EZELSJACHT SOLAR ENERGY FACILITY, GRID CONNECTION AND ASSOCIATED INFRASTRUCTURE NEAR DE DOORNS,

IN THE WESTERN CAPE PROVINCE

AQUATIC IMPACT ASSESSMENT

SITE SENSITIVITY VERIFICATION REPORT

FOR

SLR CONSULTING (Pty) Ltd

BY

EnviroSci (Pty) Ltd

Dr Brian Colloty

1 Rossini Rd

Pari Park

Gqeberha

6070

DATE

21/10/2022

DRAFT REPORT

CONTENTS

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd ("Mainstream") is proposing the construction and operation of one (1) Solar photovoltaic (PV) Energy Facility (SEF), Battery Energy Storage System (BESS), and associated infrastructure with a generation capacity of up to 110 megawatts.

In order to evacuate the energy generated by the SEF to supplement the national grid, Mainstream is also proposing an electrical grid infrastructure/ grid connection project which will be assessed in a separate Basic Assessment Processes (i.e. EGI for SEF).

The proposed SEF site is located approximately 13 km south-east of the town De Doorns, within the Cape Winelands District Municipality of the Western Cape Province. The site proposed for the SEF component falls entirely within the Breede Valley Local Municipality.

Applicant	Project Name	Capacity (MW)	Affected Property
South Africa Mainstream Renewable Power Developments (Pty) Ltd	Ezelsjacht Solar PV Energy Facility (SEF)	110 MW_{ac}	Portion 6 of the Farm Ratelbosch No. 149

The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing solar energy to feed into the national grid.

The proposed SEF will consist of PV Panels, internal and access roads (with a width of up to 12 m during construction), a construction laydown area/camp, Operation and Maintenance (O&M) Building and Independent Power Producer (IPP) portion of Substation, amongst other associated infrastructure. The solar PV energy facility will have a generation capacity of up to 110 MW. In addition to the infrastructure mentioned above, the SEF will also potentially include energy storage infrastructure if it is deemed economically feasible to do so. This will consist of an area for a Battery Energy Storage System (BESS) covering an extent of up to approximately 5 hectares (ha). Currently, the battery technologies being considered are either Solid State Batteries or Redox Flow Batteries.

The findings of the respective specialist studies will be used to inform the location of the Solar PV arrays. All identified sensitive and/or no-go areas (including their respective buffers) will be avoided accordingly, as required. However, as part of the proposed application / Scoping & Environmental Impact Assessment (EIA) process for the SEF project, various site area / location alternatives may be assessed for the associated infrastructure such as the O&M Buildings, IPP Substations and BESS. This is however still to be confirmed and will be communicated to the specialists.

The site areas / location alternatives for the associated infrastructure such as the O&M Buildings, IPP Substations and BESS, will also need to be assessed against the 'no-go' alternative. The 'no-go' alternative is the option of not constructing the respective projects, where the status quo of the current status and/or activities on the site would prevail.

