SUTHERLAND 2 WIND ENERGY FACILTY AND GRID CONNECTION, NORTHERN CAPE PROVINCE

AQUATIC PRE-CONSTRUCTION WALKDOWN REPORT

FINAL

FOR

Nala Environmental (Pty) Ltd

ВҮ



EnviroSci (Pty) Ltd

Dr Brian Colloty

1 Rossini Rd Pari Park Gqeberha 6070

DATE

16 November 2022

REVISION 1

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SPECIALIST REPORT DETAILS

Report prepared by: Dr. Brian Colloty Pr.Sci.Nat. (Ecology) / Member SAEIES.

Expertise / Field of Study: BSc (Hons) Zoology, MSc Botany, Ph.D Botany Conservation Importance rating and interior wetland / riverine assessment consultant from 1996 to present. Brian has also been working in the study region for the last 10 years, with respect to various renewable projects in the greater region as well as mining and road upgrade related projects.

I, **Dr. Brian Michael Colloty** declare that this report has been prepared independently of any influence or prejudice as may be specified by the National Department of Environmental Affairs and or Department of Water and Sanitation.

Kintally		
Signed:		Date:16 November 2022

Appendix 1 of this report contains a detailed CV

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1. INTRODUCTION

Nala Environmental (Pty) Ltd appointed EnviroSci (Pty) Ltd to conduct the pre-commencement walkdown of the authorised Sutherland 2 Wind Energy Facility (WEF) and associated infrastructure (12/12/20/1782/3/AM5) that will require grid connection to the authorised Acrux third party substation within the adjacent Sutherland WEF site (DFFE Ref:.14/12/16/3/3/1/2457) . (Figure 1).

This assessment was based on a 4-day walk-down of the current site layout and grid corridor provided, conducted in April 2022. The aim of this walk-down was to confirm any sensitive <u>aquatic ecological</u> features, that may be affected by the revised layouts and provide the engineering team with additional information to further avoid and/or reduce the potential impacts on the aquatic environment.

Further, the layout/alignment has been adjusted based on additional input provided by the Bat, Avifaunal and Heritage specialists and this report should be read in conjunction with those reports to contextualise the overall constraints provided to the development team.

1.1 Aims and objectives

- Conduct a pre-commencement ecological (aquatic) walk-through survey / assessment of the development areas:
 - Provide a professional opinion on ecological issues relating to the aquatic environment within the footprint areas to optimise the layout;
 - Report on the presence of potential wetlands that could be affected and where the relevant mitigation measures need to be implemented if needed;
 - Serve as additional ecological information for the Proponent, contractors and Environmental Control Officers (ECOs) and/or Environmental Officers (EOs) involved in the development, i.e. demarcated no-go areas before construction starts.
- This is also to facilitate micro-siting of footprint areas, where possible, and by taking cognisance of other constraints, with the aim to further reduce negative impacts of the development.
- Aid in future decisions and environmental management regarding the project.

1.2 Assumptions and Limitation

To obtain a comprehensive understanding of the dynamics of both the flora and fauna of the aquatic communities within a study site, as well as the status of endemic, rare or threatened species in any area, assessments should always consider investigations at different time scales (across seasons/years) and through replication. No long-term monitoring was undertaken as part of this assessment. However, a concerted effort was made to assess the entire site, as well as make use of any available literature, species distribution data and aerial photography. The EIA and walkdown assessments were also conducted in peak rainfall/flowering seasons, so the results of this assessment are provided with a high level of confidence.

It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without detailed investigation.

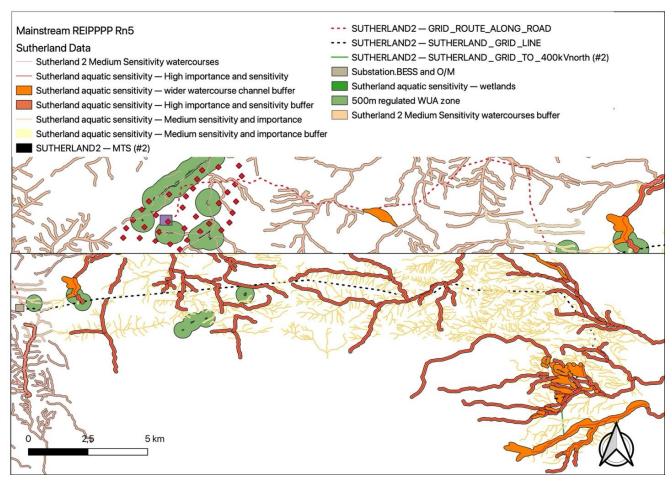


Figure 1: The proposed project layouts used in the walk down assessment conducted in April 2022 and associated grid connections and the aquatic habitat sensitivities presented to the developer during the Round 5 bid

