



# DRAFT SCOPING REPORT

Scoping and Environmental  
Impact Assessment for the  
proposed development of the  
204.6 MW Kwagga Wind  
Energy Facility 3 near Beaufort  
West, Western Cape

MAY 2021

Prepared for:  
Kwagga Wind Energy  
Facility 3 (Pty) Ltd

Prepared by:  
CSIR Environmental  
Management Services  
PO Box 320, Stellenbosch  
7599  
South Africa



# SCOPING AND ENVIRONMENTAL IMPACT ASSESSMENT

for the

## Proposed Development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

# DRAFT SCOPING REPORT

May 2021

***Prepared for:***

Kwagga Wind Energy Facility 1 (Pty) Ltd

***Prepared by:***

CSIR

Council for Scientific and Industrial Research (CSIR)

PO Box 320, Stellenbosch 7599

Tel: +27 21 888 2400

Fax: +27 21 888 2693

***Lead Authors:***

Paul Lochner, Lizande Kellerman, Dhiveshni Moodley and Rohaida Abed (CSIR)

***Specialists:***

Johann Lanz; Toni Belcher; Dr Jayson Orton; Dr John Almond; Dr Noel van Rooyen; Prof Gretel van Rooyen; Ashlin Bodasing; Michael Brits, Mark Hodgson; Dr Brett Williams; Jason Hutton; Chris van Rooyen; Albert Froneman; Sue Reuther; Iris Wink; Adrian Johnson and Menno Klapwijk

***Mapping:***

Dhiveshni Moodley (CSIR)

***Formatting and Desktop Publishing:***

Magdel van der Merwe (DTP Solutions)

© CSIR 2021. All rights to the intellectual property and/or contents of this document remain vested in the CSIR. This document is issued for the sole purpose for which it is supplied. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by means electronic, mechanical, photocopying, recording or otherwise without the express written permission of the CSIR. It may also not be lent, resold, hired out or otherwise disposed of by way of trade in any form of binding or cover than that in which it is published.



# REPORT DETAILS

<b>Title:</b>	Scoping and Environmental Impact Assessment (EIA) for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape: DRAFT SCOPING REPORT
<b>Purpose of this report:</b>	<p>The purpose of this Draft Scoping Report is to:</p> <ul style="list-style-type: none"> <li>• Present the details of and the need for the proposed project;</li> <li>• Describe the affected environment at a sufficient level of detail based on scoping level specialist input to facilitate informed decision-making;</li> <li>• Provide an overview of the Scoping and EIA Process being followed, including public consultation;</li> <li>• Provide an overview of the potential positive and negative impacts of the proposed project on the environment;</li> <li>• Provide recommendations to avoid or mitigate negative impacts and to enhance the positive benefits of the project; and</li> <li>• Provide the Plan of Study for the EIA Phase for the proposed project.</li> </ul> <p>The Draft Scoping Report is now available to all Interested and Affected Parties (I&amp;APs), Organs of State and stakeholders for a 30-day review period extending from 28 May to 28 June 2021. All comments submitted during the 30-day review will be incorporated in a detailed Comments and Responses Report, and addressed, as applicable and where relevant, and be included in the Final Scoping Report. The Final Scoping Report will be submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) for decision-making.</p>
<b>Prepared for:</b>	Kwagga Wind Energy Facility 3 (Pty) Ltd
<b>Prepared by:</b>	<p>CSIR:                  PO Box 320, Stellenbosch, 7599, South Africa                  Tel: +27 21 888 2400                  Fax: +27 21 888 2693</p>
<b>Authors:</b>	Paul Lochner, Lizande Kellerman, Dhiveshni Moodley and Rohaida Abed
<b>Formatting and Desktop Publishing:</b>	Magdel van der Merwe, DTP Solutions
<b>Date:</b>	May 2021
<b>To be cited as:</b>	<p>CSIR, 2021. Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 (i.e. Kwagga WEF 3) near Beaufort West in the Western Cape. CSIR Report Number: <i>Pending</i></p>



# REPORT CONTENTS

---

## PART A: MAIN REPORT

### Executive Summary

<b>Chapter 1</b>	Introduction
<b>Chapter 2</b>	Project Description
<b>Chapter 3</b>	Description of the Affected Environment
<b>Chapter 4</b>	Approach to EIA Process and Public Participation
<b>Chapter 5</b>	Project Alternatives
<b>Chapter 6</b>	Issues and Potential Impacts
<b>Chapter 7</b>	Plan of Study for EIA

## PART B: APPENDICES

<b>Appendix A</b>	Curriculum Vitae of the Environmental Assessment Practitioners
<b>Appendix B</b>	Declaration of the Environmental Assessment Practitioners
<b>Appendix C</b>	Database of Interested and Affected Parties
<b>Appendix D</b>	Public Participation
<b>Appendix E</b>	Pre-Consultation with the Competent Authority
<b>Appendix F</b>	Scoping inputs from Specialists
<b>Appendix G</b>	Additional Information

Scoping and Environmental Impact Assessment for the proposed development of the  
204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West, Western Cape

# Executive Summary



## **INTRODUCTION**

The Project Developer, ABO Wind renewable energies (Pty) Ltd is proposing the construction of three Wind Energy Facilities (WEFs) and its associated infrastructure, on behalf of three separate Project Applicants, in the Central Karoo District Municipality situated to the south of Beaufort West in the Western Cape Province. The project details are provided in Table A below. **It must be noted that this report only covers the proposed 204.6 MW Kwagga Wind Energy Facility 3 ('Kwagga WEF 3'), as detailed below. Separate reports are provided for the remaining WEF projects.**

**Table A. Project Names, Applicants and the main Affected Farm Portions**

Project Name	Project Applicant	Capacity	Affected Farm Portions
Kwagga WEF 1 (facility)	Kwagga Wind Energy Facility 1 (Pty) Ltd	279 MW	<ul style="list-style-type: none"> <li>• Tyger Poort 376 / 3</li> <li>• Dwaalfontein Wes 377 / RE</li> <li>• Dwaalfontein Wes 377 / 1</li> <li>• Dwaalfontein 379 / RE</li> </ul>
Kwagga WEF 1 (access road)			<ul style="list-style-type: none"> <li>• Wolve Kraal 17 / RE</li> <li>• Wolve Kraal 17 / 7, 10, 11 and 12</li> </ul>
Kwagga WEF 2	Kwagga Wind Energy Facility 2 (Pty) Ltd	341 MW	<ul style="list-style-type: none"> <li>• Wolve Kraal 17 / RE</li> <li>• Wolve Kraal 17 / 1, 3, 6, 7, 8, 9, 10, 11, and 12</li> <li>• Annex Wolve Kraal 18 / RE</li> <li>• Annex Welbedacht 19 / RE</li> </ul>
Kwagga WEF 3	Kwagga Wind Energy Facility 3 (Pty) Ltd	204.6 MW	<ul style="list-style-type: none"> <li>• Arthurs Kraal 386 / 1, 2, 3</li> <li>• Annex Taaibos 21 / RE</li> <li>• Cyferfontein 115 / 4, 5, 6, 8</li> <li>• Muis Kraal 373 / 5, 7</li> </ul>

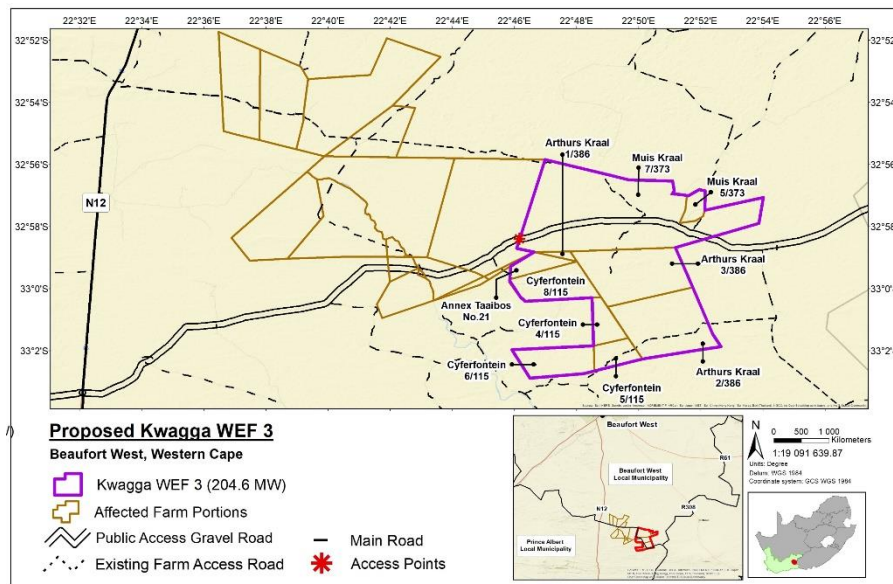
The proposed Kwagga WEF 1 will be located in the Beaufort West Local Municipality, with the new access road to be constructed linking the proposed Kwagga WEF 1 project site with the R308 Rietbron bound public access road to the south of the site will be located in the Prince Albert Local Municipality, whereas the proposed Kwagga WEF 2 will be entirely located in the Prince Albert Local Municipality, and the Kwagga WEF 3 will be located in both these local municipalities.

The proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 are not located within any of the Renewable Energy Development Zones (REDZs) gazetted in Government Gazette 41445, GN R114 on 16 February 2018; and Gazette 44191, GN R144 on 26 February 2021. The proposed Kwagga WEFs are also not located within any of the Strategic Transmission Corridors gazetted in Government Gazette 41445, GN R113 on 16 February 2018. Therefore, a full Scoping and EIA Process in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended) is being undertaken for each of the three proposed WEFs with a 107 decision-making timeframe, as opposed to a BA Process and 57-day decision-making timeframe allowed for in the REDZs and strategic transmission corridors. The Competent Authority for the proposed projects is the National Department of Forestry, Fisheries and the Environment (DFFE).

An integrated Public Participation Process is being undertaken for the proposed projects.

The Draft Scoping Report was released to all Interested and Affected Parties (I&APs), Organs of State and stakeholders for a 30-day review period, extending from 28 May to 28 June 2021. All comments submitted during the 30-day review will be incorporated into a detailed Comments and Responses Report, and addressed, as applicable and where relevant, and will be included in the Final Scoping Report. The Final Scoping Report will then be submitted to the DFFE, in accordance with Regulation 21 (1) of the 2014 NEMA EIA Regulations (as amended), for decision-making.

## PROJECT LOCATION



**Figure A. Locality Map of the Proposed Kwagga WEF 3 Project**

The locality of the proposed Kwagga WEF 3 project is shown in Figure A. The co-ordinates of the proposed project site are detailed in Chapter 2 of this Draft Scoping Report.

## PROJECT BASIC ASSESSMENT TEAM

In accordance with Regulation 12 (1) of the 2014 NEMA EIA Regulations (as amended), the Project Developer has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the required Scoping and EIA Processes in order to determine the biophysical, social and economic impacts associated with undertaking the proposed development. The project team, including the relevant specialists, is indicated in Table B below.

**Table B. Project Team for the Kwagga WEF 3 Scoping and EIA Process**

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
<i>Environmental Management Services (CSIR)</i>		
Paul Lochner ( <i>Registered EAP (2019/745)</i> )	CSIR	Technical Advisor and Quality Assurance
Rohaida Abed ( <i>Pr.Sci.Nat.</i> )	CSIR	Project Review
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Project Lead
Dhiveshni Moodley ( <i>Cand.Sci.Nat.</i> )	CSIR	Project Manager
<i>Specialists</i>		
Johann Lanz ( <i>Pr.Sci.Nat.</i> )	Private	Agriculture and Soils Compliance Statement
Dr Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology, Palaeontology and Cultural Landscape)
Dr John Almond	Natura Viva cc	
Chris van Rooyen, Albert Froneman ( <i>Pr.Sci.Nat.</i> )	Chris van Rooyen Consulting	Avifauna Impact Assessment
Ashlin Bodasing, Michael Brits	ARCUS Consultancy Services Ltd	Bat Impact Assessment
Toni Belcher ( <i>Pr.Sci.Nat.</i> )	Private	Aquatic Biodiversity and Species Impact Assessment
Dr Noel van Rooyen ( <i>Pr.Sci.Nat.</i> )	Ekotrust cc	Terrestrial Biodiversity and Species Impact Assessment
Dr Brett Williams	Safetrain cc T/A Safetech	Noise Impact Assessment

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Menno Klapwijk	Bapela Cave Klapwijk cc	Visual Impact Assessment
Iris Wink, Adrian Johnson	JG Afrika (Pty) Ltd	Traffic Impact Assessment
Sue Reuther	SRK Consulting (Pty) Ltd	Socio-Economic Impact Assessment
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Civil Aviation Compliance Statement
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Defence Site Sensitivity Verification

## **PROJECT DESCRIPTION**

It is important to point out at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase (subsequent to the issuing of EA, should it be granted for the proposed project).

A summary of the key components of the proposed Kwagga WEF 3 project is provided in Table C below.

**Table C. Summary of the proposed Kwagga WEF 3 project components and associated infrastructure**

Infrastructure	Description
Number of turbines:	33
Turbine Capacity:	At least 6.2 MW
Hub Height:	Up to 180 m
Rotor Diameter:	Up to 200 m
Blade length:	Up to 100 m
WEF Project Size / Generation Capacity:	Approximately 204.6 MW
On-site substation hub:	The proposed project will include two on-site substation hubs incorporating the facility substation, switchyard, collector infrastructure and associated O&M buildings. Each substation location will have a maximum development footprint of 25 ha and built infrastructure will not exceed 10 m in height.
Area of on-site substation hub alternatives:	
Alternative 1	20 ha
Alternative 2	25 ha
Alternative 3	20 ha
Height of substation hub:	Maximum 10 m
Capacity of on-site substation:	33/132 kV
Area occupied by construction compound and lay down area:	Six (6) ha (300 m x 200 m) Four possible locations or placement alternatives for the construction compound and laydown area have been identified and will be assessed during the EIA Phase.
Internal service roads:	There are a number of existing gravel farm roads (some just jeep tracks) with widths ranging between 4 m and 6 m located around and within the proposed Kwagga WEF 3 site boundary



	(see Figure 2.2). The width of the existing internal service roads will be extended to a maximum width of 10 m, where necessary. The existing internal service road network in addition to all additional internal service roads that are to be constructed on the project site will be confirmed by the Project Developer during the EIA Phase. The length of the internal service road network for the proposed Kwagga WEF 3 is approximately 33 km. The specialists will assess all proposed internal service roads during the EIA Phase.
Concrete batching plant:	50 m x 50 m (on-site batching) (0.25 ha)
Operational and Maintenance (O&M) Building:	1 ha
General temporary Hardstand Area (boom erection, storage, and assembly area):	1 ha
Battery Energy Storage System (BESS):	<p>The BESS will cover an area of approximately five (5) ha, have a maximum height of 8 m (as recommended) and have a storage capacity of up to 500 MW/500 MWh.</p> <p>The BESS technologies that are considered include:</p> <ul style="list-style-type: none"> <li>- Lead Acid and Advanced Lead Acid</li> <li>- Lithium ion, NiCd, NiMH-based Batteries</li> <li>- High Temperature (NaS, Na-NiCl<sub>2</sub>, Mg/PB-Sb)</li> <li>- Flow Batteries (VRFB, Zn-Fe, Zn-Br)</li> </ul>
Site Access:	The proposed Kwagga WEF 3 project site can be accessed via the N12 main road, which is situated to the west of the site, as well as from the R308 Rietbron bound public access gravel road that traverses the northern section of the site. The N12 is a surfaced national road that connects Beaufort West and the N1 main road in the north with Klaarstroom, De Rust, Oudtshoorn and other Garden Route towns to the south. The R308 Rietbron bound public access road is a well-maintained gravel road with widths ranging between 6 m and 8 m, and will be widened to a maximum width of 10 m, where necessary.
Proximity to grid connection:	Eskom's Droërivier Substation is ideally located within the Northern Corridor of the Strategic Transmission Corridors (as gazetted on 16 February 2018, GN R113) and approximately 65 km north of the proposed Kwagga WEF 3. It is proposed that a 132 kV overhead transmission line, which will be constructed for the proposed Kwagga WEF 3 at a later stage, will extend between the proposed on-site collector substation at the Kwagga WEF 3 and the existing Droërivier-Proteus 400 kV line that runs parallel to the N12 in a north-south direction and connects Beaufort West with the George/Mossel Bay area further south.

	<p><b>Note from the CSIR:</b> A separate Environmental Assessment Process will be undertaken at a later stage once the grid connection and the 132 kV power line routing for the proposed Kwagga WEF 3 has been confirmed, and hence does not form part of this S&amp;EIA Process.</p>
<p>Fencing:</p>	<p>For various reasons such as security, public protection and lawful requirements, the proposed built infrastructure on site will be secured via the installation of appropriate fencing. Existing livestock fencing on the affected farms portions may be upgraded in places where deemed insufficiently secure, whereas permanent fencing will be required around the O&amp;M area and on-site substation hubs. Access points will be managed and monitored by an appointed security service provider. The type and height of fencing to be installed will be confirmed during detailed design as the development progresses.</p>

### **NEED FOR THE ENVIRONMENTAL IMPACT ASSESSMENT**

As noted above, in terms of the 2014 NEMA EIA Regulations (as amended) published in GN R326, R327, R325 and R324, a full Scoping and EIA Process is required for the proposed project. The need for the Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

- *“The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure”.*

Chapter 4 of this Draft Scoping Report contains the detailed list of activities contained in GN R327, R325 and R324 which are triggered by the various project components and thus form part of this Scoping and EIA Process.

The purpose of the Scoping and EIA Process is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The Scoping and EIA therefore needs to show the Competent Authority, the DFFE; and the project proponent, Kwagga Wind Energy Facility 3 (PTY) Ltd, what the consequences of their choices will be in terms of impacts on the biophysical and socio-economic environment and how such impacts can be, as far as possible, enhanced or mitigated and managed as the case may be.

### **POTENTIAL ISSUES AND IMPACT ASSESSMENT**

Potential issues and impacts associated with the proposed Kwagga WEF 3 project have been identified based on scoping level assessment of the environmental status quo of the receiving environment (environmental, social and heritage features present on site – as discussed in Chapter 3 of this Scoping Report) and input from specialists that form part of the EIA project team. These potential issues and impacts, summarised in Table D below, will be assessed in further detail during the EIA Phase through the

specialist assessments and are included in Chapter 6 of this Scoping Report. It must be noted that additional issues may be raised during the Scoping Phase, which could potentially be assessed during the EIA Phase. The Terms of Reference (ToRs) for the various Specialist Assessments are included in Chapter 7 of this Scoping Report.

**Table D. Summary of Issues to be addressed during the EIA Phase as part of the Specialist Assessments**

Specialist Assessment / Input	Key issues to be addressed
<b>Agriculture and Soils Compliance Statement</b>	<p><b><u>Construction and Operational Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Loss of agricultural land use;</li> <li>▪ Soil degradation including erosion, topsoil loss and contamination; and</li> <li>▪ Increased financial security for farming operations<sup>1</sup>.</li> </ul>
<b>Aquatic Biodiversity and Species</b>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Disturbance and possible loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota;</li> <li>▪ The removal of indigenous riparian and instream vegetation that has the potential to reduce the ecological integrity and functionality of the watercourses;</li> <li>▪ Water demand for construction could place stress on the existing available water resources should external water sources not be utilised;</li> <li>▪ Road crossing structures if not adequately designed could impede flow in the watercourses;</li> <li>▪ Alien vegetation infestation within the aquatic features due to disturbance; and</li> <li>▪ Increased sedimentation and risks of contamination of surface water runoff during construction.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained;</li> <li>▪ Modified runoff characteristics from hardened surfaces at the turbines and the substations, as well as along the access roads that have the potential to result in erosion of hillslopes and watercourses; and</li> <li>▪ Possible increased potential for water quality impacts such as contamination from sewage generated on site because of the operation on site.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ An increased disturbance of aquatic habitat due to the increased activity on the site; and</li> <li>▪ Increased sedimentation and risks of contamination of surface water runoff.</li> </ul>
<b>Terrestrial Biodiversity and Species</b>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ The clearing of natural vegetation and resultant loss of faunal habitat;</li> <li>▪ The loss of endangered, threatened, protected and endemic plants/animals;</li> <li>▪ Direct faunal mortalities due to construction activities and increased vehicle traffic;</li> </ul>

<sup>1</sup> This potential issue is considered to have a positive impact because of the proposed development.

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> <li>▪ Increased human activity, noise and light levels;</li> <li>▪ Increased dust deposition;</li> <li>▪ Establishment of alien vegetation as a result of the clearing of the vegetation;</li> <li>▪ Increased stormwater run-off and erosion; and</li> <li>▪ Changes in animal behaviour.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Direct faunal mortalities;</li> <li>▪ Increased human activity, light and noise levels;</li> <li>▪ Establishment of alien vegetation will continue; and</li> <li>▪ Changes in animal behaviour.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Some clearing of natural vegetation due to removal of infrastructure;</li> <li>▪ Possible ingestion or ensnarement of animals due to waste material lying around;</li> <li>▪ Establishment of alien invasive vegetation; and</li> <li>▪ Increased erosion and stormwater run-off.</li> </ul>
<p><b>Avifauna Impact Assessment</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines and associated infrastructure;</li> <li>▪ The noise and movement associated with the construction activities at the project footprint will be a source of disturbance, which would lead to the displacement of avifauna from the area.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Avifauna mortality and injury through collisions with the wind turbines; and</li> <li>▪ Electrocution of priority species on the internal electrical grid network.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ The noise and movement associated with the activities at the study area will be a source of disturbance, which would lead to the displacement of avifauna from the area.</li> </ul>
<p><b>Bat Impact Assessment</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Displacement of bats due to habitat loss / habitat transformation;</li> <li>▪ Roost disturbance; and</li> <li>▪ Roost destruction.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Mortality of bats due to turbine collisions while commuting/foraging and/or due to barotrauma;</li> <li>▪ Mortality of bats due to turbine collisions during migrations; and</li> <li>▪ Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Displacement of bats due to disturbance associated with the decommissioning activities.</li> </ul>

Specialist Assessment / Input	Key issues to be addressed
Heritage Impact Assessment (including Archaeology and Cultural Landscape)	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ The destruction or disturbance of archaeological artefacts or sites;</li> <li>▪ The destruction or disturbance of graves or burial sites;</li> <li>▪ The destruction or disturbance of historic built infrastructure;</li> <li>▪ Visual intrusion of visually sensitive heritage resources and/or cultural landscape features, which might erode its association with intangible heritage.</li> </ul>
Palaeontology Impact Assessment	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations.</li> </ul>
Noise Impact Assessment	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise).</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Mechanical and aerodynamic noise from the operation of the wind turbine components.</li> </ul>
Socio-Economic Assessment	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Investment and the contribution to the national, regional and local economy<sup>1</sup>;</li> <li>▪ Generation of employment, income and skills<sup>1</sup>; and</li> <li>▪ Pressures on community fabric and resources due to an influx of jobseekers.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Lower national CO<sub>2</sub> emissions per unit of energy generated<sup>1</sup>;</li> <li>▪ Investment and the contribution to the national, regional and local economy<sup>1</sup>;</li> <li>▪ Generation of employment, income and skills<sup>1</sup>; and</li> <li>▪ Improvement of community facilities and prospects through funding of social upliftment projects<sup>1</sup>.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Loss of employment due to decommissioning of the facility.</li> </ul>
Traffic Impact Assessment	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Increase in vehicle traffic due to construction activities – Potential traffic congestion and delays on the surrounding road network and associated noise and dust pollution.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Potential traffic congestion and delays on the surrounding road network due to increased vehicle traffic<sup>2</sup>.</li> </ul>
Visual Impact Assessment	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on visual receptors;</li> <li>▪ Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors;</li> <li>▪ Potential visual impact of security and construction lighting on the nightscape of the region;</li> </ul>

<sup>2</sup> Note that the traffic generated because of the development during the operational phase will be minimal and will not have a significant impact on the surrounding road network in light of the remote and rural setting of the area.

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> <li>▪ Potential scarring in the landscape caused by earthworks and excavations; and</li> <li>▪ Increased dust emissions from heavy machinery and vehicle traffic.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on visual receptors;</li> <li>▪ Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors; and</li> <li>▪ Potential visual impact of on-site security lighting and red-flashing warning lights on top of the turbine hubs on the rural nightscape of the region.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and increased dust emissions due to decommissioning activities including disassembly of project components, heavy machinery, increased vehicle traffic and rehabilitation; and</li> <li>▪ Potential visual impact of security and construction lighting on the nightscape of the region.</li> </ul>

The effect of potential on-site impacts can be limited or reduced to acceptable levels through avoidance, minimisation and the implementation of appropriate mitigation measures and management actions during the construction, operational and decommissioning phases of this proposed development.

Therefore, based on the scoping level specialist input assessed and provided during the Scoping Phase, potential negative impacts associated with the proposed Kwagga WEF 3 project are anticipated to mainly be of **low to very low significance after mitigation**, whilst some positive socio-economic impacts of moderate significance are expected.

**Summary of where requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326) are provided in this Scoping Report**

<b>Section of the EIA Regulations</b>	<b>Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)</b>	<b>Chapter / Appendix</b>	<b>YES / NO</b>
Appendix 2 - (1)(a)	Details of - i. the EAP who prepared the report; and ii. the expertise of the EAP, including a curriculum vitae;	<b>Appendix A and Appendix B</b>	<b>Yes</b>
Appendix 2 - (1)(b)	The location of the activity, including - i. the 21 digit Surveyor General code of each cadastral land parcel; ii. where available, the physical address and farm name; iii. where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	<b>Chapter 1 and Chapter 2</b>	<b>Yes</b>
Appendix 2 - (1)(c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or if it is - i. a linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or ii. on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	<b>Chapter 2</b>	<b>Yes</b>
Appendix 2 - (1)(d)	A description of the scope of the proposed activity, including – i. all listed and specified activities triggered; ii. a description of the activities to be undertaken, including associated structures and infrastructure;	<b>Chapter 2 and Chapter 4.2</b>	<b>Yes</b>
Appendix 2 - (1)(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	<b>Chapter 4.1</b>	<b>Yes</b>
Appendix 2 - (1)(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	<b>Chapter 1.8</b>	<b>Yes</b>
Appendix 2 - (1)(g)	A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - i. details of all the alternatives considered; ii. details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	<b>i) Chapter 5.1 ii) Chapter 4.4; Appendix D; and Appendix E iii) Chapter 6.1 to 6.17 iv) Chapter 3 and Appendix F</b>	<b>Yes</b>

Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)	Chapter / Appendix	YES / NO
	<ul style="list-style-type: none"> <li>iii. a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</li> <li>iv. the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>v. the impacts and risks which have informed the identification of each alternative, including nature, significance, consequence, extent, duration, and probability of such identified impacts, including the degree to which these impacts –               <ul style="list-style-type: none"> <li>(aa) can be reversed;</li> <li>(bb) may cause irreplaceable loss of resources; and</li> <li>(cc) can be avoided, managed or mitigated;</li> </ul> </li> <li>vi. the methodology used in identifying and ranking the nature, significance, consequences, extent, duration, and probability of potential environmental impacts and risks associated with the alternatives;</li> <li>vii. positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>viii. the possible mitigation measures that could be applied and level of residual risk;</li> <li>ix. the outcome of the site selection matrix;</li> <li>x. if no alternatives, including alternative locations for the activity, were investigated, the motivation for not considering such and</li> <li>xi. a concluding statement indicating the preferred alternatives, including the preferred location of the activity;</li> </ul>	<ul style="list-style-type: none"> <li>v) Chapter 6 and Appendix F</li> <li>vi) Chapter 7.5</li> <li>vii) Chapter 6 and Appendix F</li> <li>viii) Chapter 6.15</li> <li>ix) Chapter 5.2</li> <li>x) Chapter 5.1</li> <li>xi) Not applicable. The preferred alternatives will be confirmed during the EIA Phase following detailed specialist assessment.</li> </ul>	
Appendix 2 - (1)(h)	<p>A plan of study for undertaking the environmental impact assessment process to be undertaken, including -</p> <ul style="list-style-type: none"> <li>i. a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</li> <li>ii. a description of the aspects to be assessed as part of the environmental impact assessment process;</li> <li>iii. aspects to be assessed by specialists;</li> <li>iv. a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;</li> </ul>	Section 7.1 - 7.8	Yes



Section of the EIA Regulations	Requirements for a Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations (as amended, GN R326)	Chapter / Appendix	YES / NO
	<ul style="list-style-type: none"> <li>v. a description of the proposed method of assessing duration and significance;</li> <li>vi. an indication of the stages at which the competent authority will be consulted;</li> <li>vii. particulars of the public participation process that will be conducted during the environmental impact assessment process; and</li> <li>viii. a description of the tasks that will be undertaken as part of the environmental impact assessment process;</li> <li>ix. identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</li> </ul>		
Appendix 2 - (1)(i)	<p>An undertaking under oath or affirmation by the EAP in relation to -</p> <ul style="list-style-type: none"> <li>i. the correctness of the information provided in the report;</li> <li>ii. the inclusion of comments and inputs from stakeholders and interested and affected parties; and</li> <li>iii. any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;</li> </ul>	<b>Appendix B</b>	<b>Yes</b>
Appendix 2 - (1)(j)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	<b>Appendix B</b>	<b>Yes</b>
Appendix 2 - (1)(k)	Where applicable, any specific information required by the competent authority.	<b>N/A</b>	<b>X</b>
Appendix 2 - (1)(l)	Any other matter required in terms of section 24(4)(a) and (b) of the Act.	<b>N/A</b>	<b>X</b>
Appendix 2 - (2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	<p><b>Not applicable in terms of the actual Scoping Report, but various gazetted assessment and reporting protocols have been complied with for the specialist studies. Refer to Chapter 4 of this Scoping Report.</b></p>	<b>Yes</b>

Scoping and Environmental Impact Assessment for the proposed development of the  
204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West, Western Cape

# PART A

## MAIN REPORT



# CHAPTER I:

## INTRODUCTION





# Table of Contents

---

<b>1. INTRODUCTION</b>	<b>1-4</b>
1.1. Project Motivation	1-7
1.2. An Overview of the Proposed Kwagga Wind Energy Facility 3	1-8
1.3. Legal Requirements for an EIA	1-8
1.4. Project Developer	1-9
1.5. Project Applicant	1-10
1.6. EIA Project Team	1-10
1.7. Details and Expertise of the CSIR EIA Project Management Team	1-11
1.8. Need and Desirability	1-12
1.9. Objectives for this Scoping Report	1-27



# List of Tables

---

Table 1.1: The EIA Project Team	1-10
Table 1.2: The Guideline on the Need and Desirability's list of questions to determine the "Need and Desirability" of a proposed project	1-13



# List of Figures

---

Figure 1.1: Locality map for the proposed Kwagga Wind Energy Facilities 1-3 near Beaufort West in the Western Cape	1-4
Figure 1.2: Locality map for the proposed Kwagga WEF 3 near Beaufort West in the Western Cape.	1-6

# 1. INTRODUCTION

The Project Developer, ABO Wind renewable energies (Pty) Ltd (hereafter “ABO Wind”) is proposing the construction of three Wind Energy Facilities (WEFs), namely Kwagga WEF 1, Kwagga WEF 2, and Kwagga WEF 3, and its supporting electrical infrastructure, in the Central Karoo District Municipality, situated approximately 57 km south from the town of Beaufort West in the Western Cape Province (see Figure 1.1).

The proposed Kwagga WEF 1 will be located in the Beaufort West Local Municipality, with the new access road to be constructed linking the proposed Kwagga WEF 1 project site with the R308 Rietbron bound public access road to the south of the site will be located in the Prince Albert Local Municipality, whereas the proposed Kwagga WEF 2 will be entirely located in the Prince Albert Local Municipality, and the Kwagga WEF 3 will be located in both these local municipalities.

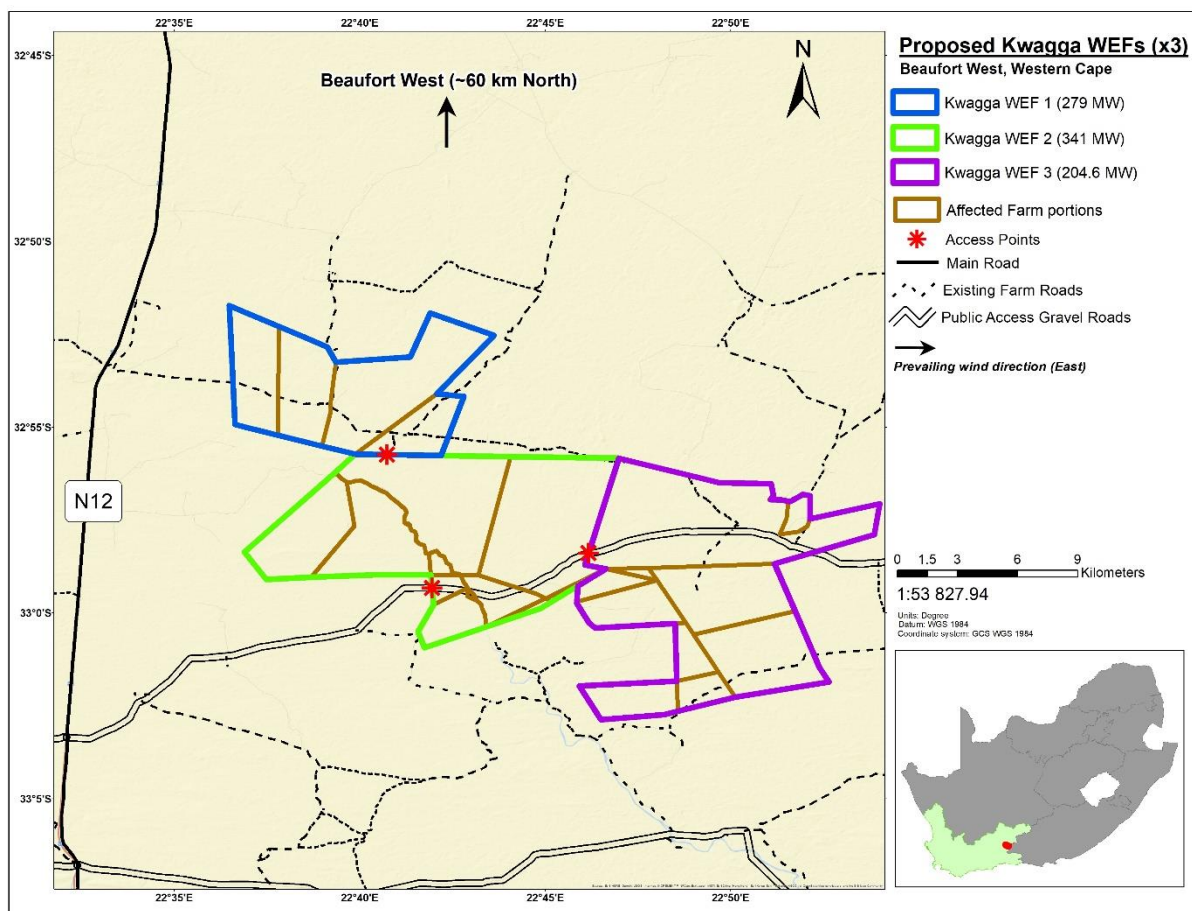


Figure 1.1: Locality map for the proposed Kwagga Wind Energy Facilities 1-3 near Beaufort West in the Western Cape

The proposed projects are being developed to generate electricity via wind energy, which will feed into and supplement the national electricity grid. This report comprises the Draft Scoping Report (DSR) for the development of the **204.6 MW Kwagga Wind Energy Facility 3** (hereafter, "Kwagga WEF 3") (see Figure 1.2).

Note that the Project Developer is still investigating options for possible grid connection, from the proposed Kwagga WEF 3 to a proposed on-site collector substation, and/or a third party major transmission station (MTS) to be constructed nearby, and therefore a separate Environmental Assessment Process will be undertaken at a later stage once the grid connection and the power line routing has been confirmed.

The proposed Kwagga WEF 3 will be developed on the following land portions:

- Portion 1 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600001);
- Portion 2 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600002);
- Portion 3 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600003);
- The Farm Annex Taaibos No. 21 (Surveyor General 21 Digit Code: C0610000000002100000);
- Portion 4 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C06100000000011500004);
- Portion 5 of the Farm Cyferfontein No. 115 (Surveyor General 21 Digit Code: C06100000000011500005);
- Portion 6 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C06100000000011500006);
- Portion 8 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C06100000000011500008);
- Portion 5 of the Farm Muis Kraal No. 373 ((Surveyor General 21 Digit Code: C00900000000037300005); and
- Portion 7 of the Farm Muis Kraal No. 373 ((Surveyor General 21 Digit Code: C00900000000037300007).

This chapter provides an introduction (project overview) of the proposed Kwagga WEF 3, and includes the following:

- An overview of the proposed WEF;
- The legal requirements for an Environmental Impact Assessment (EIA);
- Information on the Project Applicant;
- The EIA project team;
- Project Motivation;
- Need and Desirability;
- The objectives of the Scoping Report; and the
- Requirements for a Scoping Report in terms of Appendix 2 of the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations (as amended, GN R326).

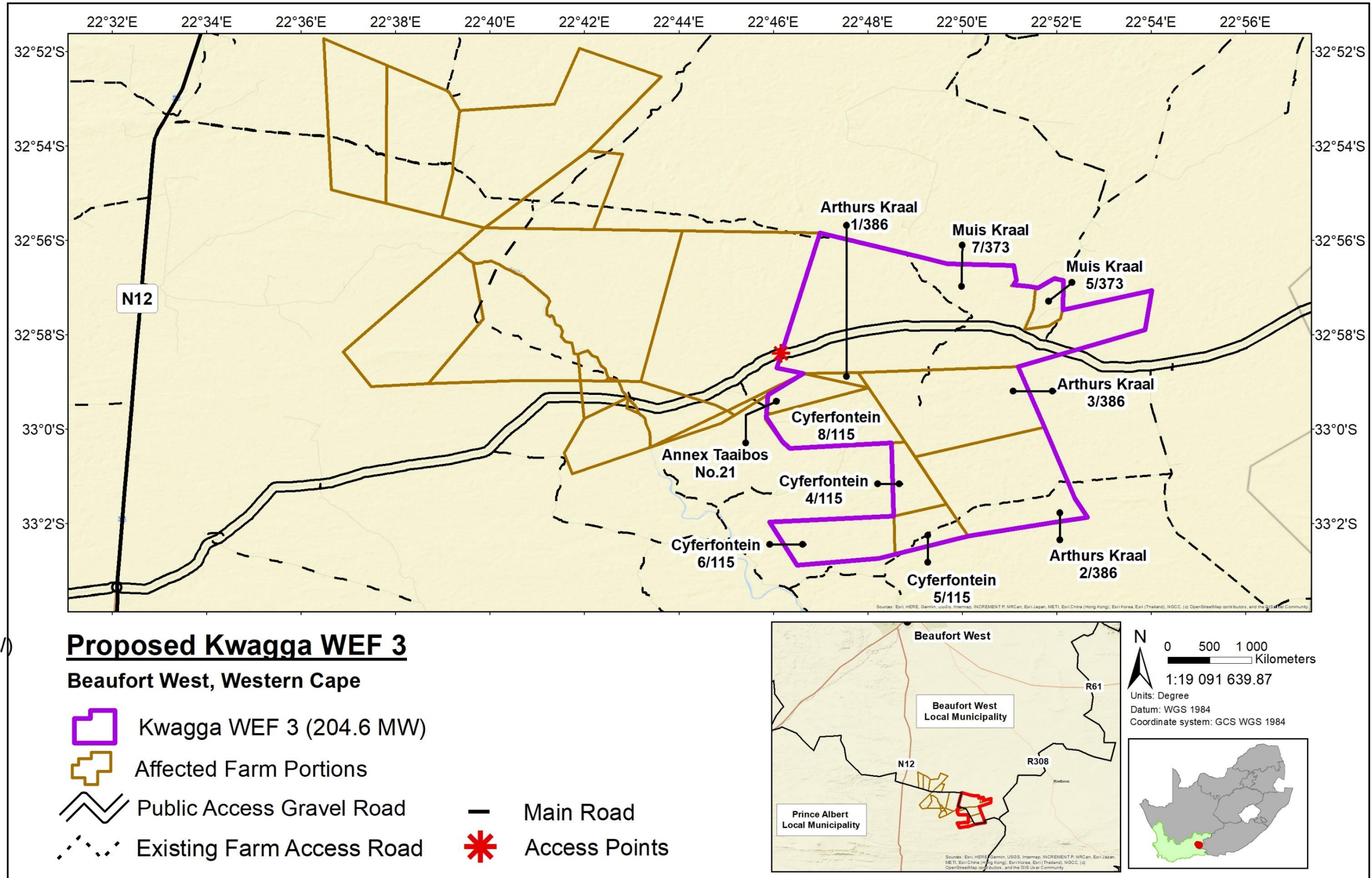


Figure 1.2: Locality map for the proposed Kwagga WEF 3 near Beaufort West in the Western Cape.

## 1.1. Project Motivation

---

The need for renewable energy is becoming increasingly apparent, in both local and international context, with South Africa becoming an integral part of the global transition towards renewable sources of electricity generation. The urgency behind this evolution can be appreciated considering that South Africa is one of the largest emitters of greenhouse gases in Africa<sup>1</sup>, and is also estimated to rank amongst the top 20 largest emitters of greenhouse gases in the world. These emissions are largely a result of an energy-intensive economy and high dependence on coal-based electricity generation. The South African government is therefore committed to supplementing the existing generation capacity of thermal and nuclear power plants with renewable energy power generation, thus creating the framework that will lead to an increase in the supply of clean energy for the nation. The development of renewable energy is important for South Africa to reduce its overall environmental footprint from power generation (including externality costs), and thereby to steer the country on a pathway towards sustainability.

The Integrated Resource Plan (IRP) for South Africa for the period 2010 to 2030 (referred to as “IRP2010”) was released by government in 2010, and a draft of an updated report was published in 2013, which proposes to secure 17 800 MW of renewable energy capacity by 2030 (including wind, solar and other energy sources). In August 2011, the Department of Energy (DoE) (currently operating as the Department of Mineral Resources and Energy (DMRE)) launched the Renewable Energy Independent Power Producer Programme (REIPPPP) and invited potential Independent Power Producers (IPPs) to submit proposals for the financing, construction, operation and maintenance of the first 3 725 MW of onshore wind, solar thermal, PV, biomass, biogas, landfill gas or small hydropower projects. On 18 August 2015, an additional procurement target of 6 300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in Government Gazette 39111. Of this, the additional target allocated for wind energy is 3 040 MW.

The most recent update to the IRP, the Integrated Resource Plan 2019 (IRP 2019), was gazetted by the Minister of Mineral Resources and Energy, Gwede Mantashe, in October 2019, updating the energy forecast for South Africa from the current period to the year 2030. Provision has been made for new additional capacity by 2030 including in particular 14 400 MW of wind (which is based on a consistent annual allocation of 1 600 MW commencing in the year 2022 up to 2030), 6 000 MW of solar PV, and 2 088 MW for storage. The IRP 2019 also notes that for wind energy, 1 980 MW is installed capacity, and 1 362 MW is committed/already contracted capacity. In terms of the REIPPPP, submitted proposals are then evaluated according to a Request for Proposal (RfP). Based on previous bidding windows of the REIPPPP, the two main evaluation criteria for compliant proposals are price and economic development with a point allocation of 70/30 (DoE, 2013), with other selection criteria including technical feasibility and grid connectivity, environmental acceptability, black economic empowerment, community development, and local economic and manufacturing propositions. The bidders whose responses rank the highest (according to the aforementioned criteria) generally have the greatest potential to be appointed as “Preferred Bidders” by the DMRE. It is intended that this project will be bid into a future bidding program such as the REIPPPP or another suitable tender process. The next round to be announced in terms of the REIPPPP is Bid Window 5. According to the State of the Nation Address delivered by President Cyril Ramaphosa on 11

---

<sup>1</sup> <https://ourworldindata.org/co2/country/south-africa?country=ZAF~NGA~KEN~ZWE~IRN~LBY~GIN~LBR~MWI~TGO~BWA~BFA~BDI~CMR~SDN#citation>



February 2021, Bid Window 5 will call for 2 600 MW from wind and solar energy<sup>2</sup>. The President also explained that another bid window will follow in August 2021<sup>1</sup>.

Additionally, the project would contribute towards meeting the national energy target as set by the DMRE and assist the government in achieving its proposed renewable energy targets.

Should the proposed Kwagga WEF 3 identified by ABO Wind be acceptable and authorised, it is considered viable that long-term benefits for the community and society in the Beaufort West area would be realised. The proposed project will provide an opportunity for additional employment in an area where job creation is identified as a key priority. Approximately 400 employment opportunities will be created during the construction phase and 30 during the operational period of the proposed Kwagga WEF 3. The proposed Kwagga WEF 3 will make use of local labour as much as possible, and a minimum of 50% of the jobs (during the construction and operational phases) will be filled by the local communities.

The proposed project would also have international significance as it contributes to South Africa being able to meet some of its international obligations by aligning domestic policy with internationally agreed strategies and standards as set by the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement on Climate Change, Kyoto Protocol, and United Nations Convention on Biological Diversity (UNCBD), all of which South Africa is a signatory to. Renewable energy is critical to South Africa as this source of energy is recognised as a major contributor to climate protection, has a much lower environmental impact significance, as well as advancing economic and social development.

In order to submit a bid in terms of the REIPPPP, the Project Applicant is required to have obtained an EA in terms of the 2014 NEMA EIA Regulations (as amended), as well as several additional authorisations or consents.

---

## **1.2. An Overview of the Proposed Kwagga Wind Energy Facility 3**

---

The proposed Kwagga WEF 3 will comprise of a maximum of 33 turbines with a hub height and rotor diameter of up to 180 m and up to 200 m, respectively. The blade length will be up to 100 m. The development footprint of the proposed WEF will be approximately 250 ha. The key components of the Kwagga WEF 3 are discussed in more detail in Chapter 2 of this DSR.

---

## **1.3. Legal Requirements for an EIA**

---

Section 24(1) of the NEMA, states that “In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the competent authority charged by this Act with granting the relevant EA”. The reference to “listed activities” relates to the regulations promulgated in Government Notice (GN) R982, R983, R984 and R985 in Government Gazette 38282, dated 4 December 2014, which came into effect on 8 December 2014. These were amended in April 2017, specifically promulgated in GN R326, R327, R325 and R324 in Government Gazette 40772, dated 7 April 2017. GN R327 and GN R324 includes listed activities that trigger the need for a Basic Assessment (BA) Process, whereas GN R325 includes listed activities that trigger the need for a full Scoping and EIA Process.

---

<sup>2</sup> <https://www.gov.za/speeches/president-cyril-ramaphosa-2021-state-nation-address-11-feb-2021-0000#>

In terms of the NEMA and the 2014 NEMA EIA Regulations (as amended), a full **Scoping and EIA Process** is required for the construction of the proposed Kwagga WEF 1.

The proposed Kwagga WEF 1, Kwagga 2 WEF and Kwagga 3 WEF are not located within any of the Renewable Energy Development Zones (REDZs) gazetted in Gazette 41445, GN R114 on 16 February 2018; and Gazette 44191, GN R144 on 26 February 2021. The proposed Kwagga WEFs are also not located within any of the strategic power corridors gazetted in Gazette 41445, GN R113 on 16 February 2018. Therefore, a full Scoping and EIA Process is being undertaken for each of the proposed three WEFs with a 107 decision-making timeframe, as opposed to a BA Process and 57-day decision-making timeframe allowed for in the REDZs and strategic power corridors.

The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

***“The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facility or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure”.***

ABO Wind has appointed the Council for Scientific and Industrial Research (CSIR) to undertake the Scoping and EIA Process in order to determine the potential biophysical, social and economic impacts associated with undertaking the proposed activities. Given that energy related projects have been elevated to national strategic importance in terms of the EIA Process, the proposed WEF requires Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE) as the Competent Authority (CA), acting in consultation with other spheres of government.

Chapter 4 of this Scoping Report contains the detailed list of activities contained in R327, R325, and R324, which may be triggered by the various project components and thus form part of the Scoping and EIA Process.

The purpose of the Scoping and EIA Process is to identify, assess and report on any potential impacts the proposed project, if constructed and implemented, may have on the receiving environment. The environmental assessment therefore, needs to show the CA, what the biophysical and socio-economic impacts will be of the proposed WEF. It also needs to show the CA how such impacts can be avoided, remedied, mitigated or managed, and how positive impacts can be enhanced.

---

#### **1.4. Project Developer**

---

ABO Wind AG is a Europe based company, which was formed in 1996. The company has since established subsidiaries in 13 countries. ABO Wind renewable energies (Pty) Ltd, the South African subsidiary, was founded in 2017. The company focuses on solar, wind and biogas technologies and works with landowners, technology providers, regulators and investors to source and develop renewable energy projects. ABO Wind acts as the project developer and project interface, coordinating the research and studies, the site identification, the project structure, EIAs, selecting the strategic partners and arranging financing.

The company, since inception, has developed and sold wind energy, solar and biogas projects with a total capacity of 3 500 MW. A significant portion of these projects are turnkey projects. ABO Wind has not been involved in the South African REIPPPP bidding process as yet; however, the company intends to bid this project (should EA be granted) in a future bidding program such as the REIPPPP under the DMRE, or another suitable tender process.

The Project Developer, ABO Wind, is proposing the construction of a WEF with a possible maximum installed capacity of 204.6 MW on behalf of the Project Applicant, Kwagga Wind Energy Facility 3 (Pty) Ltd. Once a Power Purchase Agreement (PPA) is awarded, the proposed facility will generate electricity for a minimum period of 20 years.

### 1.5. Project Applicant

---

The Project Applicant seeking EA for the proposed Kwagga WEF 3 project is the Kwagga Wind Energy Facility 3 (Pty) Ltd with registration number 2020/429978/07.

### 1.6. EIA Project Team

---

As previously noted, the CSIR has been appointed by ABO Wind to undertake the Scoping and EIA (S&EIA) Process required for the proposed Kwagga WEF 3 project. Public participation forms an integral part of the S&EIA Process and assists in identifying issues and possible alternatives to be considered during the S&EIA Process. The CSIR is undertaking the Public Participation Process (PPP) for this S&EIA Process. Details on the PPP are included in Chapter 4 of this DSR.

The project team, which is involved in this Scoping and EIA Process is listed in **Error! Reference source not found.** below. This team includes a number of specialists who have extensive experience in conducting specialist studies for renewable energy projects in South Africa.

**Table 1.1: The EIA Project Team**

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
<i>Environmental Management Services (CSIR)</i>		
Paul Lochner ( <i>Registered EAP (2019/745)</i> )	CSIR	Technical Advisor and Quality Assurance
Rohaida Abed ( <i>Pr.Sci.Nat.</i> )	CSIR	Project Review
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Project Lead
Dhiveshni Moodley ( <i>Cand.Sci.Nat.</i> )	CSIR	Project Manager
<i>Specialists</i>		
Johann Lanz ( <i>Pr.Sci.Nat.</i> )	Private	Agriculture and Soils Compliance Statement
Dr Jayson Orton	ASHA Consulting (Pty) Ltd	Heritage Impact Assessment (Archaeology, Palaeontology and Cultural Landscape)
Dr John Almond	Natura Viva cc	
Chris van Rooyen, Albert Froneman ( <i>Pr.Sci.Nat.</i> )	Chris van Rooyen Consulting	Avifauna Impact Assessment

NAME	ORGANISATION	ROLE/STUDY TO BE UNDERTAKEN
Ashlin Bodasing, Michael Brits	ARCUS Consultancy Services Ltd	Bat Impact Assessment
Toni Belcher ( <i>Pr.Sci.Nat.</i> )	Private	Aquatic Biodiversity and Species Impact Assessment
Dr Noel van Rooyen ( <i>Pr.Sci.Nat.</i> )	Ekotrust cc	Terrestrial Biodiversity and Species Impact Assessment
Dr Brett Williams	Safetrain cc T/A Safetech	Noise Impact Assessment
Menno Klapwijk	Bapela Cave Klapwijk cc	Visual Impact Assessment
Iris Wink, Adrian Johnson	JG Afrika (Pty) Ltd	Traffic Impact Assessment
Sue Reuther	SRK Consulting (Pty) Ltd	Socio-Economic Impact Assessment
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Civil Aviation Compliance Statement
Lizande Kellerman ( <i>Pr.Sci.Nat.</i> )	CSIR	Defence Site Sensitivity Verification

Feedback on the specialist studies commissioned as part of this S&EIA Process is also included in Chapter 4, Chapter 6 and Chapter 7 of this DSR. Chapter 4 also includes motivation for not undertaking certain studies identified by the Screening Tool.

**Note from CSIR:** *There are currently no operational WEFs within a 5 km radius from the proposed Kwagga WEF 3 project site; however, a number of proposed WEF projects have recently received EA in close proximity to the proposed Kwagga WEF 3 project site and ABO Wind has been in consultation with the other Project Developer to discuss potential Wake Loss effects and confirm the need for a Wake Loss Assessment to be undertaken. A copy of the Wake Loss Assessment Report for the proposed Kwagga WEF 3 is included in Appendix G of this DSR.*

### **1.7. Details and Expertise of the CSIR EIA Project Management Team**

This section provides information on the expertise of the CSIR EIA Project Management Team and EAPs, consisting of Paul Lochner, Lizande Kellerman and Dhiveshni Moodley.

#### **Paul Lochner (Technical Advisor and Quality Assurance):**

Paul Lochner is an environmental assessment practitioner (EAP) at the CSIR in Stellenbosch, with more than 28 years of experience in a wide range of environmental assessment and management studies. Paul commenced work at CSIR in 1992, after completing a B.Sc. degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at focused on wetlands and estuarine management; environmental engineering in the coastal zone; and coastal zone management plans. Since 2008, Paul has been the leader and manager of the Environmental Management Services (EMS) group within CSIR that has been at the forefront of advancing environmental assessment in South Africa. This group currently consists of approximately 10 to 20 environmental scientists, planners and engineers, with offices in Stellenbosch, Cape Town and Durban. Paul's particular experience is in environmental planning and assessment for renewable energy, electricity grid infrastructure, desalination, oil & gas, wetlands & coastal zone management, and industrial & port development. He has been closely involvement in the research and application of Strategic Environmental Assessment (SEA) in South Africa, and also has wide experience in Environmental & Social Impact Assessment, Environmental Management Programmes (EMPRs) and Environmental Screening Studies. He has been the project leader for over 40

SEAs and EIAs over the past 28 years. He also served as project leader for a suite of SEAs commissioned by the DFFE from 2014 to 2020.

Paul is a Registered EAP (Reg. No. 2019/745) with the Environmental Assessment Practitioners Association of South Africa (EAPASA).

**Lizande Kellerman Pr. Sci. Nat. (Project Leader):**

Lizande Kellerman is a Principal EAP and scientist at the CSIR in Stellenbosch, with more than 10 years of experience in environmental impact studies, primarily in the planning, preparation and management of BAs, EIAs, and SEAs, as well as EMPs, Screening/Fatal Flaw Studies, Biodiversity Risk Assessments, Biodiversity Resource Assessments and license applications for agriculture, atmospheric emissions, water use, waste management, mining, bioprospecting and biodiversity permitting, for numerous projects in the agricultural (including aquaculture), construction, conservation, mining and renewable energy sectors.

Lizande holds a BSc degree in Zoology and Entomology, with an Honours and Masters in Botany both at the University of Pretoria. She is currently working towards completing her PhD in Conservation Ecology. She commenced work at the CSIR in 2012 after spending three years working as an environmental scientist in the private sector. She has published several articles, both peer reviewed scientific and popular, and presented at five international conferences. She has also lectured on biodiversity, ecological and EIA at various universities in South Africa. Her training and experience as a qualified terrestrial ecologist has enabled her to provide expert input into ecological impact assessments and to perform specialist reviews of various terrestrial biodiversity and ecology impact assessments as part of BAs, EIAs and SEA.

Lizande is a registered Professional Natural Scientist (Reg. No. 400046/10) with the South African Council for Natural Scientific Professions (SACNASP).

**Dhiveshni Moodley Cand. Sci. Nat. (Project Manager):**

Dhiveshni Moodley is an EAP Intern at the CSIR in Stellenbosch. Dhiveshni holds a BSc, BSc Honours (*cum laude*) and MSc (*cum laude*) degrees in Environmental Science from the University of KwaZulu-Natal. She has about two year's work experience in flood risk, hydrogeological- and wetland functional assessment specialist studies, as well as conducting BAs and Scoping/EIAs in the Renewable Energy sector. Her key interest lies in using GIS analyses to apply the formation of accurate, feasible solutions to complex environmental challenges.

Dhiveshni is a registered Candidate Natural Scientist (Reg. No. 1472997/19) with the SACNASP.

---

## 1.8. Need and Desirability

---

It is an important requirement in the EIA Process to review the need and desirability of the proposed project. Guidelines on Need and Desirability were published by the DEA (now operating as the DFFE) in 2017<sup>3</sup>. These guidelines list specific questions to determine need and desirability of proposed developments. This checklist is a useful tool in addressing specific questions relating to the need and

---

<sup>3</sup> DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa. ISBN: 978-0-9802694-4-4.

desirability of a project and assists in explaining that need and desirability at the provincial and local context. Need and desirability answer the question of whether the activity is being proposed at the right time and in the right place.

Table 1.2 includes a list of questions based on the DFFE’s Guideline to determine the need and desirability of the proposed project. It should be noted this table will be informed by the outcomes of the Scoping and EIA Processes and will be updated, once the relevant impact assessment has been received.

**Table 1.2: The Guideline on the Need and Desirability’s list of questions to determine the “Need and Desirability” of a proposed project**

NEED	
Question	Response
<b>1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?</b>	
<p>1.1. How were the following ecological integrity considerations taken into account?:</p> <ul style="list-style-type: none"> <li>1.1.1. Threatened Ecosystems,</li> <li>1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure,</li> <li>1.1.3. Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"),</li> <li>1.1.4. Conservation targets,</li> <li>1.1.5. Ecological drivers of the ecosystem,</li> <li>1.1.6. Environmental Management Framework,</li> <li>1.1.7. Spatial Development Framework, and</li> <li>1.1.8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).</li> </ul>	<p><b>The environmental sensitivities, in particular the aquatic and terrestrial biodiversity and ecological sensitivities present on site will be assessed in detail within the Aquatic and Terrestrial Biodiversity and Ecology Impact Assessments to be included in the EIA Report.</b></p> <p><b>The specialists will identify all aquatic and terrestrial biodiversity sensitive areas on site that should be avoided by the proposed development, as well as any other ecologically sensitive areas and how to suitably develop within these areas so that the ecological integrity of the areas is maintained.</b></p> <p><b>The Aquatic and Terrestrial Biodiversity and Ecology specialists have prepared scoping inputs and these inputs have been included in Appendix F of this Scoping Report. It is noted that the majority of the Kwagga WEF 3 site have been identified as Other Natural Areas (ONAs) i.e. areas not required to meet biodiversity targets. The presence of CBA 1 was noted along a larger tributary of the Brandleegte River and Muiskraal River in the northern parts of the Kwagga WEF 3 site as well as some smaller sections of the Daniels River and Huis River tributaries in the southern parts of the site with several of the other smaller watercourses being noted as ESAs across the site.</b></p> <p><b>The development footprint within the CBA 1 area is however extremely limited and given that the proposed project layout will be amended to avoid the CBAs as far as possible, a significant impact on the CBAs is unlikely. In addition, it is not likely that the proposed development would compromise the functioning of the ESAs given that the current</b></p>

NEED	
Question	Response
	<p>proposed project layout will be refined to avoid these areas as far as possible.</p> <p>It is the specialists' opinion that the proposed development of the project is considered compatible with the aims and objectives of ESAs and ONAs, from an aquatic and terrestrial biodiversity point of view.</p> <p>The preliminary sensitivity map is included in Chapter 5 of this DSR and will be further refined during the EIA Phase following detailed assessments to be completed by the specialists on the EIA project team. The specialists provided scoping inputs, which informed the current preliminary sensitivity map. Such inputs to the DSR are included in Appendix F.</p>
<p>1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>The environmental sensitivities such as ESAs and the CBA 1 present on site were identified by the Aquatic and Terrestrial Biodiversity and Ecology specialists and are discussed in the Scoping inputs provided in Appendix F of this DSR. Detailed Aquatic and Terrestrial Biodiversity and Ecology Impact Assessments will be undertaken and included in the EIA Report. Based on the biodiversity screening and fine scale mapping that was done for the site during the Scoping Phase, the specialists confirmed that the site falls mostly within ONAs with only one of the larger tributaries of the Brandleegte River and Muiskraal River in the north and north-eastern parts of the site as well as some smaller sections of the Daniels River and Huis River tributaries in the southern parts of the site being identified as CBA 1. Several of the other smaller watercourses were mapped as ESAs. The current proposed footprint within the CBA 1 area is extremely limited and a significant impact on the CBA is not likely, especially if the project layout is adjusted to avoid the CBA entirely. In addition, it is unlikely that the development would compromise the functioning of the ESAs. It is the specialists' opinion that the proposed development of the WEF is considered compatible with the aims and objectives of ESAs and ONAs, from an aquatic and terrestrial biodiversity point of view.</p> <p>The Aquatic and Terrestrial Biodiversity and Ecology specialists will identify all ecological sensitive areas on site that should be avoided by the proposed development and propose mitigation measures to reduce or minimise impacts to ensure</p>

NEED	
Question	Response
	<p>that the ecological integrity of the areas is maintained.</p> <p>The preliminary sensitivity map is included in Chapter 5 of this DSR and will be further refined during the EIA Phase.</p> <p>Measures to avoid, remedy, mitigate and manage impacts will be included in the Environmental Management Programme (EMPr) that will be compiled during the EIA Phase and included within the EIA Report.</p>
1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Measures to avoid, remedy, mitigate or manage biophysical impacts will be included in the EMPr that will be compiled during the EIA Phase and included within the EIA Report.
1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether; what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Waste will mostly be generated during the construction and decommissioning phases of the project. Measures to avoid, remedy, mitigate or manage waste will be included within the EMPr that will be compiled during the EIA Phase and included within the EIA Report. Waste generated on site will be disposed of at a licenced landfill site.
1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A Heritage Impact Assessment (HIA) will be undertaken during the EIA Phase to assess potential archaeological, palaeontological and cultural impacts resulting from the proposed development during the EIA Phase. Scoping inputs have been provided by the heritage and palaeontological specialists and are included in Appendix F of this DSR. It will be further refined during the EIA Phase and the full HIA will be included in the EIA Report. The HIA will also be sent to Heritage Western Cape for approval during the EIA Phase.
1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Measures to avoid, remedy, mitigate or manage impacts on non-renewable natural resources will be included in the EMPr that will be compiled during the EIA Phase and included within the EIA Report.



NEED	
Question	Response
<p>1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <p>1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. dematerialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)</p> <p>1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources of the proposed development alternative?)</p> <p>1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?</p>	<p><b>South Africa has heavily relied on coal as a source of electricity for decades. Due to the nature of coal as a non-renewable resource that causes major environmental degradation, there is therefore a need to identify alternative resources that could promote sustainable energy sources as well as cleaner energy production mechanisms. The proposed project aims to harness the wind resource available in the area for the generation of electricity. This project is seen as a source of ‘clean energy’ and reduces the dependence on non-renewable sources.</b></p> <p><b>The proposed project is a sustainable option for the area and the footprint will as far as possible avoid areas of very high environmental sensitivity. Where impacts cannot be avoided, the footprint will be placed to minimise, mitigate or manage potential impacts to the receiving environment.</b></p>
<p>1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts?:</p> <p>1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>1.8.2. What is the level of risk associated with the limits of current knowledge?</p> <p>1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p><b>The precautionary approach has been adopted for this study, i.e. assuming the worst-case scenario will occur and then identifying ways to mitigate or manage these impacts.</b></p> <p><b>Current gaps in knowledge include confirmation on the preferred turbine types to be used at this site. Ways in which these gaps are addressed are to consider the worst-case scenarios as noted above in terms of turbine size and generation capacity. A range of specifications have been provided as new technology may also come onto the market closer to the construction period (should the proposed Kwagga WEF 3 be approved).</b></p>

NEED	
Question	Response
<p>1.9. How will the ecological impacts resulting from this development impact on people's environmental right in terms following:</p> <p style="padding-left: 40px;">1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p style="padding-left: 40px;">1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</p>	<p><b>A detailed Socio-Economic Impact Assessment will be included in the EIA Report. A preliminary socio-economic profile is included in Chapter 3 of this DSR and will be further refined during the EIA Phase. Scoping inputs have been provided by the Socio-Economic specialist and have been included in Appendix F of the DSR.</b></p>
<p>1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?</p>	<p><b>Linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area will be considered as part of the Socio-Economic Impact Assessment undertaken for this project and will be included within the EIA Report.</b></p>
<p>1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?</p>	<p><b>The impacts on ecological integrity objectives of the area will be considered as part of the Aquatic and Terrestrial Biodiversity and Ecology Impact Assessments undertaken for this project and will be included within the EIA Report.</b></p>
<p>1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?</p>	<p><b>Please refer to Chapter 5 of this DSR where the alternatives are discussed.</b></p>
<p>1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?</p>	<p><b>Please refer to Chapter 6 of this DSR where the potential cumulative impacts are discussed for this project. Table 7.3 and Table 7.4 in Chapter 7 also contains a list of all the other renewable energy projects that have received EA and projects whose EA status is pending.</b></p>
<p><b>2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:</b></p>	

NEED	
Question	Response
<p>2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,</p>	<p><b>The Kwagga WEF 3 is located in the Prince Albert Local Municipality (PALM) and the Beaufort West Local Municipality (BWLM).</b></p> <p>Both the PALM and the BWLM Integrated Development Plans (IDP) (2017-2022), recognises renewable energy projects as potential sustainable economic development opportunities. The development of the Kwagga WEF 3 will therefore also be in line with the vision of the PALM and the BWLM to diversify the job market by creating and supporting sustainable economic growth and development opportunities.</p> <p>One of the economic priority issues identified within the PALM and BWLM IDPs (2017-2022) is the fairly high level of unemployment. The IDPs identifies low economic growth as one of the main reasons for the lack of new labour entrants into the economy. Although the BWLM has experienced a slight increase in average growth in employment across all labour cohorts, between 2013 and 2017 (1.4%), the unemployment rate of 26.2% is significantly higher than the provincial average unemployment rate (18.2%) (Quantec Research Data, 2018; BWLM IDP, 2019/2020).</p> <p>The PALM's unemployment rate of 20.3% in 2017 was lower than that of the Central Karoo District Municipality (CKDM) but higher than the provincial average unemployment rate (18.2%). Most jobs in the PALM (55.2%) are within the tertiary sector, followed by the primary (37.0%) and secondary (7.8%) sectors (MERO, 2018). Despite the relatively high rate of employment, the per capita income in the PALM was lowest of all local municipalities within the CKDM, and has increased by 2% between 2011 and 2012 and by only 1% between 2012 and 2013. During 2016, a high level of income equality was identified in Ward 2 (i.e. in which the Kwagga WEF 3 is located) (StatsSA, 2016).</p> <p>The proposed Kwagga WEF 3 project will create job opportunities and economic spin offs during the construction and operational phases (if an EA is granted by the DFFE). It is estimated that up to 400 employment opportunities will be created during the construction phase and up to 30 during the operational phase. It should, however, be noted that employment during the construction phase will be temporary, whilst 30 employment</p>

NEED	
Question	Response
	<p>opportunities being long-term during the operational phase.</p> <p>Therefore, the proposed WEF would help to address the need for increased electricity supply to the national grid while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area. The proposed project will therefore be supportive of the IDPs objective of facilitating job creation to address the high unemployment rate.</p>
2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	This is not applicable as the proposed project is located within a rural area and the site is zoned for agricultural use.
2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.)	<p>As indicated above, the current land use on the proposed site is agriculture, predominantly livestock farming.</p> <p>The impact of the proposed project on cultural or heritage areas (including archaeology and palaeontology) will be assessed as part of the HIA in the EIA Phase.</p> <p>Should the proposed project proceed, approximately 250 ha (comprising 0.27 % of the total farming area that constitutes the properties relevant to the Kwagga WEF 3) of the land will be developed on and it is not expected that this will significantly threaten the agricultural activities present on site. An Agricultural Compliance Statement will be included within the EIA Report to reflect the impact of the proposed project in terms of the land capability and agricultural potential. Scoping level inputs have been provided by the Agricultural and Soil specialist, which indicate that the proposed site for the Kwagga WEF 3 is identified as being of predominantly low and medium sensitivity for agricultural resources.</p> <p>As noted, an EMPr will be compiled for the proposed project to ensure that all potential negative impacts identified are suitably managed and mitigated, and potential positive impacts are enhanced. The impact on the sense of place is difficult to predict and would potentially be ambiguous. This is due to the subjective nature of perceptions regarding the relative attraction or disturbance of the wind facility in a rural landscape.</p>

NEED	
Question	Response
	<b>The visual impact and considerations will be further assessed as part of the Visual Impact Assessment (VIA) to be undertaken as part of the EIA Phase of this project. A preliminary environmental sensitivity map was prepared during the Scoping Phase based on the input obtained from the various scoping specialist studies. The map will be updated in the EIA Phase to ensure that sensitive features will be identified and avoided by the project layout, as best as possible.</b>
2.1.4. Municipal Economic Development Strategy ("LED Strategy").	<b>The LED Strategy will be considered and potential alignment will be discussed in the EIA Report.</b>
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?  2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	<b>This will be addressed within the Socio-Economic Impact Assessment that will be included in the EIA Report.</b>
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	<b>These needs and interests of the relevant communities will be addressed within the Socio-Economic Impact Assessment that will be included in the EIA Report. Issues raised by I&amp;APs to this effect will also be addressed in the relevant Issues and Responses Trail of the Scoping and/or the EIA Report.</b>
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long term? Will the impact be socially and economically sustainable in the short- and long-term?	<b>This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report.</b>
<b>2.5. In terms of location, describe how the placement of the proposed development will:</b>	
2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other,	<b>Local employment opportunities will be provided as far as possible. Approximately 400 and 30 employment opportunities will be generated in the construction and operational phases, respectively.</b>
2.5.2. reduce the need for transport of people and goods,	<b>This is not applicable as the proposed project is located within a remote rural area and the development site is zoned for agricultural use. This project is a renewable energy project proposal.</b>
2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the	<b>This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use. This project is a renewable energy project proposal.</b>

NEED	
Question	Response
<p>achievement of thresholds in terms public transport),</p> <p>2.5.4. compliment other uses in the area,</p> <p>2.5.5. be in line with the planning for the area,</p>	<p><b>Even though the site includes some minor areas of high agricultural sensitivity, the overall sensitivity of the site will have minimal influence on the layout constraints for a WEF. The protocol, that prescribes the assessment and minimum reporting requirements for potential development impacts on agricultural resources, imposes allowable development limits on different agricultural sensitivity categories of land. The allowable development footprint is the area of a particular sensitivity category of land that can be directly occupied by the physical footprint of a renewable energy development. Therefore, high sensitivity agricultural land can be utilised by the footprint of the proposed WEF, as long as it is within the allowable limits set by the protocol.</b></p> <p><b>On this site earmarked for the proposed development of the Kwagga WEF 3 project, the area of high sensitivity agricultural land is so small that any wind farm layout will be within the allowable limits and therefore the sensitivity will effectively impose no constraint on the layout of the facility footprint. Even though this is the case, it is still advisable to avoid those very limited areas on the site that are rated as high sensitivity as a result of their cultivation status. These are, however, associated with and in close proximity to the farmsteads that are likely to be avoided by the footprint of the development, anyway.</b></p>
<p>2.5.6. for urban related development, make use of the underutilised land available with the urban edge,</p>	<p><b>This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use.</b></p>
<p>2.5.7. optimise the use of existing resources and infrastructure,</p>	<p><b>The proposed project will inject power into the existing Droërivier/Proteus 400kV line that runs parallel to the N12 located to the west of the proposed Kwagga WEF 3. The Eskom Droërivier substation is ideally located within the Northern Corridor of the Strategic Transmission Corridors (as gazetted on 16 February 2018, GN R113) and approximately 70 km north of the proposed Kwagga WEF 3. Additionally, the Eskom Transmission Development Plan (TDP) states that a strategic EIA has been initiated for an additional Droërivier/Narina/Gourikwa 400 kV line in order to ensure that servitudes are acquired timeously to cater for amongst others, potential renewable generation projects towards Beaufort West.</b></p>

NEED	
Question	Response
	<b>The Project Developer will undertake a separate Environmental Assessment Process at a later stage once the grid connection and the power line routing from the proposed Kwagga WEF 3 to the national grid has been confirmed.</b>
2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	<b>The project is a renewable energy project and not related to bulk infrastructure expansion.</b>
2.5.9. discourage "urban sprawl" and contribute to compaction/densification,	<b>This will be addressed in the Socio-Economic Impact Assessment that will be included in the EIA Report.</b>
2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	<b>This is not applicable as the proposed project is located within a remote rural area and the site is zoned for agricultural use.</b>
2.5.11. encourage environmentally sustainable land development practices and processes,	<b>The development of a renewable energy facility is a sustainable land development practice provided it is constructed and operated in an environmentally friendly manner.</b>
2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	<b>Please refer to Chapter 5 for a description of the process undertaken to identify the site as a preferred site for a WEF.</b>
2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	<b>This will be addressed within the Socio-Economic Impact Assessment that will be included within the EIA Report.</b>
2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	<b>The impact of the proposed project on cultural areas and heritage resources (archaeology and palaeontology), as well as on the sense of place will be assessed in the HIA and VIA which will be included in the EIA Report.</b>
2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	<p><b>Several Renewable Energy projects (particularly wind energy facilities) are being proposed and have been granted Environmental Authorisation in the vicinity of Beaufort West and surrounds.</b></p> <p><b>On 26 February 2021, Minister Barbara D. Creecy published Government Gazette 44191, GN R144 for notification of the identification of three new Renewable Energy Development Zones (REDZs) additional to the eight existing REDZs that were gazetted under GN R114 in Government Gazette 41445 of 16 February 2018. One of these newly</b></p>

NEED	
Question	Response
	<p><b>proposed REDZ comprises the town of Beaufort West and immediate surrounds.</b></p> <p><b><u>Note</u> that the proposed Kwagga WEF 3 project site is not located within any of the gazetted REDZs.</b></p>
<b>2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?</b>	
2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	<p><b>This will be addressed within the Socio-Economic Impact Assessment that will be included in the EIA Report.</b></p>
2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	
2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	
<b>2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:</b>	
2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	<p><b>This will be addressed within the Socio-Economic Impact Assessment that will be included in the EIA Report.</b></p>
2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity	



NEED	
Question	Response
and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	
<b>2.13. What measures were taken to:</b>	
2.13.1. ensure the participation of all interested and affected parties,	<p><b>On 5 June 2020, the Minister of Forestry, Fisheries and the Environment issued Directives in terms of regulation 4 (10) of the Regulations issued by the Minister of Cooperative Governance and Traditional Affairs in terms of section 27(2) of the Disaster Management Act, 2002 (Act 57 of 2002). These Directives were published in Government Gazette 43412, GN R650 on 5 June 2020, regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences.</b></p> <p><b>Regulation 5.1 of GN R650 states that Authorities responsible for the processing of applications contemplated in the EIA Regulations, will be receiving such applications from 5 June 2020 and will receive and process applications and issue decisions in the manner as set out in Annexure 2 of GN R650. Regulation 5.2 of GN R650 states that Annexure 3 includes additional requirements in respect of the provision, supporting or obtaining of services contemplated in Regulation 5.1.</b></p> <p><b>Annexure 3 of GN R650 states that an EAP must: Prepare a written Public Participation Plan, containing proposals on how the identification of and consultation with all potential Interested and Affected Parties (I&amp;APs) will be ensured in accordance with Regulation 41(2)(a) to (d) of the 2014 NEMA EIA Regulations (as amended) or proposed alternative reasonable methods as provided for in regulation 41(2)(e), for purposes of an application and submit such plan to the Competent Authority i.e. DFFE for approval.</b></p>
2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,	
2.13.3. ensure participation by vulnerable and disadvantaged persons,	

NEED	
Question	Response
	<b>The PP Plan (required in terms of GN R650) was submitted to the DFFE via email on 13 January 2021 and then approved by the DFFE on 22 January 2021. The PP Process that is undertaken as part of the Scoping Phase to date and is to be undertaken in the EIA Phase is included in Chapter 4 and 7 of this DSR. The PP Plan for the proposed Kwagga WEFs contains a description of various methods to notify potential I&amp;APs of the proposed project and the opportunity to comment on the DSR, namely, through notices in the local newspaper, sites notices, emails as well as sms text messages. The PP Plan along with proof of submission to DFFE and approval from DFFE is included in Appendix D of the DSR.</b>
2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,	<b>The EIA process will take cognisance of all interests, needs, and values espoused by all I&amp;APs. Opportunity for public participation will be provided to all I&amp;APs throughout the S&amp;EIA Process in terms of the 2014 NEMA EIA Regulations (as amended) and as per the approved PP Plan for the proposed Kwagga WEF projects.</b>
2.13.5. ensure openness and transparency, and access to information in terms of the process,	<b>The Public Participation Process that is undertaken as part of the Scoping Phase to date and to be undertaken in the EIA Phase is included in Chapter 4 and Chapter 7 of the DSR. Various methods are employed to notify potential I&amp;APs of the proposed project and the opportunity to comment on the DSR, namely, through notices in the local newspaper, sites notices, emails, as well as sms text messages.</b>
2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,	<b>The EIA process will take cognisance of all interests, needs and values adopted by all I&amp;APs.</b>
2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein was promoted.	<b>Public participation of all I&amp;APs will be promoted and opportunities for engagement will be provided during the EIA process.</b>
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	<b>This will be addressed within the Socio-Economic Impact Assessment that will be included within the EIA Report.</b>

NEED	
Question	Response
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	<b>An EMPr will be developed to address health and safety concerns. An Environmental Control Officer (ECO) will be appointed to monitor compliance with the EMPr and EA (should such authorisation be granted) during the construction and operational phases.</b>
<b>2.16. Describe how the development will impact on job creation in terms of, amongst other aspects:</b>	
2.16.1. the number of temporary versus permanent jobs that will be created,	<b>This will be addressed within the Socio-Economic Impact Assessment that will be included within the EIA Report.</b>
2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	
2.16.3. the distance from where labourers will have to travel,	
2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits),	
2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	
<b>2.17. What measures were taken to ensure:</b>	
2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment,	<b>The different government departments have been listed as I&amp;APs and are given the opportunity to comment on the DSR and will be given the opportunity to comment on the Draft EIA Report during the 30-day public participation period.</b>
2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	<b>This will be determined during the EIA Phase (following the Public Participation Phase undertaken as part of the Scoping Phase).</b>
2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	<b>The proposed WEF will adhere to the principles of environmental management. Measures taken to ensure adherence to the principles of NEMA will be determined during the EIA Phase.</b>
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	<b>It would be premature to decide whether proposed mitigation measures of the WEF are realistic prior to the completion of the Impact Assessment Phase of this EIA process. Therefore, the practicality of mitigation measures shall be determined during the EIA Phase. The proposed mitigation measures to be included in the EMPr that will be included in the EIA Report will be informed by the specialist</b>

NEED	
Question	Response
	<b>studies undertaken. This will include a detailed assessment of the environment as well as the impacts associated with the proposed development. WEFs can be dismantled and completely removed from the site leased for the development and do not permanently prevent alternative land-uses on the same land parcel.</b>
2.20. What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	<b>The EMPr (to be included in the EIA Report) of this proposed project must form part of the contractual agreement and be adhered to by both the contractors/workers and the Project Applicant.</b>
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	<b>Agriculture on site is influenced by climatic variables and limitations. Renewable energy development is a suitable land use option for the site. The proposed WEF would be more robust in terms of economic viability and profitability while also being largely uninfluenced by climate change variables. The proposed project would also provide the farm owners with additional income by way of lease agreements with each Project Applicant, and will also contribute to local socio-economic upliftment through job creation.</b>
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope, and nature of the project in relation to its location and other planned developments in the area?	<b>The potential cumulative impacts resulting from the proposed project can only be objectively determined at the end of the EIA process. These will be assessed as part of the EIA Phase. The cumulative impacts of similar types of projects that have received EA or whose EA status is pending (e.g. other renewable energy projects within 50 km of the proposed project) will be assessed in the EIA Report.</b>

### 1.9. Objectives for this Scoping Report

The Scoping Phase of the EIA refers to the process of determining the spatial and temporal boundaries for the EIA. In broad terms, the objectives of the Scoping Process in terms of the 2014 NEMA EIA Regulations (as amended) are to:

- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative;
- Identify and confirm the preferred site for the preferred activity;
- Identify the key issues to be addressed in the impact assessment phase and the approach to be followed in addressing these issues; and
- Confirm the level of assessment to be undertaken during the impact assessment.

This is achieved through parallel initiatives of consulting with:

- The lead authorities involved in the decision-making for this EIA application;
- The public to ensure that local issues are well understood; and
- The EIA specialist team to ensure that technical issues are identified.

The Scoping Process is supported by a review of relevant background literature on the local area. Through this comprehensive process, the environmental assessment can identify and focus on key issues requiring further assessment during the EIA Phase.

The primary objective of the Scoping Report is to present key stakeholders (including affected organs of state) with an overview of the proposed project and key issues that require assessment in the EIA Phase and allows the opportunity for the identification of additional issues that may require assessment.

Issues that will be raised in response to the Draft Scoping Report that is being released for a 30-day comment period will be captured in the Issues and Responses Trail that will be included in the Final Scoping Report and Plan of Study for EIA. The Final Scoping Report will be submitted to the DFFE for decision-making (i.e. approval or rejection) in line with Regulation 21 (1) of GN R326. This approval is planned to mark the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.

In terms of legal requirements, a crucial objective of the Scoping Report is to satisfy the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended), as noted in Regulation 21 (3) of the GN R326. This section regulates and prescribes the content of the Scoping Report and specifies the type of supporting information that must accompany the submission of the Scoping Report to the authorities. An overview of where the requirements of Appendix 2 of the 2014 NEMA EIA Regulations (as amended) are addressed in this Scoping Report is presented at the beginning of this report.

Furthermore, this process is designed to satisfy the requirements of Regulations 41, 42, 43 and 44 of the 2014 NEMA EIA Regulations (as amended) relating to the PPP and, specifically, the registration of and submissions from I&APs.