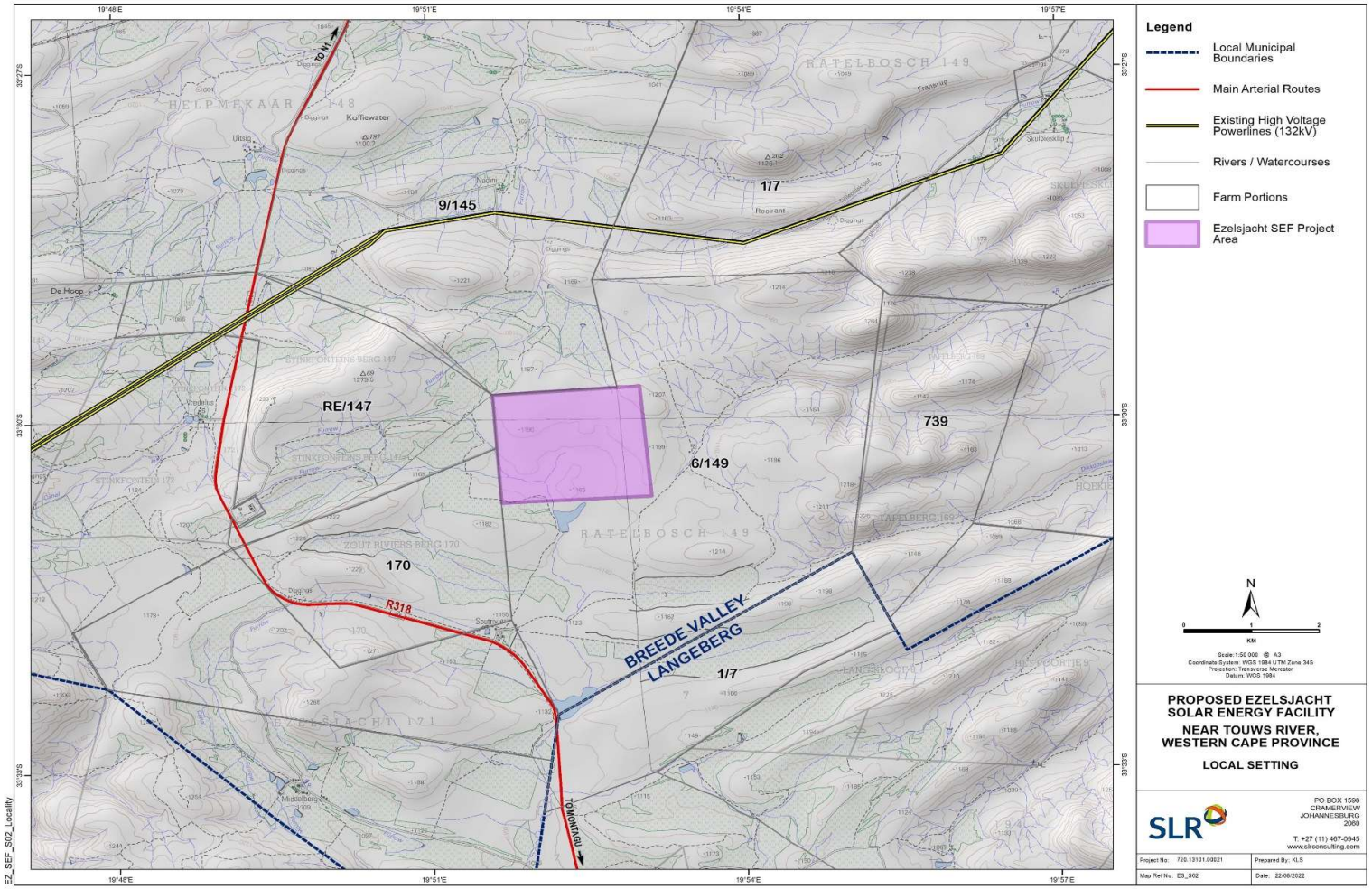

Figure 1-1: Locality Map of the Ezelsjacht SEF

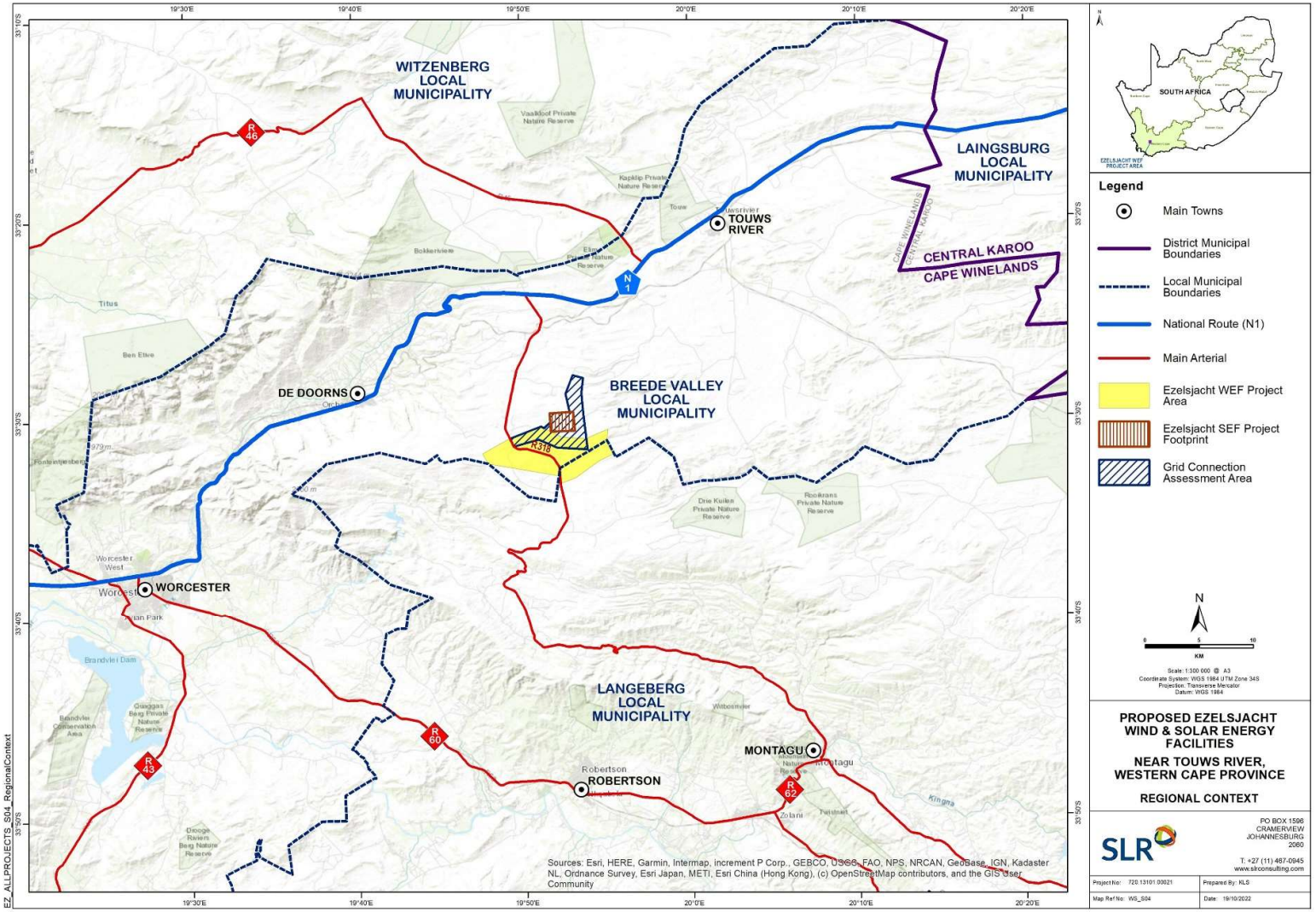

Figure 2-2: Regional Context of the Ezelsjacht SEF in relation to other projects proposed for Ezelsjacht (separate applications)

2. TECHNICAL DETAILS FOR THE PROPOSED DEVELOPMENT

Ezelsjacht SEF infrastructure	
Location of the site (centre point)	33°30'21.04"S 19°53'33.22"E
Application site area	+/- 370 hectares
Affected Farm Portions	Portion 6 of the Farm Ratelbosch No. 149
SG Codes	C08500000000014900006
Export Capacity	110 MW
Height of PV panels	Up to 5m
33kV/132kV IPP portion of onsite substation	• The 33kV/132kV IPP portion of the onsite substation will be located adjacent to the 132kV Eskom portion of the substation (EGI for WEF EA Application) within the 25ha Infrastructure Area that has been assessed. • 33kV/132kV IPP portion of the onsite substation will cover an area of approx. 120m x 120m
Battery Energy Storage System (BESS)	• BESS storage of up to 500 MWh will be located within the 25ha Infrastructure Area that has been assessed and will cover an area of approx. 5 ha. • A Battery Energy Storage System (BESS) will be located next to the IPP portion / yard of the shared onsite 33/132kV substation and will cover an area of 5 ha. The storage capacity and type of technology would be determined at a later stage during the development phase, but will most likely be either solid state or redox flow.
Roads	• Internal roads will be constructed between turbines, existing roads will be utilized as far as possible. The width of the internal roads will be up to 12m wide
Associated Infrastructure	• Operations and Maintenance Building of approx. 5ha within the 25ha infrastructure area that has been assessed. Temporary laydown or staging area, approximately 3ha. • Underground 33kV cables, buried along internal access roads where feasible; and

