

**SCIENTIFIC SERVICES**

**postal** Private Bag X6546, George, 6530  
**physical** 4<sup>th</sup> Floor, York Park, Building,  
York Street, George, 6530  
**website** [www.capenature.co.za](http://www.capenature.co.za)  
**enquiries** Colin Fordham  
**telephone** +27 44 802 5328 **fax** +27 44 802 5313  
**email** [cfordham@capenature.co.za](mailto:cfordham@capenature.co.za)  
**reference** 14/2/6/1/7/3\_SWEL/399/5\_2017/CF098  
**date** 10<sup>th</sup> August 2017

EnviroAfrica  
P.O. Box 5367 Tel: (021) 851 1616  
Heidelberg Fax: (086) 512 0154  
7135  
[admin@enviroafrica.co.za](mailto:admin@enviroafrica.co.za)

Attention: Ms Inge Erasmus

**DRAFT SCOPING REPORT AND PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NEMA ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS FOR THE PROPOSED CHANGE OF LAND USE BY CONSTRUCTION OF A WATER STORAGE DAM ON FARM VAN DER WATTSKRAAL No. 399 PORTION 5, SWELLENDAM, SWELLENDAM MUNICIPAL AREA.**

**DEA&DP REFERENCE #: 16/3/3/2/E3/10/1003/17**

CapeNature, as custodian of biodiversity in the Western Cape<sup>1</sup>, would like to thank you for the opportunity to comment on the pre-application query for the proposed construction of a dam on Farm Van Der Wattskraal No. 299 Portion 5, Swellendam Municipal Area. The application was received on the 8<sup>th</sup> of July 2017. Please note that our comments only pertain to the biodiversity related impacts and not to the overall desirability of the application.

The following information was extracted from the draft Scoping Report supplied for comment:

*"In order to minimise risks the owner is proposing to diversify its agricultural produce by establishing a citrus branch on one of its properties. This is also seen as the perfect project for realising land reform and BEE partnership. Various models were evaluated, and it was decided to base this partnership on the PALS (Partnerships in Agri Land Solutions) model, which have been successfully implemented by the Witzenberg PALS project (Department of Rural Development and Land Reform). In order to establish the 105 ha of citrus orchards, irrigation will be required. Water will be obtained from Eksteenkloof, but a storage dam must be established.*