### *References*

Ritchie, H. and Roser, M. 2020. "CO<sub>2</sub> and Greenhouse Gas Emissions". Published online at OurWorldInData.org. viewed 07 April 2021 <<https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>>

# CHAPTER 2:

## PROJECT DESCRIPTION





# Table of Contents

---

<b>2. PROJECT DESCRIPTION</b>	<b>2-3</b>
<b>2.1 Key components of the proposed Kwagga WEF 3</b>	<b>2-4</b>
2.1.1 General Description of a Wind Turbine and Wind Turbine Technology	2-7
2.1.2 Associated Infrastructure	2-8
2.1.2.1 Hardstand Areas	2-8
2.1.2.2 Construction Compounds and Laydown Areas	2-9
2.1.2.3 Operations and Maintenance (O&M) Area	2-10
2.1.2.4 Site Access Roads	2-10
2.1.2.5 Internal Service Roads	2-10
2.1.2.6 Stormwater Channels and Water Pipelines	2-10
2.1.2.7 Fencing	2-11
2.1.2.8 Sewage or Liquid Effluent	2-11
2.1.2.9 Solid Waste Generation	2-11
2.1.3 Electrical Components and Connection to the Grid	2-11
2.1.3.1 Electrical Grid Infrastructure	2-12
2.1.3.2 On-site Substations	2-12
2.1.3.3 Battery Energy Storage System (BESS)	2-12
2.1.4 Site Access and Transportation of Wind Turbine Components to Site	2-16
2.1.4.1 Site Access	2-16
2.1.4.2 Port of Entry	2-17
2.1.4.3 Transportation of Wind Turbines	2-18
2.1.5 Water Requirements	2-20
<b>2.2 Overview of Project Development Cycle</b>	<b>2-20</b>
2.2.1 Detailed Planning and Design	2-20
2.2.2 Construction Phase	2-21
2.2.3 Operational Phase	2-21
2.2.4 Decommissioning Phase	2-22



## List of Tables

---

Table 2.1:	Co-ordinates of the Corner Points of the Preferred Project Site	2-3
------------	---	-----



## List of Figures

---

Figure 2.1:	Typical components of a Wind Energy Facility (Source: Tennessee Valley Authority, Wikimedia)	2-5
Figure 2.2:	Preliminary project layout of the proposed Kwagga WEF 3 development footprint	2-6
Figure 2.3:	Generic design for a wind turbine (Source: Tennessee Valley Authority, Wikimedia)	2-7
Figure 2.4:	Example of a typical hardstand area	2-9
Figure 2.5:	Schematic diagram of a typical Lead acid battery (Source: Martin <i>et.al</i> , 2010)	2-13
Figure 2.6:	Schematic diagram of a typical Redox Flow Battery (Source: Parsons, 2017)	2-15
Figure 2.7:	The R308 public access gravel road (in yellow) and proposed access point to the proposed Kwagga WEF 3 (Source: JG Afrika, 2021)	2-16
Figure 2.8:	Proposed route for the transportation of the turbine components from the Port of Ngqura to the proposed Kwagga WEF 3 (Source: JG Afrika (Pty) Ltd, 2021)	2-17
Figure 2.9:	Example of cranes at Port of Entry (Source: JG Afrika (Pty) Ltd, 2021)	2-18
Figure 2.10:	Example of a tower section being transported (Source: Google Images, 2021)	2-19
Figure 2.11:	Example of a wind turbine blade being transported on an extendible trailer (Source: Google Images, 2021)	2-19
Figure 2.12:	Example of a nacelle being transported (Source: JG Afrika (Pty) Ltd, 2021)	2-19
Figure 2.13:	Example of a hub and rotary units being transported (Source: JG Afrika (Pty) Ltd, 2021)	2-20



## 2. PROJECT DESCRIPTION

This chapter provides an overview of the conceptual project design and an overview of the site and technology selection process for the proposed 204.6 MW Kwagga Wind Energy Facility 3 (“Kwagga WEF 3”), as provided by the Project Developer, ABO Wind renewable energies (Pty) Ltd (hereafter “ABO Wind”).

The purpose of this chapter is to present sufficient project information on the proposed Kwagga WEF 3 (including the facility itself and the associated infrastructure) to inform the EIA Process in terms of design parameters applicable to the project.

As noted in Chapter 1 of this Scoping Report, ABO Wind is proposing the construction of the Kwagga WEF 3 and associated infrastructure in the Western Cape. ABO Wind is still investigating options for possible grid connection, from the proposed Kwagga WEF 3 to a proposed on-site collector substation, and/or a third party major transmission station (MTS) to be constructed nearby, and therefore a separate Environmental Assessment Process will be undertaken at a later stage once the grid connection and the power line routing has been confirmed.

The proposed Kwagga WEF 3 will consist of a maximum of 33 individual turbines, which will be positioned at strategic locations on site that will be informed by the assessment inputs provided by the specialists on the EIA project team during the EIA Phase. While the exact type of turbine technology is yet to be finalised, the turbines are expected to have a combined maximum generation capacity of 204.6 MW. The proposed location of the Kwagga WEF 3 is shown in Figure 1.1 and Figure 1.2 in Chapter 1.

Table 2.1 shows the co-ordinates of the preferred project site.

**Table 2.1: Co-ordinates of the Corner Points of the Preferred Project Site**

Site	Point	Latitude	Longitude
Kwagga WEF 3	North-North-East	32°56'34.58"S	22°51'4.32"E
	North-North-East	32°56'50.86"S	22°51'8.96"E
	North-North-East	32°56'57.69"S	22°51'2.69"E
	North-North-East	32°57'1.99"S	22°51'32.79"E
	North-North-East	32°56'50.80"S	22°51'54.33"E
	North-North-East	32°56'47.31"S	22°51'57.95"E
	North-East	32°56'50.95"S	22°52'8.52"E
	East-North-East	32°57'28.36"S	22°52'7.55"E
	East-North-East	32°57'4.38"S	22°54'0.55"E
	East-North-East	32°57'53.72"S	22°53'51.69"E
	East-North-East	32°58'40.96"S	22°51'10.73"E
	East-South-East	33° 1'28.30"S	22°52'23.01"E
	East-South-East	33° 1'51.70"S	22°52'38.44"E
	South-South-East	33° 2'16.69"S	22°50'7.22"E
	South-South-West	33° 2'44.55"S	22°48'13.28"E
	South-South-West	33° 2'53.09"S	22°46'30.62"E
	West-South-West	33° 2'0.74"S	22°45'55.28"E
South-South-West	33° 1'51.91"S	22°48'32.31"E	

Site	Point	Latitude	Longitude
	South-South-West	33° 0'18.96"S	22°48'28.64"E
	West-South-West	33° 0'24.41"S	22°46'20.86"E
	West-South-West	33° 0'16.17"S	22°46'10.89"E
	West-South-West	32°59'35.06"S	22°45'49.68"E
	West-West-North	32°59'16.79"S	22°45'52.27"E
	West-West-North	32°58'49.31"S	22°46'37.62"E
	West-West-North	32°58'42.49"S	22°46'4.29"E
	North-North-West	32°55'52.02"S	22°46'59.56"E

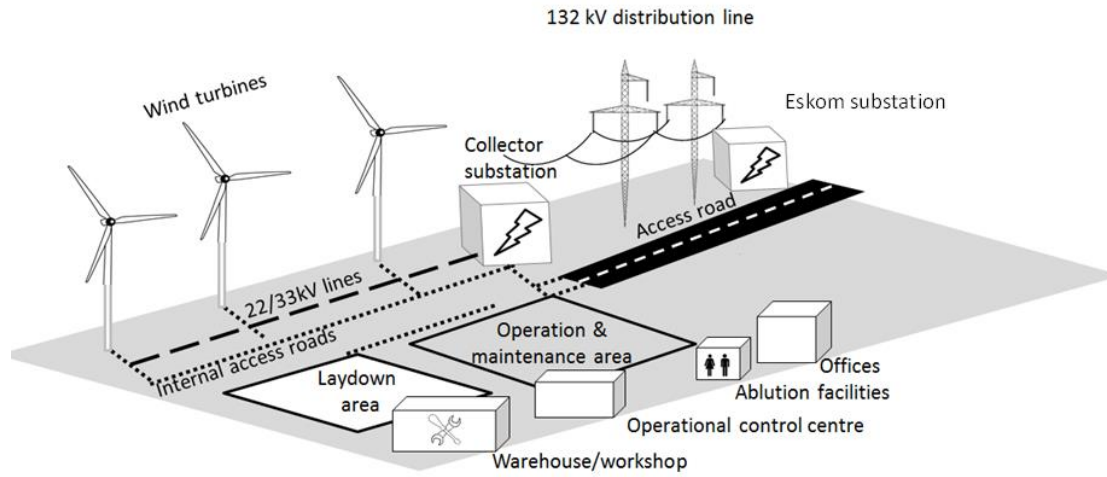
## 2.1 Key components of the proposed Kwagga WEF 3

A summary of the key components of the proposed project is described below. It is important to note at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase (subsequent to the issuing of an Environmental Authorisation (EA), should such an authorisation be granted for the proposed project, and shortly before construction commences). In line with the precautionary approach and in order to ensure that any environmental impacts which may arise as a result of the project are adequately assessed during the EIA Phase, worst-case scenarios and estimates have been provided in this section. For example, the current project description is representative of a worst-case scenario in terms of the total number of turbines proposed for implementation, as it reflects the maximum number of wind turbines that may be implemented i.e. 33 turbines. The hub height is up to 180 m, the rotor diameter is up to 200 m and the blade length is up to 100 m.

The total physical development footprint of the proposed project (i.e. maximum 33 turbines and supporting infrastructure) is estimated to comprise approximately 250 ha. As discussed in Chapter 1 of this Scoping Report, once the commercial operation date is achieved, the proposed facility will generate electricity for a minimum period of 20 years. The properties to be affected by the development of the proposed WEF will be leased from the property owners by the Project Applicant for the life span of the WEF project. As the proposed Kwagga WEF 3 requires approximately 250 ha, which is about 0.27% of the total assessed study area that is approximately 9 385 ha in extent, there is ample spatial scope to avoid major environmental constraints through optimisation of the final design, if required. Figure 2.2 indicates the preliminary project layout including the associated infrastructure for the proposed Kwagga WEF 3.

All high resource areas within the relevant affected properties, as well as potential locations for all relevant supporting infrastructure have been assessed during the Scoping Phase. Based on the initial findings of the specialist assessments, a preliminary combined environmental sensitivity map was prepared and is included in Chapters 3 and 5 of this Scoping Report. This map shows the environmental sensitivities (*inter alia* avifauna, bats, terrestrial biodiversity, watercourses, heritage features, etc.) within the larger study area that was assessed during Scoping. Based on this map, the preferred development footprint for the Kwagga WEF 3 will be revised to avoid (where possible) the most sensitive features that were identified by the specialists within the original assessed study area. This revised development footprint and associated project layout will be taken forward into the EIA Phase for further assessment by the specialist team.

The Kwagga WEF 3 will typically consist of some of the illustrated components shown in Figure 2.1 below.



**Figure 2.1: Typical components of a Wind Energy Facility (Source: Tennessee Valley Authority, Wikimedia)**

An overview of the key components of the proposed Kwagga WEF 3 project are discussed in Section 2.1.1 to 2.1.3 below.

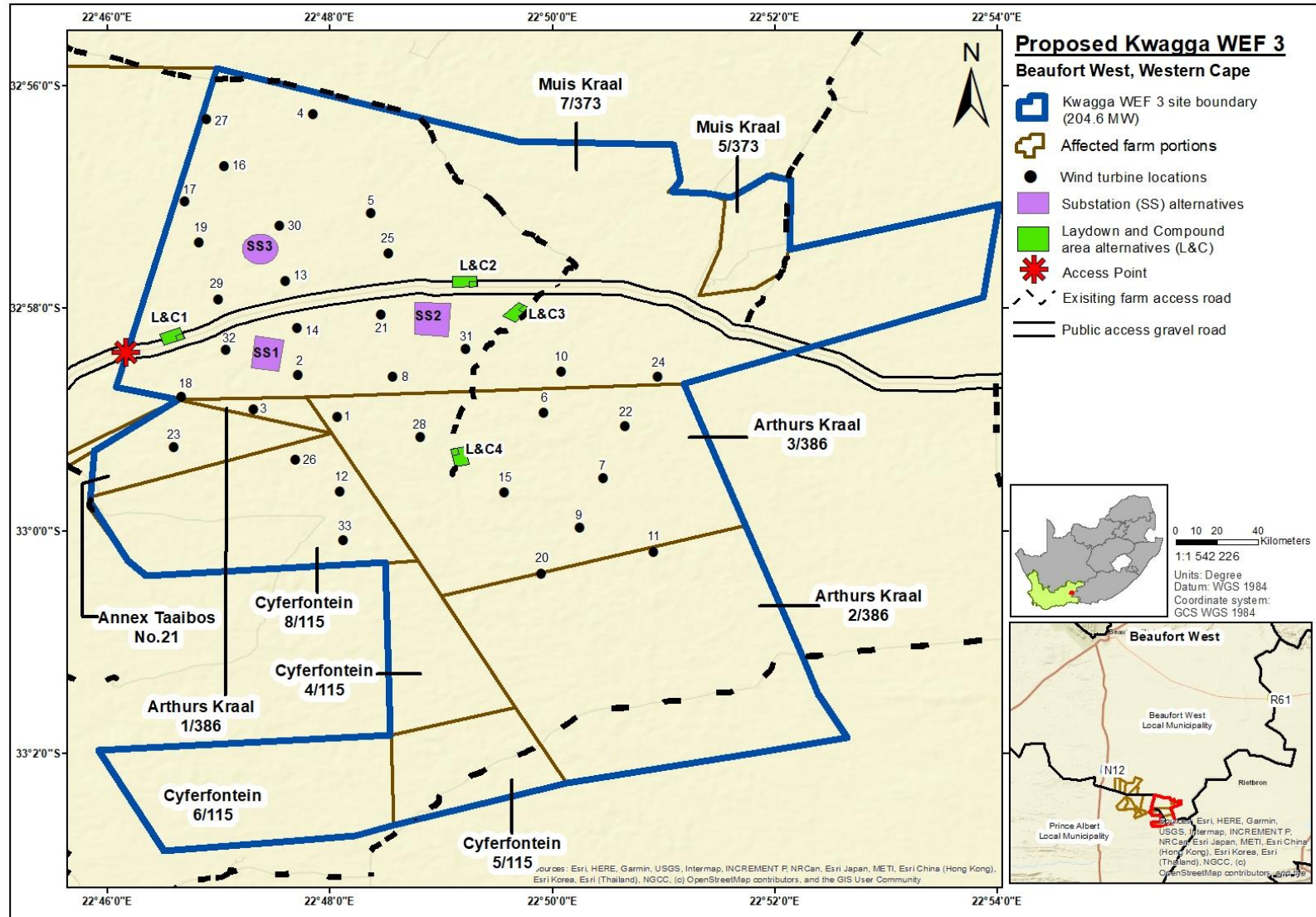


Figure 2.2: Preliminary project layout of the proposed Kwagga WEF 3 development footprint

### 2.1.1 General Description of a Wind Turbine and Wind Turbine Technology

---

Wind turbines generate electricity by converting movement or kinetic energy produced by the wind into electricity. Different turbine technologies achieve this through slightly different means. A typical horizontal-axis wind turbine consists of a number of components, which work together to generate electricity as depicted in Figure 2.3 below. When the rotor spins the shaft, the shaft spins the assembly of magnets, which generate voltage in the coil of wire. This voltage provides alternating electrical current, which could then be distributed through powerlines. The wind turbine tower supports the rotor and nacelle and provides the height for the rotor blades to clear the ground safely, and to capitalise on atmospheric wind resources, which occur approximately 80 - 200 m above the earth's surface.

It is anticipated that the individual wind turbines planned for the proposed Kwagga WEF 3 will have the following **approximate** specifications:

- Number of turbines: 33
- Hub height: Up to 180 m
- Rotor diameter: Up to 200 m
- Blade length: Up to 100 m
- Turbine capacity: at least 6.2 MW
- Reinforced concrete foundation and crane platform: Approximately 1 ha per turbine.

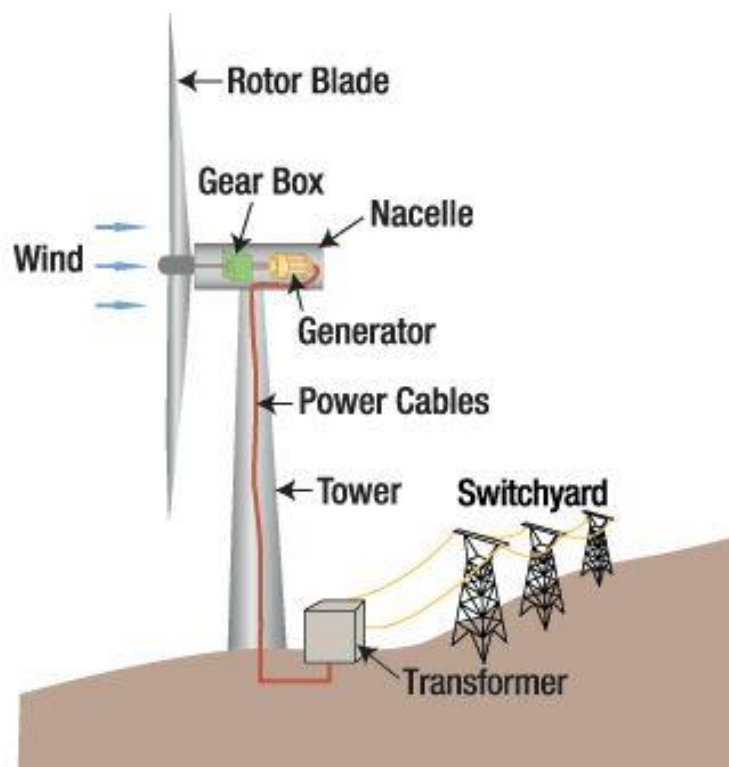


Figure 2.3: Generic design for a wind turbine (Source: Tennessee Valley Authority, Wikimedia)

---

The energy output of a wind turbine ultimately depends on the size of the generator, velocity of the wind, the height of the hub, and the length of the rotor blades. Wind turbines operate at a range of wind speeds and have a start-up speed, which is the speed at which the blades and rotor start to rotate, and a cut-in speed, which reflects the minimum wind speed at which usable power is generated. This is typically about 3 - 4 m/s with full power output occurring at higher wind speeds of approximately 10 to 12 m/s. Wind turbines are also equipped with a cut-out speed or pitch control system as a safety feature to prevent mechanical damage at high or turbulent wind speeds. The cut-out speed is the highest wind speed after which a wind turbine will stop producing power, and a braking system will be activated. This is typically between 25 and 28 m/s depending on the manufacturer and type of turbine selected for implementation. The pitch control system will turn the rotor out of the mean wind direction and change the orientation of the blades so the rotor will capture lower wind speeds and the output power of generator stays within the allowed range. Once the wind drops below the cut-out speed back to a safe level, the turbine can resume normal operation.

Even though wind turbines are relatively tall they do not require extensive land space. The concrete foundation of each turbine and crane platform (which will be established next to each turbine) will have a combined footprint of approximately one (1) ha. It will therefore comprise a total area of approximately 33 ha for the 33 turbines at the proposed Kwagga WEF 3. The comparatively small base of the turbine allows other activities to continue uninterrupted in the space underneath and around the turbine. Conventional large-scale development footprints often lead to habitat fragmentation and interference with fauna. As such, the micro siting of the wind turbines will be in an optimum position that minimises the possibility of habitat fragmentation and interference with movement of fauna on the ground.

In terms of wind turbine technology to be used as part of the proposed development, the Project Developer is currently considering a range of wind turbine designs and generation capacity. The exact turbine specifications have not yet been confirmed. Some turbine specifications will only be finalised during the detailed design phase closer to construction. However, the “worst-case scenario” is presented and will be assessed by the specialists during the EIA Phase. The turbine technology selection process shall be subjected to further wind analysis and is also dependent on technical, commercial and site suitability assessment that will, in part, be informed by the EIA Process.

## **2.1.2 Associated Infrastructure**

---

### **2.1.2.1 Hardstand Areas**

The hardstand area for each turbine, covering a footprint of approximately 1 ha will be established adjacent to each wind turbine concrete base. This area will be comprised of a crane platform (approximately 90 m x 50 m), a storage area (approximately 1 000 m<sup>2</sup>), and a crane boom area (approximately 150 m x 30 m). This hardstand area will be utilised by the auxiliary cranes for assembly of turbine components, off-loading and storage during the construction phase, and possibly for maintenance during the operational phase. A schematic illustration of a typical hardstand area and crane platform is provided in Figure 2.4 below.

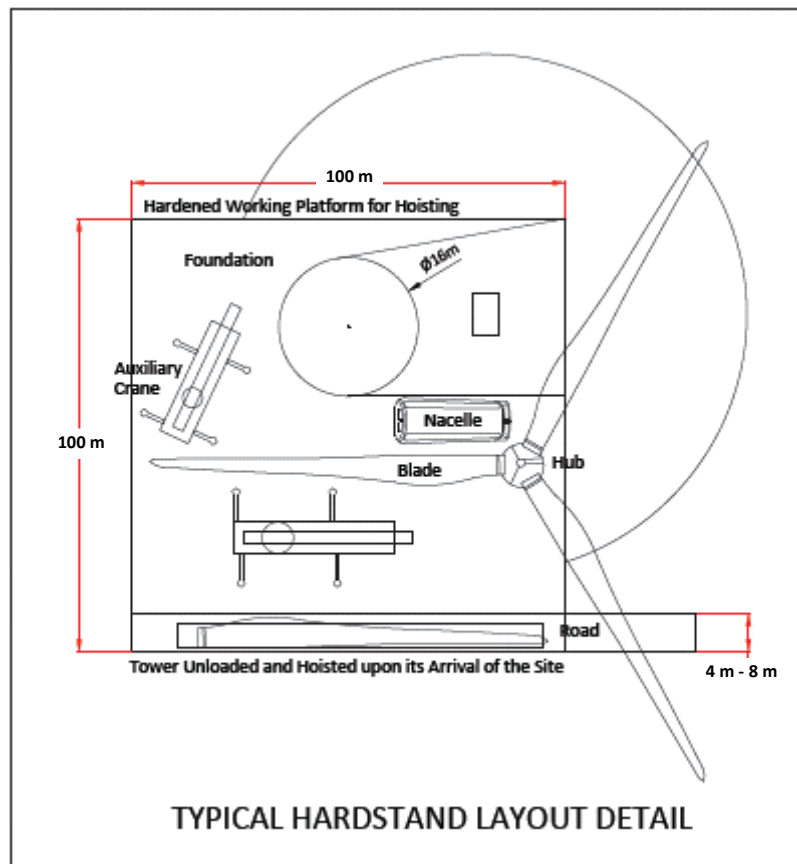


Figure 2.4: Example of a typical hardstand area

### 2.1.2.2 Construction Compounds and Laydown Areas

During the construction phase, the proposed development will require the establishment of at least one construction compound and laydown area with an approximate footprint of about six (6) ha (300 m x 200 m). This area that will be fenced with access control usually comprises of the following structures and infrastructure:

- Site office and meeting room (e.g. temporary/prefabricated double storey container type structure);
- Worker amenities (e.g. canteen, ablution facilities, changing room, etc.);
- Storage structures for equipment, materials, fuel, oil, machinery etc. (e.g. containers, skips etc.);
- Security office and boom gate;
- Parking area; and
- Concrete batching plant of 0.25 ha in size (50 m x 50 m).

Four possible development footprints for the construction compound and laydown area have been identified at the proposed Kwagga WEF 3 project site and will be taken forward into the EIA Phase for detailed specialist assessment.

### **2.1.2.3 Operations and Maintenance (O&M) Area**

The on-site operations and maintenance (O&M) area is required to support the functioning of the proposed Kwagga WEF 3 and provide services to personnel who will be responsible for the operation and routine maintenance of the facility during its lifespan. The proposed O&M area will have a footprint of approximately one (1) ha, will be fenced with access control and will comprise of the following:

- Buildings including *inter alia* a reception area, site offices, ablution facilities, operational control centre, workshops and a security office;
- Storage areas for materials and spare equipment and components;
- Water storage (likely in 10 000 L above ground conventional storage tanks);
- Ablution facilities (conservancy tank system with disposal of sewage at an appropriate licensed wastewater treatment works); and
- Central waste collection and storage area.

It is anticipated that the O&M area, which will form part of the development footprint earmarked for the construction compound and laydown area as described above, will include the installation of a communications tower on site with a maximum height of 32 m. The maximum height of onsite buildings and other related infrastructure is not likely to exceed 10 m.

### **2.1.2.4 Site Access Roads**

The proposed Kwagga WEF 3 project site can be accessed via the N12 main road, which is situated to the west of the site, as well as from the R308 Rietbron bound public access gravel road that traverses the northern section of the site. The N12 is a surfaced national road that connects Beaufort West and the N1 main road in the north with Klaarstroom, De Rust, Oudtshoorn and other Garden Route towns to the south. The R308 Rietbron bound public access road is a well-maintained gravel road with widths ranging between 6 m and 8 m, and will be widened to a maximum width of 10 m, where necessary.

### **2.1.2.5 Internal Service Roads**

There are a number of existing gravel farm roads (some just jeep tracks) with widths ranging between 4 m and 6 m located around and within the proposed Kwagga WEF 3 site boundary (see Figure 2.2). The width of the existing internal service roads will be extended to a maximum width of 10 m, where necessary. The existing internal service road network in addition to all additional internal service roads that are to be constructed on the project site will be confirmed by the Project Developer during the EIA Phase. The length of the internal service road network for the proposed Kwagga WEF 3 is approximately 33 km. The specialists will assess all proposed internal service roads during the EIA Phase.

### **2.1.2.6 Stormwater Channels and Water Pipelines**

Stormwater drainage systems will be constructed on site to ensure that stormwater run-off from site is appropriately managed. Water from these systems is not likely to contain any chemicals or hazardous substances, and will be released into the surrounding environment based on the natural drainage contours. Temporary water pipelines will be installed on site during construction for water supply to *inter alia* the concrete batching plant and the O&M area for domestic use and sanitation. Possible groundwater abstraction on site for purposes of the batching plant is being considered taking into account any necessary and relevant legal requirements.



#### **2.1.2.7 Fencing**

For various reasons such as security, public protection and lawful requirements, the proposed built infrastructure on site will be secured via the installation of appropriate fencing. Existing livestock fencing on the affected farms portions may be upgraded in places where deemed insufficiently secure, whereas permanent fencing will be required around the O&M area and on-site substation hubs. Access points will be managed and monitored by an appointed security service provider. The type and height of fencing to be installed will be confirmed during detailed design as the development progresses.

#### **2.1.2.8 Sewage or Liquid Effluent**

The proposed project will require sewage services during the construction and operational phases. Low volumes of sewage or liquid effluent are estimated during both phases. Liquid effluent will be limited to the ablution facilities during the construction and operational phases. Portable sanitation facilities (i.e. chemical toilets) will be used during the construction phase, which will be regularly serviced and emptied by a registered contractor on a regular basis. However, due to the remote location of the project site, a conservancy tank system will be employed on site during the operational phase for which a registered company will be contracted to store and transport sewage from site to an appropriate municipal waste water treatment facility.

#### **2.1.2.9 Solid Waste Generation**

Solid waste generation on site during the construction and operational phases will be managed according to the EMPr, which will be included in the EIA Report.

During the 24-month construction phase, it is estimated that the proposed project would generate approximately 50 m<sup>3</sup> of solid waste per month. Solid waste includes but is not limited to packaging material, building rubble, discarded bricks, wood, concrete, plant debris and domestic waste. Solid waste will be collected and temporarily stockpiled within designated areas on site during construction, and thereafter removed and disposed of at a nearby registered waste disposal facility on a regular basis as per agreement with the local municipality. Where possible, recycling and re-use of materials will be encouraged.

During the operational phase, the facility will typically produce minor quantities of general non-hazardous waste mainly resulting from the O&M and office areas. General waste will be collected and temporarily stockpiled in skips in a designated area on site and thereafter removed and disposed of at a nearby registered waste disposal facility on a regular basis as per agreement with the local municipality. Where possible, recycling and re-use of materials will be encouraged.

Any hazardous waste such as chemicals or contaminated soil as a result of spillages, which may be generated during the construction and operational phases, will be temporarily stockpiled within a designated area on site and thereafter removed off site by a suitable service provider for safe disposal at a registered hazardous waste disposal facility.

### **2.1.3 Electrical Components and Connection to the Grid**

---

***Note from the CSIR: The electrical components are discussed below to provide a holistic overview of the proposed Kwagga WEF 3 and for the sake of completeness. However, as noted in Chapter 1, the electrical grid infrastructure (EGI) component of the proposed Kwagga WEF 3 project is still to be confirmed by the Project Developer and will therefore form part of a separate Environmental Assessment Process, which will be undertaken at a later stage.***

### **2.1.3.1 Electrical Grid Infrastructure**

Eskom's Droërivier Substation is ideally located within the Northern Corridor of the Strategic Transmission Corridors (as gazetted on 16 February 2018, GN R113) and approximately 65 km north of the proposed Kwagga WEF 3. It is proposed that a 132 kV overhead transmission line, which will be constructed for the proposed Kwagga WEF 3 at a later stage, will extend between the proposed on-site collector substation at the Kwagga WEF 3 and the existing Droërivier–Proteus 400 kV line that runs parallel to the N12 in a north-south direction and connects Beaufort West with the George/Mossel Bay area further south.

**Note from the CSIR:** *A separate Environmental Assessment Process will be undertaken at a later stage once the grid connection and the 132 kV power line routing for the proposed Kwagga WEF 3 has been confirmed, and hence does not form part of this S&EIA Process.*

### **2.1.3.2 On-site Substations**

The proposed project will include two on-site substation hubs incorporating the facility substation, switchyard, collector infrastructure and associated O&M buildings. Each substation location will have a maximum development footprint of 25 ha and built infrastructure will not exceed 10 m in height.

The construction of each on-site substation would require the following activities:

- A survey of the site on which the proposed on-site substations will be constructed;
- Site clearing and levelling;
- Construction of access roads to the proposed substation site (where required);
- Construction of substation terraces and foundations;
- Assembly and installation of equipment (including transformers);
- Connection of conductors to equipment;
- Testing of equipment; and
- Rehabilitation of any disturbed areas and protection of erosion sensitive areas.

Three possible development footprints have been identified at the proposed Kwagga WEF 3 project site for the construction of the on-site substation hubs, which will be taken forward into the EIA Phase for detailed specialist assessment.

### **2.1.3.3 Battery Energy Storage System (BESS)**

BESS offer a wide range of advantages to South Africa including electricity supply reliability and quality improvement. The main purpose of the BESS is to mitigate intermittency of wind- and solar PV energy generation by storing and dispatching of electricity when needed i.e. to contribute to the grid 24 hours/day, during peak demand at night or during power outages. In essence, BESS technology allows renewable energy to enter the completely independent power generation market.

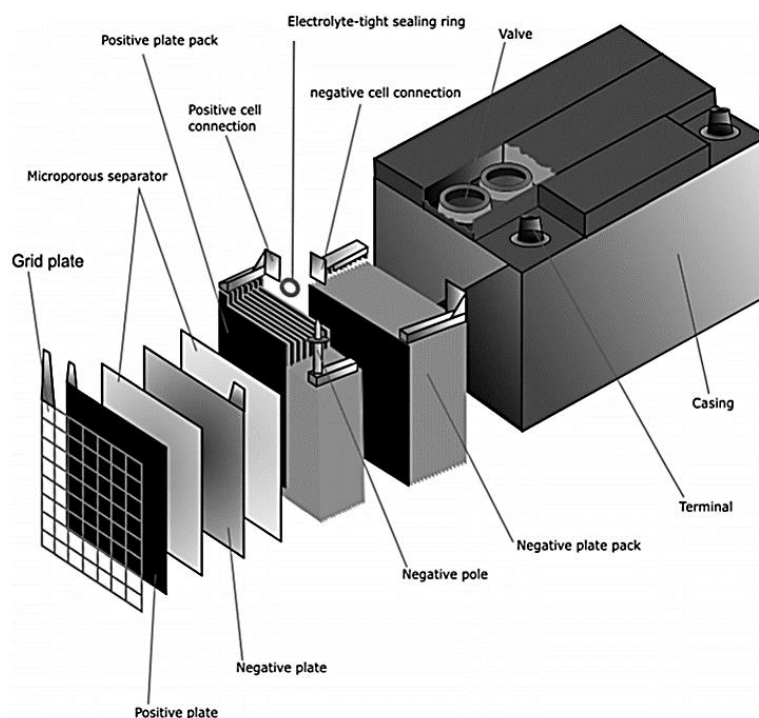
The proposed Kwagga WEF 3 will also include one electrochemical BESS. The BESS will comprise an area of approximately five (5) ha that is most likely to be included within the perimeter of an on-site substation (see Section 2.1.3.2 above). The BESS will have a maximum height of 8 m (as recommended) and a storage capacity of 500 MW/500 MWh.

The Project Developer is considering several types of electrochemical BESS technologies for inclusion at the proposed Kwagga WEF 3. The electrochemical BESS technologies that are being considered include:

- Lead Acid and Advanced Lead Acid BESS

Lead acid batteries are solid-state batteries which consist of a negative electrode which is comprised of Lead, a positive electrode, which is comprised of Lead oxide, electrolyte (i.e. sulphuric acid) and separators (i.e. insulating material between oppositely charged plates which allow electrolyte to pass through) (Garcke and Brandt, 2018). The submersion of the electrodes/ plates in electrolyte allows for the generation and storage of energy during charge and discharge cycles. There are two types of lead acid batteries; Flooded Lead Acid (FLA) and Valve Regulated Lead Acid (VRLA) batteries. FLA and VRLA batteries have the same operating principle; however, the main components of VRLA batteries are enclosed in solid sealed systems with a pressure-regulating valve unlike FLA batteries in which hydrogen is vented (Martin *et al.*, 2010). VRLA batteries are more commonly used as large standby power supplies (i.e. BESS).

It is proposed that the BESS would be housed in containers along with its associated operational, safety and control infrastructure. Should this BESS type be the preferred BESS alternative, the BESS will be pre-assembled off site and delivered to site for placement as per specifications of the supplier and remain sealed during operations.



**Figure 2.5: Schematic diagram of a typical Lead acid battery (Source: Martin *et al.*, 2010)**

---

- Lithium Ion Batteries

Lithium Ion batteries are also sealed systems i.e. pre-assembled off site and then delivered to site for placement. This BESS system consists of multiple battery cells that are assembled together to form modules. A module may consist of several cells working in conjunction. Each cell contains a positive electrode, a negative electrode and an electrolyte. The negative electrode for a lithium-ion cell is typically

carbon. The positive electrode can be lithium iron phosphate or a lithium metal oxide. The electrolyte is usually a lithium salt dissolved in an organic solvent.

If the Lithium ion BESS is the preferred BESS alternative, the BESS will be pre-assembled off site, delivered to site for placement and will remain sealed during operations.

- Nickel based batteries (i.e. Nickel-Cadmium (NiCd) and nickel–metal hydride (NiMH))

The positive electrodes of Nickel based NiCd battery cells are composed of a nickel-oxyhydroxide, which is the active material, and the negative electrodes are composed of metallic cadmium. The positive and negative plates are separated from each other by a continuous strip of porous plastic and an aqueous solution of potassium hydroxide (i.e. electrolyte). Similar to the NiCd BESS, the Nickel based NiMH BESS comprises of positive electrodes made of nickel hydroxide and an aqueous solution of potassium hydroxide functioning as the electrolyte. However, the NiMH BESS differs in that the negative electrodes are composed of metal hydride (Parsons, 2017). Sealed and vented designs of NiMH and NiCd batteries are used commercially. Vented nickel based batteries are often used for large power storage (i.e. wind generated power storage). Vented systems contain a low pressure release valve, which facilitates the release of oxygen and hydrogen produced at the negative electrode in cases of overcharging or rapid discharging. This release system results in the BESS being safer and more economical (Parsons, 2017)

In addition, should any of the two nickel based BESSs discussed here be the preferred BESS alternative, the BESS will be pre-assembled off site and will remain sealed during operations.

- High Temperature (NaS, Na-NiCl<sub>2</sub>, Mg/PB-Sb) BESS

Similar to the Lithium ion BESS and Lead Acid BESS, High Temperature batteries are also sealed battery energy storage systems. Sodium Sulphur (NaS) batteries are considered the most advanced High Temperature BESS technology of the three types of technology being considered. This type of BESS comprises of sodium at the negative electrode and molten sulphur at the positive electrode. The electrodes are separated by a solid beta alumina ceramic electrolyte, which only allows positively charged sodium ions to pass through and combine with the molten sulphur to form sodium polysulfides. The general high fire risk associated with High Temperature BESS's is also mitigated by the NaS BESS as the structure comprises of a double-walled airtight enclosure that contains the NaS cells in a series-parallel array formation. The cells are also surrounded with sand both to mitigate fire and to anchor the cells (Parsons, 2017).

The Mg/PB-Sb BESS, unlike the NaS BESS, comprises of two liquid metal electrodes of different densities and a molten salt electrolyte, which separates the electrodes. The differences in density and the immiscibility of the three materials result in three distinct layers, which remain separate.

The third type of High Temperature BESS is the Na-NiCl<sub>2</sub> BESS that is also referred to as the ZEBRA battery. This BESS technology comprises of a negative electrode of molten sodium and a porous solid nickel chloride positive electrode. A ceramic electrolyte, similar to that found in a NaS BESS, separates the electrodes and only allows sodium ions to pass through (Parsons, 2017).

High temperature BESS technologies are all similar in that the systems are required to operate at high temperatures (approximately 300°C), therefore require active heating in order to facilitate ion transfer and maintain the molten state of some/all of the BESS components (Parsons, 2017). This may increase

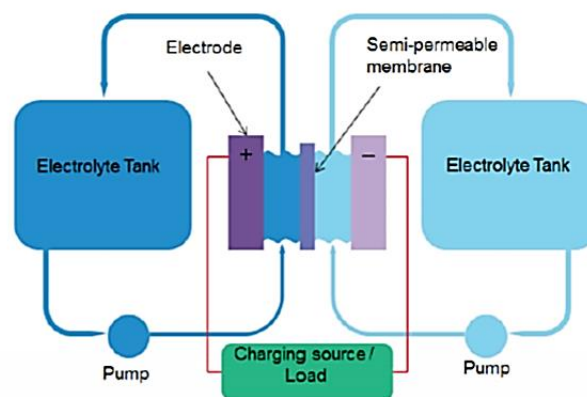
operational costs and increase the risk of fires; however, these High Temperature BESS technologies are considered extremely efficient as less degradation of electrodes may be experienced in the long-term. These BESS systems also comprise of cells that are hermetically sealed and contain fire mitigation measures.

Should any of the High Temperature BESS discussed above be the preferred BESS alternative, the BESS will be pre-assembled off site, delivered to site for placement and will remain sealed during operations.

- Redox Flow Batteries (RFB): Vanadium-Vanadium Redox Flow Battery (VRFB), Zinc-iron Flow Battery (Zn-Fe), Zinc-Bromine Flow Battery (Zn-Br)

Flow batteries generally comprise of three major components; a cell stack, auxiliary parts and electrolyte storage. The active chemical species in a flow battery are stored mostly externally in above-ground storage tanks. The energy is stored in two chemical components, which are dissolved in a liquid to form electrolytes during operation. The energy density of a RFB is thus dependent on the size of the storage tanks (Parsons, 2017).

There are two types of RFB's i.e. a 'true' RFB and a hybrid RFB. In a 'true' RFB the electro-active materials used to store energy remain dissolved in solution. Therefore, the energy is determined by the volumes of electrolyte available. Examples of a 'true' RFB is the VRFB and iron-chromium systems. Hybrid RFBs deposit at least one chemical species as a solid during the charge cycle, therefore preventing the complete separation of power and energy characteristics (Parsons, 2017). Examples of a hybrid RFB is the Zn-Br RFB and the Zn-Fe RFB. Examples of electrolytes for RFBs include Hydrochloric Acid and Sulphuric Acid, which are considered as dangerous goods in terms of the 2014 NEMA EIA Regulations (as amended).



**Figure 2.6: Schematic diagram of a typical Redox Flow Battery (Source: Parsons, 2017)**

---

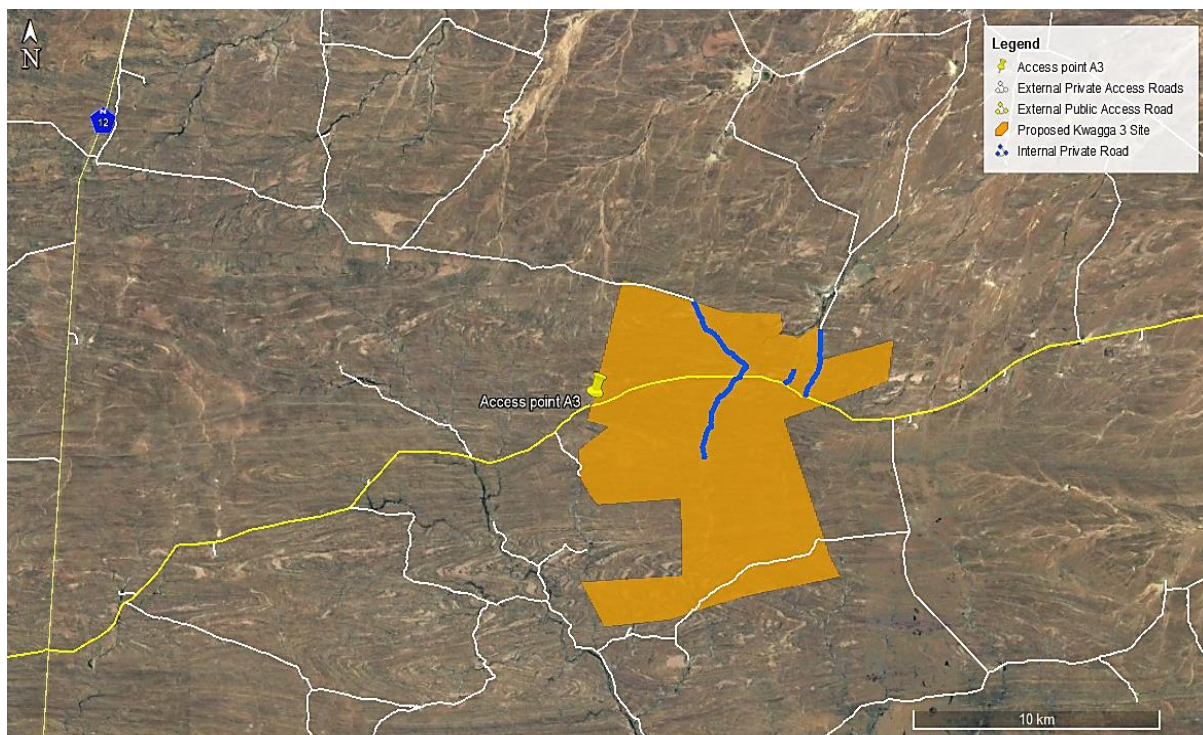
The preferred type of BESS technology to be installed at the Kwagga WEF 3 project as well as the preferred BESS supplier to be contracted will be confirmed during the detailed design phase after Environmental Authorisation (EA) has been obtained (should such EA be granted). The potential risks associated with the various BESS technologies being considered, and the required mitigation measures will be included in the EIA Report, as well as the Environmental Management Programme (EMPr).

## 2.1.4 Site Access and Transportation of Wind Turbine Components to Site

### 2.1.4.1 Site Access

The preliminary site layout indicates that the proposed main access road to the Kwagga WEF 3 will be from the N12, which is situated to the west of the site, via the R308 Rietbron bound public access gravel road that traverses the northern section of the site (see Figure 2.2). The proposed access point (shown as Access Point A3 in Figure 2.7) to the proposed Kwagga WEF 3 is located approximately 43 km from the N12 along the R308. The R308 gravel road will be widened to a maximum width of 10 m, where necessary.

JG Afrika (Pty) Ltd has been appointed to undertake a Transportation Impact Assessment (TIA) for the proposed Kwagga WEF 3. The TIA will assess the expected traffic related impacts of the proposed facility during the construction, operational and subsequent decommissioning phases. The purpose of the TIA is also to consider the traffic impact that the WEF would have on the surrounding road network and receiving environment during the construction of the access roads, construction and installation of the turbines, as well as for maintenance during the operational phase.



**Figure 2.7: The R308 public access gravel road (in yellow) and proposed access point (A3) to the proposed Kwagga WEF 3 (Source: JG Afrika, 2021)**

The nearest towns in relation to the proposed Kwagga WEF 3 project site include Beaufort West, Klaarstroom, Prince Albert, Willowmore and Oudtshoorn. Beaufort West is situated within 103 km travel distance from the proposed Kwagga WEF 3. Prince Albert is located within 98 km, Willowmore within 107 km and Oudtshoorn within 116 km travel distance from the proposed WEF, respectively. The main route linking Beaufort West to the proposed WEF is the N12. It is envisaged that the majority of materials, plants and labour will be sourced from Beaufort West (other towns might serve as alternatives) and transported to the proposed WEF site via the N12.

Should concrete batch plants or quarries not be available in the surrounding areas, mobile concrete batch plants and temporary construction material stockpile yards will be utilised. Delivery of materials to the mobile batch plant and the stockpile yard could be staggered to minimise traffic disruptions (JG Afrika, 2021). The Project Applicant is proposing to establish a concrete batch plant on site (within the construction compound and laydown area) for purposes of the construction phase (see Section 2.1.2.2 above).

#### 2.1.4.2 Port of Entry

The most suitable South African port to import the turbine components to South Africa is the Port of Ngqura, which is located near Port Elizabeth in the Eastern Cape and which is located approximately 400 km travel distance from the proposed development site. This Port is a deep-water port geared for handling large container ships and has large laydown areas available for storage of wind turbine components. The Port forms part of the Coega Industrial Development Zone (CIDZ) and is operated by Transnet National Ports Authority (TNPA). The Port also services the industrial bulk commodity requirements of the regional and national hinterland. Containers handled include imports and exports from across the globe as well as transshipment cargoes serving primarily East and West coast traffic, as well as inter-line traffic from South America to Asia.

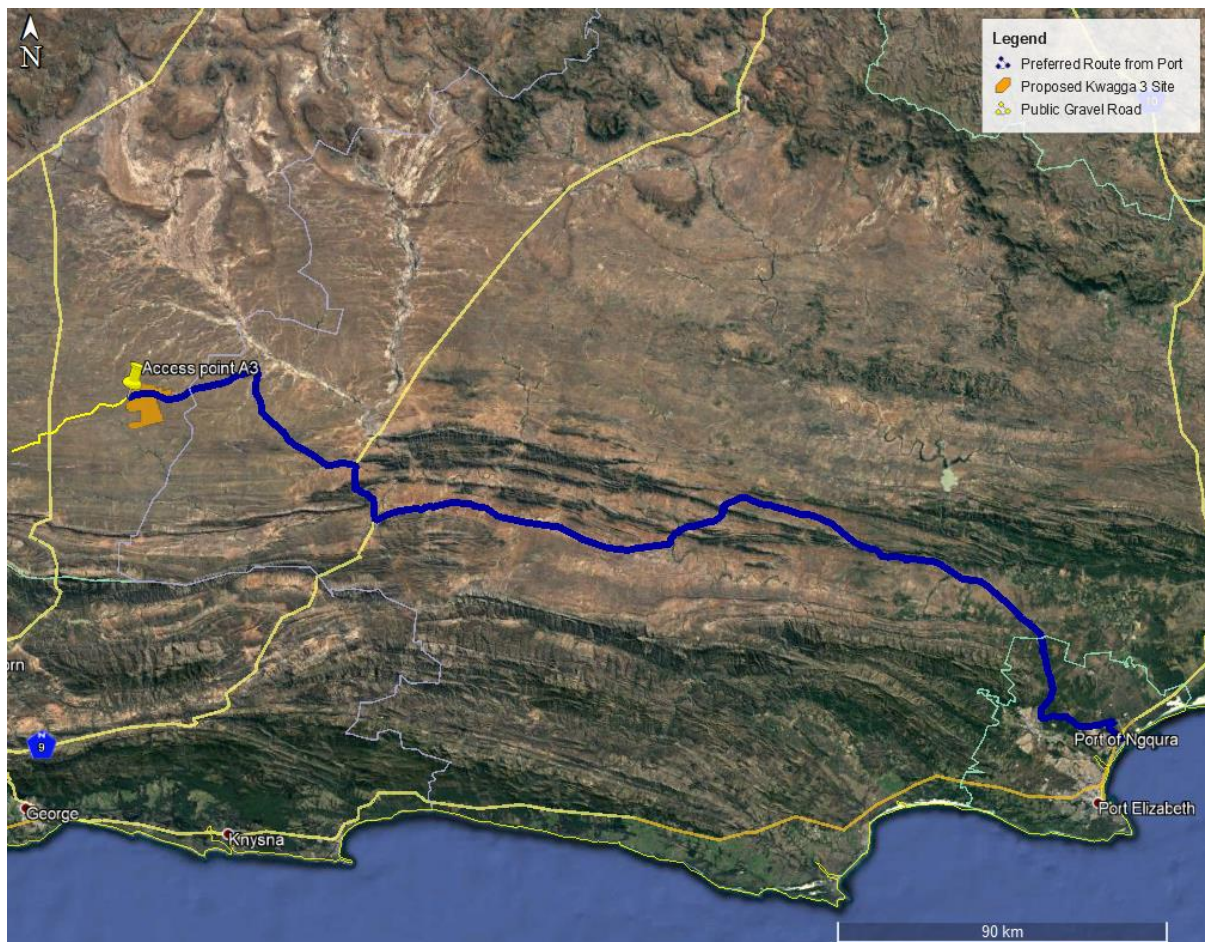


Figure 2.8: Proposed route for the transportation of the turbine components from the Port of Ngqura to the proposed Kwagga WEF 3 (Source: JG Afrika (Pty) Ltd, 2021)

Most shipping vessels importing the turbine components will be equipped with on-board cranes to do all the safe off-loading of Wind Turbine Generator (WTG) components onto the abnormal transport vehicles, parked adjacent to the shipping vessels (Figure 2.9). The imported turbine components may be temporarily

stored at the nearest laydown area within the port's bounds or transported directly from the Port of Entry to the laydown area at the proposed project site. Mobile cranes will be required at these laydown areas to position the respective turbine components at their temporary storage location.

The most likely route for abnormal load vehicles will be from the port, heading northwest on the R75 and the R329 to Willowmore (passing Steylerville) and then north onto the N9 and R306 towards Rietbron. At Rietbron, the abnormal load vehicles will travel westwards towards the N12 and the proposed project site via the R308 public access gravel road traversing the affected farm portions.



**Figure 2.9: Example of cranes at Port of Entry (Source: JG Afrika (Pty) Ltd, 2021)**

---

#### **2.1.4.3 Transportation of Wind Turbines**

Wind turbine components can be transported in a number of ways with different truck / trailer combinations and configurations, which will need to be investigated at a later stage when the transporting contractor and the plant hire companies apply for the necessary permits from the Permit Issuing Authorities.

For the transportation of the turbines from the Port of Entry to the proposed WEF site, the blades are the longest and possibly most vulnerable components of a wind turbine and hence needs to be transported with utmost care. The blades need to be transported on an extendible blade transport trailer or in a rigid container with rear steerable dollies. The blades can be transported individually, in pairs or in three's; although different manufacturers have different methods of packaging and transporting the blades.

In terms of the National Road Traffic Act, 1996 (Act No. 93 of 1996), the trucks delivering turbine components will be considered as abnormal loads. Approval i.e. relevant permits may have to be obtained from National, Provincial and/or Local Competent Authorities for the transportation of abnormal heavy components. This is normally the responsibility of the logistics company in charge of these components.

Figures 2.10 to 2.13 below provide examples of transportation of some of the turbine components.





Figure 2.10: Example of a tower section being transported (Source: Google Images, 2021)

---



Figure 2.11: Example of a wind turbine blade being transported on an extendible trailer (Source: Google Images, 2021)

---

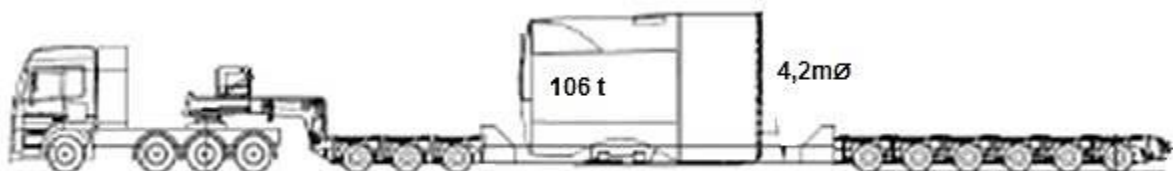


Figure 2.12: Example of a nacelle being transported (Source: JG Afrika (Pty) Ltd, 2021)

---

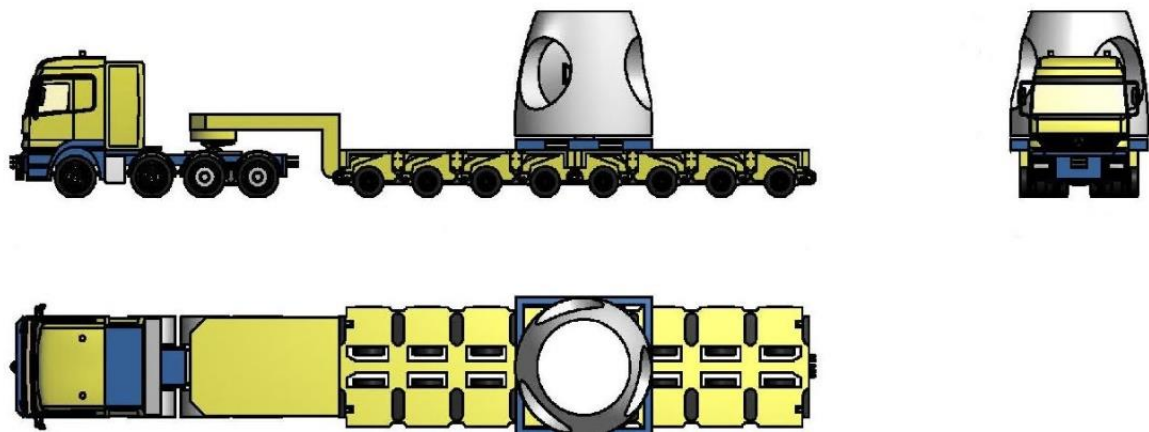


Figure 2.13: Example of a hub and rotary units being transported (Source: JG Afrika (Pty) Ltd, 2021)

---

### 2.1.5 Water Requirements

---

The monthly water use requirement during the construction phase is an estimated average of 8 333 kilolitre (kL). High water use is only anticipated during the first six months of the construction phase mainly for purposes of the turbine foundations, roads and dust suppression. Thereafter the water usage will decrease drastically. The water use requirement during the operational phase will be primarily for human consumption and sanitation purposes. It is proposed that water be sourced from either the Beaufort West Local Municipality or the Prince Albert Local Municipality, and specific arrangements will be agreed upon with the relevant Local Municipality in a Service Level Agreement (SLA).

Note, however, that should municipal water supply cannot be confirmed, the Project Developer will investigate other water sources considering any necessary and relevant legal requirements.

## 2.2 Overview of Project Development Cycle

---

This section provides an outline of the main activities that are proposed during each phase of the proposed project, i.e. extending from the Planning and Design phase through to the Decommissioning phase. The operational life of the wind energy facility is expected to be approximately 20 years, which could be extended through regular maintenance and/or upgrades in technology.

### 2.2.1 Detailed Planning and Design

---

The project layout, including the exact placement of each individual turbine, building infrastructure and the proposed internal service road network will be finalised in the EIA Phase. The project layout will be informed by the findings of the specialist impact assessments, which includes the identification of sensitive biophysical areas that need to be avoided i.e. ‘no-go’ areas. The specialists will be requested to comment on the final project layout. The turbine manufacturer and turbine generation capacity to be used will be dependent on availability of turbines in the international market, suitability to the South African wind climate, and service levels and experience available in South Africa, and will only be confirmed during the detailed design phase prior to construction.

### 2.2.2 Construction Phase

---

The construction phase will take place subsequent to the issuing of an EA from the DFFE and once a power purchase agreement (PPA) with a suitable energy off-taker which could be either the national government or private is signed. The construction phase for the proposed Kwagga WEF 3 project is expected to extend over 18 to 24 months; however, the construction period is subject to the actual number of turbines to be erected, the final requirements of Eskom and the REIPPPP RfP provisions at that time.

The main activities that are proposed to take place during the construction phase will entail the clearance of vegetation within the approved development footprint to facilitate the construction and/or establishment of infrastructure including but not limited to the turbine locations, construction compound, laydown area (for the storage of construction equipment, materials, machinery and turbine components), internal service roads and all relevant built structures. Next, the wind turbine foundations will be constructed at each approved turbine location with the aid of a mechanical excavator. Then follows the construction of the on-site substations. The construction of the substation buildings will entail construction of the foundations and building structure as well as the installation of electrical infrastructure such as transformers, conductors, etc. Subsequently, the trenches for the installation of the electrical cabling to facilitate the connection of the wind turbines to the on-site substations will be excavated at a maximum depth of 1 m between each wind turbine.

The construction phase will also involve the transportation of personnel, construction materials and equipment to and from the site. All efforts will be made to ensure that all construction work will be undertaken in compliance with local, provincial and national legislation, local and international best practice, as well as the approved EMPr that will be compiled and included in the EIA Report. An independent Environmental Control Officer (ECO) will be appointed during the construction phase and will monitor compliance with the recommendations and conditions of the EMPr and EA, respectively.

Skilled as well as unskilled temporary employment opportunities will be created during the construction phase. It is difficult to specify the actual number of employment opportunities that will be created at this stage; however, it is estimated that up to 400 employment opportunities are expected to be created during the construction phase. Of these 15% will comprise skilled, 30% semi-skilled, and 55% unskilled employment opportunities. The proposed construction and operational phases will make use of local labour (including female labour) as far as possible and a minimum of 50% of the workers will be sourced from the local communities. All non-local workers will be housed in rental accommodation in the nearby towns i.e. Beaufort West, Klaarstroom, Prince Albert, Rietbron and Oudtshoorn. The Engineering, Procurement and Construction (EPC) contractor will arrange daily transport of these workers to and from the site by buses. No workers will be accommodated in worker amenities on site during construction.

### 2.2.3 Operational Phase

---

The following activities will occur during the operational phase:

- Operation of the WEF and generation of electricity to add to the national grid;
- Storage of energy generated by the WEF in electrochemical batteries;
- Routine maintenance of the WEF; and
- Unscheduled maintenance of the WEF.

The operational lifespan of the proposed Kwagga WEF 3 is expected to be approximately 20 years. Wind turbines will be operational for this entire period except under circumstances of mechanical breakdown, extreme weather conditions and/or maintenance activities. Wind turbines will be subject to regular maintenance and inspection (i.e. routine servicing) to ensure the continued optimal functioning of the turbine components. It is expected that the WEF will operate throughout the day and night (24 hours). During the operational phase of the WEF, agricultural land use activities on site would be able to continue uninterrupted. The only development related activities on site will be routine servicing and maintenance.

The projected operations are expected to provide several services and added economic spin offs (as highlighted in Chapter 1 of this Scoping Report). Up to 30 employment opportunities will be created during the operational phase of the project. Of these, 10% will comprise skilled, 40% semi-skilled and 50% unskilled employment opportunities. Approximately 70% of the operations and maintenance team will aim to be sourced from the local community.

#### **2.2.4 Decommissioning Phase**

---

At the end of the operational phase, the WEF may be decommissioned, or may be repowered i.e. redesigned and refitted so as to operate for a longer period. The main aim of decommissioning is to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise i.e. if the facility becomes outdated or the land needs to be used for other purposes, the decommissioning procedures will be undertaken in line with the approved EMPr and the site will be rehabilitated and returned to its pre-construction state.

Various components of the proposed Kwagga WEF 3, which are to be decommissioned will be reused, recycled or disposed of in accordance with the relevant regulatory requirements. All of the components of the wind turbines are considered to be reusable or recyclable. The turbines may also be traded or sold as there is an active second-hand market for wind turbines and/or it may be used as scrap metal. The decommissioning phase of the project is also expected to create temporary skilled and unskilled employment opportunities.

# CHAPTER 3:

## DESCRIPTION OF THE AFFECTED ENVIRONMENT





# Table of Contents

<b>3</b>	<b>DESCRIPTION OF THE AFFECTED ENVIRONMENT</b>	<b>3-6</b>
<b>3.1</b>	<b>Background</b>	<b>3-6</b>
<b>3.2</b>	<b>Biophysical Environment</b>	<b>3-9</b>
3.2.1	Climate and Climate Change	3-9
3.2.1.1	General Context	3-9
3.2.1.2	Climate Change	3-12
3.2.2	Topography and Landscape	3-12
3.2.3	Geology	3-13
3.2.4	Geohydrology	3-14
3.2.5	Land Types and Soils	3-15
3.2.6	Land Capability and Agricultural Sensitivity	3-17
3.2.6.1	General Context	3-17
3.2.6.2	Screening Tool Descriptions and Site Verification	3-17
3.2.7	Strategic Water Source Areas	3-18
3.2.8	Aquatic Biodiversity	3-19
3.2.8.1	General Context	3-20
3.2.8.2	Biodiversity Conservation Planning	3-21
3.2.8.3	Aquatic Ecosystems	3-23
3.2.8.4	Screening Tool Descriptions and Site Verification	3-23
3.2.9	Terrestrial Biodiversity	3-25
3.2.9.1	General Context	3-25
3.2.9.2	Biodiversity Conservation Planning	3-25
3.2.9.3	Terrestrial Ecosystems	3-25
3.2.9.4	Terrestrial Species	3-27
3.2.9.5	Screening Tool Descriptions and Site Verification	3-27
3.2.10	Bats	3-30
3.2.10.1	Screening Tool Descriptions and Site Verification	3-32
3.2.11	Avifauna	3-33
3.2.11.1	Screening Tool Descriptions and Site Verification	3-35
3.2.12	Visual Aspects and Sensitive Receptors	3-38
3.2.12.1	Screening Tool Descriptions and Site Verification	3-39
3.2.13	Noise Aspects and Sensitive Receptors	3-40
3.2.13.1	Screening Tool Descriptions and Site Verification	3-41
3.2.14	Heritage: Archaeology and Cultural Landscape	3-43
3.2.14.1	Screening Tool Descriptions and Site Verification	3-44
3.2.15	Palaeontology	3-46
3.2.15.1	Screening Tool Descriptions and Site Verification	3-46

<b>3.3</b>	<b>Environmental Sensitivity Map</b>	<b>3-48</b>
<b>3.4</b>	<b>Socio-Economic Environment</b>	<b>3-51</b>
3.4.1	Regional Context – Central Karoo District Municipality	3-51
3.4.1.1	Demographics and Economic Profile	3-51
3.4.1.2	Renewable Energy	3-52
3.4.1.3	Shale Gas Exploration	3-52
3.4.1.4	Social Characteristics	3-53
3.4.2	Local Context – Beaufort West Local Municipality	3-54
3.4.2.1	Demographics and Economic Profile	3-54
3.4.2.2	Education	3-55
3.4.2.3	Employment and Income	3-55
3.4.2.4	Health, Housing and Services	3-55
3.4.3	Local Context – Prince Albert Local Municipality	3-56
3.4.3.1	Demographics and Economic Profile	3-56
3.4.3.2	Education and Skills Development	3-57
3.4.3.3	Employment and Income	3-57
3.4.3.4	Health, Housing and Services	3-57
3.4.4	Study Area Context – Kwagga WEF 3	3-58
<b>3.5</b>	<b>Eco-Tourism Activities</b>	<b>3-58</b>
<b>3.6</b>	<b>Civil Aviation</b>	<b>3-59</b>
<b>3.7</b>	<b>Defence</b>	<b>3-60</b>



## List of Tables

---

Table 3.1:	Bat Species recorded within the combined Kwagga WEF 1, Kwagga 2 and Kwagga WEF 3 study area and their sensitivity to WEFs (Source: ARCUS, 2021)	3-31
Table 3.2:	List of Priority Species recorded from all data sources at the combined study area for the proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 projects, with regional status (Source: Van Rooyen, 2021)	3-34
Table 3.3:	Population growth of the Central Karoo District Municipality for the period 2001 – 2030 (Source: Reuther, 2021)	3-52



# List of Figures

Figure 3.1:	Locality map for the proposed Kwagga WEF 3 project situated to the south of Beaufort West in the Western Cape	3-8
Figure 3.2:	Köppen-Geiger Climate Classification of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site ( <i>indicated in red circle</i> ) (Source: Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), 2019)	3-9
Figure 3.3:	The average monthly distribution of rainfall within the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <a href="https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za">https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za</a> , 2021)	3-10
Figure 3.4:	The average annual rainfall within the Beaufort West area, including the proposed Kwagga WEF 3 project site for the drought-stricken period 2016 – 2021 (Source: <a href="https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za">https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za</a> , 2021)	3-10
Figure 3.5:	The average monthly maximum and minimum temperature for the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <a href="https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za">https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za</a> , 2021)	3-11
Figure 3.6:	The average and maximum annual wind speeds and gusts for the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <a href="https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za">https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za</a> , 2021)	3-11
Figure 3.7:	The landscape character of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site ( <i>indicated in red circle</i> ) (Source: DEA&DP, 2019)	3-12
Figure 3.8:	The regional topographical setting of the proposed Kwagga WEF 3 project site and surrounding area (Source: Klapwijk, 2021)	3-13
Figure 3.9:	The geology of the proposed Kwagga WEF 3 project site ( <i>site boundary indicated in red</i> ) and immediate surrounds (Source: Council for Geoscience, 1:250 000 Map (3222 – Beaufort West and 3322 – Oudtshoorn), 1979)	3-14
Figure 3.10:	Groundwater resource potential of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site ( <i>indicated in red circle</i> ) (Source: DEA&DP, 2019)	3-15
Figure 3.11:	The Land Type Classification of the proposed Kwagga WEF 3 project site ( <i>site boundary indicated in red</i> ) (Land Type Survey, 1987) (Source: Van Rooyen, 2021)	3-16
Figure 3.12:	Soil types of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site ( <i>indicated in red circle</i> ) (Source: DEA&DP, 2019)	3-16
Figure 3.13:	Agricultural sensitivity of the proposed Kwagga WEF 3 project site ( <i>site boundary indicated in blue</i> ) (Source: Lanz, 2021)	3-18
Figure 3.14:	SWSAs in relation to the locality of the proposed projects (i.e. all three Kwagga WEFs).	3-19



DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3, near Beaufort West in the Western Cape

---

Figure 3.15: Aquatic features mapped for the proposed Kwagga WEF 3 project site ( <i>site boundary indicated in red</i> ) and immediate surrounds (Source: Belcher, 2021)	3-21
Figure 3.16: CBAs and ESAs identified and mapped for the proposed Kwagga WEF 3 project site and immediate surrounds ( <i>site boundary indicated in red</i> ) (Source: Belcher, 2021).	3-22
Figure 3.17: Map depicting Aquatic Biodiversity Combined Sensitivity in and around the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020).	3-24
Figure 3.18: Map showing the Aquatic Biodiversity and Species Combined Sensitivity for the proposed Kwagga WEF 3 project site following the site sensitivity verification (Source: Belcher, 2021).	3-24
Figure 3.19: Vegetation mapping of the proposed Kwagga WEF 3 project site (Source: Van Rooyen, 2021)	3-26
Figure 3.20: Map indicating Terrestrial Plant Species sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)	3-27
Figure 3.21: Map indicating Terrestrial Animal Species sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)	3-28
Figure 3.22: Map indicating Terrestrial Biodiversity Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)	3-28
Figure 3.23: Terrestrial Biodiversity and Species Combined Sensitivity map for the proposed Kwagga WEF 3 project site following the site sensitivity verification. The areas indicated in purple shows homesteads or other highly disturbed areas (Source: Van Rooyen, 2021)	3-30
Figure 3.24: Map indicating Bats (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020)	3-32
Figure 3.25: Map indicating Bats (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site following the site sensitivity verification (After: ARCUS, 2021)	3-33
Figure 3.26: Area specific collision risk rating for the eight most abundant priority species in the combined Kwagga WEF 1-3 study area (Source: Van Rooyen, 2021).	3-35
Figure 3.27: Map indicating Relative Avian (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020).	3-36
Figure 3.28: Map indicating Relative Animal Species Sensitivity for the proposed Kwagga WEF 3 project site as it relates to avifaunal species (Source: DFFE Screening Tool, 2020).	3-36
Figure 3.29: Areas of high avifaunal sensitivity, each with a 400 m 'no-go' buffer zone linked to surface water identified within the combined Kwagga WEF 1-3 study area (Source: Van Rooyen, 2021).	3-37
Figure 3.30: Areas of high avifaunal sensitivity, each with a 400 m 'no-go' buffer zone linked to surface water identified within the proposed Kwagga WEF 3 project site (After: Van Rooyen, 2021).	3-37
Figure 3.31: Potential visual receptors identified within the Kwagga WEF 3 project site and surrounds (Source: Klapwijk, 2021)	3-38
Figure 3.32: Potential Landscape (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).	3-39
Figure 3.33: Map indicating potential Flicker Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).	3-40
Figure 3.34: Map indicating the noise sensitive receptors identified within the proposed Kwagga WEF 3 project site and immediate surrounds (Source: Williams, 2021).	3-41
Figure 3.35: Map indicating potential Noise Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020)	3-42

Figure 3.36: Map indicating the two identified Noise Sensitivity Receptors within the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Williams, 2021).	3-42
Figure 3.37: Map of all heritage resources recorded during the field survey, each with a 50 m buffer zone, within the proposed Kwagga WEF 3 project site. Red = Grade IIIA, Orange = Grade IIIB, Yellow = Grade IIIC, White = NCW. The project site boundary is indicated in blue (Source: Orton, 2021)	3-44
Figure 3.38: Map indicating potential Archaeology and Cultural Heritage Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).	3-45
Figure 3.39: Map indicating the identified Heritage / Archaeological sensitivity within the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Orton, 2021).	3-45
Figure 3.40: Map showing the potential Palaeontological Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020)	3-47
Figure 3.41: Map showing the Palaeontological Combined Sensitivity for the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Almond, 2021)	3-47
Figure 3.42: Preliminary combined environmental sensitivity map (excluding Visual sensitivity) for the proposed Kwagga WEF 3 project site	3-49
Figure 3.43: Preliminary combined environmental sensitivity map (including Visual sensitivity) for the proposed Kwagga WEF 3 project site	3-50
Figure 3.44: Mineral resources map for the Central Karoo District Municipality. The proposed Kwagga WEF 3 project site ( <i>indicated in red circle</i> ) appears to be located partly within the potential shale gas exploration area (Source: Western Cape DEA&DP, 2019)	3-53
Figure 3.45: Map showing the proposed Kwagga WEF 3 project site relating to Civil Aviation sensitivity (Source: DFFE Screening Tool, 2020)	3-59
Figure 3.46: Map showing the proposed Kwagga WEF 3 project site relating to Defence sensitivity (Source: DFFE Screening Tool, 2020)	3-60

### 3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

---

This chapter of the Scoping Report provides a broad overview of the affected environment for the proposed Kwagga Wind Energy Facility (WEF) 3 and the surrounding area.

The receiving environment is understood to include biophysical, socio-economic and heritage aspects, which could be affected by the proposed development or which in turn might impact on the proposed development.

This information is provided to identify the potential issues and impacts of the proposed project on the environment and vice versa. The information presented within this chapter has been sourced from:

- Scoping inputs from the specialists that form part of the project team;
- Feedback from the Screening Tool, where applicable;
- Review of inter alia information sources available on the South African National Biodiversity Institute (SANBI) Biodiversity Geographical Information System (BGIS), Agricultural Geo-Referenced Information System (AGIS); and the Western Cape Department of Agriculture (DoA) CapeFarmMapper;
- The Beaufort West Local Municipality Integrated Development Plan (IDP) (2017-2022), and the Prince Albert Local Municipality IDP (2017-2022); and
- The Central Karoo District Municipality Spatial Development Framework (SDF) (2019, draft) and the Western Cape Provincial SDF (2014).

It is important to note that this chapter intends to provide a broad overview of the affected environment. Detailed descriptions of the preferred project site (Kwagga WEF 3) that are focused on significant environmental aspects of the proposed project will be provided in the relevant specialist assessments during the EIA Phase.

#### 3.1 Background

---

The proposed Kwagga WEF 3 project is situated on the following farm portions, located approximately 65 km to the south of Beaufort West in the Western Cape Province:

- Portion 1 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600001);
- Portion 2 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600002);
- Portion 3 of the Farm Arthurs Kraal No. 386 (Surveyor General 21 Digit Code: C0090000000038600003);
- The Farm Annex Taaibos No. 21 (Surveyor General 21 Digit Code: C0610000000002100000)
- Portion 4 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C0610000000011500004);
- Portion 5 of the Farm Cyferfontein No. 115 (Surveyor General 21 Digit Code: C0610000000011500005);
- Portion 6 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C0610000000011500006);

- Portion 8 of the Farm Cyferfontein No. 115 ((Surveyor General 21 Digit Code: C06100000000011500008);
- Portion 5 of the Farm Muis Kraal No. 373 ((Surveyor General 21 Digit Code: C00900000000037300005); and
- Portion 7 of the Farm Muis Kraal No. 373 ((Surveyor General 21 Digit Code: C00900000000037300007).

The total farm properties cover an area of approximately 9 385 ha and the preferred development footprint of the proposed Kwagga WEF 3 will occupy about 250 ha. As previously noted, the proposed project is located within the Beaufort West and Prince Albert Local Municipalities, which both fall within the Central Karoo District Municipality, and is situated to the east of the N12 main road. Figure 3.1 below provides a locality map of the proposed project site.

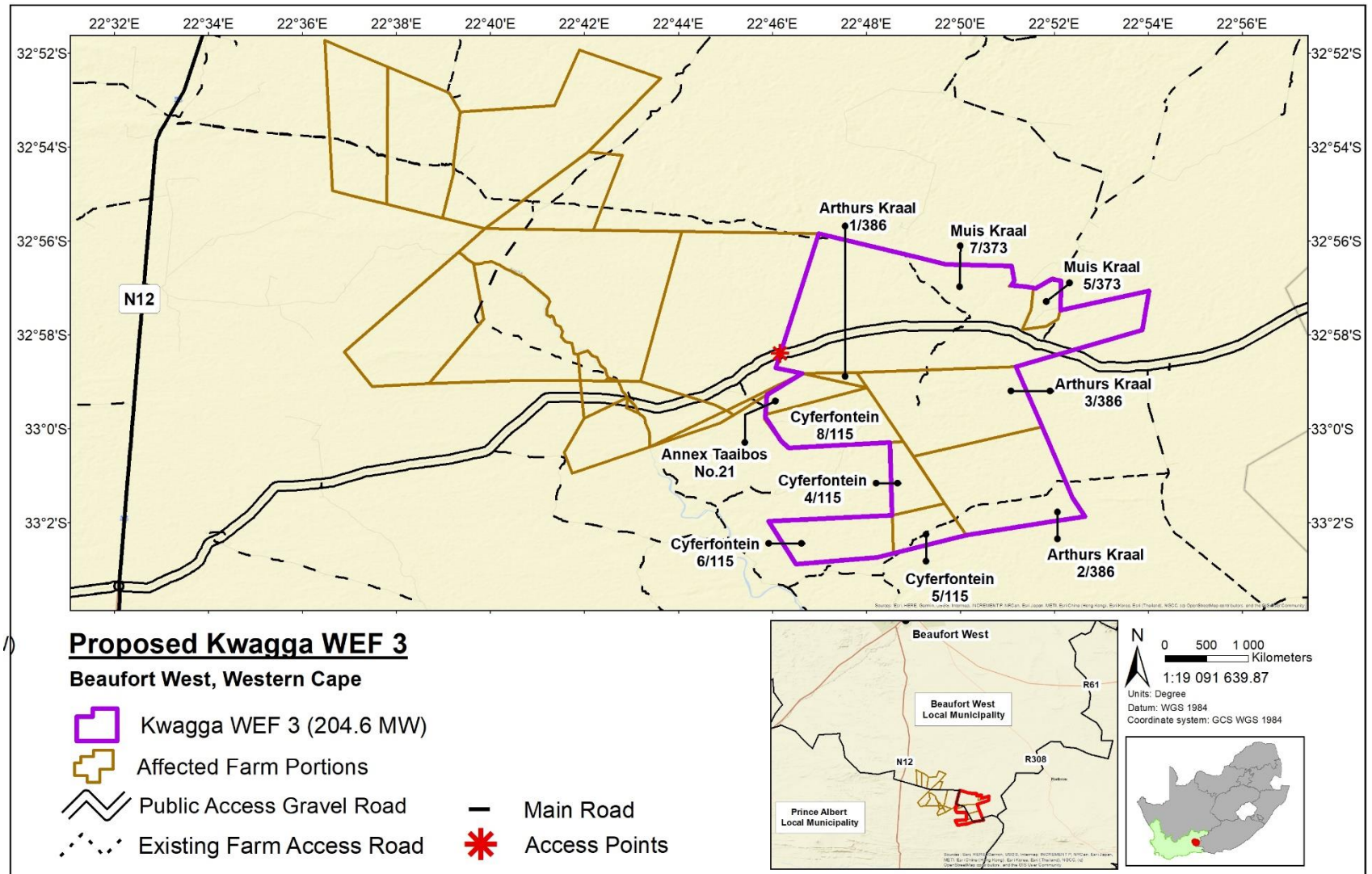


Figure 3.1: Locality map for the proposed Kwagga WEF 3 project situated to the south of Beaufort West in the Western Cape

## 3.2 Biophysical Environment

### 3.2.1 Climate and Climate Change

#### 3.2.1.1 General Context

The Central Karoo region, and more specifically the Gamka Karoo vegetation type in which the proposed project site is located, is considered one of the most arid regions within the Nama Karoo Biome. According to the Köppen-Geiger climate classification method the area is classified “BWk”, which is indicative of an arid, cold desert environment (Figure 3.2). Such extremes, a dry prevailing climate with very low relative humidity, freezing cold winter nights and extremely hot summer days, have given rise to a regionally unique environment both from an aquatic and terrestrial perspective.

This harsh, arid region is characteristic of a summer to autumn rainfall regime, usually peaking between January and March each year. The mean annual rainfall of the area varies between 100 mm and 200 mm with an annual evaporation rate of 1 400 mm. Figure 3.3 shows the average monthly distribution of rainfall within the Beaufort West area, including the proposed Kwagga WEF 3 site for the period 2009 – 2021. The past five years however have been typified by significantly below average annual rainfall due to the severe and prolonged drought experienced in the region (Figure 3.4). Temperatures in the region can be considered to be extreme, with the mean monthly maximum temperature being recorded as 38.7°C in January and the mean July minimum temperature is -3.2°C. The highest average maximum temperatures occur from November to March with the hottest months being January and February (Figure 3.5). The area is characteristic of strong, gusty winds prevailing for most of the year, with the average gust falling within the 20 to 30 kmph range, with the highest wind speeds recorded from October to March (Figure 3.6).