	outside of the road footprints and where there are topography and environmental concerns. • Overhead 33kV power lines will be constructed, using monopole structures where burying is not possible due to technical, geological, environmental or topographical constraints. 33kV overhead power lines supported by 132 kV pylons of approximately 22 m high will be required, as well as tracks for access to the pylons. • Galvanized steel fencing of approx. 1.8 m in height. • Other associated infrastructure, stores, workshops,.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations [4 December 2014, Government Notice (GN) R982, R983, R984 and R985, as amended], various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require environmental authorisation (EA) from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and the Environment (DFFE), prior to the commencement thereof. One (1) application for EA for the proposed development will be submitted to the DFFE, in the form of a Scoping & EIA process in terms of the NEMA EIA Regulations of 2014 (as amended). Dr Brian Colloty of EnviroSci (Pty) Ltd has been commissioned to verify the sensitivity of the Ezelsjacht WEF site under these specialist protocols with regard the Aquatic environment.

In accordance with GN 320 and GN 1150 (20 March 2020)[1] of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool).

3. SITE SENSITIVITY VERIFICATION METHODOLOGY

Based on the DFFE Screening Tool results, the site contains areas of very high sensitivity with regards to the Aquatic Biodiversity theme due to the presence of Critical Biodiversity Areas (CBAs), wetlands, Strategic Water Resources Areas (Tulbagh-Ashton Groundwater system) and rivers (Refer to Figure 3-1 below).

These areas were therefore then verified in this screening assessment, using desktop spatial databases, current and historical aerial imagery and a site visit conducted in September 2022.

This information was then compared to current wetland inventories, 1: 50 000 topocadastral surveys mapping and the site. A baseline map was then developed (Figure 5-1).

[1] GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation

The results of which were then used to describe the current or observed character of the aquatic systems of the site, as well as to present the applicant with fine scale delineations to take forward into the SEF design process, i.e. impact avoidance of any of the Very High (No-go) areas, while keeping any additional impacts e.g. road crossings over Medium and or Low sensitivity areas to a minimum.