2. PROJECT DESCRITION

Sutherland 2 Wind Farm (Pty) Ltd received Environmental Authorisation (EA) (DFFE Ref: 12/12/20/1782/3), dated 10 November 2016 and further amendments to the EA dated 25 November 2016, 25 August 2017, 10 March 2020, 08 June 2020 and the latest 09 July 2021, for the development of the 140MW Sutherland 2 Wind Energy Facility (WEF) and associated infrastructure, in the Northern Cape Province. The WEF received an EA for the Independent Power Producer (IPP) portion of the on-site substation (DFFE Ref: 14/12/16/3/3/1/1814/1) on 20 October 2021 and received a separate EA for Switching Station portion of the on-site substation and 132kV overhead powerline (DFFE Ref: 14/12/16/3/3/1/1814/2) on 20 October 2021. The Environmental Management Programmes (EMPrs) for the WEF, IPP portion of the on-site substation and Eskom portion of the on-site substation, including the 132kV overhead powerline, have been approved by the Department of Forestry, Fisheries and the Environment (DFFE), and will therefore be included within the Final Layout for the WEF for completeness.

The WEF will include the following:

- Up to 25 wind turbines (140MW maximum export capacity); hub height up to of 200m, rotor diameter up to 200m
- > The wind turbines will be connected to another by means of medium voltage cables
- An internal gravel road network will be constructed to facilitate movement between turbines on site.

 These roads will include drainage and cabling
- ➤ A hardstanding laydown area of a maximum of 10 000m² will be constructed
- A temporary site office will be constructed on site for all contractors, this would be approximately 5000m² in size

The proposed IPP portion of the of the on-site substation and associated infrastructure will include the following:

- ➤ An IPP portion of the on-site substation
- Laydown area
- Operation & Maintenance Building
- Fencing of the proposed on-site substation
- Battery Energy Storage Infrastructure (BESS)

The proposed Switching Station portion of the on-site substation and powerline will include the following:

- Switching Station portion of the on-site substation
- Fencing
- ➤ 132kV distribution line from the proposed Sutherland 2 WEF on-site substation to the Acrux third party substation (including tower/pylon infrastructure and foundations)
- Connection to the Acrux third party substation
- Service road below the powerline

The property affected by the 140MW Sutherland 2 WEF and associated infrastructure include the following:

Portion 1 of Tonteldoosfontein Farm 152

The properties associated with grid connection infrastructure include the following:

- Portion 1 of Tonteldoosfontein Farm 152
- Portion 2 of Gunsfontein Farm 151
- Portion 1 of Gunsfontein 151
- Portion 1 of Beeren Valley Farm 150

- Remaining Extent of Beeren Valley Farm 150
- Remaining Extent of Nooitgedacht Farm 148

The Sutherland 2 WEF has been selected as a Preferred Bidder project via a private off-taker and construction is expected to commence in early 2023.

Sutherland 2 Wind Farm (Pty) Ltd has commissioned Nala Environmental (Pty) Ltd to undertake the ground truthing and subsequent finalisation of the layout and EMPrs, in terms of the NEMA EIA Regulations, 2014 (as amended). As per the conditions of the EAs, independent specialist walkthrough's have been undertaken to inform the final layout and final EMPr for the WEF and associated infrastructure.

3. RESULTS

The study area (Figure 1) contained a variety of aquatic features, associated with systems found within the greater region, and these were as follows:

- Non perennial rivers with or without riparian vegetation. These ranged from narrow channels to broader flood plain areas in the lower valleys. However, broad riparian zones were only found within the lower valley areas, dominated by a small number of trees, while obligate instream vegetation is limited to a small number of sedges (nut grasses) and grasses. Several of these will need to be spanned by the proposed access and internal roads (Plate 1)
- 2. Minor drainage lines (Plate 2), with no obligate aquatic vegetation.
- 3. Dams with no wetland or aquatic features mostly used for watering of livestock.
- 4. Pans/Depressions wetlands (Plate 3)
- 5. Valley Bottom Wetlands (Plate 4)

The WEF project and grid connection span various Quinary Catchments that form the divide between the Nama Karoo and Great Karoo Ecoregions. The WEF components are all located within the Orange Water Management Area, while the later portion of the grid connection is located in the Breede Gouritz Catchment Management Agency. One (1) wind turbine of the Sutherland 2 project is located within the Berg-Olifants Water Management Area.