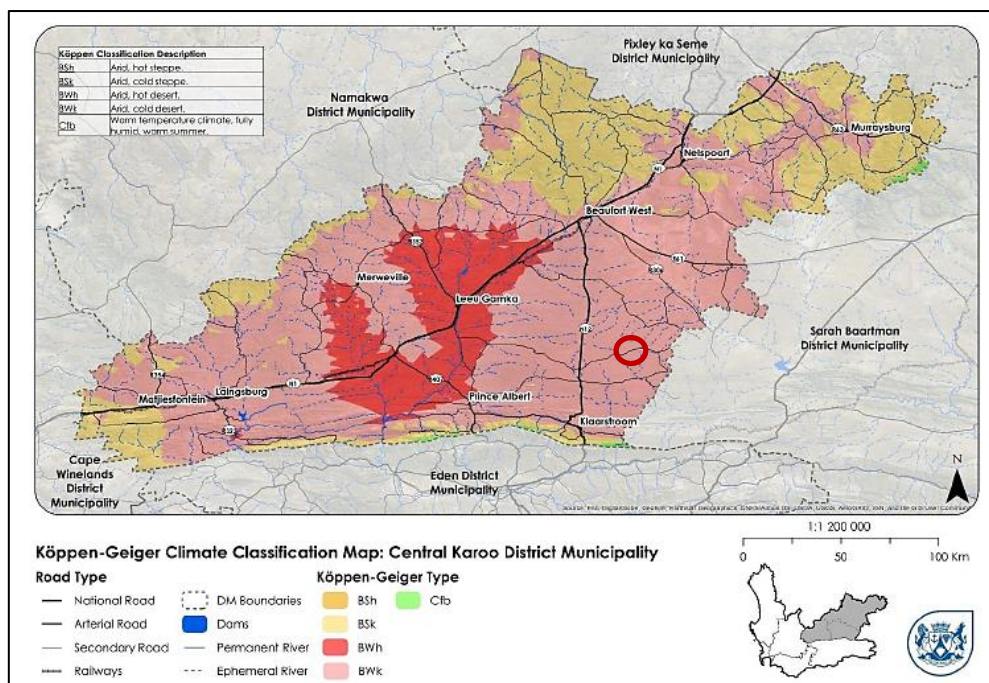


Figure 3.2: Köppen-Geiger Climate Classification of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site (indicated in red circle) (Source: Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), 2019)

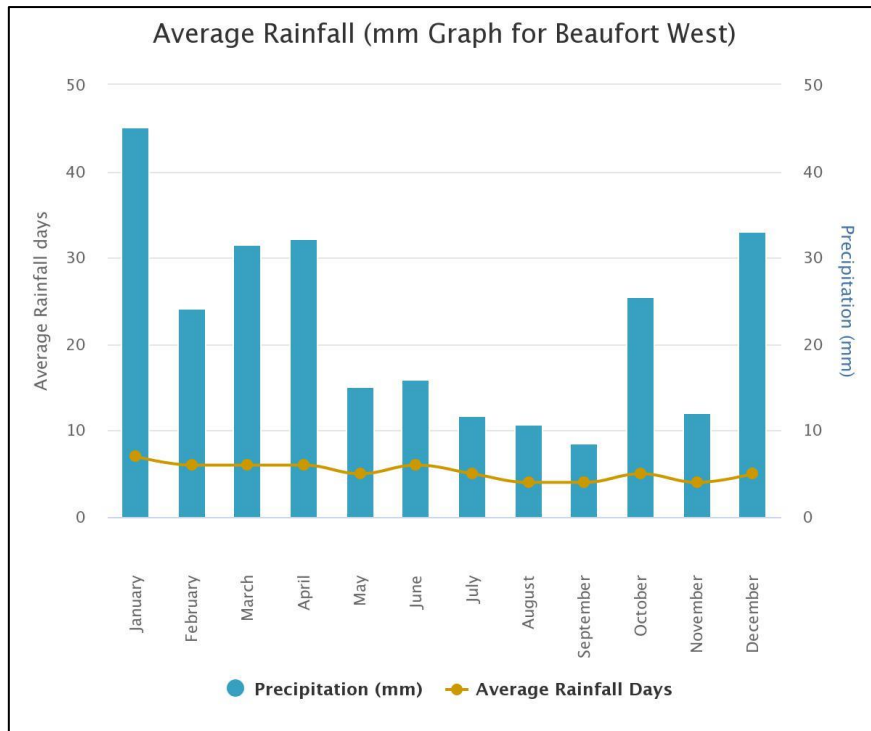


Figure 3.3: The average monthly distribution of rainfall within the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za, 2021>)

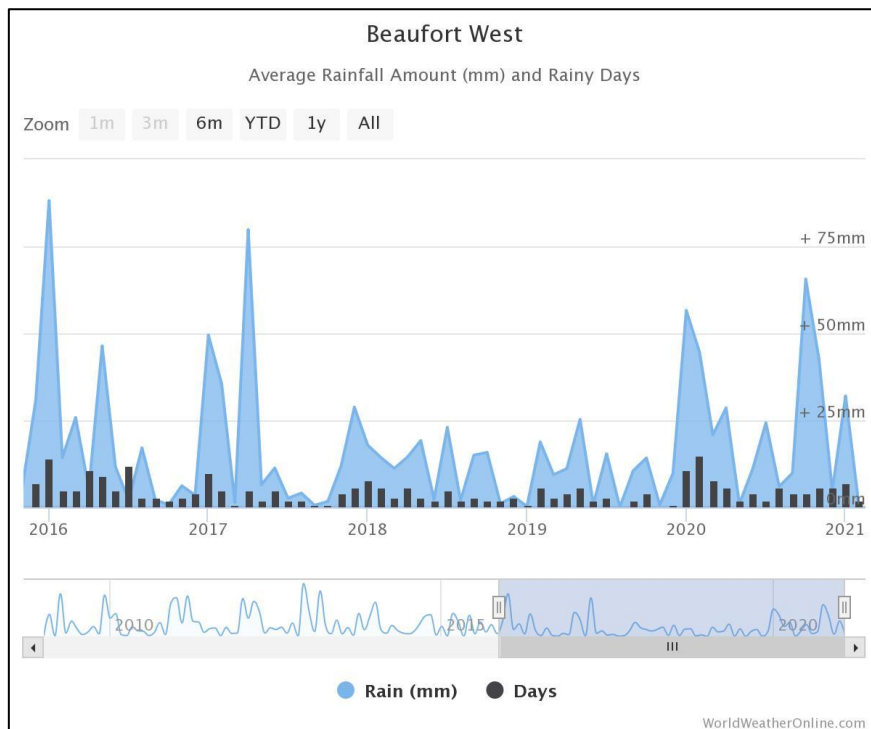


Figure 3.4: The average annual rainfall within the Beaufort West area, including the proposed Kwagga WEF 3 project site for the drought-stricken period 2016 – 2021 (Source: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za, 2021>)

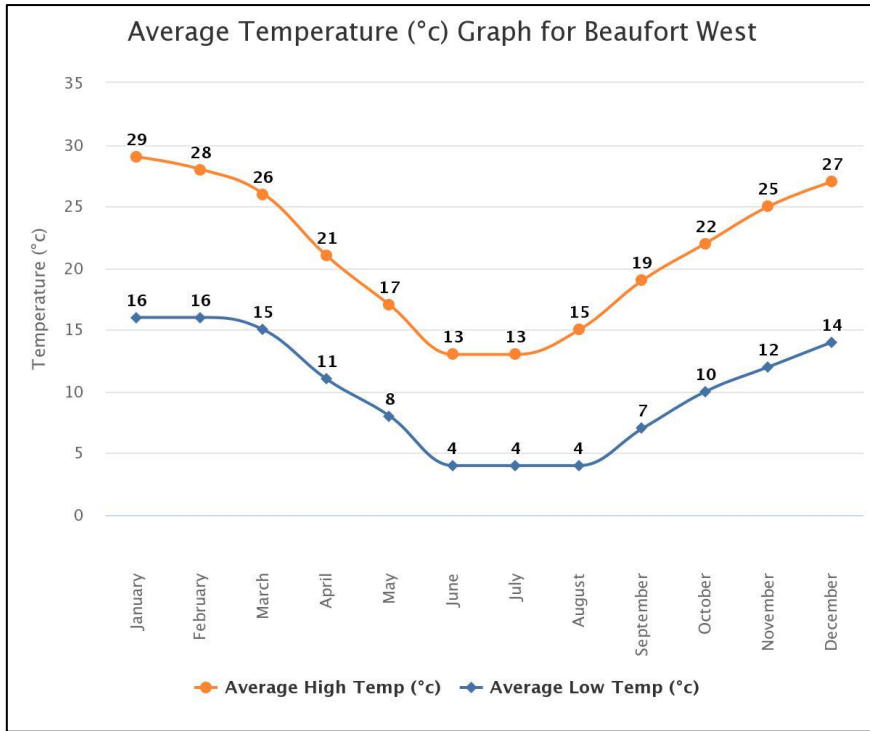


Figure 3.5: The average monthly maximum and minimum temperature for the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za, 2021>)

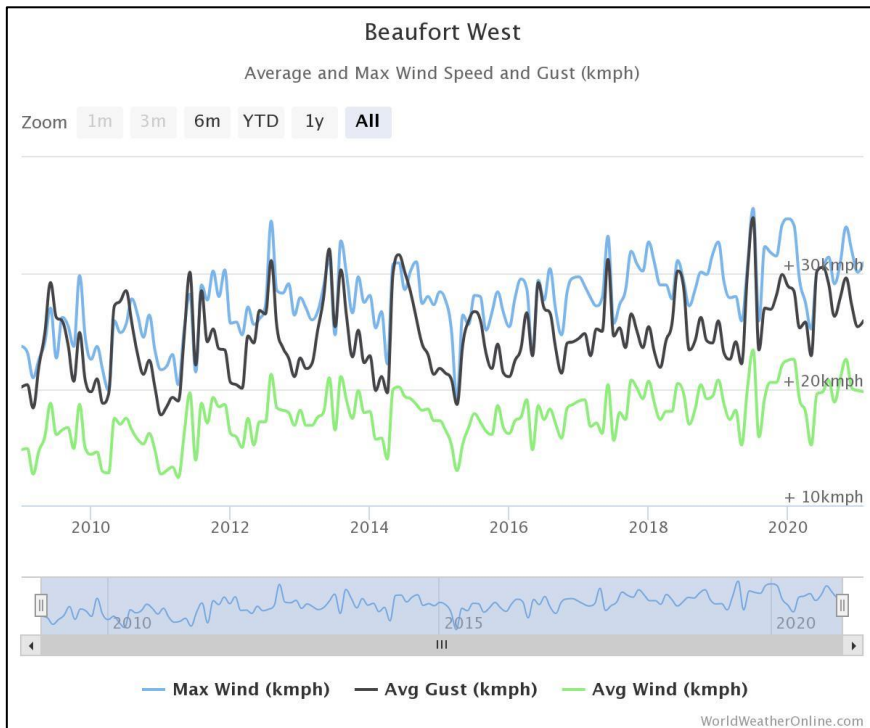


Figure 3.6: The average and maximum annual wind speeds and gusts for the Beaufort West area, including the proposed Kwagga WEF 3 project site for the period 2010 – 2020 (Source: <https://www.worldweatheronline.com/beaufort-west-weather-averages/western-cape/za, 2021>)



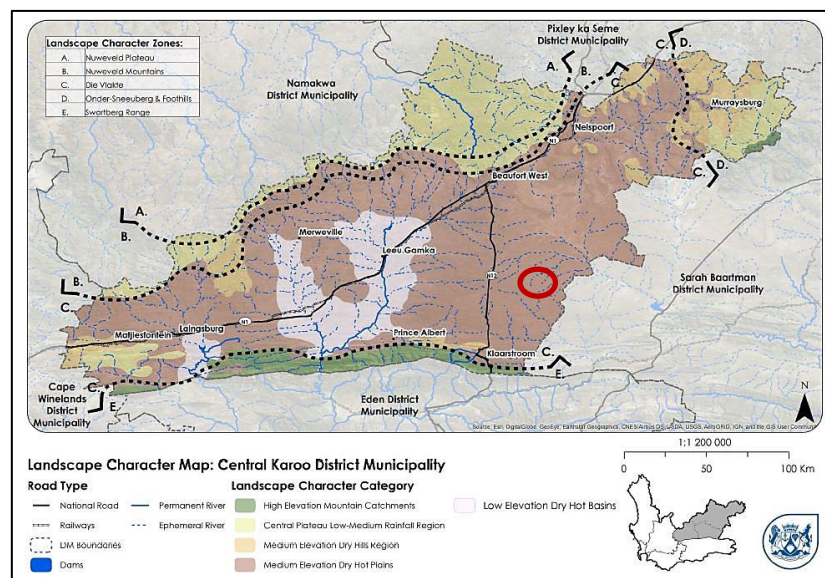
### 3.2.1.2 Climate Change

Temperatures in the Central Karoo region are anticipated to rise with resulting lower annual rainfall in the medium to long term, although it is uncertain what impact increasing climate change will have on rainfall patterns in the region, as some research is suggesting that parts of the Western Cape Province may even receive greater annual precipitation. Lower rainfall will also mean higher levels of evaporation and average wind velocities are expected to increase as well. As a result, these increasingly hot, arid conditions will cause the Karoo vegetation to become less resilient with an overall reduction in carrying capacity and a potential increase in veld fires. In addition, agricultural potential of the region is expected to be severely impacted with a further decline in productivity and yield, which is undoubtedly exacerbated by the ongoing drought prevailing in the area. This will ultimately require the adoption of more drought-tolerant farming practices or the implementation of alternative land uses such as renewable energy generation developments, in particular solar and wind to ensure economic growth<sup>1</sup>.

### 3.2.2 Topography and Landscape

The information described below is based on scoping inputs provided by the Visual Specialist, which are included in Appendix F.8 of this Scoping Report.

The landscape character of the Kwagga WEF 3 project site and surrounding area is relatively flat to slightly undulating with low ridges and covered with sparse, low-growing vegetation dominated by dwarf, spiny Karoo shrubs. The study site is situated in the Central or 'Great' Karoo, an area that forms part of the Nama Karoo Biome and that is typified by dry, hot plains (i.e. 'Die Vlakte') at altitudes varying between 700 m and 1 100 m (Figure 3.7). The peripheral boundaries to the north and south of the study area are truncated by the Swartberg Mountains in the south, providing a natural barrier between the Karoo interior and the southern Cape coast, and the Nuweveld Mountains to the north of Beaufort West (Figure 3.8).



**Figure 3.7: The landscape character of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site (indicated in red circle) (Source: DEA&DP, 2019)**

<sup>1</sup> Central Karoo District Municipality Spatial Development Framework (Draft), Western Cape Department of Environmental Affairs, and Development Planning (DEA&DP), 2019

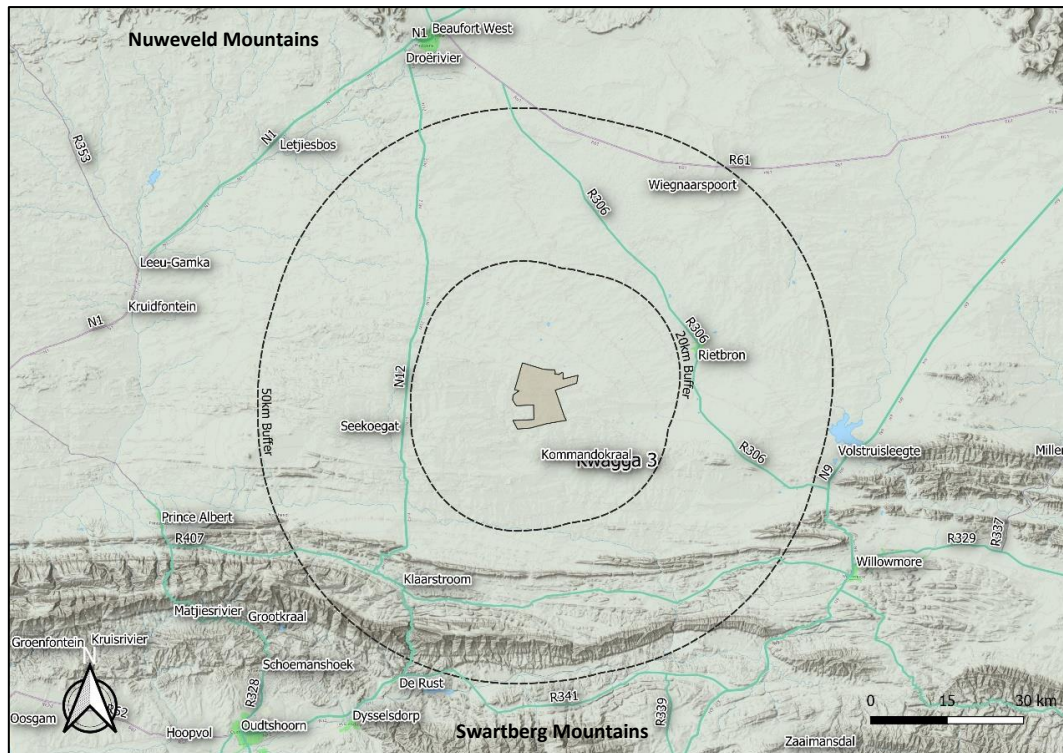


Figure 3.8: The regional topographical setting of the proposed Kwagga WEF 3 project site and surrounding area (Source: Klapwijk, 2021)

### 3.2.3 Geology

The information described below is based on scoping inputs provided by the Palaeontologist and the Terrestrial Biodiversity Specialist, which are included in Appendix F.2 and F.6 of this Scoping Report, respectively.

The underlying geology of the Kwagga WEF 3 study area and surrounds is depicted in the geological map 3222 Beaufort West and 3322 Oudtshoorn (Council for Geoscience, 1:250 000 Map (3222 – Beaufort West), 1979) (Figure 3.9). The dominant geology consists of mudstone (red in places) with sandstone and thin greenish cherty beds (Pa - pale green) of the Abrahamskraal Formation (Adelaide Subgroup, Lower Beaufort Group, Karoo Supergroup) (Figure 3.9). It is likely that the majority of the bedrocks within the project site can be largely or entirely assigned to the sandstone package of the Moordenaars Member and the following mudrock-dominated Karelskraal Member towards the top of the very thick Abrahamskraal Formation succession but lower members are represented in the far south. West-east trending ridges built of the conformably overlying, sandstone-rich Poortjie Member at the base of the Teekloof Formation (Adelaide Subgroup) may also be present. A small anticlinal outcrop area of Middle Permian deltaic typically sandstone and shale sediments of the Waterford Formation (Ecca Group) occurs in the south-east corner of the proposed project site (Pw, dark brown) (Figure 3.9). Late Cenozoic superficial sediments, including silty, sandy and gravelly alluvium (pale yellow areas indicated in Figure 3.9), downwasted surface gravels, rubbly colluvium, and skeletal soils with local development of spring deposits such as calcrete occur along the rivers and drainage lines (Figure 3.9). Most of the superficial deposits are unconsolidated and probably of Late Pleistocene to Holocene age (i.e. last 2.5 million years) but some alluvium is well-calcretised and might be somewhat older. High Level gravel terraces are not well-developed in the region, implying low levels of stream incision.

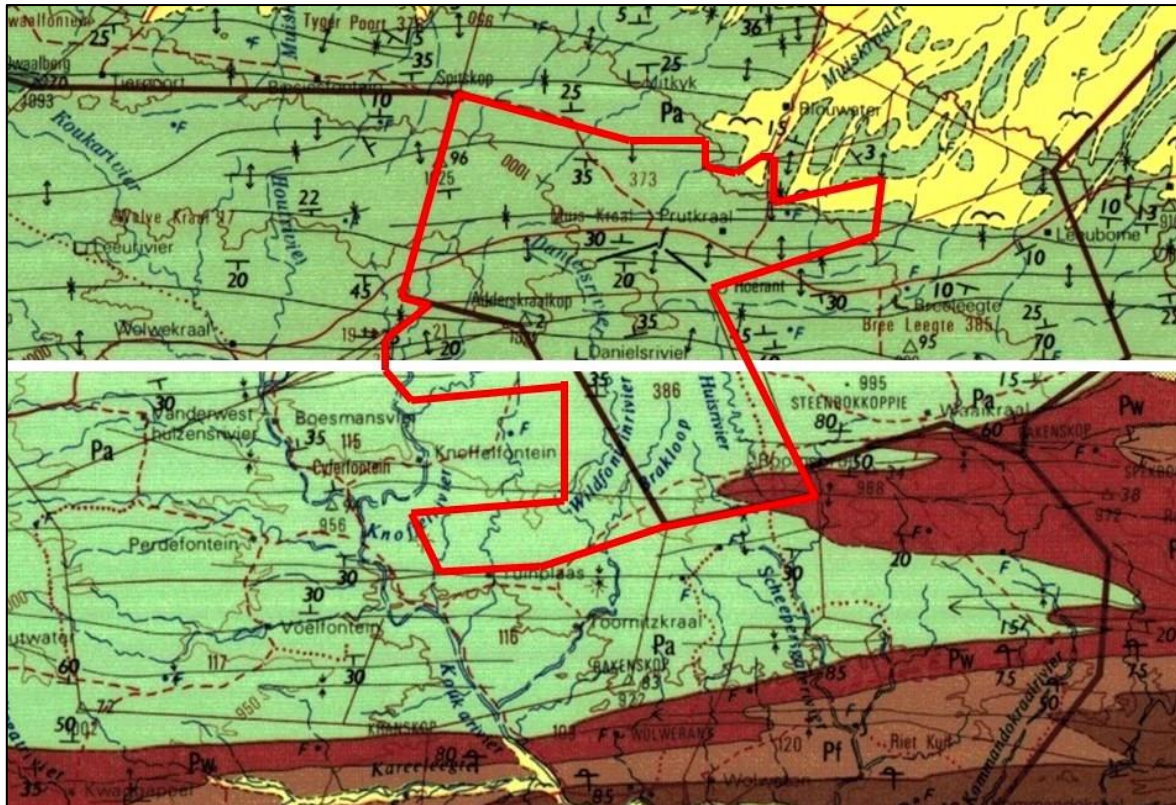


Figure 3.9: The geology of the proposed Kwagga WEF 3 project site (site boundary indicated in red) and immediate surrounds (Source: Council for Geoscience, 1:250 000 Map (3222 – Beaufort West and 3322 – Oudtshoorn), 1979)

### 3.2.4 Geohydrology

According to the 1: 1 200 000 scale groundwater resource potential map of the Central Karoo District Municipality, the proposed Kwagga WEF 3 project site is located in a region of the Central Karoo that has a fairly low average groundwater resource potential (i.e. between 4 001 and 6000 m<sup>3</sup>/km<sup>2</sup>/a) (Figure 3.10).

Groundwater quality within the larger study area is considered to be generally good to somewhat brackish in certain parts of the proposed project site, with virtually no recharge occurring on the plains topography. In addition, the potential for groundwater vulnerability is considered overall moderate for the study area.

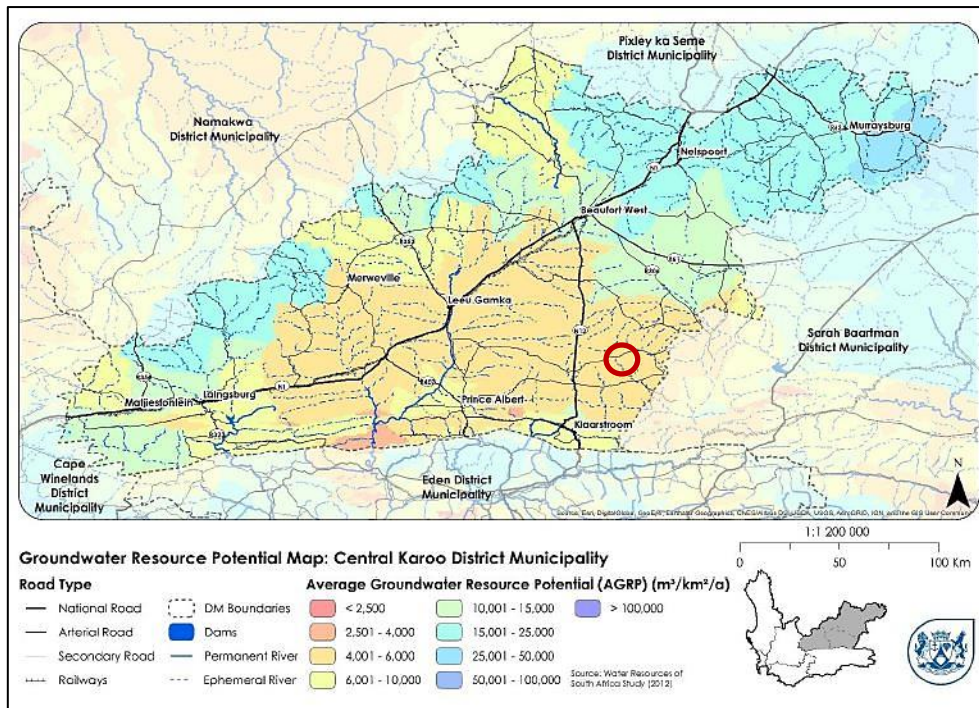


Figure 3.10: Groundwater resource potential of the Central Karoo District Municipality, including the proposed Kwagga WEF 3 project site (indicated in red circle) (Source: DEA&DP, 2019)

### 3.2.5 Land Types and Soils

The information described below is based on scoping inputs provided by the Agricultural and Terrestrial Biodiversity Specialists, which are included in Appendix F.1 and F.6 of this Scoping Report, respectively.

The land type classification denotes areas that display a marked degree of uniformity with respect to terrain form, soil pattern and climate. A terrain unit within a land type is any part of the land surface with homogeneous form and slope.

The proposed Kwagga WEF 3 project site falls entirely within the Fc163b unit (Figure 3.11). The Fc land type typically consists of Glenrosa and/or Mispah soil forms where lime is generally present in the entire landscape. These soils are also usually very shallow covering hard or weathered bedrock, with limited pedological development (i.e. Soil Symbol EB) (Figure 3.12).



### 3.2.6 Land Capability and Agricultural Sensitivity

---

The information described below is based on scoping inputs provided by the Agricultural Specialist, which are included in Appendix F.1 of this Scoping Report.

#### 3.2.6.1 General Context

Agricultural sensitivity, in terms of environmental impact, is a direct function of the capability of the land for agricultural production. This is because a negative impact, or exclusion of agriculture, on land of higher agricultural capability is more detrimental to agriculture than the same impact on land of low agricultural capability. The Department of Forestry, Fisheries and the Environment (DFFE) National Web-Based Screening Tool classifies agricultural sensitivity according to only two criteria – land capability and whether the land is cultivated or not. All cultivated land is classified as high sensitivity (or very high sensitivity). This is because there is a scarcity of arable production land in South Africa, in terms of how much is required for food security.

Uncultivated land is classified by the Screening Tool in terms of its land capability. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land. The higher land capability classes are suitable as arable land for the production of cultivated crops, while the lower suitability classes are only suitable as non-arable, grazing land, or at the lowest extreme, not even suitable for grazing. In 2017, the then Department of Agriculture, Forestry and Fisheries (DAFF) released updated and refined land capability mapping across the whole of South Africa. This has greatly improved the accuracy of the land capability rating for any particular piece of land anywhere in the country. The new land capability mapping divides land capability into 15 different categories with 1 being the lowest and 15 being the highest. Values of below 8 are generally not suitable for production of cultivated crops. This land capability data is used by the Screening Tool.

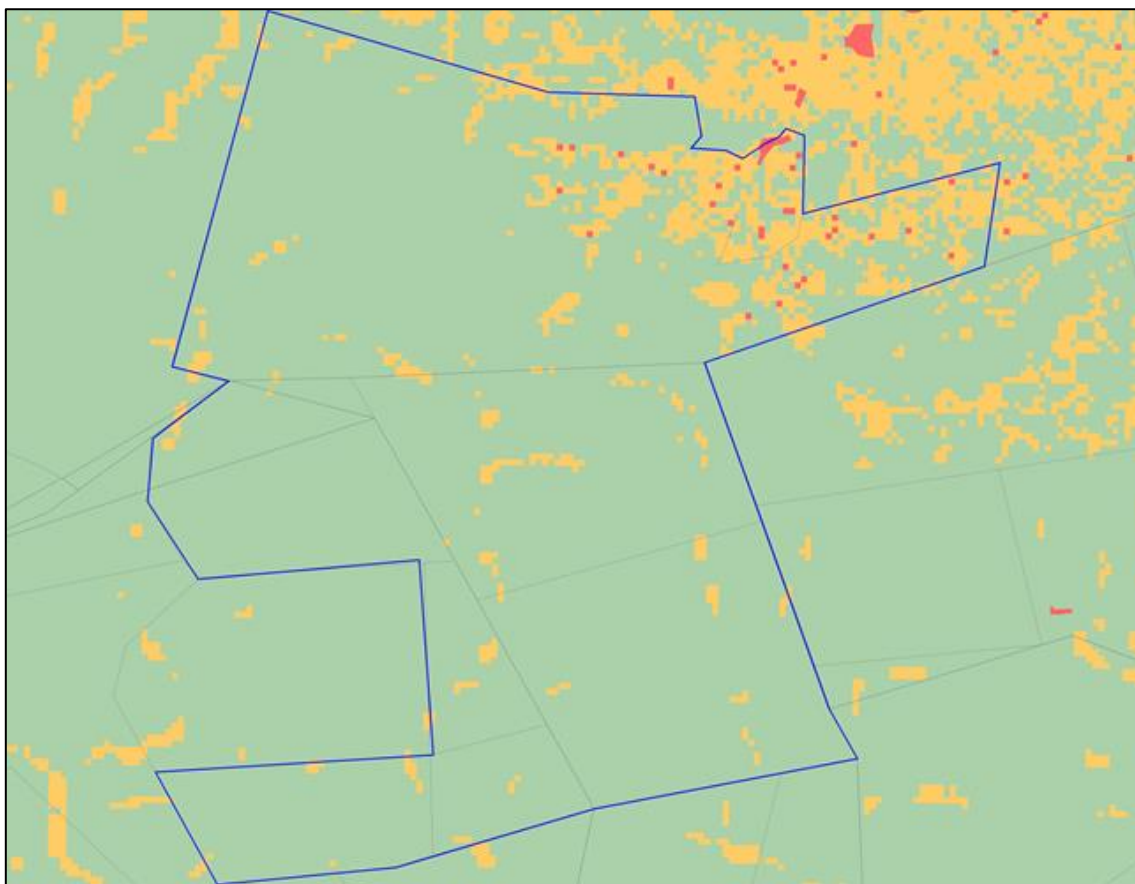
#### 3.2.6.2 Screening Tool Descriptions and Site Verification

The proposed project site is identified by the Screening Tool as being of predominantly low sensitivity with few small patches of medium sensitivity for agricultural resources (i.e. a land capability that varies between 3 and 8) distributed across the project site, but it also includes few small patches of high sensitivity (i.e. a land capability of 9) along the north-eastern boundary of the project site, which is cultivated land associated with watercourses. The differences in land capability across the project site are unlikely to be very significant and are probably more a function of how the land capability data is generated than of actual meaningful differences in agricultural potential on the ground. The differences in agricultural sensitivity also have minimal influence on the layout constraints for a WEF. A map of the proposed project site overlaid on the Screening Tool sensitivity is shown in Figure 3.13 below.

The agricultural sensitivity, as identified by the Screening Tool, is confirmed by the site verification, but largely because it is practically impossible to dispute the land capability. It is however an anomaly that, in an arid climate with an average annual rainfall of approximately 160 mm and an annual evaporation rate of 1 400 mm, land could be allocated a value as high as 9 (i.e. high agricultural sensitivity). It is even more so because the land type soil data shows the soils to be predominantly very shallow soils overlying rock (as discussed in Section 3.2.5 above).

The high sensitivity of land as a result of its cultivation status is also confirmed. Even if the land is no longer cultivated, and even if it is very marginal for cultivation, the definition of cultivated land used to establish agricultural sensitivity by the Screening Tool is any land that is currently under cultivation or that has been cultivated within the past five years. This area identified within the Kwagga WEF 3 project site is likely to have been cultivated within the past five years. While the identified agricultural sensitivity of the proposed project site cannot be disputed because it is rigidly defined, what is of most importance for agricultural impact is that, despite the high sensitivity rating, the land is actually of very limited agricultural value. It is not viable arable land. At best, it is very marginal arable land that is not considered particularly preservation worthy as agricultural production land.

As per the requirements of GN R320, an Agricultural Compliance Statement will be undertaken during the EIA Phase and included in the EIA Report.



**Figure 3.13: Agricultural sensitivity of the proposed Kwagga WEF 3 project site (site boundary indicated in blue) (Source: Lanz, 2021)**

### 3.2.7 Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) are defined as “areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b)” (Le Maitre *et al.*, 2018:1 in DEFF, 2019: Page 61).

Thirty-seven groundwater SWSAs have been identified in South Africa and are considered to be strategically important at a national level for water and economic security. The total area for groundwater SWSAs extends approximately 104 000 km<sup>2</sup> and covers approximately 9% of the land surface of South Africa (Le Maitre *et al.* 2018, in DEFF, 2019: Page 61).

There are no SWSAs on the farm portions to be affected by the proposed Kwagga WEF 3 project. The closest surface water SWSA is located more than 40 km to the south-west, while the nearest groundwater SWSA is situated about 50 km to the north. Refer to Figure 3.14 below for a map showing surface water and groundwater SWSAs.

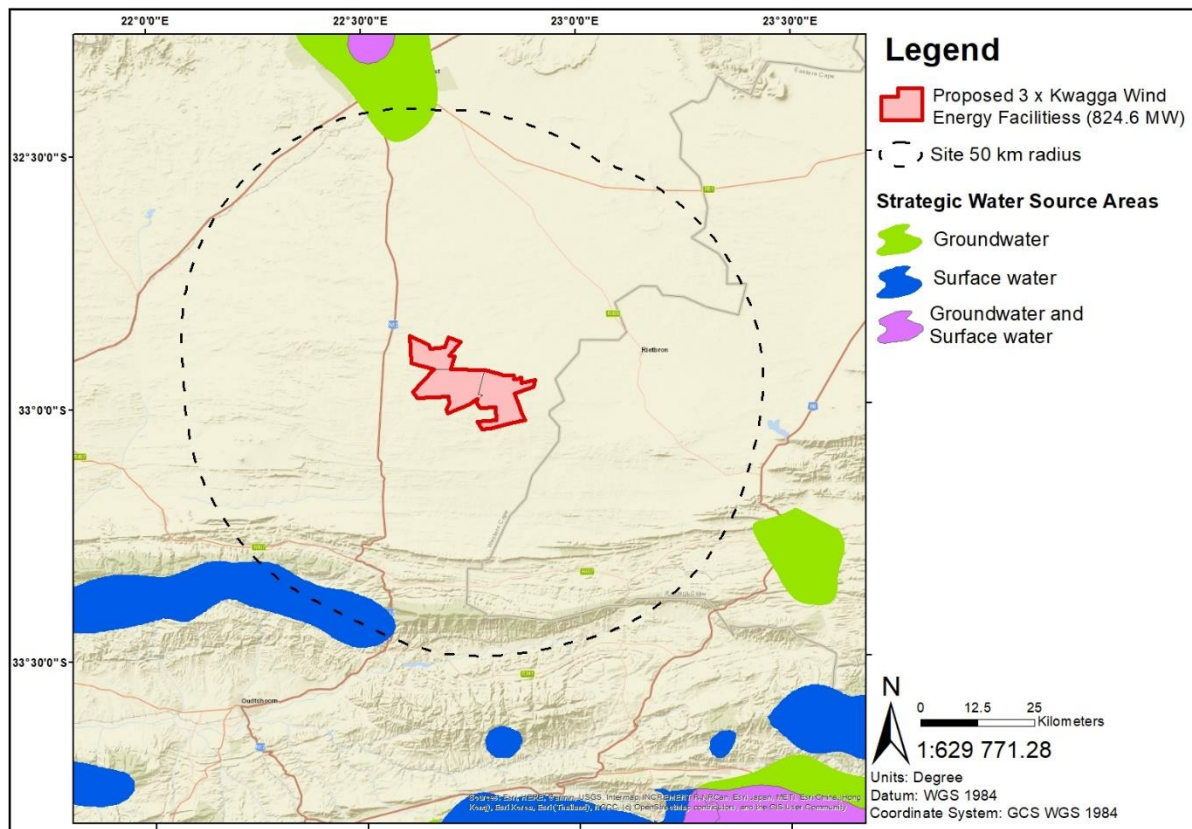


Figure 3.14: SWSAs in relation to the locality of the proposed projects (i.e. all three Kwagga WEFs).

### 3.2.8 Aquatic Biodiversity

Various resources, such as, but not limited to, Google Earth satellite imagery, the SANBI BGIS, the Western Cape DoA CapeFarmMapper and the National Fresh Water Priority Areas (NFEPAs), have been used to define the regional vegetation, water resources, fauna and anticipated ecological sensitivity of the study area. A literature review of existing reports, scientific studies, databases, reference works, guidelines and legislation relevant to the study area was conducted to establish the baseline ecological and vegetative condition of the site and associated environment. Details pertaining to the aquatic environment will be provided in the Aquatic Biodiversity and Species Impact Assessment to be undertaken during the EIA Phase and included in the EIA Report. The information described below is based on scoping inputs provided by the Aquatic Specialist, and which are included in Appendix F.5 of this Scoping Report.



### 3.2.8.1 General Context

The Kwagga WEF 3 project site is located in the upper catchment of the Kouka River, a tributary of the Gouritz River System, and the Amos/Sout River, a tributary in the Groot/Gamtoos River System. The proposed project site also transect the watershed between north-east flowing streams of the Muiskraal River and the Brandleegte River that drain into the Groot/Gamtoos River System, and the south to southerly flowing streams of the Daniels River and Huis River that drain into the Gouritz River System.

The northerly flowing streams in the northern extent of the project site are all tributaries that drain into the Amos River (Figure 3.15). The Amos River is joined by several other streams to form the Sout River. This river is joined by the Kariega River at Beervlei Dam to form the Groot River. The Groot River flows in a south-easterly direction to where it is joined by the Kouga River upstream of Hankey. These two rivers form the Gamtoos River, which flows for a short distance before draining into the sea north-east of Jeffreys Bay in the Eastern Cape.

The southerly draining streams on the project site all drain into the Kouka River, a tributary of the Traka River that flows southwards through the Swartberg Mountains to join the Olifants River in its upper reaches. The Olifants River joins the Gamka River downstream of Calitzdorp to form the Gouritz River that drains into the sea west of Mossel Bay.

Within the Kwagga WEF 3 project site, the streams fall within the foothill zones of the Great Karoo Ecoregion. The watercourses in this region, due to the low rainfall of the area, are non-perennial (i.e. ephemeral) rivers that tend to only flow for relatively short periods immediately following rainfall events. They comprise primarily of gravel beds, and single to multiple channels. The larger streams contain distinct riparian vegetation that comprises of a mix of small trees and short shrubs such as *Vachellia karroo*, *Searsia lancea*, *Searsia pallens*, *Gymnosporia* sp., *Carissa haematocarpa*, *Melianthus comosus*, *Lycium* spp. and *Asparagus striatus*. The smaller watercourses have less distinct vegetation that is typified by a low density of *Vachellia karroo* with grasses such as *Stipagrostis namaquensis*.

Only localised impacts occurred along the rivers where the agricultural activities within the project site have directly impacted on the watercourses. At these points that are typically along the access roads through the site, there has been some removal of indigenous riparian vegetation or habitat modification within the watercourse at the road crossing. There are about ten small instream dams within the study area. Land-use is largely low-density livestock grazing that has also impacted on the vegetation in and adjacent to the watercourses. The invasion of alien vegetation along the watercourses is relatively low and comprises mainly of invasive plants such as *Opuntia ficus-indica* (prickly pear), *Xanthium strumarium* (cocklebur), *Tagetes minuta* (khaki weed) and *Hypochaeris radicata* (false dandelion).

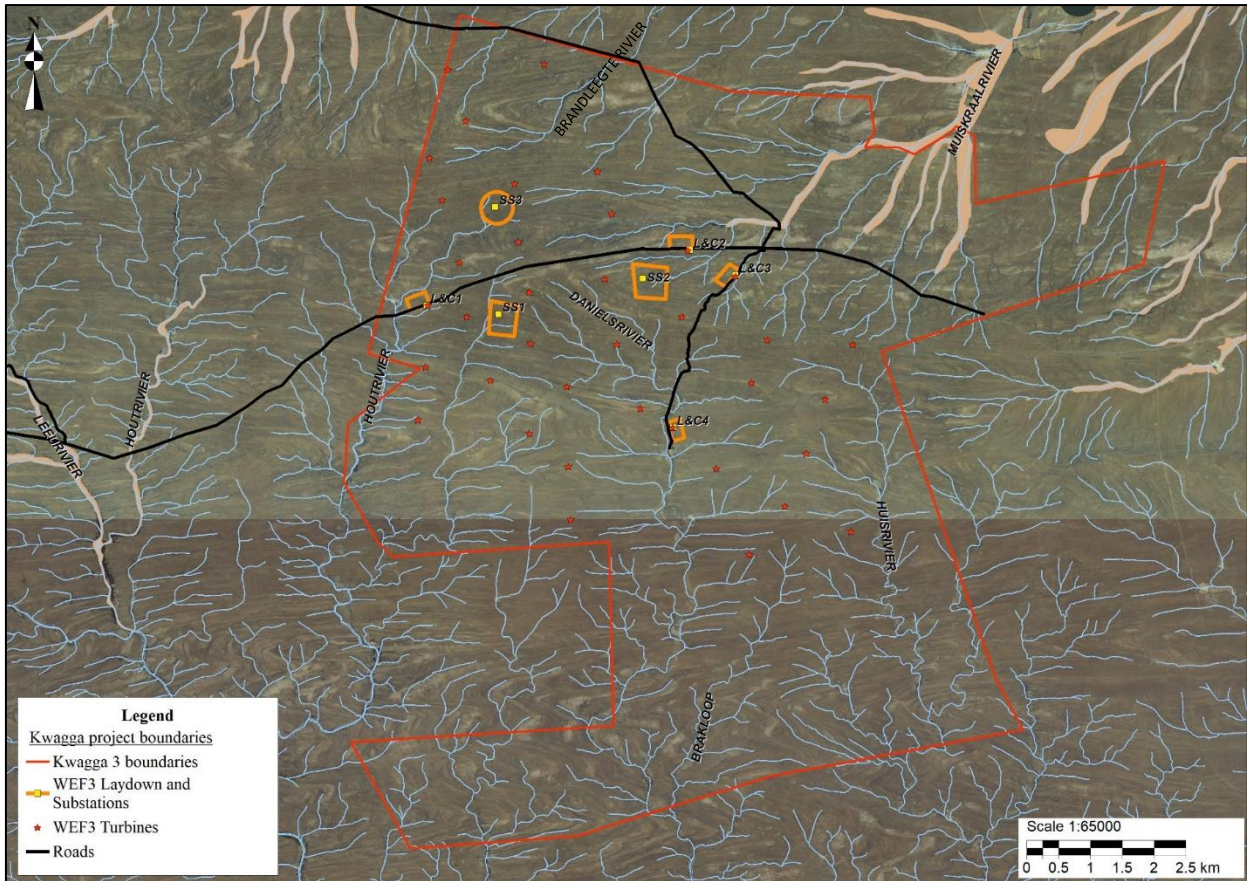


Figure 3.15: Aquatic features mapped for the proposed Kwagga WEF 3 project site (site boundary indicated in red) and immediate surrounds (Source: Belcher, 2021)

### 3.2.8.2 Biodiversity Conservation Planning

#### Freshwater Ecosystem Priority Areas

Freshwater Ecosystem Priority Areas (FEPAs) are priority areas for conserving freshwater ecosystems and supporting sustainable use of water resources and upstream management areas. The catchments of the Brandleegte River and the Muiskraal River are each classified as a FEPA quinary (sub) catchment, an area that is considered to be in a natural condition and are required to meet biodiversity targets for species, ecosystems or ecological processes and infrastructure.

#### Critical Biodiversity Areas and Ecological Support Areas

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) are indicated in terms of the Western Cape Biodiversity Spatial Plan (WCBSP) (2017). This preliminary data provided by the WCBSP is the product of a systematic biodiversity planning assessment which identifies portions of land that require safeguarding to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services, across terrestrial and aquatic realms. These spatial priorities are used to inform sustainable development in the Western Cape Province.

In addition to the above, CBAs and ESAs are separated further into CBA 1 and 2 as well as ESA 1 and 2, respectively. It is important to note that CBA 1 show areas in a natural condition and those that are potentially degraded or represent secondary vegetation are considered to be CBA 2. Similarly, a distinction is

made between ESAs that are likely to be functional (i.e. in a natural, near-natural or moderately degraded condition – ESA 1), and ESAs that are likely severely degraded or have no natural cover remaining and therefore require restoration where feasible i.e. ESA 2. The ESAs are not considered essential from a conservation perspective for meeting biodiversity targets; however, they may offer some ecological services.

Other Natural Areas (ONAs) have not been identified as a priority, but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Land use guidelines for Terrestrial ONAs are not required to meet biodiversity targets. ONAs represent the largest area in the region and form a matrix within which the CBAs and ESAs occur.

The Brandleegte River and Muiskraal River catchments located in the north and north-eastern parts of the proposed project site (indicated in green in Figure 3.16 below) is classified as an aquatic CBA, with the wider river corridors also being classified as a terrestrial CBA. Portions of the Daniels River are also classified as aquatic CBAs where there is good riparian vegetation (indicated in green in Figure 3.16). All of the remaining watercourses are identified as aquatic ESAs (indicated in blue in Figure 3.16). The ecological functioning of these watercourses should not be compromised by the proposed project activities. There are no natural wetlands identified within the project site except for a few very small artificial wetland areas that are associated with earth dams and livestock troughs.

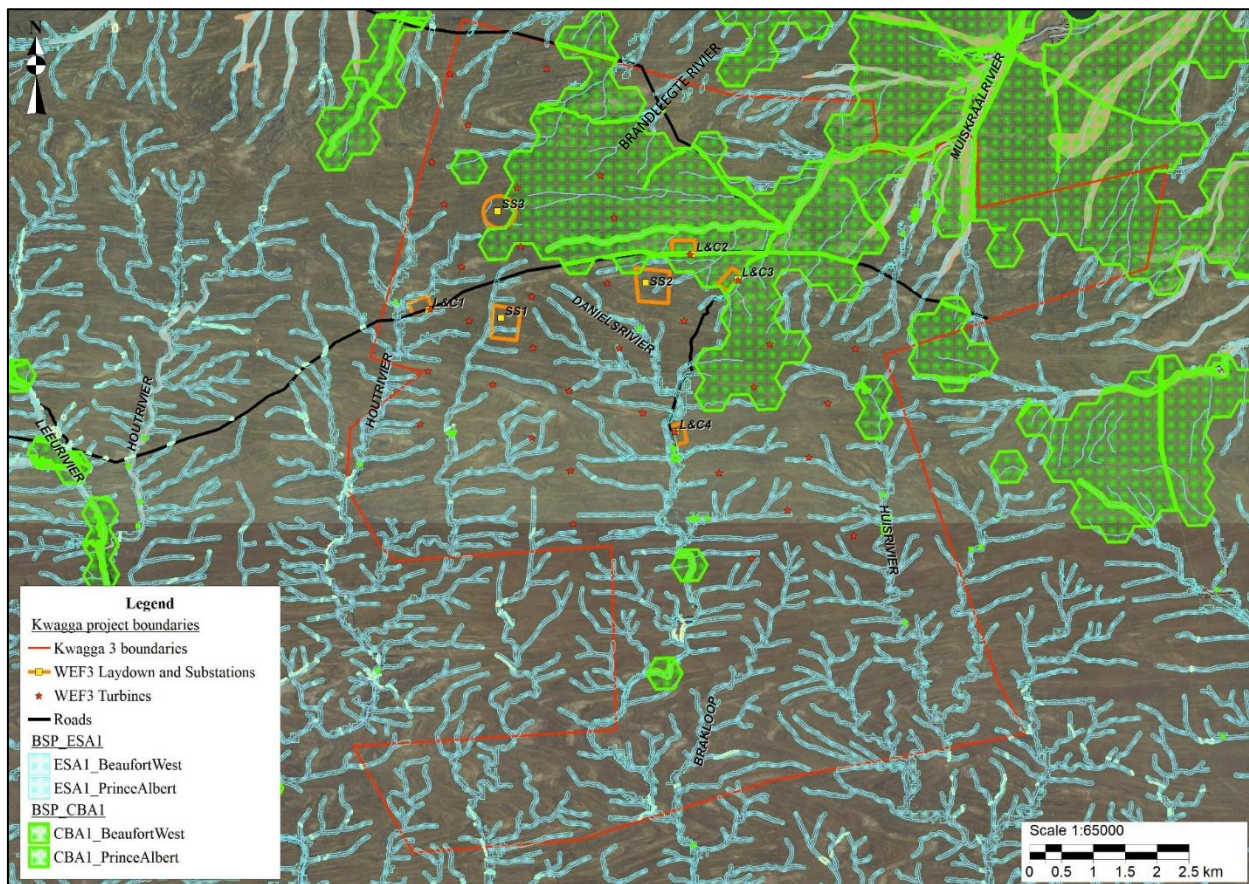


Figure 3.16: CBAs and ESAs identified and mapped for the proposed Kwagga WEF 3 project site and immediate surrounds (site boundary indicated in red) (Source: Belcher, 2021).

### **3.2.8.3 Aquatic Ecosystems**

The aquatic features within the proposed project site are in a largely natural to moderately modified (B/C Category) ecological condition and are considered of moderate ecological importance and sensitivity. The Muiskraal River is a larger river that provides more significant aquatic habitat and a wide ecological corridor within the landscape. As such, it is deemed to be of high ecological importance and sensitivity. This river system is however also the most impacted upon in the area due to agricultural activities that are extending into the watercourses and as a result is in a moderately modified (C category) ecological condition. The rest of the watercourses within the proposed project site are subject to more localised impacts that have reduced the habitat integrity in places to moderately modified (C Category); however, these impacts are direct habitat disturbances and do not impact on the overall ecological integrity or ecological importance and sensitivity of the watercourses. It is recommended that the watercourses remain in their current ecological integrity of largely natural to moderately modified. The Muiskraal River should where possible be rehabilitated to a largely natural to moderately modified condition, given its high ecological importance and sensitivity.

### **3.2.8.4 Screening Tool Descriptions and Site Verification**

Figure 3.17 below presents the information from the Screening Tool for the Aquatic Biodiversity Combined Sensitivity as it relates to the farm portions earmarked for the proposed Kwagga WEF 3 project. Evident from this data is that a relatively small area of the proposed project site under consideration is considered to be of very high sensitivity for the Brandleegte River and the Muiskraal River including its associated larger tributaries, that is linked to the identified FEPA and aquatic CBA of these river systems, while the remainder of the proposed project site is considered to be of low Aquatic Biodiversity Combined Sensitivity.

The site sensitivity verification concurs with the very high Aquatic Biodiversity Combined Sensitivity for the Muiskraal River and its larger tributaries within the proposed project site and has confirmed that these were in a moderately modified ecological condition but is still considered to be of high ecological importance and sensitivity due to the extent and accompanying riparian vegetation associated with these watercourses that provide important ecological corridors in the landscape for the movement of biota. The other larger watercourses within the project site such as the Brandleegte River, Hout River, Daniels River and Huis River are deemed to be of moderate (or medium) sensitivity while the smaller watercourses, as well as the recommended buffer areas (i.e. 100 m for the larger streams and 35 m for the smaller watercourses), are considered to be of low Aquatic Biodiversity Combined Sensitivity (Figure 3.18).

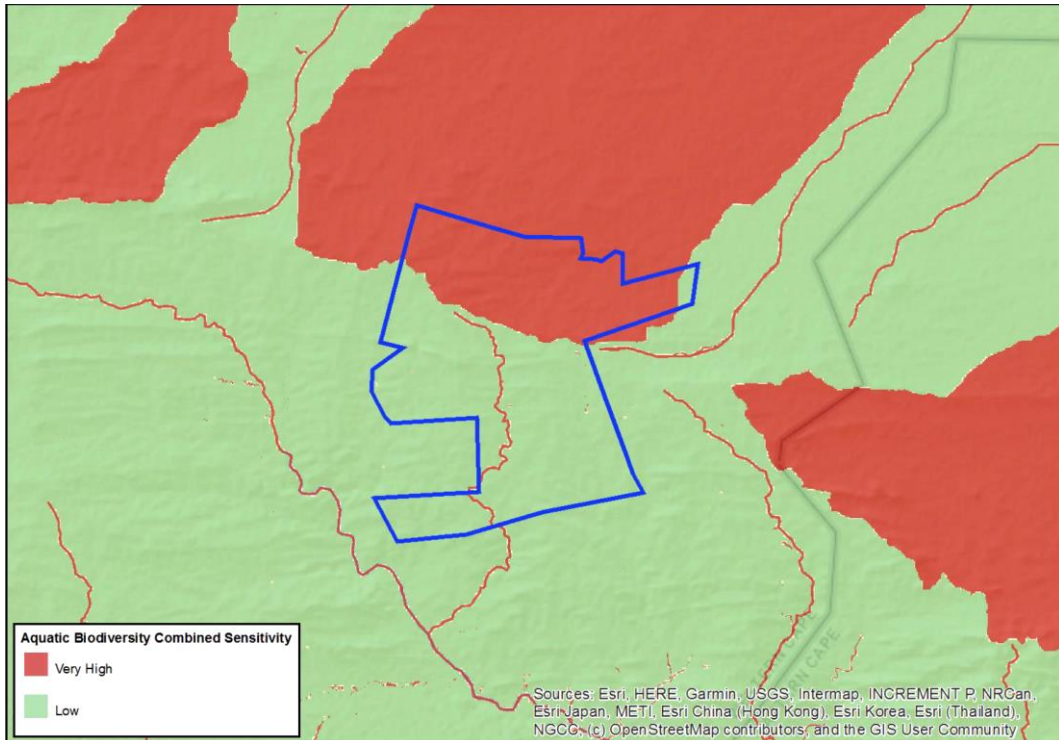


Figure 3.17: Map depicting Aquatic Biodiversity Combined Sensitivity in and around the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020).

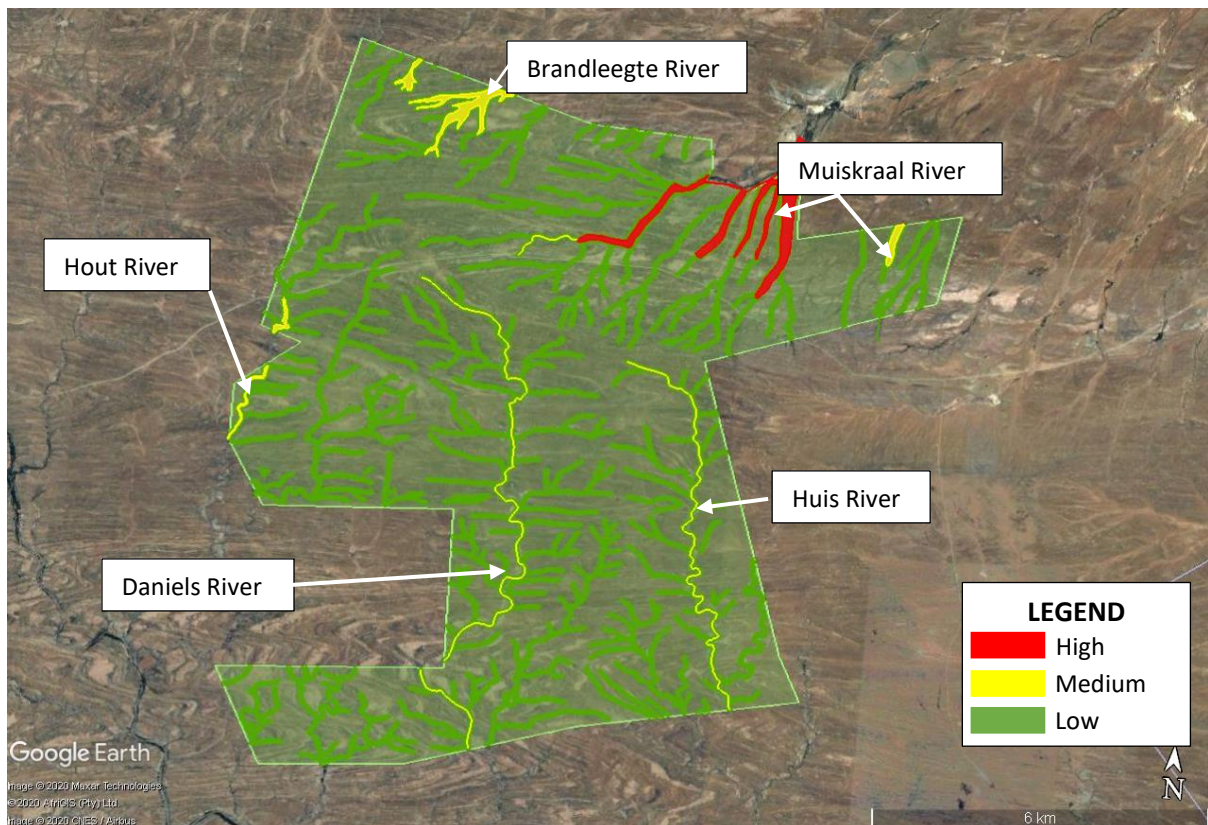


Figure 3.18: Map showing the Aquatic Biodiversity and Species Combined Sensitivity for the proposed Kwagga WEF 3 project site following the site sensitivity verification (Source: Belcher, 2021).

### 3.2.9 Terrestrial Biodiversity

---

Various resources, such as, but not limited to, Google Earth satellite imagery, the SANBI BGIS, SANBI NewPOSA, International Union for Conservation of Nature (IUCN) Red List and the University of Cape Town (UCT) Animal Demography Unit, as well as national and provincial biodiversity spatial data and species lists, have been used to define the regional vegetation, watercourses, fauna and anticipated ecological sensitivity of the study area. Details pertaining to the terrestrial environment will be provided in the Terrestrial Biodiversity and Species Impact Assessment to be undertaken during the EIA Phase and included in the EIA Report. The information described below is based on scoping inputs provided by the Terrestrial Specialist, and which are included in Appendix F.6 of this Scoping Report.

#### 3.2.9.1 General Context

Refer to Section 3.2.8.1 above for information on the general context of the site from an ecological perspective.

#### 3.2.9.2 Biodiversity Conservation Planning

##### ***Protected Areas and National Protected Areas Expansion Strategy***

According to the South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) databases, Quarter 3 (2020), the proposed project site does not form part of any formally protected areas nor does it form part of the National Protected Area Expansion Strategy (NPAES) (2010).

The closest formally protected area is the Karoo National Park, which was proclaimed in 1979 and is located approximately 80 km away to the north of the Kwagga WEF 3 project site. Refer to Section 3.5 below for more information on other conservation areas in the region of the proposed project site.

##### ***Critical Biodiversity Areas and Ecological Support Areas***

Refer to Section 3.2.8.2 above for information on the identification of CBAs and ESAs within the proposed project site and immediate surrounds.

##### ***Critically Endangered and Threatened Ecosystems***

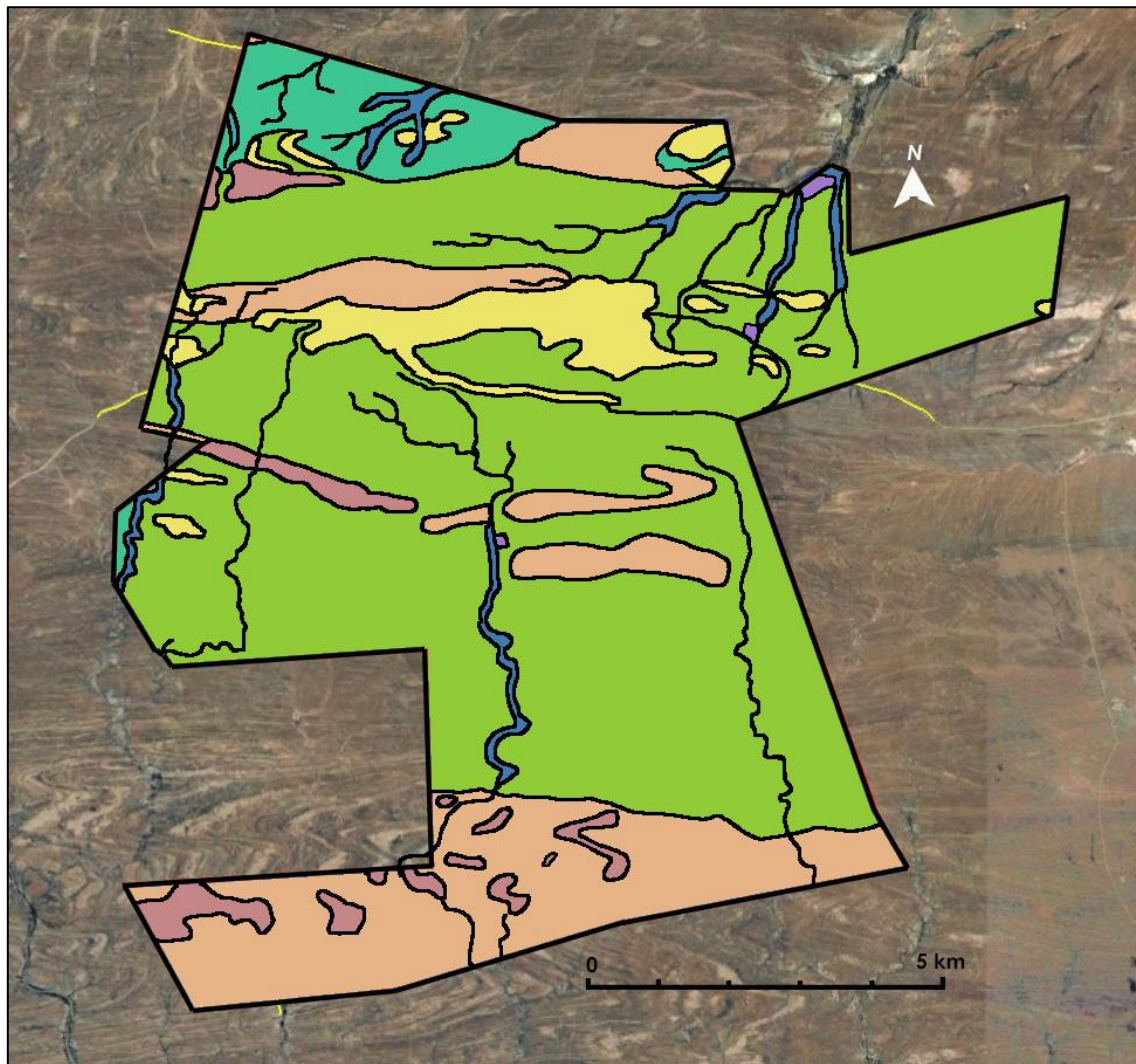
There are no Critically Endangered, Threatened and/or Vulnerable Ecosystems present within the proposed project site nor within the Beaufort West or Prince Albert Local Municipalities. Such areas are located more than 50 km to the south of the site within the adjacent Eden District Municipality (see Figure 3.31 below).

#### 3.2.9.3 Terrestrial Ecosystems

As indicated above, the proposed project site falls in the Nama Karoo Biome, more specifically in the Lower Karoo Bioregion between Beaufort West and Klaarstroom, and is located in the Gamka Karoo vegetation type, which occurs between the Great Escarpment (Nuweveld Mountains) in the north and Cape Fold Belt Mountains (Swartberg Mountains) in the south. As highlighted above, the Gamka Karoo vegetation type, which is dominated by spiny Karoo dwarf shrubs, is classified as "least threatened" with about 2% statutorily conserved in the Karoo National Park and some private nature reserves. Only a small part has undergone transformation.

Looking at the combined area encompassing the proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 project cluster, eight broad habitat types were distinguished within this combined study area. Overall, the

vegetation on the Kwagga WEF 3 project site is structurally fairly homogeneous with dwarf shrubs (i.e. Karoo bushes) being dominant. Based on species composition, however, six habitats (i.e. plant communities) were distinguished, described and mapped within the Kwagga WEF 3 project site (Figure 3.19).



- |   |  |
|---|--|
| 1 | <i>Rhigozum obovatum</i> - <i>Trichodiadema decorum</i> dwarf shrubveld    |
| 2 | <i>Rhigozum obovatum</i> - <i>Sericocoma avolans</i> dwarf shrubveld       |
| 3 | <i>Ruschia cradockensis</i> - <i>Crassula deltoidea</i> dwarf shrubveld    |
| 4 | <i>Lycium cinereum</i> - <i>Anacampseros ustulata</i> dwarf shrubveld      |
| 5 | <i>Rhigozum obovatum</i> - <i>Pteronia ciliata</i> dwarf shrubveld         |
| 6 | <i>Vachellia karroo</i> - <i>Lycium oxycarpum</i> bushveld of watercourses |
|   | Infrastructure   |

**Figure 3.19: Vegetation mapping of the proposed Kwagga WEF 3 project site (Source: Van Rooyen, 2021)**

### 3.2.9.4 Terrestrial Species

Botanical diversity is generally associated with niche habitats within the proposed project site, in particular east-west trending crests and scarps of hills, low-lying ridges and rocky outcrops in the northern, central and southern parts of the Kwagga WEF 3 project site, as well as the numerous ephemeral watercourses transecting the site. The dominant shrub and dwarf shrub species of the plains habitats include *Lycium* spp., *Rhigozum obovatum*, *Vachellia karroo*, *Searsia burchellii*, *Chrysocoma ciliata*, *Eriocephalus* spp., *Felicia muricata* and *Pentzia incana*. The most prominent grass species include *Aristida congesta*, *Aristida diffusa*, *Fingerhuthia africana*, *Stipagrostis ciliata*, *Stipagrostis obtusa* and *Eragrostis* spp. The site does not fall within any Centre of Endemism, but some endemic plant species characteristic of the area includes *Chasmatophyllum stanleyi*, *Hereroa incurva*, *Hoodia dregei*, *Ruschia beaufortensis*, *Jamesbrittenia tenuifolia*, *Manulea karrooica* and *Piarranthus comptus*.

Fauna of conservation concern that could potentially occur in the region include the Near-Threatened Littledale's whistling rat (*Parotomys littledalei*), the Endangered Karoo dwarf tortoise (*Chersobius boulengeri*) that is also an endemic species to the area, and the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*). However, due to intensive grazing by livestock exacerbated by the ongoing drought, the vegetation on site and along many of the drainage lines is severely degraded and as a result, favourable habitat for especially the Riverine Rabbit does not appear to be present and is therefore unlikely to occur in the proposed Kwagga WEF 3 project site.

Refer to Appendix F.6 of this Scoping Report for a list of terrestrial botanical and faunal species common to the study area and surrounds, as well as the terrestrial botanical and faunal species recorded on site.

### 3.2.9.5 Screening Tool Descriptions and Site Verification

Figures 3.20 to 3.22 below indicate the results of the Screening Tool in terms of terrestrial plant species, terrestrial animal species, and the terrestrial biodiversity combined sensitivity, respectively, for the proposed Kwagga WEF 3 project site.

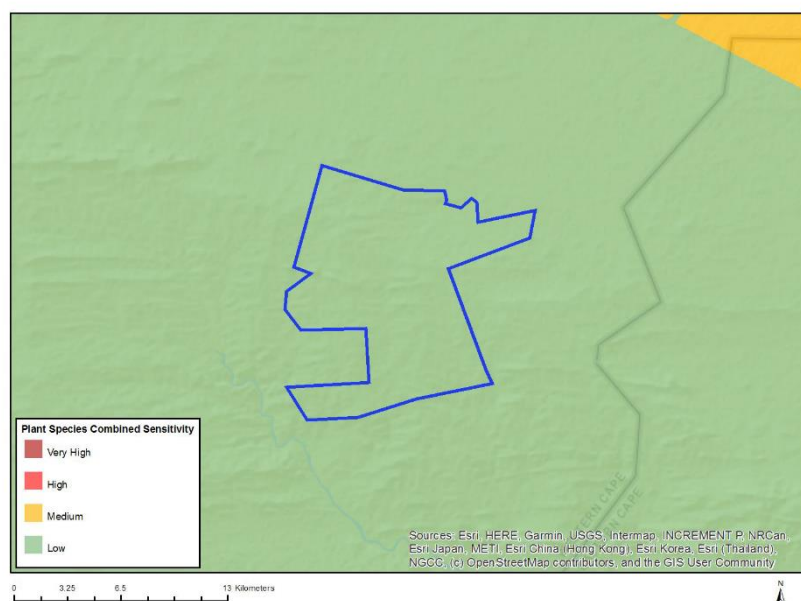
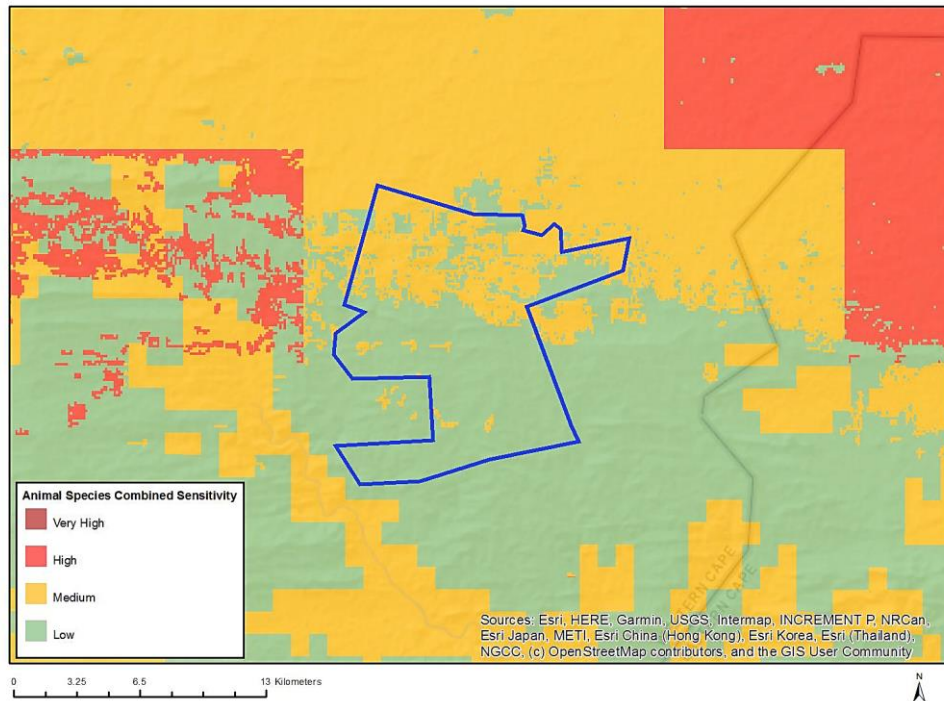
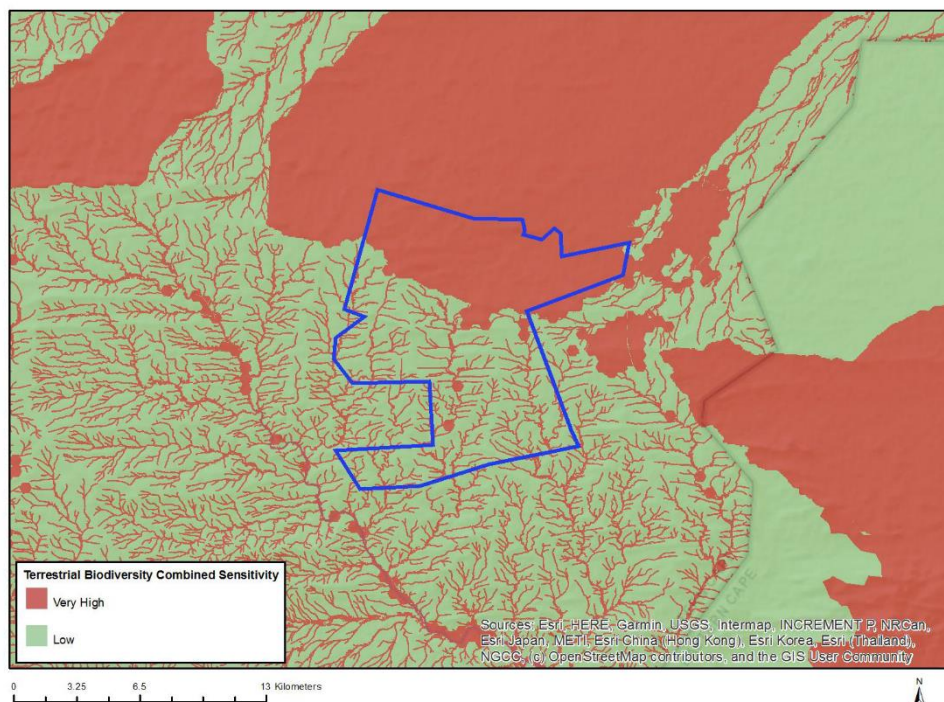


Figure 3.20: Map indicating Terrestrial Plant Species sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)





**Figure 3.21: Map indicating Terrestrial Animal Species sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)**



**Figure 3.22: Map indicating Terrestrial Biodiversity Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2021)**

Based on the above, the Screening Tool notes that floral significance or sensitivity is deemed to be of low significance (Figure 3.20), suggesting that the occurrence of important plant communities are unlikely. Following the site sensitivity verification, the terrestrial plant species sensitivity was confirmed as being of

low significance; however, many provincially protected/specially protected and CITES II listed species, which are mostly associated with cliffs, scarps and rocky ridges (outcrops), were recorded on site. This is supported by the tabled evidence in Appendix B of the Terrestrial Biodiversity and Species Scoping Report (Appendix F.6 of this Scoping Report).

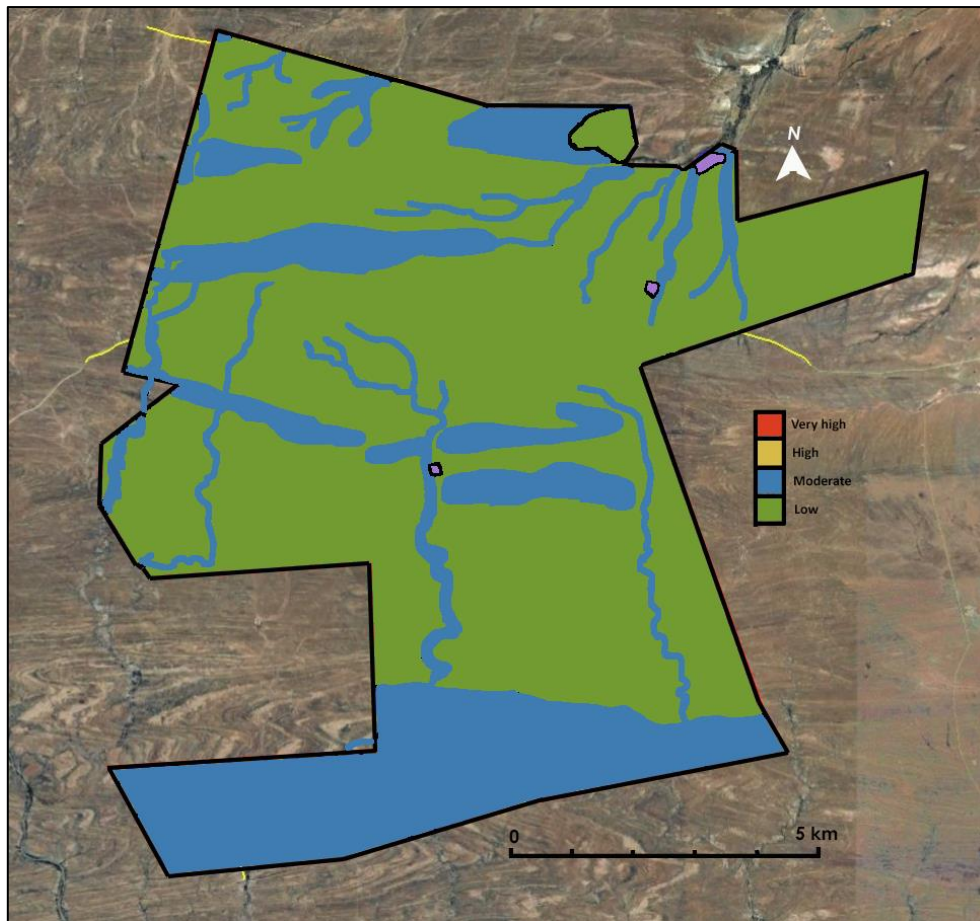
The Screening Tool shows that faunal populations in the region are considered to range from 'medium to low' ecological significance or sensitivity (Figure 3.21), highlighting the probable presence i.e. medium sensitivity of the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*) and the Endangered Karoo dwarf tortoise (*Chersobius boulengeri*) within the proposed project site. However, the site sensitivity verification has confirmed the terrestrial animal species sensitivity to be of low significance considering the absence of ideal habitat for the Riverine Rabbit, mainly due the fact that intensive grazing by livestock exacerbated by the prolonged drought has severely degraded the vegetation on site, especially along many of the drainage lines. In addition, Riverine Rabbit was not recorded on site during fieldwork, and the Animal Demography Unit's mammal database<sup>2</sup> has no record of the Riverine Rabbit in the 3222D degree square (i.e. encompassing the location of the proposed Kwagga WEF 3 project site). Although several individuals of the leopard tortoise or bergskilpad (*Stigmochelys pardalis*) were recorded on site, the Karoo dwarf tortoise was not encountered during fieldwork.

In terms of the terrestrial biodiversity combined sensitivity layer on the Screening Tool, the majority of the study area is shown to have a very high ecological significance or sensitivity (Figure 3.22), mainly due to the presence of the Muiskraal River corridor that is classified as an aquatic CBA, with the wider river corridor also being classified as a terrestrial CBA, and all of the remaining watercourses are identified as aquatic ESAs (as described in Section 3.2.8.2 above). Furthermore, the Muiskraal River catchment including its larger tributaries transecting the northern parts of the proposed project site are also identified as a national FEPA.

Although the site verification agrees with the delineation of these aquatic CBAs and ESAs on site as having a very high sensitivity, the entire FEPA quinary catchment cannot be considered as of very high ecological significance as only a small proportion of the proposed project site, mostly areas limited to the river tributaries and drainage lines can be considered sensitive and should be avoided where possible. Therefore, terrestrial biodiversity combined sensitivity was confirmed to be of medium (or moderate) sensitivity, whereas terrestrial plant communities and animal species was confirmed to be of low sensitivity following the site sensitivity verification (see Figure 3.23 below). Overall, the potential impact of the proposed WEF development footprint within the identified CBAs and ESAs is believed to be negligible when avoided and/or mitigated.

---

<sup>2</sup> Animal Demography Unit, University of Cape Town website (<http://vmus.adu.org.za>; accessed November 2020)



**Figure 3.23: Terrestrial Biodiversity and Species Combined Sensitivity map for the proposed Kwagga WEF 3 project site following the site sensitivity verification. The areas indicated in purple shows homesteads or other highly disturbed areas (Source: Van Rooyen, 2021)**

### 3.2.10 Bats

A detailed description of the bat species encountered within the proposed project site and the potential impact of the proposed WEF development on these bats will be provided in the Bat Impact Assessment that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Bat Specialist, and which are included in Appendix F.4 of this Scoping Report.

The pre-construction monitoring was designed to monitor bat activity across the combined study area earmarked for the proposed development of the Kwagga WEF 1, Kwagga WEF 2 and the Kwagga WEF 3 project cluster. The baseline environment was investigated by using acoustic monitoring to document bat activity between 24 April 2019 and 27 July 2020 (i.e. 461 sample nights), and the monitoring was undertaken in accordance with the “*South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities*” (Sowler *et.al.* 2017).

*Note from the CSIR: The 12-month pre-construction bat monitoring for the proposed Kwagga WEF 3 project was conducted prior to the enforcement of the 5<sup>th</sup> Edition of the “South African Good Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities” dated 8 June 2020 (MacEwan *et.al.* 2020).*

The Bat Specialist conducted on-site field surveys during the following periods:

- Autumn: 28 – 29 May 2019
- Winter: 31 July – 2 August 2019
- Spring: 14 – 17 September 2019 and 18 – 20 November 2019
- Summer: 5 – 7 February 2020

In addition to the acoustic monitoring, potential structures such as buildings, rocky outcrops/ridges/cliffs and trees that bats could use as roosts, were investigated for the presence or evidence of roosting bats, but **no roosts were located within the combined study area.**

According to the African Chiroptera Report of 2013, approximately eleven species of bat could potentially occur within the Kwagga WEF 3 project site and surrounding area. The distributions of some bat species in South Africa, particularly rarer species, are poorly known; therefore, it is possible that more (or fewer) species may be present. The sensitivity of each bat species to the proposed project is a function of their conservation status and the likelihood of risk to these species from the proposed WEF development. Table 3.1 lists the bat species recorded within the combined Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 study area including their sensitivity to the WEF projects.

**Table 3.1: Bat Species recorded within the combined Kwagga WEF 1, Kwagga 2 and Kwagga WEF 3 study area and their sensitivity to WEFs (Source: ARCUS, 2021)**

Species	Species Code	# of Bat Passes	Conservation Status		Likelihood of Risk
			National	International	
Egyptian free-tailed bat <i>Tadarida aegyptiaca</i>	EFB	22 545	Least Concern	Least Concern	High
Roberts's Flat-headed bat <i>Sauromys petrophilus</i>	RFB	3 016	Least Concern	Least Concern	High
Natal long-fingered bat <i>Miniopterus natalensis</i>	NLB	1 253	Least Concern	Least Concern	High
Cape serotine bat <i>Neoromicia capensis</i>	CS	7 194	Least Concern	Least Concern	Medium-High
Long-tailed serotine bat <i>Eptesicus hottentotus</i>	LTS	226	Least Concern	Least Concern	Medium

During the pre-construction bat monitoring period undertaken within the combined Kwagga WEF 1-3 study area, bat activity was low to moderate and species diversity was typical for arid regions in South Africa. In addition, bat activity generally peaked during autumn followed by summer, then spring and low activity was recorded during winter. The highest bat activity was observed during the period February to April and activity was usually lower near the ground than at heights >50 m.

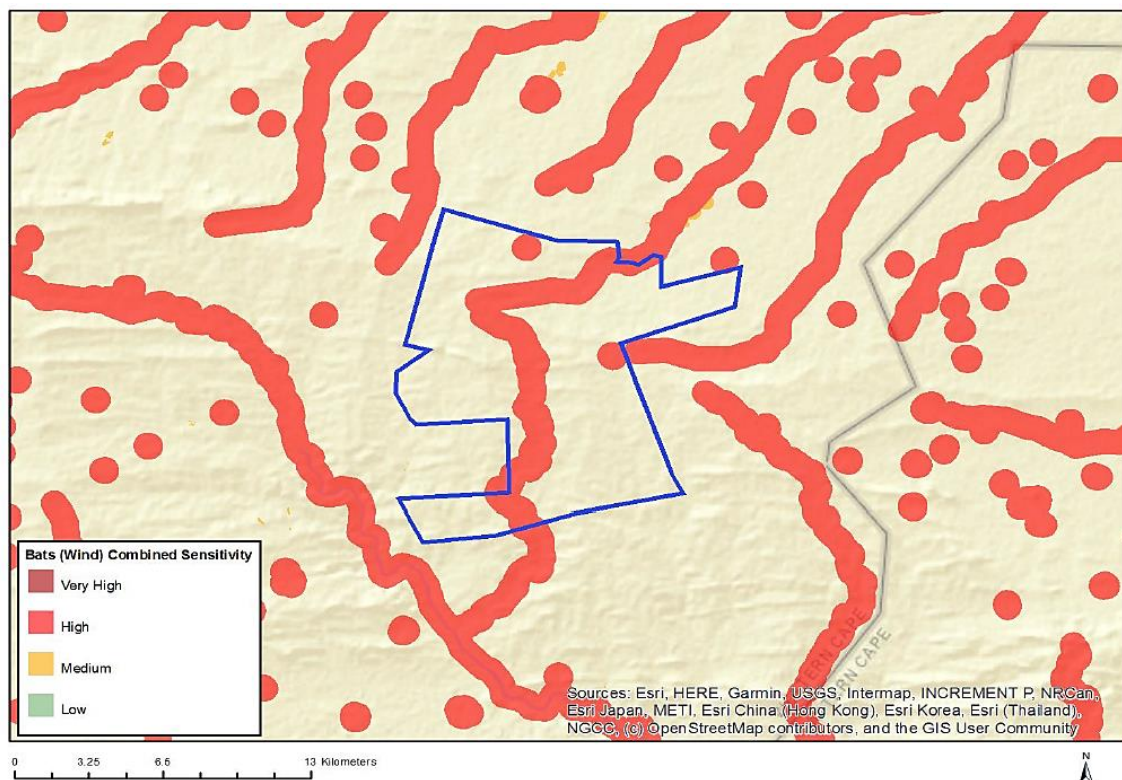
Furthermore, there was a clear decrease in bat activity with increasing distance from the riparian edge although this relationship did not persist beyond 300 m. This suggests that a minimum of a 300 m buffer area around watercourses on site may be an effective means to reduce the potential risk of collision of bats with wind turbines, particularly the clutter-edge species e.g. serotine bats, but also for open-air species such as the free-tailed and flat-headed bats, which were active to a relatively high degree at ground level.

Therefore, the data collected during the monitoring period suggests that the risk to bats posed by wind energy development at the proposed Kwagga WEF 3 site is low for clutter-edge bat species and the correct placement of turbines will limit the impact to these species. Open-air bat species are at a slightly higher risk as free-tailed bats account for 66% of bat activity at this site. An initial mitigation measure to avoid impacts to free-tailed bats is the choice of turbine design. Since 71% of free-tailed bats occur near the ground it is

advisable to select a combination of hub height and turbine blade length that do not sweep down past 50 m above the ground, if possible. Taking into account the turbine designs under consideration, the minimum blade sweep is recommended to not be lower than 30 m. If the minimum blade sweep is lower than 30 m, fatality thresholds would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines. More active mitigation such as curtailment and deterrents may be appropriate to reduce residual impacts should threshold bat mortality (i.e. 100 bats) for the proposed Kwagga WEF 3 project site be reached. As such, post construction acoustic monitoring and carcass searching is required. Provided these considerations are met, development of wind energy at the proposed Kwagga WEF 3 project site is compatible with bat conservation.

### 3.2.10.1 Screening Tool Descriptions and Site Verification

Figures 3.24 below indicates the results of the Screening Tool in terms of the bats combined sensitivity as it relates to wind energy development within the proposed Kwagga WEF 3 project site and surrounds. The pre-construction monitoring has confirmed that the project site is generally low sensitivity for bats from a Wind perspective, with the high sensitivity areas for bat species that are linked to watercourses on site such as areas within 500 m of rivers and associated riparian habitat, and areas within 500 m of artificial wetlands such as earth dams or livestock troughs (Figure 3.25).