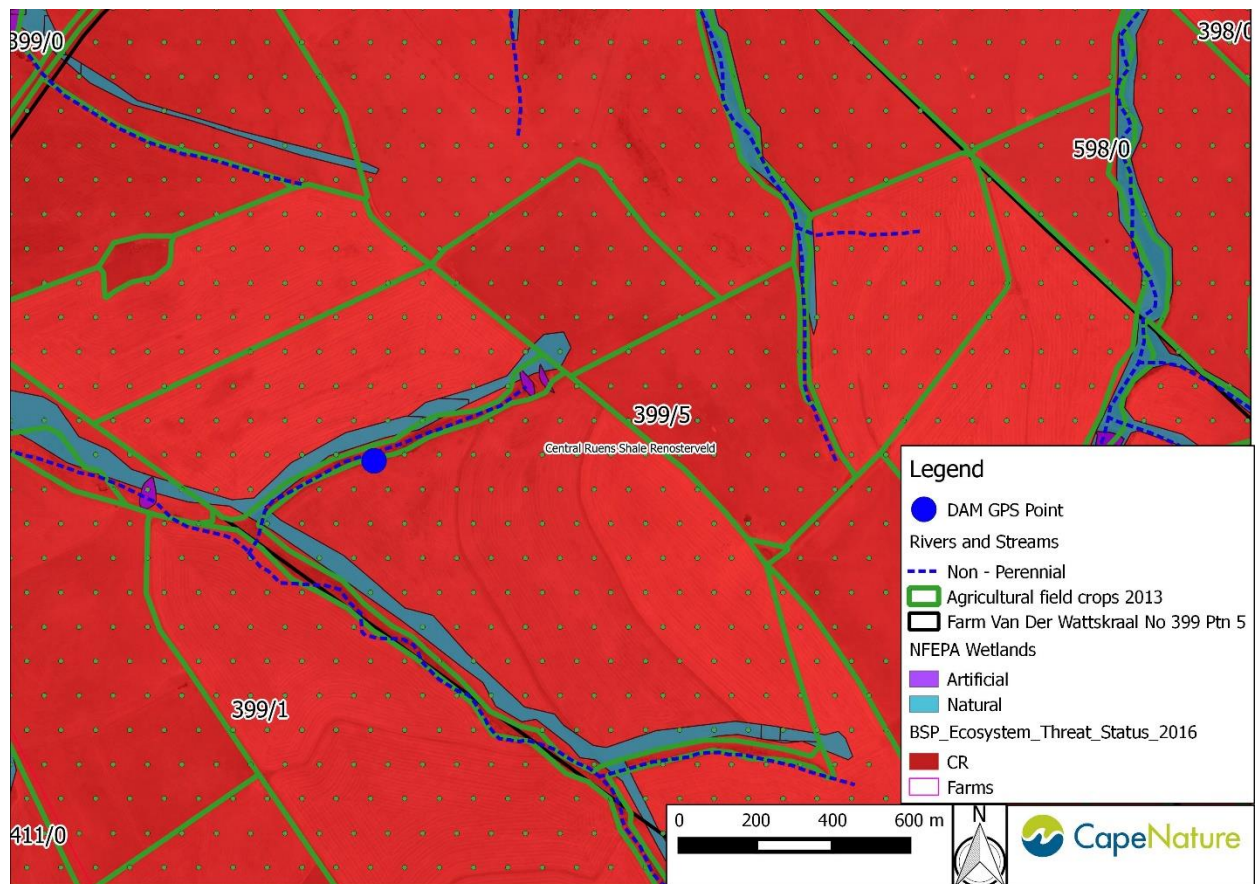
*Thus, consideration is being given to the construction of a farm storage dam on Portion 5 of Farm van der Wattskraal No. 399, about 15,5 km east of Riviersonderend and 45,7 km west of*

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<sup>1</sup> Section 9, Western Cape Nature Conservation Board Act 15 of 1998

*Swellendam. The proposed dam wall will be 19,5 m high and will have a capacity of approximately 625 000 cubic meters. The area to be inundated will be approximately 8,8 ha.”*

According to Mucina and Rutherford<sup>2</sup> and the Western Cape Biodiversity Sector Plan (WCBSP 2017)<sup>3</sup>, the vegetation unit that could be affected by the development proposal is the **Critically Endangered** Central Rûens Shale Renosterveld (Hardly Protected) (Figure 1). Central Rûens Shale Renosterveld is a threatened ecosystem listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM: BA), and contains 42 (forty two) threatened plant species and eight endemic plant species with <1% formally conserved and with 9% of the original extent remaining in a natural condition. The conservation target for this specific vegetation type is listed as 27% of its original extent.