Further, the study area was included in the National Freshwater Ecosystems Priority Areas (NFEPAs) as Upstream FEPAs. While none of the Sutherland 2 infrastructure is located within a Groundwater Strategic Water Resource Areas, however the grid connection does span a National Wetland Cluster (NSBA, 2018).

Figure 2 indicates the available spatial data with regard potential wetlands and or riverine systems within the study area (van Deventer *et al.*, 2020). During the walkdown, the site was again ground-truthed, as well as compared to 1: 50 000 topocadastral surveys mapping data and that which was observed on site (Figure 3). A baseline map was then refined, using the 2022 walkdown survey data (Figure 4). This was also the compared to the associated Critical Biodiversity Areas (CBAs) contained in the respective Northern Biodiversity Spatial Maps (Figure 5), to ensure that as far as possible the proposed layouts have avoided any CBAs associated with the aquatic environment.

During the environmental assessment phase of the project, a proposed 50 m buffer was provided, and it was also determined in this walkdown assessment that all of the proposed infrastructure development will avoid any of the delineated wetlands, including the 50m buffer. The same buffer was used on the remaining aquatic systems observed to ensure that these areas are avoided or spanned regardless of the sensitivity assigned, with the exception of any new road crossings needed.

Several structures or portions of the facility are however located within the DWS 500m regulated zone, thus requiring a water use license. This process has been initiated by Sutherland 2 Wind Farm (Pty) Ltd, and the attached Section 21 c & i Risk Assessment Matrix (Appendix 2) indicates that all potential impacts would be low and that a General Authorisation process could be followed.



Plate 1: One of the broader systems with riparian vegetation that will be spanned by the grid connection



Plate 2: A minor drainage in the foreground with little to no aquatic habitat, typical of the region



Plate 3: The small depression with no aquatic features, other than an accumulation of water during high rainfall periods, well removed from the proposed development area



Plate 4: Valley Bottom Wetland (Channelled) observed to the west of the Sutherland 2 WEF area

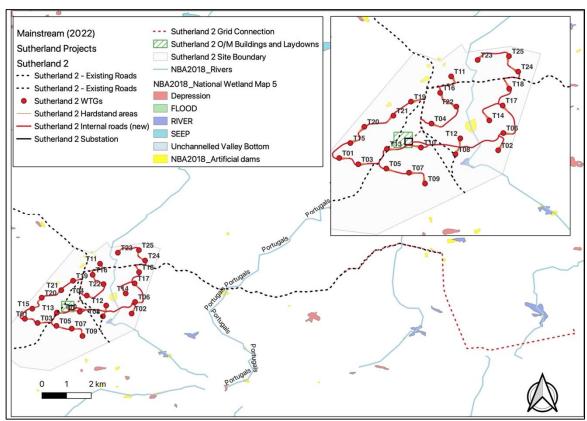


Figure 2: National Wetland Inventory wetlands and waterbodies (van Deventer et al., 2020)