**Figure 3.24: Map indicating Bats (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020)**

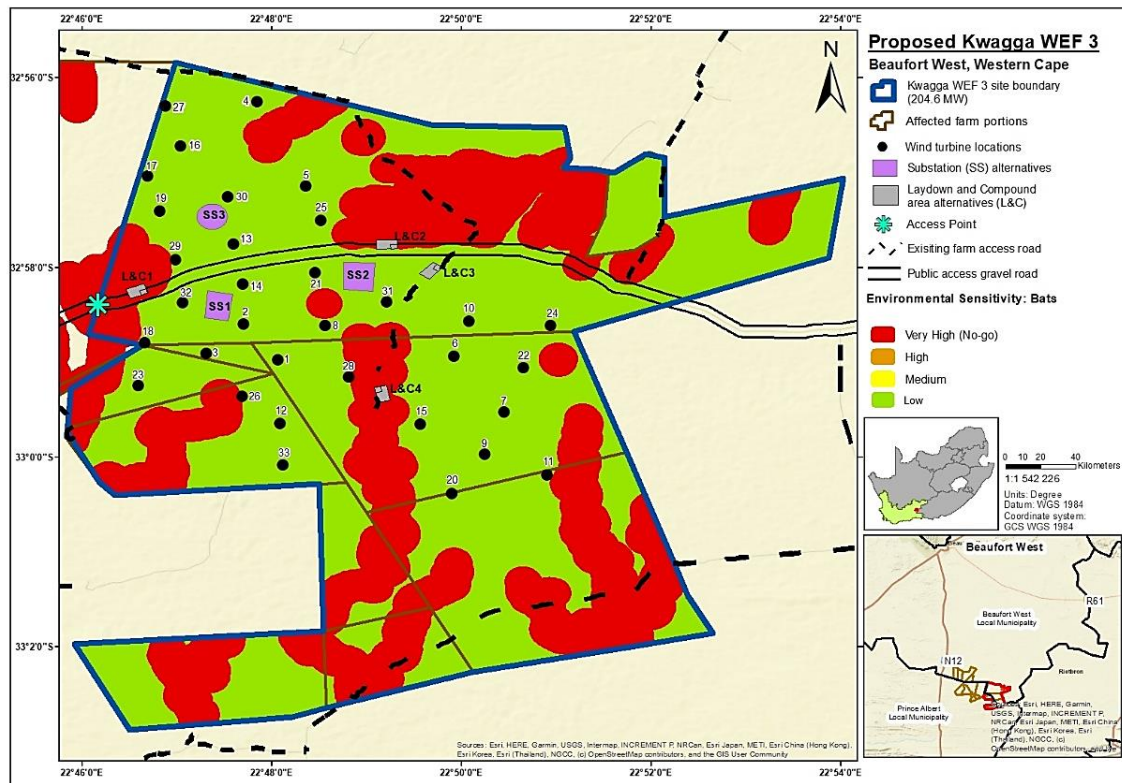


Figure 3.25: Map indicating Bats (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site following the site sensitivity verification (After: ARCUS, 2021)

### 3.2.11 Avifauna

A detailed description of the avifauna species encountered within the proposed project site during the site monitoring, and the potential impact of the proposed WEF development on these bird species will be provided in the Avifauna Impact Assessment that will be included in the EIA Report. The information described below is based on the findings of a 12-month pre-construction avifaunal monitoring programme, which was implemented by the Avifauna Specialist at the combined study area for the proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 project cluster during the course of 2019 and 2020. The monitoring programme was implemented prior to the promulgation of the prescribed protocol for assessment and minimum criteria for reporting on the impacts of WEFs on avifauna (GN 320 published on 20 March 2020), as well as the protocol on terrestrial plant and animal species (GN 1150 published on 30 October 2020). However, it is important to note that the aforementioned pre-construction monitoring programme was designed in accordance with the latest version (2015) of the “Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development areas in southern Africa” (Jenkins *et.al.*, 2011). The resultant Avifauna Reconnaissance Monitoring Report is included in Appendix F.3 of this Scoping Report.

The Avifauna Specialist conducted on-site field surveys during the following periods:

- Autumn: 10 – 18 March 2019 and 5 – 10 May 2020
- Winter: 17 – 26 July and 6 – 8 August 2019
- Spring: 12 – 28 September 2019
- Summer: 16 – 20 January 2020
- Autumn: 3 – 4 March 2020

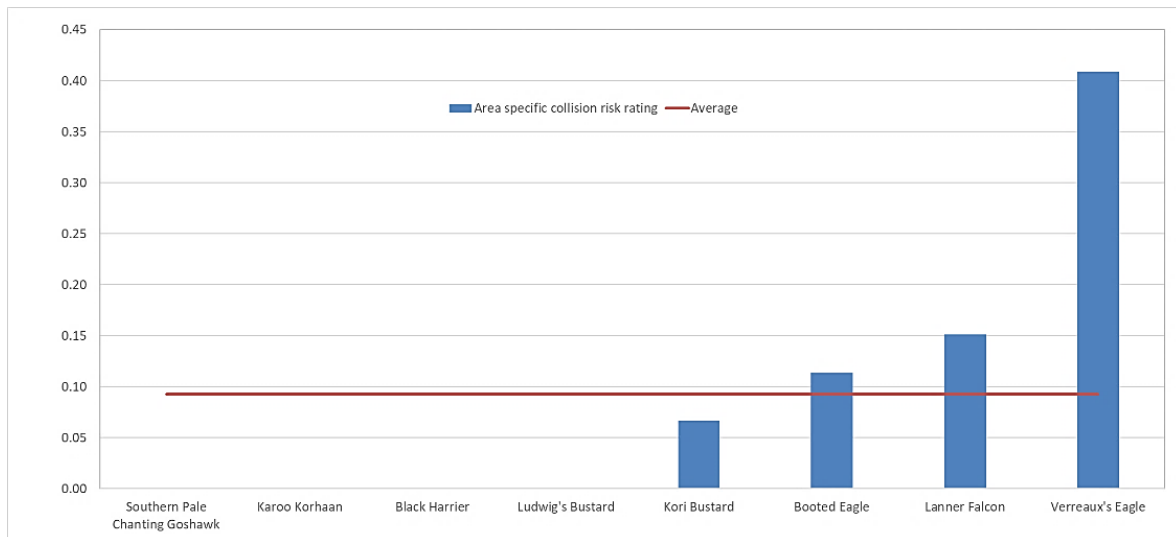
In addition to the monitoring and variables recorded, a total of five potential focal points (FPs) of bird activity were identified and monitored. Four focal points were farm (earth) dams and one was a Martial Eagle nest on the Droërivier-Proteus 400 kV high voltage line located approximately 35 km from the western boundary of the proposed Kwagga WEF 3 project site, on Tower 108. No birds were recorded during any of the surveys for the duration of the 12-month monitoring period at focal points 1 to 3 (earth dams); non-priority bird species were recorded at the fourth focal point (earth dam) in March 2020, but no priority species were recorded; and at the fifth focal point (Tower 108) two adult Martial Eagles were recorded at their nest in May 2020.

With an overall recorded species count of 91, of which 12 species are priority species (Table 3.2), the combined Kwagga WEF study area supports a moderate diversity of avifauna, which is to be expected from an extremely arid area. Nonetheless, the transect survey data indicates that the study area is suitable for a number of priority species at low densities, especially members of the Otididae family (bustards and korhaans), and Accipitridae (raptors).

**Table 3.2: List of Priority Species recorded from all data sources at the combined study area for the proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 projects, with regional status (Source: Van Rooyen, 2021)**

Priority Species		Transects turbine	Transects control	Vantage Points (VP)	VP control	Incidental counts
Black Harrier (Endangered)	<i>Circus maurus</i>			*		
Blue Crane (Near threatened)	<i>Anthropoides paradiseus</i>					*
Booted Eagle (Least concern)	<i>Aquila pennatus</i>	*		*		
Greater Kestrel (Least concern)	<i>Falco rupicoloides</i>					*
Karoo Korhaan (Near threatened)	<i>Eupodotis vigorsii</i>	*	*	*	*	*
Kori Bustard (Near threatened)	<i>Ardeotis kori</i>	*		*		*
Lanner Falcon (Vulnerable)	<i>Falco biarmicus</i>			*		
Ludwig's Bustard (Endangered)	<i>Neotis ludwigii</i>	*	*	*		*
Martial Eagle (Endangered)	<i>Polemaetus bellicosus</i>					*
Southern Pale Chanting Goshawk (Near-endemic)	<i>Melierax canorus</i>	*	*	*		*
Spotted Eagle-Owl (Least concern)	<i>Bubo africanus</i>					*
Verreaux's Eagle (Vulnerable)	<i>Aquila verreauxii</i>			*	*	
<b>12</b>		<b>5</b>	<b>3</b>	<b>8</b>	<b>2</b>	<b>8</b>

Eight priority species were recorded as incidental sightings in and around the combined Kwagga WEF study area and eight priority species were recorded during vantage point (VP) counts. An area-specific collisions risk rating for each priority species recorded during VP counts was calculated to give an indication of the likelihood of an individual of the specific species to collide with the turbines in the proposed development footprints. An area specific collision risk rating for the eight most abundant priority species recorded during VP counts is shown in Figure 3.26 below, indicating that the Verreaux's Eagle, Lanner Falcon, Booted Eagle and the Kori Bustard are the four species with higher than zero collision risk indices.



**Figure 3.26: Area specific collision risk rating for the eight most abundant priority species in the combined Kwagga WEF 1-3 study area (Source: Van Rooyen, 2021).**

The Avifauna Specialist concluded that the overall abundance of priority species within the combined Kwagga WEF 1-3 study area was low, with an average of 0.43 birds/km recorded during transect counts. The low numbers are not surprising, given the general aridity of the habitat.

### **3.2.11.1 Screening Tool Descriptions and Site Verification**

In terms of the Screening Tool, the proposed Kwagga WEF 3 project site and immediate environment is classified as low sensitivity for avifauna from a Wind perspective and no known nests or roosts were identified on site (Figure 3.27). However, in terms of the Relative Animal Species theme the Screening Tool has identified the following avifaunal species to be of conservation concern (Figure 3.28):

- Medium sensitivity – Ludwig's Bustard (*Neotis ludwigii*)

The pre-construction monitoring has confirmed that the combined Kwagga WEF 1-3 study area is generally low sensitivity for avifauna from a Wind perspective, with a number of high sensitivity areas that are all linked to the presence of surface water i.e. earth dams and livestock troughs, which is a huge attractant for most birds, especially in very arid areas. Each of the eleven high sensitivity sites was assigned a 400 m 'no-go' buffer zone and no turbines or associated infrastructure should be constructed within these buffer zones (Figure 3.29), to prevent displacement of birds during the construction phase, and to reduce the collision risk during the operational phase. Figure 3.30 indicates the areas of high avifaunal sensitivity mainly linked to surface water, each with a 400 m 'no-go' buffer zone, identified within the proposed Kwagga WEF 3 project



site following the site sensitivity verification. The presence of Ludwig’s Bustard as identified by the Screening Tool was also confirmed on site (Table 3.2).

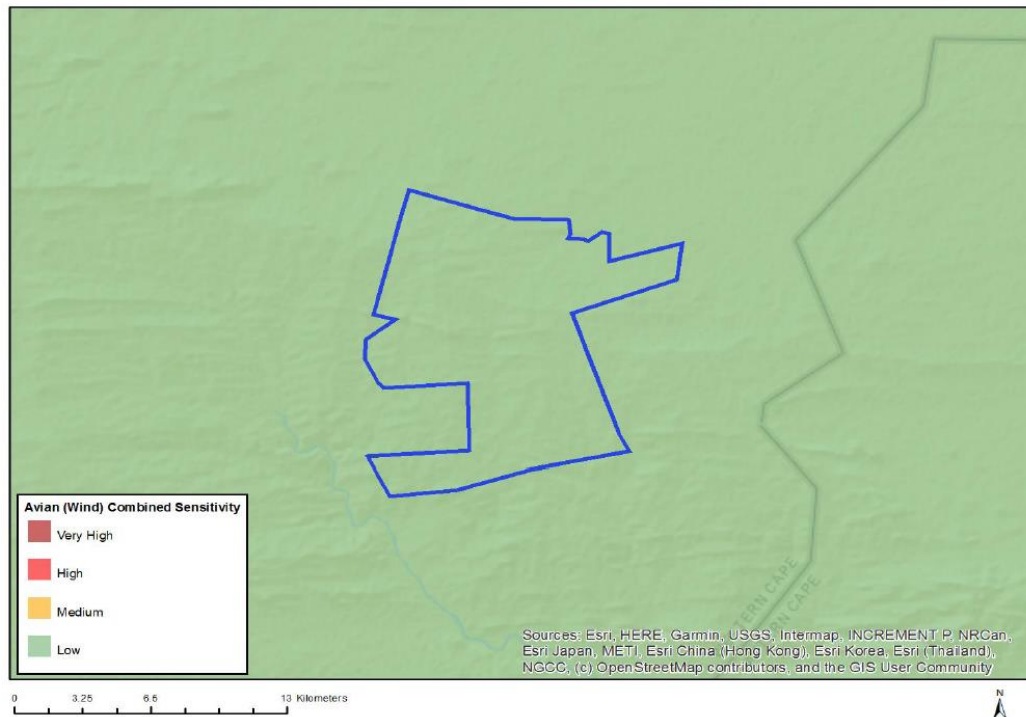


Figure 3.27: Map indicating Relative Avian (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site (Source: DFFE Screening Tool, 2020).

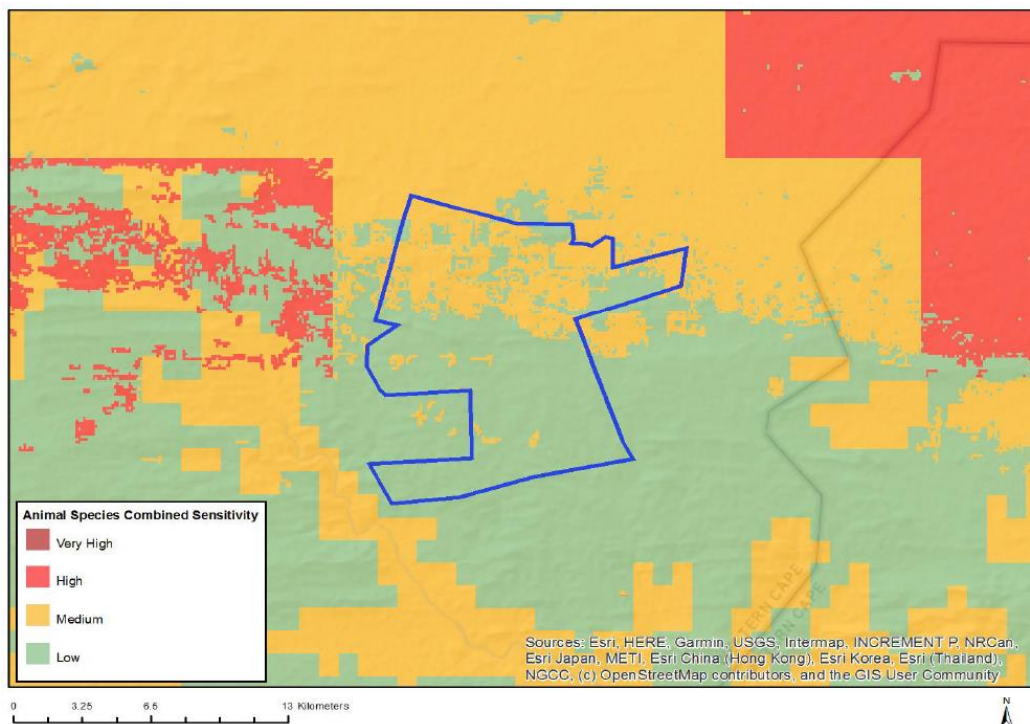


Figure 3.28: Map indicating Relative Animal Species Sensitivity for the proposed Kwagga WEF 3 project site as it relates to avifaunal species (Source: DFFE Screening Tool, 2020).

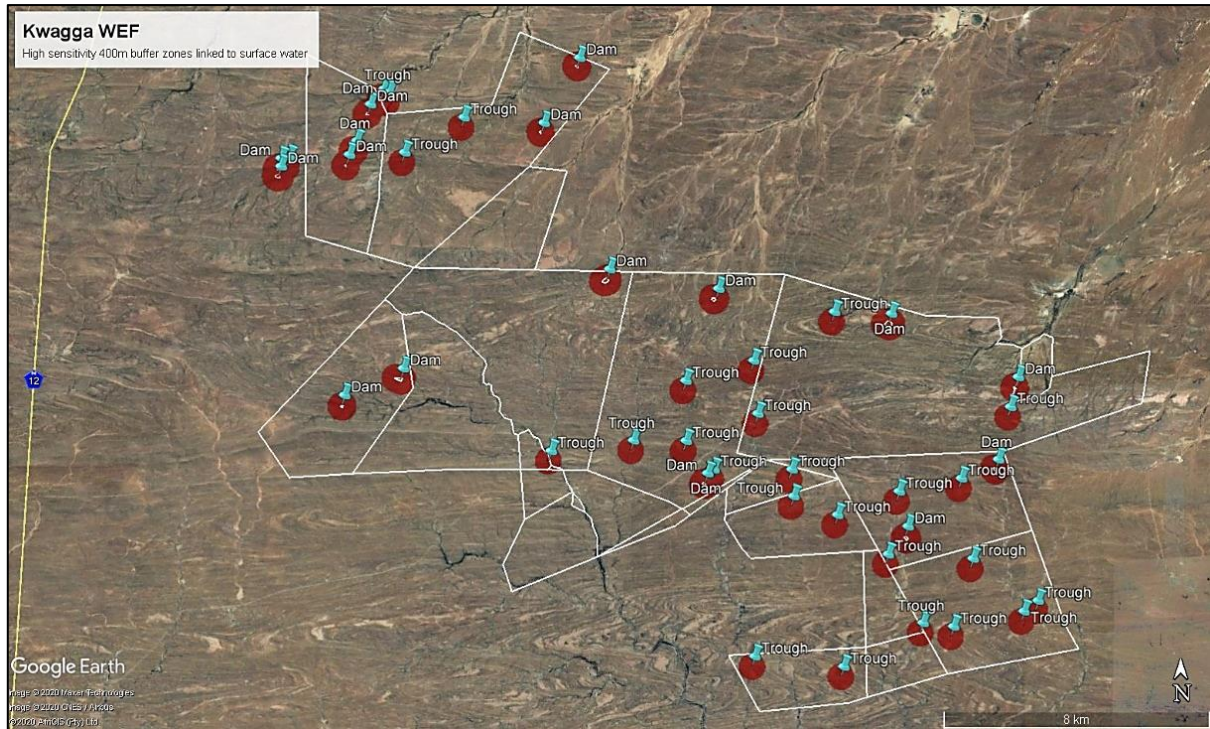


Figure 3.29: Areas of high avifaunal sensitivity, each with a 400 m ‘no-go’ buffer zone linked to surface water identified within the combined Kwagga WEF 1-3 study area (Source: Van Rooyen, 2021).

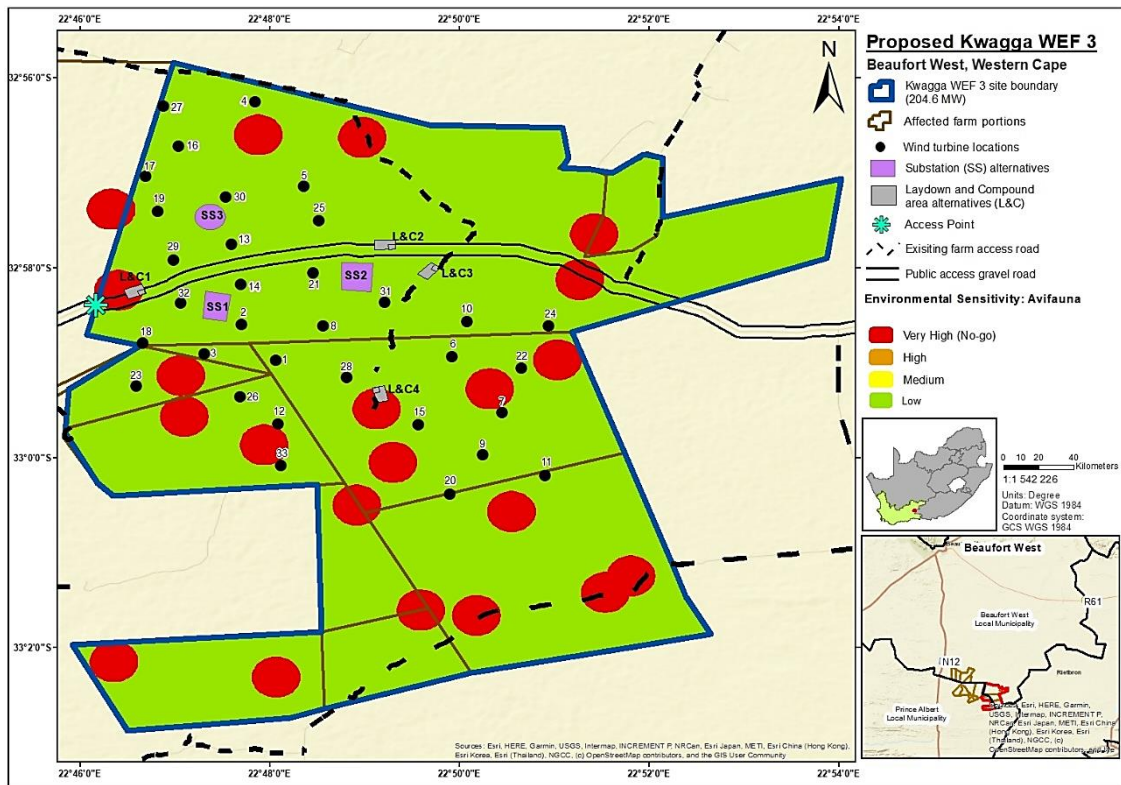


Figure 3.30: Areas of high avifaunal sensitivity, each with a 400 m ‘no-go’ buffer zone linked to surface water identified within the proposed Kwagga WEF 3 project site (After: Van Rooyen, 2021).

### 3.2.12 Visual Aspects and Sensitive Receptors

A detailed description of the landscape and sensitive receptors of the proposed Kwagga WEF 3 project site will be provided in the Visual Impact Assessment that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Visual Specialist, and which are included in Appendix F.8 of this Scoping Report.

The visual assessment provides information on landscape, terrain and vegetation, as well as other aspects such as land use and sensitive receptors. As described in Section 3.2.2 of this chapter, the landscape character of the Kwagga WEF 3 project site and surrounds is relatively flat to slightly rolling with low ridges and covered with sparse, low-growing shrubland vegetation that is visually uniform. The vegetation is typical of the Karoo ambience and together with the undulating topography provides the sought after 'Karoo sense of place'.

The key visual sensitive receptors identified within the proposed project site and surrounds include built infrastructure i.e. homesteads of which the majority seems permanently uninhabited. Other visually sensitivity receptors include travellers on the main roads such as the N12, R306 and the R61, as well as conservation and tourism activities and hospitality establishments that rely on the aesthetic environment. Landscape sensitive receptors identified within the proposed project site include low-lying ridges, low-growing vegetation and several watercourses such as rivers and drainage lines, all of which are regarded as visually interesting and provides for that typical Karoo ambience (Figure 3.31). The visual periphery to the north and south of the project site is characterised by mountains and high ridges most of which are included in conservation areas.

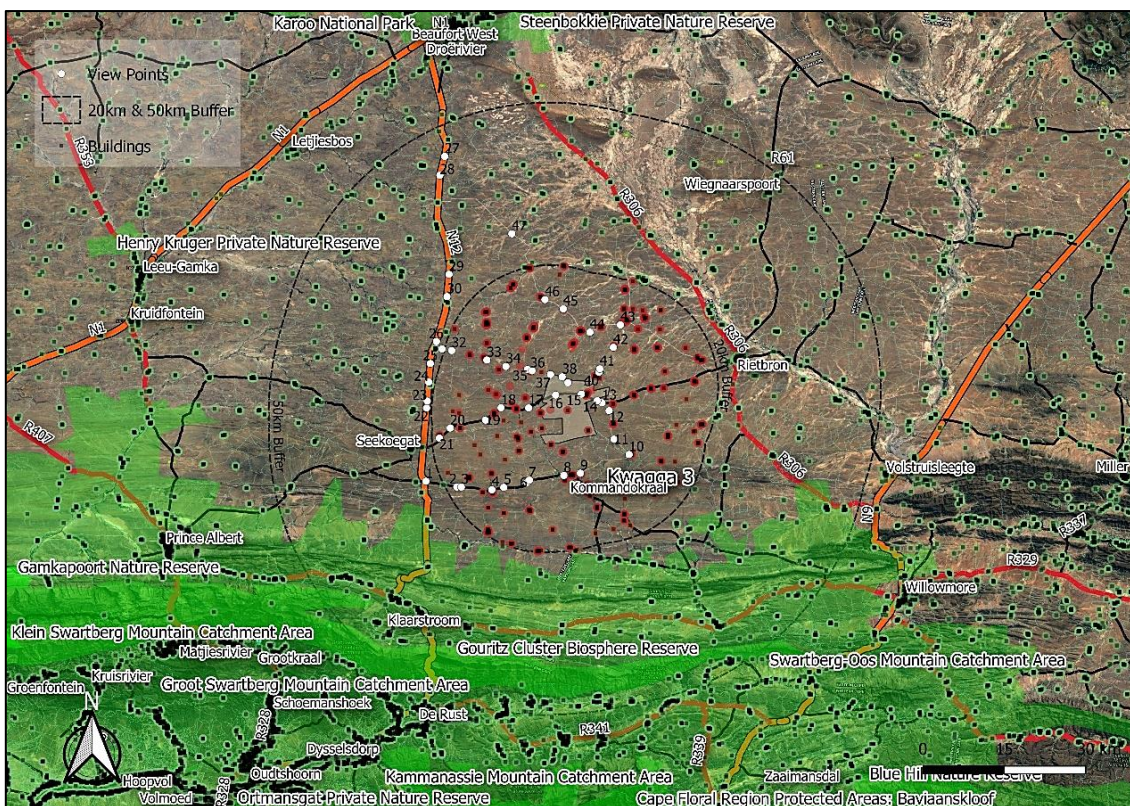


Figure 3.31: Potential visual receptors identified within the Kwagga WEF 3 project site and surrounds (Source: Klapwijk, 2021)

### 3.2.12.1 Screening Tool Descriptions and Site Verification

Figure 3.32 below indicates the results of the Screening Tool in terms of the landscape combined sensitivity for the Kwagga WEF 3 project site and surrounding area. The Screening Tool shows that the landscape sensitivity as it relates to wind energy developments in the region is considered to range from very high to low where the very high and high sensitivities are mainly linked to slopes of more than 1:4 and between 1:4 and 1:10 i.e. higher lying ridges and/or cliffs, respectively, as well as proximity (<500 m) to watercourses i.e. rivers and drainage lines within the proposed project site, while proximity (<1 km) to watercourses is considered medium significance. The site verification undertaken by the Specialist during October 2020 has confirmed these identified sensitivities.

In addition, the Screening Tool notes areas of low and very high flicker significance or sensitivity, which specifically relate to receptors associated with “potential temporarily or permanently inhabited residences” (Figure 3.33). Following the site sensitivity verification, these identified visual receptors were confirmed to be homesteads and associated farming structures, many of which appear to be permanently unoccupied or even abandoned, and are therefore not considered to be a concern for the proposed WEF development.

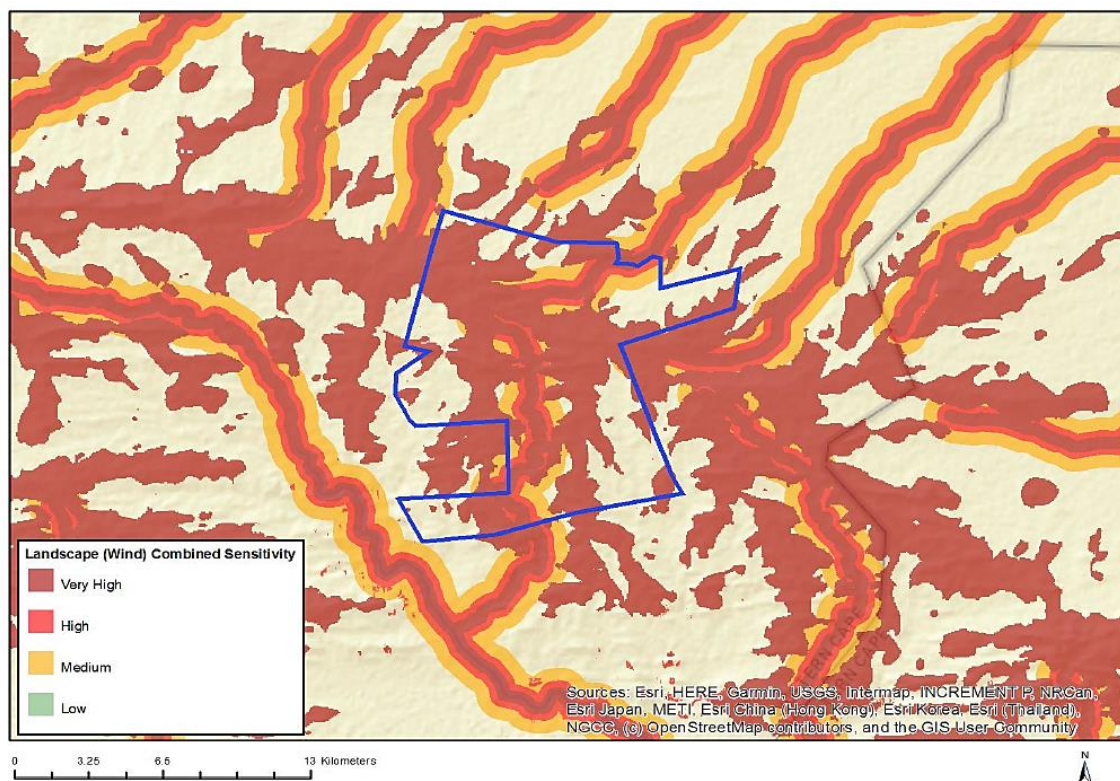
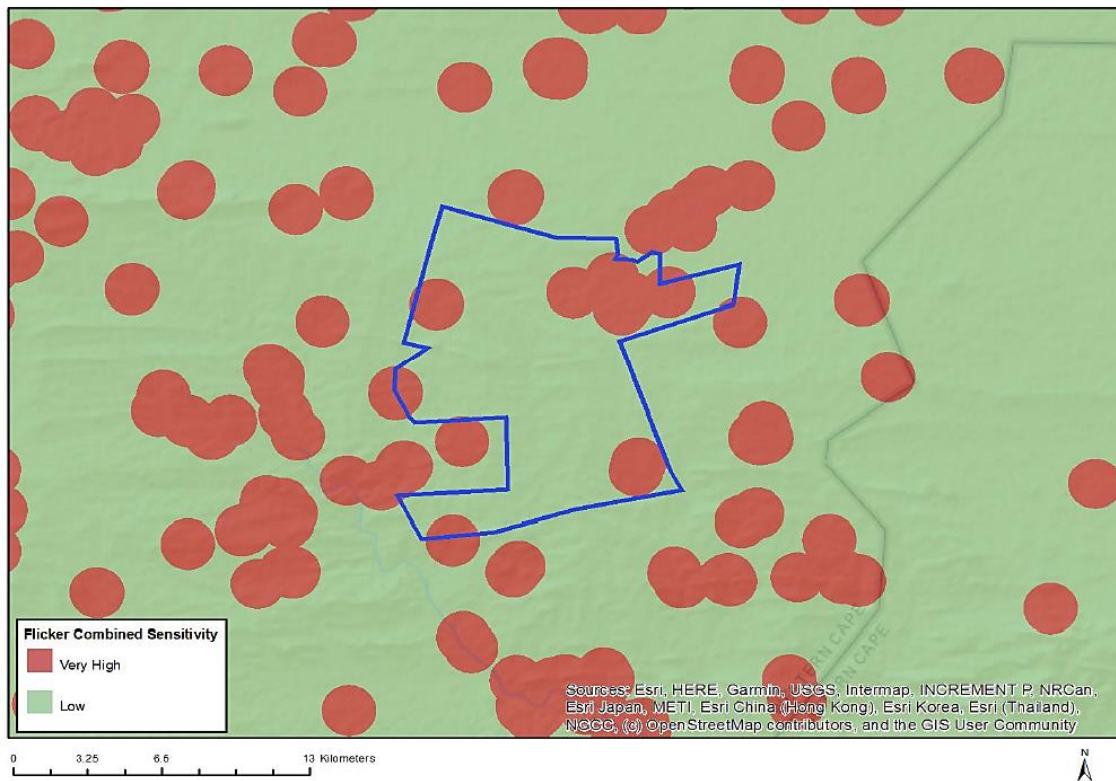


Figure 3.32: Potential Landscape (Wind) Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).



**Figure 3.33: Map indicating potential Flicker Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).**

### 3.2.13 Noise Aspects and Sensitive Receptors

A detailed description of the ambient noise levels and sensitive receptors within the proposed Kwagga WEF 3 project site and immediate surrounds will be provided in the Noise Impact Assessment that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Noise Specialist, and which are included in Appendix F.7 of this Scoping Report.

Although the proposed project site is situated within a rural setting where the main land-use activity is low-density livestock grazing and where the majority of the homesteads located within the project site appear to be permanently uninhabited, the proposed WEF development could affect several noise sensitive receptors identified within the proposed project site. A number of noise sensitive receptors have also been identified and mapped within a 5 km radius surrounding the proposed project site (Figure 3.34).

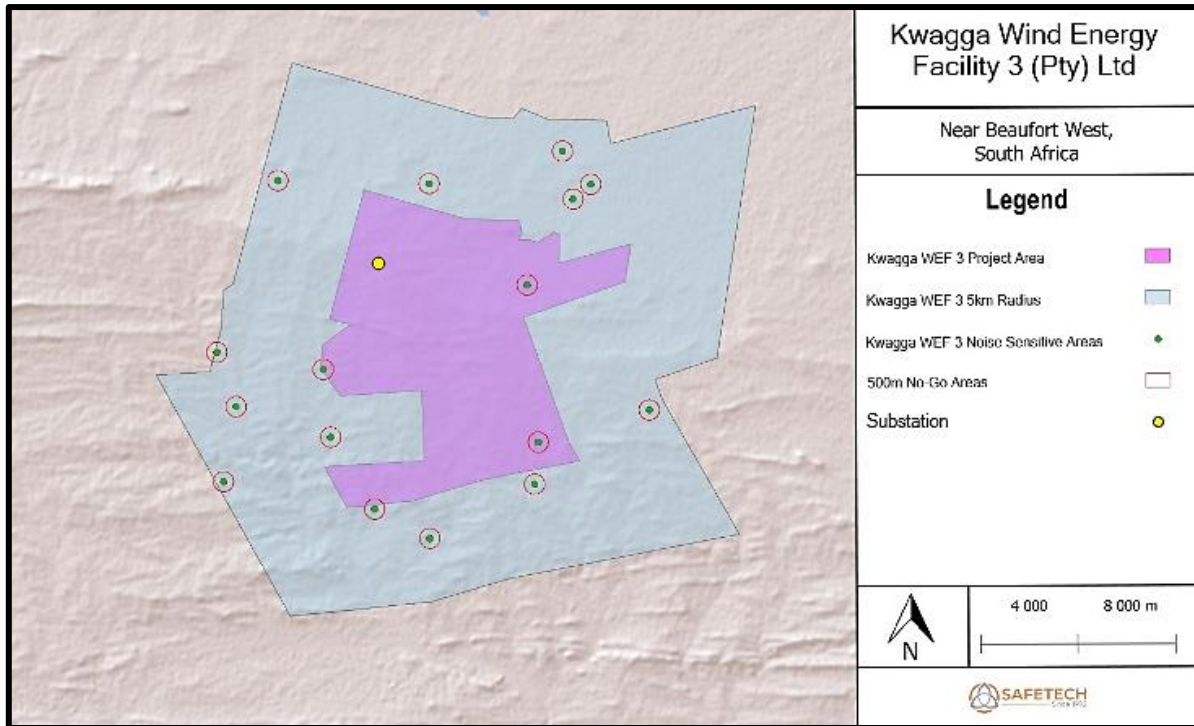


Figure 3.34: Map indicating the noise sensitive receptors identified within the proposed Kwagga WEF 3 project site and immediate surrounds (Source: Williams, 2021).

### 3.2.13.1 Screening Tool Descriptions and Site Verification

Figure 3.35 below indicates the results of the Screening Tool in terms of noise sensitivity identified for the proposed Kwagga WEF 3 project site and surrounds. The Screening Tool notes that the very high noise sensitivity is attributed to the identification of a number of potential noise sensitive receptors i.e. 'temporarily or permanently inhabited residences' (i.e. homesteads) located within the proposed project site. The site sensitivity verification has confirmed the location of two such noise sensitive receptors present on site during the fieldwork conducted in October 2020, which have a very high sensitivity and have been allocated a 500 m 'no-go' buffer zone (Figure 3.36). Two more noise sensitive receptors, of which the allocated 500 m 'no-go' buffer zone around each sensitive receptor extends into the proposed project site, are located very close to the border of the proposed project site; one on the western boundary and one on the south-western boundary.

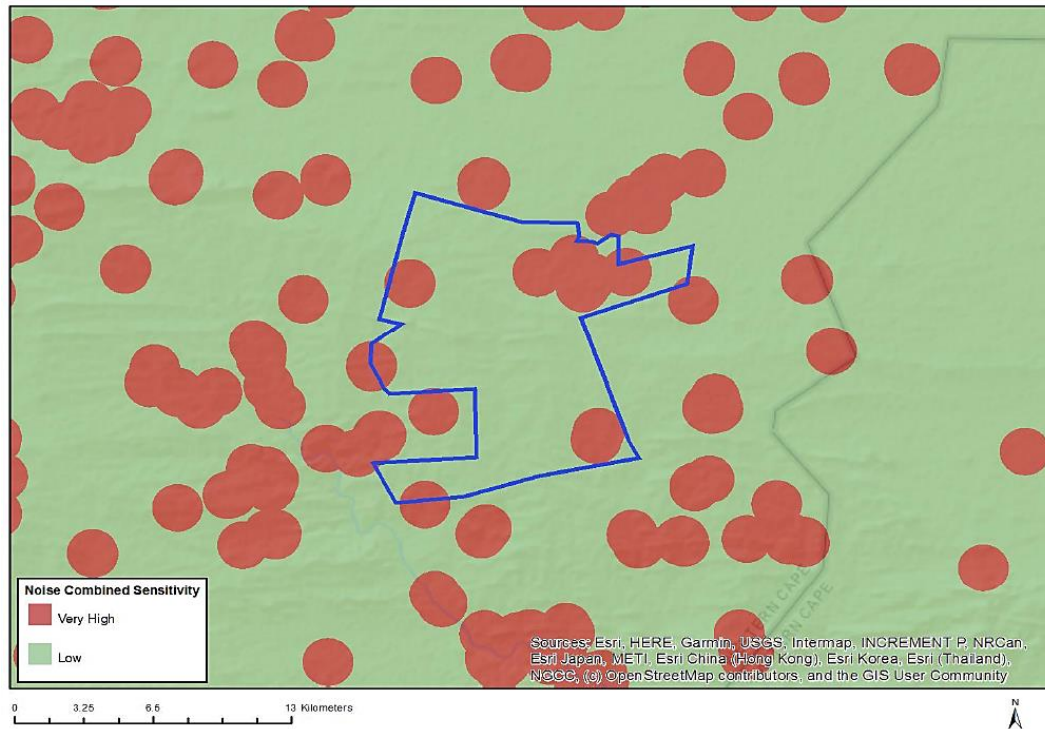


Figure 3.35: Map indicating potential Noise Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020)

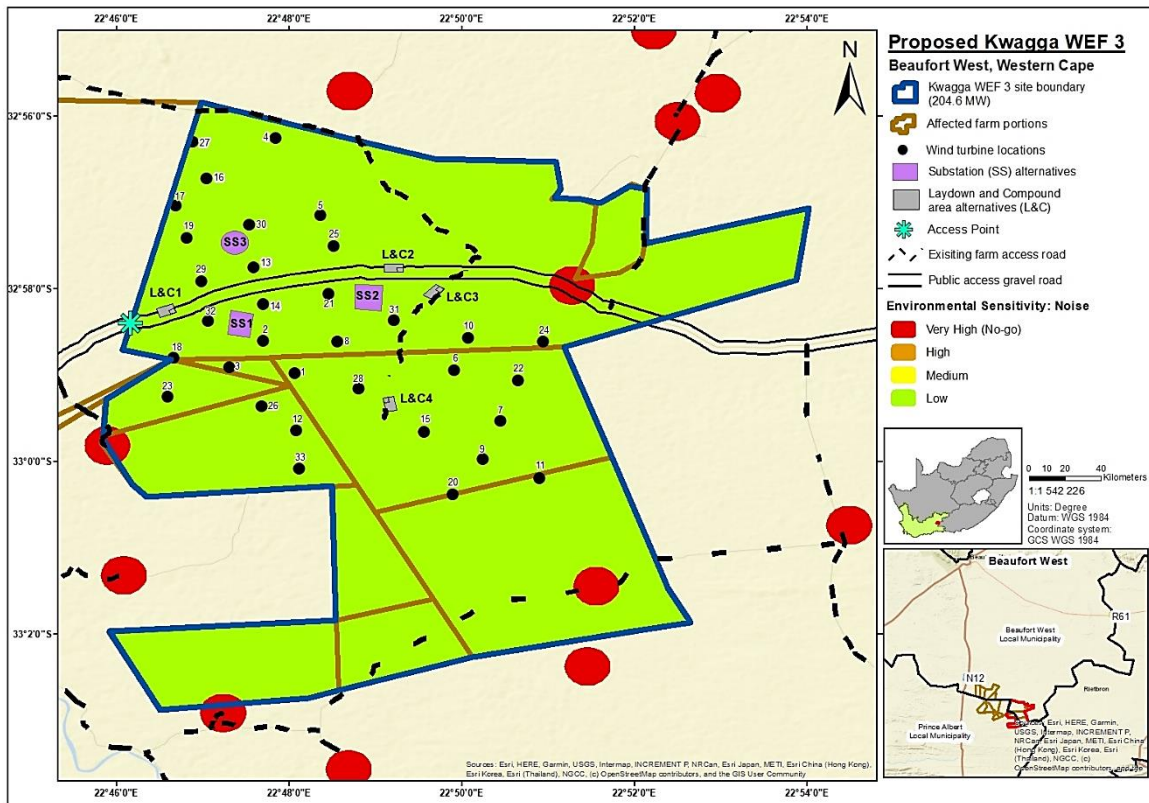


Figure 3.36: Map indicating the two identified Noise Sensitivity Receptors within the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Williams, 2021).

### 3.2.14 Heritage: Archaeology and Cultural Landscape

---

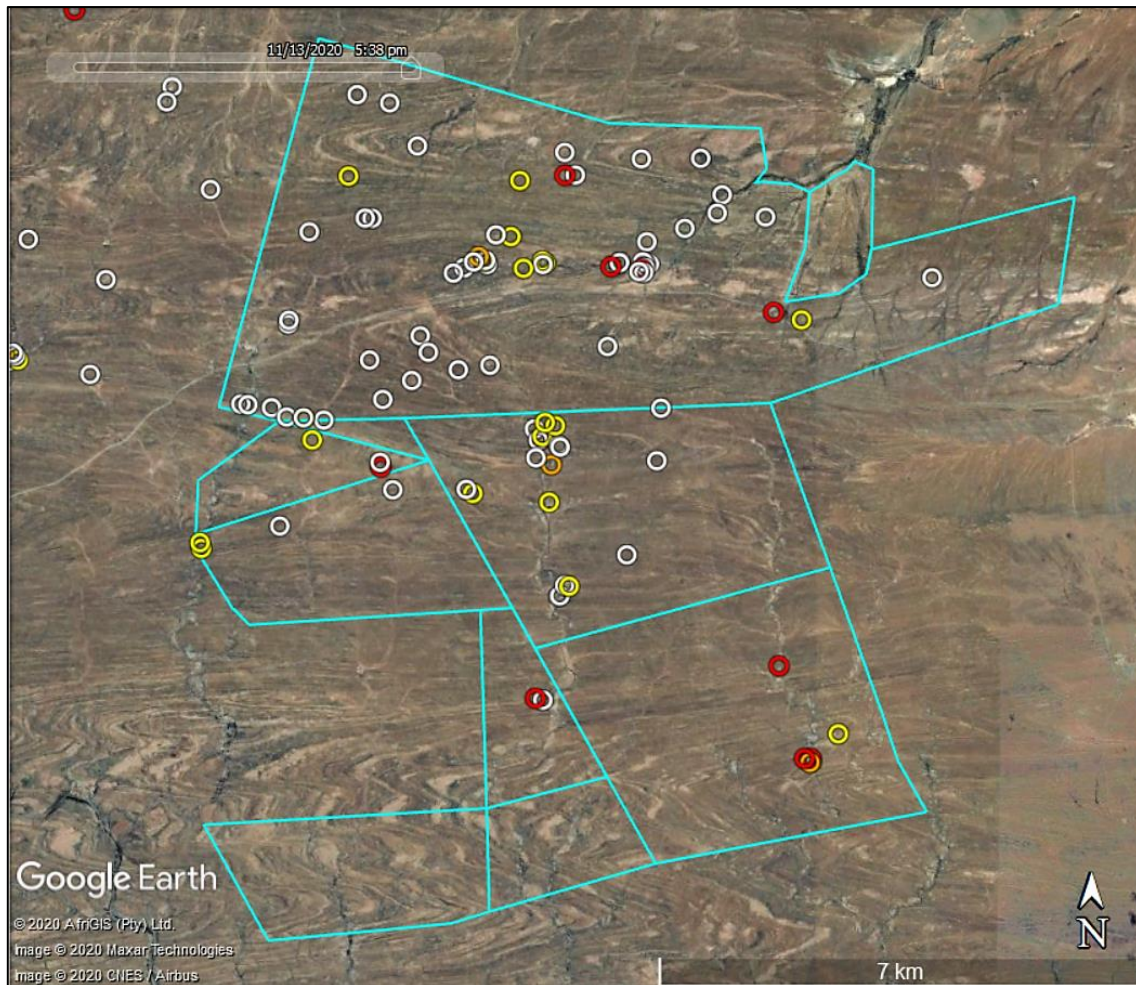
A detailed description of the archaeological features and cultural landscape within the proposed Kwagga WEF 3 project site will be provided in the Heritage Impact Assessment (Archaeology, Palaeontology and Cultural Landscape), that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Heritage Specialist, and which are included in Appendix F.2 of this Scoping Report.

The proposed project site was initially examined on aerial photography to determine whether any obvious heritage resources (such as buildings) could be observed. A number of such locations were noted and marked for ground-truthing on site. The Heritage Specialist has extensive knowledge of the Karoo landscape and the types of heritage resources expected to be found in the project area. Although a detailed literature study is to follow during the EIA Phase, a site visit was undertaken by the Heritage Specialist in November 2020 to conduct field surveys to record and photograph heritage sites / resources and verify the site sensitivity assigned by the Screening Tool.

A number of sensitive sites of archaeological and cultural significance was identified within the proposed project site (Figure 3.37) and include the following:

- a) Graves, located in the north-eastern parts of the project site, are deemed to have high cultural significance for their social value and are considered Grade IIIA resources;
- b) 19<sup>th</sup> and early 20<sup>th</sup> century ruined and standing built structures (houses) are deemed to be of medium sensitivity and are considered Grade IIIB resources;
- c) Stone artefacts on tuff and crypto-crystalline silica from a Later Stone Age site are deemed to be of medium sensitivity and are considered Grade IIIB resources;
- d) Historical glass and ceramic artefact scatters are considered to be of low sensitivity and are referred to as Grade IIIC resources found to be of low cultural significance;
- e) Historical packed stone structures and ruins e.g. stone house that is considered to be of medium sensitivity and classified as Grade IIIB resources with medium cultural significance; and
- f) A number of other heritage resource sites distributed across the project site that are considered not conservation worthy (NCW).





**Figure 3.37: Map of all heritage resources recorded during the field survey, each with a 50 m buffer zone, within the proposed Kwagga WEF 3 project site. Red = Grade IIIA, Orange = Grade IIIB, Yellow = Grade IIIC, White = NCW. The project site boundary is indicated in blue (Source: Orton, 2021)**

Wind turbines and related infrastructure should avoid all Grade IIIA and IIIB sites including their 50 m buffer zones. It is always preferred that all heritage resources be avoided as far as possible, but those considered NCW have very little to no cultural significance and are in practice of no further concern. Grade IIIC resources do have some cultural significance and, although best avoided, they can easily be mitigated through excavation and/or collection of archaeological materials.

#### **3.2.14.1 Screening Tool Descriptions and Site Verification**

Figure 3.38 indicates the archaeological and heritage sensitivity as assigned by the Screening Tool. The overall heritage sensitivity of the proposed Kwagga WEF 3 project site is considered to be medium. However, the site visit undertaken by the Specialist confirms that the largest extent of the proposed project site is found to be of very low heritage sensitivity. This does not mean that no heritage resources will be present in these very low sensitive areas, but the probability of resources of high cultural significance being found there are highly unlikely. Figure 3.39 shows the identified sites that are considered to be of confirmed medium heritage / archaeological sensitivity following the site sensitivity verification.

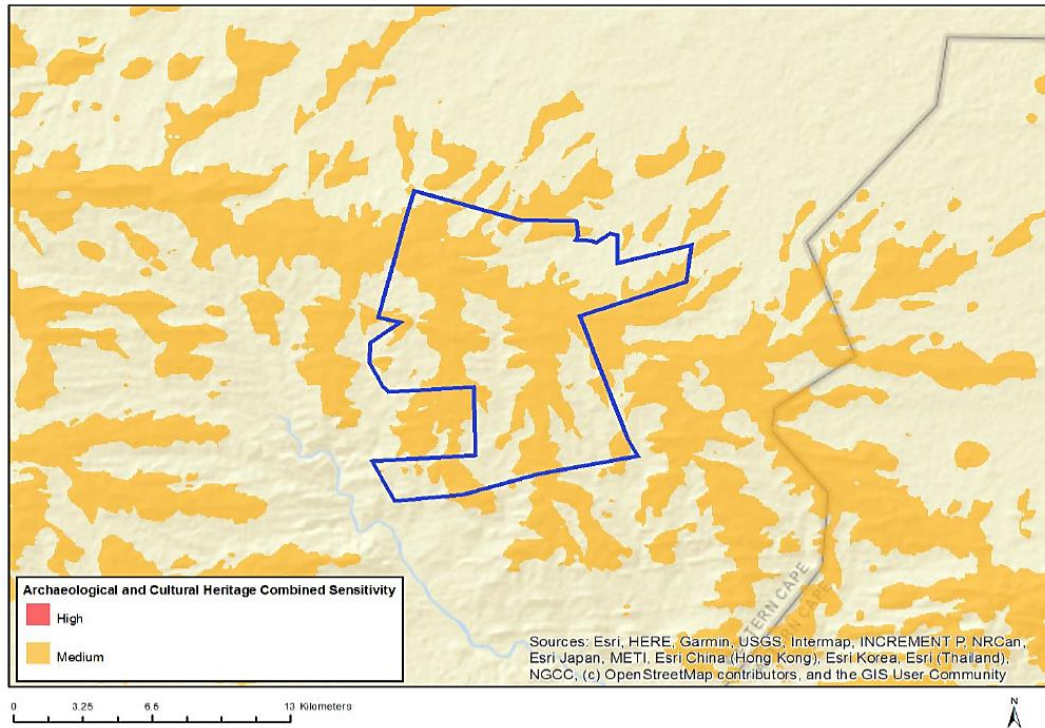


Figure 3.38: Map indicating potential Archaeology and Cultural Heritage Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020).

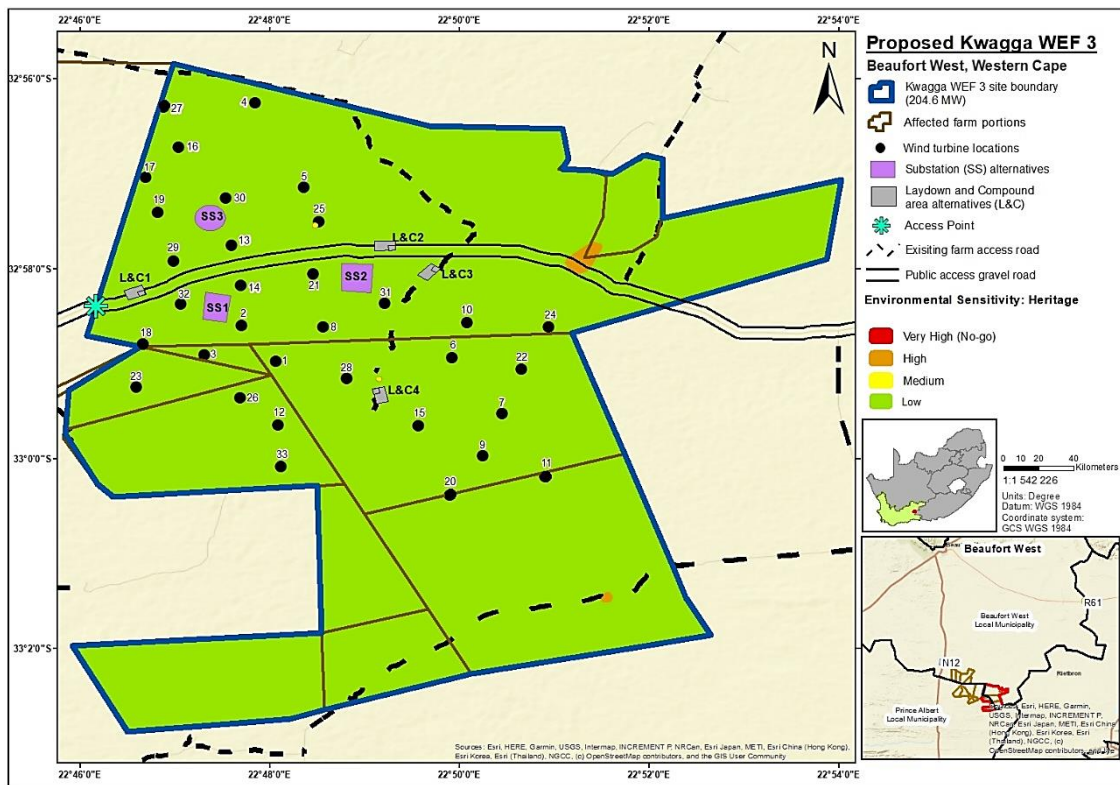


Figure 3.39: Map indicating the identified Heritage / Archaeological sensitivity within the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Orton, 2021).

### 3.2.15 Palaeontology

---

A detailed description of the palaeontological features within the proposed Kwagga WEF 3 project site will be provided in the Palaeontology Impact Assessment, which will form part of the Heritage Impact Assessment (Archaeology, Palaeontology and Cultural Landscape), that will be included in the EIA Report. The information described below is based on scoping inputs provided by the Palaeontologist, and which are included in Appendix F.2 of this Scoping Report.

The proposed project site is underlain by continental sediments of the Lower Beaufort Group (Abrahamskraal and Teekloof Formations) of Permian age, as well as extensive, largely unconsolidated Late Caenozoic superficial sediments such as colluvium, alluvium and surface gravels. The fossil record of the Abrahamskraal – Teekloof contact zone, extensively represented within the project site, is of special scientific interest because of its record of environmental and palaeobiological events related to the major Middle Permian Mass Extinction Event of 262-260 million years ago. Since vertebrate fossils are generally rare within this interval, any new records of well-preserved, identifiable material are of considerable scientific value.

Twenty new fossil sites or subsites (probable scattered bones of the same individual) were recorded from some 60 potentially fossiliferous sedimentary exposures examined within the proposed Kwagga WEF 3 project site during the field surveys undertaken by the Palaeontologist during November 2020. Most specimens can only be accurately identified following laboratory preparation, while some are unidentifiable (e.g. poorly preserved postcranial remains). The new palaeontological finds are all from the Lower Beaufort Group (Abrahamskraal and Teekloof Formations) and include small dicynodonts (the most numerous category), large herbivorous dinocephalians and unidentified large herbivores (probably dinocephalians or pareiasaurs), as well as semi-articulated palaeoniscoid fish remains, invertebrate burrows and poorly-preserved petrified wood. No fossils were recorded within the Late Caenozoic superficial deposits within the proposed Kwagga 3 WEF project site.

#### **3.2.15.1 Screening Tool Descriptions and Site Verification**

The Lower Beaufort Group outcrop area in the Main Karoo Basin as a whole is provisionally designated as very high sensitivity in palaeontological heritage terms on the basis of its rich fossil record of continental (fluvial/lacustrine/terrestrial) vertebrates of Middle to Late Permian age. In addition, the South African Heritage Resources Information System (SAHRIS) Palaeosensitivity map shows almost the entire proposed project site and surrounds to be of very high sensitivity, with the exception of small riverine areas with thick alluvial deposits located in the north-eastern corner of the proposed project site. Likewise, according to the Screening Tool, a very high sensitivity is noted for the majority of the proposed Kwagga WEF 3 project site with a small area of Waterford Formation deltaic rocks located in the south-eastern corner of the proposed project site that is considered to be of medium sensitivity (Figure 3.35).

However, based on the fieldwork conducted by the Specialist within the Kwagga WEF 3 project site during November 2020, taking into consideration the additional palaeontological fieldwork conducted by the same Specialist in proposed WEF project development areas adjoining the proposed Kwagga WEF 1-3 project cluster, the overall very high palaeosensitivity assigned to the proposed project site by the Screening Tool is therefore disputed. Since comparatively few fossils of scientific and conservation value are recorded over a large area here, even in areas of good bedrock exposure, it is concluded that in practice the palaeosensitivity of the proposed project site is generally low, but with sparse, small and largely unpredictable sites of

potentially high to very high palaeosensitivity. The low palaeosensitivity of small areas with thick alluvial deposits (indicated in green in Figure 3.40) and the medium sensitivity of deltaic sediments of the Waterford Formation (indicated in orange in Figure 3.40) is uncontested. Therefore, no areas of high palaeosensitivity or very high ('no-go') areas are identified within the proposed project site (Figure 3.41).

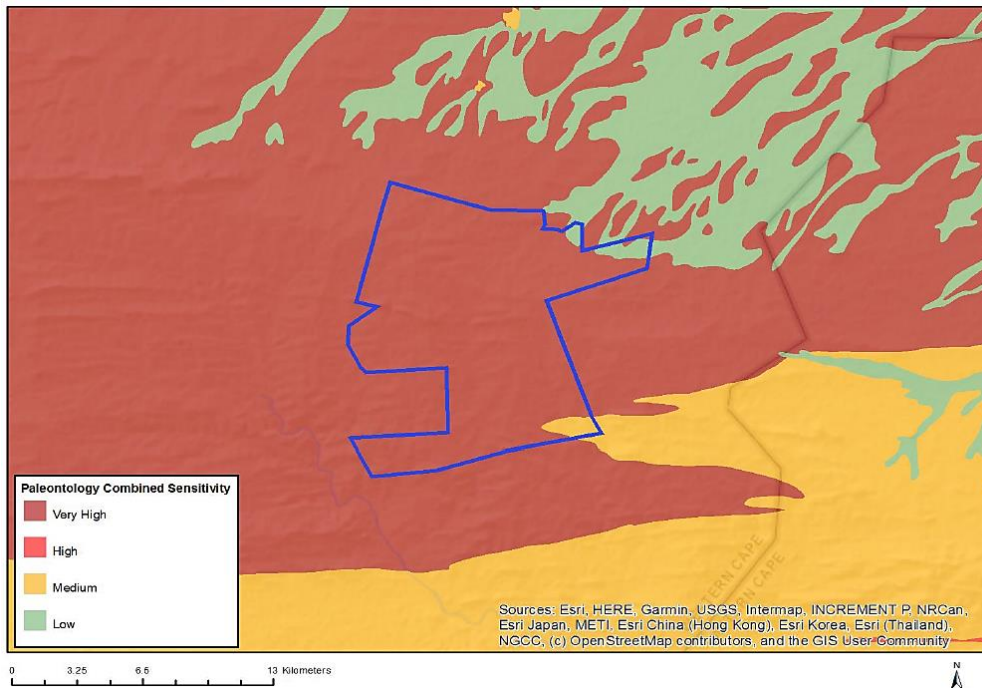


Figure 3.40: Map showing the potential Palaeontological Combined Sensitivity for the proposed Kwagga WEF 3 project site and surrounds (Source: DFFE Screening Tool, 2020)

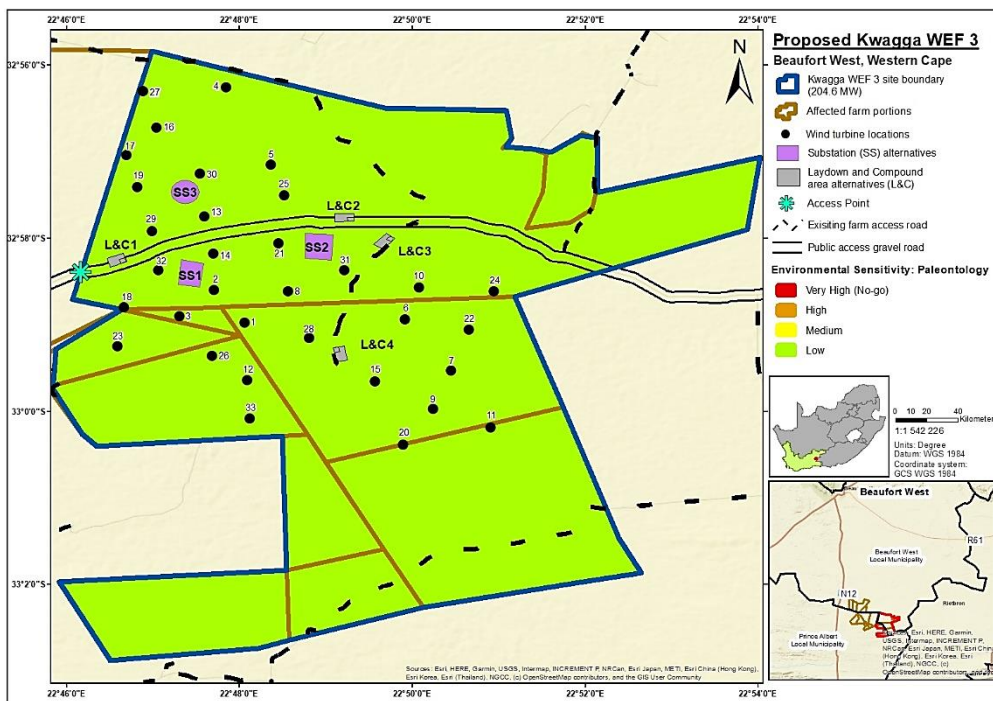


Figure 3.41: Map showing the Palaeontological Combined Sensitivity for the proposed Kwagga WEF 3 project site as confirmed following the site sensitivity verification (After: Almond, 2021)

### **3.3 Environmental Sensitivity Map**

---

Based on the environmental sensitivities identified and verified by the Specialists on site during the Scoping Phase (included as Appendix F to this Scoping Report), a combined environmental sensitivity map has been compiled for the proposed project site and preliminary development footprint of the Kwagga WEF 3 (Figure 3.42 and Figure 3.43 below).

Figure 3.42 shows the identified and assessed environmental sensitivities such as agricultural potential, terrestrial biodiversity, watercourse features, avifauna and bats 'no-go' areas, and sensitive heritage and noise features, present within the project site, but excluding the potential visual sensitivity that is associated with a typical wind farm development. This map therefore indicates that the inherent sensitivity of the proposed project site is generally medium to low and is therefore more than suited for the development of the proposed WEF project given that all measures be taken to avoid, manage or mitigate potential impacts that may be imposed by the proposed development. Figure 3.43 shows the same identified and assessed environmental sensitivities as depicted in Figure 3.42 but including the potential visual impact that the proposed development of wind turbines in this area could have on the receiving environment.

These identified sensitivities will be further assessed and refined through detailed specialist impact assessments during the EIA Phase. The specialist impact assessments will be included in the EIA Report.

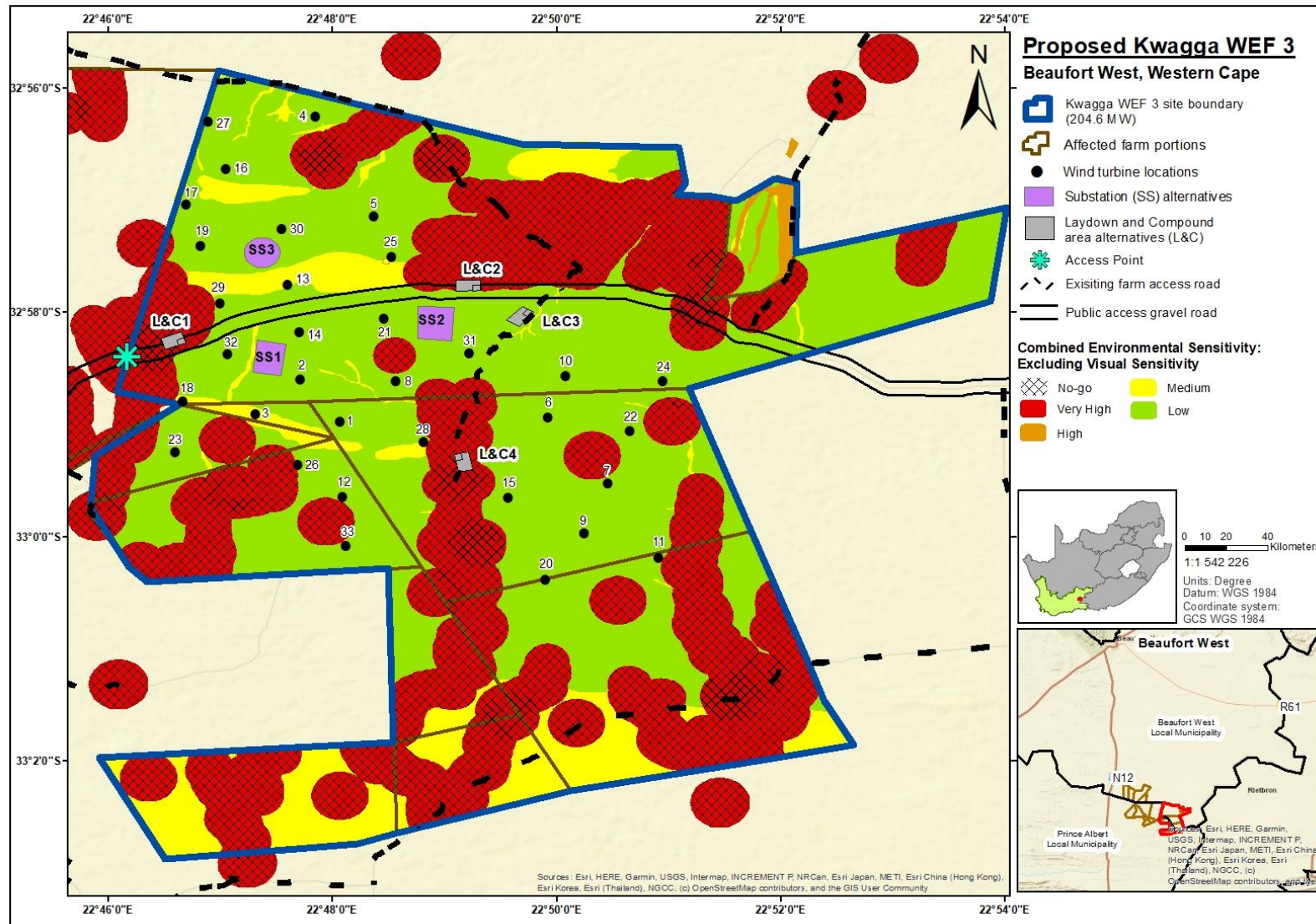


Figure 3.42: Preliminary combined environmental sensitivity map (excluding Visual sensitivity) for the proposed Kwagga WEF 3 project site

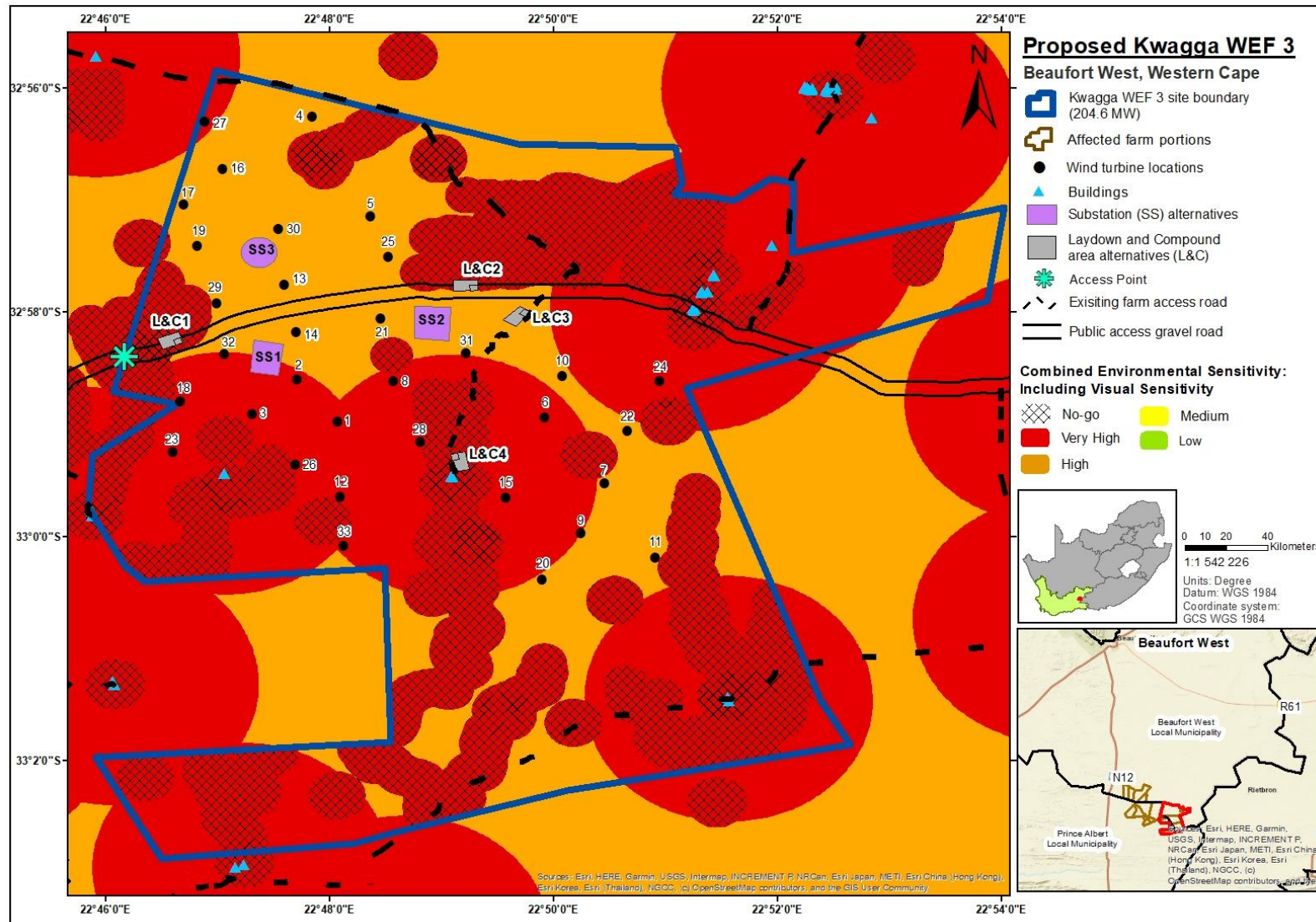


Figure 3.43: Preliminary combined environmental sensitivity map (including Visual sensitivity) for the proposed Kwagga WEF 3 project site

### 3.4 Socio-Economic Environment

---

The available data used to compile the socio-economic baseline for the Central Karoo region, and Beaufort West and Prince Albert areas, although not exhaustive, is interpreted in terms of professional opinion and is indicative of generally accepted trends within the Western Cape Province and the broader South Africa.

#### 3.4.1 Regional Context – Central Karoo District Municipality

---

The information described below is based on scoping inputs provided by the Socio-Economic Specialist, which are included in Appendix F.10 of this Scoping Report.

The proposed Kwagga WEF 3 project site is situated within the Central Karoo District Municipality (CKDM), which comprises the Laingsburg, Prince Albert and Beaufort West Local Municipalities (LMs). The CKDM is situated in the eastern parts of the Western Cape and borders the Northern Cape and Eastern Cape provinces. The CKDM is the largest district in the Western Cape Province, covering 38 854 km<sup>2</sup> (28%) of the provincial area, but has a small population resulting in low population densities. The district is strategically located along the national transport corridor (i.e. N1 main road) between Johannesburg and Cape Town but has a low level of development. It is characterised by sparsely populated towns located at large distances from each other. Larger towns serve as agricultural service centres to the surrounding farms.

##### 3.4.1.1 Demographics and Economic Profile

The CKDM population increased by 4.6% from 2011 to 2016, at a lower rate than the 7.8% increase in the Western Cape population. Annualised population growth rates have declined between 2001 and 2016 and were expected to have declined further by 2020, with projected slight increases in the growth rate thereafter (Table 3.3). Overall, population growth is expected to remain very low, and considerably below provincial and national averages.

Beaufort West is the most populous LM in the District, with approximately 51 000 residents in 2016, followed by Prince Albert (14 300) and Laingsburg LMs (8 900). The CKDM population is comprised of 7% Black Africans, 85% Coloureds and 8% Whites. More than 80% of residents live in the towns of Beaufort West, Laingsburg, Prince Albert and Murraysburg.



**Table 3.3: Population growth of the Central Karoo District Municipality for the period 2001 – 2030**  
(Source: Reuther, 2021)

<b>Municipality</b>	<b>Population growth p.a. 2001-2011</b>	<b>Population growth p.a. 2011-2016</b>	<b>Projected p.a. growth 2016-2020</b>	<b>Projected p.a. growth 2020-2025</b>	<b>Projected p.a. growth 2025-2030</b>
Beaufort West	1.5%	0.6%	0.5%	0.6%	0.6%
Prince Albert	2.5%	1.7%	1.4%	1.8%	1.8%
Laingsburg	2.4%	1.5%	1.2%	1.5%	1.5%
CKDM	1.7%	0.9%	0.7%	0.9%	0.9%

The CKDM economy is dominated by the services (tertiary) sector, which accounts for 70.5% of CKDM Regional Gross Domestic Product (GDPR), followed by agriculture (primary sector) (18.4%) and manufacturing (secondary sector) (11%). The CKDM tertiary sector comprises government services (21.9%); finance, insurance, real estate and business services (13.4%); wholesale, trade, catering and accommodation (13.3%); and transport, storage and communication (12.3%). Livestock farming remains the backbone of the CKDM primary sector, while crop and fruit farming can also be found. Game farms and tourism become increasingly important. The secondary sector includes food and beverage processing, which are closely tied to the district's primary sector, as well as construction and other manufacturing.

### **3.4.1.2 Renewable Energy**

The South African Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has been very successful in attracting investment, including in local component manufacturing and construction. It also contributes to energy security and possibly lower electricity costs, with resulting socio-economic benefits, and reduces carbon emissions compared to coal-generated electricity.

The Central Karoo region is attractive for renewable energy projects due to the significant solar and wind energy resources. Various renewable energy projects have been approved in the CKDM area, but most have yet to be implemented (refer to Table 7.3 and Figure 7.1 in Chapter 7 of this Scoping Report). Considerable opportunities for expanding renewable energy projects specifically related to solar and wind power generation have been identified in the CKDM, which encourages Independent Power Producers (IPPs) to locate in the region and to create downstream business- and employment opportunities.

According to the Western Cape Provincial SDF, renewable energy generation is also deemed one of the most promising economic sectors in the Central Karoo region that will add significant value to the regional GDPR, while having the potential to change the composition and character of towns throughout the municipal district.

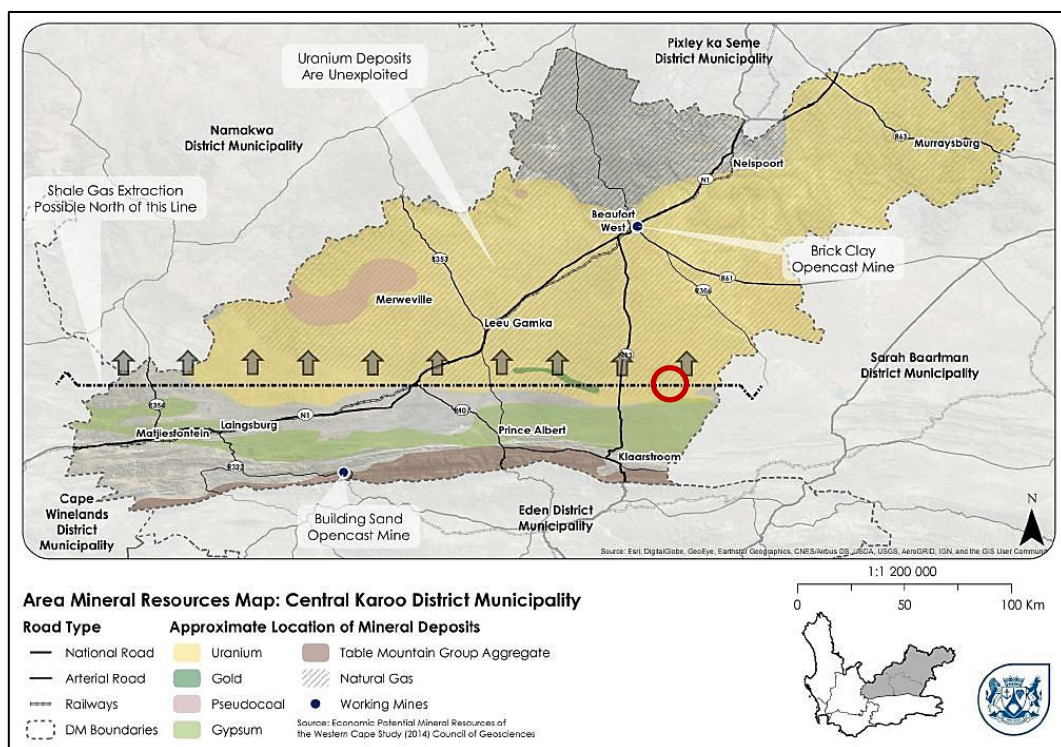
### **3.4.1.3 Shale Gas Exploration**

Shale gas exploration through fracking within the Central Karoo region has become an increasingly important consideration for the South African authorities. The ongoing search for shale gas by a number of energy companies in the Karoo has become a contentious issue among environmentalists, farmers, local residents and various government and non-government institutions. Major risks associated with fracking of shale gas include (i) usage of scarce water resources, specifically groundwater, (ii) impact on

critical biodiversity value, cultural heritage and sense of place in the Central Karoo, (iii) the contamination of groundwater, (iv) increased traffic volumes, (v) increased housing demand, and (vi) deterioration of existing transport infrastructure.

The Strategic Environmental Assessment (SEA) for Shale Gas Development in the Central Karoo<sup>3</sup> recognised that whilst the potential economic and energy impact of medium to large scale shale gas extraction could be substantial, there are also potential environmental trade-offs which must be fully understood in order to be prevented or mitigated. The SEA makes several recommendations with respect to air quality, earthquakes, water resources, waste planning, ecological impacts, agriculture, tourism, health, sense of place, noise and spatial implications. It is important to note that the extent of the impact is dependent on the scale at which shale gas extraction would take place.

The proposed Kwagga WEF 3 project site appears to be partly located within the identified shale gas exploration area (Figure 3.44).



**Figure 3.44: Mineral resources map for the Central Karoo District Municipality. The proposed Kwagga WEF 3 project site (indicated in red circle) appears to be located partly within the potential shale gas exploration area (Source: Western Cape DEA&DP, 2019)**

### 3.4.1.4 Social Characteristics

Employment opportunities in the CKDM are limited. In the rural areas, employment is primarily in the agricultural sector, which largely provides job opportunities for semi-skilled and unskilled workers at generally low wages. Towns within the CKDM have a slightly more diverse employment profile. Generally, the region is characterised by high levels of poverty, low levels of education and social grant dependence.

<sup>3</sup> Scholes, R., Lochner, P., Schreiner, G., Snyman-Van Der Walt, L. and de Jager, M. (eds.) 2016. Shale Gas Development in the Central Karoo: A Scientific Assessment of the Opportunities and Risks. CSIR/IU/021MH/EXP/2016/003/A, ISBN 978-0-7988-5631-7

The tertiary sector provides 69% of jobs, followed by the primary sector (23%) and the secondary sector (8%). Most job opportunities can be found in the Beaufort West LM (65% of District employment in 2015), followed by Prince Albert (20%) and Laingsburg LMs (15%). Unemployment is, however, also highest in the Beaufort West LM at 27%, with lower levels in Prince Albert (19%) and Laingsburg (18%) LMs.

Poverty rates have increased significantly between 2011 and 2016, and continue to remain high compared to the provincial average; 3.1% of the CKDM population lived below the poverty line in 2016, compared to only 2.7% in the Western Cape Province. During this period, poverty rates have increased most within the Laingsburg LM, followed by the Beaufort West and Prince Albert LMs.

The CKDM is currently being serviced by five hospitals and nine permanent Primary Health Care facilities. Virtually all households in the CKDM had access to formal housing in 2017. The only notable other types of housing are traditional housing comprising 8.1% of households in Prince Albert LM, and informal housing comprising 184 households in Prince Albert, 173 households in Beaufort West and 35 households in the Laingsburg LM.

### **3.4.2 Local Context – Beaufort West Local Municipality**

---

The information described below is based on scoping inputs provided by the Socio-Economic Specialist, which are included in Appendix F.10 of this Scoping Report.

The Beaufort West Local Municipality (BWLM) is the largest municipality in the CKDM and extends over 56% of the District area (21 931 km<sup>2</sup>). Beaufort West is the economic, political and administrative centre of the CKDM. Smaller towns in the BWLM include Merweville, Murraysburg and Nelpoort.

The BWLM is divided into seven wards, of which Ward 1 (eastern municipal area), Ward 2 (central municipal area and portions of Beaufort West town) and Ward 7 (western municipal area) are primarily large rural wards, whereas Ward 3 to 6 are small urban wards within the town of Beaufort West.

The proposed Kwagga WEF 3 study area is located on the south-western boundary of Ward 2 in the BWLM.

#### **3.4.2.1 Demographics and Economic Profile**

The population of the BWLM has increased by approximately 3% from 49 586 in 2011 to 51 080 in 2016. The municipal population is about evenly split between the three rural and four urban wards, although rural wards have experienced a slight decrease in population density from 2011 to 2016, while urban wards have registered a slight increase, especially Ward 6. Ward population density was about evenly distributed at approximately 6 800 per ward, and only Ward 7 had a significantly higher population of 10 400 in 2016. The average household in the BWLM comprises 3.4 people.

The municipality has a relatively young population, with 36% of residents younger than 18 years, 57% between 18 – 65 years and 7% older than 65 years. The BWLM population is comprised of 18% Black Africans, 75% Coloureds and 7% Whites.

The BWLM economy has contributed 70.5% (or approximately R 1.4 billion) to the CKDM GDP of R 2 billion in 2015 and has grown 3.1% per annum on average over the period 2005 – 2015, which is just below the CKDM average of 3.4%. The BWLM economy is more strongly geared towards the tertiary

sector (79% of municipal GDP in 2015) compared to that of the CKDM economy, and has comprised of 48% commercial services and 30% government, social and personal services. The secondary sector with a contribution of 7% to the municipal GDP is small while the primary sector has contributed 14% to the municipal GDP in 2015. Although the primary sector has grown on average by 5.9% per annum between 2005 and 2015, continued growth in this sector has been volatile between 2013 and 2017, with significant contractions during 2015 (-3%) and 2016 (-9.8%), which is indicative of difficult farming conditions and the cumulative impact of the prolonged and ongoing drought in the region.

#### **3.4.2.2 Education**

Education levels characteristic of the BWLM are generally relatively low. In 2016, approximately 17% of the municipal population had completed secondary education (matriculated), while another 32% obtained at least some secondary education. A sizable share of the population (8.5%) had received no schooling, and the largest proportion (38%) had only primary education. Less than 5% of the population has obtained some form of tertiary education.

Education levels are considerably higher in (some of) the urban areas, particularly those in Ward 2 and Ward 4, where more than half of the population has matriculated, and 9% and 12% of these populations, respectively, have obtained a tertiary education. Education levels are lowest in Ward 1, Ward 6 and Ward 7, where more than half of the population has only attended primary school or has no schooling at all.

During the period 2011 to 2016, the percentage of the population without any schooling decreased by 34% and the percentage of the population with matric has increased by 23%. However, the school dropout rate has increased from 38% in 2016 to 41% in 2017.