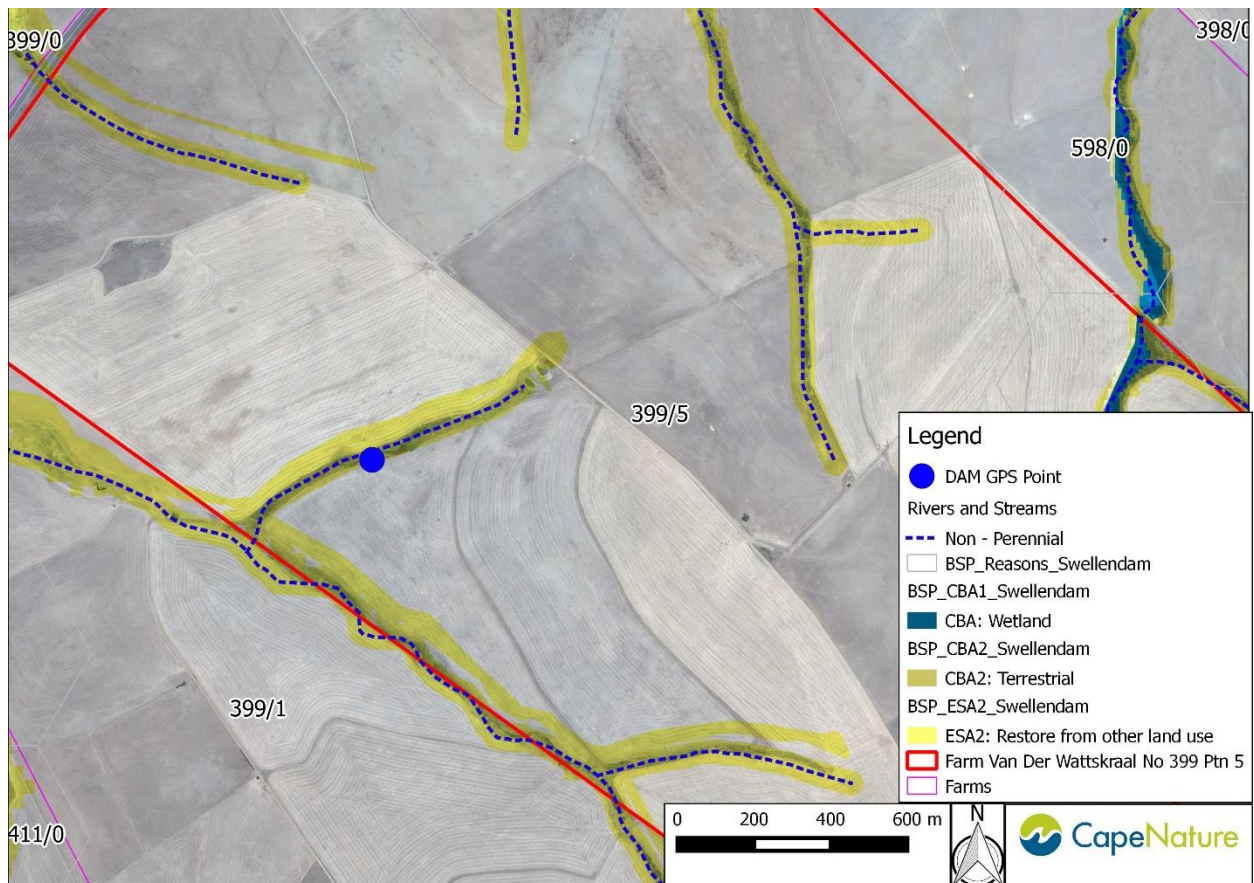
**Figure 1: Map showing location of proposed dam relative to farm boundaries, DAFF registered agricultural fields, vegetation units, NFEPA wetlands and locations of known streams and rivers.**

There dam is proposed to be built on a non-perennial drainage line present on the Farm, which is also a Freshwater Ecosystem Priority Areas (FEPAs)<sup>4</sup> (Figure 1). According to the WCBSP data, the dam location is dominated by an Ecological Support Area 2 region (Figure 2).

<sup>2</sup> Mucina, L. & Rutherford, M. C. (EDS) 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria. (revised 2012)

<sup>3</sup> Pence, G.Q.K. 2017. The Western Cape Biodiversity Spatial Plan: Technical Report. In Prep. Western Cape Nature Conservation Board (CapeNature), Cape Town.

<sup>4</sup> Nel, J.L., Murray, K.M., Maherry, A.M., Petersen, C.P., Roux, D.J., Driver, A., Hill, L., Van Deventer, H., Funke, N., Swartz, E.R., Smith-Adao, L.B., Mbona, N., Downsborough, L. & Nienaber, S. (2011). Technical Report for the National Freshwater Ecosystem Priority Areas project. WRC Report No. K5/1801.