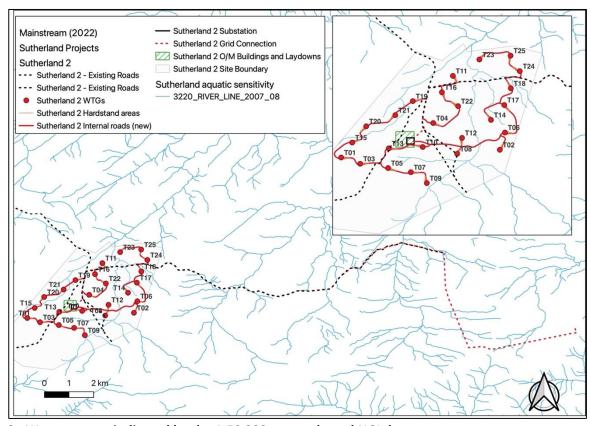


Figure 3: Watercourses indicated by the 1:50 000 topocadastral NGI data

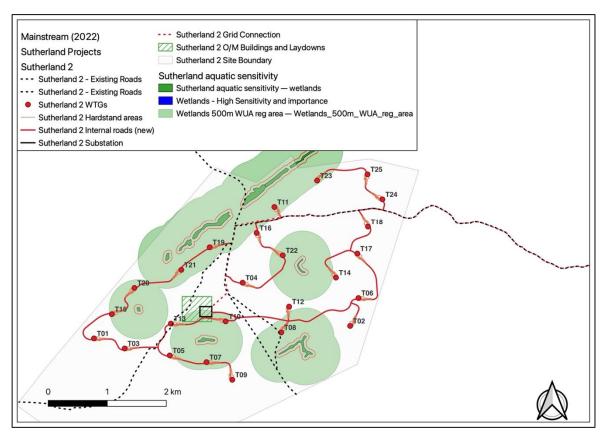


Figure 4a: Confirmed and delineated waterbodies in relation to the proposed infrastructure as well as any of the regulated WUA areas

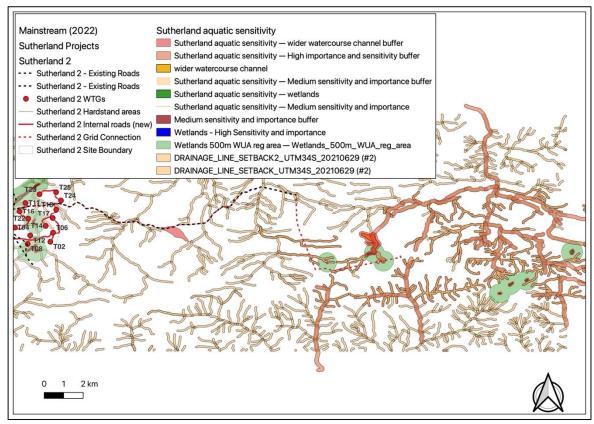


Figure 4b: Confirmed and delineated waterbodies in relation to the proposed infrastructure as well as any of the regulated WUA areas

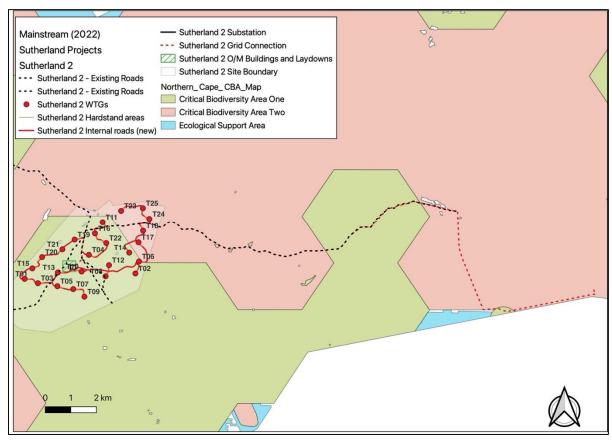


Figure 5: Northern Cape Biodiversity Spatial Plan

The Present Ecological State (PES) of a river, watercourse or wetland represents the extent to which it has changed from the reference or near pristine condition (Category A) towards a highly impacted system where there has been an extensive loss of natural habit and biota, as well as ecosystem functioning (Category E).

The PES scores were revised for the country and based on newer models, aspects of functional importance as well as direct and indirect impacts have been included (DWS, 2014). The new PES system incorporates Ecological Importance (EI) and Ecological Sensitivity (ES) separately as opposed to Ecological Importance and Sensitivity (EIS) in the old model, although the new model is still heavily centred on rating rivers using broad fish, invertebrate, riparian vegetation and water quality indicators. The Recommended Ecological Category (REC) is still contained within the new models, with the default REC being B, when little or no information is available to assess the system or when only one of the above-mentioned parameters are assessed or the overall PES is rated between a C or D.

All the systems assessed by DWS (2014) on a Subquaternary level within the study area were rated as follows:

Subquaternary Catchment Number	Present Ecological Score (PES)	Ecological Importance (EI)	Ecological Sensitivity Score (ES)
7624	В	Medium	Low
7650	В	Medium	Very Low
7652	В	Medium	Very Low
7733	С	Low	Very Low
7720	А	Very High	Low
7778	А	Very High	Low

Where A = Natural, B = Largely Natural, C = Moderately Modified

Based on the information collected during the field investigations, these ratings are verified and upheld for the riverine systems. Overall, these catchment areas and subsequent rivers / watercourses are in a natural state with localised impacts in some areas, which include the following:

- Erosion and sedimentation associated with existing road crossings; and
- Impeded water flow due to several in channel farm dams or weirs.