#### **3.4.2.3 Employment and Income**

In 2017, the unemployment rate of 26.2% in the BWLM was higher than both the CKDM and the Western Cape Province, and increased between 2007 and 2017. Between 2013 and 2017, the majority of jobs was created in the agricultural sector, followed by wholesale and retail trade, catering and accommodation. The drought has, however, negatively affected jobs in the primary sector, with knock-on effects on associated sectors such as manufacturing and retail.

The vast majority of jobs in the LM are low-skilled and semi-skilled, which is understood given the dominance of agriculture in job generation and low education levels in the municipal population. Unfortunately, those sectors also registered no (semi-skilled) or negative (low-skilled) growth, while skilled jobs increased by 2.1% between 2006 and 2016.

Approximately 60% of municipal households earned less than R 3 300 per month in 2016, and approximately 7% of households had no income at all. During 2016, income rates are lowest in Ward 6 and Ward 7, where 79% and 75% of households, respectively, earn less than R 3 300 per month, while income is highest in Ward 2 and Ward 4, where 20% and 22% of households, respectively, earn more than R 12 500 per month. Low income and rising unemployment, which results mainly from job losses in the agricultural sector and influx of residents into towns, has recently forced many households into poverty.

#### **3.4.2.4 Health, Housing and Services**

The BWLM was serviced by two hospitals and 13 permanent or mobile health care facilities in 2016. Virtually all households in the BWLM (97.50%) have resided in formal dwellings in 2016, while 1.36% of

households resided in informal dwellings. The highest incidence of informal housing was found in Ward 2 and Ward 5. During 2011 to 2016, the number of households that gained access to formal dwellings had increased by 16.1%.

Access to services is generally high across the BWLM. The majority of households have access to municipal water supply (82%), sanitation (97%) and refuse removal (85%). The percentage of households relying on borehole water and being responsible for their own waste disposal is predictably higher in the more rural Ward 1, Ward 2, Ward 6 and Ward 7.

### **3.4.3 Local Context – Prince Albert Local Municipality**

---

The information described below is based on scoping inputs provided by the Socio-Economic Specialist, which are included in Appendix F.10 of this Scoping Report.

The Prince Albert Local Municipality (PALM) is the smallest municipality and located in the southern part of the CKDM and extends over 21% of the District area (8 153 km<sup>2</sup>). Prince Albert is the main economic and administrative centre of the PALM. Smaller towns in the PALM include Leeu-Gamka and Klaarstroom.

The PALM is divided into four wards, of which Ward 1 (north-western municipal area), Ward 2 (eastern municipal area) and Ward 4 (south-western municipal area) are primarily large rural wards, whereas Ward 3 is a small urban ward within the town of Prince Albert.

The proposed Kwagga WEF 3 study area is located at the north-eastern boundary of Ward 2 in the PALM.

#### **3.4.3.1 Demographics and Economic Profile**

The population of the PALM has increased by approximately 9% between 2011 and 2016 to 14 272. In 2016, approximately 20% of the municipal population lived in the town of Prince Albert and a population increase exceeding 15 600 by 2024 is predicted. The average household in the PALM comprises an average of 3.5 people.

The municipality has a relatively young population, with 38% of residents younger than 18 years, 55% between 18 – 65 years and 6% older than 65 years. The PALM population is comprised of 3% Black Africans, 85% Coloureds and 12% Whites.

The PALM economy has contributed approximately 23% (or around R 454 million) to the CKDM GDP of R 2 billion in 2016, and has grown from 2.4% in 2016 to 2.8% in 2017, which is just below the CKDM average of 3.4%.

The tertiary sector dominates the PALM economy and accounted for 65% of total output in 2016. The tertiary sector i.e. Government services and the primary sector i.e. Agriculture together accounted for nearly half of the municipal economic output (21.8% and 21.7% of municipal GDP in 2016, respectively), followed by wholesale and retail trade, catering and accommodation (approx. 14.4%) and community, social and personal services (approx. 12.3%).

The Agricultural sector growth in particular is vulnerable and hence volatile, as it has been affected by a prolonged drought, fluctuation in fuel cost, diseases and changes in consumer demand. The sector recorded negative growth of -3% and -9.7% in 2015 and 2016, respectively, followed by an expansion of 6.7% in 2017, albeit from a low base. This was contrasted by the wholesale and retail trade, catering and accommodation sector as well as the construction sector, which contracted by 0.5% and 1.3% in 2017.

### **3.4.3.2 Education and Skills Development**

Education levels characteristic of the PALM are higher than in some neighbouring municipalities. Approximately 24% of the population had completed secondary education (matric) in 2016, while another 38% obtained at least some secondary education. Nearly 5% of the population had received no schooling, and 28% had only (some) primary education. Only 1% of the population has a form of tertiary education.

Education levels are highest in Ward 2, where nearly all residents with a tertiary education reside, and lowest in Ward 3, where more than half of inhabitants have some primary education or no schooling.

During the period 2011 to 2016, the number of people without schooling decreased by 53% (from 950 to 449 people) and the number of people who completed matric increased by 58% (from 1 431 to 2 259 people), indicating that the younger people receive more reliable schooling.

### **3.4.3.3 Employment and Income**

In 2017, the unemployment rate of 20.3% in the PALM was lower than that of the CKDM but higher than the provincial rate, and generally increased between 2007 and 2017. Between 2013 and 2017, the majority of jobs (55.2%) was created in the tertiary (government services) sector, followed by the primary (agricultural) sector with 37% and the secondary (wholesale and retail trade, catering and accommodation) sector with 7.8%. The drought has, however, negatively affected jobs in the primary sector, with knock-on effects on associated sectors such as manufacturing and retail.

The vast majority of jobs (approx. 84%) in the PALM are low-skilled and semi-skilled, which is understood given the importance of agriculture in job generation and overall low education levels in the municipal population. Unfortunately, those sectors also registered lower growth than skilled jobs between 2006 and 2017. The job losses can, amongst other factors, be attributed to the mechanisation of certain tasks in the e.g. agricultural and construction sectors.

Approximately 62% of municipal households earned less than R 3 300 per month in 2016, and approximately 7% of households had no income at all. During 2016, income rates were lowest in Ward 3, where 85% households earn less than R 3 300 per month, while income is highest in Ward 2, where 11% of households earn more than R 12 500 per month. Low income and rising unemployment, which results mainly from job losses in the agricultural sector and influx of residents into towns, has recently forced many households into poverty.

### **3.4.3.4 Health, Housing and Services**

The PALM was serviced by one hospital and five permanent or mobile health care facilities in 2017. Also, the PALM had three antiretroviral treatment (ART) clinics/sites and six tuberculosis (TB) treatment sites at the time. Virtually all households in the PALM (94%) have resided in formal dwellings in 2016, while less than 1% of households resided in informal dwellings. The highest incidence of informal housing was found in the urban Ward 3.

Access to services is generally high across the PALM. The majority of households have access to municipal water supply (79%), sanitation (95%) and refuse removal (76%). The percentage of households relying on borehole water and being responsible for their own waste disposal is predictably lowest in urban Ward 3.

### 3.4.4 Study Area Context – Kwagga WEF 3

---

The information described below is based on scoping inputs provided by the Visual and Socio-Economic Specialists, which are included in Appendix F.8 and F.10 of this Scoping Report, respectively.

The proposed Kwagga WEF 3 project site i.e. the study area is very remote, sparsely inhabited and the primary land-use is agriculture, specifically low-density livestock grazing, notably Merino sheep and Angora goats. Unfortunately, the prolonged regional drought has significantly reduced farming activities in the area, and all farmers had to reduce their herds or sell their livestock since 2019.

Very few people are currently employed on farms within the study area and surrounds (typically less than five persons per farm), mostly only checking on livestock. Few of the landowners reside permanently on the farms within the region, and none within the study area itself.

Apart from the Silwerkaroo Guesthouse that is located off the N12 halfway between Beaufort West and Klaarstroom, and which is situated approximately 20 km from the boundary of the proposed Kwagga WEF 3 project site, no other settlements are located within several kilometres of the study area. Many of the homesteads present on the farms, that could potentially be affected by the proposed project, appear to be permanently unoccupied or even abandoned, as indicated above.

The nearest settlements to the proposed project site include Beaufort West that is located about 85 km to the north with a population of approximately 35 000, Rietbron that is located about 20 km to the east with a population of approximately 1 200, and Klaarstroom that is located about 35 km to the south with a population of approximately 600.

## 3.5 Eco-Tourism Activities

---

The information described below is based on scoping inputs provided by the Visual Specialist, which is included in Appendix F.8 of this Scoping Report.

The Karoo National Park<sup>4</sup> is located on the southern slopes of the Nuweveld Mountain range approximately 10 km from the town of Beaufort West in the Central or 'Great' Karoo. It offers accommodation, camping, birding, game viewing, nature trails (e.g. fossils, hiking and 4x4) and an environmental interpretive centre, and is located approximately 80 km from the proposed project site, towards the north. The Steenbokkie Private Nature Reserve is situated east of Beaufort West less than 10 km from town, and is located more than 50 km from the proposed project site, towards the north. The Henry Kruger Private Nature Reserve is situated just north of Leeu-Gamka straddling the R353 provincial road, and is located more than 50 km from the proposed project site, towards the west. The Gouritz Cluster Biosphere Reserve, the Gamkapoort Nature Reserve, the Swartberg Private Nature Reserve, the Gamkaskloof Provincial Nature Reserve and the Kleinberg Private Nature Reserve, as well as the Groot Swartberg-, Kammanassie- and the Swartberg-Oos Mountain Catchment Areas are all located more than 50 km away from the proposed project site.

The above activities will not be directly impacted by the proposed development due to their respective distances from the proposed project site; however, potential visual intrusion by the wind turbines could impact on sensitive receptors located on higher elevation areas such as the mountain passes in the Karoo

---

<sup>4</sup> Karoo National Park Management Plan 2017-2027 (2017) South African National Parks

National Park in the north and the Swartberg Mountain range in the south. Refer to Figure 3.31 for potential visual sensitive receptors identified in and near the proposed Kwagga WEF 3 project site.

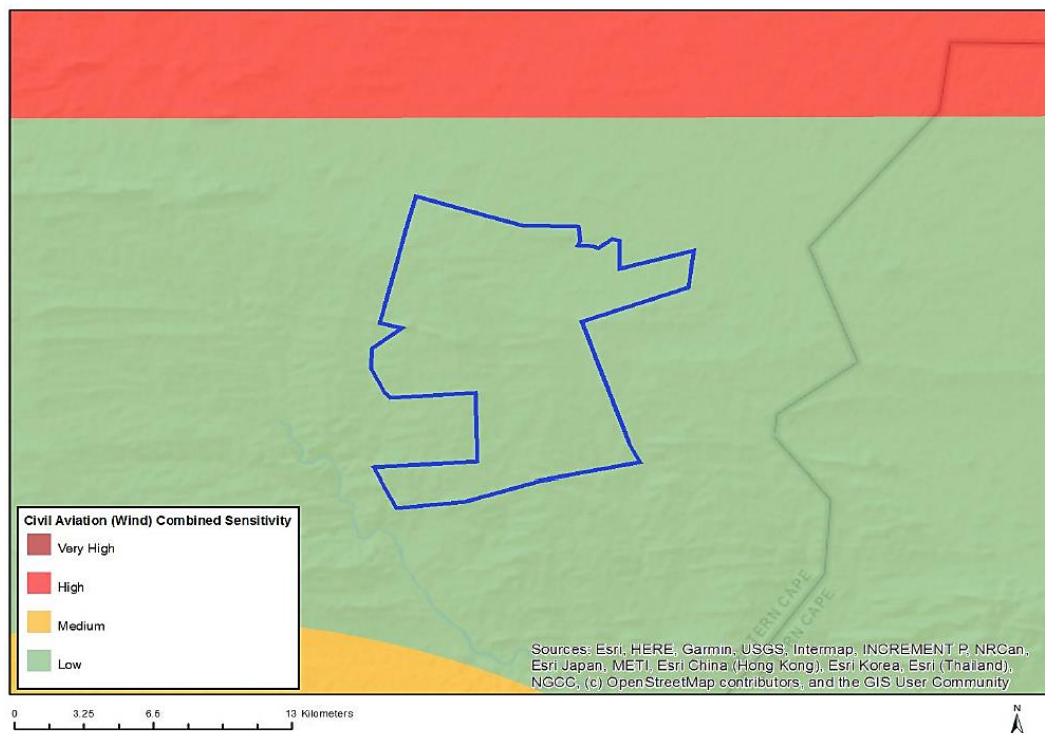
General traffic related impacts, although anticipated to be of low to very low significance, will be addressed in the Traffic Impact Assessment during the EIA Phase, which will be included in the EIA Report. Refer to Appendix F.9 of this Scoping Report for specialist inputs regarding potential traffic related impacts resulting from the proposed development.

### 3.6 Civil Aviation

---

As required by GN 320, a Civil Aviation Site Sensitivity Verification was compiled of which the report is included in Appendix F.11 of this Scoping Report.

The Screening Tool has indicated the proposed Kwagga WEF 3 project site to be of low sensitivity relating to Civil Aviation (Figure 3.45). This low sensitivity was verified and confirmed by the EAP (see Appendix F.12). Therefore, in line with GN R320, no further requirements are applicable i.e. a Defence Compliance Statement is not required.



**Figure 3.45: Map showing the proposed Kwagga WEF 3 project site relating to Civil Aviation sensitivity (Source: DFFE Screening Tool, 2020)**

---

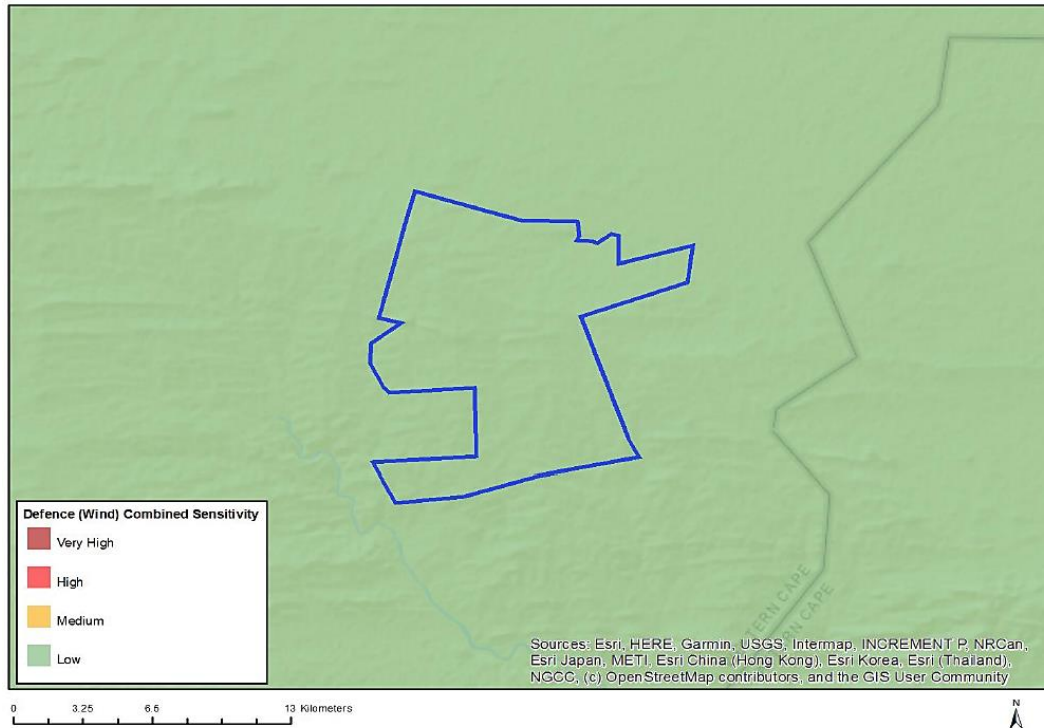


### 3.7 Defence

---

As required by GN 320, a Defence Site Sensitivity Verification was compiled of which the report is included in Appendix F.12 of this Scoping Report.

The Screening Tool has indicated the proposed Kwagga WEF 3 project site to be of low sensitivity relating to Defence (Figure 3.46). This low sensitivity was verified and confirmed by the EAP (see Appendix F.12). Therefore, in line with GN R320, no further requirements are applicable i.e. a Defence Compliance Statement is not required.



**Figure 3.46: Map showing the proposed Kwagga WEF 3 project site relating to Defence sensitivity (Source: DFFE Screening Tool, 2020)**

---

# CHAPTER 4:

## APPROACH TO EIA PROCESS AND PUBLIC PARTICIPATION





# Table of Contents

---

<b>4</b>	<b>APPROACH TO THE EIA PROCESS AND PUBLIC PARTICIPATION</b>	<b>4-4</b>
<b>4.1</b>	<b>Legislation, Policies and Guidelines Pertinent to this EIA</b>	<b>4-4</b>
4.1.1	National Legislation	4-4
4.1.1.1	The Constitution of the Republic of South Africa (Act 108 of 1996)	4-4
4.1.1.2	NEMA and EIA Regulations published on 8 December 2014 (as amended on 7 April 2017; GN R327, GN R326, GN R325 and GN R324)	4-4
4.1.1.3	Government Notice (GN) 960 (published 5 July 2019)	4-5
4.1.1.4	Government Notice (GN) 320 (20 March 2020)	4-5
4.1.1.5	Government Notice (GN) 1150 (30 October 2020)	4-5
4.1.1.6	National Environmental Management: Biodiversity Act (Act 10 of 2004)	4-6
4.1.1.7	The National Heritage Resources Act (Act 25 of 1999)	4-7
4.1.1.8	National Forests Act (Act 84 of 1998)	4-9
4.1.1.9	Conservation of Agricultural Resources Act (Act 43 of 1983)	4-9
4.1.1.10	National Water Act (Act 36 of 1998)	4-9
4.1.1.11	Water Services Act (Act 108 of 1997)	4-10
4.1.1.12	Hazardous Substances Act (Act 15 of 1973)	4-11
4.1.1.13	Subdivision of Agricultural Land Act (Act 70 of 1970)	4-11
4.1.1.14	National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA)	4-11
4.1.1.15	National Environmental Management: Air Quality Act (Act 39 of 2004)	4-11
4.1.1.16	Development Facilitation Act (Act 67 of 1995)	4-11
4.1.1.17	Other Applicable Legislation	4-12
4.1.2	Provincial Legislation	4-12
4.1.2.1	Western Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974) and the Western Cape Nature Conservation Laws Amendment Act (Act No. 3 of 2000)	4-12
4.1.2.2	Draft Western Cape Biodiversity Bill (7 May 2019)	4-12
4.1.3	Local Planning Legislation	4-13
4.1.3.1	Environmental Management Framework	4-13
4.1.3.2	Beaufort West Local Municipality Integrated Development Plan (Beaufort West Local Municipality 2017-2022)	4-13
4.1.3.3	Prince Albert Local Municipality Integrated Development Plan (Prince Albert Local Municipality 2017-2022)	4-13
4.1.3.4	Guidelines, Frameworks and Protocols	4-15
4.1.4	International Finance Corporation Performance Standards	4-15
<b>4.2</b>	<b>Legal Context for this EIA</b>	<b>4-16</b>
<b>4.3</b>	<b>National Web-Based Environmental Screening Tool</b>	<b>4-23</b>
4.3.1	Square Kilometer Array and Radio Frequency Interference	4-26
<b>4.4</b>	<b>Principles for Scoping and Public Participation</b>	<b>4-28</b>
4.4.1	Objectives of the Scoping Phase	4-28
4.4.2	Introduction to the Public Participation Process	4-29

4.4.3	Requirement for a Public Participation Plan	4-31
4.4.4	Pre-Application Consultation with the DFFE	4-32
4.4.5	Landowner Written Consent	4-33
4.4.6	Determination of Appropriate Consultation Measures, and I&AP Identification, Registration and the Creation of an Electronic Database	4-34
4.4.7	Site Notices	4-35
4.4.8	Technical Scoping with the Project Proponent and EIA Team	4-36
4.4.9	Scoping Report Phase – Review of the Draft Scoping Report	4-36
4.4.10	Compilation of Final Scoping Reports for Submission to the DFFE	4-37
<b>4.5</b>	<b>Schedule for the Scoping and EIA Process</b>	<b>4-38</b>



## List of Tables

---

Table 4.1:	Listed Activities in GN R327, GN R325, and GN R324 that will be potentially triggered by the proposed Kwagga Wind Energy Facility 3	4-17
Table 4.2:	List of Specialist Assessments identified by the Screening Tool for the proposed Kwagga Wind Energy Facility 3	4-23
Table 4.3:	SKA sensitivity distance guidelines (Source: DFFE, 2019: Part 3, Page 2)	4-27
Table 4.4:	Site Notice Board Placement for the Proposed Kwagga WEF 3	4-35
Table 4.5:	Provisional Schedule for the proposed Kwagga Wind Energy Facility 3 (including the Scoping and EIA Phases)	4-39



## List of Figures

---

Figure 4.1:	Location of the proposed Kwagga WEF 3 project in relation to the SKA and KCAAA	4-28
-------------	--	------

## 4 APPROACH TO THE EIA PROCESS AND PUBLIC PARTICIPATION

---

This chapter presents the Environmental Impact Assessment (EIA) Process to be conducted for the proposed development and gives particular attention to the legal context and guidelines that apply to this EIA, the steps in the Scoping and Public Participation component of the EIA (in accordance with Regulations 41, 42, 43 and 44 of GN R326 of the 2014 NEMA EIA Regulations, as amended) and the schedule for the EIA Process.

### 4.1 Legislation, Policies and Guidelines Pertinent to this EIA

---

The scope and content of this Scoping Report has been informed by the following legislation, policies, guidelines and information series documents:

#### 4.1.1 National Legislation

---

##### 4.1.1.1 *The Constitution of the Republic of South Africa (Act 108 of 1996)*

The Constitution, which is the supreme law of the Republic of South Africa, provides the legal framework for legislation regulating environmental management in general, against the backdrop of the fundamental human rights. Section 24 of the Constitution states that:

- “Everyone has the right:
  - to an environment that is not harmful to their health or well-being; and
  - to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that –
    - prevent pollution and ecological degradation;
    - promote conservation; and
    - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

Section 24 of the Bill of Rights therefore guarantees the people of South Africa the right to an environment that is not detrimental to human health or well-being, and specifically imposes a duty on the State to promulgate legislation and take other steps that ensure that the right is upheld and that, among other things, ecological degradation and pollution are prevented.

In support of the above rights, the environmental management objectives of the proposed project are to protect ecologically sensitive areas and support sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development in the towns nearest to the project site.

##### 4.1.1.2 *NEMA and EIA Regulations published on 8 December 2014 (as amended on 7 April 2017; GN R327, GN R326, GN R325 and GN R324)*

Chapter 1, Section 2 of the National Environmental Management Act (Act 107 of 1998) (NEMA) sets out a number of principles to give guidance to developers, private landowners, members of the public and authorities. The proclamation of the NEMA gives expression to an overarching environmental law. Various

mechanisms, such as cooperative environmental governance, compliance and non-compliance, enforcement, and regulating government and business impacts on the environment, underpin NEMA. NEMA, as the primary environmental legislation, is complemented by a number of sectoral laws governing marine living resources, mining, forestry, biodiversity, protected areas, pollution, air quality, waste and integrated coastal management. Principle number 3 determines that a development must be socially, environmentally and economically sustainable. Principle Number 4(a) states that all relevant factors must be considered, *inter alia* i) that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied; vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised; and viii) that negative impacts on the environment and on peoples' environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

These Regulations contain the relevant listed activities that are triggered, thus requiring a full Scoping and EIA Process. Refer to Table 4.1 of this chapter for the complete list of listed activities. Refer to Section 4.2 of this chapter for additional information on the 2014 NEMA EIA Regulations, as amended.

#### **4.1.1.3 Government Notice (GN) 960 (published 5 July 2019)**

GN 960 was published on 5 July 2019 and came into effect for compulsory use of the National Web Based Environmental Screening Tool from 4 October 2019. The notice outlines the requirement to submit a report generated by the National Web Based Environmental Screening Tool, in terms of Section 24(5)(h) of the NEMA and Regulation 16(1)(b)(v) of the 2014 NEMA EIA Regulations, as amended, when submitting an Application for Environmental Authorisation (EA) in terms of Regulations 19 and 21 of the 2014 NEMA EIA Regulations, as amended. As such, the Application for EA for the proposed Kwagga WEF 3 project has been run through the National Web Based Environmental Screening Tool, and the associated report generated and attached to the Application for EA, which is being submitted to the DFFE with the Draft Scoping Report.

#### **4.1.1.4 Government Notice (GN) 320 (20 March 2020)**

GN 320 prescribes the general requirements for undertaking site sensitivity verification and protocols for the assessment and minimum report content requirements for identified environmental impacts for environmental themes in terms of sections 24(5)(a) and (h) and 44 of NEMA, when applying for EA.

The Specialist Assessments undertaken as part of this Scoping and EIA Process comply with GN 320, where applicable, including Aquatic Biodiversity, Terrestrial Biodiversity, Noise Impact, Agriculture and Avifauna. The remaining specialist assessments comply with Appendix 6 of the 2014 NEMA EIA Regulations, and where relevant, Part A of GN 320 which contains site sensitivity verification requirements where a Specialist Assessment is required but no specific assessment protocol has been prescribed. The site sensitivity verifications required for Defence Civil Aviation also comply with GN 320. The protocols were enforced within 50 days of publication of the notice i.e. on 9 May 2020.

#### **4.1.1.5 Government Notice (GN) 1150 (30 October 2020)**

GN 1150 prescribes procedures and protocols in respect of specific environmental themes for the assessment of, as well as the minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the NEMA, when applying for EA. GN 1150 includes a

protocol for the specialist assessment and minimum report content requirements for environmental impacts on a) terrestrial animal species and b) terrestrial plant species. The requirements of these protocols apply from the date of publication (i.e. from 30 October 2020), except where the Project Applicant provides proof to the Competent Authority that the specialist assessment affected by these protocols had been commissioned prior to the date of publication of these protocols in the Government Gazette, in which case Appendix 6 of the 2014 NEMA EIA Regulations will apply to such applications.

*Note from the CSIR: The Terrestrial Biodiversity Specialist Assessment undertaken as part of this Scoping and EIA Process for the proposed Kwagga WEF 3 project was commissioned prior to the publication date of the Species Protocols i.e. 30 October 2020, and therefore the terrestrial animal and plant species components form part of the Terrestrial Biodiversity Specialist Assessment that is being undertaken in adherence to the protocol specified in GN 320. Contractual proof showing appointments of the specialists prior to 30 October 2020 has been provided to the Competent Authority with the Draft Scoping Reports and Application Forms for EA.*

#### **4.1.1.6 National Environmental Management: Biodiversity Act (Act 10 of 2004)**

The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for “the management and conservation of South Africa’s biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological resources in a sustainable manner, amongst other provisions”. The Act states that the state is the custodian of South Africa’s biological diversity and is committed to respect, protect, promote and fulfil the constitutional rights of its citizens.

Chapter 1 sets out the objectives of the Act, and they are aligned with the objectives of the Convention on Biological Diversity, which are the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of the benefits of the use of genetic resources. The Act also gives effect to CITES, the Ramsar Convention, and the Bonn Convention on Migratory Species of Wild Animals. The State is endowed with the trusteeship of biodiversity and has the responsibility to manage, conserve and sustain the biodiversity of South Africa.

This Act therefore serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. Effective disturbance and removal of threatened or protected species encountered on or around the sites, will require specific permission from the applicable authorities.

Furthermore, NEMBA states that the loss of biodiversity through habitat loss, degradation or fragmentation must be avoided, minimised or remedied. The loss of biodiversity includes *inter alia* the loss of endangered, threatened or protected plant and animal species.

Chapter 5 of NEMBA (Sections 73 to 75) regulates activities involving invasive species, and lists duty of care as follows:

- the land owner/land user must take steps to control and eradicate the invasive species and prevent their spread, which includes targeting offspring, propagating material and regrowth,

in order to prevent the production of offspring, formation of seed, regeneration or re-establishment;

- take all required steps to prevent or minimise harm to biodiversity; and
- ensure that actions taken to control/eradicate invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment.

An amendment to the NEMBA has been promulgated in 2011, which lists about 225 threatened or protected ecosystems based on vegetation types present within these ecosystems. Should a project fall within a vegetation type or ecosystem that is listed as being threatened or protected, actions in terms of NEMBA are triggered. Based on the preliminary sensitivity screening and site sensitivity verifications that were undertaken for the proposed development site during the Scoping Phase, none of the listed threatened ecosystems was found to occur within the proposed Kwagga WEF 3 study area. However, the proposed development site does provide potential habitat to several terrestrial animal and plant species of conservation concern (SCC). This will be confirmed as part of the Terrestrial Biodiversity Impact Assessment to be undertaken during the EIA Phase.

#### **4.1.1.7 The National Heritage Resources Act (Act 25 of 1999)**

The National Heritage Resources Act (Act 25 of 1999) (NHRA) introduces an integrated and interactive system for the management of national heritage, archaeological and palaeontological resources (which include landscapes and natural features of cultural significance).

Parts of sections 35(4), 36(3) (a) and 38(1) of the NHRA apply to the proposed project:

##### **Archaeology, palaeontology and meteorites:**

Section 35 (4) – No person may, without a permit issued by the responsible heritage resources authority:

- a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- c) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

##### **Burial grounds and graves:**

Section 36 (3) (a) No person may, without a permit issued by South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority:

- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

##### **Heritage resources management:**



38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as:

- a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- b) the construction of a bridge or similar structure exceeding 50 m in length;
- c) any development or other activity which will change the character of the site –
  - (i) exceeding 5 000 m<sup>2</sup> in extent, or
  - (ii) involving three or more erven or subdivisions thereof; or
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;
- d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value. Section 38 (2a) of the NHRA states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted.

The Heritage Western Cape (HWC) is required to provide comment on the proposed project. In line with HWC requirements, a Notification of Intent to Develop (NIDs) has been submitted to the HWC for the proposed project (see Appendix D.6). The response from HWC on the NID has determined the requirements for the assessment phase from a heritage perspective (see Appendix D.7). As per the requirements of the HWC, an integrated Heritage Impact Assessment (HIA) including archaeology, cultural landscape, palaeontology and visual aesthetics will be undertaken during the EIA Phase. These relevant specialist assessments will be released to Interested and Affected Parties (I&APs) for comment during the EIA Phase.

Once a final comment has been issued by the HWC, the recommendations should be included in the conditions of the EA (should it be granted). This will essentially give ‘permission’ from the HWC to the Project Applicant to proceed from a heritage perspective.

The proposed project may require a permit in terms of the NHRA prior to any fossils or artefacts being removed by professional palaeontologists and archaeologists. If archaeological mitigation is needed, then the appointed archaeologist will need to submit a Work Plan to the HWC to conduct the work. This must be carried out well in advance of construction to ensure that there is enough time for HWC to approve the mitigation work before construction commences.

Should professional palaeontological mitigation be necessary during the construction phase, the palaeontologist concerned will need to apply for a Fossil Collection Permit from HWC. Palaeontological collection should comply with international best practice. All fossil material collected must be deposited,

together with key collection data, in an approved depository (museum / university). Palaeontological mitigation work including the ensuing Fossil Collection reports should comply with the minimum standards specified by Heritage Western Cape (2016) and SAHRA (2013).

#### **4.1.1.8 National Forests Act (Act 84 of 1998)**

The National Forest Act (Act 84 of 1998) (NFA) allows for the protection of certain tree species of conservation concern. The Minister has the power to declare a particular tree to be a protected tree. According to Section 12 (1) d (read with Sections (5) 1 and 62 (2) (c)) of the NFA, a licence is required to remove, cut, disturb, damage or destroy any of the listed protected trees. The most recent list of protected tree species was published in 2019. The Department of Agriculture, Land Reform and Rural Development (DALRRD) is authorised to issue licences for any removal, cutting, disturbance, damage to or destruction of any protected trees. Therefore, the removal of any protected tree species listed within the NFA will require a tree removal permit, which can be obtained from the DALRRD.

#### **4.1.1.9 Conservation of Agricultural Resources Act (Act 43 of 1983)**

The objectives of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) are to provide for the conservation of the natural agricultural resources of South Africa by the:

- maintenance of the production potential of land;
- combating and prevention of erosion and weakening or destruction of the water sources; and
- protection of the vegetation and the combating of weeds and invader plants.

The CARA states that no land user shall utilise the vegetation of wetlands (a watercourse or pans) in a manner that will cause its deterioration or damage. This includes cultivation, overgrazing, diverting water run-off and other developments that damage the water resource. The CARA includes regulations on alien invasive plants. According to the amended regulations (GN R280 of March 2001), declared weeds and invader plants are divided into three categories:

- Category 1 may not be grown and must be eradicated and controlled,
- Category 2 may only be grown in an area demarcated for commercial cultivation purposes and for which a permit has been issued, and must be controlled, and
- Category 3 plants may no longer be planted and existing plants may remain as long as their spread is prevented, except within the flood line of watercourses and wetlands. It is the legal duty of the land user or land owner to control invasive alien plants occurring on the land under their control.

Should alien plant species occur within the development footprint, it will be managed in line with the Environmental Management Programme (EMPr). Rehabilitation after disturbance to agricultural land is also managed by CARA. The DALRRD reviews and approves applications in terms of these Acts according to their Guidelines for the evaluation and review of applications pertaining to renewable energy on agricultural land, dated September 2011.

#### **4.1.1.10 National Water Act (Act 36 of 1998)**

One of the important objectives of the National Water Act (Act 36 of 1998) (NWA) is to ensure the protection of the aquatic ecosystems of South Africa's water resources. Section 21 of this Act identifies

certain land uses, infrastructural developments, water supply/demand and waste disposal as 'water uses' that require authorisation (licensing) by the Department of Water and Sanitation (DWS). Chapter 4 (Part 1) of the NWA sets out general principles for the regulation of water use. Water use is defined broadly in the NWA, and includes taking and storing water, activities which reduce stream flow, waste discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering the bed, banks, course or characteristics of a watercourse, removing water found underground for certain purposes, and recreation. In general, a water use must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. The Minister may limit the amount of water which a responsible authority may allocate. In making regulations the Minister may differentiate between different water resources, classes of water resources and geographical areas.

All water users who are using water for agriculture: aquaculture, agriculture: irrigation, agriculture: watering livestock, industrial, mining, power generation, recreation, urban and water supply service must register their water use. This covers the use of surface- and groundwater.

Section 21 of the NWA lists the following water uses that need to be licensed:

- a) taking water from a water resource;
- b) storing water;
- c) impeding or diverting the flow of water in a watercourse;
- d) engaging in a stream flow reduction activity contemplated in section 36;
- e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- g) disposing of waste in a manner which may detrimentally impact on a water resource;
- h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- i) altering the bed, banks, course or characteristics of a watercourse;
- j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- k) using water for recreational purposes.

Any activities that take place within a watercourse, or within 100 m of the edge of a watercourse, or within 500 m of a delineated wetland boundary, will require a water use authorisation in terms of Section 21 (c) and Section 21 (i) of the NWA. An application for water use authorisation for the proposed Kwagga WEF 3 might be required should any of the planned structures or infrastructure associated with the proposed project trigger water uses in terms of Section 21 (c) and Section 21 (i) of the NWA. The need for a General Authorisation or Water Use License will be confirmed during the EIA Phase.

#### **4.1.1.11 Water Services Act (Act 108 of 1997)**

Water will be required during the construction, operational and decommissioning phases of the proposed project. Potable water is only to be utilised for human consumption purposes, whereas greywater is to be used for earthworks, dust suppression, etc. Water is likely to be sourced from the Prince Albert Local

Municipality and/or the Beaufort West Local Municipality. Compliance with this Act will be undertaken during the relevant phase of the project, in consultation with the local and district municipalities.

#### ***4.1.1.12 Hazardous Substances Act (Act 15 of 1973)***

During the proposed project, fuel and diesel will be utilised to power vehicles, generators and equipment. In addition, potential spills of hazardous materials could occur during the relevant phases. Such management actions will be recommended in the EMPr, which will be included as an Appendix to the EIA Report.

#### ***4.1.1.13 Subdivision of Agricultural Land Act (Act 70 of 1970)***

The Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA) requires that any long-term lease associated with the renewable energy facility be approved by the DALRRD. The SALA consent is separate from the Application for EA, and needs to be applied for and obtained separately. An application for the change of land use (re-zoning) for the development on agricultural land will be lodged by the Project Applicant for approval in terms of the SALA as required.

#### ***4.1.1.14 National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA)***

General and hazardous waste will be generated during the construction, operational and decommissioning phases, which will require proper management. Such management actions will be recommended in the EMPr, which will be included as an Appendix to the EIA Report.

#### ***4.1.1.15 National Environmental Management: Air Quality Act (Act 39 of 2004)***

The proposed stockpiling activities, including earthworks, may result in the unsettling of, and temporary exposure to, dust. Appropriate dust control methods will need to be applied. Such management actions will be recommended in the EMPr, which will be included as an Appendix to the EIA Report.

#### ***4.1.1.16 Development Facilitation Act (Act 67 of 1995)***

The Development Facilitation Act (Act 67 of 1995) (DFA) sets out a number of key planning principles which have a bearing on assessing proposed developments in light of the national planning requirements. The planning principles most applicable to the study area include:

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Promoting the establishment of viable communities; and
- Promoting sustained protection of the environment.

#### **4.1.1.17 Other Applicable Legislation**

Other applicable national legislation that may apply to the proposed project include:

- Advertising on Roads and Ribbons Act (Act 21 of 1940);
- Civil Aviation Act (Act 13 of 2009) and Civil Aviation Regulations (CAR) of 1997;
- Civil Aviation Authority Act (Act 40 of 1998);
- Electricity Act (Act 41 of 1987);
- Electricity Regulations Amendments (August 2009);
- Energy Efficiency Strategy of the Republic of South Africa (Department of Minerals and Energy (DME), March, 2005);
- Environment Conservation Act (Act 73 of 1989);
- Fencing Act (Act 31 of 1963);
- Integrated Resource Plan for South Africa (2010);
- National Environmental Management: Protected Areas Act (NEM:PA) (Act 31 of 2004); and
- National Road Traffic Act (Act 93 of 1996).
- Occupational Health and Safety Act (Act 85 of 1993), as amended by Occupational Health and Safety Amendment (Act 181 of 1993);
- Promotion of Administrative Justice Act (Act 2 of 2000);
- Road Safety Act (Act 93 of 1996);
- White Paper on Renewable Energy (2003);

#### **4.1.2 Provincial Legislation**

---

##### **4.1.2.1 Western Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974) and the Western Cape Nature Conservation Laws Amendment Act (Act No. 3 of 2000)**

This Act should be given consideration following EA with particular respect to its Chapters IV (The protection of wild animals other than fish) and Chapter VI (The protection of flora). The requirement for permits when removing and relocating specific flora that may be encountered or alternatively addressing fauna that may be encountered around the sites would require due consideration.

The Western Cape Nature Conservation Laws Amendment Act (2000) provides for the amendment of various laws on nature conservation in order to transfer the administration of the provisions of those laws to the Western Cape Nature Conservation Board, which includes various regulations pertaining to wild plants and animals including avifauna.

##### **4.1.2.2 Draft Western Cape Biodiversity Bill (7 May 2019)**

The purpose of the Draft Western Cape Biodiversity Bill, 2019 is to provide for the framework and institutions for nature conservation and the protection, management and sustainable use of biodiversity and ecosystems in the Province; and for matters incidental thereto. This law has not been promulgated however some aspects of its Chapter 7 (Protection of Ecosystems, Ecological Infrastructure and Species), in particular, may apply to the affected sites, once promulgated.

### 4.1.3 Local Planning Legislation

---

#### 4.1.3.1 Environmental Management Framework

Research indicates that there is no Environmental Management Framework (EMF) for the Central Karoo District Municipality. The Screening Tool also notes that no intersections with EMF areas have been found.

#### 4.1.3.2 Beaufort West Local Municipality Integrated Development Plan (Beaufort West Local Municipality 2017-2022)

The **vision** of the Beaufort West Local Municipality Integrated Development Plan (BWLM IDP) 2017-2022 is to be the *economic gateway in the Central Karoo, where people are developed and live in harmony together*<sup>1</sup>.

Further unpacking of the vision indicates the provision of directives regarding the growth of the economy and ensuring financial sustainability among other areas in which development is required.

The five priority areas of the IDP are:

1. Service to the people – seeking to improve and maintain basic service delivery through infrastructure development;
2. Sustainable economic growth by leveraging competitive advantages of the region (The IDP identifies low economic growth as one of the main reasons for the lack of new labour entrants into the economy);
3. A well run administration that is efficient, effective and has the right skills mix;
4. Ensure financial sustainability; and
5. Be a transparent organisation.

#### 4.1.3.3 Prince Albert Local Municipality Integrated Development Plan (Prince Albert Local Municipality 2017-2022)

The **vision** of the Prince Albert Local Municipality Integrated Development Plan (PALM IDP) 2017-2022 is to be, *an area characterised by high quality of living and service delivery*.

Further unpacking of the vision indicates the provision of directives regarding the growth of the economy and ensuring financial sustainability among other areas in which development is required. The Prince Albert Local Municipality (PALM) Integrated Development Plan (IDP) (2017-2022), recognises renewable energy projects as having the potential to improve and stimulate sustainable growth and development of the economy.

The following points are provided in the PALM, outlining the Development strategy of the local municipality:

- *“To ensure a sustainable Prince Albert, where all sectors is aligned for the betterment and benefit of the municipal area as a whole.*
- *To create an enabling environment for the inhabitants of Prince Albert towards guaranteed job opportunities and thus a better livelihood and citizen satisfaction.*

---

<sup>1</sup> Beaufort West Municipality. (2017). Beaufort West Municipality 4th Generation Integrated Development Plan 2017-2022. Beaufort West Municipality.

- *To harness social, technical, economic and environmental innovation to the benefit of Prince Albert*
- *To enable, promote and facilitate the education of our community in order to establish a high level of knowledge economy in Prince Albert*
- *To enable the facilitation of an employable, citizen centric, responsible and caring community*
- *To encourage responsible account payment in order to maintain and improve communal equity*
- *To establish partnerships with stakeholders in the municipal space, including the community and ward representatives, sector departments and private sector.*
- *To continuously upskill staff in order to maintain levels of service and ensure expert attention to municipal activities."*

In addition, the PALM developed five Strategic Focus Areas (SFA) which comprise of seven Strategic Objectives and 16 Performance Areas. The five SFAs are:

6. Basic service delivery;
7. Local Economic Development
8. Municipal financial viability and transformation;
9. Municipal transformation and organisational development;
10. Good governance and Public participation

The main priority issues identified within the Prince Albert Local Municipality Integrated Development Plan (IDP) (2017-2022) can be summarized under the umbrellas of; improvement of service delivery and sustainable economic development. Majority of residents within the PALM are involved in low-skilled and semi-skilled employment (~84%)<sup>2</sup>. High job losses were recorded in the low-skilled and semi-skilled employment levels due to the mechanisation of tasks in the agricultural and construction sectors<sup>3</sup>.

Household income within the PALM were recorded as being highest in Ward 2 (i.e. in which the Kwagga WEF 3 is located), where 11% of households earn more than R12 500 per month. However, the majority of the households in Ward 2 (67.5%) earn below R 3 300. This indicates a relatively high level of income inequality in the Ward<sup>4</sup>. In addition, the PALM is recorded as having the lowest the per capita income amongst all local municipalities in the Central Karoo District Municipality. Small increases in the per capita income between 2011 and 2013 were well below inflation, therefore represents a decline in real terms<sup>5</sup>.

The proposed Kwagga WEF 3 project will create job opportunities and economic spin offs during the construction and operational phases (if an EA is granted by the DFFE). The proposed Kwagga WEF 3 project would help to address the need for harnessing social, technical, economic and environmental innovation and sustainable economic growth by leveraging competitive advantages of the region, in terms of harnessing the characteristic strong winds in the area to generate electricity. The proposed project will also help to address the need to improve basic service delivery and infrastructure development through increased electricity supply while also providing advanced skills transfer and training to the local communities and creating contractual and permanent employment in the area. It is estimated that up to

---

<sup>2</sup> MERO. (2018). Municipality Economic Review and Outlook. Cape Town: Western Cape Government Provincial Treasury.

<sup>3</sup> Prince Albert Local Municipality. (2017-2022). Prince Albert Local Municipality Integrated Development Plan.

<sup>4</sup> StatsSA. (2016, October 14). Statistics South Africa. Retrieved from [http://www.statssa.gov.za/?page\\_id=964](http://www.statssa.gov.za/?page_id=964)

<sup>5</sup> Prince Albert Municipality. (2017). Prince Albert Municipality Annual Report Performance report 205/2016.

400 employment opportunities will be created during the construction phase and up to 30 during the operational phase.

The proposed project will therefore be supportive of the PALM IDP's development strategy and SFAs and the priority areas indicated in the BWLM IDP of facilitating job creation to address the high unemployment rate, improving infrastructure development and promoting financial sustainability.

#### **4.1.3.4 Guidelines, Frameworks and Protocols**

- DEA Public Participation Guideline published in terms of the NEMA EIA Regulations (DEA, 2012 and DEA, 2017);
- DEA&DP and DEA Guidelines published in terms of the NEMA EIA Regulations, in particular:
  - Guideline on Alternatives (DEA, 2014);
  - Guideline on Transitional Arrangements (DEA&DP, 2013);
  - Guideline on Alternatives (DEA&DP, 2013);
  - Guideline on Public Participation (DEA&DP, 2013);
  - National Noise Control Regulations (GN R154 of 1992) and SANS 10103:2008;
  - South African Best Practice Guidelines for Pre-Construction Monitoring of Bats at Wind Energy Facilities (2020);
  - South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (2020);
  - Best practice guidelines for avian (bird) monitoring and impact mitigation at proposed wind energy development areas in southern Africa (2015);
  - Guideline on Need and Desirability (DEA&DP, 2013);
  - Guideline on Need and Desirability (DEA, 2017).
- Information Document on Generic Terms of Reference for EAPs and Project Schedules (March 2013);
- Integrated Environmental Management Information Series (Booklets 0 to 23) (Department of Environmental Affairs and Tourism (DEAT), 2002 – 2005);
- Guidelines for Involving Specialists in the EIA Processes Series (DEA&DP; CSIR and Tony Barbour, 2005 – 2007);
- United Nations Framework Convention on Climate Change (1997); and
- Kyoto Protocol (which South Africa acceded to in 2002).

#### **4.1.4 International Finance Corporation Performance Standards**

---

In order to promote responsible environmental stewardship and socially responsible development, the proposed Kwagga WEF 3 will as far as practicable incorporate the environmental and social policies of the International Finance Corporation (IFC). These policies provide a frame of reference for lending institutions to review environmental and social risks of projects, particularly those undertaken in developing countries.

Through the Equator Principles, the IFC's standards are now recognised as international best practice in project finance. The IFC screening process categorises projects into A, B or C in order to indicate relative degrees of environmental and social risk. The categories are:

- *Category A* - Projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented;



- *Category B* - Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures; and
- *Category C* - Projects expected to have minimal or no adverse impacts, including certain financial intermediary projects.

Accordingly, projects such as the proposed Kwagga WEF 3 are categorised as Category B projects. The EIA Process for Category B projects examines the project's potential negative and positive environmental impacts. As required for Category B projects, a Scoping and EIA Process is being undertaken for the proposed Kwagga WEF 3 project.

Other Acts, standards and/or guidelines which may also be applicable will be reviewed in more detail as part of the specialist studies to be conducted for the EIA Process.

---

## 4.2 Legal Context for this EIA

---

Section 24(1) of the NEMA, as amended states that *"In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on the environment of listed activities must be considered, investigated, assessed and reported to the Competent Authority charged by this Act with granting the relevant EA"*. The reference to "listed activities" relates to the regulations promulgated in Government Notice (GN) R982, R983, R984 and R985 in Government Gazette 38282, dated 4 December 2014, which came into effect on 8 December 2014. These were amended in April 2017, specifically promulgated in GN R326, R327, R325 and R324 in Government Gazette 40772, dated 7 April 2017. GN R327 and GN R324 includes listed activities that trigger the need for a Basic Assessment (BA) Process, whereas GN R325 includes listed activities that trigger the need for a full Scoping and Environmental Impact Assessment (S&EIA) Process.

In terms of the NEMA, as amended and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations as amended, a full S&EIA Process is required for the construction of the proposed Kwagga WEF 3 project.

The need for the full S&EIA Process is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

***"The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more, excluding where such development of facility or infrastructure is for photovoltaic installations and occurs (a) within an urban area; or (b) on existing infrastructure"***.

Note that the proposed Kwagga WEF 3 project is not located within any of the 11 Renewable Energy Development Zones (REDZs) gazetted in GN 114 on 16 February 2018 and GN 144 on 26 February 2021, nor is it located within any of the strategic power corridors gazetted in GN 113 on 16 February 2018; therefore, a full Scoping and EIA Process is being undertaken for the proposed WEF, subjected to a 107 days decision-making timeframe.

All the listed activities forming part of this proposed development and therefore requiring EA are included in the Application Form for EA that has been prepared and has been submitted to the DFFE with this Draft Scoping Report. The listed activities triggered by the proposed Kwagga WEF 3 are indicated in Table 4.1.

**Table 4.1: Listed Activities in GN R327, GN R325, and GN R324 that will be potentially triggered by the proposed Kwagga Wind Energy Facility 3**

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
<b>GN R327 (Listing notice 1)</b>		
<b>Activity 9 (i) and (ii)</b>	<p>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or stormwater—</p> <p>(i) with an internal diameter of 0.36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more;</p> <p>excluding where—</p> <p>(a) such infrastructure is for bulk transportation of water or stormwater or stormwater drainage inside a road reserve or railway line reserve; or</p> <p>(b) where such development will occur within an urban area.</p>	<p>The proposed project may entail the construction of stormwater channels/drains to facilitate the bulk transportation of stormwater run-off. However, it is highly unlikely that these stormwater channels/drains will exceed 1 000 meters in length or have an internal diameter of more than 0.36 m. It is therefore unlikely that this activity would be triggered.</p>
<b>Activity 11 (i)</b>	<p>The development of facilities or infrastructure for the transmission and distribution of electricity-</p> <p>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;</p>	<p>The proposed project will entail the construction of a 33kV/132kV on-site substation hub incorporating a facility substation, switchyard, collector infrastructure and associated Operation and Maintenance (O&amp;M) buildings. The proposed project will be constructed on various farm portions approximately 60 km south of Beaufort West within the Beaufort West Local Municipality and Prince Albert Local Municipality, Western Cape Province and is therefore situated outside of the urban edge. This activity would therefore be triggered.</p>
<b>Activity 12 (x) and (xii)</b>	<p>The development of:</p> <p>(x) buildings exceeding 100 square metres in size;</p> <p>(xii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p>a) within a watercourse;</p> <p>b) in front of a development setback; or</p>	<p>The proposed project will entail the construction of the WEF and associated infrastructure such as wind turbines and hardstands, offices, O&amp;M buildings, workshop, ablution facilities, on-site substation hubs, construction compound and laydown area, security enclosures and access roads, etc. Based on the aquatic- and terrestrial biodiversity specialists input provided for the Scoping Phase, several watercourses such as drainage lines with associated riverine areas were identified on site. The buildings and infrastructure are expected to</p>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
	<p>c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p>	<p>exceed a footprint of 100 m<sup>2</sup> with some infrastructure or structures potentially occurring within a watercourse (e.g. drainage line) or within 32 m from the edge of watercourses. This activity would therefore be triggered.</p> <p>Additional information regarding the presence of watercourses on site is provided in the aquatic biodiversity and the terrestrial biodiversity scoping inputs, which are attached to this Scoping Report as Appendix F.5 and Appendix F.6.</p>
<p><b>Activity 14</b></p>	<p>The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.</p>	<p>The construction and operation phases of the proposed WEF project will require infrastructure for a maximum of 80 cubic metres of storage of dangerous goods, which will include flammable and combustible liquids such as oils, lubricants and solvents.</p>
<p><b>Activity 19 (i)</b></p>	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving-</p> <p>a) will occur behind a development setback;</p> <p>b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>	<p>The proposed project will most likely entail the excavation, removal and moving of more than 10 m<sup>3</sup> of soil, sand, pebbles or rock from nearby watercourses on site. The proposed project could potentially also entail the infilling of more than 10 m<sup>3</sup> of material into the nearby watercourses. Based on the scoping inputs provided by the aquatic- and terrestrial biodiversity specialists, several watercourses including the Muiskraal River, some of its associated tributaries and several drainage lines have been identified on the proposed project site. The activity would therefore be triggered.</p> <p>Details of the infilling of and excavations from the to be affected watercourses / drainage features will be confirmed during the detailed design phase prior to construction.</p> <p>Additional information regarding the presence of watercourses on site is provided in the aquatic biodiversity and the terrestrial biodiversity scoping inputs, which are attached to this Scoping Report as Appendix F.5 and Appendix F.6.</p>
<p><b>Activity 24 (ii)</b></p>	<p>The development of a road –</p> <p>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</p>	<p>The key route providing access to the proposed project is the N12 main road that runs along the proposed project site to the west. The proposed Kwagga WEF 3 will be accessible from the N12 via</p>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
	<p>but excluding a road–</p> <p>a) which is identified and included in activity 27 in Listing Notice 2 of 2014; or</p> <p>b) where the entire road falls within an urban area; or which is 1 km or shorter.</p>	<p>the R308 Rietbron bound public access gravel road that traverses the northern section of the site.</p> <p>In addition to the existing internal service ‘farm’ roads on site, which will be extended to a maximum width of 10 m, where necessary, additional internal service roads are to be constructed on the project site of which the width will not exceed 10 m. The length of the internal service road network for the proposed Kwagga WEF 3 is approximately 33 km.</p> <p>The activity would therefore be triggered.</p>
<b>Activity 28 (ii)</b>	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p> <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The land earmarked for the development of the proposed Kwagga WEF 3 is currently used for agricultural purposes (mainly low intensive livestock farming). The proposed project which is considered to be a commercial / industrial development will have an estimated footprint of approximately 250 ha. This activity would therefore be triggered.</p>
<b>Activity 56 (i) and (ii)</b>	<p>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre–</p> <p>(i) where the existing reserve is wider than 13,5 meters; or</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres;</p> <p>excluding where widening or lengthening occur inside urban areas.</p>	<p>The key route providing access to the proposed project is the N12 main road that runs along the proposed project site to the west. The proposed Kwagga WEF 3 will be accessible from the N12 via the R308 Rietbron bound public access gravel road that traverses the northern section of the site. The existing reserve for the R308 varies between 8 m and 10 m, but could be wider than 13.5 m in some places.</p> <p>In addition to the existing internal service ‘farm’ roads on site, which will be extended to a maximum width of 10 m, where necessary, additional internal service roads are to be constructed on the project site of which the width will not exceed 10 m. The length of the internal service road network for the proposed Kwagga WEF 3 is approximately 33 km. The activity would therefore be triggered.</p>
<b>GN R325 (Listing notice 2)</b>		
<b>Activity 1</b>	<p>The development of facilities or infrastructure for the generation of electricity from a renewable</p>	<p>The proposed project will entail the construction of a WEF with a maximum generation capacity of 279</p>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
	<p>resource where the electricity output is 20 megawatts or more, excluding where such development of facilities or infrastructure is for PV installations and occurs</p> <p>(a) within an urban area or; (b) on existing infrastructure.</p>	<p>MW i.e. a facility to be developed for the generation of electricity from a renewable wind resource. This activity would therefore be triggered.</p>
<b>Activity 4</b>	<p>The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic meters.</p>	<p>The proposed WEF project will include the installation of a Battery Energy Storage System (BESS). The BESS will comprise of a selection of electrochemical batteries together with chargers, inverters and related equipment. The BESS will have a maximum height of 8 m (as recommended) and cover an area of approximately five (5) ha that is most likely to be included within the perimeter of an on-site substation area that is approximately 25 ha in size.</p> <p><u>Note</u> that this activity is only applicable to the flow BESS and not any of the other BESS types being assessed as the materials to be stored in the tanks, that is likely to have a combined capacity of more than 500 m<sup>3</sup>, might be considered a dangerous good in terms of the SANS definition in the regulations. Therefore, this activity might be triggered.</p>
<b>Activity 15</b>	<p>The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for:</p> <p>(i) the undertaking of a linear activity; or (i) maintenance purposes undertaken in accordance with a maintenance management plan.</p>	<p>The proposed WEF project will have a total estimated development footprint of approximately 250 ha. As a result, more than 20 ha of indigenous vegetation would be removed for the construction of the proposed project.</p> <p>This activity would therefore be triggered.</p>
<b>GN R324 (Listing notice 3)</b>		
<b>Activity 2 (i) (ii)</b>	<p>The development of reservoirs<sup>6</sup>, excluding dams, with a capacity of more than 250 cubic metres.</p> <p>i. Western Cape</p> <p>ii. In areas containing indigenous vegetation;</p>	<p>Consideration of this listed activity is based on a precautionary approach in identifying potential listed activities that could be triggered by this proposed development; however, water use required for purposes of construction and operation of this proposed project will be stored in conventional aboveground storage (plastic) tanks to be sited on the construction compound and</p>

---

<sup>6</sup> A reservoir is defined as “an open-air storage area such as a natural lake or artificial catchment (usually formed by masonry or earthwork) where water is collected and stored for communal use” (<https://www.nationalgeographic.org/encyclopedia/reservoir/>)

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
		laydown area during construction, and within the bounds of the O&M buildings during operation. It is also not anticipated that the water storage capacity of these conventional aboveground tanks will exceed 250 m <sup>3</sup> at any one time during construction or operations. Therefore, it is highly unlikely that this activity will be triggered.
<b>Activity 4 (i) (ii) (aa)</b>	<p>The development of a road wider than 4 meters with a reserve less than 13.5 meters.</p> <p>i. Western Cape</p> <p>ii. Areas outside urban areas;</p> <p>(aa) Areas containing indigenous vegetation;</p>	<p>Existing roads will be upgraded to access each of the main affected farm portions. The access roads are estimated to have an existing width ranging between 6 m and 8 m, and will be increased to a maximum width of 10 m.</p> <p>The planned internal road network extends approximately 33 km for the proposed Kwagga WEF 3 project.</p> <p>The proposed project will take place outside of an urban area on land containing indigenous vegetation. This activity would therefore be triggered.</p>
<b>Activity 12 (i) (ii)</b>	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>ii. Within critical biodiversity areas identified in bioregional plans;</p>	<p>The proposed WEF project will have an estimated development footprint of approximately 250 ha. As a result, more than 300 m<sup>2</sup> of indigenous vegetation would be removed for the construction of the proposed WEF and its associated infrastructure.</p> <p>The proposed project site contains Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Other Natural Areas (ONAs) in terms of the Western Cape Biodiversity Spatial Plan (2017).</p> <p>This activity would therefore be triggered.</p>
<b>Activity 14 (ii) (a) and (c); (i), (i),(bb) and (ff)</b>	<p>The development of –</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs –</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p>	<p>The proposed WEF project will be constructed on various farm portions, located approximately 60 km south of Beaufort West within the Beaufort West Local Municipality and the Prince Albert Local Municipality, Western Cape Province. Hence, development of the proposed project will take place outside of an urban area.</p> <p>The proposed project will entail the construction of the WEF and associated infrastructure such as wind turbines and hardstands, offices, O&amp;M building,</p>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Listed Activity Number	Listed Activity Description	Description of the project activity that potentially triggers the relevant listed activity
	<p>i. Western Cape</p> <p>i. Outside urban areas:</p> <p>(bb) National Protected Area Expansion Strategy Focus areas;</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	<p>workshop, ablution facilities, on-site substation and a collector station, laydown area, security enclosures and access roads etc. Based on the aquatic- and terrestrial biodiversity specialists input provided for the Scoping Phase, several watercourses such as drainage lines with associated riverine areas were identified on site. The buildings and infrastructure are expected to exceed a footprint of 100 m<sup>2</sup> with some infrastructure or structures potentially occurring within a watercourse (e.g. drainage line) or within 32 m from the edge of watercourses.</p> <p>The proposed project site contains Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Other Natural Areas (ONAs) in terms of the Western Cape Biodiversity Spatial Plan (2017). In addition, portions of the proposed project site include areas, which are identified as part of the NPAES Lower Karoo Focus Area. Please note: Metadata for the NPAES Focus Areas states that Focus Areas are identified for land-based protected area expansion; however should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES.</p> <p>This activity would therefore be triggered.</p>
<p><b>Activity 18 (i) (ii) (aa)</b></p>	<p>The widening of a road by more than four (4) meters, or the lengthening of a road by more than one (1) kilometre:</p> <p><b>i. Western Cape</b></p> <p>ii. All areas outside urban areas:</p> <p>(aa) Areas containing indigenous vegetation;</p>	<p>Existing roads will be upgraded to access each of the main affected farm portions. The access roads are estimated to have an existing width ranging between 6 m and 8 m, and will be increased to a maximum width of 10 m. Also, existing farm roads/jeep tracks that will form part of the internal service road network will be upgraded to a maximum width of 10 m.</p> <p>The planned internal service road network extends approximately 33 km for the proposed Kwagga WEF 3 project. The proposed project will take place outside of an urban area on land containing indigenous vegetation.</p> <p>This activity would therefore be triggered.</p>

**Notes regarding the identification of potential listed activities:**

- It should be noted that a precautionary approach was followed when identifying listed activities (for inclusion in the Application for EA and to be assessed as part of the Scoping and EIA Process), i.e. if the activity potentially forms part of the project, it is listed. However, the final project description will be shaped by the findings of the EIA Process and certain activities may be added or removed from the project proposal, followed by the submission of an Amended Application Form for EA to the DFFE, as required.
- Also important to that is that the assessment for and inclusion of relevant listed activities applicable to the construction of the proposed transmission lines and associated electrical grid infrastructure (EGI) for purposes of the proposed Kwagga WEF 3 project does not form part of this Scoping and EIA Process, and are therefore excluded from Table 4.1. The EGI component to the proposed Kwagga WEF 3 project is still to be confirmed by the Project Developer and will therefore form part of a separate Environmental Assessment Process, which will be undertaken at a later stage.

### 4.3 National Web-Based Environmental Screening Tool

As noted above, GN 960 (dated 5 July 2019) published a notice of the compulsory requirement (as from 4 October 2019) to submit a report generated by the National Web Based Environmental Screening Tool, when submitting an Application for EA. The proposed Kwagga WEF 3 project has accordingly been run through the National Web Based Environmental Screening Tool, and the associated report generated and attached to the Application for EA.

Based on the selected classification, the National Web Based Environmental Screening Tool provides a list of specialist assessments that should be undertaken as part of the Scoping and EIA Process, as well as identifies the sensitivities on site that need to be verified by either the EAP or the specialists, where relevant, as noted in the Assessment Protocols of 20 March 2020 (GN 320) and 30 October 2020 (GN 1150). The classification that applies to the proposed project is **Utilities Infrastructure; Electricity; Generation; Renewable; and Wind.**

The following list of Specialist Assessments have been identified by the National Web Based Environmental Screening Tool for inclusion in the Scoping and EIA Report (Table 4.2). The National Web Based Environmental Screening Tool Report notes that it is the responsibility of the EAP to confirm this list and to motivate in the Scoping Report, the reason for not including any of the identified specialist assessments, where relevant.

**Table 4.2: List of Specialist Assessments identified by the Screening Tool for the proposed Kwagga Wind Energy Facility 3**

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
1	Agriculture and Soils	Yes	Protocol GN 320 – Part B – Agriculture (Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Agricultural Resources by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more): Compliance Statement	Appendix F.1



**DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape**

---

<b>Specialist Assessment Required by the Screening Tool</b>		<b>Assessment undertaken in Scoping and EIA Process</b>	<b>Type of Assessment undertaken in Scoping and EIA Process</b>	<b>Appendix of Scoping Report</b>
<b>2</b>	Landscape/Visual Impact Assessment	Yes	Protocol GN 320 – Part A: Site Sensitivity Verification; and Appendix 6: Impact Assessment	Appendix F.8
<b>3</b>	Flicker Impact Assessment	Yes		
<b>4</b>	Archaeological and Cultural Heritage Impact Assessment	Yes	Protocol GN 320 – Part A: Site Sensitivity Verification; and Appendix 6: Impact Assessment	Appendix F.2
<b>5</b>	Palaeontology Impact Assessment	Yes	In line with HWC requirements, an integrated Heritage Impact Assessment including Archaeology, Cultural Landscape and Palaeontology will be undertaken. This is in line with previous reporting requirements in the Western Cape as well.	
<b>6</b>	Terrestrial Biodiversity Impact Assessment	Yes	Protocol GN 320 – Part B – Biodiversity (Protocol for the specialist assessment and impacts on terrestrial biodiversity): Impact Assessment	Appendix F.6
<b>7</b>	Plant Species Assessment	Yes	The Terrestrial Biodiversity Impact Assessment includes feedback on Terrestrial Plant and Animal Species. This study was commissioned prior to the Species Protocol being gazetted in GN 1150 dated 30 October 2020 (as discussed above in Section 4.1.1.5). The Impact Assessment to be undertaken as part of this Scoping and EIA Process is referred to as a Terrestrial Biodiversity and Species Impact Assessment.	
<b>8</b>	Animal Species Assessment	Yes		
<b>9</b>	Aquatic Biodiversity Impact Assessment	Yes	Protocol GN 320 – Part B - Biodiversity (Protocol for the specialist assessment and impacts on aquatic biodiversity): Impact Assessment  The Impact Assessment to be undertaken as part of this Scoping and EIA Process is referred to as an Aquatic Biodiversity and Species Impact Assessment. Note there is currently no Species Protocol applicable to Aquatic Plants and Animals.	Appendix F.5
<b>10</b>	Avifauna Impact Assessment	Yes	Protocol GN 320 – Part B – Avifauna (Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Avifaunal Species by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more): Impact Assessment  Minimum report content requirements for environmental impacts on avifaunal species by onshore wind energy generation facilities (i.e. the Kwagga WEF 3) as prescribed in GN 320 indicates that an “Avifaunal Specialist Assessment must be undertaken based on the results of a site specific Pre-Application Avifaunal Monitoring Plan that is informed by a Reconnaissance Study, as well as data collected over four seasons (i.e. summer, autumn,	Appendix F.3

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

Specialist Assessment Required by the Screening Tool		Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report
			<p>winter and spring) on the preferred site and the control site”.</p> <p>As such this study was commissioned by the Project Developer in accordance with GN 320 prior to the appointment of the EAP (i.e. CSIR) to conduct this Scoping and EIA Process.</p>	
11	Noise Impact Assessment	Yes	Protocol GN 320 – Part B – Noise (Protocol for the specialist assessment and minimum report content requirements for noise impacts): Impact Assessment	Appendix F.7
12	Bat Impact Assessment	Yes	<p>Protocol GN 320 – Part A: Site Sensitivity Verification; and Appendix 6: Impact Assessment</p> <p>A pre-construction monitoring plan was designed to monitor bat activity across the entire area of interest proposed by the Kwagga WEF 3. The baseline environment was investigated by using acoustic monitoring to document bat activity over a period of 15 months. The monitoring was undertaken in accordance with the South African Best Practice Guidelines for Pre-Construction Monitoring of Bats at Wind Energy Facilities (2020).</p>	Appendix F.4
13	Socio-Economic Assessment	Yes	<p>Appendix 6: Impact Assessment</p> <p>There are no themes on the Screening Tool that currently relate to Socio-Economic features that could be verified on site. Hence Part A of GN 320 (Site Sensitivity Verification) is not applicable in this regard.</p>	Appendix F.10
14	Traffic Impact Assessment	Yes	<p>Appendix 6: Impact Assessment</p> <p>There are no themes on the Screening Tool that currently relate to traffic or transport features that could be verified on site. Hence Part A of GN 320 (Site Sensitivity Verification) is not applicable in this regard.</p>	Appendix F.9
15	Civil Aviation Assessment	Yes	Protocol GN 320 – Part B – Civil Aviation (Protocol for the specialist assessment and minimum report content requirements for environmental impacts on civil aviation installations): No further assessment requirements are identified as the entire area of interest for the proposed Kwagga WEF 3 project site is classified as ‘low’ sensitivity. Only a site sensitivity verification is provided to confirm the site as a low sensitivity, as required by GN 320.	Appendix F.11
16	Defence Assessment	Yes	Protocol GN 320 – Part B - Defence (Protocol for the specialist assessment and minimum report content requirements for environmental impacts on	Appendix F.12

Specialist Assessment Required by the Screening Tool	Assessment undertaken in Scoping and EIA Process	Type of Assessment undertaken in Scoping and EIA Process	Appendix of Scoping Report	
		defence installations): No further assessment requirements are identified as the entire area of interest for the proposed Kwagga WEF 3 project site is classified as 'low' sensitivity. Only a site sensitivity verification is provided to confirm the site as a low sensitivity, as required by GN 320.		
17	Radio Frequency Interference (RFI) Assessment	No	Motivation not to undertake this specialist assessment is provided in Section 4.3.1 below.	Not Applicable

#### 4.3.1 Square Kilometer Array and Radio Frequency Interference

In 2012, South Africa and eight (8) partner countries (Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia) were selected as the preferred site for hosting the Square Kilometre Array (SKA), the world's largest and most sensitive radio telescope. Five countries submitted responses to an invitation to submit proposals to host the SKA in 2003. The original bid proposal was submitted and endorsed by South African Cabinet in 2003 in line with the national research and development strategy, published in 2002 and the Government's Astronomy Geographic Advantage Programme (AGA) ((DFFE, 2019: Part 3, Page 2).

The Astronomy Geographic Advantage (AGA) Act (Act 21 of 2007) aims to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy; to provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and to provide for matters connected therewith. The purpose of the AGA Act is to preserve the geographic advantage areas that attract investment in astronomy. The AGA Act also notes that declared astronomy advantage areas are to be protected and properly maintained in terms of Radio Frequency Interference (RFI). The AGA Act is administered by the Department of Science and Innovation (previously the Department of Science and Technology).

According to the CSIR Wind and Solar Phase 2 SEA (DFFE, 2019: Part 3, Page 2), the majority of the mid-frequency dish array of the Square Kilometre Array (SKA) will be constructed in the core which is located in the Northern Cape; with dish antennas being located in the spiral arms. The South African component of the SKA will consist of approximately 3 000 receptors comprising dish antennas, each with a diameter of 15 m, and radio receptors known as dense aperture-arrays. The outer stations in the spiral arms will extend beyond the borders of South Africa and at least 3 000 km from the core area. About 80% of the receptors, including a dense core and up to five (5) spiral arms, will be located in the Karoo Central Astronomy Advantage Area (KCAAA) (DFFE, 2019: Part 3, Page 2)<sup>7</sup>.

The KCAAA, which is located between Brandvlei, Van Wyksvlei, Carnarvon and Williston in the Northern Cape Province, was officially declared in 2014 by the Minister of Science and Technology in terms of the AGA Act for the purposes of protection RFI and Electromagnetic Interference (EMI). The declaration of the

<sup>7</sup> More information on the SEA can be accessed at <https://redzs.csir.co.za>

KCAAA ensures the long term viability of the area to be used for astronomical installations (DFFE, 2019: Part 3, Page 2).

**Table 4.3: SKA sensitivity distance guidelines (Source: DFFE, 2019: Part 3, Page 2)**

Colour	Sensitivity	Distance from SKA Facility	
		Wind	Other Solar PV
<b>Dark Red</b>	Very High	Less than 18 km	Less than 8 km
<b>Red</b>	High	Between 18 and 26 km	Between 8 and 14 km
<b>Orange</b>	Medium	Between 26 and 48 km	Between 14 and 32 km
<b>Green</b>	Low	Greater than 48 km	Greater than 32 km

The location of the proposed Kwagga WEF 3 project does not pose an EMI or RFI risk to the SKA, as the proposed project is located outside of the Northern Cape as well as the KCAAA. Refer to Figure 4.1 for the location of the proposed project in relation to the SKA and KCAAA. Furthermore, the proposed project site falls within an area of low sensitivity in terms of SKA sensitivity for the development of wind energy (Table 4.3). This also aligns with the findings of the Screening Tool (i.e. the proposed project sites fall within a low sensitivity in terms of the relative RFI theme sensitivity).

During the pre-application consultation undertaken with DFFE during November and December 2020, it was explained that it is not intended to commission a RFI study for the proposed WEF project due to (i) the location of the proposed project being entirely within the Western Cape and far away from the SKA and KCAAA; (ii) the findings of the Screening Tool; (iii) the findings of the Wind and Solar Phase 1 SEA (DEA, 2015) and (iv) the Wind and Solar Phase 2 SEA (DFFE, 2019).

Furthermore, the South African Radio Astronomy Observatory (SARAO) is registered on the project I&AP database as a key stakeholder, and will be informed of the availability of the Draft Scoping Report for a 30-day comment period. Therefore, the SARAO can provide comment on the project during the 30-day comment period.

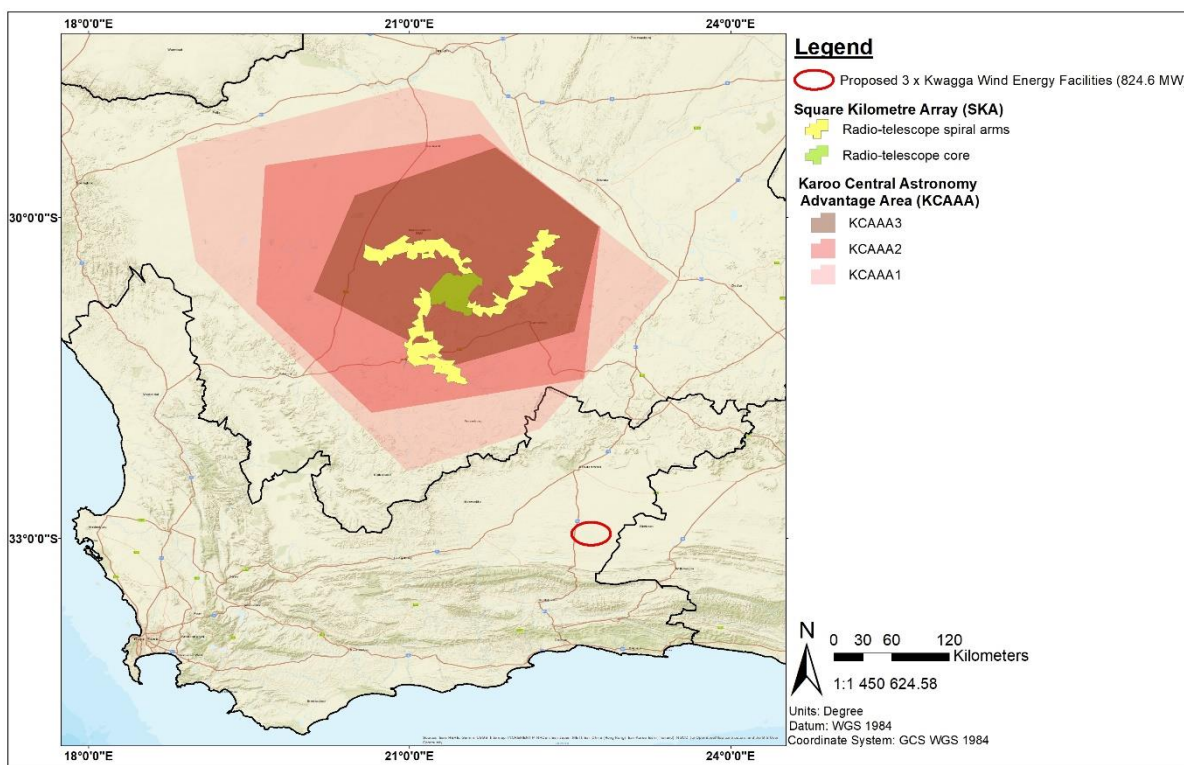


Figure 4.1: Location of the proposed Kwagga WEF 3 project in relation to the SKA and KCAAA

## 4.4 Principles for Scoping and Public Participation

### 4.4.1 Objectives of the Scoping Phase

This Scoping Process is being planned and conducted in a manner that is intended to identify and provide sufficient information to enable the authorities to reach a decision regarding the scope of issues to be addressed in this EIA Process, and in particular to convey the range of specialist assessments that will be included as part of the Environmental Impact Reporting Phase of the EIA, as well as the approach to these specialist assessments.

As highlighted in Chapter 1 of this Scoping Report, within this context, the objectives of this Scoping Process (as per the 2014 NEMA EIA Regulations, as amended) are to:

- Identify the relevant policies and legislation relevant to the proposed development;
- motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify and inform a broad range of stakeholders about the proposed development;
- Confirm the process to be followed and opportunities for stakeholder engagement;
- Clarify the project scope to be covered;
- Identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks;

- Identify and confirm the preferred site for the preferred activity, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- Clarify the alternatives being considered and ensure due consideration of alternative options regarding the proposed development, including the “No-go” option;
- Conduct an open, participatory and transparent approach and facilitate the inclusion of stakeholder issues in the decision-making process;
- Identify and document the key issues to be addressed in the impact assessment phase (through a process of broad-based consultation with stakeholders) and the approach to be followed in addressing these issues;
- Confirm the level of assessment to be undertaken during the impact assessment, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

#### 4.4.2 Introduction to the Public Participation Process

---

This section provides an overview of the tasks being undertaken in the Scoping Phase, with a particular emphasis on providing a clear record of the public participation process (PPP) followed. As discussed in Chapter 1 of this Scoping Report, separate EIA processes are being undertaken for each of the proposed Kwagga WEF 1, the Kwagga WEF 2 and the Kwagga WEF 3 projects. As such, separate applications for Scoping and EIA will be submitted to the DFFE for the three proposed Kwagga WEF projects, respectively.

An integrated PPP is being undertaken for the proposed WEFs and associated infrastructure, which entails that all public participation documents (such as newspaper advertisements, site notices, notification letters, emails, etc.) will serve to notify the I&APs and Organs of State of the joint availability of the reports for the abovementioned projects and will provide I&APs with an opportunity to comment on the reports. This approach was undertaken due to the close proximity of the sites (i.e. the proposed projects will take place within the same geographical area) and that the proposed projects entail the same activity (i.e. generation of energy using a renewable source (i.e. Wind)).

The PPP for this Scoping and EIA Process is being driven by a stakeholder engagement process that will include inputs from authorities, I&APs, technical specialists and the project proponent. Guideline 4 on “Public Participation in support of the EIA Regulations” published by the Department of Environmental Affairs and Tourism (DEAT) in May 2006, states that public participation is one of the most important aspects of the EA Process. This stems from the requirement that people have a right to be informed about potential decisions that may affect them and that they must be afforded an opportunity to influence those decisions. Effective public participation also improves the ability of the Competent Authority (CA) to make informed decisions and results in improved decision-making as the view of all parties are considered.

An effective PPP could therefore result in stakeholders working together to produce better decisions than if they had worked independently. The DEAT guideline states the following in terms of PPP:

- “Provides an opportunity for I&APs, EAPs and the CA to obtain clear, accurate and understandable information about the environmental impacts of the proposed activity or implications of a decision;
  - Provides I&APs with an opportunity to voice their support, concern and question regarding the project, application or decision;
  - Enables an applicant to incorporate the needs, preferences and values of affected parties into its application;
  - Provides opportunities for clearing up misunderstanding about technical issues, resolving disputes and reconciling conflicting interests;
  - Is an important aspect of securing transparency and accountability in decision-making; and
  - Contributes toward maintaining a health, vibrant democracy.”

To the above, one can add the following universally recognised principles for public participation:

- Inclusive consultation that enables all sectors of society to participate in the consultation and assessment processes;
- Provision of accurate and easily accessible information in a language that is clear and sufficiently non-technical for I&APs to understand, and that is sufficient to enable meaningful participation;
- Active empowerment of grassroots people to understand concepts and information with a view to active and meaningful participation;
- Use of a variety of methods for information dissemination in order to improve accessibility, for example, by way of discussion, documents, meetings, workshops, focus group discussions, and the printed and broadcast media;
- Affording I&APs sufficient time to study material, to exchange information, and to make contributions at various stages during the assessment process;
- Provision of opportunities for I&APs to provide their inputs via a range of methods, for example, via briefing sessions, public meetings, written submissions or direct contact with members of the EIA team; and
- Public participation is a process and vehicle to provide sufficient and accessible information to I&APs in an objective manner to assist I&APs to identify issues of concern, to identify alternatives, to suggest opportunities to reduce potentially negative or enhance potentially positive impacts, and to verify that issues and/or inputs have been captured and addressed during the assessment process.

At the outset it is important to highlight two key aspects of public participation:

- There are practical and financial limitations to the involvement of all individuals within a PPP. Hence, the PPP aims to generate issues that are representative of societal sectors, not each individual and will be designed to be inclusive of a broad range of sectors relevant to the proposed project; and

- The PPP will aim to raise a diversity of perspectives and will not be designed to force consensus amongst I&APs. Indeed, diversity of opinion rather than consensus building is likely to enrich ultimate decision-making. Therefore, where possible, the PPP will aim to obtain an indication of trade-offs that all stakeholders (i.e. I&APs, technical specialists, the authorities and the development proponent) are willing to accept with regard to the ecological sustainability, social equity and economic growth associated with the project.

The Department of Environmental Affairs (2017), Public Participation guideline in terms of the NEMA EIA Regulations is also being considered during this Scoping and EIA Process. According to Section (2)(4)(f) and (o) of NEMA, (i) the participation of all interested and affected parties (I&APs) in environmental governance must be promoted and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured, and (ii) the environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage. Therefore, public participation is a crucial aspect of the EIA Process to ensure that all information that reasonably has or may have the potential to influence any decision with regard to an EA, unless access to that information is protected by law, is made available to all registered I&APs, and that they be afforded an opportunity to engage and provide input on matters that they are interested in or potentially affected by.

The key steps in the PPP for this Scoping and EIA Process are described below. This approach is structured in line with the requirements of Chapter 6 (PPP) of the 2014 NEMA EIA Regulations (as amended, i.e. GN R326), as well as the approved Public Participation Plan, as described below. Various mechanisms will be undertaken to provide notice to all potential and registered I&APs of the proposed project, as described below.

The S&EIA Processes commenced in November 2020, whereby the specialist assessments were commissioned and the Scoping Reports were being compiled. The Draft Scoping Reports are currently being released to I&APs, Stakeholders and Organs of State (including the National DFFE) for a 30-day comment period. The Applications for EA will be submitted to the National DFFE at the same time as the Draft Scoping Reports.

#### **4.4.3 Requirement for a Public Participation Plan**

---

On 5 June 2020, the Minister of Forestry, Fisheries and the Environment issued Directives in terms of regulation 4 (10) of the Regulations issued by the Minister of Cooperative Governance and Traditional Affairs in terms of section 27(2) of the Disaster Management Act, 2002 (Act 57 of 2002). These Directives were published in Government Gazette 43412, GN 650 on 5 June 2020, regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences.

Regulation 5.1 of GN 650 states that Authorities responsible for the processing of applications contemplated in the EIA Regulations, will be receiving such applications from 5 June 2020 and will receive and process applications and issue decisions in the manner as set out in Annexure 2 of GN 650. Regulation 5.2 of GN 650 states that Annexure 3 includes additional requirements in respect of the provision, supporting or obtaining of services contemplated in Regulation 5.1.



