Wetland Consulting Services (Pty.) Ltd.
Specialist wetland and riparian consultants

Wetland Consulting Services (Pty.) Ltd. 1998/17216/07
P.O. Box 72295
Lynnwood Ridge
Pretoria
0040

CSIR
Building 33
Room S157
Meiring Naude Road
Brummeria
Pretoria

Tel: +27 12 349 2699
Fax: +27 12 349 2993
E-mail: info@wetcs.co.za
Website: www.wetcs.co.za

13 November 2018

Zitholele Consulting (Pty) Ltd
Mathys Vosloo
Mathysv@zitholele.co.za

Recreation of Pan – Kendal 30-year ADF Project

Wetland Consulting Services (Pty) Ltd (WCS) was requested by Mathys Vosloo of Zitholele Consulting (Pty) Ltd to provide a brief opinion and comment on the feasibility of recreating a pan to compensate for the loss of a pan wetland located within the proposed footprint of the Kendal 30-year ADF. The request to consider the recreation of a pan arises from the DEA Rejection Letter (DEA Reference 14/12/16/3/3/3/68 dated 06/04/2017) which requested under required additional information that "*the report on the investigation of the recreation pan*" must be submitted.

The pan falling within the footprint of the proposed ADF is approximately 11.5 hectares in size, with a catchment of 71 hectares. Although the pan has recently been utilised to store irrigation water, under natural conditions the pan is expected to have been a seasonal, freshwater pan. Water inputs to the pan, as is the case with many pans of the area, would have been predominantly from interflow inputs as well as rainfall and surface runoff. Shallow groundwater could possibly also play a role.

In order to recreate a pan that resembles the natural pans of the area, it would be necessary to create a pan basin that fills up with water and inundates on a seasonal basis, followed by drying out. It is therefore necessary to create the pan basin and provide a source of water. Water could be pumped into a created basin to mimic the natural fluctuations of pan water levels, or alternatively a catchment could be created to allow for the natural movement of water into the pan from rainfall. Taking the current Kendal Pan as an example, a basin covering 11.5 hectares would need to be created, together with a catchment of a further 70 hectares that drain into the pan basin. Both these scenarios are considered unpractical:

- There is no self-evident source of water that could be utilised to support such a pan, other than abstracting from natural water sources in the area, i.e. farm dams or the Wilge River. This would reduce flow within these systems, leading to additional impacts and increasing the impact footprint; and
- Creating a pan with an inwardly draining catchment would require substantial earthworks and disturbance of a further footprint, leading to knock-on impacts to other wetland systems. There is no opportunity to create such a pan within the footprint of the Kendal 30-year ADF as the ADF will be a permanent feature of the landscape and will not be removed. It is also not possible to create a pan on the rehabilitated ADF. Creating a pan on an alternative footprint will require disturbance of an additional area, while creating a catchment that drains into the created pan will of necessity require the exclusion of the 70ha pan catchment from its existing drainage catchment,

leading to further impacts to other wetland systems and increasing the overall impact footprint.

The recreation of pans could be a potential solution in cases where opencast mining leads to the destruction of pan habitat, as such a pan could be recreated on the rehabilitated opencast pit. Kendal Power Station however has no such land available. Recreating a pan on rehabilitated mine land owned by a third party could be considered. However, such a scenario is likely to be challenging from an environmental liability point of view. Creating a pan on rehabilitated mine land could lead to increased ingress of water into the backfilled mine spoils, leading to increased generation of contaminated water requiring treatment and / or contaminated mine drainage. It is unlikely that a third party mine would accept such an increased risk.

It is our experience that the commitment to recreate pan habitat following opencast mining has been included in a number of environmental authorizations for opencast mines, but that no mine has as yet managed to successfully implement such an endeavor. Difficulties are generally understood to relate to the complexities of the rehabilitation required as recreation of pan habitat requires not only the excavation and shaping of a pan basin, but rather the reinstatement of the hydrological driving process that lead to the formation and maintenance of the pan wetland in the first place. This has been found to very difficult and very costly to achieve, with success of the various proposed approaches as yet uncertain, as these designs have not yet been implemented.

In our opinion the impact associated with the loss of the pan wetland at Kendal is better addressed through wetland offset activities that aim to protected and rehabilitated existing pan wetlands on the Highveld, guided by the SANBI & DWS (2016) wetland offset guidelines, rather than through an attempt to recreate pan habitat.