A freshwater specialist review on an application for rectification for the unlawful commencement of activities in terms of Section 24g of NEMA (107 of 1998), on Sandfontein (farm 232 portion 2), Bonnievale, Western Cape

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24 September, 2011

In the comments on a draft environmental impact report by Boland Environmental Consultants, CapeNature stated that “The transformation on an ecologically important seepage area is especially concerning and we suggest that comment/advice is sought from a freshwater specialist on rehabilitation measures and as how to maintain ecological functioning in the new dam.”

In response to these comments, a freshwater specialist review of the application for rectification for the unlawful commencement of activities was carried out, with a particular focus on impacts of the dam on the identified seepage area. Given that the dam is likely to potentially impact any seepage area/s downstream but would not impact on any such areas upstream, the area downslope of the dam was assessed in the field. This was carried out on 22 September 2011 based on an examination of soil morphology, vegetation and the direct presence of water (surface and sub-surface).

Based on the field assessment, it is concluded that the downstream area certainly does not constitute a hillslope seepage wetland. It is an ephemeral channel (Fig. 1) of a second order drainage line in a valley bottom setting. However, within the drainage line there are very localized microsites where wet season seepage occurs and/or water accumulates seasonally in localized depressions in the bedrock underlying the drainage line. These microsites are generally all narrower than 1.5 m and less than 10 m² in surface area (Figure 2), and appear to be maintained by a combination of lateral seepage of moisture from the adjacent hillslope and longitudinal seepage down the floor of the drainage line, and support a few hydric species, namely the rush Juncus effusus and the sedge Ficinia indica. Both of these are generalist species, well adapted to colonizing seasonally saturated areas. Thus, the microsites are not considered to be of high ecological importance.
Fig. 1: The ephemeral drainage line on Sandfontein (farm 232 portion 2)

Fig. 2: One of the seasonally saturated microsites in the drainage line
The lateral seepage into these microsites is unlikely to be significantly affected by the upstream dam. However, the longitudinal seepage is likely to be affected, although not completely eliminated, in that water is currently seeping through the bottom of the dam wall.

A further hydrological effect of the dam is capturing the stormflows. This is likely to affect the approximately 370 m reach of the drainage line from the dam wall to the confluence of the drainage line with the mainstream, which is of a higher order. Given a lack of significant aquatic habitats in this 370 m reach which could potentially be affected, the environmental impacts of the altered flows are not high.

Given the factors reported above, and the fact that the affected area does not fall within an aquatic CBA (Critical Biodiversity Area), the impacts of the dam on downstream seepage/saturated areas are not considered to be of high significance from an environmental impact point of view. Nevertheless, it is recommended that the potential impacts should be offset by clearing invasive alien plants on the property, notably the Acacia saligna stand which has densely infested the drainage line upstream of the dam, as already recommended by Boland Environmental Consultants. It is recommended further that the downstream impacts of the dam on stormflows be significantly reduced by installing outflow pipes, as recommended by the dam specialist and Boland Environmental Consultants. As recommended, adequate measures also need to be taken to prevent erosion by outflows from the dam, which could potentially have both onsite impacts as well as serving as a source of increased sediment supply to downstream environments.