Annexure 3 of GN 650 states that an EAP must:

- Prepare a written Public Participation Plan, containing proposals on how the identification of and consultation with all potential Interested and Affected Parties (I&APs) will be ensured in accordance with Regulation 41(2)(a) to (d) of the 2014 NEMA EIA Regulations (as amended) or proposed alternative reasonable methods as provided for in regulation 41(2)(e), for purposes of an application and submit such plan to the Competent Authority i.e. DFFE for approval; and
- Request a meeting or pre-application discussion with the Competent Authority to determine the reasonable measures to be followed to identify potential I&APs and register IA&Ps for purposes of conducting public participation on the application requiring adherence to Chapter 6 of the 2014 NEMA EIA Regulations (as amended) as set out in the public participation plan and obtain agreement from the Competent Authority on the public participation plan.

GN 650 also states that for new applications, the public participation plan agreed with the Competent Authority must be annexed to the EA application form.

GN 650 is applicable to Alert Level 3 and was repealed by GN 970. GN 970, published on 9 September 2020, contains directions regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences, and it applies for the period of the national state of disaster. However, it is understood that even though GN 650 is repealed, it may be used as a guideline to inform the PPP.

The Public Participation Plan (required in terms of GN 650) was submitted to the DFFE via email on 13 January 2021 and then approved by the DFFE on 22 January 2021. Refer to Appendix D.1 of this Scoping Report for a copy of the Public Participation Plan, Appendix D.2 for proof of submission of Public Participation Plan to the DFFE, and Appendix D.3 for a copy of DFFE's Approval of the Public Participation Plan. The PPP for this Scoping and EIA Process is being undertaken in compliance with the approved Public Participation Plan and Chapter 6 of the 2014 NEMA EIA Regulations (as amended).

#### **4.4.4 Pre-Application Consultation with the DFFE**

---

A request for a Pre-Application Meeting was submitted to the DFFE, on 10 November 2020 after which the EAP received written response from the DFFE on 19 November 2020 (Reference Number: 2020-11-0012) confirming that a Pre-Application Meeting was not deemed necessary as the agenda items could be clarified via email. Subsequent liaison with the DFFE was undertaken via email in order to discuss and agree on various aspects prior to release of the Scoping Reports. The following points were discussed with the DFFE:

- An overview of the project description;
- Confirmation on the approach towards including electrochemical Battery Energy Storage Systems in the project description;
- Findings of the National Web-Based Screening Tool Reports;
- Discussion and confirmation on the specialist assessments and compliance statements to be undertaken;

- Discussion and confirmation on the approach towards the specialist reporting, including that of the recently published Assessment Protocols (GN 320, dated 20 March 2020);
- Approach to the Public Participation Process, including the Public Participation Plan;
- Discussion and confirmation on the proposed project schedule and overall process for the Scoping and EIAs, including the applicable Listed Activities and Cumulative Impact Assessment approach; and
- Points for clarification.

Refer to Appendix E.1 of this Scoping Report for a copy of the Pre-Application Meeting Request Form submitted to the DFFE; Appendix E.2 for a copy of the presentation submitted via email during the Pre-Application Consultation with the DFFE; and Appendix E.3 for a copy of the correspondence from the DFFE with Approval of the Pre-Application Meeting Presentation. The Public Participation Plan was therefore also discussed with the DFFE during the Pre-Application Consultation in order to facilitate the decision-making on the plan itself.

#### 4.4.5 Landowner Written Consent

---

Regulation 39(1) of the 2014 NEMA EIA Regulations (as amended) states that *“if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land”*.

Regulation 39 (2) of the 2014 NEMA EIA Regulations (as amended) further states that *“sub-regulation (1) does not apply in respect of: (a) linear activities; (b) activities constituting, or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and (c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014”*.

The proposed Kwagga WEF 3 project constitutes linear and non-linear activities, and landowner consent is therefore required for the following land portions to be affected by this proposed WEF:

- Portion 1 of the Farm Arthurs Kraal No. 386; Surveyor General 21 Digit Code: C0090000000038600001
- Portion 2 of the Farm Arthurs Kraal No. 386; Surveyor General 21 Digit Code: C0090000000038600002
- Portion 3 of the Farm Arthurs Kraal No. 386; Surveyor General 21 Digit Code: C0090000000038600003
- The Farm Annex Taaibos No. 21; Surveyor General 21 Digit Code: C0610000000002100000
- Portion 4 of the Farm Cyferfontein No. 115; Surveyor General 21 Digit Code: C0610000000011500004
- Portion 5 of the Farm Cyferfontein No. 115; Surveyor General 21 Digit Code: C0610000000011500005
- Portion 6 of the Farm Cyferfontein No. 115; Surveyor General 21 Digit Code: C0610000000011500006

- Portion 8 of the Farm Cyferfontein No. 115; Surveyor General 21 Digit Code: C0610000000011500008
- Portion 5 of the Farm Muis Kraal No. 373; Surveyor General 21 Digit Code: C0090000000037300005
- Portion 7 of the Farm Muis Kraal No. 373; Surveyor General 21 Digit Code: C0090000000037300007

Written consent has been obtained from the respective landowners of the affected farm portions on which the non-linear infrastructure is proposed to be located. The written consent has been included as an appendix to the Application for EA, which is being submitted to the DFFE, together with the Draft Scoping Report for comment.

#### **4.4.6 Determination of Appropriate Consultation Measures, and I&AP Identification, Registration and the Creation of an Electronic Database**

---

In line with Regulation 41 (2) (b) of GN R326 and prior to the commencement of the Scoping and EIA Processes (and advertising the EA Processes in the local print media), an initial database of I&APs (including key stakeholders and Organs of State) was developed for the Scoping and EIA Processes. This was undertaken based on research. Appendix C of this Scoping Report includes a copy of the I&AP Database, which indicates interaction with I&APs, key stakeholders and all I&APs that have been added to the project database.

In line with Regulation 41 (2) (b) of GN R326, the database includes the details of the following:

- Landowners of the affected farm portions;
- Occupiers of the affected farm portions;
- Landowners of the neighbouring adjacent farm portions;
- The municipal councillor of the ward in which the proposed project will be undertaken (Ward 7 of the Beaufort West Local Municipality and Ward 2 of the Prince Albert Local Municipality);
- The municipality which has jurisdiction in the area (i.e. Beaufort West Local Municipality, the Prince Albert Local Municipality and the Central Karoo District Municipality);
- Relevant Organs of State that have jurisdiction in respect of any aspect of the activity; and
- Any other party as required by the Competent Authority.

The I&AP database contains, as a minimum, the Competent Authority (i.e. DFFE); relevant state departments (e.g. Western Cape Department of Environmental Affairs and Development Planning (DEADP), Department of Water and Sanitation (DWS), Department of Mineral Resources and Energy (DMRE) etc.); relevant organs of state (e.g. Beaufort West Local Municipality, Central Karoo District Municipality, Prince Albert Local Municipality, Eskom SOC Ltd, etc.); as well as potential and registered I&APs (e.g. landowners, neighbours etc.). The above stakeholders, Organs of State and I&APs will accordingly receive written notification of the commencement of the Scoping and EIA Processes, and the release of the Draft Scoping Reports as well as Draft EIA Reports for comment.

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs is ongoing for the duration

of the study. Stakeholders from a variety of sectors, geographical locations and/or interest groups are expected to show an interest in the proposed project, for example:

- Provincial and Local Government Departments;
- Local interest groups, for example, Councillors and Rate Payers associations;
- Surrounding landowners;
- Farmer Organisations;
- Environmental Groups and NGOs; and
- Grassroots communities and structures.

As per Regulation 42 of the GN 326, in terms of the electronic database, I&AP details will be captured and automatically updated as and when information is distributed to or received from I&APs. This ongoing record of communication is an important component of the PPP. It must be noted that while not required by the regulations, those I&APs proactively identified at the outset of the Scoping and EIA Process will remain on the project database throughout the process and will be kept informed of all opportunities to comment and will only be removed from the database by request.

In order to accommodate the varying needs of I&APs and develop their capacity to participate in the process, information sharing forms an integral and ongoing component of the EIA Process to ensure effective public participation.

#### 4.4.7 Site Notices

---

One specific mechanism of informing I&APs of the proposed projects includes the placement of site notice boards. Regulation 41 (2) (a) of the 2014 NEMA EIA Regulations (as amended) requires that a notice board providing information on the project and Scoping and EIA Process is fixed at a place that is conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the application will be undertaken or any alternative site.

Notice boards in the Afrikaans and English languages were placed at the entrance of the key affected farm portions on which the proposed project will be constructed, as well as at other strategic locations, and government and public facilities in Beaufort West and Prince Albert. The site notice boards were placed on 20 and 21 October 2020. Table 4.4 provides a breakdown of the locations at which the site notice boards were placed.

**Table 4.4: Site Notice Board Placement for the Proposed Kwagga WEF 3**

---

#	Locality/ Description	Coordinates
1	Entrance at the Prince Albert Local Municipality offices, Prince Albert	S33° 13' 41.8" E22° 01' 52.0"
2	Entrance at the Central Karoo District Municipality offices, Beaufort West	S32° 20' 55.0" E22° 34' 57.6"
3	Entrance at the Beaufort West Local Municipality offices, Beaufort West	S32° 21' 00.7" E22° 35' 00.4"
4	Entrance at the Beaufort West Public Library, Beaufort West	S32° 21' 01.3" E22° 35' 00.4"

#	Locality/ Description	Coordinates
5	Entrance gate on the N12 main road at the Silver Karoo Guest House turnoff	S32°53'20.19" E22°33'11.11"
6	Entrance gate to Farm Dwaalfontein 1/377 on the western border of the proposed Kwagga WEF 3	S32°53'47.83" E22°36'32.70"
7	Entrance gate to Farm Tyger Poort 3/376 on the eastern border of the proposed Kwagga WEF 3	S32°55'16.68" E22°42'22.13"
8	Entrance gate to the homestead on Farm Wolwe Kraal 8/17 from the Rietbron bound public access road	S32°59'26.55" E22°43'3.57"
9	Entrance gate at Koffiefontein gate to Farm Wolwe Kraal 9/17 from the Rietbron bound public access road	S32°59'10.09" E22°44'47.93"
10	Entrance gate to Farm Muis Kraal 7/373 from the Rietbron bound public access road	S32°58'12.50" E22°51'43.96"

#### 4.4.8 Technical Scoping with the Project Proponent and EIA Team

The scoping process has been designed to incorporate two complementary components: a stakeholder engagement process that includes the relevant authorities and wider I&APs; and a technical process involving the EIA team and the project proponent.

The purpose of the technical scoping process is to draw on the past experience of the EIA team and the project proponent to identify environmental issues and concerns related to the proposed project, and confirm that the necessary specialist assessments have been identified. Most of the specialists have worked with the CSIR on several other projects, as well as having experience from EIAs for other renewable energy projects in the Western Cape. The specialists were therefore able to identify issues (as shown in Chapter 6 of this Scoping Report) to be addressed in the EIA Phase based on their experience and knowledge of the area and type of activity. Their inputs have informed the scope and Terms of Reference for the specialist assessments (as included in Chapter 7 of this Scoping Report). The findings of the scoping process with input from the stakeholders and the authorities will inform the specialist assessments, which will only be completed after the 30-day public comment period on the Draft Scoping Report has been finalised.

#### 4.4.9 Scoping Report Phase – Review of the Draft Scoping Report

In terms of Regulation 41 (6) of GN R326 the section below outlines the PPP for this assessment in order to provide potential I&APs, Stakeholders and Organs of State access to information on the project and the opportunity to comment at the various stages of the assessment process.

As noted above, the Scoping Reports for the proposed projects are currently being released to I&APs, Stakeholders and Organs of State for a 30-day comment period. The section below summarises the PPP for the review of the Scoping Reports.

- Database Development and Maintenance:** In line with Regulation 41 (2) (b) of GN R326, an initial database of potential I&APs was developed for the Scoping and EIA Process, and will be updated throughout the process.

- **Site Notice Boards:** As noted in Section 4.4.7 above, notice boards were placed for the proposed projects. A copy of the notice boards is included in Appendix D.4 of this Scoping Report.
- **Advertisements to Register Interest:** An advertisement will be placed in Afrikaans and English in at least one local newspaper (e.g. Die Courier) at the commencement of the 30-day comment period for the Draft Scoping Report. A copy of the content of the advertisement is included in Appendix D.5 of this Scoping Report.
- **Letter 1 to I&APs (Commencement of the Scoping and EIA Process):** Written notification of the availability of the Draft Scoping Reports (i.e. Letter 1) will be sent to all I&APs and Organs of State included on the project database via email, where email addresses are available. This letter will be sent at the commencement of the 30-day review period on the Draft Scoping Reports, and will include information on the proposed projects and notification of the release and availability of the reports. Letter 1 will be written in English. Proof of email, as well as copies of the Letter 1 and emails sent will be included in the Final Scoping Reports that will be submitted to the DFFE for decision-making.
- **Text Messaging:** SMS texts will also be sent to all I&APs on the database, where cell phone numbers are available, to inform them of the proposed project and how to access the Draft Scoping Reports.
- **Executive Summaries of the Scoping Reports:** Executive Summaries of the Scoping Reports will be emailed to I&APs on the database, and uploaded to the project website.
- **30-day Comment Period:** As noted above, potential I&APs, including authorities and Organs of State, will be notified via Letter 1, of the 30-day comment and registration period within which to submit comments on the Draft Scoping Reports and/or to register on the I&AP database.
- **Availability of Information:** The Draft Scoping Reports are currently being made available for a 30-day comment period, and are being distributed to ensure access to information on the project and to communicate the plan of study for the EIA phase. The Draft Scoping Reports will be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>) for I&APs to access it. As a supplementary mechanism, the Draft Scoping Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive. If an I&AP cannot access the report via the project website, via the alternative web-platforms such as Dropbox or Google Drive, and if additional information is required (other than what is provided in the Executive Summaries), then the I&AP can contact the EAP, who will then make an electronic copy available (where feasibly possible).
- **Comments Received:** A key component of the Scoping and EIA Process is documenting and responding to the comments received from I&APs and the authorities. Copies of all comments received during the review of the Draft Scoping Reports will be included as an appendix to the Final Scoping Reports and in the Comments and Response Report.

#### 4.4.10 Compilation of Final Scoping Reports for Submission to the DFFE

---

Following the 30-day commenting period of the Draft Scoping Reports and incorporation of the comments received into the reports, the Final Scoping Reports will be submitted to the DFFE in line with Regulation 21 (1) of the 2014 NEMA EIA Regulations (as amended). The reports will be submitted electronically to the DFFE via the Novell S-Filer system, as recommended by the DFFE since June 2020.

In line with best practice, I&APs on the project database will be notified via Letter 2 via email (where email addresses are available) of the submission of the Final Scoping Reports to the DFFE for decision-making. To ensure ongoing access to information, copies of the Final Scoping Reports that will be submitted for decision-making, will be placed on the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>). As a supplementary mechanism, the Final Scoping Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive.

The Final Scoping Reports that will be submitted for decision-making to the DFFE will include proof of the PPP that was undertaken to inform Organs of State, Stakeholders and I&APs of the availability of the Scoping Reports for the 30-day review (as explained above).

The DFFE will have 43 days (from receipt of the Final Scoping Reports) to either a) accept the scoping report, with or without conditions, and advise the applicant to proceed with the tasks contemplated in the plan of study for EIA; or b) refuse EA (respectively in line with Regulation 22 (a) and (b) of the 2014 NEMA EIA Regulations, as amended). In line with best practice, I&APs on the project database will be notified via Letter 3 via email (where email addresses are available) of the outcome of the decision-making on the Final Scoping Reports.

This step marks the end of the PPP for the Scoping Phase. The PPP for the subsequent EIA Phase is presented in the Plan of Study for the EIA i.e. Chapter 7 of this Scoping Report.

---

#### **4.5 Schedule for the Scoping and EIA Process**

---

The proposed schedule for the Scoping and EIA Processes, based on the legislated EIA timeframes, is presented in Table 4.4. It should be noted that this schedule could be revised during the EIA Process, depending on factors such as the time required for decisions from authorities.





# CHAPTER 5:

## PROJECT ALTERNATIVES





# Table of Contents

---

<b>5</b>	<b>APPROACH TO THE ASSESSMENT OF ALTERNATIVES</b>	<b>5-3</b>
<b>5.1</b>	<b>Assessment of Alternatives</b>	<b>5-4</b>
5.1.1	No-go Alternative	5-4
5.1.2	Land-use Alternatives	5-5
5.1.2.1	Agriculture	5-5
5.1.3	Type of Activity Alternatives	5-5
5.1.4	Renewable Energy Alternatives	5-6
5.1.4.1	Biomass Energy	5-6
5.1.4.2	Hydro Energy	5-7
5.1.4.3	Wind and Solar Energy	5-8
5.1.4.4	Solar Energy	5-9
5.1.4.5	Wind Energy	5-10
5.1.4.6	Summary of the Renewable Energy Alternatives	5-11
5.1.5	Site Alternatives	5-12
5.1.5.1	Site Specific Considerations	5-14
5.1.6	Location Alternatives	5-16
5.1.6.1	Development Footprint within the Preferred Site	5-16
5.1.6.2	Project Infrastructure Location Alternatives	5-18
5.1.7	Technology Alternatives	5-19
<b>5.2</b>	<b>Summary of Legislative Requirements for the Assessment of Alternatives</b>	<b>5-23</b>
<b>5.3</b>	<b>Concluding Statement of Preferred Alternatives</b>	<b>5-25</b>



# List of Tables

---

Table 5.1:	Summary of Evaluation of Potential Risks and Impacts for Renewable Energy Alternatives	5-11
Table 5.2:	Summary of the Site Selection Matrix	5-13
Table 5.3:	Site selection factors and suitability of the site for the development of the proposed Kwagga WEF 3	5-14

Table 5.4:	Advantages and disadvantages associated with the BESS technologies being considered for the proposed Kwagga WEF 3 (Sources: Parsons, 2017; Zhang <i>et al.</i> , 2016)	5-19
Table 5.5:	Requirements for the consideration of Alternatives based on the 2014 NEMA EIA Regulations (as amended)	5-23



## List of Figures

Figure 5.1:	Biomass Potential – location of the proposed Kwagga WEF 3 indicated in blue circle (Source: SARERD, 2016)	5-7
Figure 5.2:	Micro Hydropower Potential – location of the proposed Kwagga WEF 3 indicated in red circle (Source: SARERD, 2016)	5-8
Figure 5.3:	Solar Resource Availability in South Africa – location of the proposed Kwagga WEF 3 indicated in blue circle (Source: CSIR, 2018)	5-10
Figure 5.4:	Mean Wind Power Density for South Africa – location of the proposed Kwagga WEF 3 indicated in red circle (Source: CSIR, 2018).	5-11
Figure 5.5:	Preliminary combined environmental sensitivity map (excluding Visual sensitivity) for the proposed Kwagga WEF 3 project	5-21
Figure 5.6:	Preliminary combined environmental sensitivity map (including Visual sensitivity) for the proposed Kwagga WEF 3 project	5-22

## 5 APPROACH TO THE ASSESSMENT OF ALTERNATIVES

---

This chapter discusses the alternatives that have been considered as part of the Scoping Phase, as well as the selection process of the preferred alternatives that will be considered and assessed as part of the EIA Phase. Sections 24(4) (b) (i) and 24(4A) of the NEMA require an Environmental Assessment to include investigation and assessment of impacts associated with alternatives to the proposed project. In addition, Section 24O (1)(b)(iv) also requires that the Competent Authority, when considering an application for EA, takes into account “*where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment*”.

Therefore, the assessment of alternatives should, as a minimum, include the following:

- The consideration of the no-go alternative as a baseline scenario;
- A comparison of the reasonable and feasible alternatives; and
- Providing a methodology for the elimination of an alternative.

The 2014 NEMA EIA Regulations (as amended) define “alternatives”, in relation to a proposed activity, “as different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:

- property on which or location where the activity is proposed to be undertaken;
- type of activity to be undertaken;
- design or layout of the activity;
- technology to be used in the activity;
- operational aspects of the activity; and
- includes the option of not implementing the activity”.

Appendix 2 of the 2014 NEMA EIA Regulations (as amended) provides the following objectives, inter alia, of the Scoping Process in relation to alternatives:

- To identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks; and
- To identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment.

The Scoping Report is therefore required to provide a full description of the process followed to reach the proposed preferred activity and technology alternative, site and location of the development footprint within the site, including details of all the alternatives considered and the outcome of the site selection matrix.

## 5.1 Assessment of Alternatives

---

### 5.1.1 No-go Alternative

---

The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not developing the proposed Kwagga WEF 3 project. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It provides the baseline against which other alternatives are compared and will be considered throughout the report. The following implications will occur if the no-go alternative is implemented (i.e. the proposed project does not proceed):

- No benefits will be derived from the implementation of an additional land-use;
- No additional power will be generated or supplied through means of renewable energy resources by this project at this location;
- The no-go alternative will not contribute to and assist the government in achieving its stated target of 17 742 MW total installed (i.e. including installed capacity; committed/already contracted capacity and new additional capacity) for Wind energy capacity by 2030 (Integrated Resource Plan-IRP, 2019);
- Electricity generation on the proposed development site will remain at zero and as a result the local economy will not be diversified, while existing electricity generation sources nationally will age and degrade over time, with maintenance requirements potentially leading to outages;
- There will be lost opportunity for skills transfer and education/training of local communities;
- The positive socio-economic impacts likely to result from the project such as increased local spending and the creation of local employment opportunities will not be realized;
- There will be no opportunity for additional employment in an area, where job creation is identified as a key priority;
- The local economic benefits associated with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) will not be realized, and socio-economic contribution payments into the local community trust will not be realized;
- The development of WEFs instead of coal fired power stations can directly contribute to South Africa's response to climate mitigation; and
- Wind and solar energy are the cheapest source of electricity in South Africa. The development of the proposed WEF can contribute to the competitive nature of the REIPPPP to drive prices down even further to ensure that South Africans have access to affordable yet clean electricity.

Converse to the above, the following benefits could occur if the no-go alternative is implemented:

- Only the agricultural land use (livestock farming) will remain thus no impact on agricultural land use will occur;
- No biodiversity (fauna and flora) will be removed or disturbed during the development of this proposed facility;
- No aquatic resources will be impacted upon during the construction of the proposed WEF and associated infrastructure;

- No birds or bats will be impacted upon – either through the loss of their habitat which can lead to displacement, mortalities due to collisions with wind turbines, or caused by barotrauma for bats;
- No change to the current landscape will occur – the visual character of the area will remain unchanged;
- No heritage artefacts or palaeontological resources will be impacted on;
- No noise impacts will occur either during the construction phase or during the operational phase when wind turbines are rotating;
- No additional traffic will be generated; and
- No additional water use will be required.

The no-go alternative means no addition of renewable energy, which means further reliance on fossil fuels that will continue to have a negative environmental impact. While the no-go alternative i.e. not developing the proposed WEF will not result in any negative environmental impacts in the area, it will also not have any positive community development or socio-economic benefits. In addition, it will not assist government in addressing climate change, reaching its set targets for renewable energy, nor will it assist in supplying the increasing electricity demand within the country. **Hence, the no-go alternative is not currently the preferred alternative.**

### 5.1.2 Land-use Alternatives

---

#### 5.1.2.1 Agriculture

All farm portions forming part of the proposed WEF project is zoned for agricultural land-use, and is mainly used for livestock farming. Soils of the proposed WEF site are predominantly very shallow soils overlying rock, which are predominantly of the Glenrosa and/or Mispah soil forms. The major limitations to agriculture are the shallow, rocky soils and the limited climatic moisture availability as the proposed project site is located in an arid climate with an average annual rainfall of only 160 mm. Because of these limitations, the study area is very unsuitable for cultivation and agricultural land use is limited to low-density grazing.

As noted in Chapter 3 of this Scoping Report, agricultural potential is uniformly low across the affected farms and the choice of placement of the proposed WEF on the farms is therefore likely to have agricultural impacts of low significance. The predominant land capability of the proposed project site varies between 3 and 8 i.e. land with very limited agricultural crop potential and in most cases utilisable wilderness land. The grazing capacity of the area is classified as low at 30 hectares per large stock unit. **Hence, agricultural land use is not a preferred alternative.**

However, the proposed WEF will generate an additional income stream to the landowners and is therefore considered **the preferred land use alternative** and will not impede on the existing land use activities as the proposed WEF can co-exist with continued livestock farming on site.

### 5.1.3 Type of Activity Alternatives

---

In terms of the type of activity, this relates to the generation of electricity from a renewable energy source, and in this particular case, from wind. As indicated in Chapter 1 of this DSR, the South African subsidiary of ABO Wind focuses on solar, wind and biogas technologies and works with landowners, technology providers, regulators and investors to source and develop renewable energy projects. Therefore, the **generation of electricity from a renewable energy source** was the only activity considered by the Project Applicant, and thus considered in this DSR. No other activity types were considered or deemed appropriate based on the expertise of the Project Applicant. Refer to the section below that provides a description on the selection of wind energy as the preferred alternative.

#### 5.1.4 Renewable Energy Alternatives

---

Where the “activity” is the generation of electricity from a renewable energy source, possible alternatives that could potentially be considered on the proposed project site include renewable energy technologies such as Biomass, Hydro Energy, Wind Energy and Solar Energy. However, based on the preliminary investigations undertaken by the Project Applicant, **Wind Energy development is the preferred technology alternative** and no other renewable energy technologies are deemed to be appropriate for the site. The unsuitability of other renewable energy technologies for the site, and impacts of each, are discussed below.

##### 5.1.4.1 Biomass Energy

The proposed project site does not contain any abundant or sustainable supply of biomass. According to the South African Renewable Energy Resource Database (SARERD, 2016), the proposed project area does not have any cumulative biomass energy potential. **Therefore, the implementation of a Biomass Energy Facility at the proposed site is not considered to be a reasonable and feasible alternative to be assessed as part of this S&EIA Process.**

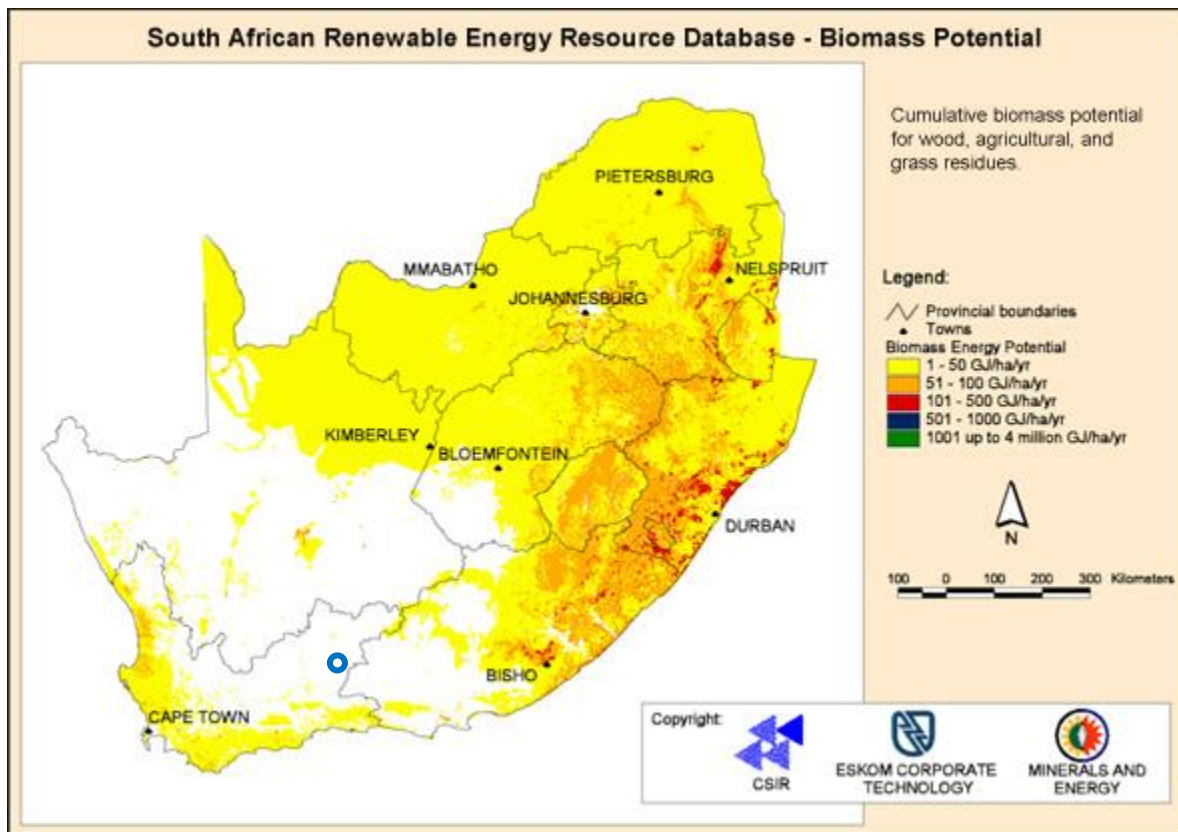


Figure 5.1: Biomass Potential – location of the proposed Kwagga WEF 3 indicated in blue circle (Source: SARERD, 2016)

#### 5.1.4.2 Hydro Energy

The proposed project site does not contain any large inland water bodies, which excludes the possibility of renewable energy from small- or large-scale hydro energy generation. In terms of micro hydropower potential, the SARERD (2016) has classified the proposed project area as “Not Suitable”. **Therefore, the implementation of a Hydro Energy Facility at the proposed site is not considered to be a reasonable and feasible alternative to be assessed as part of this S&EIA Process.**



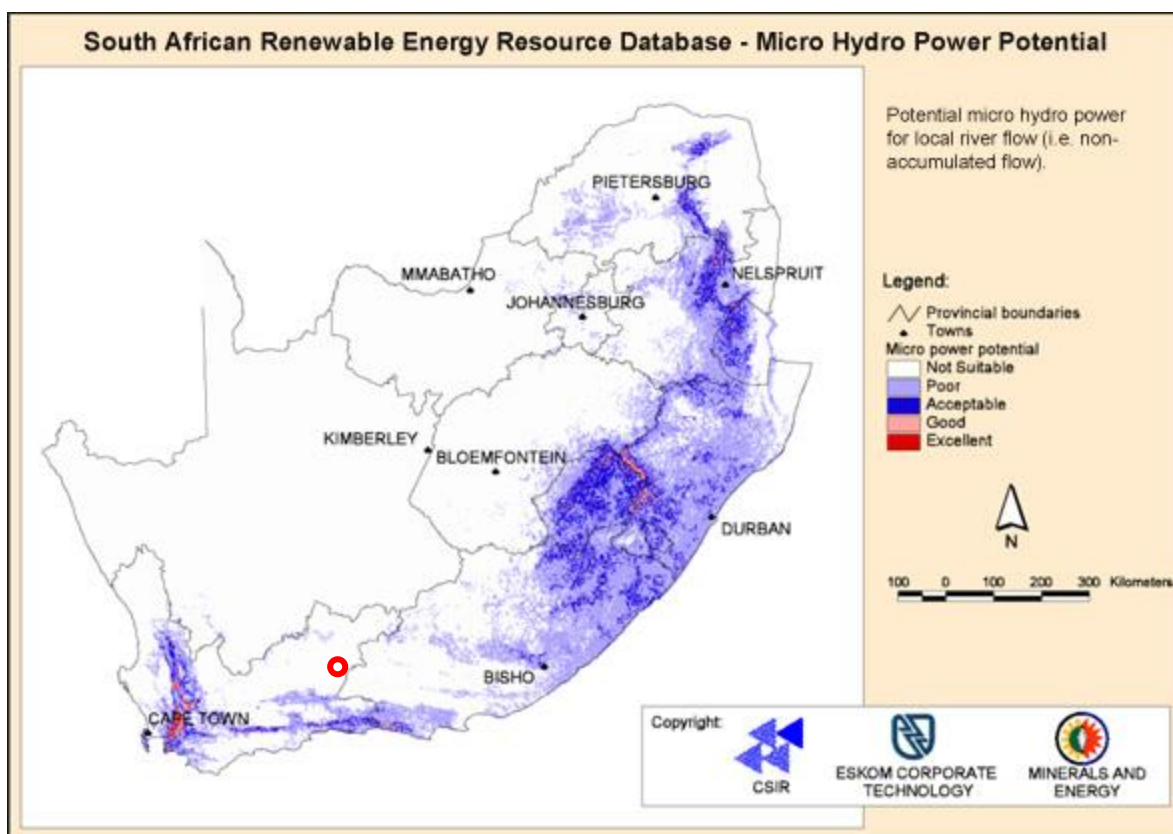


Figure 5.2: Micro Hydropower Potential – location of the proposed Kwagga WEF 3 indicated in red circle (Source: SARERD, 2016)

#### 5.1.4.3 Wind and Solar Energy

- 2019 IRP

The 2019 IRP proposes to secure 26 630 MW of renewable energy capacity by 2030 (for Wind, Solar Photovoltaic (PV) and Concentrated Solar Power). This amount excludes Hydropower and Storage. Of this total, 1 474 MW of Solar PV, 1 980 MW of Wind and 300 MW of Concentrated Solar Power is already installed capacity. In addition, of the 26 630 MW, approximately 814 MW of Solar PV, 1 362 MW of Wind and 300 MW of Concentrated Solar Power is committed or already contracted capacity. Furthermore, of the 26 630 MW total, and 6 000 MW is allocated to solar PV, and 14 400 MW is allocated to wind as new additional capacity, which is based on a consistent annual allocation of 1 600 MW from 2022 up to 2030.

Linked to the 2010 IRP, the Department of Mineral Resources and Energy (DMRE) entered into a bidding process for the procurement of 3 725 MW of renewable energy from Independent Power Producers (IPPs) by 2016 and beyond. On 18 August 2015, an additional procurement target of 6 300 MW to be generated from renewable energy sources was added to the REIPPPP for the years 2021 - 2025, as published in Government Gazette 39111. The additional target allocated for wind energy, solar PV energy, and solar CSP energy is 3 040 MW, 2 200 MW, and 600 MW respectively.

On 7 July 2020, in Government Gazette 43509 and GN R753, the Minister of Mineral Resources and Energy, in consultation with the National Energy Regulator of South Africa (NERSA), determined that new

generation capacity needs to be procured to contribute towards energy security. Specifically, 2 000 MW will be procured from a range of energy source technologies in accordance with the short-term risk mitigation capacity allocated for the years 2019 to 2022 (under “other” in the allocation table contained in 2019 IRP). In line with this, the Risk Mitigation IPP Procurement Programme (RMIPPPP) was designed and launched in August 2020 by the DMRE in order to fulfil the GN R753 Ministerial Determination.

#### **5.1.4.4 Solar Energy**

In terms of the suitability of solar energy development at this location, the proposed project area has a high Global Horizontal Irradiation (GHI), relevant to PV installations (Figure 5.3). As indicated in Figure 5.3, the site has a GHI of 2000 – 2200 kWh/m<sup>2</sup> in terms of the long-term yearly total. The high GHI recorded in the area in which the proposed project is located indicates that the generation of renewable energy from solar energy is not unfeasible. However, the current land-use activities in the area indicates the suitability of the land to wind energy technology as opposed to solar energy technology.

The land earmarked for the development of the proposed Kwagga WEF 3 is currently used for low-density livestock grazing. Such land is generally preferred for wind energy developments as the grazing activities can continue on the land together with the operation of the WEF. In addition, the area selected for the development of the proposed Kwagga WEF 3 receives very good wind resources, which indicates viability for wind energy developments (Figure 5.4), as discussed in Section 5.1.4.5.

The area in which the proposed WEF is to be developed is also relatively water scarce. It is therefore proposed that water be trucked to the proposed project site from the local municipality for consumptive and construction purposes, due to the scarcity of water in the greater Central Karoo area. Solar panels require regular cleaning in order to function optimally. Therefore, obtaining a sufficient amount of water to comply with annual cleaning requirements of solar panels is deemed unfeasible.

Overall, solar energy development can occur within this area but other localities in South Africa may be more favourable for solar energy development. Site-specific requirements for **solar energy facilities** however makes this proposed project site **a less feasible alternative** when compared to the potential of WEFs at this specific project site.

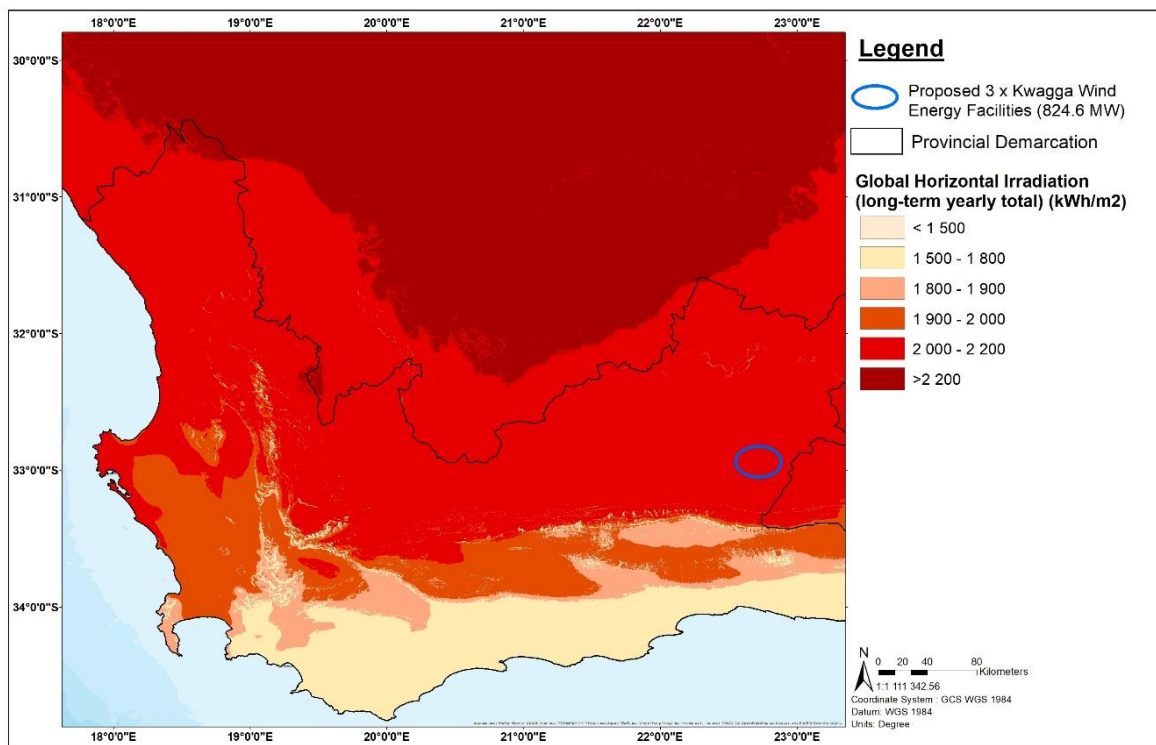


Figure 5.3: Solar Resource Availability in South Africa – location of the proposed Kwagga WEF 3 indicated in blue circle (Source: CSIR, 2018)

#### 5.1.4.5 Wind Energy

Wind resource is defined in terms of average wind speed and includes Weibull distribution (used to describe wind speed distributions); turbulence, wind direction, and pattern of wind direction (as depicted by a wind rose). These factors are all key considerations used in determining whether a site is suitable for the development of a WEF. A mean wind power density map has also been created (CSIR, 2018), which is not related to any specific turbine type and demonstrates the wind resource of the country. The mean wind power density map shows that the project area falls within an area of 400 – 500 W/m<sup>2</sup>, which is considered as good viability for a wind energy project (Figure 5.4).

Based on the research conducted by the Project Developer the proposed affected land portions located to the south of Beaufort West were selected based on the area having a good wind resource. Three on-site wind measuring meteorological (met) masts have been installed, one mast on each of the three proposed Kwagga WEF project sites, to provide wind- and meteorological measurements to verify the presence of the resource. The process of collecting on-site wind data is necessary to confirm both the presence of the wind resource on-site and the bankable viability of the proposed project. The provision of at least 12 months' on-site wind monitoring data is also a requirement of the REIPPPP. Data received from consistent measurements for a year indicated that the wind resource at the proposed Kwagga WEF 3 project site is more than adequate for the development of a WEF.

Furthermore, the 2019 IRP indicated a higher allocation target to wind energy compared to solar energy for new additional capacity from 2022 to 2030 (i.e. 14 400 MW as opposed to 6 000 MW) which further supports the development of a WEF at this location.

Therefore, the implementation of a WEF at the proposed project site is more favourable and feasible than solar energy, biomass or hydropower development. Therefore, the proposed WEF is considered to be the most feasible and preferred technology alternative as it would be able to generate sufficient energy to support an economically viable wind energy project.

Finally, since the alternative renewable energy generation activities considered were deemed not to be reasonable and feasible for the area and the specific site, no other renewable energy technology alternatives were further assessed during the EIA Phase i.e. only Wind.

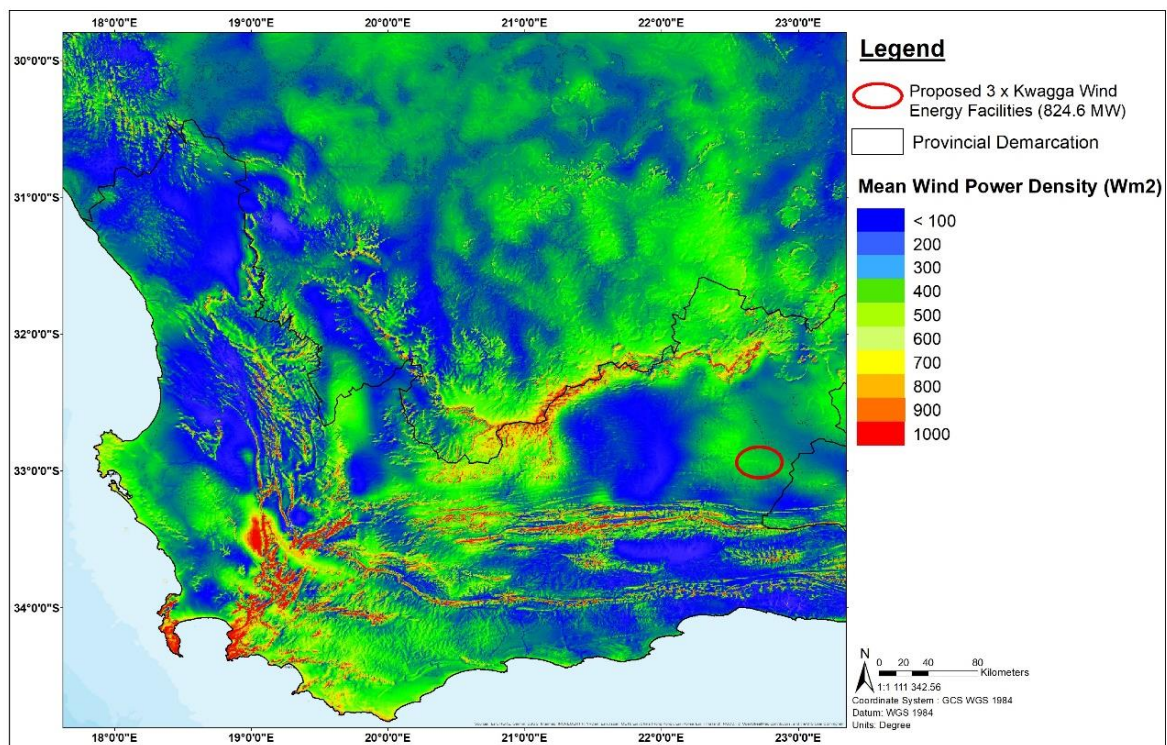


Figure 5.4: Mean Wind Power Density for South Africa – location of the proposed Kwagga WEF 3 indicated in red circle (Source: CSIR, 2018).

#### 5.1.4.6 Summary of the Renewable Energy Alternatives

Table 5.1 presents a summary and an evaluation matrix for the possible renewable energy alternatives with regards to resource suitability and availability, and potential risks and impacts.

Table 5.1: Summary of Evaluation of Potential Risks and Impacts for Renewable Energy Alternatives

Type of Renewable Energy Alternative	Are suitable resources available at the proposed project site?	Main Potential Impacts and Risks	Is this the preferred Alternative?
Biomass Energy	<ul style="list-style-type: none"> <li>No – not suitable</li> </ul>	<ul style="list-style-type: none"> <li>Significant Waste Generation</li> <li>Air Emissions</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>
Hydro Energy	<ul style="list-style-type: none"> <li>No – not suitable</li> </ul>	<ul style="list-style-type: none"> <li>Not suitable</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>

Type of Renewable Energy Alternative	Are suitable resources available at the proposed project site?	Main Potential Impacts and Risks	Is this the preferred Alternative?
Wind Energy	<ul style="list-style-type: none"> <li>▪ Yes - 400 – 500 W/m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Visual</li> <li>▪ Noise Generation</li> <li>▪ Bird and bat collisions</li> <li>▪ Loss of agricultural land</li> <li>▪ Impacts on aquatic ecology and terrestrial ecology</li> </ul>	<ul style="list-style-type: none"> <li>▪ Yes</li> </ul>
Solar Energy	<ul style="list-style-type: none"> <li>▪ Yes - 2000 - 2200 kWh/m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Visual</li> <li>▪ Loss of agricultural land</li> <li>▪ Impacts on heritage resources</li> <li>▪ Impacts on the water balance</li> <li>▪ Impacts on avifauna, aquatic ecology and terrestrial ecology</li> </ul>	<ul style="list-style-type: none"> <li>▪ No</li> </ul>

### 5.1.5 Site Alternatives

As per the requirements listed within Appendix 2 – [(1) (d)] and [(2) (1) (g) (ix)] of the 2014 NEMA EIA Regulations (as amended), a site selection matrix should be provided to show how the preferred site was determined through a site selection process. Within this context, it is understood that the “site” referred to in the Regulations are the farms or land portions earmarked for the development of the proposed Kwagga WEF 3 project.

The preferred site within the Western Cape was selected based on national level considerations (i.e. high wind power density levels) and various local factors as described below. However, before selecting the preferred site for the WEF, other alternative areas for the proposed WEF development were investigated and researched by the Project Developer. The other alternative sites considered are described below:

- Site 1: Prior to the commencement of this S&EIA process for the preferred site, another area extending approximately 1 800 ha located south-west of the preferred site was investigated. Upon further consideration of the 12-month pre-construction bird- and bat monitoring results, which was commissioned in early 2019, in addition to internal spatial data analysis undertaken by the Project Developer, the site was dismissed as a suitable option because of high bird sensitivities.
- Site 2: Areas further to the north and south of the preferred site were also investigated and based on internal spatial data analysis undertaken by the Project Developer, this site was dismissed as a suitable option due to the presence of protected and conservation areas including the Karoo National Park, the Karoo National Park Important Bird and Biodiversity Area, and the Steenbokkie Private Nature Reserve located to the north, and the Gouritz Cluster Biosphere Reserve located to the south.
- Site 3: The area north and north-east of the preferred site was also investigated and based on internal spatial data analysis undertaken by the Project Developer, the area was dismissed as a suitable option due to the presence of an episodic river corridor (i.e Swartbakens River) stretching from Beaufort West down to Rietbron in the Eastern Cape. The Swartbakens River corridor is classified as an aquatic Critical Biodiversity Area (CBA) 1; the wider river corridor is also classified as a terrestrial CBA (see Figure 3.16 in Chapter 3 of this Scoping Report). In addition, the catchment

of the Swartbakens River (north and north-east of the preferred Kwagga WEF 3 site) is classified as a Freshwater Ecosystem Priority Area (FEPA) Sub-catchment.

Furthermore, from an impact and risk assessment perspective, the implementation of the WEF at the preferred site will most likely result in fewer risks in comparison to its implementation at alternative sites within the Western Cape (i.e. regions with similar wind power density levels), based on the following points:

- There is no guarantee that the current land use of alternative sites will be flexible in terms of development potential, for example, the agricultural potential at the alternative sites might be higher and of greater significance.
- There is no guarantee of the willingness of other landowners to allow the implementation of a WEF on their land and if the landowners strongly object, then the project will not be feasible.
- There is no guarantee that other sites will be located close to existing or proposed electrical infrastructure to enable connection to the national grid. The further away a project is from the grid, the higher the potential for significant environmental and economic impacts.

**Table 5.2: Summary of the Site Selection Matrix**

Site Alternatives	Main Potential Impacts and Risks	Distance to Grid	Access	Sensitive receptors	Motivation
Site 1:	<ul style="list-style-type: none"> <li>Positioning of turbines in the flight path of identified priority bird species i.e. High potential avifauna mortality and injury through collisions with the wind turbines</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 70 km from the Eskom Droërvier substation</li> </ul>	<ul style="list-style-type: none"> <li>N12</li> <li>Rietbron public access road (R308)</li> </ul>	<ul style="list-style-type: none"> <li>Avifauna impacts</li> <li>Visual impacts</li> </ul>	<ul style="list-style-type: none"> <li>This site was considered a <b>no-go</b> due to bird sensitivities</li> </ul>
Site 2:	<ul style="list-style-type: none"> <li>Potential encroachment on protected and conservation areas (i.e. Karoo National Park, the Steenbokkie Private Nature Reserve and the Gouritz Cluster Biosphere Reserve)</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 50 km from the Eskom Droërvier substation</li> </ul>	<ul style="list-style-type: none"> <li>N12</li> <li>N1</li> <li>R306</li> </ul>	<ul style="list-style-type: none"> <li>Protected areas</li> <li>Conservation areas</li> <li>Visual impacts</li> </ul>	<ul style="list-style-type: none"> <li>This site was considered a <b>no-go</b> due to the presence of protected and conservation areas</li> </ul>
Site 3:	<ul style="list-style-type: none"> <li>Adverse impacts and encroachment on the Swartbakens River corridor or catchment which are identified as a CBA 1 and FEPA Sub-catchment, respectively. In addition, the wider catchment of the Swartbakens River is mapped as a terrestrial CBA.</li> </ul>	<ul style="list-style-type: none"> <li>Approximately 60 km from the Eskom Droërvier substation</li> </ul>	<ul style="list-style-type: none"> <li>N12</li> </ul>	<ul style="list-style-type: none"> <li>Aquatic ecosystems</li> <li>Terrestrial ecosystems</li> <li>Visual Impact</li> </ul>	<ul style="list-style-type: none"> <li>This area was considered a <b>no-go</b> due to the sensitive aquatic habitats (CBAs and FEPA).</li> </ul>

On a site specific level, the site selection factors of land availability, environmental sensitivities, distance to the national grid, site accessibility, topography, fire risk, current land use and landowner willingness were all considered to determine the feasible i.e. preferred site.

#### 5.1.5.1 Site Specific Considerations

The preferred site for the proposed Kwagga WEF 3 extends over the following farm portions:

- Portion 1 of the Farm Arthurs Kraal No. 386;
- Portion 2 of the Farm Arthurs Kraal No. 386;
- Portion 3 of the Farm Arthurs Kraal No. 386;
- The Farm Annex Taaibos No. 21;
- Portion 4 of the Farm Cyferfontein No. 115;
- Portion 5 of the Farm Cyferfontein No. 115;
- Portion 6 of the Farm Cyferfontein No. 115;
- Portion 8 of the Farm Cyferfontein No. 115;
- Portion 5 of the Farm Muis Kraal No. 373; and
- Portion 7 of the Farm Muis Kraal No. 373.

At a specific (local) level, sites on the portions of the Arthurs Kraal No. 386, Annex Taaibos No. 21, Cyferfontein No. 115, and Muis Kraal No. 373 farms listed above were deemed suitable due to all the site selection factors noted above (i.e. land availability, environmental sensitivities, distance to the national grid, site accessibility, topography, current land use and landowner willingness) being favourable. The site selection criteria considered by the Project Applicant are discussed in detail below in Table 5.3.

**Table 5.3: Site selection factors and suitability of the site for the development of the proposed Kwagga WEF 3**

FACTOR	SUITABILITY OF THE PREFERRED SITE
<b>Land Availability</b>	The abovementioned farm portions are of a suitable size for the proposed project. The land available for the development of the proposed Kwagga WEF 3 is approximately 9 385 ha in extent. Although this total area was preliminarily assessed by the specialists during the Scoping Phase, and will be assessed in detail during the EIA Phase, only approximately 250 ha (about 0.27% of the total available assessed area) will be required for the proposed WEF and its associated infrastructure.
<b>Environmental Sensitivity</b>	Although the proposed Kwagga WEF 3 site does contain environmental features that will have to be avoided due to its high environmental sensitivities, following these exclusions sufficient suitable land is still available to ensure the development feasibility of the project (see Section 5.1.5 below).
<b>Wind speed Levels</b>	Good to Very Good
<b>Distance to and availability of the Grid</b>	The proposed Kwagga WEF 3 is located approximately 65 km south of the Eskom Droërvier Substation. It however is proposed that a 132 kV overhead transmission line, which will be constructed for the proposed project at a later stage, will extend approximately 23 km between the proposed on-site substation hub at the Kwagga WEF 1 and the existing Droërvier–Proteus 400 kV line that runs parallel to the N12 in a north-south direction and connects Beaufort West with the George/Mossel Bay area further south.

FACTOR	SUITABILITY OF THE PREFERRED SITE
	<i>Note from the CSIR: A separate Environmental Assessment Process will be undertaken at a later stage once the grid connection and the 132 kV power line routing for the proposed Kwagga WEF 3 has been confirmed, and hence does not form part of this Scoping/EIA Process.</i>
<b>Site Accessibility</b>	The main route providing access to the proposed Kwagga WEF 3 is the N12 main road that runs along the proposed project site to the west. The proposed Kwagga WEF 3 will be accessible from the N12 via the R308 Rietbron bound public access gravel road that traverses the southern section of the project site. In addition to the existing internal service 'farm' roads on site, which will be extended to a maximum width of 10 m, where necessary, additional internal service roads are planned to be constructed on the project site of which the width will not exceed 10 m. The length of the internal service road network for the proposed Kwagga WEF 3 is approximately 33 km.
<b>Topography</b>	The proposed Kwagga WEF 3 project site is situated in the Nama Karoo biome and the landscape of the area is a generally relatively flat to rolling terrain with low ridges that are covered with low growing and sparse Karoo shrubland vegetation. The altitude of the site ranges 940 m in the south to 1021 m at Adderskraalkop in the central part of the Kwagga 3 site and 1025 on the western boundary of the Portion 7 of the Farm Muiskraal No. 373. The current land-use is primarily low-density small stock grazing. The peripheral visual boundaries to the north and south of the proposed site are truncated by the Swartberg Mountains in the south and the Nuweveld Mountains in the north.
<b>Fire Risk</b>	The site is located in the Gamka Karoo (NK1 1) vegetation type (Mucina & Rutherford 2006). It occurs on irregular to slightly undulating plains covered with dwarf spiny shrubland, dominated by Karoo dwarf shrubs. Mudrock and sandstones of the Beaufort Group with some Ecca Group shales cover the entire area. Shallow soils leave large areas as uncovered rock. The exposed bedrock in addition to a dwarf sparse shrubland vegetation cover makes this area of extremely low fire risk.
<b>Current Land Use</b>	Agriculture (mainly low-density livestock grazing)
<b>Landowner Willingness</b>	All affected landowners have given their consent and have signed letters of consent for the undertaking of the S&EIA Process and the subsequent development of the proposed Kwagga WEF 3 should EA be granted.

Furthermore, the proposed Kwagga WEF 3 forms part of a larger WEF project cluster that is being proposed by the Project Developer (i.e. the development of three WEFs, namely the Kwagga WEF 1, the Kwagga WEF 2 and the Kwagga WEF 3). The main determining points for the Project Developer was to find suitable, developable land in one contiguous block to (i) optimize design, (ii) minimize construction and operational costs, and (iii) minimize sprawling development and limit the impact footprints. In addition, the proximity to the Eskom Droërvier Substation and the existing Droërvier–Proteus 400 kV line that runs parallel to the N12 was also a major determinant for identifying suitable sites for the proposed WEF development.

It is important to note that the National Department of Environmental Affairs (DEA) in discussion with the Department of Energy (DoE) (now respectively operating as the DFFE and DMRE), was mandated by MinMec to commission a Strategic Environmental Assessment (SEA) to identify the areas in South Africa



that are of strategic importance for Wind and Solar PV development. The Phase 1 Wind and Solar PV SEA was completed in 2015, and was in support of the Strategic Infrastructure Plan (SIP) 8, which focuses on the promotion of green energy in South Africa. The SEA aimed to identify strategic geographical areas best suited for the roll-out of large scale wind and solar PV energy projects, referred to as Renewable Energy Development Zones (REDZs). Through the identification of the REDZs, the key objective of the SEA was to enable strategic planning for the development of large scale wind and solar PV energy facilities in a manner that avoids or minimises significant negative impact on the environment while being commercially attractive and yielding the highest possible social and economic benefit to the country – for example through strategic investment to lower the cost and reduce timeframes of grid access. Following the completion of the SEA, the REDZs were gazetted in February 2018 in GN R114 by the Minister of Environmental Affairs. Following this, the Phase 2 Wind and Solar SEA was commissioned by the DFFE in 2016 and was completed in 2019, which resulted in the identification of three additional REDZs. These REDZs were gazetted for implementation in Government Gazette 44191, Government Notice R142, dated 26 February 2021. One of these three REDZs is the Beaufort West REDZ, which allows for both Wind and Solar developments.

The proposed Kwagga WEF 3 project was identified and selected prior to the gazetting of the Phase 2 REDZs; however, it is nevertheless located approximately 14 km away (at its closest point) from the Beaufort West REDZ. In addition, the proposed Kwagga WEF 3 project site is located approximately 20 km away (at its closest point) from the Central Strategic Transmission Corridor (as gazetted on 16 February 2018, GN R113). Therefore, its proximity to the Beaufort West REDZ and the Central Strategic Transmission Corridor supports the development of a large-scale renewable energy project at the proposed location. The proposed project is therefore linked to the national planning vision for wind and solar development in South Africa.

Given the site selection requirements associated with WEFs and the suitability of the land available on the aforementioned land portions, and the fact that no initial fatal flaws are present on the proposed Kwagga WEF 3 project site, no other site alternatives were considered as part of the S&EIA Process.

**Therefore, the Kwagga WEF 3 project site was deemed feasible and selected as the preferred site i.e. no other site alternatives will be considered in the EIA Phase.**

## 5.1.6 Location Alternatives

---

### 5.1.6.1 Development Footprint within the Preferred Site

As an initial step, the Project Developer consulted the National Web-Based Environmental Screening Tool (<https://screening.environment.gov.za/screeningtool/#/pages/welcome>) to determine a baseline description of the prevalent environmental sensitivities within the proposed preferred project site. Subsequent consultation with the affected landowners was then also undertaken in order to identify possible areas within the proposed project site boundary that should be excluded from development. This then guided the selection of the best suitable developable footprint to be assessed by the specialists from an environmental sensitivities and practical/technical perspective. The study area that was subjected to specialist assessment for purposes of this S&EIA Process comprises the aforementioned affected farm portions (see Section 5.1.5.1) and covers approximately 9 385 ha.

The main project components are the wind turbines themselves, which inform the layout of associated infrastructure such as roads, crane platforms, construction compound and laydown area and substation hubs. Detailed consideration was given to selecting areas that would be suitable for turbine placement or project infrastructure. In the selection process, some areas within the preferred project site were eliminated for the following reasons:

- Wind resources: To ensure that a project has a good chance of being constructed in the highly competitive REIPPPP space, wind turbines must be placed in the areas with the highest wind resources. Typically, ridgelines prove most suitable in this respect due to flow acceleration effects whereas average wind speeds in the valleys between tend to be very low for the opposite reasons.
- Buildable areas: Consideration of all preliminary technical and environmental parameters (prior to the S&EIA Process) which demarcate where turbine placement is feasible and exclude areas where not. This is based on maximum allowable slopes, setbacks from farmsteads, setbacks from neighbouring farms required by provincial land-use regulations and finally required buffers from Eskom power lines. In addition, the process of identifying buildable areas takes into account certain 'no-go' zones to avoid potential environmental sensitivities identified by specialists.
- Landowner input: The landowners were provided with the opportunity to state preference for certain areas of their properties to be excluded from the development. This meant that some areas of potential development would be excluded due to landowner preferences.

Preliminary specialist assessment of the study area during the Scoping Phase through desktop based analysis and fieldwork methodologies (where required) resulted in the determination and verification of environmental sensitivities present on site. The proposed development footprint is based on a preliminary project layout of the proposed Kwagga WEF 3, which was assessed by the specialists during the Scoping Phase to indicate sensitive areas that should preferably be avoided, and comprises an estimated 250 ha which is approximately 0.27 % of the total study area. Based on these scoping level findings from the specialist assessments, a combined environmental sensitivity map has been produced (included as Figure 5.5 and Figure 5.6 below). Figure 5.5 shows the identified and assessed environmental sensitivities such as agricultural potential, terrestrial biodiversity, watercourse features, avifauna and bats 'no-go' areas, and sensitive heritage and noise features, present within the study area, but excluding the potential visual sensitivity that is associated with a typical wind farm development. This map therefore indicates that the inherent sensitivity of the preferred project site is generally medium to low and is therefore more than suited for the development of the proposed WEF project given that all measures be taken to avoid, manage or mitigate potential impacts that may be imposed by the proposed development. Figure 5.6 shows the same identified and assessed environmental sensitivities as depicted in Figure 5.5 but including the potential visual impact that the proposed development of wind turbines in this area could have on the receiving environment.

During the EIA Phase, the specialists will, based on their impact assessment of the proposed development footprint of the Kwagga WEF 3 following the Scoping Phase, refine their sensitivity mapping of the proposed project layout with recommendations regarding micro siting and selection of infrastructure location alternatives, as well as required mitigation measures and management actions. As a result, the preferred project layout of the proposed Kwagga WEF 3 within the identified development footprint will be determined, whereby any sensitive features identified and confirmed by the specialist impact assessments, will be avoided, remedied or mitigated by the proposed project layout. Although all existing

access roads will be utilised for the proposed project and have been assessed during the Scoping Phase, the planned internal road network including all additional access service roads to be constructed will be confirmed as part of the project layout, which will also be to detailed specialist assessment during the EIA Phase.

**The preferred development footprint of the Kwagga WEF 3 project** is shown in **Error! Reference source not found.5** and Figure 5.6 below. Therefore, **no other alternative development footprints within the preferred project site** will be considered during the EIA Phase. The **proposed project layout of the Kwagga WEF 3 infrastructure** is also shown in **Error! Reference source not found.5** and Figure 5.6 below. Therefore, **no other alternative project layouts within the preferred development footprint** will be considered during the EIA Phase.

#### **5.1.6.2 Project Infrastructure Location Alternatives**

Various infrastructure alternatives are being considered and will be assessed in this S&EIA Process. These include alternative locations for the construction compound and laydown area and substation hubs, as well as alternative technologies for the Battery Energy Storage Systems (BESS).

- **Construction Compound and Laydown Area:**

Three possible locations or placement alternatives for the construction compound and laydown area have been identified at the proposed Kwagga WEF 3 project site and will be taken forward into the EIA Phase for detailed specialist assessment. These are listed below:

- Construction Compound and Laydown Area 1 is located on Portion 7 of the Farm Muis Kraal No. 373, directly east of the main access point to the proposed WEF, along the R308 Rietbron bound public access gravel road.
- Construction Compound and Laydown Area 2 is located on Portion 7 of the Farm Muis Kraal No. 373, north-east of Substation Hub Location Alternative 2, along the R308 Rietbron bound public access gravel road.
- Construction Compound and Laydown Area 3 is located on Portion 7 of the Farm Muis Kraal No. 373 east of Substation Hub Location Alternative 2, along the existing internal farm access road.
- Construction Compound and Laydown Area 3 is located on Portion 3 of the Farm Arthurs Kraal No. 386 in between turbine 28 and 15, along the existing internal farm access road.

The construction compound and laydown area will comprise an approximate footprint of about six (6) ha (300 m x 200 m).

- **Substation Hubs**

The proposed project will include two on-site substation hubs incorporating a facility substation, switchyard, collector infrastructure and associated O&M buildings. Each substation location will have a maximum development footprint of 25 ha and built infrastructure will not exceed 10 m in height. Three possible locations or placement alternatives for the substation hubs have been identified at the proposed Kwagga WEF 3 project site and will be taken forward into the EIA Phase for detailed specialist assessment. These are listed below:

- Substation Hub Location Alternative 1 is located on Portion 3 of the Farm Arthurs Kraal No. 386 in between turbine 31, turbine 14 and turbine 2, in the vicinity of the R308 Rietbron bound public access gravel road.
- Substation Hub Location Alternative 2 is located on Portion 7 of the Farm Muis Kraal No. 373 south-west of Construction Compound and Laydown Area Alternative 2.
- Substation Hub Location Alternative 3 is located on Portion 7 of the Farm Muis Kraal No. 373 in between four, in the vicinity of Construction Compound and Laydown Area Alternative 1.

### 5.1.7 Technology Alternatives

The Project Developer is considering several types of electrochemical BESS technologies for inclusion at the proposed Kwagga WEF 3. The electrochemical BESS technologies that are being considered in the EIA include the following:

- Lead Acid and Advanced Lead Acid BESS;
- Lithium ion BESS;
- Nickel based BESS (i.e. Nickel-Cadmium (NiCd) and nickel–metal hydride (NiMH));
- High Temperature (NaS, Na-NiCl<sub>2</sub>, Mg/PB-Sb) BESS; and
- Redox Flow Batteries (RFB): Vanadium-Vanadium Redox Flow Battery (VRFB), Zinc-iron Flow Battery (Zn-Fe), Zinc-Bromine Flow Battery (Zn-Br).

The preferred BESS technology to be employed at the Kwagga WEF 3 will be confirmed in the EIA Phase.

**Table 5.4: Advantages and disadvantages associated with the BESS technologies being considered for the proposed Kwagga WEF 3 (Sources: Parsons, 2017; Zhang *et al.*, 2016)**

BESS technologies being considered	Advantages	Disadvantages
<u>Lead Acid and Advanced Lead Acid BESS (Valve regulated (VRLA and fluid lead acid (FLA))</u>	<ul style="list-style-type: none"> <li>▪ Mature technology.</li> <li>▪ Relatively low cost associated to production of the BESSs.</li> <li>▪ Advanced Lead Acid BESS have a longer operational life span, better temperature performance and lower initial costs than traditional Lead Acid BESS.</li> <li>▪ VRLA BESS are solid-state i.e. pose less risk to the environment in terms of spillages.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Contain toxic chemicals, which can be harmful to humans and the environment.</li> <li>▪ Lack of adequate maintenance can cause leakage of electrolytes.</li> <li>▪ FLA BESS require high maintenance therefore are not preferred for large scale energy storage.</li> </ul>
<u>Lithium ion BESS</u>	<ul style="list-style-type: none"> <li>▪ Sealed systems i.e. pre-assembled off site and delivered to site for placement (i.e. carries less potential risk to the environment in terms of spillages).</li> <li>▪ Does not require active cooling unlike other BESS technologies.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Explosions and fires can occur as result of electrolytes mixing when a breach occurs. A breach can be caused by:                             <ul style="list-style-type: none"> <li>- improper maintenance near operating temperature,</li> <li>- thermal expansion, or</li> <li>- freeze thaw cycles.</li> </ul> </li> </ul>

<p><u>Nickel based BESS (Nickel-Cadmium (NiCd) and nickel-metal hydride (NiMH))</u></p>	<ul style="list-style-type: none"> <li>▪ Vented <u>nickel based</u> BESS are considered safer and more economical due to low-pressure release valve facilitating the release of oxygen and hydrogen in cases of overcharging or rapid discharging.</li> <li>▪ NiMH BESS cells do not contain any toxic chemicals, unlike NiCd BESS, which contain cadmium.</li> </ul>	<ul style="list-style-type: none"> <li>▪ NiCd BESS cells contain cadmium, which is considered toxic and harmful.</li> </ul>
<p><u>High Temperature</u></p>	<ul style="list-style-type: none"> <li>▪ Sealed system i.e. pre-assembled off site and then delivered to site for placement poses less risk to the environment in terms of spillages.</li> <li>▪ Well-known for its long-term efficiency and minimal electrode degradation. The liquid nature of the components results in minimal stress experienced by the electrodes, which would otherwise degrade and crack if in a solid state.</li> <li>▪ BESS comprise of cells that are hermetically sealed and contain fire mitigation measures such as cells being surrounded with sand (e.g. NaS BESS).</li> </ul>	<ul style="list-style-type: none"> <li>▪ General high fire risk associated with High Temperature BESS technologies.</li> <li>▪ Operate at high temperatures (approximately 300°C). This therefore require active heating in order to facilitate ion transfer and maintain the molten state of some/all of the BESS components increase operational costs.</li> </ul>
<p><u>Redox Flow Batteries (RFB): Vanadium-Vanadium Redox Flow Battery (VRFB), Zinc-iron Flow Battery (Zn-Fe), Zinc-Bromine Flow Battery (Zn-Br)</u></p>	<ul style="list-style-type: none"> <li>▪ RFBs are self-discharging systems therefore generally require little maintenance.</li> <li>▪ High economic efficiency of <u>VRFB BESS</u> as Vanadium has a high economic value and can be recycled.</li> <li>▪ Low costs of the active materials required for <u>Zn-Br</u> BESS</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of spillage tends to be higher for Flow Batteries as opposed to sealed solid-state BESS as the storage tanks of Flow Batteries, may be subjected to leaks or spills during the replacement or blending of the electrolyte, or during transport of the battery to and from site.</li> </ul>

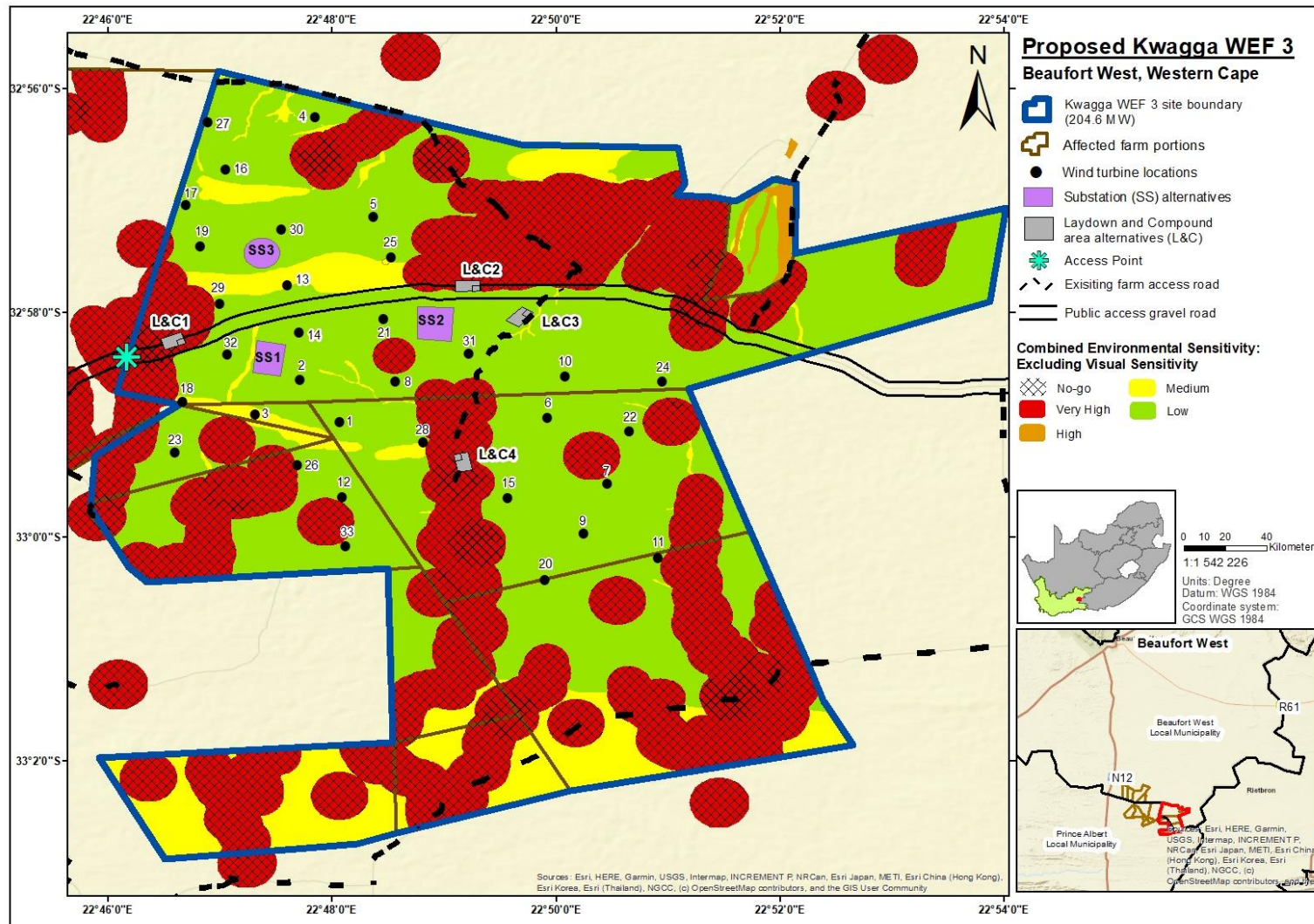


Figure 5.5: Preliminary combined environmental sensitivity map (excluding Visual sensitivity) for the proposed Kwagga WEF 3 project site

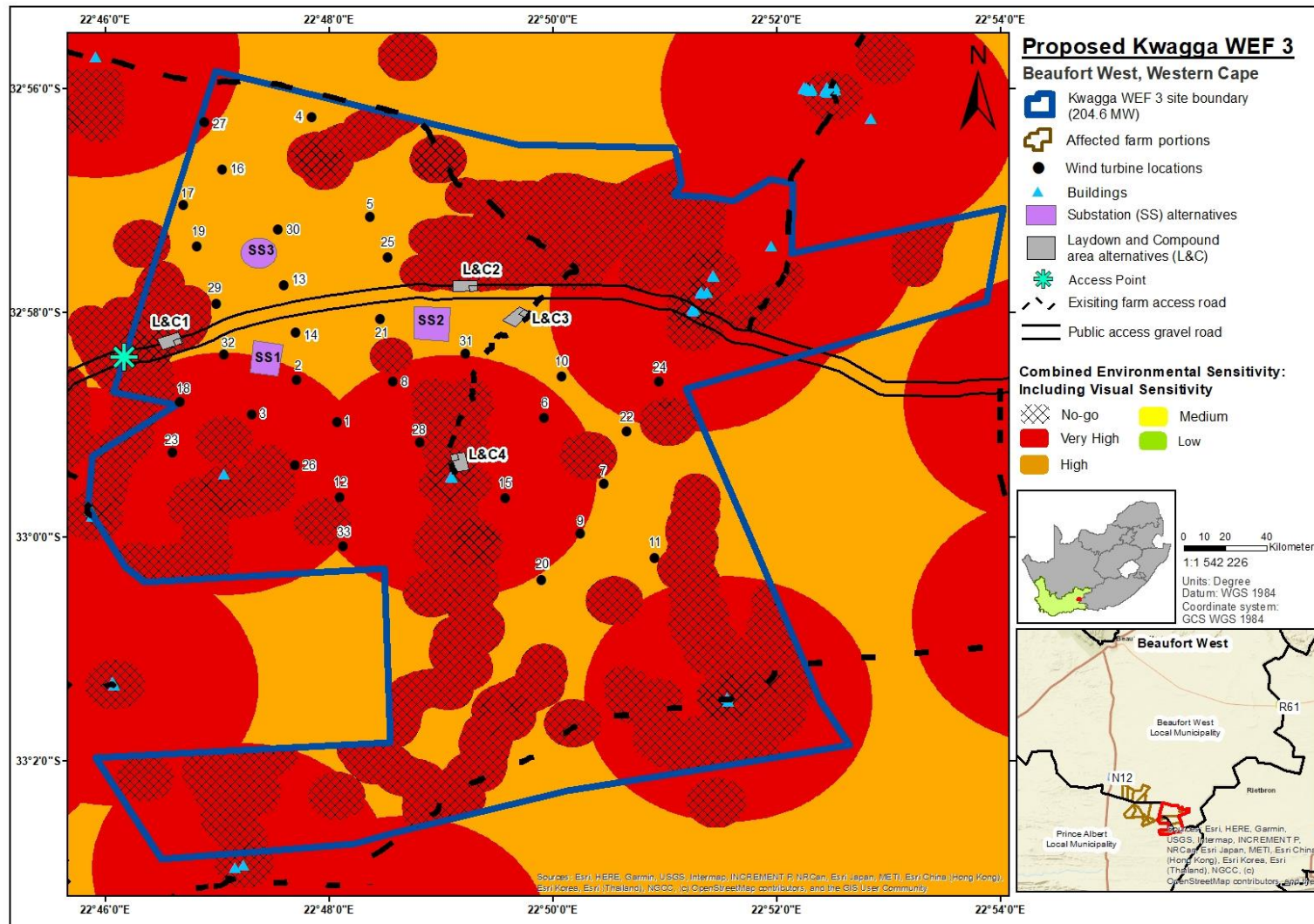


Figure 5.6: Preliminary combined environmental sensitivity map (including Visual sensitivity) for the proposed Kwagga WEF 3 project site

## 5.2 Summary of Legislative Requirements for the Assessment of Alternatives

As noted in Chapter 1 of this Scoping Report, the 2014 NEMA EIA Regulations (as amended) have certain requirements in terms of the selection of the **proposed preferred activity, site and location of the development footprint within the site**. Table 5.5 below indicates the requirements of the 2014 NEMA EIA Regulations (as amended) in terms of the process leading to the preferred activity, site and development footprint location alternatives. Table 5.5 also includes a response from the EAP showing how the requirements of the 2014 NEMA EIA Regulations (as amended) have been addressed in this report.

**Table 5.5: Requirements for the consideration of Alternatives based on the 2014 NEMA EIA Regulations (as amended)**

	Section of the EIA Regulations	Requirements for an EIA Report in terms of Appendix 3 of the 2014 NEMA EIA Regulations (GN R982)	Response from EAP
1	Appendix 2 – 2 – 1 – g – (i)	2. (1) A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include:  (g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including:  (i) details of all the alternatives considered;	Refer to Sections 5.1, 5.2 (i.e. this section) and 5.3 of this chapter which provides a description of the process that led to the identification of the preferred alternatives and which alternatives will be taken further into the EIA Phase for assessment.
2	Appendix 2 – 2 – 1 – g – (ii)	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Refer to Chapter 4 of this Scoping Report and Appendix D, which details the process followed in terms of Public Participation and includes the supporting documentation.
3	Appendix 2 – 2 – 1 – g – (iii)	(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	This will be completed following the release of the Draft Scoping Report.
4	Appendix 2 – 2 – 1 – g – (iv)	(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Refer to Section 5.1.6 and 5.1.7 of this chapter for a description of the environmental sensitivities associated with the preferred site. Section 5.1.5 of this chapter also provides information on environmental attributes that were considered in the selection of the preferred site for the proposed WEF. Chapter 3 of this Scoping Report also



	Section of the EIA Regulations	Requirements for an EIA Report in terms of Appendix 3 of the 2014 NEMA EIA Regulations (GN R982)	Response from EAP
			includes a description of the wider affected environment linked to the proposed Kwagga WEF 3.
5	Appendix 2 – 2 – 1 – g – (v)	<p>(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts:</p> <p>(aa) can be reversed;</p> <p>(bb) may cause irreplaceable loss of resources; and</p> <p>(cc) can be avoided, managed or mitigated;</p>	<p>In terms of the no-go alternative, this is not considered as the preferred alternative, as discussed in Section 5.1.1 of this chapter. The impacts and risks of both adopting and not adopting the no-go alternative have been discussed in this section.</p> <p>Feedback on the impacts and risks that informed the identification of the preferred activity (i.e. generation of energy from wind resources) is provided in Section 5.1.4 above. Such feedback relating to the preferred site and location of the development footprint within the site is captured in Chapter 6 of this Scoping Report. This chapter includes a high-level assessment of impacts and risks of the Kwagga WEF 3 at the preferred site and location of the development footprint within the site, and it includes a description and assessment of the nature, significance, consequence, extent, duration and probability of the identified impacts for the preferred alternatives, as well as an assessment of the reversibility and irreplaceability of the potential identified impacts, as well as the degree to which the identified impacts can be avoided, managed or mitigated.</p> <p>Furthermore, various technologies for the BESS will be assessed in terms of impacts and risks in the EIA Phase. In addition, four location alternatives for the construction compound and laydown area, and six location alternatives for the substation hubs will be assessed in terms of impacts and risks in the EIA Phase. The preferred BESS technology, substation locations, and construction compound and laydown area will be confirmed in the EIA Phase.</p>
6	Appendix 2 – 2 – 1 – g – (vi)	(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and	Refer to Chapter 7 of this Scoping Report for the impact assessment methodology that was used in the assessment of impacts captured in Chapter 6. The same impact assessment methodology will be

	Section of the EIA Regulations	Requirements for an EIA Report in terms of Appendix 3 of the 2014 NEMA EIA Regulations (GN R982)	Response from EAP
		probability of potential environmental impacts and risks associated with the alternatives;	used in the EIA Phase and as such has only been mentioned once in the Scoping Report.
7	Appendix 2 – 2 – 1 – g – (vii)	(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Feedback on the impacts and risks that informed the identification of the preferred activity (i.e. generation of energy from wind resources) is provided in Section 5.1.4 above. Such feedback relating to the preferred site and location of the development footprint within the site is captured in Chapter 6 of this Scoping Report. This chapter includes a high-level assessment of impacts and risks of the Kwagga WEF 3 at the preferred site and location of the development footprint within the site.
8	Appendix 2 – 2 – 1 – g – (viii)	(viii) the possible mitigation measures that could be applied and level of residual risk;	Feedback on the impacts and risks that informed the identification of the preferred activity (i.e. generation of energy from wind resources) is provided in Section 5.1.4 above. Such feedback relating to the preferred site and location of the development footprint within the site is captured in Chapter 6 of this Scoping Report. This chapter includes a high-level assessment of impacts and risks of the Kwagga WEF 3 at the preferred site and location of the development footprint within the site.
9	Appendix 2 – 2 – 1 – g – (ix)	(ix) the outcome of the site selection matrix;	Refer to Section 5.1.5 of this chapter for information on the process that led to the identification of the preferred site.
10	Appendix 2 – 2 – 1 – g – (x)	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	Where no further alternatives were considered, a motivation has been provided in this chapter.
11	Appendix 2 – 2 – 1 – g – (xi)	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Refer to Section 5.3 of this chapter for a concluding statement.