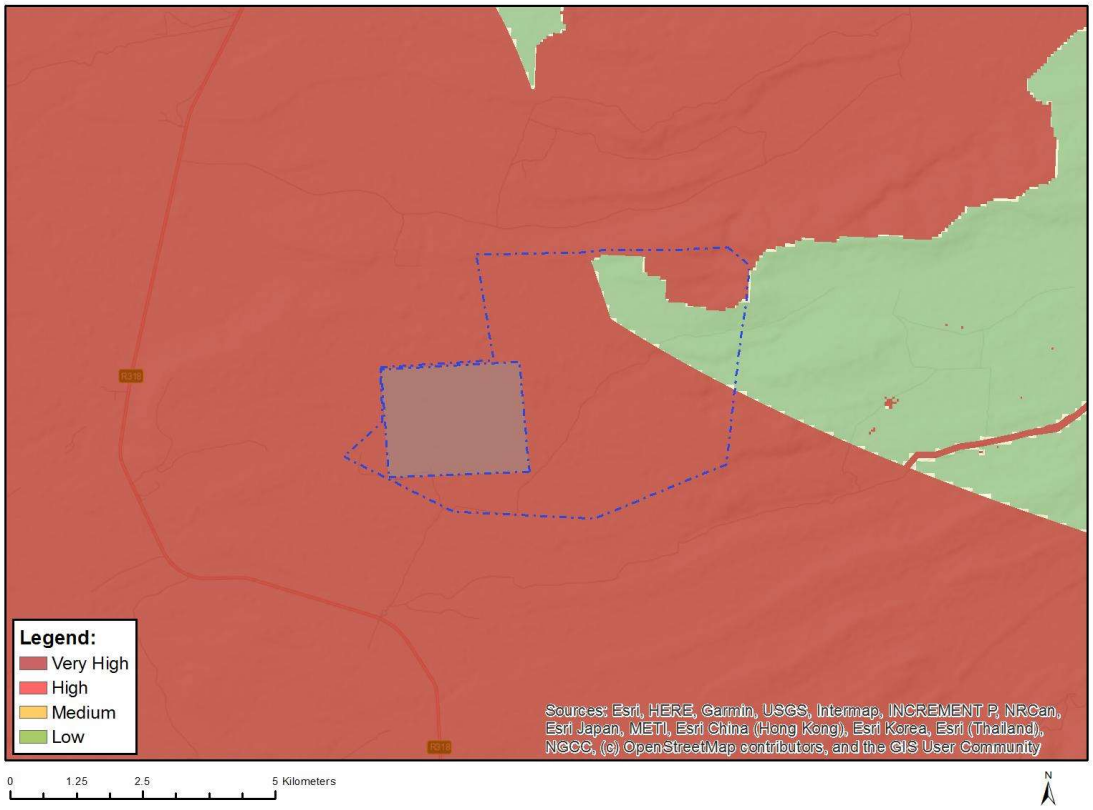

Figure 3-1. DFFE Screening Tool outcome for the aquatic biodiversity theme for the Ezelsjacht Solar Energy Facility site

4. OUTCOME OF SITE SENSITIVITY VERIFICATION

The site is located within quaternary catchments J12D and H40A, in the Breede-Gourtiz Water Management Area. The land has largely been transformed to cultivated fields and there are few natural areas remaining. Untransformed land is confined to drainage lines and steep slopes. The area has been subjected to significant habitat loss.

The aquatic features were identified and delineated in-field during a site visit (total of three days) conducted in 2-5 September 2022. It was determined that the proposed project has the potential to impact the following aquatic features:

- Riverine (minor drainage lines): Incised channels with limited riparian vegetation or part of an alluvial valley;
- Wetland: Valley bottom wetlands, both channelled and unchanneled;
- Wetland: Seeps; and
- Artificial: Dams.

The valley bottom wetlands, have portions of intact habitat which obtained an overall C rating for Present Ecological State (PES). However, there are reaches which have been largely modified and have deviated significantly from the reference condition. The minor drainage lines and seep wetlands remaining in the study area have been significantly impacted by past land transformation and continued agricultural activities. These aquatic systems are highly degraded and generally received a PES rating of D or E. The continued erosion within these drainage areas, coupled with the excessive sediment inputs from the cultivated and ploughed lands, has resulted in sedimentation of the larger valley bottom wetlands downslope.

There are impoundments in almost every watercourse in the study area and this has resulted in flow modification and erosion within the wetlands and riverine systems. The loss of habitat and modified condition of the systems means that they are unable to support species biodiversity and do not function naturally. However, the remaining habitat must be protected from any further deterioration in ecological state, especially the valley bottom wetlands.

Based on the status of the environment and past disturbances, the aquatic environment was mapped and assessed using an accepted methodology to determine the overall sensitivity and recommended constraint levels. The respective aquatic features in the form of a .Shp file (WGS84) have been supplied to the applicant with and without buffers. It is recommended that a 15m aquatic buffer zone be applied to the seeps and other minor drainage lines, while rivers and valley bottom wetlands should be afforded an aquatic buffer of 25m in width

5. CONCLUSION

Based on the above outcomes, the specialist **agrees** with the environmental sensitivities identified on site., however the specialist findings (informed by a site visit)present fine scale delineation of the systems such as those shown in Plate 1.