**Figure 2: Map showing location of proposed sites relative to farm boundaries and WCBSP (2017).**

ESA 2 areas are defined as: “Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.”

ESA 2 objectives are: “Restore and/or manage to minimize impact on ecological processes and ecological infrastructure functioning, especially soil and water-related services, and to allow for faunal movement.”

Following a review of the application and appendices, and given the above mentioned sensitivity of the site, CapeNature would like to make the following comments/recommendations:

1. CapeNature supports the Environmental Assessment Practitioner (EAP) obtaining a botanical impact assessment for the Environmental Impact Report phase of the project. Given the sensitivity of the vegetation unit in the region. It is further recommended that the specialist must have in-depth knowledge of the local vegetation type present on site to, *inter alia*, determine the desirability of the dam and infrastructure within the critically endangered vegetation, to look for the presence of red data species (especially those CapeNature has record of occurring in the regions such as the endangered *Ixia longituba*), to make recommendations regarding the where the dam is proposed and to give a reasoned opinion on the likely effects that developing the site will have on meeting the conservation targets. The appointed botanical specialist must please consult the Terms of Reference for the consideration of biodiversity in environmental assessment and decision-making in the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape v 2* (de



Villiers *et al.*, 2016)<sup>5</sup> and Appendix 6 to the EIA Regulations, GN No. R.982 of 4 December 2014.

2. Similarly CapeNature also supports the appointment of a wetland specialist as stated by the EAP. This report will accurately delineate the extent of any freshwater resources and determine the impact that proposed development would have on the surrounding freshwater ecosystems. Suggested Terms of Reference for this study include (but are not limited to):
  - 2.1. Accurate wetland or riparian system delineation and characterisation as per DWAF (2008)<sup>6</sup>. The proposed dam and infrastructure footprint should be overlaid on this map to accurately determine the impact this development would have on the freshwater resources. Suitable buffers should be also be delineated (if possible).
  - 2.2. Should any freshwater systems be determined to be at risk of being impacted by the development, in line with DWS (2014)<sup>7</sup> guidelines the specialist must determine the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS), which will in turn determine the DWS Recommended Ecological Category (REC) of such systems. The specialist is advised to consult Ollis *et al.* (2013)<sup>8</sup> for characterisation of freshwater habitat type, then depending on the characterisation of the system the following is methods can be utilised:
    - 2.2.1. Should any of the systems be characterised as a River or Riparian systems Kleynhans (1996)<sup>9</sup> and Kleynhans (1999)<sup>10</sup> can be used to determine PES and EIS such systems.
    - 2.2.2. Should any of the systems be classified as a wetland system Macfarlane *et al.* (2009)<sup>11</sup> and Duthie (1999)<sup>12</sup> can be used to determine PES and EIS for such systems.
    - 2.2.3. For wetland systems it is also recommended that the wetland ecosystem services tool (Kotze *et al.* 2008b)<sup>13</sup> be used to assist in determining wetland EIS scores.
    - 2.2.4. Following delineation and REC determination of the freshwater habitat suitable buffers should be delineated and used to inform layout design.
    - 2.2.5. If applicable, it is also recommended that the specialist consider using the buffer tool developed by: Macfarlane, D.M. and Bredin, I.P. 2016. Buffer zone guidelines for rivers, wetlands and estuaries. Part 2: Practical Guide. WRC Report No (tbc), Water Research Commission, Pretoria.

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<sup>5</sup> De Villiers C.C., Driver A., Clark B., Euston-Brown D.I.W., Day E.G., Job N., Helme N.A., Holmes P.M., Brownlie S. and A.B. Rebelo (2016). *Ecosystem Guidelines for Environmental Assessment in the Western Cape*, Edition 2. Fynbos Forum, Cape Town

<sup>6</sup> DWAF (2008) Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas, prepared by M. Rountree, A. L. Batchelor, J. MacKenzie and D. Hoare. Report no. XXXXXXXXX. Stream Flow Reduction Activities, Department of Water Affairs and Forestry, Pretoria, South Africa.