### 5.3 Concluding Statement of Preferred Alternatives

As per Appendix 2, Section 2 (1) (g) (xi) of the 2014 NEMA EIA Regulations (as amended), and based on Section 5.1 above, the following alternatives will be taken forward into the EIA Phase for further assessment:

- **No-Go Alternative:**

- The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not constructing the proposed Kwagga WEF 3. This alternative would result in no environmental impacts on the site or surrounding local area as a result of the WEF. It will provide a baseline against which other alternatives will be compared and considered during the EIA Phase. The no-go alternative will be assessed in detail by all the specialists on the project team.
- **Land-Use Alternative:**
  - The current land-use is agriculture, specifically low density small stock grazing and this has been identified as an alternative land-use for the site. The agricultural potential of the site is generally low and not deemed feasible to assess further during the EIA Phase. The development of a WEF at the proposed project site is more favourable than the agricultural land-use alternative and is therefore the preferred land-use alternative.
- **Type of Activity Alternative:**
  - This relates to the generation of electricity from a renewable energy source, and in this particular case, from wind. The generation of electricity from a renewable energy source was the only activity considered by the Applicant, and thus considered in this DSR. No other activity types were considered or deemed appropriate based on the expertise of the Applicant.
- **Renewable Energy Alternatives:**
  - Given the above, the development of a WEF is the preferred and only renewable energy technology to be developed on site because:
    - The site has a good sufficient wind resource based on on-site measurements and wind resource modelling with limited environmental impact;
    - Solar energy, a potential developable technology on site, would not be as economically viable compared to wind development at this location mainly due to the scarcity of water; and
    - The 2019 IRP indicates a higher allocation target towards wind energy compared to solar energy.
- **Preferred Site and Development Footprint within the site:**
  - The preferred project site for the proposed Kwagga WEF 3 comprises the following farm portions:
    - Portion 1 of the Farm Arthurs Kraal No. 386;
    - Portion 2 of the Farm Arthurs Kraal No. 386;
    - Portion 3 of the Farm Arthurs Kraal No. 386;
    - The Farm Annex Taaibos No. 21;
    - Portion 4 of the Farm Cyferfontein No. 115;
    - Portion 5 of the Farm Cyferfontein No. 115;
    - Portion 6 of the Farm Cyferfontein No. 115;
    - Portion 8 of the Farm Cyferfontein No. 115;
    - Portion 5 of the Farm Muis Kraal No. 373; and

- Portion 7 of the Farm Muis Kraal No. 373.
  - The development footprint within the preferred project site was determined through a screening exercise of the project study area by the specialist team (specialists input have been provided during the Scoping Phase and are included in Appendix F of this Scoping Report) as well as through consultation with the affected landowners to identify sensitive areas that should preferably be avoided and thus are excluded from development (i.e. 'no-go' areas). The proposed development footprint of the proposed Kwagga WEF 3 will comprise approximately 250 ha.
  - The preferred project layout for the proposed Kwagga WEF 3 will be determined and confirmed following the input from the various specialists during the EIA Phase. The specialist assessments will aim to identify various environmental sensitivities within the development footprint that should be avoided, which will be taken into consideration during the determination and refinement of the preferred project layout of the WEF.
  - Although all existing access roads will be utilised for the proposed project and have been assessed during the Scoping Phase, the planned internal road network on site including all additional access service roads to be constructed will be confirmed as part of the project layout, which will be subject to detailed specialist assessment during the EIA Phase.
  
- **Project Infrastructure Location Alternatives**
  - Four possible locations for the construction compound and laydown area will be assessed in the EIA Phase and the preferred alternative will thereafter be selected.
  - Eight possible locations for the substation hubs will be assessed in the EIA Phase and the preferred alternative will thereafter be selected.
  
- **Technology Alternatives**
  - The following types of electrochemical BESS technologies will be assessed in the EIA Phase and the preferred alternative will thereafter be selected:
    - Lead Acid and Advanced Lead Acid BESS;
    - Lithium ion BESS;
    - Nickel based BESS (i.e. Nickel-Cadmium (NiCd) and nickel–metal hydride (NiMH));
    - High Temperature (NaS, Na-NiCl<sub>2</sub>, Mg/PB-Sb) BESS; and
    - Redox Flow Batteries (RFB): Vanadium-Vanadium Redox Flow Battery (VRFB), Zinc-iron Flow Battery (Zn-Fe), Zinc-Bromine Flow Battery (Zn-Br).

# CHAPTER 6:

## ISSUES AND POTENTIAL IMPACTS





# Table of Contents

---

<b>6</b>	<b>ISSUES AND POTENTIAL IMPACTS</b>	<b>6-3</b>
<b>6.1</b>	<b>Aquatic and Terrestrial Biodiversity and Species</b>	<b>6-3</b>
6.1.1	Key Issues	6-3
6.1.2	Aquatic Biodiversity and Species Impacts	6-3
6.1.2.1	Assessment to be undertaken during the EIA Phase	6-4
6.1.3	Terrestrial Biodiversity and Species Impacts	6-4
6.1.3.1	Assessment to be undertaken during the EIA Phase	6-5
<b>6.2</b>	<b>Visual Impacts</b>	<b>6-5</b>
6.2.1	Key Issues	6-5
6.2.2	Assessment to be undertaken during the EIA Phase	6-6
<b>6.3</b>	<b>Heritage (including Archaeology and Cultural Landscape)</b>	<b>6-6</b>
6.3.1	Key Issues	6-6
6.3.2	Assessment to be undertaken during the EIA Phase	6-7
<b>6.4</b>	<b>Palaeontology</b>	<b>6-7</b>
6.4.1	Key Issues	6-7
6.4.2	Assessment to be undertaken during the EIA Phase	6-7
<b>6.5</b>	<b>Bats</b>	<b>6-8</b>
6.5.1	Key Issues	6-8
6.5.2	Assessment to be undertaken in the EIA phase	6-8
<b>6.6</b>	<b>Avifauna</b>	<b>6-9</b>
6.6.1	Key Issues	6-9
6.6.2	Assessment to be undertaken during the EIA Phase	6-10
<b>6.7</b>	<b>Soils and Agricultural Potential</b>	<b>6-10</b>
6.7.1	Assessment to be undertaken during the EIA Phase	6-11
<b>6.8</b>	<b>Socio-Economic</b>	<b>6-11</b>
6.8.1	Key Issues	6-11
6.8.2	Assessment to be undertaken during the EIA	6-12
<b>6.9</b>	<b>Traffic</b>	<b>6-12</b>
6.9.1	Key Issues	6-12
6.9.2	Assessment to be undertaken during the EIA Phase	6-13
<b>6.10</b>	<b>Noise</b>	<b>6-13</b>
6.10.1	Key Issues	6-13
6.10.2	Assessment to be undertaken during the EIA Phase	6-14
<b>6.11</b>	<b>Civil Aviation</b>	<b>6-14</b>
<b>6.12</b>	<b>Defence</b>	<b>6-15</b>

<b>6.13</b>	<b>Impacts relating to BESS</b>	<b>6-15</b>
<b>6.14</b>	<b>Impacts relating to Wake Loss</b>	<b>6-15</b>
<b>6.15</b>	<b>Scoping-level Impact Assessment</b>	<b>6-16</b>
<b>6.16</b>	<b>Conclusion</b>	<b>6-43</b>
<b>6.17</b>	<b>Cumulative Impacts</b>	<b>6-43</b>



## List of Tables

Table 6.1:	Scoping level assessment of potential risks/impacts of the proposed Kwagga WEF 3 project, including high-level mitigation measures	6-17
------------	--	------

## 6 ISSUES AND POTENTIAL IMPACTS

---

The purpose of this chapter is to present a synthesis of the key issues and potential impacts that have been identified thus far as part of the Scoping Process. These issues and impacts have been identified via the environmental status quo of the receiving environment (environmental, social and heritage features present on site) (discussed in Chapter 3 of this Scoping Report), a review of environmental impacts from other similar wind energy projects, and scoping inputs from the specialists that form part of the project team. The Terms of Reference (ToRs) for the Specialist Assessments that have been deemed necessary, based on the relevant issues and impacts discussed within this chapter, are incorporated into the Plan of Study for the EIA (PSEIA) that is discussed in Chapter 7 of this Scoping Report.

### 6.1 Aquatic and Terrestrial Biodiversity and Species

#### 6.1.1 Key Issues

---

The proposed Wind Energy Facility (WEF) development will result in a number of actions that will arise in both the construction and operational phases of the project and include inter alia:

- Possible levelling of topographic features;
- Some clearance of vegetation;
- Establishment of hard paved roadways and related surfaces;
- Excavation and construction of structures using wet trades;
- Establishment of transformers and substations;
- Establishment of wind turbines and crane platforms;
- Cabling at a sub-surface level;
- Fencing of the site; and
- Other supportive infrastructure.

The construction phase is a relatively short-term undertaking, although “intensive” in terms of the rapid physical changes that arise on site. The operational phase is more benign in nature, with limited staff and minor activity in and around the proposed project. Given this situation, it is expected that the following impacts of an ecological nature may arise during the construction and operational phases.

#### 6.1.2 Aquatic Biodiversity and Species Impacts

---

Most of the potential aquatic ecosystem impacts of the proposed project are likely to take place during the construction phase. The potential aquatic ecosystem impacts of all the proposed activities include:

##### **Construction Phase:**

- Disturbance and possible loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota;
- The removal of indigenous riparian and instream vegetation that has the potential to reduce the ecological integrity and functionality of the watercourses;



- Water demand for construction could place stress on the existing available water resources should external water sources not be utilised;
- Road crossing structures if not adequately designed could impede flow in the watercourses;
- Alien vegetation infestation within the aquatic features due to disturbance; and
- Increased sedimentation and risks of contamination of surface water runoff during construction.

**Operational Phase:**

- Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained;
- Modified runoff characteristics from hardened surfaces at the turbines and the substations, as well as along the access roads that have the potential to result in erosion of hillslopes and watercourses; and
- Possible increase in water consumption and potential for water quality impacts (such as contamination from sewage generated on site) as a result of the operation of the site.

**Decommissioning Phase:**

- An increased disturbance of aquatic habitat due to the increased activity on the site; and
- Increased sedimentation and risks of contamination of surface water runoff.

**6.1.2.1 Assessment to be undertaken during the EIA Phase**

The Specialist is required to compile an Aquatic Biodiversity and Species Impact Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Aquatic Biodiversity' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.3 in Chapter 7 of this Scoping Report for the ToRs specified for the Aquatic Biodiversity and Species Impact Assessment to be undertaken.

**6.1.3 Terrestrial Biodiversity and Species Impacts**

---

The following is a list of potential impacts on the terrestrial ecosystems and species that may occur due to the proposed development:

**Construction Phase:**

*Direct Impacts*

- The clearing of natural vegetation and resultant loss of faunal habitat;
- The loss of endangered, threatened, protected and endemic plants/animals;
- Direct faunal mortalities due to construction activities and increased traffic;
- Increased human activity, noise and light levels; and
- Increased dust deposition.

*Indirect impacts*

- Establishment of alien invasive vegetation as a result of the clearing of vegetation;
- Increased stormwater run-off and erosion; and

- Changes in animal behaviour.

#### **Operational Phase:**

##### *Direct Impacts*

- Direct faunal mortalities; and
- Increased human activity, light and noise levels.

##### *Indirect impacts*

- Establishment of alien invasive vegetation will continue; and
- Changes in animal behaviour.

#### **Decommissioning Phase:**

##### *Direct Impacts*

- Some clearing of natural vegetation due to removal of infrastructure;
- Possible ingestion or ensnarement of animals due to waste material lying around; and
- Increased dust deposition.

##### *Indirect impacts*

- Establishment of alien invasive vegetation; and
- Increased erosion and stormwater run-off.

#### **6.1.3.1 Assessment to be undertaken during the EIA Phase**

The Specialist is required to compile a Terrestrial Biodiversity and Species Impact Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Terrestrial Biodiversity' (GG 43110 / GN R320, 20 March 2020)). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.2 in Chapter 7 of this Scoping Report for the ToRs specified for the Terrestrial Biodiversity and Species Impact Assessment to be undertaken.

## **6.2 Visual Impacts**

### **6.2.1 Key Issues**

---

Activities that will be undertaken as part of the construction and operational phases of the proposed project that will result in potential visual impacts are discussed below. The key visual issues identified by the Specialist during the Scoping Phase of this EIA process include the following:

- Potential scarring in the landscape caused by site clearance and earthworks for inter alia access roads, laydown areas, construction camps, foundations and assembly platforms;
- Potential visual intrusion and increased dust emissions during construction from heavy machinery and vehicle traffic; and

- Potential visual intrusion in the landscape during operations from inter alia the wind turbines, on-site substations, and operational and maintenance structures.

The following potential direct impacts on visually sensitive and landscape receptors due to the proposed development include:

**Construction Phase:**

- Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on existing visual receptors;
- Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors;
- Potential scarring in the landscape caused by earthworks and excavations;
- Potential visual impact of security and construction lighting on the nightscape of the region; and
- Increased dust emissions from heavy machinery and vehicle traffic.

**Operational Phase:**

- Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on existing visual receptors;
- Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors; and
- Potential visual impact of on-site security lighting and red-flashing warning lights on top of the turbine hubs on the rural nightscape of the region.

**Decommissioning Phase:**

- Visual intrusion and increased dust emissions due to decommissioning activities including disassembly of project components, heavy machinery, increased vehicle traffic and rehabilitation; and
- Potential visual impact of security and construction lighting on the nightscape of the region.

### **6.2.2 Assessment to be undertaken during the EIA Phase**

---

The Specialist is required to undertake a Visual Impact Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020), as well as in terms of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMPr that will form part of the EIA Report. Refer to Section 7.8.11 in Chapter 7 of this Scoping Report for the ToRs specified for the Visual Impact Assessment to be undertaken.

## **6.3 Heritage (including Archaeology and Cultural Landscape)**

### **6.3.1 Key Issues**

---

Both direct (destruction through the proposed project activities) and indirect (destruction through unintended consequences or deviations from the authorised work and footprint, and through visual intrusion into a sensitive area) impacts may occur mainly during the construction and decommissioning phases of the proposed project.

The potential direct heritage impacts identified during the Scoping Phase of this EIA process include:

- **Construction Phase:**
  - The destruction or disturbance of archaeological artefacts or sites;
  - The destruction or disturbance of graves or burial sites;
  - The destruction or disturbance of historic built infrastructure; and
  - Visual intrusion of visually sensitive heritage resources and/or cultural landscape features, which might erode its association with intangible heritage.
- **Operational and Decommissioning Phases:**
  - Visual intrusion of visually sensitive heritage resources and/or cultural landscape features, which might erode its association with intangible heritage.

### 6.3.2 Assessment to be undertaken during the EIA Phase

---

The Heritage Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020), as well as in terms of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.6 in Chapter 7 of this Scoping Report for the ToRs specified for the Heritage Impact Assessment to be undertaken.

## 6.4 Palaeontology

### 6.4.1 Key Issues

---

The destruction or disturbance of palaeontological resources (isolated fossil materials) is considered the key potential impact from the proposed development, either directly or indirectly and mainly during the construction and decommissioning phases.

The potential direct impacts identified during the scoping assessment are:

- **Construction and Decommissioning Phases:**
  - Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations.

### 6.4.2 Assessment to be undertaken during the EIA Phase

---

The Palaeontologist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020), as well as in terms of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The Palaeontological Impact Assessment will form part of the Heritage Impact Assessment as described in Section 6.3 above. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.7 in Chapter 7 of this Scoping Report for the ToRs specified for the Palaeontological Impact Assessment to be undertaken.

## 6.5 Bats

### 6.5.1 Key Issues

---

Wind energy facilities have the potential to affect bats directly through collisions and barotrauma resulting in mortality, and indirectly through the modification of habitats. Habitat loss and displacement impacts for the proposed project are relatively small and should not pose a significant risk because the development footprint (i.e. turbines, roads, buildings, etc.) is relatively small. Direct impacts to bats will be limited to species that make use of the airspace in the rotor-swept zone of the wind turbines. The key potential direct impacts on bats from the proposed development activities that have been identified in the Scoping Phase include:

- **Construction Phase:**
  - Roost disturbance;
  - Roost destruction; and
  - Displacement of bats due to habitat loss / habitat transformation.
- **Operational Phase:**
  - Mortality of bats due to turbine collisions while commuting/foraging and/or due to barotrauma;
  - Mortality of bats due to turbine collisions during migrations; and
  - Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines.
- **Decommissioning Phase:**
  - Displacement of bats due to disturbance associated with the decommissioning activities.

### 6.5.2 Assessment to be undertaken in the EIA phase

---

A 12-month pre-construction bat monitoring programme was designed and acoustic monitoring was undertaken across the entire project study area in accordance with the *“South African Good Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities”* (Sowler *et.al.* 2017). The bat monitoring commenced in April 2019 and was completed in July 2020. The findings from the 12-month pre-

construction bat monitoring programme informed the scoping level assessment of potential impacts on bats for the proposed project.

*Note from the CSIR: The 12-month pre-construction bat monitoring for the proposed Kwagga WEF 3 project was conducted prior to the enforcement of the 5<sup>th</sup> Edition of the “South African Good Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities” dated 8 June 2020 (MacEwan et.al. 2020).*

The Bat Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with ‘Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed’ (GG 43110 / GNR 320, 20 March 2020), as well as in terms of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.9 in Chapter 7 of this Scoping Report for the ToRs specified for the Bats Impact Assessment to be undertaken.

## 6.6 Avifauna

### 6.6.1 Key Issues

---

It is important to assess the impacts of wind energy facilities, and to base this assessment on a thorough investigation of the local avifauna prior to construction, which was sufficiently done for the proposed WEF development. A 12-month pre-construction avifaunal monitoring programme was implemented by the Avifaunal Specialist at the proposed Kwagga WEF 3 study area during the course of 2019 and 2020. The 12-month pre-construction monitoring programme was designed in accordance with the latest version of the “Best Practice Guidelines for Avian Monitoring and Impact Mitigation at proposed Wind Energy Development Areas in Southern Africa” (Jenkins et.al. 2015).

The key potential impacts on the avifauna, that are all considered direct impacts, identified for the proposed WEF and its associated infrastructure include:

- **Construction Phase:**
  - Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines and associated infrastructure; and
  - The noise and movement associated with the construction activities at the project site will be a source of disturbance, which would lead to the displacement of avifauna from the area.
- **Operational Phase:**
  - Avifauna mortality and injury through collisions with the wind turbines; and
  - Electrocuting of priority bird species on the internal electrical grid infrastructure.
- **Decommissioning Phase:**

- The noise and movement associated with the activities at the project site will be a source of disturbance, which would lead to the displacement of avifauna from the area.

Based on the findings from the 12-month pre-construction avifaunal monitoring, the Avifaunal Specialist has concluded that the level of avifaunal activity and overall abundance of priority species at the proposed project site is regarded as low. Impacts at this stage are not viewed as being of an extent or significance so as to preclude development and it is the Specialist' expert opinion that the project may proceed to the EIA Phase.

### 6.6.2 Assessment to be undertaken during the EIA Phase

---

The Avifauna Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Avifauna by Onshore Wind and/or Solar PV Energy Generation Facilities where the Electricity Output is 20 MW or more' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.4 in Chapter 7 of this Scoping Report for the ToRs specified for the Avifaunal Impact Assessment to be undertaken.

## 6.7 Soils and Agricultural Potential

---

The significance of all potential impacts on agricultural resources is considered low and is mitigated by two factors; (a) the fact that the proposed development site is situated on land of limited agricultural potential that is only viable for low density grazing, and (b) the agricultural footprint of the proposed development (including all associated infrastructure and road network), that results in the exclusion of land from potential grazing, is very small in relation to the surface area of the affected farms. The WEF infrastructure will only occupy approximately 0.27% of the total surface area, according to the typical surface area requirements of WEFs in South Africa. Therefore, all agricultural impacts, including loss of agricultural land use, erosion and soil degradation will not be widespread and can at worst only affect a very limited proportion (0.27%) of the surface area. All agricultural activities will be able to continue unaffectedly on all parts of the farms other than the small development footprint for the duration of and after the project.

Two potential negative agricultural impacts have been identified, that are considered direct impacts:

- Loss of agricultural land use;
  - Agricultural land directly occupied by the development infrastructure will become unavailable for agricultural use; and
  - This impact is relevant only in the construction phase. No further loss of agricultural land use occurs in subsequent phases.
- Soil degradation;
  - Soil can be degraded by impacts in three different ways: erosion; topsoil loss; and contamination;

- Erosion can occur as a result of the alteration of the land surface run-off characteristics, which can be caused by construction related land surface disturbance, vegetation removal, and the establishment of hard surface areas including roads;
- Loss of topsoil can result from poor topsoil management during construction related excavations;
- Hydrocarbon spillages from construction activities can contaminate soil. Soil degradation will reduce the ability of the soil to support vegetation growth; and
- This impact is relevant only during the construction and decommissioning phases.

One positive agricultural impact has been identified, that is considered an indirect impact:

- Increased financial security for farming operations;
  - Reliable income will be generated by the farming enterprises through the lease of the land to the wind energy facility; and
  - This is likely to increase their cash flow and financial security and thereby could improve farming operations.

Due to the generally low agricultural potential of the site, and the consequent low agricultural impact, there are no restrictions relating to agriculture, which could preclude authorisation of the proposed development and therefore, from an agricultural impact point of view, the development should proceed to the EIA Phase.

### 6.7.1 Assessment to be undertaken during the EIA Phase

---

The Agricultural Specialist is required to compile an Agricultural Compliance Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Agricultural Resources by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 MW or more' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation and management actions will be incorporated into the EMPr that will form part of the EIA Report. Refer to Section 7.8.1 in Chapter 7 of this Scoping Report for the ToRs specified for the Agricultural Compliance Statement to be undertaken.

## 6.8 Socio-Economic

### 6.8.1 Key Issues

---

An assessment of the social and economic factors (both positive and negative) is being undertaken to determine the potential social and economic impacts and/or benefits that may occur due to the development of the proposed project.

The following potential socio-economic impacts of the proposed development were identified during the Scoping Phase and include:

- **Construction Phase:**



- Investment and the contribution to the national, regional and local economy;
- Generation of employment, income and skills; and
- Pressures on community fabric and resources due to an influx of jobseekers.
  
- **Operational Phase:**
  - Lower national CO<sub>2</sub> emissions per unit of energy generated;
  - Investment and the contribution to the national, regional and local economy;
  - Generation of employment, income and skills; and
  - Improvement of community facilities and prospects through funding of social upliftment projects.
  
- **Decommissioning Phase:**
  - Loss of employment due to decommissioning of the facility.

### 6.8.2 Assessment to be undertaken during the EIA

---

The Socio-Economic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation, policies and guidelines that may be deemed necessary, if applicable. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.8 in Chapter 7 of this Scoping Report for the ToRs specified for the Socio-Economic Impact Assessment to be undertaken.

## 6.9 Traffic

### 6.9.1 Key Issues

---

The proposed main routes via which the proposed Kwagga WEF 3 project site could be accessed will be along the N12, which is situated to the west of the site, and via the Rietbron bound public access gravel road, which runs through the northern section of the site. The existing road network on the proposed project site consists of several unsurfaced gravel roads that traverse the various farm portions. However, the planned internal access road network for purposes of the WEF and associated infrastructure is yet to be confirmed as part of the final project layout and will be assessed during the EIA Phase.

The potential traffic related issues identified during the Scoping Phase include:

- **Construction Phase:**
  - Noise, dust and exhaust pollution due to construction related traffic including transportation of people, construction materials, water and equipment to and from the development site, as well as abnormal trucks delivering turbine components to the site;
  - Noise, dust and exhaust pollution due to the construction of access roads, excavations of turbine foundations, trenching for electrical cables and other ancillary construction works that will temporarily generate increased traffic; and

- Potential traffic congestion and delays on the surrounding road network due to increase in vehicle traffic during the construction phase.
- **Operational Phase:**
  - Potential traffic congestion and delays on the surrounding road network due to increased vehicle traffic (*Note that the traffic generated because of the development during the operational phase will be minimal and will not have a significant impact on the surrounding road network in light of the remote and rural setting of the area*).
- **Decommissioning Phase:**
  - Noise, dust and exhaust pollution due to construction related traffic including transportation of people, construction materials, water and equipment to and from the development site, as well as abnormal trucks transporting turbine components from the site; and
  - Potential traffic congestion and delays on the surrounding road network due to increased vehicle traffic because of decommissioning activities.

It is critical to ensure that the abnormal load vehicles will be able to move safely and without obstruction along the preferred routes.

### 6.9.2 Assessment to be undertaken during the EIA Phase

---

The Traffic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation, policies and guidelines that may be deemed necessary, if applicable. The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.10 in Chapter 7 of this Scoping Report for the ToRs specified for the Traffic Impact Assessment to be undertaken.

## 6.10 Noise

### 6.10.1 Key Issues

---

Potential noise-related impacts resulting from the construction and operational phases of this proposed WEF project can only be modelled and correctly calculated once more information regarding the duration of construction, equipment to be used and possible locations of major ancillary activity sites are known and confirmed. It is anticipated that during operation of the development, the large majority of the project site will continue with small density livestock farming as it is the current land use. The only development related activities on site during the operational phase would entail routine servicing and unscheduled maintenance. The noise impact from maintenance activities is considered to be insignificant, with the main noise source being the operating wind turbine blades and the nacelle.

The key potential noise impacts resulting from the proposed development, which are all considered direct impacts, include the following:

- **Construction Phase:**

- Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise).
- **Operational Phase:**
  - Mechanical and aerodynamic noise from the operation of the wind turbine components (*Note that this impact is difficult to determine at this stage, as noise modelling has not been conducted during the scoping phase. These impacts will be confirmed once modelling has been completed during the EIA Phase*).
- **Decommissioning Phase:**
  - Noise pollution i.e. increase in ambient sound levels due to decommissioning activities (e.g. equipment and vehicle noise).

Based on a scoping level desktop assessment, as well as a basic predictive model to identify potential issues of concern, the proposed project will result in increased noise levels in the area as wind turbines do emit noises at sufficient levels to propagate over large distances. The fact that there would be a number of wind turbines operating simultaneously in an area where there are noise-sensitive developments increase the possibility that a noise impact could occur. However, at this preliminary stage it is impossible to determine whether the significance of this noise impact would be low, medium or high and what potential impact it could have on the quality of living for the surrounding receptors. Previous studies have indicated that with the implementation of correct mitigation measures (especially a sufficient setback or buffer zone) it would be possible to minimize the potential noise risks and reduce the noise impacts to a more acceptable medium or low significance. Considering this, the impact assessment provided in this section is based on a scoping level desktop assessment and the impact ratings will be confirmed and detailed during the EIA Phase based on more information gathered.

### **6.10.2 Assessment to be undertaken during the EIA Phase**

---

The Noise Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Noise Impacts' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. In addition, the Specialist Assessment should also take into consideration any additional relevant legislation and guidelines that may be deemed necessary (e.g. noise standards, measurements and calculations stipulated in SANS 10103:2008 Version 6 and SANS 10357:2004 Version 2.1). The relevant mitigation and management actions will be incorporated into the EMP that will form part of the EIA Report. Refer to Section 7.8.5 in Chapter 7 of this Scoping Report for the ToRs specified for the Noise Impact Assessment to be undertaken.

## **6.11 Civil Aviation**

---

Civil Aviation Assessments are required to comply with the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Civil Aviation Installations' (GG 43110 / GN R320, 20 March 2020). However, as indicated in Chapter 3 and Chapter 4 of this Scoping Report, the findings from the National Web-Based Screening Tool has indicated that the entire area of interest for the proposed Kwagga WEF 3 project site is

classified as 'low' sensitivity. The low sensitivity was verified by the EAP during a site visit undertaken on 20 and 21 October 2020. Therefore, in line with GN R320, only a site sensitivity verification is necessary to confirm the site as a low sensitivity. A site sensitivity verification is provided in Appendix F.11 of this Scoping Report.

---

## 6.12 Defence

---

Defence Assessments are required to comply with the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Defence Installations' (GG 43110 / GN R320, 20 March 2020). However, as indicated in Chapter 3 and Chapter 4 of this Scoping Report, the entire area of interest for the proposed Kwagga WEF 3 project site is classified as 'low' sensitivity on the National Web-Based Screening Tool. The low sensitivity was verified by the EAP during a site visit undertaken on 20 and 21 October 2020. Therefore, in line with GN R320, only a site sensitivity verification is necessary to confirm the site as a low sensitivity. A site sensitivity verification is provided in Appendix F.12 of this Scoping Report.

---

## 6.13 Impacts relating to BESS

---

The Specialists will assess the inclusion of battery energy storage systems (BESS) as part of their respective specialist assessments of the proposed project components during the EIA Phase. However, to ensure that all aspects and impacts are covered, additional potential impacts or risks relating to the BESS have been identified by the EAP and will be discussed in more detail in the EIA Report. These include the following:

- Risk of fire, explosion or release of toxic gas;
- Spillage of electrolytes; and
- Waste generation.

---

## 6.14 Impacts relating to Wake Loss

---

The proposed Kwagga WEF 3 will be developed eastwards of two directly adjacent wind farms, namely the Beaufort West WEF and the Trakas WEF, both of which were proposed by Mainstream Renewable Power South Africa. It is understood that both the Beaufort West and Trakas WEFs have already received Environmental Authorisation, although none has yet been awarded preferred bidder status in terms of the REIPPPP.

The Competent Authority (i.e. DFFE) advises that, as part of the EIA Process for the development of wind energy generation projects, the potential wake effect between proposed projects and neighbouring facilities which are either authorised or already operational, needs to be considered. One particular issue that is to be addressed through this assessment of possible wake loss is the potential impact thereof on the local socio-economic community and enterprise development because of the respective WEF projects.

ABO Wind has already been in consultation with Mainstream to discuss the potential wake effect of the proposed Kwagga WEF 3 project on the neighbouring Beaufort West and Trakas WEFs, and *vice versa*. As a

result, a wake loss assessment that used indicative project layouts and an assumed turbine model based on site specific sensitivities and wind data, has been performed by the Project Applicant, Kwagga WEF 3.

At this preliminary stage, the wake loss assessment only considered wake losses; however, there are other forms of loss, which could influence the results of the assessment, and includes but is not limited to unavailability losses, performance losses, electrical losses and environmental losses, as well as the effect of other proposed and/or authorised WEFs in the vicinity. The wake loss assessment results show that there could be a potential for each WEF project to impact the other through wake loss, albeit by a very low value (0.1%). Although there is the potential for a very small reduction in yield that could affect socio-economic and enterprise development spend, the net effect of both projects contributing to the local community is considered positive.

Further engagement between the respective Project Developers are continuing to deal with the issue of potential wake loss and discuss any arrangements that may be deemed necessary.

A copy of the Wake Loss Assessment Report is included in Appendix G of this Scoping Report.

---

### 6.15 Scoping-level Impact Assessment

---

Based on the scoping-level inputs from the various specialists, a **high-level preliminary** scoping impact assessment was conducted and outlined in Table 6.1 below. The impact assessment provided in this section is based on a scoping level desktop assessments and the impact ratings will be confirmed and detailed during the EIA Phase based on more detailed studies being undertaken, including modelling where required. The mitigation measures provided in this section are also high-level for the purposes of Scoping and will be detailed during the EIA Phase.

Please see Chapter 7 of this Scoping Report for the Plan of Study (PoS) for EIA, which includes the Methodology for the assessment of impacts (Section 7.5) and the ToR for the specialist assessments (Section 7.8).

**Table 6.1: Scoping level assessment of potential risks/impacts of the proposed Kwagga WEF 3 project, including high-level mitigation measures**

<b>Impact</b>	<b>Impact Criteria</b>		<b>Significance and Ranking (Pre-Mitigation)</b>	<b>Potential mitigation measures</b>	<b>Significance and Ranking (Post-Mitigation)</b>	<b>Confidence Level</b>
<b>AQUATIC BIODIVERSITY AND SPECIES</b>						
<b>CONSTRUCTION PHASE</b>						
<i>Disturbance and possible loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota</i>	<b>Status</b>	Negative	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>Slightly modify the project layout plan i.e. micro siting to minimise activities within delineated aquatic ecosystems.</li> </ul>	<b>Very Low (5)</b>	<b>High</b>
	<b>Spatial Extent</b>	Site-specific				
	<b>Duration</b>	Short term with possible long-term impacts				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Unlikely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
<i>The removal of indigenous riparian and instream vegetation that has the potential to reduce the ecological integrity and functionality of the watercourses</i>	<b>Status</b>	Negative	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>Slightly modify the project layout plan i.e. micro siting to minimise activities within delineated aquatic ecosystems;</li> <li>Rehabilitate disturbed aquatic habitats by revegetating with suitable local indigenous vegetation.</li> </ul>	<b>Very Low (5)</b>	<b>High</b>
	<b>Spatial Extent</b>	Site-specific				
	<b>Duration</b>	Medium-term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very Unlikely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
<i>Demand for water for construction could place stress on the existing available water resources</i>	<b>Status</b>	Negative	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>The water demand for a WEF is generally very low during operation and thus the associated water use is extremely unlikely to result in any significant impact. However, the construction phase usually requires larger quantities of water albeit over a short period of time but increase in water consumption could potentially impact on the existing available water resources;</li> </ul>	<b>Very Low (5)</b>	<b>High</b>
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Moderate				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Probability	Extremely Unlikely				
	Reversibility	Moderate		<ul style="list-style-type: none"> <li>The water requirement during construction for purposes of the e.g. turbine foundations, roads construction and dust suppression should preferably be obtained from either the Beaufort West Local Municipality or the Prince Albert Local Municipality, and specific arrangements should be agreed upon with the relevant Local Municipality in a Service Level Agreement (SLA) prior to commencement of construction.</li> </ul>		
	Irreplaceability	Moderate				
	Status	Negative				
Road crossing structures if not adequately designed could impede flow in the watercourses	Spatial Extent	Site specific	Very Low (5)	<ul style="list-style-type: none"> <li>The road crossing structures should be designed in such a manner to not impede flow in the watercourses. For this area i.e. a low water crossing, a concrete slab through the watercourses are preferred.</li> </ul>	Very Low (5)	High
	Duration	Long term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Alien vegetation infestation within the aquatic features due to disturbance	Spatial Extent	Site specific	Low (4)	<ul style="list-style-type: none"> <li>Avoid disturbing aquatic habitats, make sure that any construction materials brought onto the site are certified to be free of alien plant seed.</li> <li>Rehabilitate disturbed aquatic habitats once construction works are complete.</li> </ul>	Very Low (5)	High
	Duration	Medium or long term				
	Consequence	Moderate				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Low				
Increased sedimentation and risks of contamination of surface water runoff during construction	Spatial Extent	Site specific	Very Low (5)	<ul style="list-style-type: none"> <li>Construction near aquatic features should preferably be undertaken in the dry season; if necessary, sediment traps should be placed downstream of works to capture sediment;</li> <li>Construction sites and laydown areas should be placed at least 30 m away from the delineated aquatic features;</li> <li>Good housekeeping measures should be implemented at the construction and operational sites that are set out in the Environmental Management Programme (EMPr) and monitored by an appointed Environmental Control Officer (ECO) for the project.</li> </ul>	Very Low (5)	High
	Duration	Short term				
	Consequence	Slight				
	Probability	Likely to Unlikely				
	Reversibility	High				
	Status	Negative				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Irreplaceability	Low				
<b>OPERATIONAL PHASE</b>						
Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>The moderate to high sensitivity aquatic habitats should be avoided in the layout design such that it is only the low sensitivity habitats that would be disturbed during construction.</li> <li>The disturbance of these habitats would only result in slight (negligible) alteration to aquatic ecosystem and processes.</li> </ul>	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Unlikely				
	Reversibility	Moderate				
Irreplaceability	Low					
Modified runoff characteristics from hardened surfaces at the turbines and the substation as well as along the access roads that have the potential to result in erosion of hillslopes and watercourses	Status	Negative	Very low (5)	<ul style="list-style-type: none"> <li>Develop a stormwater management plan for the proposed development that addresses the stormwater runoff from the developed site.</li> </ul>	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Moderate				
Irreplaceability	Low					
Possible increase in water consumption and potential for water quality impacts (such as contamination from sewage generated onsite) as a result of the operation of the site	Status	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>The water use requirement of the proposed WEF during operation is low and unlikely to result in any potential impact that might require water use authorisation. It is recommended that a sustainable water supply should be sought and secured, preferably under an SLA with one of the local municipalities, if possible.</li> <li>The sewage generated on site should be discharged to a conservancy or septic tank that is properly serviced and the content timeously evacuated to a nearby wastewater treatment works.</li> </ul>	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Long term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	Low				
Irreplaceability	Low					
<b>DECOMMISSIONING PHASE</b>						
	Status	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>Minimise works within or near aquatic ecosystems as far as possible.</li> </ul>	Very Low (5)	High



DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
Increased disturbance of aquatic habitat due to the increased activity on the site	<b>Spatial Extent</b>	Site specific		<ul style="list-style-type: none"> <li>If the layout of the WEF has avoided these areas, the decommissioning of the WEF would also be able to avoid aquatic habitats on the properties.</li> </ul>		
	<b>Duration</b>	Short term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Unlikely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
Increased sedimentation and risks of contamination of surface water runoff	<b>Status</b>	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>Decommissioning works near aquatic features should preferably be undertaken in the dry season; if necessary, sediment traps should be placed downstream of works to capture sediment;</li> <li>Laydown areas should be placed at least 30 m away from the delineated aquatic features;</li> <li>Good housekeeping measures should be implemented at the construction and operational sites that are set out in the Environmental Management Programme (EMPr) and monitored by an appointed Environmental Control Officer (ECO) for the project.</li> </ul>	Very Low (5)	High
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Short term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Unlikely				
	<b>Irreplaceability</b>	Low				
<b>TERRESTRIAL BIODIVERSITY AND SPECIES</b>						
<b>DIRECT IMPACTS - CONSTRUCTION PHASE</b>						
The clearing of natural vegetation and resultant loss of faunal habitat	<b>Status</b>	Negative	Low (4)	<ul style="list-style-type: none"> <li>A preconstruction walk-through to each of the demarcated access roads, construction sites, substation locations, turbines and crane platforms to assess the presence of protected species is proposed. Placement of infrastructure should be done in such a way as to minimise the impact on protected species.</li> <li>Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as to remaining within demarcated construction areas, no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards minimizing wildlife interactions, and the importance of protected plant and animal species. The crew should also be made aware of not harming or collecting species such as snakes, tortoises and owls.</li> <li>Ensure that temporary use areas e.g. laydown areas and construction camp, are located in areas of low sensitivity.</li> </ul>	Low (4)	Medium
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Long-term				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	<b>Consequence</b>	Moderate		<ul style="list-style-type: none"> <li>Footprints of the turbines, crane platforms, roads, construction and substation locations should be clearly demarcated and vegetation clearance should be confined to the footprint of the development and unnecessary clearance should be avoided.</li> <li>The cliffs and rocky sheets should be avoided by micro siting.</li> <li>All vehicles are to remain on demarcated roads and no driving in the veld should be allowed.</li> <li>The ECO is to provide supervision and oversight on vegetation clearing activities and other activities, which may cause damage to the environment, especially at the initiation of the project, when the majority of vegetation clearing is taking place.</li> <li>River/stream crossings should be placed in areas without extensive wetlands and preferably in rocky areas where the risk of disruption and erosion is low. All river/stream crossings should be inspected as part of the preconstruction walk-through to ensure that the optimal and acceptable locations have been chosen for river crossings. Specific guidelines of the aquatic specialist should be followed (refer to Section 6.1.2 above).</li> <li>River/stream crossings should be specifically designed not to impede or disrupt the direction and flow of the water. Specific guidelines of the aquatic specialist should be followed (refer to Section 6.1.2 above).</li> <li>No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO.</li> </ul>		
	<b>Probability</b>	Very likely				
	<b>Reversibility</b>	Low				
	<b>Irreplaceability</b>	Moderate				
The loss of endangered, threatened, protected and endemic plants/animals	<b>Status</b>	Negative	Low (4)	<ul style="list-style-type: none"> <li>A preconstruction walk-through to each of the demarcated access roads, construction site, substation, turbines and crane platforms to assess the presence of protected species is proposed. Placement of infrastructure should be done in such a way as to minimise the impact on protected species.</li> <li>Construction crew, in particular the drivers, should undergo environmental training (induction) to make them aware of the importance of protected species.</li> </ul>	Low (4)	Medium
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Long-term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Low				
	<b>Irreplaceability</b>	Moderate				
Direct faunal mortalities due to construction and increased traffic	<b>Status</b>	Negative	Low (4)	<ul style="list-style-type: none"> <li>Construction crew, in particular the drivers, should undergo environmental training to increase their awareness of environmental concerns. The crew should also be made aware of not harming or collecting species such as snakes, tortoises and owls.</li> </ul>	Low (4)	Low

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	<b>Spatial Extent</b>	Site specific		<ul style="list-style-type: none"> <li>Proper waste management procedures should be in place to avoid litter, food or other foreign material from lying around and to remove all waste material from the site.</li> <li>Any chemical spills at the site should be handled in the appropriate manner as determined by the nature of the spill.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> <li>All traffic should adhere to a low speed limit on all roads on site.</li> <li>Personnel should not be allowed to roam into the veld outside the demarcated development footprint.</li> <li>Ensure that cabling and electrical infrastructure at the site is buried sufficiently deeply to avoid being excavated by fauna and that where such infrastructure emerges above-ground that it is sufficiently protected from gnawing animals such as porcupines and springhare, which may seek such material out.</li> <li>Any dangerous fauna (e.g. snakes, scorpions) that are encountered during construction should not be handled or mistreated by construction staff and the ECO or other suitably qualified persons should be contacted to remove the animals to safety.</li> <li>Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have places where the loose material has been returned to the trench to form an escape ramp to allow any fauna that fall in to escape.</li> <li>If there is any part of the site that needs to be lit at night for security reasons, then this should be with low-UV emitting types which do not attract insects, where possible.</li> <li>Should electrical fences be erected it must be done according to the norms and standards of the Nature Conservation Authorities in the Western Cape.</li> <li>Access to the site should be strictly regulated to reduce the opportunities for poaching.</li> </ul>		
	<b>Duration</b>	Short-term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Low				
	<b>Irreplaceability</b>	Moderate				
Increased human activity, noise and light levels	<b>Status</b>	Negative	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>The SANS standards should be adhered to in terms of noise levels.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> <li>If there is any part of the site that needs to be lit at night for security reasons, then this should be with low-UV emitting types which do not attract insects, where possible.</li> </ul>	<b>Low (4)</b>	<b>High</b>
	<b>Spatial Extent</b>	Site-specific				
	<b>Duration</b>	Short-term				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Likely				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Reversibility	Irreplaceability				
	High	-				
Increased dust deposition	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Excessive dust can be reduced by spraying non-potable water onto the soil or apply alternative organic microbial dust suppressants to control dust generation.</li> </ul>	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	-				
<b>INDIRECT IMPACTS - CONSTRUCTION PHASE</b>						
Establishment of alien vegetation as a result of the clearing of vegetation	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Implement a monitoring program for the early detection and regular clearing of alien invasive plant species.</li> <li>A control program should be employed to combat declared alien invasive plant species within the development footprint in the most environmentally friendly manner that does not result in undesirable secondary impacts.</li> <li>Herbicides for the control of alien species should be applied according to the relevant instructions and by appropriately trained personnel.</li> <li>No alien species should be used in rehabilitation or landscaping of the project site.</li> <li>Use only plants and seed collected on-site for revegetation, where possible.</li> <li>Cleared areas may need to be fenced-off during rehabilitation to exclude livestock and wildlife.</li> <li>Material brought onto site e.g. building sand should be regularly checked for the germination of alien species.</li> <li>Construction machinery should be cleaned before coming onto site to avoid importing seed of alien species.</li> </ul>	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Long-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
Changes in animal behaviour	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Construction crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.</li> <li>Development should avoid cliffs and rocky outcrops.</li> <li>Soil compaction should be kept to a minimum by restricting driving to designated roads.</li> </ul>	Low (4)	Medium
	Spatial Extent	Site-specific				
	Duration	Long-term				
	Consequence	Moderate				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Probability	Likely		<ul style="list-style-type: none"> <li>Appropriate lighting should be installed to minimise negative effects on nocturnal animals.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> <li>The mitigation measures as indicated by the noise specialist must be adhered to.</li> </ul>		
	Reversibility	Moderate				
	Irreplaceability	Low				
Increased erosion and stormwater run-off	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>Clearing of vegetation, compaction and levelling should be restricted to the approved footprint of the proposed development.</li> <li>All access roads should have water diversion structures with energy dissipation features to slow and disperse the water into the receiving area.</li> <li>Soil compaction should be kept to a minimum by restricting driving to designated roads.</li> <li>A rehabilitation and revegetation plan should be developed as part of the EMPr.</li> <li>Regular monitoring of the site during construction for erosion problems is required.</li> <li>Proper road maintenance procedures should be in place.</li> <li>Silt traps should be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.</li> <li>Wherever appropriate, topsoil should be removed and stored separately and reapplied as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation on cleared areas.</li> <li>Where applicable, construction of gabions and other stabilization features on steep slopes to prevent erosion.</li> <li>Reduced activity on site after large rainfall events when the soils are wet. No driving off hardened roads should be allowed until the soils have dried out and the risk of getting stuck has decreased.</li> <li>A suitably qualified road engineer should plan, design and supervise the proper construction of roads to minimise the impact on the environment.</li> </ul>	Low (4)	Medium
	Spatial Extent	Site-specific to regional				
	Duration	Long-term				
	Consequence	Substantial				
	Probability	Likely				
	Reversibility	Low				
	Irreplaceability	Moderate				
	Irreplaceability					
<b>DIRECT IMPACTS - OPERATIONAL PHASE</b>						
Direct faunal mortalities	Status	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>Maintenance crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.</li> <li>Access to the site should be strictly controlled.</li> <li>All excess wires, cables and waste material should be removed from the site.</li> </ul>	Very Low (5)	Medium
	Spatial Extent	Site-specific				
	Duration	Long-term				
	Consequence	Slight				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Probability	Reversibility				
	Likely	Moderate		<ul style="list-style-type: none"> <li>All vehicles at the site should adhere to a low speed limit and any fauna on roads should receive right of way or can be moved off the road in the case of slow-moving fauna such as tortoises.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> </ul>		
Increased human activity, light and noise levels	Low		Low (4)	<ul style="list-style-type: none"> <li>The mitigation measures as indicated by the noise specialist must be adhered to.</li> <li>Maintenance crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.</li> <li>Appropriate lighting should be installed to minimise negative effects on nocturnal animals.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> </ul>	Low (4)	Medium
	Negative	Site specific				
	Long-term	Moderate				
	Likely	Moderate				
	Moderate	Low				
	Low					
<b>INDIRECT IMPACTS - OPERATIONAL PHASE</b>						
Establishment of alien vegetation will continue	Negative	Site specific	Low (4)	<ul style="list-style-type: none"> <li>Implement a monitoring program for the early detection of alien invasive plant species and a control program to combat declared alien invasive plant species should be employed.</li> <li>No alien species should be used for landscaping, rehabilitation or any other purpose.</li> <li>Clearing of alien species should be done on a regular basis.</li> </ul>	Very Low (5)	Medium
	Long-term	Moderate				
	Likely	Moderate				
	Moderate	Low				
	Low					
Changes in animal behaviour	Negative	Substantial	Moderate (3)	<ul style="list-style-type: none"> <li>Operations crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.</li> <li>Soil compaction should be kept to a minimum by restricting driving to designated roads.</li> <li>Appropriate lighting should be installed to minimise negative effects on nocturnal animals.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> <li>The mitigation measures as indicated by the noise specialist must be adhered to.</li> </ul>	Low (4)	Medium
	Long-term	Likely				
	Moderate	Moderate				
	Low					
<b>DIRECT IMPACTS - DECOMMISSIONING PHASE</b>						

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Status					
Some clearing of natural vegetation due to removal of infrastructure	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as to remaining within demarcated construction areas, no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards minimizing wildlife interactions, and the importance of protected plant and animal species. The crew should also be made aware of not harming or collecting species such as snakes, tortoises and owls.</li> <li>Vegetation clearance should be confined to the footprint of the decommissioning activities and unnecessary clearance should be avoided.</li> <li>The cliffs and rocky sheets should be avoided.</li> <li>All vehicles are to remain on demarcated roads and no driving in the veld should be allowed.</li> <li>The ECO is to provide supervision and oversight on vegetation clearing activities and other activities, which may cause damage to the environment.</li> <li>Watercourses and stream/river/drainage line crossings should be avoided as far as possible.</li> <li>No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO.</li> </ul>	Very Low (5)	Medium
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
Possible ingestion or ensnarement of animals due to waste material lying around	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Decommissioning crew should undergo environmental training to increase their awareness of environmental concerns.</li> <li>Proper waste management procedures should be in place and no material should be left on site in order to prevent instances of ensnarement or ingestion of foreign material.</li> </ul>	Very Low (5)	Medium
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Moderate				
	Irreplaceability	Low				
Increased dust deposition	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Excessive dust can be reduced by spraying non-potable water onto the soil or apply alternative organic microbial dust suppressants to control dust generation.</li> <li>No construction activities, including night driving should be done at night i.e. between sunset and sunrise, where possible.</li> <li>All traffic should adhere to a low speed limit on all roads on site.</li> </ul>	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Short-term				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	-				
<b>INDIRECT IMPACTS - DECOMMISSIONING PHASE</b>						
	Status	Negative	Low (4)		Very Low (5)	Medium

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
Establishment of alien vegetation	<b>Spatial Extent</b>	Site specific		<ul style="list-style-type: none"> <li>Implement a monitoring program for at least three years after decommissioning to document vegetation recovery and alien infestation across the site.</li> <li>A control program to combat declared alien invasive plant species should be employed.</li> <li>Areas where turbines, crane platforms or other infrastructure are removed, must be revegetated with indigenous plant species.</li> <li>No alien species should be used for rehabilitation/revegetation or any other purpose.</li> </ul>		
	<b>Duration</b>	Long-term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Moderate				
	<b>Irreplaceability</b>	Low				
Increased erosion and stormwater run-off	<b>Status</b>	Negative	Low (4)	<ul style="list-style-type: none"> <li>No new roads should be built during decommissioning activities; only existing roads should be used.</li> <li>Proper road maintenance procedures should be in place.</li> <li>Areas where turbines, crane platforms or other infrastructure are removed, must be revegetated with indigenous plant species as soon as possible.</li> </ul>	Low (4)	Medium
	<b>Spatial Extent</b>	Site-specific to regional				
	<b>Duration</b>	Long-term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Irreplaceability</b>	Low				
<b>VISUAL</b>						
<b>DIRECT IMPACTS – CONSTRUCTION PHASE</b>						
Visual intrusion and potential scarring in the landscape caused by earthworks and excavations; potential visual impact of security and construction lighting on the nightscape of the region; and increased dust emissions from heavy machinery and vehicle traffic.	<b>Status</b>	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>Limit area of disturbance for turbine footprint, substations, access roads, construction compound and laydown areas.</li> <li>Suppress dust during construction.</li> <li>Site turbines at least 2 km from any hospitality or tourism facility.</li> </ul>	Low (4)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Short Term				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Very likely				
	<b>Irreplaceability</b>	Replaceable				
Visual intrusion by wind turbines and	<b>Status</b>	Negative	Low (4)	<ul style="list-style-type: none"> <li>Limit area of disturbance.</li> <li>Suppress dust during construction.</li> </ul>	Low (4)	High
	<b>Spatial Extent</b>	Local				



DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
associated structures and infrastructure on landscape receptors	<b>Duration</b>	Short Term		<ul style="list-style-type: none"> <li>Use non-reflective materials.</li> </ul>		
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Replaceable				
<b>DIRECT IMPACTS – OPERATIONAL PHASE</b>						
Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on visual receptors, including potential visual impact of on-site security lighting and red-flashing warning lights on top of the turbine hubs on the rural nightscape of the region	<b>Status</b>	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>Mitigation will already have been implemented by the placement of turbines according to distance from visual receptors.</li> <li>Manage need for hazard lighting on top of turbines to only when a plane enters the affected airspace rather than being permanently lit.</li> <li>Limit need for security lighting.</li> <li>Use non-reflective materials.</li> <li>Paint all other project infrastructure elements such as operational buildings, support poles etc. a dark colour.</li> <li>Avoid bright colour/patterns and logos.</li> </ul>	Moderate (3)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	High				
<b>Irreplaceability</b>	Replaceable					
Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors	<b>Status</b>	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>Mitigation will already have been implemented by the placement of turbines according to distance from visual receptors.</li> <li>Manage need for hazard lighting on top of turbines to only when a plane enters the affected airspace rather than being permanently lit.</li> <li>Limit need for security lighting.</li> <li>Use non-reflective materials.</li> <li>Paint all other project infrastructure elements such as operational buildings, support poles etc. a dark colour.</li> <li>Avoid bright colour/patterns and logos.</li> </ul>	Moderate (3)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	High				
<b>Irreplaceability</b>	Replaceable					
<b>DIRECT IMPACTS – DECOMMISSIONING PHASE</b>						
Visual intrusion and increased dust emissions due to	<b>Status</b>	Neutral	Low (4)	<ul style="list-style-type: none"> <li>Remove all project components from site.</li> <li>Rehabilitate all disturbed areas to visually the original state by shaping and planting.</li> </ul>	Very Low (5)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Medium term				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Consequence	Probability				
decommissioning activities including disassembly of project components, heavy machinery, increased vehicle traffic and rehabilitation; and Potential visual impact of security and construction lighting on the nightscape of the region.	Consequence	Moderate				
	Probability	Likely				
	Reversibility	High				
	Irreplaceability	Replaceable				
<b>HERITAGE, ARCHAEOLOGY, PALAEOLOGY AND CULTURAL LANDSCAPE</b>						
<b>DIRECT IMPACTS - CONSTRUCTION PHASE</b>						
The destruction or disturbance of archaeological artefacts or sites;  The destruction or disturbance of graves or burial sites;  The destruction or disturbance of historic built infrastructure; and  Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations.	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>A suitable Palaeontologist to check final project layouts at a desktop level accompanied by professional mitigation (i.e. fossil recording and collection) of any palaeontological sensitive sectors of the approved development footprint prior to construction;</li> <li>Sample/excavate/collect archaeological materials, palaeontological materials and fossils found within the approved development footprint as required;</li> <li>Implement a Change Fossil Finds Protocol by the ECO and palaeontological specialists during the construction phase.</li> <li>Keep construction activities and the duration of construction to a minimum.</li> </ul>	Very Low (5)	High
	Spatial Extent	Site specific				
	Duration	Permanent				
	Consequence	Moderate				
	Probability	Likely				
	Reversibility	Non-reversible				
Irreplaceability	High					

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Status					
Visual intrusion of visually sensitive heritage resources and/or cultural landscape features, which might erode its association with intangible heritage	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Apply larger buffers around visually sensitive landscapes and sites during construction (however, due to the general flatness of the terrain this will do little to reduce impact significance).</li> <li>Keep construction activities and the duration of construction to a minimum.</li> </ul>	Low (4)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	High				
<b>DIRECT IMPACTS - OPERATIONAL PHASE</b>						
Visual intrusion of visually sensitive heritage resources and/or cultural landscape features	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>No further measures possible.</li> </ul>	Low (4)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	High				
<b>DIRECT IMPACTS - DECOMMISSIONING PHASE</b>						
Visual intrusion of visually sensitive heritage resources and/or cultural landscape features; and  Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations	Status	Negative	Low (4)	<ul style="list-style-type: none"> <li>Keep decommissioning activities and duration of decommissioning to a minimum.</li> <li>Sample/excavate/collect archaeological materials, palaeontological materials and fossils found within the approved development footprint as required;</li> <li>Implement a Change Fossil Finds Protocol by the ECO and palaeontological specialists during the decommissioning phase.</li> </ul>	Low (4)	High
	Spatial Extent	Local				
	Duration	Long term				
	Consequence	Moderate				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	High				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

<b>Impact</b>	<b>Impact Criteria</b>		<b>Significance and Ranking (Pre-Mitigation)</b>	<b>Potential mitigation measures</b>	<b>Significance and Ranking (Post-Mitigation)</b>	<b>Confidence Level</b>
<b>BATS</b>						
<b>DIRECT IMPACTS - CONSTRUCTION PHASE</b>						
Displacement of bats due to habitat loss / habitat transformation	<b>Status</b>	Negative	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>During construction laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation. Construction of the infrastructure should, where possible, be situated in areas that are already disturbed.</li> <li>Limit the removal of vegetation, particularly large mature trees within 50 m of turbine positions to reduce the possible displacement of bats.</li> <li>Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr.</li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very Unlikely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
Roost Disturbance	<b>Status</b>	Negative	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>It may be possible to limit roost abandonment by avoiding construction activities near existing roosts.</li> <li>Large mature trees within 50 m of the turbine positions should be inspected for roosting bats.</li> <li>It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 50 m of large mature trees.</li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Short term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Unlikely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Replaceable				
Roost Destruction	<b>Status</b>	Negative	<b>Low (4)</b>	<ul style="list-style-type: none"> <li>The WEF must be designed and constructed in such a way as to avoid the destruction of potential and actual roosts, particularly large mature trees, buildings, rocky crevices (if blasting is required).</li> <li>It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 50 m of large mature trees.</li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Permanent				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Very Unlikely				
	<b>Reversibility</b>	Non-reversible				
	<b>Irreplaceability</b>	Moderate				
<b>DIRECT IMPACTS - OPERATIONAL PHASE</b>						
Mortality of bats due to turbine collisions while	<b>Status</b>	Negative	<b>High (2)</b>	<ul style="list-style-type: none"> <li>Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water</li> </ul>	<b>Low (4)</b>	<b>Medium</b>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level																
commuting/foraging and/or due to barotrauma	<b>Spatial Extent</b>	Local		<p>features, riparian edges, large mature trees, buildings, and rocky crevices. These areas have been buffered by 300 m and the current layout adheres to these buffers.</p> <ul style="list-style-type: none"> <li>The height of the lower blade swept area must be maximised, and should not be lower than 30 m. If the minimum blade sweep is lower than 30 m, fatality thresholds would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 100 bat fatalities per year).</li> <li>Apply curtailment during spring, summer and autumn based on the below table if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>1 September – 30 November (Spring)</th> <th>1 December – 28 February (Summer)</th> <th>1 March – 31 May (Autumn)</th> </tr> </thead> <tbody> <tr> <td><b>Time Period</b></td> <td>19h00 – 00h00</td> <td>20h00 – 01h00</td> <td>20h00 – 00h00</td> </tr> <tr> <td><b>Temperature</b></td> <td>Between 13°C and 23°C</td> <td>Between 14 °C and 21°C</td> <td>Between 13.5 °C and 22.5°C</td> </tr> <tr> <td><b>Cut in Wind Speed</b></td> <td>Below 4.5 m/s</td> <td>Below 6.5 m/s</td> <td>Below 4.5 m/s</td> </tr> </tbody> </table>		1 September – 30 November (Spring)	1 December – 28 February (Summer)	1 March – 31 May (Autumn)	<b>Time Period</b>	19h00 – 00h00	20h00 – 01h00	20h00 – 00h00	<b>Temperature</b>	Between 13°C and 23°C	Between 14 °C and 21°C	Between 13.5 °C and 22.5°C	<b>Cut in Wind Speed</b>	Below 4.5 m/s	Below 6.5 m/s	Below 4.5 m/s		
	1 September – 30 November (Spring)	1 December – 28 February (Summer)			1 March – 31 May (Autumn)																	
<b>Time Period</b>	19h00 – 00h00	20h00 – 01h00			20h00 – 00h00																	
<b>Temperature</b>	Between 13°C and 23°C	Between 14 °C and 21°C			Between 13.5 °C and 22.5°C																	
<b>Cut in Wind Speed</b>	Below 4.5 m/s	Below 6.5 m/s			Below 4.5 m/s																	
<b>Duration</b>	Long term																					
<b>Consequence</b>	Severe																					
<b>Probability</b>	Likely																					
<b>Reversibility</b>	Moderate																					
<b>Irreplaceability</b>	High																					
Mortality of bats due to turbine collisions during migrations	<b>Status</b>	Negative	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, riparian edges, large mature trees, buildings, and rocky crevices. These areas have been buffered by 300 m. The current layout includes three (3) turbines located in these buffers, which must be relocated.</li> </ul>	<b>Low (4)</b>	<b>Medium</b>																
<b>Spatial Extent</b>	Regional																					

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level																
	<b>Duration</b>	Long term		<ul style="list-style-type: none"> <li>The height of the lower blade swept area must be maximised, and should not be lower than 30 m. If the minimum blade sweep is lower than 30 m, fatality thresholds would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 100 bat fatalities per year).</li> <li>Apply curtailment during spring, summer and autumn based on the below table if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>1 September – 30 November (Spring)</th> <th>1 December – 28 February (Summer)</th> <th>1 March – 31 May (Autumn)</th> </tr> </thead> <tbody> <tr> <td><b>Time Period</b></td> <td>19h00 – 00h00</td> <td>20h00 – 01h00</td> <td>20h00 – 00h00</td> </tr> <tr> <td><b>Temperature</b></td> <td>Between 13°C and 23°C</td> <td>Between 14 °C and 21°C</td> <td>Between 13.5 °C and 22.5°C</td> </tr> <tr> <td><b>Cut in Wind Speed</b></td> <td>Below 4.5 m/s</td> <td>Below 6.5 m/s</td> <td>Below 4.5 m/s</td> </tr> </tbody> </table>		1 September – 30 November (Spring)	1 December – 28 February (Summer)	1 March – 31 May (Autumn)	<b>Time Period</b>	19h00 – 00h00	20h00 – 01h00	20h00 – 00h00	<b>Temperature</b>	Between 13°C and 23°C	Between 14 °C and 21°C	Between 13.5 °C and 22.5°C	<b>Cut in Wind Speed</b>	Below 4.5 m/s	Below 6.5 m/s	Below 4.5 m/s		
		1 September – 30 November (Spring)			1 December – 28 February (Summer)	1 March – 31 May (Autumn)																
	<b>Time Period</b>	19h00 – 00h00			20h00 – 01h00	20h00 – 00h00																
	<b>Temperature</b>	Between 13°C and 23°C			Between 14 °C and 21°C	Between 13.5 °C and 22.5°C																
	<b>Cut in Wind Speed</b>	Below 4.5 m/s			Below 6.5 m/s	Below 4.5 m/s																
<b>Consequence</b>	Substantial																					
<b>Probability</b>	Likely																					
<b>Reversibility</b>	Moderate																					
<b>Irreplaceability</b>	Moderate																					
Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines	<b>Status</b>	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>This impact can be mitigated by using as little lighting as possible, and only where essential for operation of the facility.</li> <li>Where lights need to be used such as at the collector substation and switching station and elsewhere, these should have low attractiveness for insects such as low pressure sodium and warm white LED lights (Rydell 1992; Stone 2012). High pressure sodium and white mercury lighting is attractive to insects (Blake et al. 1994; Rydell 1992; Svensson &amp; Rydell 1998) and should not be used as far as possible.</li> </ul>	Very Low (5)	Medium																
	<b>Spatial Extent</b>	Local																				
	<b>Duration</b>	Long term																				
	<b>Consequence</b>	Slight																				
	<b>Probability</b>	Unlikely																				
	<b>Reversibility</b>	High																				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Impact	Impact Criteria		Significance and Ranking (Pre-Mitigation)	Potential mitigation measures	Significance and Ranking (Post-Mitigation)	Confidence Level
	Irreplaceability	Low		<ul style="list-style-type: none"> <li>Lighting should be fitted with movement sensors to limit illumination and light spill, and the overall lit time. In addition, the upward spread of light near to and above the horizontal plane should be restricted and directed to minimise light trespass and sky glow.</li> <li>Increasing the spacing between lights, and the height of light units can reduce the intensity and volume of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between and over lights.</li> </ul>		
<b>DIRECT IMPACTS - DECOMMISSIONING PHASE</b>						
Displacement of bats due to disturbance associated with the decommissioning activities	Status	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>The impacts to bat during this phase are likely to be restricted to disturbance. Provided decommissioning activities are restricted to daylight hours, the impact to bats are predicted to be negligible.</li> </ul>	Very Low (5)	Medium
	Spatial Extent	Local				
	Duration	Short term				
	Consequence	Slight				
	Probability	Unlikely				
	Reversibility	High				
	Irreplaceability	Replaceable				
<b>AVIFAUNA</b>						
<b>DIRECT IMPACTS - CONSTRUCTION PHASE</b>						
The noise and movement associated with the construction activities at the WEF footprint will be a source of disturbance, which would lead to the displacement of avifauna from the area.	Status	Negative	Moderate (3)	<ul style="list-style-type: none"> <li>Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible. Access to the remainder of the area should be strictly controlled to prevent unnecessary disturbance of priority species.</li> <li>Removal of vegetation must be restricted to a minimum and must be rehabilitated to its former state where possible after construction.</li> <li>Construction of new roads should only be considered if existing roads cannot be upgraded.</li> <li>Measures to control noise and dust should be applied according to current best practice in the industry.</li> <li>The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned.</li> </ul>	Low (4)	High
	Spatial Extent	Site specific				
	Duration	Short term				
	Consequence	Substantial				
	Probability	Very likely				
	Reversibility	High				
	Irreplaceability	Low				
	Status	Negative	Low (4)		Low (4)	Medium

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines and associated infrastructure.	<b>Spatial Extent</b>	Site specific		<ul style="list-style-type: none"> <li>Once the project is operational, vehicle and pedestrian access to the site should be controlled and restricted to the facility footprint as much as possible to prevent unnecessary destruction of vegetation.</li> <li>Formal live-bird monitoring should be resumed once the turbines have been constructed, as per the most recent edition of the Best Practice Guidelines (Jenkins et al. 2015). The purpose of this would be to establish if displacement of priority avifaunal species has occurred and to what extent. The exact time when operational monitoring should commence, will depend on the construction schedule, and should commence when the first turbines start operating. The Best Practice Guidelines require that, as an absolute minimum, operational monitoring should be undertaken for the first two (preferably three) years of operation, and then repeated in year 5, and again every five years thereafter for the operational lifetime of the facility.</li> </ul>		
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
<b>DIRECT IMPACTS - OPERATIONAL PHASE</b>						
Birds mortality and injury as a result of collisions with the wind turbines.	<b>Status</b>	Negative	<b>High (2)</b>	<ul style="list-style-type: none"> <li>No turbines should be located in the buffer zones as indicated in the sensitivity map in Appendix E. These buffer zones are all linked to surface water, which could attract many birds, including some threatened raptors species such as the Martial Eagle.</li> <li>The results of the pre-construction monitoring must guide the lay-out of the turbines, especially as far as proposed no-turbine zones are concerned. No turbines must be located in the buffer zones which were identified based on the results of the pre-construction monitoring, with a specific view to limiting the risk of collisions to a variety of birds, including several Red Data species.</li> <li>Formal live-bird monitoring and carcass searches should be in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al. 2015) to assess collision rates.</li> <li>If estimated annual collision rates indicate unacceptable mortality levels of priority species, i.e., in the case of raptors more than 12% of the adult breeding populations which could potentially be directly impacted by the wind farm, additional measures will have to be implemented which could include shut down on demand or other proven measures.</li> </ul>	<b>Moderate (3)</b>	<b>High</b>
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Severe				
	<b>Probability</b>	Very likely				
	<b>Reversibility</b>	High				
<b>Irreplaceability</b>	Low					
Electrocution of priority species on the internal electrical grid network.	<b>Status</b>	Negative	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>Use underground cabling as much as is practically possible.</li> <li>Where the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted to ensure that a raptor friendly pole design is used, and that appropriate mitigation is implemented pro-actively for complicated pole structures e.g., insulation of live components to prevent electrocutions on terminal structures and pole transformers.</li> <li>Conduct regular inspections of the overhead sections of the internal reticulation network to look for bird carcasses.</li> </ul>	<b>Low (4)</b>	<b>High</b>
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Severe				
	<b>Probability</b>	Unlikely				



DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
<b>DIRECT IMPACTS - DECOMMISSIONING PHASE</b>						
The noise and movement associated with the activities at the study area will be a source of disturbance, which would lead to the displacement of avifauna from the area.	<b>Status</b>	Negative	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>▪ Activity should as far as possible be restricted to the footprint of the infrastructure.</li> <li>▪ Measures to control noise and dust should be applied according to current best practice in the industry.</li> <li>▪ Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum as far as practical.</li> <li>▪ The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned.</li> </ul>	<b>Low (4)</b>	<b>High</b>
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Short term				
	<b>Consequence</b>	Substantial				
	<b>Probability</b>	Very likely				
	<b>Reversibility</b>	High				
	<b>Irreplaceability</b>	Low				
<b>AGRICULTURE AND SOILS<sup>1</sup></b>						
<b>DIRECT IMPACTS - CONSTRUCTION PHASE</b>						
Soil degradation through erosion, topsoil loss, and contamination	<b>Status</b>	Negative	<b>n/a</b>	<ul style="list-style-type: none"> <li>▪ Implement an effective system of stormwater run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.</li> <li>▪ Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there.</li> <li>▪ Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion, and to reduce dust formation.</li> <li>▪ If an activity will mechanically disturb the soil below surface in any way, then any available topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During</li> </ul>	<b>n/a</b>	<b>n/a</b>
	<b>Spatial Extent</b>	n/a				
	<b>Duration</b>	n/a				
	<b>Consequence</b>	n/a				
	<b>Probability</b>	n/a				
	<b>Reversibility</b>	n/a				
	<b>Irreplaceability</b>	n/a				

<sup>1</sup> The Agricultural Specialist is required to compile an Agricultural Compliance Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Agricultural Resources by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 MW or more' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The relevant mitigation measures will be incorporated into the EMP that will form part of the EIA Report, but no assessment of identified impacts is required. The Agricultural Specialist is therefore also required to provide a Site Sensitivity Verification Report as per the requirements of the protocol.

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

				rehabilitation, the stockpiled topsoil must be evenly spread over the entire disturbed surface, and then stabilized by facilitating.		
<b>SOCIO-ECONOMIC</b>						
<b>DIRECT IMPACTS – CONSTRUCTION PHASE</b>						
Investment and the contribution to the national, regional and local economy	<b>Status</b>	Positive	<b>Low (4)</b>	<ul style="list-style-type: none"> <li>▪ Source as many goods and services as far as possible from the local and regional economy (e.g. use local contractors and accommodation and equipment suppliers as far as possible and purchase perishable goods locally).</li> <li>▪ Provide suitable training to service providers, where possible and practicable.</li> <li>▪ Develop and implement a fair and transparent procurement policy.</li> <li>▪ Provide ancillary training to service providers on maximising the use of income and training to further future economic prospects, potentially through projects initiated as part of the social upliftment programme.</li> </ul>	<b>Moderate (3)</b>	<b>Low</b>
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Partially reversible				
	<b>Irreplaceability</b>	n/a				
Generation of employment, income and skills	<b>Status</b>	Positive	<b>Low (4)</b>	<ul style="list-style-type: none"> <li>▪ Maximise use of local skills and resources through preferential employment of locals where practicable.</li> <li>▪ Develop and implement a fair and transparent labour and recruitment policy.</li> <li>▪ Ensure gender equality in recruitment, as far as possible.</li> <li>▪ Provide suitable training and skills development to especially unskilled and low skilled workers.</li> <li>▪ Provide ancillary training to workers on maximising the use of income and training to further future economic prospects, potentially through projects initiated as part of the social upliftment programme.</li> </ul>	<b>Low (4)</b>	<b>Low</b>
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Medium term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Very likely				
	<b>Reversibility</b>	Employment reversible, training irreversible				
	<b>Irreplaceability</b>	n/a				
Pressures on community fabric and resources due to an influx of jobseekers	<b>Status</b>	Negative	<b>Low (4)</b>	<ul style="list-style-type: none"> <li>▪ Clearly publicise and implement a local recruitment policy, to discourage outside workers.</li> <li>▪ Work together with impartial local representatives to identify local people during the recruitment process.</li> <li>▪ Consult with the municipality regarding the capacity of existing services and infrastructure (e.g. provision of water, electricity, waste removal, sanitation and housing) to cope with additional workers brought into the area during the construction period.</li> <li>▪ Consider the establishment of projects that improve local services and infrastructure and/or deal with social problems or conflicts through the social upliftment programme, if the need arises.</li> </ul>	<b>Low (4)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Site specific				
	<b>Duration</b>	Medium term				
	<b>Consequence</b>	Moderate				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Partially reversible				
	<b>Irreplaceability</b>	n/a				
<b>DIRECT IMPACTS – OPERATIONAL PHASE</b>						
	<b>Status</b>	Positive	<b>Insignificant</b>	▪ None	<b>Insignificant</b>	<b>High</b>

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

Lower national CO <sub>2</sub> emissions per unit of energy generated	<b>Spatial Extent</b>	National				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	n/a				
	<b>Probability</b>	n/a				
	<b>Reversibility</b>	n/a				
	<b>Irreplaceability</b>	n/a				
Investment and the contribution to the national, regional and local economy	<b>Status</b>	Positive	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>Source as many goods and services as far as possible from the local and regional economy (e.g. use local contractors and accommodation and equipment suppliers as far as possible and purchase perishable goods locally).</li> <li>Provide suitable training to service providers, where possible and practicable.</li> <li>Develop and implement a fair and transparent procurement policy.</li> <li>Provide ancillary training to service providers on maximising the use of income and training to further future economic prospects, potentially through projects initiated as part of the social upliftment programme.</li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Likely				
	<b>Reversibility</b>	Partially reversible				
Generation of employment, income and skills	<b>Status</b>	Positive	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>Maximise use of local skills and resources through preferential employment of locals where practicable.</li> <li>Develop and implement a fair and transparent labour and recruitment policy.</li> <li>Ensure gender equality in recruitment, as far as possible.</li> <li>Provide suitable training and skills development to especially unskilled and low skilled workers.</li> <li>Provide ancillary training to workers on maximising the use of income and training to further future economic prospects, potentially through projects initiated as part of the social upliftment programme.</li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very likely				
	<b>Reversibility</b>	Employment reversible, training irreversible				
Improvement of community facilities and prospects through funding of social upliftment projects	<b>Status</b>	Positive	<b>Insignificant</b>		<b>Insignificant</b>	<b>Low</b>
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Long term				
	<b>Consequence</b>	n/a				
	<b>Probability</b>	n/a				
	<b>Reversibility</b>	n/a				
	<b>Irreplaceability</b>	n/a				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

DIRECT IMPACTS – DECOMMISSIONING PHASE						
Loss of employment due to decommissioning of the facility	<b>Status</b>	Negative	Very low (5)	<ul style="list-style-type: none"> <li>Clearly communicate project duration to staff.</li> <li>Assist with recommendations and referrals where possible should loss of employment is to occur due to the decommissioning of the facility</li> </ul>	Very low (5)	High
	<b>Spatial Extent</b>	Regional				
	<b>Duration</b>	Permanent				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very likely				
	<b>Irreplaceability</b>	n/a				
<b>NOISE</b>						
DIRECT IMPACTS – CONSTRUCTION PHASE						
Noise pollution i.e. increase in ambient sound levels due to construction activities (equipment and vehicle noise)	<b>Status</b>	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>Staff to receive training on noise sensitivity.</li> <li>Monitoring of noise during the construction phase to confirm noise levels are within limits, and to determine actual noise impact and whether further mitigation measures need to be implemented.</li> <li>Limit construction to daytime in order to take advantage of unstable weather conditions.</li> <li>Regularly service equipment to ensure no unnecessary noise is emitted.</li> </ul>	Very Low (5)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Short Term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very Unlikely				
	<b>Irreplaceability</b>	Resources are replaceable				
DIRECT IMPACTS – OPERATIONAL PHASE						
Mechanical and aerodynamic noise from the operation of the wind turbine components (This impact is difficult to determine as noise modelling has not been conducted during the scoping phase. These impacts will be confirmed once modelling has been completed).	<b>Status</b>	Negative	Very Low (5)	<ul style="list-style-type: none"> <li>Conduct noise monitoring during the operational phase to determine actual noise impact and whether further mitigation measures need to be implemented.</li> <li>Implement a 500 m “no-go” buffer around all noise sensitive areas to ensure no wind turbines impact these noise sensitive areas.</li> </ul>	Very Low (5)	High
	<b>Spatial Extent</b>	Local				
	<b>Duration</b>	Long Term				
	<b>Consequence</b>	Slight				
	<b>Probability</b>	Very Unlikely				
	<b>Irreplaceability</b>	Resources are replaceable				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

DIRECT IMPACTS – DECOMMISSIONING PHASE						
Noise pollution i.e. increase in ambient sound levels due to decommissioning activities (e.g. equipment and vehicle noise).	<b>Status</b>	<i>Negative</i>	<b>Very Low (5)</b>	<ul style="list-style-type: none"> <li>• Staff to receive training on noise sensitivity.</li> <li>• Monitoring of noise during the decommissioning phase to confirm noise levels are within limits, and to determine actual noise impact and whether further mitigation measures need to be implemented.</li> <li>• Limit construction to daytime in order to take advantage of unstable weather conditions.</li> <li>• Regularly service equipment to ensure no unnecessary noise is emitted.</li> </ul>	<b>Very Low (5)</b>	<b>High</b>
	<b>Spatial Extent</b>	<i>Local</i>				
	<b>Duration</b>	<i>Short Term</i>				
	<b>Consequence</b>	<i>Slight</i>				
	<b>Probability</b>	<i>Very Unlikely</i>				
	<b>Reversibility</b>	<i>Highly Reversible</i>				
<b>Irreplaceability</b>	<i>Resources are replaceable</i>					
TRAFFIC						
CONSTRUCTION PHASE						
Noise, dust and exhaust pollution due to construction related traffic including transportation of people, construction materials, water and equipment to and from the development site, as well as abnormal trucks delivering turbine components to the site;	<b>Status</b>	<i>Negative</i>	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>▪ Stagger turbine component delivery to site</li> <li>▪ Reduce the construction period to mitigate the increase in traffic due to construction activities</li> <li>▪ Stagger the construction of the turbines</li> <li>▪ The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network.</li> <li>▪ Staff and general trips should occur outside of peak traffic periods</li> <li>▪ Maintenance of haulage routes.</li> <li>▪ Properly design and continuously maintain the internal access road network.</li> </ul>	<b>Low (4)</b>	<b>Medium</b>
	<b>Spatial Extent</b>	<i>Local</i>				
	<b>Duration</b>	<i>Medium term</i>				
	<b>Consequence</b>	<i>Severe</i>				
	<b>Probability</b>	<i>Unlikely</i>				
	<b>Reversibility</b>	<i>High</i>				
Noise, dust and exhaust pollution due to the construction of access roads, excavations of turbine foundations, trenching for electrical cables and other ancillary	<b>Irreplaceability</b>	<i>Replaceable</i>				

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

construction works that will temporarily generate increased traffic; and  Potential traffic congestion and delays on the surrounding road network due to increase in vehicle traffic						
<b>OPERATIONAL PHASE</b>						
Potential traffic congestion and delays on the surrounding road network due to increased vehicle traffic <sup>2</sup>	<i>Status</i>	<i>Negative</i>	<b>Low (4)</b>	<ul style="list-style-type: none"> <li>▪ <i>Staff and general trips should occur outside of peak traffic periods</i></li> </ul>	<b>Very Low (5)</b>	<b>Medium</b>
	<i>Spatial Extent</i>	<i>Regional</i>				
	<i>Duration</i>	<i>Long term</i>				
	<i>Consequence</i>	<i>Moderate</i>				
	<i>Probability</i>	<i>Likely</i>				
	<i>Reversibility</i>	<i>High</i>				
	<i>Irreplaceability</i>	<i>Replaceable</i>				
<b>DECOMMISSIONING PHASE</b>						
Noise, dust and exhaust pollution due to construction related traffic including transportation of people, construction	<i>Status</i>	<i>Negative</i>	<b>Moderate (3)</b>	<ul style="list-style-type: none"> <li>▪ <i>Stagger turbine component removal from the site</i></li> <li>▪ <i>Reduce the decommissioning period</i></li> <li>▪ <i>Stagger the removal of the turbines</i></li> <li>▪ <i>The use of mobile batch plants and quarries in close proximity to the site would decrease the impact on the surrounding road network.</i></li> <li>▪ <i>Staff and general trips should occur outside of peak traffic periods</i></li> <li>▪ <i>Maintenance of haulage routes.</i></li> </ul>	<b>Low (4)</b>	<b>Medium</b>
	<i>Spatial Extent</i>	<i>Regional</i>				
	<i>Duration</i>	<i>Medium term</i>				
	<i>Consequence</i>	<i>Severe</i>				

<sup>2</sup> Note that the traffic generated because of the development during the operational phase will be minimal and will not have an impact on the surrounding road network in light of the remote and rural setting of the area.

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

materials, water and equipment to and from the development site, as well as abnormal trucks transporting turbine components from the site; and  Potential traffic congestion and delays on the surrounding road network due to increase in vehicle traffic	<i>Probability</i>	<i>Unlikely</i>		<ul style="list-style-type: none"> <li>▪ <i>Properly design and continuously maintain the internal access road network.</i></li> </ul>		
	<i>Reversibility</i>	<i>High</i>				
	<i>Irreplaceability</i>	<i>Replaceable</i>				

## 6.16 Conclusion

---

The effect of potential on-site impacts can be limited or reduced to acceptable levels through avoidance, minimisation and the implementation of appropriate mitigation measures and management actions during the construction, operational and decommissioning phases of this proposed development. Therefore, based on the scoping level specialist input potential negative impacts associated with the Kwagga WEF 3 project are anticipated to mainly be of **low to very low significance after mitigation**, whilst some positive socio-economic impacts of moderate significance are expected.

## 6.17 Cumulative Impacts

---

The Specialists will assess potential cumulative impacts by identifying other renewable energy generation facilities, within a 50 km radius of the proposed Kwagga WEF 3 project, that have been approved (i.e. positive EA has been issued) or which have a BA/EIA process underway as at 31 March 2021.

Cumulative impacts, which were identified by the Specialists during the Scoping Phase and that are associated with these similar types of development projects include *inter alia*:

- Habitat destruction, modification, loss and fragmentation;
- Removal of vegetation and impact on or loss of fauna and flora SCC;
- Compromising the integrity of CBAs, ESAs, FEPAs, NPAES and SWSAs;
- Possible loss of landscape connectivity and disruption of broad-scale ecological processes;
- Impact on terrestrial fauna, including mortality and displacement;
- Avifaunal displacement, collisions (injuries, electrocution) and mortalities (birds and bats);
- Impact on aquatic resources and reducing the integrity of watercourses;
- Impact on heritage resources (including archaeology, palaeontology and cultural landscape);
- Loss of agricultural land;
- Increase in stormwater run-off and soil erosion;
- Increase in water requirements;
- Increased vehicle traffic and associated impacts on roads;
- Increased noise levels;
- Visual intrusion and potential flicker effect;
- Light pollution;
- Dust pollution;
- Socio-economic impacts including social upliftment and job creation, skills development and training, as well as the generation of additional income stream for the landowners;
- Increased investment and the contribution to the national, regional and local economy; and
- Upgrade of infrastructure and contribution of renewable energy into the National Electrical Grid, as well as lower national CO<sub>2</sub> emissions per unit of energy generated.

The proposed renewable energy projects located within 50 km of the proposed Kwagga WEF 3 project that will be considered in the Cumulative Impact Assessment are detailed in Table 7.3 and Table 7.4 and shown in Figure 7.1 within Chapter 7 of this Scoping Report.