The pans / depression and valley bottom wetlands, ranged from PES = B (Largely natural) to C (Moderately Modified), link to changes to their catchments being modified by agricultural encroachment.

4. SENSITIVITY MAPPING

Using the baseline description and field data while considering the current disturbances and site characteristics, the following features were identified, then categorized into one of number pre-determined sensitivity categories to provide protect and/or guide the layout planning and design processes of the corridor and a suitable alignment for the grid within. Aquatic sensitivity mapping categorizes feature or areas (with their buffers) into the following categories:

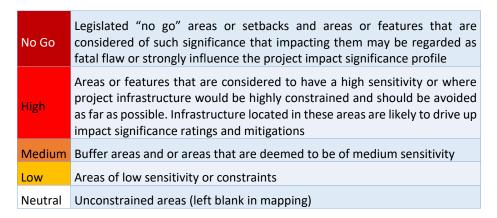


Figure 6 indicates the No-Go areas (pans and wetlands) and High sensitivity areas (broad watercourses) that have been avoided by the proposed layout options, but discussed in further detail in Table 1 below:

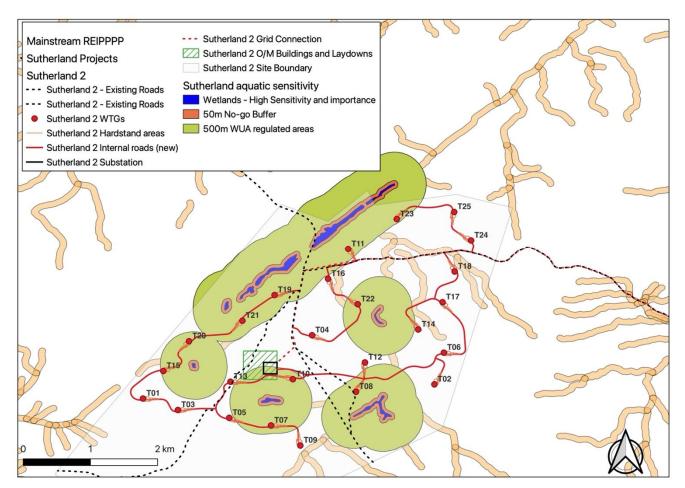
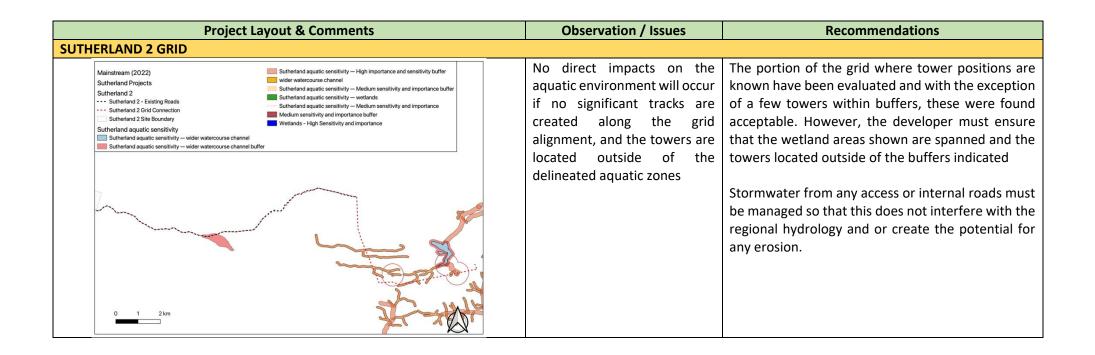


Figure 6: Results of the sensitivity analysis for Sutherland 2 WEF

Table 1: Findings of the walkdown surveys for the structures shown in Figure 6 with specific reference to habitats observed within the development layout only

Project Layout & Comments	Observation / Issues	Recommendations
THELAND 2 WEF AND COLLECTOR SUBSTATION		
Mainstream REIPPPP Sutherland Projects Sutherland 2 - Existre Roads Suther	The proposed turbine localities and substation / O&M Building site have avoided any of the aquatic systems delineated, regardless of the sensitivity.	It was recommended that during the final design phase that any laydowns, temporary construction areas as well as the crane pads / hardstands be located outside of any of the delineated systems. This includes the internal road network, that should in particular avoid any of the wetland areas, and will only require 5 new crossings over medium sensitivity watercourses. Stormwater from any access or internal roads must be managed so that this does not interfere with the regional hydrology and or create the potential for any erosion.



5. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the walk-down, several sensitive areas are present within the region, but based on the field assessments, the **final layouts and alignments will be located within disturbed or less sensitive areas**. Furthermore, no important aquatic riparian habitats and or wetlands will be disturbed by the proposed Sutherland 2 WEF and Grid layout, and therefore the proposed layout is deemed acceptable. This is however based on the assumption that any access along the grid corridors will also not be located in any of the No-go areas shown in Figure 6.

The following recommendations are reiterated:

- Vegetation clearing should occur in in a phased manner in accordance with the construction programme, to minimise erosion and/or run-off.
- All construction materials, including fuels and oil, should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses.
- No stockpiles are allowed within any of the delineated waterbodies shown in this assessment.
- All cleared areas must be re-vegetated after construction has been completed.
- All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor.

6. APPENDIX 1 – SPECIALIST CV

CURRICULUM VITAE

- Dr Brian Michael Colloty
- 7212215031083

1 Rossini Rd

Pari Park

Port Elizabeth, 6070

brianc@envirosci.co.za

083 498 3299

Profession: Ecologist (Pr. Sci. Nat. 400268/07)

Member of the South African Wetland Society

Specialisation: Ecology and conservation importance rating of inland habitats, wetlands, rivers & estuaries

Years experience: 25 years

SKILLS BASE AND CORE COMPETENCIES

- 25 years experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive throughout Africa. Experience also includes biodiversity and ecological assessments with regard sensitive fauna and flora, within the marine, coastal and inland environments. Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Current projects also span all nine provinces in South Africa.
- 15 years experience in the coordination and management of multi-disciplinary teams, such as specialist teams for small to large scale EIAs and environmental monitoring programmes, throughout Africa and inclusive of marine, coastal and inland systems. This includes project and budget management, specialist team management, client and stakeholder engagement and project reporting.
- GIS mapping and sensitivity analysis

TERTIARY EDUCATION

1994: B Sc Degree (Botany & Zoology) - NMU

1995: B Sc Hon (Zoology) - NMU

1996: M Sc (Botany - Rivers) - NMU

2000: Ph D (Botany – Conservation Rating Systems (wetlands) – NMU

EMPLOYMENT HISTORY

- 1996 2000 Researcher at Nelson Mandela University SAB institute for Coastal Research & Management. Funded by the WRC to develop estuarine importance rating methods for South African Estuaries
- 2001 January 2003 Training development officer AVK SA (reason for leaving sought work back in the environmental field rather than engineering sector)

- February 2003- June 2005 Project manager & Ecologist for Strategic Environmental Focus (Pretoria) (reason for leaving sought work related more to experience in the coastal environment)
- July 2005 June 2009 Principal Environmental Consultant Coastal & Environmental Services (reason for leaving company restructuring)
- June 2009 August 2018 Owner / Ecologist of Scherman Colloty & Associates cc
- August 2018 Owner / Ecologist EnviroSci (Pty) Ltd

SELECTED RELEVANT PROJECT EXPERIENCE

World Bank IFC Standards

- Botswana South Africa 400kv transmission line (400km) biodiversity assessment on behalf of Aurecon current
- Farim phosphate mine and port development, Guinea Bissau biodiversity and estuarine assessment on behalf of Knight Piesold Canada 2016.
- Tema LNG offshore pipeline EIA marine and estuarine assessment for Quantum Power (2015).
- Colluli Potash South Boulder, Eritrea, SEIA marine baseline and hydrodynamic surveys co-ordinator and coastal vegetation specialist (coastal lagoon and marine) (on-going).
- Wetland, estuarine and riverine assessment for Addax Biofeuls Sierra Leone, Makeni for Coastal & Environmental Services: 2009
- ESHIA Project manager and long-term marine monitoring phase coordinator with regards the dredge works required in Luanda bay, Angola. Monitoring included water quality and biological changes in the bay and at the offshore disposal outfall site, 2005-2011