Plate 1: Seep wetland

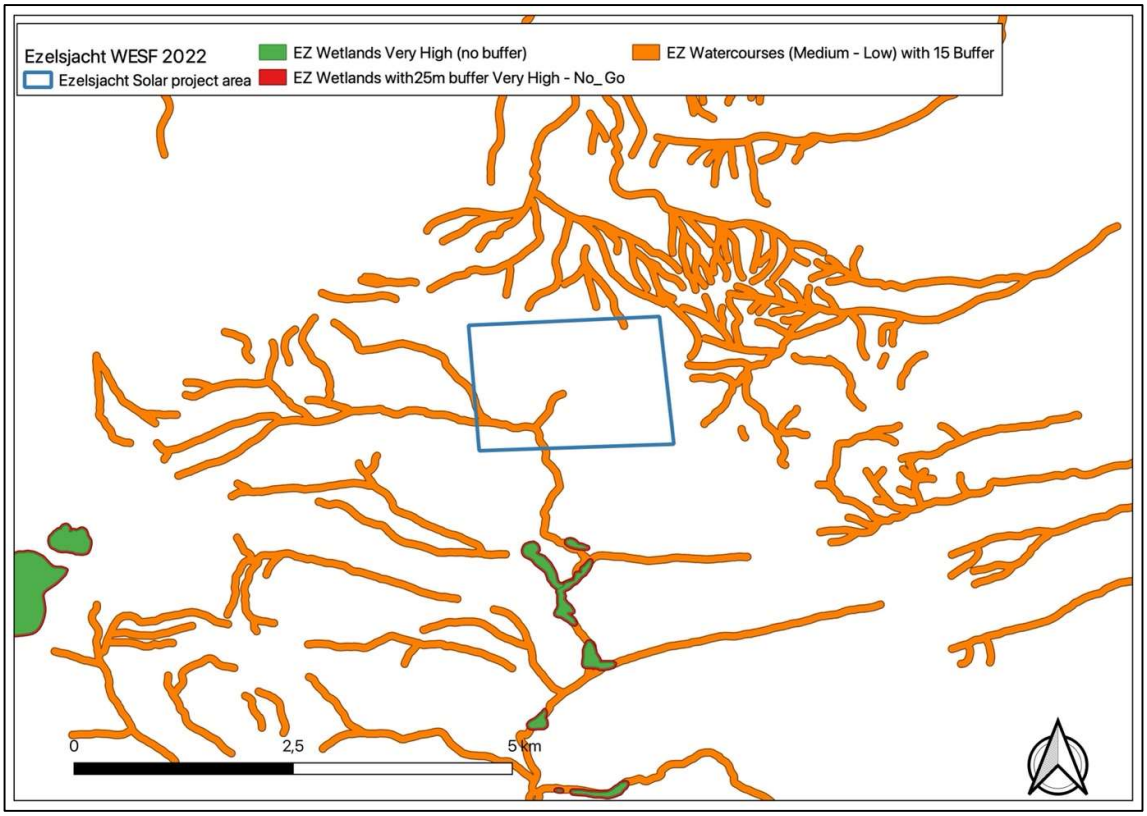

Figure 5-1. Environmental sensitivity map produced by the aquatic specialist for the SEF and grid option farm boundaries

Motivation of the outcomes of the sensitivity map and key conclusions

In conclusion, the DFFE Screening Tool identified one sensitivity rating within the development footprint, namely, *Very high.*

Although there is some overlap with the findings on site and the Screening Tool's outcome (i.e. confirmation of Very High sensitivity theme on site), the development footprint contains various other sensitivities (Very high and Medium - low) that were identified following the undertaking of infield assessment and spatial input considerations.

The environmental sensitivity input received from the aquatic ecology specialist will be taken forward and considered within the formal Environmental Authorisation (EA) process and the impact to these areas will be assessed in an Aquatic Biodiversity Assessment Report (aligned to the relevant protocols and requirements of Appendix 6 of the EIA regulations). Appropriate layout and development restrictions will be implemented within the development footprint to ensure that the impact to aquatic ecology is deemed acceptable by the aquatic ecologist.

ANNEXURES – DECLARATION AND CV

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I .....Dr Brian Colloty..... as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
  - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
  - ~~am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);~~
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

Signature of the EAP: Date: 7/11/2022

EnviroSci (Pty) Ltd

Name of company (if applicable):

FORM NO. BAR10/2019

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CURRICULUM VITAE

Dr Brian Michael Colloty
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083 498 3299

Profession: Ecologist & Environmental Assessment Practitioner (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 of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation 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 – Estuaries & Mangroves) – 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

- Kenmare Mining Pilivilli, Mozambique - wetland (mangroves, peatlands and estuarine) assessment and biodiversity offset analysis - current
- 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 and animal search and rescue for the Karusa and Soetwater Wind Farms on behalf of Enel Green Power, Current
- Plant and animal search and rescue for the Nxuba, Oyster Bay and Garob Wind Farms on behalf of Enel Green Power, 2018 - 2019
- Plant and Animal Search and Rescue for the Port of Ngqura, Transnet Landside infrastructure Project, with development and management of on site nursery, Current
- Plant and Animal Search and Rescue for the Port of Ngqura, OTGC Tank Farm Project (2019)
- 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 – 2017
- 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 - 2018
- 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 118 renewable projects in the past 9 years in the Western, Eastern, Northern Cape, KwaZulu-Natal and Free State provinces. Clients included RES-SA, Red Cap, 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, Cennergi / Exxaro, WKN Wind current, ACED, 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).