# CHAPTER 7:

## PLAN OF STUDY FOR EIA





# Table of Contents

<b>7</b>	<b>PLAN OF STUDY FOR THE EIA</b>	<b>7-3</b>
<b>7.1</b>	<b>Purpose of EIA and Requirements of the EIA Regulations</b>	<b>7-3</b>
<b>7.2</b>	<b>Overview of Approach to Preparing the EIA Report and EMPr</b>	<b>7-5</b>
<b>7.3</b>	<b>Public Participation Process</b>	<b>7-5</b>
7.3.1	Task 1 – I&AP Review of the EIA Report and EMPr	7-6
7.3.2	Task 2 – Comments and Responses Report	7-7
7.3.3	Task 3 – Compilation of the Final EIA Reports for Submission to DFFE	7-8
7.3.4	Task 4 – Environmental Authorisation (EA) and Appeal Process	7-8
7.3.5	Consultation with Heritage Western Cape	7-9
<b>7.4</b>	<b>Authority Consultation during the EIA Phase</b>	<b>7-9</b>
<b>7.5</b>	<b>Approach to the Impact Assessment Methodology and Specialist Assessments</b>	<b>7-10</b>
7.5.1	Impact Assessment Methodology	7-10
<b>7.6</b>	<b>Issues or Impacts to be assessed as part of the EIA Process</b>	<b>7-22</b>
<b>7.7</b>	<b>Alternatives to be assessed in the EIA Phase</b>	<b>7-26</b>
<b>7.8</b>	<b>Terms of Reference for the Specialist Assessments</b>	<b>7-28</b>
7.8.1	Agricultural Compliance Statement	7-30
7.8.2	Terrestrial Biodiversity and Species Impact Assessment	7-31
7.8.3	Aquatic Biodiversity and Species Impact Assessment	7-33
7.8.4	Avifauna Impact Assessment	7-35
7.8.5	Noise Impact Assessment	7-38
7.8.6	Heritage Impact Assessment	7-39
7.8.7	Palaeontology Impact Assessment	7-41
7.8.8	Socio-Economic Impact Assessment	7-43
7.8.9	Bat Impact Assessment	7-44
7.8.10	Traffic Impact Assessment	7-45
7.8.11	Visual Impact Assessment	7-47
7.8.12	Defence	7-48
7.8.13	Civil Aviation	7-48



## List of Tables

---

Table 7.1:	Requirements for the Plan of Study for EIA in accordance with the 2014 NEMA EIA Regulations, as amended	7-4
Table 7.2:	Authority Communication Schedule	7-10
Table 7.3:	Proposed renewable energy projects, located within 50 km of the proposed Kwagga WEF projects, that will be considered in the Cumulative Impact Assessment (Source: DFFE REEA Quarter 4, 2021; SAHRIS)	7-12
Table 7.4:	Proposed Kwagga WEF project developments	7-15
Table 7.5:	Example of Table for Assessment of Impacts/Risks	7-21
Table 7.6:	Summary of Issues to be addressed during the EIA Phase as part of the specialist assessments / input	7-22
Table 7.7:	Specialist Asssments and associated Specialist Consultants commissioned to assess the environmental sensitivites identified by the National Web-Based Screening Tool	7-28



## List of Figures

---

Figure 7.1:	Renewable Energy projects within the 50 km radius considered for the Cumulative Impact Assessment (Source: DFFE REEA Quarter 4, 2021; SAHRIS).	7-16
Figure 7.2:	Guide to assessing risk/impact significance as a result of consequence and probability	7-19

## 7 PLAN OF STUDY FOR THE EIA

---

This chapter presents the Plan of Study for the Environmental Impact Assessment (PSEIA), which sets out the process to be followed in the Environmental Impact Assessment (EIA) Phase as required by the 2014 National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) EIA Regulations, as amended. The PSEIA is based on the outcomes of the Scoping Phase (to date) and provides the Terms of Reference (ToR) for the specialist assessments that have been identified, the alternatives that will be considered and assessed, as well as the public participation process (PPP) that will be undertaken during the EIA Phase.

### 7.1 Purpose of EIA and Requirements of the EIA Regulations

---

“The purpose of the EIA Phase is to, through a consultative process:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;
- Identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the—
  - i. nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
  - ii. degree to which these impacts—
    - (aa) can be reversed;
    - (bb) may cause irreplaceable loss of resources, and
    - (cc) can be avoided, managed or mitigated;
- Identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;
- Identify, assess and rank the potential impacts that the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.”

The EIA Phase consists of three parallel and overlapping processes:

- Central assessment process through which inputs are integrated and presented in an EIA Report that is submitted for approval to the national Department of Forestry, Fisheries and the

Environment (DFFE) (previously the Department of Environment, Forestry and Fisheries) and other commenting authorities (Sections 7.2, 7.3 and 7.4);

- Undertaking of a PPP whereby findings of the EIA Phase are communicated and discussed with Interested and Affected Parties (I&APs) and responses are documented (Section 7.3); and
- Undertaking of specialist assessments that provide additional information/assessments required to address the issues raised in the Scoping Phase (Sections 7.5, 7.6 and 7.8).

Table 7.1 below shows the requirements for the PSEIA in accordance with Appendix 2 (2) (1) (h) of the 2014 NEMA EIA Regulations, as amended.

**Table 7.1: Requirements for the Plan of Study for EIA in accordance with the 2014 NEMA EIA Regulations, as amended**

Section of the EIA Regulations: Appendix 2 (2) (1) (h)	Requirements for a PSEIA in the Scoping Report in terms of Appendix 2 of the 2014 NEMA EIA Regulations, as amended (GN R326)	Section of this Chapter of the PSEIA in which the required information is discussed
h	A plan of study for undertaking the EIA process to be undertaken, including –	
i	a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	Section 7.7
ii	a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 7.5
iii	aspects to be assessed by specialists;	Section 7.5 and Section 7.7 and Section 7.8
iv	a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;	Section 7.5
v	a description of the proposed method of assessing duration and significance;	Section 7.5
vi	an indication of the stages at which the Competent Authority will be consulted;	Section 7.3 and Section 7.4
vii	particulars of the public participation process that will be conducted during the environmental impact assessment process;	Section 7.3
viii	a description of the tasks that will be undertaken as part of the environmental impact assessment process; and	Section 7.2, Section 7.3, Section 7.5 and Section 7.8.
ix	identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 7.8 (note that Chapter 6 includes high-level management actions identified during the Scoping Phase. Section 7.8 of this chapter highlights which specialist studies will include such measures)

## **7.2 Overview of Approach to Preparing the EIA Report and EMPr**

---

The specialist studies are being undertaken based on compliance with relevant legislation and based on the Terms of Reference indicated in Section 7.7 of this chapter. The results of the specialist assessments and other relevant project information and research undertaken for the proposed Kwagga WEF 3 will be integrated into the Draft EIA Report. The Draft EIA Report will be released for a 30-day I&AP and authority comment period, as outlined in Sections 7.3 and 7.4 of this chapter. I&APs registered on the project database will be notified in writing of the release of the Draft EIA Report for comment.

Comments raised, through written correspondence (emails and comments) will be captured in a Comments and Responses Report for inclusion in the Final EIA Report that will be submitted to the DFFE for decision-making. Refer to Section 7.3.2 for additional information regarding this process.

The Draft and Final EIA Reports will include an Environmental Management Programme (EMPr), which will be prepared in compliance with the relevant regulations (i.e. Appendix 4 of the 2014 NEMA EIA Regulations, as amended). This EMPr will be based broadly on the environmental management philosophy presented in the ISO 14001 standard, which embodies an approach of continual improvement. Actions in the EMPr will be drawn primarily from the management actions in the specialist assessments for the construction and operational phases of the project. If the project components are decommissioned or re-developed this will need to be done in accordance with the relevant environmental standards and clean-up/remediation requirements applicable at the time. However, general management actions for the decommissioning phase will be provided.

## **7.3 Public Participation Process**

---

The PPP in the EIA Phase will be undertaken in compliance with Chapter 6 of the 2014 NEMA EIA Regulations (as amended), as well as the approved Public Participation Plan. The need for a Public Participation Plan was originally stipulated in the directives published in Government Gazette 43412, GN R650 on 5 June 2020, regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences. GN 650 is applicable to Alert Level 3 and was repealed by GN 970. GN 970, published on 9 September 2020, contains directions regarding measures to address, prevent and combat the spread of COVID-19 relating to national environmental management permits and licences, and it applies for the period of the national state of disaster. However, it is understood that even though GN 650 is repealed, it may be used as a guideline to inform the PPP. As such, the Public Participation Plan was submitted to the then Department of Environment, Forestry and Fisheries (now DFFE) via email on 13 January 2021 and approved by the DFFE on 22 January 2021. Refer to Appendix D.1 of this Scoping Report for a copy of the Public Participation Plan, Appendix D.2 for proof of submission of the Public Participation Plan to the DFFE, and Appendix D.3 for a copy of DFFE's approval of the Public Participation Plan.

The key steps in the PPP for the EIA Phase are described below.

The PPP for the Scoping Phase is described in detail in Chapter 4 of this Scoping Report. As discussed in Chapter 1 and Chapter 4 of this Scoping Report, an integrated PPP is being undertaken for the proposed wind energy facilities (WEFs) and associated infrastructure, which will entail that all public participation documents will serve to notify the I&APs and Organs of State of the joint availability of the reports for the

Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 projects and will provide I&APs with an opportunity to comment on the reports. This approach was undertaken due to the close proximity of the sites (i.e. the proposed projects will take place within the same geographical area) and that the proposed projects entail the same activity (i.e. generation of energy using a renewable source (i.e. Wind)).

**Please note:** Separate Scoping and Environment Impact Assessment (S&EIA) processes are being undertaken for each of the proposed Kwagga WEF 1, Kwagga WEF 2 and Kwagga WEF 3 projects. As such, separate applications for Scoping and EIA will be submitted to the DFFE for the three proposed Kwagga WEF projects, respectively.

### **7.3.1 Task 1 – I&AP Review of the EIA Report and EMPr**

---

The first stage in the process will entail the release of the Draft EIA Report for a 30-day I&AP and stakeholder comment period. As discussed in Chapter 4, an initial database of I&APs (including key stakeholders and Organs of State) was developed prior to the commencement of the S&EIA processes, and advertising the EA processes in the local print media, in line with Regulation 41 (2) (c) of GN R326. Appendix C of this Scoping Report includes a copy of the I&AP database, which indicates interaction with I&APs, key stakeholders and all I&APs that have been added to the electronic project database.

While I&APs have been encouraged to register their interest in the project from the start of the process, following the public announcements, the identification and registration of I&APs is ongoing for the duration of the study. As a result, I&AP details will be captured and automatically updated as and when information is distributed to or received from I&APs as per Regulation 42 of the GN R326, in terms of the electronic database. I&APs will only be removed or de-registered from the database, upon request.

Relevant stakeholders, Organs of State and I&APs will be informed of the review period in the following manner:

- **Database Maintenance:** As indicated above, in line with Regulation 42 of GN R326, an initial database of potential I&APs was developed for the S&EIA processes, and will be updated throughout the process. The updated database will be used to provide written notification of the release of the Draft EIA Reports for comment.
- **Advertisements to Register Interest:** An advertisement will be placed in Afrikaans and English in at least one local newspaper, 'Die Courier' at the commencement of the 30-day comment period for the Draft EIA Reports. A copy of the content of the advertisement will be included as an Appendix in the Draft EIA Reports.
- **Letter 3 to I&APs (Outcome of decision-making on Final Scoping Report (FSR) and commencement of EIA Phase):** Written notification of the outcome of decision-making on the FSR and the commencement of the EIA Phase (i.e. Letter 3) will be sent to all I&APs and Organs of State included on the updated project database via email, where email addresses are available. This letter will be sent once the outcome of decision making on the FSR is received by the CA (i.e. at most 43 days after acknowledgment of receipt of scoping report by CA). Letter 3 will include information on the proposed projects and notification of the commencement of the EIA Phase. Letter 3 will be written in the English language. Proof of

email, as well as copies of the Letter 3 and emails sent will be included in the Final EIA Reports that will be submitted to the DFFE for decision-making.

- **Letter 4 to I&APs (Availability of the Draft EIA Reports for public comment):** Written notification of the availability of the Draft EIA Reports (i.e. Letter 4) will be sent to all I&APs and Organs of State included on the updated project database via email, where email addresses are available. This letter will be sent at the commencement of the 30-day comment period on the Draft EIA Reports, and will include information on the proposed projects and notification of the release and availability of the reports. Letter 4 will be written in the English language. Proof of email, as well as copies of the Letter 4 and emails sent will be included in the Final EIA Reports that will be submitted to the DFFE for decision-making.
- **Text Messaging:** SMS texts will also be sent to all I&APs on the updated project database, where cell phone numbers are available, to inform them of the proposed projects and how to access the Draft EIA Reports.
- **Executive Summaries of the EIA Reports:** Executive Summaries of the Draft EIA Reports will be emailed to I&APs on the project database (where email addresses are available), and uploaded to the project website.
- **Local Networks:** Where possible, communication will be made with the Ward Councillor's to request that they send notifications of the projects, availability of the reports and executive summaries via their local networks (such as WhatsApp groups, Neighbourhood Watch groups, other social media mechanisms etc.).
- **30-day Comment Period:** As noted above, potential I&APs, including authorities and Organs of State will be notified via Letter 4, of the 30-day comment and registration period within which to submit comments on the Draft EIA Reports.
- **Availability of Information:** The Draft EIA Reports will be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>) for I&APs to access it. As a supplementary mechanism, the Draft EIA Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive. If an I&AP cannot access the reports via the project website, via the alternative web-platforms such as Dropbox or Google Drive, and if additional information is required (other than what is provided in the Executive Summaries), then the I&AP can contact the EAP, who will then make an electronic copy available (where feasibly possible).

### 7.3.2 Task 2 – Comments and Responses Report

---

A key component of the S&EIA process is documenting and responding to the comments received from I&APs and the authorities. Copies of all written comments received during the review of the Draft EIA Reports will be compiled into a Comments and Responses Report for inclusion in an appendix to the Final EIA Reports that will be submitted to the DFFE for decision-making. The Comments and Responses Report will indicate the nature of the comment, as well as when and who raised the comment. The comments received will be considered by the EIA team and appropriate responses provided by the relevant member of the EIA team, the Project Developer and/or specialists. The response provided will indicate how the comment received has been dealt with in the EIA Process, and considered in the Final EIA Reports and in the project design or EMPs. Should the comment received fall beyond the scope of this EIA, clear reasoning will be provided.



### 7.3.3 Task 3 – Compilation of the Final EIA Reports for Submission to DFFE

---

Following the 30-day commenting period of the Draft EIA Reports and incorporation of the comments received into the reports, the Final EIA Reports will be submitted to the DFFE for decision-making in line with Regulation 23 (1) (a) of the 2014 NEMA EIA Regulations, as amended. The reports will be submitted electronically to the DFFE via the Novell S-Filer system, as recommended by the DFFE since June 2020.

In line with best practice, I&APs on the project database will be notified via **Letter 5** via email (where email addresses are available) of the submission of the Final EIA Reports to the DFFE for decision-making. To ensure ongoing access to information, copies of the Final EIA Reports that have been submitted for decision-making and the Comments and Response Reports (detailing comments received during the EIA Phase and responses thereto) will be placed on the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>). As a supplementary mechanism, the Final EIA Reports will also be uploaded to other alternative web-platforms such as Dropbox or Google Drive.

The Final EIA Reports, which have been submitted for decision-making to the DFFE, will include proof of the PPP that was undertaken to inform Organs of State, Stakeholders and I&APs of the availability of the Draft EIA Reports for the 30-day comment period (as explained above).

The DFFE will have 107 days (from receipt of the Final EIA Reports) to either grant or refuse EA (in line with Regulation 24 (1) of the 2014 NEMA EIA Regulations, as amended).

### 7.3.4 Task 4 – Environmental Authorisation (EA) and Appeal Process

---

Subsequent to the decision-making phase, if EAs are granted by the DFFE for the proposed projects, all registered I&APs, Organs of State and Stakeholders on the project database will receive notification of the issuing of the EAs and the associated appeal period. The 2014 NEMA EIA Regulations, as amended (i.e. Regulation 4 (1)) states that after the Competent Authority has reached a decision, it must inform the Project Applicant of the decision, in writing, within 5 days of such decision. Regulation 4 (2) of the 2014 NEMA EIA Regulations, as amended stipulates that I&APs need to be informed of the EA and associated appeal period within 14 days of the date of the decision. All registered I&APs will be informed of the outcome of the EAs and the appeal procedure, as well as the respective timelines.

The distribution of the EAs (should such authorisations be granted by the DFFE), as well as the notification of the appeal period, will include a letter (i.e. **Letter 6** (Release of EA and Notification of Opportunity to Appeal)) to be sent via email to all registered I&APs, Stakeholders and Organs of State on the project database, where email addresses are available. The letter will include information on the appeal period, as well as details regarding where to obtain a copy of the EAs. A copy of the EAs will also be emailed with Letter 6. The EAs will also be uploaded to the project website (i.e. <https://www.csir.co.za/environmental-impact-assessment>), and a similar supplementary mechanism (as explained above). SMS texts will also be sent to all I&APs on the database, where cell phone numbers are available, to inform them of the EAs (should they be granted).

At the end of the Appeal period, in line with best practice, I&APs on the project database will be notified of the outcome of the Appeal period, via **Letter 7** via email (where email addresses are available).

### 7.3.5 Consultation with Heritage Western Cape

---

In line with Heritage Western Cape (HWC) requirements, three Notifications of Intent to Develop (NIDs) were submitted for the proposed project to the HWC on 16 February 2021 (See Appendix D.6). HWC responded on 24 February 2021 stating the requirements for the assessment phase from a heritage perspective (see Appendix D.7). As per HWC requirements, an integrated Heritage Impact Assessment (HIA) including archaeology, cultural landscape, palaeontology and visual aesthetics will be undertaken during the EIA Phase. In addition, as per HWC requirements, the HIA and VIA will be sent to the Beaufort West and Prince Albert Local Municipalities, as well as to any heritage conservation bodies within or nearest to the jurisdiction of the proposed projects, if and where relevant, for a 30-day comment period during the EIA Phase. Proof of submission of the Heritage Impact Assessment to HWC for decision-making, together with their acknowledgement of receipt, as well as a copy of the approval from HWC will be included as an appendix to the Final EIA Reports.

## 7.4 Authority Consultation during the EIA Phase

---

Authority consultation is integrated into the PPP, with additional meetings held on online platforms with the lead authorities, where necessary. It is proposed that the CA (DFFE) as well as other lead authorities will be consulted at various stages during the EIA Process, if required. At this stage, the following authorities have been identified for the purpose of this EIA Process (additional authorities might be added to this list as the EIA Process proceeds):

- Beaufort West Local Municipality;
- Birdlife South Africa (Western Region);
- Breede-Gouritz Catchment Management Agency;
- Central Karoo District Municipality;
- Department of Agriculture, Rural Development and Land Reform (Western Cape);
- Department of Mineral Resources and Energy (Western Cape);
- DFFE Biodiversity and Conservation Directorate;
- Earthlife Africa;
- Endangered Wildlife Trust;
- Eskom Holdings SOC Ltd;
- Heritage Western Cape (HWC);
- Independent Communications Authority of South Africa (ICASA);
- Department of Water and Sanitation;
- National Energy Regulator of South Africa (NERSA);
- South African National Roads Agency (SANRAL);
- South African Civil Aviation Authority (CAA);
- South African Heritage Resource Agency (SAHRA);
- South African Local Government Association (SALGA) (Western Cape)
- South African National Parks (SANParks);
- South African Radio Astronomy Observatory (SARAO);
- Transnet SOC Ltd;
- Western Cape CapeNature;
- Western Cape Department of Environmental Affairs and Development Planning (DEA&DP);

- Western Cape Department of Transport and Public Works; and
- Wildlife and Environmental Society of South Africa (WESSA).

The authority consultation process for the EIA Phase is outlined in Table 7.2 below.

**Table 7.2: Authority Communication Schedule**

STAGE IN EIA PHASE	FORM OF CONSULTATION
During the EIA Process	Site visit with authorities (including DFFE), if required.
During preparation of EIA Report	Communication (via email or online platforms (i.e. Microsoft Teams) with the DFFE on the outcome of Specialist Studies, if required.
On submission of EIA Report for decision-making	Online meetings with dedicated departments, if requested by the DFFE, with jurisdiction over particular aspects of the project (e.g. Local Authority) and potentially including relevant specialists.

## 7.5 Approach to the Impact Assessment Methodology and Specialist Assessments

This section outlines the assessment methodology and legal context for specialist assessments, as recommended by the then Department of Environmental Affairs (DEA) 2006 Guideline on Assessment of Impacts.

### 7.5.1 Impact Assessment Methodology

The Impact Assessment Methodology has been aligned with the requirements for EIA Reports as stipulated in Appendix 3 (3) (1) (j) of the 2014 NEMA EIA Regulations, as amended, which states the following:

“An environmental impact assessment report must contain the information that is necessary for the Competent Authority to consider and come to a decision on the application, and must include an assessment of each identified potentially significant impact and risk, including-

- (i) cumulative impacts;
- (ii) the nature, significance and consequences of the impact and risk;
- (iii) the extent and duration of the impact and risk;
- (iv) the probability of the impact and risk occurring;
- (v) the degree to which the impact and risk can be reversed;
- (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
- (vii) the degree to which the impact and risk can be mitigated”.

The identification of potential impacts includes impacts that may occur during the construction, operational and decommissioning phases of the development. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it

is important that the nature of the proposed project is well understood so that the impacts associated with the project can be assessed. The process of identification and assessment of impacts will include:

- Determining the current environmental conditions in sufficient detail so that there is a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur if the activity does not proceed;
- Develop an understanding of the activity in sufficient detail to understand its consequences; and
- The identification of significant impacts, which are likely to occur if the activity is undertaken.

As per the then Department of Environmental Affairs and Tourism (DEAT) Guideline 5: Assessment of Alternatives and Impacts, the following methodology is applied to the prediction and assessment of impacts and risks. Potential impacts and risks have been rated in terms of direct, indirect and cumulative impacts:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.
- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

The cumulative impacts will be assessed by identifying other renewable energy projects, that are in different stages of planning and/or development as well as other relevant electricity grid projects, such as construction and upgrade of electricity generation, and transmission or distribution facilities within 50 km of the proposed Kwagga WEFs. Note that there are currently no operational WEFs located within 50 km of the proposed Kwagga WEFs.

The approach for the S&EIA is that the assessment will include all renewable energy projects within 50 km that have received an EA, or has a BA/EIA in progress as at 31 March 2021, including the three proposed Kwagga WEF project developments. The information has been sourced from the National DFFE Renewable Energy EIA Application (REEA) database, 2021 Quarter 4; as well as from the South African Heritage Resources Information System (SAHRIS). Table 7.3 and Table 7.4 provides more details; and Figure 7.1 provides an illustration of the projects that will be considered in the cumulative impact assessment.

**Table 7.3: Proposed renewable energy projects, located within 50 km of the proposed Kwagga WEF projects, that will be considered in the Cumulative Impact Assessment (Source: DFFE REEA Quarter 4, 2021; SAHRIS)**

DFFE REFERENCE	EA PROCESS	PROJECT TITLE	APPLICANT	EAP	PROVINCE	TECHNOLOGY	MW	STATUS
12/12/20/1784 12/12/20/1784/AM1 12/12/20/1784/AM2 12/12/20/1784/AM3 12/12/20/1784/AM4 12/12/20/1784/AM5	S&EIA (and Amendments)	Proposed development of 170 MW Wind and Photovoltaic (PV) Energy Facility near Beaufort west in the Prince Albert local Municipality, Western Cape Province	South Africa Mainstream Renewable Power Developments (Pty) Ltd	Environmental Resource Management (Pty) Ltd  SIVEST Environmental Division  Council for Scientific and Industrial Research (CSIR)	Western Cape	Onshore Wind	Wind-120 MW  Solar PV-50 MW	Approved
12/12/20/1784/1	Environmental Authorisation (EA) Amendment Assessment	Proposed development of the 140 MW Beaufort West Wind Farm in the Prince Albert Local Municipality, Western Cape Province	South Africa Mainstream Renewable Power Developments (Pty) Ltd	SIVEST Environmental Division	Western Cape	Onshore Wind	140 MW	Approved
12/12/20/1784/2 12/12/20/1784/2/AM1	Environmental Authorisation Amendment Assessment (and Amendments)	Proposed development of the 140 MW Trakas Wind Farm in the Prince Albert Local Municipality, Western Cape Province	South Africa Mainstream Renewable Power Developments (Pty) Ltd	SIVEST Environmental Division	Western Cape	Onshore Wind	140 MW	Approved

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

DFFE REFERENCE	EA PROCESS	PROJECT TITLE	APPLICANT	EAP	PROVINCE	TECHNOLOGY	MW	STATUS
12/12/20/2133 12/12/20/2133/AM1 12/12/20/2133/AM2 12/12/20/2133/AM3 12/12/20/2133/AM4 12/12/20/2133/AM5	BA (and Amendments)	Proposed construction of 19 MW Photovoltaic Solar Facility proposed by Lurama 214 Pty Ltd on Portion 1 of the Farm Steenrotsfontein 168, Beaufort West, Western Cape	Lurama 214 Pty Ltd  BioTherm Energy (Pty) Ltd  BioTherm Energy (Pty) Ltd	Council for Scientific and Industrial Research	Western Cape	Solar PV	19 MW	Approved
14/12/16/3/3/2/772	S&EIA	Proposed establishment of the Beaufort West Solar Power Plant Site 1, Western Cape	To review	Council for Scientific and Industrial Research	Western Cape	Solar PV	0	Approved
14/12/16/3/3/2/773	S&EIA	Proposed establishment of the Beaufort West Solar Power Plant Site 2 , Western Cape Province	To review	Council for Scientific and Industrial Research	Western Cape	Solar PV	0	Approved
14/12/16/3/3/2/774	S&EIA	Proposed Beaufort West Solar power plant site 3 near Beaufort West	To review	Council for Scientific and Industrial Research	Western Cape	Solar PV	0	Approved

DRAFT SCOPING REPORT: Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga Wind Energy Facility 3 near Beaufort West in the Western Cape

---

DFFE REFERENCE	EA PROCESS	PROJECT TITLE	APPLICANT	EAP	PROVINCE	TECHNOLOGY	MW	STATUS
12/12/20/2296	BAR	Proposed Construction of the Leeu Gamka Solar Power Plant and its associated Infrastructures, near Beaufort West and Leeu Gamka, Beaufort West Local Municipality, Western Cape Province	Through Fare General Trading Pty Ltd	EnviroAfrica Environmental Consultants (Pty) Ltd	Western Cape	Solar PV	0	In process
14/12/16/3/3/2/406	S&EIA	Proposed wind and solar facility on Farm Lombaardskraal, Farm 330, Beaufort West, Western Cape	To review	Savannah Environmental Consultants (Pty) Ltd	Western Cape	Solar PV	20	In process
14/12/16/3/3/2/324	S&EIA	Proposed PV solar plant on three properties, Beaufort West, Western Cape	To review	Council for Scientific and Industrial Research	Western Cape	Solar PV	0	Withdrawn / Lapsed

**Table 7.4: Proposed Kwagga WEF project developments**

<b>DFFE REFERENCE</b>	<b>EA PROCESS</b>	<b>PROJECT TITLE</b>	<b>APPLICANT</b>	<b>EAP</b>	<b>PROVINCE</b>	<b>TECHNOLOGY</b>	<b>MW</b>	<b>STATUS</b>
Pending	S&EIA	Scoping and Environmental Impact Assessment for the proposed development of the 279 MW Kwagga WEF 1 near Beaufort West in the Western Cape	Kwagga Wind Energy Facility 1 (PTY) Ltd	CSIR	Western Cape	Wind	279	S&EIA in progress
Pending	S&EIA	Scoping and Environmental Impact Assessment for the proposed development of the 341 MW Kwagga WEF 2 near Beaufort West in the Western Cape	Kwagga Wind Energy Facility 2 (PTY) Ltd	CSIR	Western Cape	Wind	341	S&EIA in progress
Pending	S&EIA	Scoping and Environmental Impact Assessment for the proposed development of the 204.6 MW Kwagga WEF 3 near Beaufort West in the Western Cape	Kwagga Wind Energy Facility 3 (PTY) Ltd	CSIR	Western Cape	Wind	204.6	S&EIA in progress



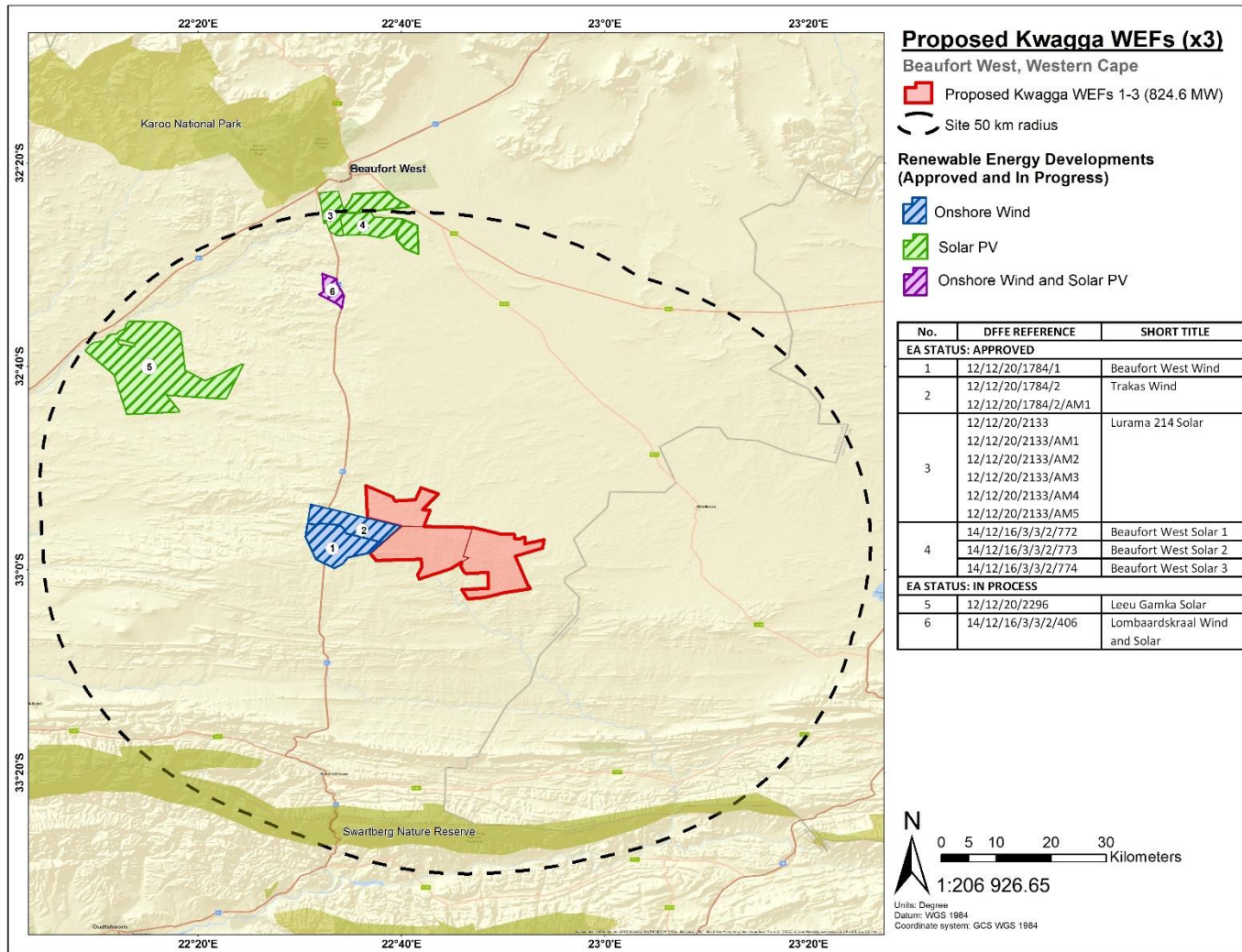


Figure 7.1: Renewable Energy projects within the 50 km radius considered for the Cumulative Impact Assessment (Source: DFFE REEA Quarter 4, 2021; SAHRIS).

In addition to the above, the Impact Assessment Methodology includes the following aspects:

**Nature of impact** - this reviews the type of effect that a proposed activity will have on the environment and should include “what will be affected and how?”

**Status** - Whether the impact on the overall environment (social, biophysical and economic) will be:

- Positive - environment overall will benefit from the impact;
- Negative - environment overall will be adversely affected by the impact; or
- Neutral - environment overall will not be affected.

**Spatial extent** – The size of the area that will be affected by the impact:

- Site specific;
- Local (<10 km from site);
- Regional (<100 km of site);
- National; or
- International (e.g. Greenhouse Gas emissions or migrant birds).

**Duration** – The timeframe during which the impact/risk will be experienced:

- Very short term (instantaneous);
- Short term (less than 1 year);
- Medium term (1 to 10 years);
- Long term (the impact will cease after the operational life of the activity (i.e. the impact or risk will occur for the project duration)); or
- Permanent (mitigation will not occur in such a way or in such a time span that the impact can be considered transient (i.e. the impact will occur beyond the project decommissioning)).

**Consequence** – The anticipated severity of the impact/risk:

- Extreme (extreme alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they permanently cease);
- Severe (severe alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Substantial (substantial alteration of natural systems, patterns or processes, i.e. where environmental functions and processes are altered such that they temporarily or permanently cease);
- Moderate (notable alteration of natural systems, patterns or processes, i.e. where the environment continues to function but in a modified manner); or
- Slight (negligible alteration of natural systems, patterns or processes, i.e. where no natural systems/environmental functions, patterns, or processes are affected).

**Reversibility of the Impacts** - the extent to which the impacts are reversible assuming that the project has reached the end of its life cycle (decommissioning phase) will be:

- High reversibility of impacts (impact is highly reversible at end of project life, i.e. this is the most favourable assessment for the environment). For example, the nuisance factor caused by noise

impacts associated with the operational phase of an exporting terminal can be considered to be highly reversible at the end of the project life);

- Moderate reversibility of impacts;
- Low reversibility of impacts; or
- Impacts are non-reversible (impact is permanent, i.e. this is the least favourable assessment for the environment). The impact is permanent. For example, the loss of a palaeontological resource on the site caused by building foundations could be non-reversible).

**Irreplaceability of Resource Loss caused by impacts** – the degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase) will be:

- High irreplaceability of resources (project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment);
- Moderate irreplaceability of resources;
- Low irreplaceability of resources; or
- Resources are replaceable (the affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment).

Using the criteria above, the impacts/risk will further be assessed in terms of the following:

**Probability** – The probability of the impact occurring:

- Extremely unlikely (little to no chance of occurring);
- Very unlikely (<30% chance of occurring);
- Unlikely (30-50% chance of occurring)
- Likely (51 – 90% chance of occurring); or
- Very likely (>90% chance of occurring regardless of prevention measures).

To determine the significance of an identified impact/risk, the consequence is multiplied by probability (qualitatively as shown in Figure 7.2 below). The significance is rated qualitatively against a predefined set of criteria (i.e. probability and consequence) as indicated in Figure 7.2. The approach incorporates internationally recognised methods from the Intergovernmental Panel on Climate Change (IPCC) (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity, to generate an integrated picture of the risks related to a specified activity in a given location, with and without mitigation. Risk is assessed for each significant stressor (e.g. physical disturbance), on each different type of receiving entity (e.g. the municipal capacity, a sensitive wetland), qualitatively (very low, low, moderate, high, very high) against a predefined set of criteria (as shown in Figure 7.2 below).

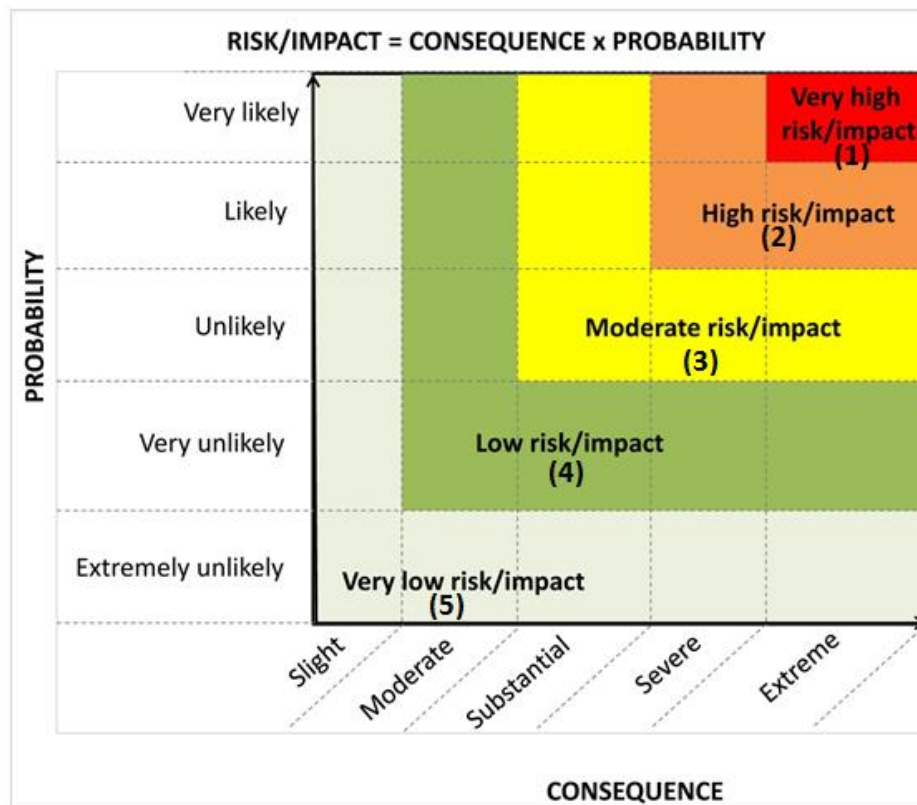


Figure 7.2: Guide to assessing risk/impact significance as a result of consequence and probability

**Significance** – Will the impact cause a notable alteration of the environment?

- Very low (the risk/impact may result in very minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Low (the risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures, and will not have an influence on decision-making);
- Moderate (the risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures, and will only have an influence on the decision-making if not mitigated);
- High (the risk/impacts will result in a considerable alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making); or
- Very high (the risk/impacts will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making (i.e. the project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating)).

With the implementation of mitigation measures, the residual impacts/risks must be ranked as follows in terms of significance (based on Figure 7.2):

- Very low = 5;
- Low = 4;
- Moderate = 3;
- High = 2; and
- Very high = 1.

**Confidence** – The degree of confidence in predictions based on available information and specialist knowledge:

- Low;
- Medium; or
- High.

Other aspects to be taken into consideration in the assessment of impact significance are:

- Impacts are to be evaluated for the construction, operational and decommissioning phases of the development. The assessment of impacts for the decommissioning phase will be brief, as there is limited understanding at this stage of what this might entail. The relevant rehabilitation guidelines and legal requirements applicable at the time will need to be applied;
- Impacts will be evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact;
- The impact evaluation will, where possible, take into consideration the cumulative effects associated with this and other facilities/projects which are either developed or in the process of being developed in the local area (i.e. within 50 km from the proposed Kwagga projects); and
- The impact assessment will attempt to quantify the magnitude of potential impacts (direct, indirect and cumulative effects) and outline the rationale used. Where appropriate, national standards are to be used as a measure of the level of impact.

Impacts will then be collated into the EMPr and these will include the following:

- Quantifiable standards for measuring and monitoring mitigatory measures and enhancements will be set. This will include a programme for monitoring and reviewing the recommendations to ensure their ongoing effectiveness;
- Identifying negative impacts and prescribing mitigation measures to avoid or reduce negative impacts. Where no mitigatory measures are possible this will be stated; and
- Positive impacts will be identified and augmentation measures will be identified to potentially enhance positive impacts where possible.

A generic EMPr was compiled for the development and expansion of (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. On 2 March 2018, these two Generic EMPrs were gazetted in Government Gazette 41473, GN R162 and GN R163, for public comment for a period of 45 days. On 22 March 2019, these two Generic EMPrs were gazetted for implementation in Government Gazette 42323, GN R435. Since the proposed project components include on-site substations, the gazetted EMPr for substations will be adhered to should any of the substations exceed 33kV.

Table 7.5 below will be used by the specialists for the rating of impacts.

**Table 7.5: Example of Table for Assessment of Impacts/Risks**

<i>Impact</i>	<i>Impact Criteria</i>		<i>Significance and Ranking (Pre-Mitigation)</i>	<i>Potential mitigation measures</i>	<i>Significance and Ranking (Post-Mitigation)</i>	<i>Confidence Level</i>
<b>CONSTRUCTION PHASE</b>						
<i>Habitat and species loss as a result of clearance of vegetation for the PV Facility</i>	<i>Status</i>	<i>Negative</i>	<i>Moderate (3)</i>	<i>Plant search and rescue (EMPr)</i>	<i>Low (4)</i>	<i>Medium</i>
	<i>Spatial Extent</i>	<i>Site Specific</i>				
	<i>Duration</i>	<i>Long-term</i>				
	<i>Consequence</i>	<i>Substantial</i>				
	<i>Probability</i>	<i>Very likely</i>				
	<i>Reversibility</i>	<i>Moderate</i>				
	<i>Irreplaceability</i>	<i>Moderate</i>				
<b>OPERATIONAL PHASE</b>						
	<i>Status</i>					
	<i>Spatial Extent</i>					
	<i>Duration</i>					
	<i>Consequence</i>					
	<i>Probability</i>					
	<i>Reversibility</i>					
	<i>Irreplaceability</i>					
<b>DECOMMISSIONING PHASE</b>						
	<i>Status</i>					
	<i>Spatial Extent</i>					
	<i>Duration</i>					
	<i>Consequence</i>					
	<i>Probability</i>					
	<i>Reversibility</i>					
	<i>Irreplaceability</i>					

## 7.6 Issues or Impacts to be assessed as part of the EIA Process

The issues and impacts presented in this Section have been identified based on scoping level assessment of the environmental status quo of the receiving environment (environmental, social and heritage features present on site – as discussed in Chapter 3 of this Scoping Report) and input from specialists that form part of the EIA project team. These issues and impacts will be assessed in further detail during the EIA Phase through the specialist assessments and are included in Chapter 6 of this Scoping Report; however, they have been summarised below in Table 7.6 for ease of reference. It must be noted that additional issues may be raised during the Scoping Phase which could potentially be assessed during the EIA Phase.

**Table 7.6: Summary of Issues to be addressed during the EIA Phase as part of the specialist assessments / input**

Specialist Assessment / Input	Key issues to be addressed
<b>Agriculture and Soils Compliance Statement</b>	<p><b>Construction and Operational Phases:</b></p> <ul style="list-style-type: none"> <li>▪ Loss of agricultural land use;</li> <li>▪ Soil degradation including erosion, topsoil loss and contamination; and</li> <li>▪ Increased financial security for farming operations<sup>1</sup>.</li> </ul>
<b>Aquatic Biodiversity and Species</b>	<p><b>Construction Phase:</b></p> <ul style="list-style-type: none"> <li>▪ Disturbance and possible loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota;</li> <li>▪ The removal of indigenous riparian and instream vegetation that has the potential to reduce the ecological integrity and functionality of the watercourses;</li> <li>▪ Water demand for construction could place stress on the existing available water resources should external water sources not be utilised;</li> <li>▪ Road crossing structures if not adequately designed could impede flow in the watercourses;</li> <li>▪ Alien vegetation infestation within the aquatic features due to disturbance; and</li> <li>▪ Increased sedimentation and risks of contamination of surface water runoff during construction.</li> </ul> <p><b>Operational Phase:</b></p> <ul style="list-style-type: none"> <li>▪ Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained;</li> <li>▪ Modified runoff characteristics from hardened surfaces at the turbines and the substations, as well as along the access roads that have the potential to result in erosion of hillslopes and watercourses; and</li> </ul>

<sup>1</sup> This potential issue is considered to have a positive impact because of the proposed development.

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> <li>▪ Possible increased potential for water quality impacts such as contamination from sewage generated on site because of the operation on site.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ An increased disturbance of aquatic habitat due to the increased activity on the site; and</li> <li>▪ Increased sedimentation and risks of contamination of surface water runoff.</li> </ul>
<p><b>Terrestrial Biodiversity and Species</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ The clearing of natural vegetation and resultant loss of faunal habitat;</li> <li>▪ The loss of endangered, threatened, protected and endemic plants/animals;</li> <li>▪ Direct faunal mortalities due to construction activities and increased vehicle traffic;</li> <li>▪ Increased human activity, noise and light levels;</li> <li>▪ Increased dust deposition;</li> <li>▪ Establishment of alien vegetation as a result of the clearing of the vegetation;</li> <li>▪ Increased stormwater run-off and erosion; and</li> <li>▪ Changes in animal behaviour.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Direct faunal mortalities;</li> <li>▪ Increased human activity, light and noise levels;</li> <li>▪ Establishment of alien vegetation will continue; and</li> <li>▪ Changes in animal behaviour.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Some clearing of natural vegetation due to removal of infrastructure;</li> <li>▪ Possible ingestion or ensnarement of animals due to waste material lying around;</li> <li>▪ Establishment of alien invasive vegetation; and</li> <li>▪ Increased erosion and stormwater run-off.</li> </ul>
<p><b>Avifauna Impact Assessment</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Total or partial displacement of avifauna due to habitat transformation associated with the presence of the wind turbines and associated infrastructure;</li> <li>▪ The noise and movement associated with the construction activities at the project footprint will be a source of disturbance, which would lead to the displacement of avifauna from the area.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Avifauna mortality and injury through collisions with the wind turbines; and</li> <li>▪ Electrocuting of priority species on the internal electrical grid network.</li> </ul>



Specialist Assessment / Input	Key issues to be addressed
	<p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ The noise and movement associated with the activities at the study area will be a source of disturbance, which would lead to the displacement of avifauna from the area.</li> </ul>
<p><b>Bat Impact Assessment</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Displacement of bats due to habitat loss / habitat transformation;</li> <li>▪ Roost disturbance; and</li> <li>▪ Roost destruction.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Mortality of bats due to turbine collisions while commuting/foraging and/or due to barotrauma;</li> <li>▪ Mortality of bats due to turbine collisions during migrations; and</li> <li>▪ Light pollution associated risks including loss of insect prey and increased collision risks for bats foraging closer to turbines.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Displacement of bats due to disturbance associated with the decommissioning activities.</li> </ul>
<p><b>Heritage Impact Assessment (including Archaeology and Cultural Landscape)</b></p>	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ The destruction or disturbance of archaeological artefacts or sites;</li> <li>▪ The destruction or disturbance of graves or burial sites;</li> <li>▪ The destruction or disturbance of historic built infrastructure;</li> <li>▪ Visual intrusion of visually sensitive heritage resources and/or cultural landscape features, which might erode its association with intangible heritage.</li> </ul>
<p><b>Palaeontology Impact Assessment</b></p>	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Damage and/or destruction of scientifically valuable fossils preserved at or beneath the ground due to surface clearance or excavations.</li> </ul>
<p><b>Noise Impact Assessment</b></p>	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Noise pollution i.e. increase in ambient sound levels due to construction activities (e.g. equipment and vehicle noise).</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Mechanical and aerodynamic noise from the operation of the wind turbine components.</li> </ul>
<p><b>Socio-Economic Assessment</b></p>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Investment and the contribution to the national, regional and local economy<sup>1</sup>;</li> <li>▪ Generation of employment, income and skills<sup>1</sup>; and</li> <li>▪ Pressures on community fabric and resources due to an influx of jobseekers.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Lower national CO<sub>2</sub> emissions per unit of energy generated<sup>1</sup>;</li> <li>▪ Investment and the contribution to the national, regional and local economy<sup>1</sup>;</li> </ul>

Specialist Assessment / Input	Key issues to be addressed
	<ul style="list-style-type: none"> <li>▪ Generation of employment, income and skills<sup>1</sup>; and</li> <li>▪ Improvement of community facilities and prospects through funding of social upliftment projects<sup>1</sup>.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Loss of employment due to decommissioning of the facility.</li> </ul>
<b>Traffic Impact Assessment</b>	<p><b><u>Construction and Decommissioning Phases:</u></b></p> <ul style="list-style-type: none"> <li>▪ Increase in vehicle traffic due to construction activities – Potential traffic congestion and delays on the surrounding road network and associated noise and dust pollution.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Potential traffic congestion and delays on the surrounding road network due to increased vehicle traffic<sup>2</sup>.</li> </ul>
<b>Visual Impact Assessment</b>	<p><b><u>Construction Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on visual receptors;</li> <li>▪ Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors;</li> <li>▪ Potential visual impact of security and construction lighting on the nightscape of the region;</li> <li>▪ Potential scarring in the landscape caused by earthworks and excavations; and</li> <li>▪ Increased dust emissions from heavy machinery and vehicle traffic.</li> </ul> <p><b><u>Operational Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and potential flicker effect by wind turbines and associated structures and infrastructure on visual receptors;</li> <li>▪ Visual intrusion by wind turbines and associated structures and infrastructure on landscape receptors; and</li> <li>▪ Potential visual impact of on-site security lighting and red-flashing warning lights on top of the turbine hubs on the rural nightscape of the region.</li> </ul> <p><b><u>Decommissioning Phase:</u></b></p> <ul style="list-style-type: none"> <li>▪ Visual intrusion and increased dust emissions due to decommissioning activities including disassembly of project components, heavy machinery, increased vehicle traffic and rehabilitation; and</li> <li>▪ Potential visual impact of security and construction lighting on the nightscape of the region.</li> </ul>

<sup>2</sup> Note that the traffic generated because of the development during the operational phase will be minimal and will not have a significant impact on the surrounding road network in light of the remote and rural setting of the area.

## 7.7 Alternatives to be assessed in the EIA Phase

---

A description of the alternatives that will be assessed or considered during the EIA Phase is provided in Chapter 5 of this Scoping Report. However, they have been summarised below for ease of reference:

- **No-go Alternative:**
  - The no-go alternative assumes that the proposed project will not go ahead i.e. it is the option of not developing the proposed Kwagga WEF 3. This alternative would result in no environmental impacts from the proposed project on the site or surrounding local area. It will provide a baseline against which other alternatives will be compared and considered during the EIA Phase. The no-go alternative will be assessed by all the specialists on the project team.
- **Land Use Alternative:**
  - All farm portions forming part of the proposed project is zoned for agricultural land-use, and is mainly used for low-density livestock farming. As discussed in Chapter 3 of this Scoping Report, the soils of the proposed project site are predominantly very shallow and rocky with limited climatic moisture availability. These soil characteristics present major limitations to agriculture, as such cultivation and agricultural potential is uniformly very low across the study area. Agricultural land use is limited to low-density grazing i.e. 30 hectares per large stock unit. Hence, the agricultural land use is not a preferred alternative. The proposed project will generate an additional income stream to the landowners and is therefore considered the preferred land use alternative and will not impede on the existing land use activities as the proposed project can co-exist with continued low-density livestock farming on site.
- **Type of Activity Alternative:**
  - This relates to the generation of electricity from a renewable energy source, and in this particular case, from wind. The **generation of electricity from a renewable energy source** was the only activity considered by the Project Developer, and thus considered in this DSR. No other activity types were considered or deemed appropriate based on the expertise of the Project Developer.
- **Renewable Energy Alternatives:**
  - Data received from consistent measurements recorded by three on-site wind measuring meteorological masts (i.e. one mast on each of the three proposed WEF project sites) for a minimum period of 12 months has indicated that the wind resource at the proposed Kwagga WEF 3 project site is more than adequate for the development of a WEF. In addition, the IRP2019 gazetted by the Minister of Mineral Resources and Energy, Gwede Mantashe, in October 2019, indicated that the highest renewable energy target capacity is allocated to wind energy (i.e. 17 742 MW total installed wind energy capacity by 2030). The proposed Kwagga WEF 3 will therefore contribute toward achieving the total installed capacity target set out in the IRP2019, should the project receive preferred bidder status in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) or similar process. Therefore, in terms of project and location compatibility, the proposed project is considered to be the most feasible renewable energy activity alternative. No other renewable energy technology alternatives will be further assessed during the EIA Phase.
- **Preferred Site and Development Footprints within the Study Area:**
  - The preferred site for the proposed Kwagga WEF 3 extends over the following farm portions:

- Portion 1 of the Farm Arthurs Kraal No. 386;
  - Portion 2 of the Farm Arthurs Kraal No. 386;
  - Portion 3 of the Farm Arthurs Kraal No. 386;
  - The Farm Annex Taaibos No. 21;
  - Portion 4 of the Farm Cyferfontein No. 115;
  - Portion 5 of the Farm Cyferfontein No. 115;
  - Portion 6 of the Farm Cyferfontein No. 115;
  - Portion 8 of the Farm Cyferfontein No. 115;
  - Portion 5 of the Farm Muis Kraal No. 373; and
  - Portion 7 of the Farm Muis Kraal No. 373.
- At a specific (local) level, sites on the Cyferfontein No. 115, Muis Kraal No. 373, Annex Taaibos No. 21 and Arthurs Kraal No. 386 farms were deemed suitable due to all the site selection factors (such as land availability, distance to the national grid, site accessibility, topography, current land use and landowner willingness) being favourable. The development footprint within the proposed project site has been determined through a screening exercise of the project site by the specialist team (specialists input have been provided during the Scoping Phase and are included in Appendix F of this Scoping Report), and through consultation with the affected landowners to identify sensitive areas that should preferably be avoided and thus are excluded from development (i.e. 'no-go' areas). The current proposed development footprint of the proposed Kwagga WEF 3 is approximately 250 ha (i.e. approximately 0.27% of the combined area of the affected farm portions listed above).
- **Layout Alternatives:**
    - The preferred layout alternatives for the proposed WEF project will be determined and confirmed following the input from the various specialists. The specialist assessments will aim to identify various environmental sensitivities within the development footprint that should be avoided, which will be taken into consideration during the determination and refinement of the preferred project layout of the proposed WEF.
    - Although all existing access roads will be utilised for the proposed project and have been assessed during the Scoping Phase, the internal road network on site will be confirmed in the revised project layout, which will be taken forward into the EIA Phase for detailed specialist assessment.
  - **Project Infrastructure Location Alternatives:**
    - Various infrastructure alternatives are being considered and will be assessed in this S&EIA process. These include development footprints for construction compound, laydown area and substations, as well as alternative technologies for the Battery Energy Storage Systems (BESS).
    - Four possible development footprints for the construction compound and laydown area will be assessed in the EIA Phase and the preferred alternative will thereafter be selected.
    - Three possible development footprints for the substation hubs will be assessed in the EIA Phase and the preferred two alternatives will thereafter be selected.

▪ **Technology Alternatives:**

- The following types of electrochemical BESS technologies will be assessed in the EIA Phase and the preferred alternative will thereafter be selected:
  - Lead Acid and Advanced Lead Acid BESS;
  - Lithium ion BESS;
  - Nickel based BESS (i.e. Nickel-Cadmium (NiCd) and nickel–metal hydride (NiMH));
  - High Temperature (NaS, Na-NiCl<sub>2</sub>, Mg/PB-Sb) BESS; and
  - Redox Flow Batteries (RFB): Vanadium-Vanadium Redox Flow Battery (VRFB), Zinc-iron Flow Battery (Zn-Fe), Zinc-Bromine Flow Battery (Zn-Br).

It is important to note that where alternatives are not feasible or will not be assessed, a motivation has been provided in Chapter 5 of this Scoping Report. The preferred alternatives will be assessed during the EIA Phase.

### 7.8 Terms of Reference for the Specialist Assessments

The Terms of Reference (ToRs) for the Specialist Assessments will essentially consist of the generic assessment requirements and the specific issues identified for each discipline. The ToRs will be updated to include relevant comments received from I&APs and authorities during the 30-day commenting period of the Draft Scoping Report.

The following Specialist Assessments have been identified following consultation with the National Environmental Screening Tool<sup>3</sup> to determine a baseline description of the prevalent environmental sensitivities within the proposed project site. The ToR for each Specialist Assessment is discussed in detail below. The Specialist Assessments and associated Specialists are indicated in Table 7.7 below. Additional Specialist Assessments could possibly be commissioned as a result of concerns raised during the Scoping Phase.

**Table 7.7: Specialist Assssments and associated Specialist Consultants commissioned to assess the environmental sensitivites identified by the National Web-Based Screening Tool**

SPECIALIST ASSESSMENT	SPECIALIST CONSULTANT	SPECIALIST NAME
Agriculture and Soils	Private	Johann Lanz
Aquatic Biodiversity and Species	Private	Toni Belcher
Avifauna Impact Assessment	Chris van Rooyen Consulting	Chris van Rooyen, Albert Froneman
Bats Impact Assessment	Arcus Consultancy Services South Africa (Pty) Limited	Ashlin Bodasing, Mark Hodgson
Civil Aviation Compliance Statement and Site Sensitivity Verification	CSIR (EAP)	Lizande Kellerman, Dhiveshni Moodley
Defence Site Sensitivity Verification	CSIR (EAP)	Lizande Kellerman, Dhiveshni Moodley
Heritage Impact Assessment	ASHA Consulting (Pty) Ltd	Dr Jayson Orton
Noise Impact Assessment	Safetrain cc T/A Safetech	Dr Brett Williams, Jason Hutton
Palaeontological Impact Assessment	Natura Viva cc	Dr John Almond

<sup>3</sup> The National Screening Tool can be accessed at <https://screening.environment.gov.za/screeningtool/#/pages/welcome>

SPECIALIST ASSESSMENT	SPECIALIST CONSULTANT	SPECIALIST NAME
Socio-Economic Impact Assessment	SRK Consulting (South Africa) (Pty) Ltd	Sue Reuther
Terrestrial Biodiversity and Species	Ekotrust cc	Dr Noel van Rooyen
Traffic Impact Assessment	JG Afrika (Pty) Ltd	Iris Wink, Adrian Johnson
Visual & Flicker Impact Assessment	Bapela Cave Klapwijk cc	Menno Klapwijk

The requirements for Specialist Assessments are specified in Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as, where relevant, the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN R320. These protocols stipulate the procedures for the assessment and Minimum Reporting Criteria for identified Environmental Themes in terms of Sections 24 (5) (A) and (H) as well as 44 of the NEMA, when applying for EA.

The Assessment Protocols in GN R320 include the following sections:

- **Part A:** This includes the Site Sensitivity Verification requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. The current use of the land and the environmental sensitivity of the site under consideration identified by the National Web-Based Screening Tool, where determined, must be verified and confirmed by undertaking a Site Sensitivity Verification. The Site Sensitivity Verification must be compiled and included as an appendix to the Specialist Assessment. However, in certain instances, there are no sensitivity layers on the Screening Tool for a particular Specialist Assessment. For example, as at March 2021, there are no sensitivity layers on the National Web-Based Screening Tool for socio-economic and traffic features. For all Specialist Assessments that fall within the ambit of Part A of GN R320, Appendix 6 of the 2014 NEMA EIA Regulations, as amended, must be complied with.
- **Part B:** This includes the Site Sensitivity Verification requirements as well as the Assessment and Minimum Reporting Criteria where a Specialist Assessment is required and a specific Assessment Protocol has been prescribed. The following protocols are prescribed and relevant to this S&EIA:
  - **Agriculture:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all onshore wind and/or solar PV energy activities requiring EA;
  - **Avifauna:** Specific Assessment Protocol to be followed. This applies to all onshore wind activities requiring EA (i.e. for onshore wind energy generation facilities, where the electricity output is 20 megawatts or more);
  - **Terrestrial Biodiversity:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all activities requiring EA (based on the classification identified by the Screening Tool);
  - **Aquatic Biodiversity:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all activities requiring EA (based on the classification identified by the Screening Tool);
  - **Noise:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all activities requiring EA (based on the classification identified by the Screening Tool);
  - **Defence:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all activities requiring EA (based on the classification identified by the Screening Tool); and

- **Civil Aviation:** Site Sensitivity Verification Report required and specific Assessment Protocol to be followed. This applies to all activities requiring EA (based on the classification identified by the Screening Tool).

### 7.8.1 Agricultural Compliance Statement

---

The Agricultural Compliance Statement must comply with the Assessment Protocols that were published on 20 March 2020, in Government Gazette 43110, GN R320. This specifically includes the Agriculture Protocol that applies to all onshore wind and/or solar PV energy activities requiring EA. This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The Agricultural Specialist is therefore also required to provide a Site Sensitivity Verification Report based on the requirements documented in the Assessment Protocol (GG 43110 / GN R320, 20 March 2020).

It must be noted that the Specialist has previously visited the site and has used the findings of previous site visits, in addition to aerial photography, satellite imagery, publically available spatial data, literature and teleconferences, to identify the level of environmental sensitivity of the study area, and to verify and confirm the assigned sensitivity and current land-use of the study area as per the National Web-Based Screening Tool. Following the compilation of the Site Sensitivity Verification report (included in Appendix F.1), it was determined by the Specialist that the small portions of “very high” and “high” sensitivities recorded within the Kwagga WEF 3 study area were an anomaly due to the climate and general soil conditions being unsuitable for cultivation. In addition, the EAP confirmed that no new cultivation (i.e. crop fields) had been established on the site at the time of their site visit (i.e. 20-21 October 2020). Therefore, a Compliance Statement is deemed sufficient for the purposes of the Agriculture and Soils Assessment for the EIA Phase of the proposed project. Therefore, the Specialist will during the EIA Phase compile an Agricultural Compliance Statement in accordance with said Assessment Protocol (GG 43110 / GN R320, 20 March 2020).

The Agricultural Compliance Statement will include the following tasks:

- Assessment of the preferred project layout following the site sensitivity verification and layout identification;
- Specification of development setbacks or buffers required, and clear motivations for these recommendations;
- A map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope, overlaid on the agricultural sensitivity map generated by the screening tool;
- Calculations of the physical development footprint area for each land parcel as well as the total physical development footprint area of the proposed development including supporting infrastructure;
- Confirmation that the development footprint is in line with the allowable development limits contained in GN R320;
- Description and mapping of soil types (soil forms), soil characteristics (soil depth, soil colour, limiting factors, and clay content of the top and sub soil layers), and degradation and erodibility of soils etc. to the extent necessary to inform this assessment;

- Assessment of the direct, indirect and cumulative impacts associated with the proposed development, where possible, (although an assessment and rating of impacts is not strictly required for a Compliance Statement stipulated in GN R320):
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above);
- Confirmation that all reasonable measures have been taken through micro siting to avoid or minimise fragmentation and disturbance of agricultural activities;
- A substantiated statement indicating the level of acceptability of the proposed development and a recommendation if the development should go ahead or not; as well as any conditions to which this statement is subjected;
- A description of assumptions, any uncertainties or gaps in knowledge or data, and limitations;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it will be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- A signed Specialist Declaration of Independence and details and relevant expertise as well as the SACNASP registration number of the specialist, including a curriculum vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### **7.8.2 Terrestrial Biodiversity and Species Impact Assessment**

---

The Terrestrial Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Terrestrial Biodiversity' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. It must be noted that this specialist assessment was commissioned prior to the



gazetting of the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species' and the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species' (GG 43855 / GN R1150, 30 October 2020).

The Specialist has conducted a site visit and fieldwork during end of October 2020 and early November 2020 in order to identify the level of sensitivity assigned to the project study area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings from the site visit and the Site Sensitivity Verification Report (included in Appendix F.6) prepared by the Specialist in accordance with the requirements documented in the Assessment Protocol (GG 43110 / GN R320 of 20 March 2020), it was confirmed that a Terrestrial Biodiversity and Species Impact Assessment (the input complying with the content requirements of the said Terrestrial Biodiversity Protocol) is required during the EIA Phase.

The Terrestrial Biodiversity and Species Impact Assessment is to be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements. The Impact Assessment Report must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary.

The Terrestrial Biodiversity and Species Impact Assessment will include the following:

- contact details of the specialist, their SACNASP registration number, their field of expertise and a Curriculum Vitae;
- a signed statement of independence by the specialist;
- Liaison with the South African National Biodiversity Institute (SANBI) to obtain information on sensitive species flagged in the National Web-Based Screening Tool (where species names are obscured / only numbered);
- A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;
- a description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;
- Description of the terrestrial ecosystem features of the project site, with focus on features that are to be potentially impacted by the proposed project. The description will include the major habitat forms within the study area, giving due consideration to terrestrial fauna and flora;
- Specification of development setbacks or buffers required, and clear motivations for these recommendations;
- a location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);
- Consideration of seasonal changes and long-term trends, such as due to climate change;
- Identification of any species of conservation concern (SCC) or protected species on site;
- Assessment of local and regional biodiversity conservation planning relevant to the project area;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed developments on terrestrial biodiversity and species:

- Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
- Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not any conditions to which this statement is subjected;
- A description of assumptions and limitations in the report and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provision of recommendations with regards to potential monitoring programmes;
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### **7.8.3 Aquatic Biodiversity and Species Impact Assessment**

---

The Aquatic Biodiversity Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Aquatic Biodiversity' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended.

The Specialist has conducted a site visit and fieldwork during end of October 2020 and early November 2020 on 8 November 2020 in order to identify the level of sensitivity assigned to the project study area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings from the site visit and the Site Sensitivity Verification Report (included in Appendix F.5) prepared by the Specialist in accordance with the requirements documented in the Assessment Protocol (GG 43110 / GN R320 of 20 March 2020), it was confirmed that an Aquatic Biodiversity and Species Impact Assessment (the input complying with the content requirements of the said Aquatic Biodiversity Protocol) is required during the EIA Phase.

The Aquatic Biodiversity and Species Impact Assessment is to be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements. The Impact Assessment Report must also be in adherence to any additional relevant legislation and guidelines that may be deemed necessary.

The Aquatic Biodiversity and Species Impact Assessment will include the following:

- Description of the aquatic biodiversity and ecosystems of the project site, with focus on features that are to be potentially impacted by the proposed project. The description should include the aquatic ecosystem types, presence of aquatic species, the major habitat forms giving due consideration to the composition of aquatic species communities, their habitat, distribution and movement patterns within the study area;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Indication of the historic ecological condition (reference) and the Present Ecological State (PES) of identified aquatic features (in- stream, riparian and floodplain habitat), wetlands and/or estuaries on site that are to be potentially impacted by the proposed project i.e. possible changes to the channel and flow regime (surface and groundwater); and comment on the recommended ecological condition of aquatic habitats to be achieved within the project area;
- A map describing the ecosystem processes that operate in relation to the aquatic ecosystems on and immediately adjacent to the project site (e.g. movement of surface and subsurface water, recharge, discharge, sediment transport, etc.
- an indication of the national and provincial priority status of the aquatic ecosystem, including a description of the criteria for the given status (i.e. if the site includes a wetland or a river freshwater ecosystem priority area or sub catchment, a strategic water source area, a priority estuary, whether or not they are free -flowing rivers, wetland clusters, a critical biodiversity or ecologically sensitivity area);
- Consideration of seasonal changes and long-term trends, such as due to climate change;
- Compilation of a Risk Matrix (Appendix A to GN R509 of 2016) and determining whether an application for Water Use Authorisation (e.g. General Authorisation or Water Use License) is required and if so, determining the requirements thereof;
- Assessment of local and regional biodiversity conservation planning relevant to the project area;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on aquatic biodiversity and species;

- Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
- Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- The threat status of the ecosystem and species as identified by the screening tool;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provision of recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

#### 7.8.4 Avifauna Impact Assessment

---

The Avifauna Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Avifauna by Onshore Wind and/or Solar PV Energy Generation Facilities where the Electricity Output is 20 MW or more' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended.

An Avifaunal Impact Assessment will be undertaken regardless of sensitivity ratings provided by the National Web-Based Screening Tool. Sensitivities provided by the Screening Tool are only to be used as a guide to focus the Avifaunal Impact Assessments.

The Avifaunal Impact Assessment will comprise of the following phases:

- Reconnaissance study;
- Preparation of a pre-application avifaunal monitoring plan; and
- Undertaking of avifaunal impact assessments and report compilation.

The reconnaissance study took place prior to the appointment of the EAP and included a site visit and a desktop study of relevant information. The occurrence of target species, their migratory patterns and seasonality of occurrence was also included. A reconnaissance report was compiled and included the 12-month pre-application avifaunal monitoring programme, which was conducted. The pre-application Avifaunal monitoring plan outlines the 12-month pre-construction bird monitoring programme which was conducted, which followed the requirements of the latest Bird and Wind Energy Best Practice Guidelines applicable at the time of the surveys (Jenkins *et.al.*, 2015). Although the general bird community is considered, this assessment has special focus on the priority species, specifically those considered to be more sensitive to wind energy development related impacts. The 12-month pre-construction bird monitoring programme and reconnaissance report is included in Appendix F.3.

Data recorded during the 12-month pre-construction bird monitoring programme and reconnaissance study will inform the pre-application Avifaunal monitoring plan (which is required to be carried out for not less than four seasons) and include the Avifaunal Impact Assessment Report.

The Avifauna Impact Assessment will include the following tasks:

- Discussion of bird abundance and movement at the proposed site;
- Discussion of priority species flight activity at the proposed site discussion on presence of target or threatened species and their occurrence on the site at heights which could pose risks to collision;
- Description of methodology used in the 12-months pre-construction monitoring including a map showing the transects, vantage points and focal points used in the monitoring at the proposed site and the control site;
- Assessment of risk of identified to collision including the estimated of fatality rates of the identified priority species based on a suitable collision risk model, per species and for the site;
- Mapping of any migration or preferential flight paths or corridors, as well as all recorded flight activity of priority species;
- Discussion of potential displacement and collision mortality of priority species, where relevant;
- Mapping of areas identified within the site as having a very high sensitivity for bird collision or displacement and in which the development of turbines should be avoided, where relevant;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on birds. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project;

- Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
- Discussion of cumulative impacts of other WEFs within a 50 km radius of the proposed development which includes:
  - Fatality rates for priority species at WEFs within a 10 km radius (if available);
  - Map of existing WEFs within a 10 km radius; and
  - Potential additional impacts, over and above existing impacts of operational WEFs, of the proposed facility on regional populations of priority species.
- Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Operational monitoring plan for the proposed site and a control site which must include:
  - Time frames and monitoring intervals;
  - Number of turbines to be monitored, including any specific area for monitoring; (if available);
  - Methodology for searcher efficiency and scavenger removal;
  - Method for monitoring, i.e. transects or radial as well as extent of monitoring area
  - Results of monitoring compared against expected fatality rates per target species as well as general species
  - Reporting requirements, including organisations for submission of reports;
  - Years and intervals for monitoring to take place; and
  - Methodology for live bird monitoring to ensure comparability with pre-construction monitoring i.e. all methods used to estimate bird numbers and movements during reconnaissance and pre- application monitoring, which should be applied in exactly the same order to ensure the comparability of these two data sets.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Recommendations for mitigation of impacts to acceptable levels (where possible).
- Management measures (including monitoring if required) which could be implemented to as far as possible reduce the effect of negative impacts and enhance the effect of positive impacts; and conditions to be included in the EMP, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### 7.8.5 Noise Impact Assessment

---

The Noise Specialist is required to compile a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically the 'Protocol for the Specialist Assessment and Minimum Report Content Requirements for Noise Impacts' (GG 43110 / GN R320, 20 March 2020). This protocol replaces the requirements of Appendix 6 of the 2014 NEMA EIA Regulations, as amended. In addition, the Specialist Assessment should also take into consideration any additional relevant legislation and guidelines that may be deemed necessary (e.g. noise standards, measurements and calculations stipulated in SANS 10103:2008 Version 6 and SANS 10357:2004 Version 2.1).

The Specialist conducted a site visit and field measurements during October 2020 in order to estimate the potential impact that noise emissions from the proposed development could have on noise sensitive receptors within and beyond the project area, and to verify and confirm the assigned sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings from the site visit and the Site Sensitivity Verification Report (included in Appendix F.7) prepared by the Specialist in accordance with the requirements documented in the Assessment Protocol (GG 43110 / GN R320 of 20 March 2020), it was confirmed that a Noise Impact Assessment (the input complying with the content requirements of the said Noise Protocol) is required during the EIA Phase. The Noise Impact Assessment is to be based on existing information, national and provincial databases, and professional experience and fieldwork conducted by the Specialist, as considered necessary and in accordance with relevant legislated requirements.

The Noise Impact Assessment will include the following tasks:

- The duration and date of the site inspection and the relevance of the season and weather conditions to the outcome of the assessment;
- A description of the methodology used to undertake the on-site assessment inclusive of the equipment and models used, as relevant, together with results of the noise assessment
- Description and assessment of the noise sensitive receptors located within as well as in the vicinity of the project area that are likely to be impacted by the proposed development;
- A map showing the proposed development footprint (including supporting infrastructure) with a 50m buffered development envelope;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed WEF development. Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project;

- Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above);
- Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology will follow that contained in Section 7.5.1 of this chapter.
- An impact a substantiated statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not and any conditions to which this statement is subjected;
- A description of assumptions, limitations and/or any uncertainties or gaps in knowledge in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- A statement confirm that all reasonable measures have been considered, or not, in the micro-siting of the proposed development to minimise disturbance of receptors;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review of the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

#### 7.8.6 Heritage Impact Assessment

---

The Heritage Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).



The Specialist conducted a site visit and field surveys during November 2020 in order to identify the level of sensitivity assigned to the project area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings of the site visit, a Site Sensitivity Verification report (included as Appendix F.2) was prepared in accordance with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

As documented in the Assessment Protocols (GG 43110 / GNR 320, 20 March 2020);

*"where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations."*

The Heritage Impact Assessment (HIA) Report will therefore be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The HIA must also comply with the requirements of Heritage Western Cape and must incorporate and integrate inputs from the Visual Impact Assessment and Palaeontology Impact Assessment, as required. The HIA must also be in adherence to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Heritage Impact Assessment must include the following:

- Description and assessment of the heritage features of the sites and surrounding area. This is to be based on desktop reviews, fieldwork, available databases and findings from other heritage studies in the area, where relevant. Reference to the grade of heritage feature and any heritage status the feature may have been awarded will be included;
- Specification of development setbacks or buffers required, and clear motivations for these recommendations;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed developments on the full scope of heritage features, including archaeology and the cultural-historical landscape, as required by heritage legislation:
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Liaison with the relevant authorities (i.e. Heritage Western Cape) in order to obtain a letter of approval, comments or a Permit in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), including Regulations issued thereunder, as necessary. This also includes submitting Notice of Intent to Develop (NID) to Heritage Western Cape and meeting the reporting requirements of Heritage Western Cape.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;

- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes.
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### 7.8.7 Palaeontology Impact Assessment

---

The Palaeontologist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

The Palaeontologist conducted a site visit and field surveys during November 2020 in order to identify the level of sensitivity assigned to the project area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool. Based on the findings of the site visit, a Site Sensitivity Verification report (included as Appendix F.2) was prepared in accordance with Part A of the aforementioned Assessment Protocols (GG 43110 / GNR 320, 20 March 2020).

As documented in the Environmental Assessment Protocols (GG 43110 / GNR 320, 20 March 2020);  
*"where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations."*

The Palaeontology Impact Assessment (PIA) Report will therefore be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended. The PIA must also comply with the requirements of

Heritage Western Cape, as required. The PIA must also be in adherence to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Palaeontology Impact Assessment must include the following tasks:

- Determine, describe and map the baseline environmental condition and palaeontological sensitivity of the study areas. Specify setbacks or buffers, and provide clear reasons for these recommendations;
- Assessment of the preferred project layout following the site sensitivity verification and layout identification;
- Describe the type and location of known palaeontology and fossil heritage sites in the study areas, and characterize all items that may be affected by the proposed projects;
- Note fossils and associated sedimentological features of palaeontological relevance (photos, maps, aerial or satellite images, and stratigraphic columns);
- Evaluate the potential for occurrence of palaeontology and fossil heritage features within the study areas;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed developments on palaeontology and fossil heritage during the construction, operational and decommissioning phases of the proposed Kwagga WEF 3 project;
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Assessment of the project alternatives and identification of a preferred alternative with motivation for this selection;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations and suggestions regarding fossil heritage management on site, including conservation measures, as well as promotion of local fossil heritage (e.g. for public education, schools, etc.) to ensure that the impacts are limited;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### 7.8.8 Socio-Economic Impact Assessment

---

The Socio-Economic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

As at March 2021, the National Web-Based Screening Tool does not include any sensitivity layers relating to socio-economic information; therefore, a Site Sensitivity Verification is technically not possible. Scoping level inputs provided by the Socio-Economic Specialist is included as Appendix F.10 to this Scoping Report.

The Socio-Economic Impact Assessment must include the following:

- Describe the socio-economic context of the study area, focusing on aspects that are potentially affected by the proposed project, and taking into consideration the current situation as well as the local trends, the local planning (Integrated Development Plans and Spatial Development Frameworks), and other developments in the area;
- Identify the potential social and economic impacts (including benefits) associated with the proposed project, including inter alia impacts associated with loss of farmland (grazing), contribution to economic growth and job creation, training and skills development opportunities, quality of life, local community income and influx of workers / job seekers;
- Apply a variety of appropriate options for sourcing information, such as review of analogous studies, available databases and social indicators, use of interviews with key stakeholders such as local landowners and government officials (local and regional), etc., where possible, to inform the assessment;
- Evaluate the implications of the social investment programme associated with REIPPPP projects on the local socio-economic context;
- Identify and assess the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a socio-economic perspective:
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;

- A description of assumptions and limitations in the report;
- Identification of additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof, if any;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making.
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### 7.8.9 Bat Impact Assessment

---

The Bat Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

The pre-construction bat monitoring took place prior to the appointment of the EAP and included multiple site visits over a period of 12 months and a desktop study of relevant information, in accordance with the *"South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities"*.

The Bat Impact Assessment Report must be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as any other additional relevant legislation and guidelines that may be deemed necessary, if applicable. Recommendations from the results obtained during the pre-construction bat monitoring programme and must be included in the Bat Impact Assessment Report will form part of the EMPr that will be included in the EIA Report.

The Bat Impact Assessment must include the following tasks:

- Description of the affected environment from a bat perspective, including consideration of the surrounding habitats and bat habitat/foraging features (e.g. caves, ridges, crevices, migration routes, feeding, roosting & nesting areas, etc.);
- Assessment of the preferred project layout following the site sensitivity verification and layout identification;

- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Identification of any SCC or protected species on site;
- Identification of the potential direct, indirect and cumulative impacts of the proposed development on bats, including impacts that may be seasonal or diurnal, or linked to specific species and their feeding, roosting or nesting habitats and habits;
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Assessment of and recommendations for definite measurements for the preferred hub height and rotor diameter of the wind turbines;
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provision of recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

---

#### 7.8.10 Traffic Impact Assessment

---

The Traffic Specialist is required to undertake a Specialist Assessment in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

As at March 2021, the National Web-Based Screening Tool does not include any sensitivity layers relating to traffic information; therefore, a Site Sensitivity Verification is technically not possible. Scoping level inputs provided by the Traffic Specialist is included as Appendix F.9 to this Scoping Report.

The Traffic Impact Assessment must include the following tasks:

- Description of the identified traffic features including the surrounding road network and potential traffic disturbances of the local area;
- Assessment of the preferred project layout and how it relates to traffic impact;
- Specification of development setbacks or buffers required, and clear motivations for these recommendations;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a traffic perspective;
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Determine the National and Local haulage routes between port of entry/manufacturer and site;
- Determine the Trip generation for the proposed development during construction and operation;
- Assessment of proposed internal roads and site access points;
- Assessment of internal circulation of trucks and proposed roads layout with specific regard to turbine positions and turbine laydown areas;
- Assessment of freight requirements and permitting needed for abnormal loads;
- A description of assumptions and limitations in the report;
- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic

EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

### 7.8.11 Visual Impact Assessment

---

The Visual Specialist is required to undertake a Specialist Assessment in adherence to the gazetted Environmental Assessment Protocols, specifically with 'Part A - General Protocol for the Site Sensitivity Verification and Minimum Report Content Requirements where a Specialist Assessment is required but no specific Environmental Theme Protocol has been prescribed' (GG 43110 / GNR 320, 20 March 2020).

The Specialist conducted a site visit during 13 – 15 October 2020 in order to identify the level of sensitivity assigned to the project area, and to verify and confirm this sensitivity and land use as per the National Web-Based Screening Tool.

The Visual Impact Assessment (VIA) Report must be compiled in adherence to Appendix 6 of the 2014 NEMA EIA Regulations, as amended, as well as to any other additional relevant legislation and guidelines that may be deemed necessary, if applicable.

The Visual Impact Assessment must include the following:

- Description of the visual character and visual absorption capacity of the local area. Any significant visual features or visual disturbances (e.g. flicker effect) must be identified, modelled and mapped, as well as any sensitive visual receptors within the proposed project area or within viewsheds of the proposed project;
- Assessment of the preferred project layout following the site sensitivity verification and layout identification;
- Viewshed for various elements of the proposed development must be calculated, defined and presented, and the varying sensitivities of these viewsheds must be highlighted;
- Specification of development setbacks or buffers required, and provide clear motivations for these recommendations;
- Identification and assessment of the potential direct, indirect and cumulative impacts of the proposed development on the receiving environment from a visual perspective;
  - Cumulative impacts to be assessed by considering renewable energy projects and other applicable (and relevant) projects within 50 km of the proposed projects (refer to Table 7.3 and Table 7.4 above).
  - Impact significance must be rated both without and with mitigation, and must cover the construction, operational and decommissioning phases of the project. The Impact Assessment Methodology to be followed is contained in Section 7.5.1 of this Chapter.
- Identification and presentation of schematic portrayals of the visual impact of the proposed project infrastructure on the different viewsheds. All impacts should be considered under varying conditions as appropriate to the assessment i.e. day, night, clear weather, cloudy weather, etc.
- Maps depicting viewsheds or line of sight across the sites should be generated and included in the VIA Report. These maps must indicate current viewsheds/visual landscape/obstructions, as well as expected visual impacts during the construction, operational and decommissioning phases of the proposed project.



- An impact statement indicating the acceptability of the proposed development and a recommendation if the development should go ahead or not;
- A description of assumptions and limitations in the report;
- A section indicating how the National Web-Based Screening Tool was interrogated and whether classification of the site is accurate or not. If not, it must be motivated why the classification is not accurate;
- Identification of any additional protocols, licensing and/or permitting requirements that are relevant to the project and the implications thereof;
- Specialist Declaration of Independence and Curriculum Vitae;
- Provide recommendations with regards to potential monitoring programmes; and
- Determine mitigation and/or management measures, which could be implemented to as far as possible, reduce the effect of negative impacts and enhance the effect of positive impacts. Also, identify best practice management actions, monitoring requirements, and rehabilitation guidelines for all identified impacts. This will be included in the EMPr, which will be appended to the EIA Report.

The Specialist is also required to:

- Incorporate and address all relevant comments and concerns raised by the stakeholders, commenting authorities and I&APs prior to submitting the Final EIA Report to the Competent Authority for decision-making; and
- Review the Generic EMPr for Substations (GN R435) and confirm if there are any specific environmental sensitivities or attributes present on the project site and any resultant site-specific impact management outcomes and actions that are not included in the pre-approved generic EMPr (Part B – Section 1). If so, a list of the required specific impact management outcomes and actions must be provided.

---

### 7.8.12 Defence

Defence Assessments are required to comply with the gazetted Environmental Assessment Protocols, specifically the ‘Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Defence Installations’ (GG 43110 / GN R320, 20 March 2020). However, as indicated in Chapter 3 and Chapter 4 of this Scoping Report, the entire area of interest for the proposed Kwagga WEF 3 project site is classified as ‘low’ sensitivity on the National Web-Based Screening Tool. The low sensitivity was verified by the EAP during a site visit undertaken on 20 and 21 October 2020. Therefore, in line with GN R320, only a site sensitivity verification is necessary to confirm the site as a low sensitivity. A site sensitivity verification is provided in Appendix F.12 of this Scoping Report.

---

### 7.8.13 Civil Aviation

Civil Aviation Assessments are required to comply with the gazetted Environmental Assessment Protocols, specifically the ‘Protocol for the Specialist Assessment and Minimum Report Content Requirements of Environmental Impacts on Civil Aviation Installations’ (GG 43110 / GN R320, 20 March 2020). However, as indicated in Chapter 3 and Chapter 4 of this Scoping Report, the findings from the National Web-Based Screening Tool has indicated that the entire area of interest for the proposed Kwagga WEF 3 project site is classified as ‘low’ sensitivity. The low sensitivity was verified by the EAP during a site visit undertaken on

20 and 21 October 2020. Therefore, in line with GN R320, only a site sensitivity verification is necessary to confirm the site as a low sensitivity. A site sensitivity verification is provided in Appendix F.11 of this Scoping Report.