South African

- Plant search and rescue, for NMBM (Driftsands sewer, Glen Hurd Drive), Department of Social Development (Military veterans housing, Despatch) and Nxuba Wind Farm, current
- Wetland specialist appointed to update the Eastern Cape Biodiversity Conservation Plan, for the Province
 on behalf of EOH CES appointment by SANBI current. This includes updating the National Wetland
 Inventory for the province, submitting the new data to CSIR/SANBI.
- CDC IDZ Alien eradication plans for three renewable projects Coega Wind Farm, Sonop Wind Farm and Coega PV, on behalf of JG Afrika (2016 2017).
- Nelson Mandela Bay Municipality Baakens River Integrated Wetland Assessment (Inclusive of Rehabilitation and Monitoring Plans) for CEN IEM Unit Current
- Rangers Biomass Gasification Project (Uitenhage), biodiversity and wetland assessment and wetland rehabilitation / monitoring plans for CEM IEM Unit current.
- Gibson Bay Wind Farm implementation of the wetland management plan during the construction and operation of the wind farm (includes surface / groundwater as well wetland rehabilitation & monitoring plan) on behalf of Enel Green Power - current
- Gibson Bay Wind Farm 133kV Transmission Line wetland management plan during the construction of the transmission line (includes wetland rehabilitation & monitoring plan) on behalf of Eskom 2016.
- Tsitsikamma Community Wind Farm implementation of the wetland management plan during the construction of the wind farm (includes surface / biomonitoring, as well wetland rehabilitation & monitoring plan) on behalf of Cennergi completed May 2016.
- Alicedale bulk sewer pipeline for Cacadu District, wetland and water quality assessment, 2016
- Mogalakwena 33kv transmission line in the Limpopo Province, on behlaf of Aurecon, 2016
- Cape St Francis WWTW expansion wetland and passive treatment system for the Kouga Municipality, 2015
- Macindane bulk water and sewer pipelines wetland and wetland rehabilitation plan 2015

- Eskom Prieska to Copperton 132kV transmission line aquatic assessment, Northern Cape on behalf of Savannah Environmental 2015.
- Joe Slovo sewer pipeline upgrade wetland assessment for Nelson Mandela Bay Municipality 2014
- Cape Recife Waste Water Treatment Works expansion and pipeline aquatic assessment for Nelson Mandela Bay Municipality 2013
- Pola park bulk sewer line upgrade aquatic assessment for Nelson Mandela Bay Municipality 2013
- Transnet Freight Rail Swazi Rail Link (Current) wetland and ecological assessment on behalf of Aurecon for the proposed rail upgrade from Ermelo to Richards Bay
- Eskom Transmission wetland and ecological assessment for the proposed transmission line between Pietermaritzburg and Richards Bay on behalf of Aurecon (2012).
- Port Durnford Exarro Sands biodiversity assessment for the proposed mineral sands mine on behalf of Exxaro (2009)
- Fairbreeze Mine Exxaro (Mtunzini) wetland assessment on behalf of Strategic Environmental Services (2007).
- Wetland assessment for Richards Bay Minerals (2013) Zulti North haul road on behalf of RBM.
- Biodiversity and aquatic assessments for 125 renewable projects in the past 9 years in the Western, Eastern, Northern Cape, KwaZulu-Natal and Free State provinces. Clients included RES-SA, RedCap, ACED Renewables, Mainstream Renewable, GDF Suez, Globeleq, ENEL, Abengoa amongst others. Particular aquatic sensitivity assessment and Water Use License Applications on behalf of Mainstream Renewable Energy (8 wind farms and 3 PV facilities.), Cennergi / Exxaro (2 Wind farm), WKN Wind current (2 wind farms & 2 PV facilities), ACED (6 wind farms) and Windlab (3 Wind farms) were also conducted. Several of these projects also required the assessment of the proposed transmission lines and switching stations, which were conducted on behalf of Eskom.
- Vegetation assessments on the Great Brak rivers for Department of Water and Sanitation, 2006 and the Gouritz Water Management Area (2014)
- Proposed FibreCo fibre optic cable vegetation assessment along the PE to George, George to Graaf Reinet, PE to Colesburg, and East London to Bloemfontein on behalf of SRK (2013-2015).

7. APPENDIX 2 – DWS RISK ASSESSMENT MATRIX

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