, the addition of nutrients such as nitrates and phosphates, through fertilisers or sewage, to a water body.

This in turn causes algal "blooms" that deplete the water's dissolved oxygen and produce toxins that kill aquatic life and render the water toxic.

Department of Water Affairs data shows that since 2005 eutrophication has caused toxic cyanobacterial "blooms" every year in Gauteng's Hartbeespoort, Roodeplaat, Klipvoor and Rietmei dams and KwaZulu-Natal's Shongweni Dam.

Independent dam expert Bill Harding is confused by data captured through the *Metsi a Me* programme, saying last week that either nutrient levels in Hartbeespoort Dam have more than tripled since the programme's 2005 start - a result diametrically opposed to the desired outcome - or the department's own test records for the dam are incorrect.

He is not alone. Emeritus Professor of Life Sciences at the University of KwaZulu-Natal Rob Hart is also concerned about *Metsi a Me*'s data capturing.

Prof Hart argues that the entire premise for the programme is scientifically flawed, imposing a Scandinavian treatment for natural lakes on a man-made reservoir.

But *Metsi a Me* project leader Petrus Venter says the dam's phosphorous load is deteriorating annually because research shows there "may be significantly more" phosphorous entering the dam than estimated.

Also, the project was aimed at restoring the dam's entire bio-diversity, not simply cleaning up its algae problem.

Harding believes it likely that the phosphorous levels have not been properly captured, and have been inflated by a factor of three, because other readings have not increased so radically.

That no one appears to have flagged the mistake for seven years raises questions about the scientific abilities of those using the data to determine whether the project is working.

A Department of Water Affairs table shows that in 2005 the dam's phosphorous level was measured at 100 microgrammes/l, and that in 2006 this was 259 microgrammes/l.

By 2007 it had reached a high of 448 microgrammes/l, declining to 323 microgrammes/l in 2010, 153 microgrammes/l last year and rising this year to 364 microgrammes/l.

For there to be "any improvement" from the 2005 *Metsi a Me* start date, the phosphorous level would have to show a march towards a reading of 60 microgrammes/l, with a target of 55, says Harding.

The *Metsi a Me* programme has seen the removal of 64,000m³ of water hyacinths, 2,400 tons of litter and debris, 31,000m litres of "algae soup", the removal of about 190 tons of fish, the rehabilitation of 8,530m² of shoreline and the establishment of 4,800m² of "floating wetlands", according to August's edition of the South African Institute of Civil Engineering's monthly magazine.

Harding says: "There is no published, objective evidence that provides any indication that anything done, using the millions spent, has improved the dam."

Venter says while there may be no evidence published in the way Harding would like, there is plenty published "in the Department of Water Affairs", and available on request.

Meanwhile, Democratic Alliance water and environment spokesman Gareth Morgan says South Africans need reassurance that what is being done is scientifically valid and he has written to Molewa requesting a thorough independent review of the remediation programme.

There is one area in which Harding, Hart and Venter agree, however.

They all say it is pointless trying to fix the dam's problem without improving the core problem - the chemicals, antibiotics, agricultural run-off (containing fertilisers, including phosphorous, hormones and antibiotics) and breakdowns in sewage treatment plants in the dam's catchment area.

Source: *Business Day* via I-Net Bridge