<sup>7</sup> Department of Water and Sanitation, 2014. Guideline to regulate activities /developments affecting watercourses. First Edition. Pretoria

<sup>8</sup> Ollis, DJ; Snaddon, CD; Job, NM & Mbona, N. (2013). Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland Systems. SANBI Biodiversity Series 22. South African Biodiversity Institute, Pretoria.

<sup>9</sup> Kleynhans, C.J. (1996) A qualitative procedure for the assessment of the habitat integrity status of the Luvuvhu River (Limpopo system, South Africa). *Journal of Aquatic Ecosystem Health*, 5, 1-14.

<sup>10</sup> Kleynhans C.J. (1999). Assessment of Ecological Importance and Sensitivity. Appendix R7 in: DWAF; Resource Directed Measures for Protection of Water Resources; Volume 3: River Ecosystems. Department of Water Affairs and Forestry, Pretoria. 9 pp.

<sup>11</sup> Macfarlane DM, Kotze DC, Ellery WN, Walters D, Koopman V, Goodman P & Goge M, (2009). WET-Health: a technique for rapidly assessing wetland health. WRC Report No. TT 340/09. Water Research Commission, Pretoria.

<sup>12</sup> Duthie, A. (1999). Appendix W5: IER (Floodplains): Determining the Ecological Importance and Sensitivity (EIS) and the Ecological Management Class (EMC). From DWAF (Department of Water Affairs and Forestry). 1999. Resource Directed Measures for Protection of Water Resources. Volume 4: Wetland Ecosystems Version 1.0, Pretoria.

<sup>13</sup> Kotze, D.C., Marneweck, G.C., Batchelor, A.L., Lindley, D.S. & Collins, N.B. (2009). WET-Ecoservices: A technique for rapidly assessing ecosystem services supplied by wetlands.

- 2.3. Identification, prediction and description of the potential impacts of the proposed development on the delineated wetland/riparian areas and the significance of these impacts (qualitative assessment), must be determined.
- 2.4. Mitigative measures for the abovementioned identified impacts must be stated and rehabilitation measures proposed should decommissioning of the development take place.
3. Details regarding the spillway including details relating to the envisaged dimensions, slope and outlet design will be required. Concentration of water flow combined with acceleration of flow velocity is a leading cause of erosion in watercourses. It is therefore recommended that the spillway discharge be designed to be as diffuse as possible. In addition to which, it is recommended that the design consider structures that can reduce the velocity of the water discharged from the spillway. Examples of such structures include the construction of stepped spillway, impact boxes, or stilling basins. Either way, suitable structures must be designed to return water velocity and dissipation back to its natural state, upon discharge from the spillway. This could mitigate downstream impacts.
4. Upstream dams are known to be a primary threat to floodplain wetland Geomorphological health. According to Macfarlane *et al.* (2009)<sup>14</sup> the damming of water results in sediment settling out of the water column and water released from the dam is therefore effectively starved of sediment. This sediment starved water often results in erosion of downstream floodplain wetlands. Sediment is essential for floodplain wetland geomorphological health and functioning as it builds alluvial ridges, results in channel aggradation, and in general maintains natural dynamics of floodplains. How do the dam engineers and wetland specialists propose this impact of sediment starvation be mitigated?

CapeNature reserves the right to revise initial comment and request further information based on any additional information that may be received.

Yours sincerely



**Colin Fordham**  
**For: Manager (Scientific Services)**  
**(1) Mr Carlo Abrahams (BGCMA)**

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<sup>14</sup> Macfarlane DM, Kotze DC, Ellery WN, Walters D, Koopman V, Goodman P & Goge M, (2009). WET-Health: a technique for rapidly assessing wetland health. WRC Report No. TT 340/09. Water Research Commission, Pretoria.