

# MULILO NEWCASTLE WIND POWER (PTY) LTD, WIND ENERGY FACILITY, NEAR NEWCASTLE, KWAZUZU-NATAL PROVINCE

*DFFE Reference Number: 14/12/16/3/3/2/2212*

*DFFE Case Officer: Mr Herman Alberts*

**DRAFT**

## ENVIRONMENTAL IMPACT ASSESSMENT REPORT

PREPARED FOR:



**MULILO NEWCASTLE WIND POWER (PTY) LTD**  
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PREPARED BY:



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**MARCH 2023**

**Report Title: Mulilo Newcastle Wind Power (Pty) Ltd Wind Energy Facility: Environmental Impact Assessment Report (EIAr)**

**Report Version: Draft**

**Department of Forestry, Fisheries and the Environment (DFFE) Reference Number: 14/12/16/3/3/2/2212**

**CES Project Code: P40700752**


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**EAP Declaration**

- ▲ I act as the independent environmental practitioner in this application;
- ▲ I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- ▲ I declare that there are no circumstances that may compromise my objectivity in performing such work;
- ▲ I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- ▲ I will comply with the Act, Regulations and all other applicable legislation;
- ▲ I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- ▲ I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- ▲ I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- ▲ All of the particulars furnished by me in this form are true and correct; and
- ▲ I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations.

ENVIRONMENTAL CONSULTANT	RESPONSIBILITY	DATE
Alan Carter	Project Leader & The EAP	February 2023
Caroline Evans	Project Manager & Co-Author	February 2023
Robyn Thomson	GIS Specialist	February 2023



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## CONTENTS OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

CONTENT OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT (APPENDIX 3, NEMA EIA REGULATIONS)		
3. (1) 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 –		
	CONTENT	SECTION OF THIS REPORT
<b>(a)</b>	<b>Details of –</b>	<b>Chapter 1 and Appendix B</b>
(i)	The EAP who prepared the Report.	
(ii)	The expertise of the EAP, including a <i>curriculum vitae</i> .	
<b>(b)</b>	<b>The location of the development footprint of the activity on the approved site as contemplated in the scoping report, including –</b>	<b>Chapter 2</b>
(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>(c)</b>	<b>A plan which locates the proposed activity or activities applied for as well as the associated infrastructure at an appropriate scale, or, if it is –</b>	<b>Chapter 2</b>
(i)	A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken.	
(ii)	On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	
<b>(d)</b>	<b>A description of the scope of the proposed activity, including –</b>	<b>Chapter 2</b>
(i)	All listed and specified activities triggered and being applied for; and	
(ii)	A description of the activities to be undertaken, including associated structures and infrastructure.	
<b>(e)</b>	<b>A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.</b>	<b>Chapter 4</b>
<b>(f)</b>	<b>A motivation for the need and desirability for the proposed development, including the need and desirability for the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report.</b>	<b>Chapter 3</b>
<b>(g)</b>	<b>A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report.</b>	<b>Chapter 6</b>
<b>(h)</b>	<b>A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including –</b>	
(i)	Details of the development footprint alternatives considered.	<b>Chapter 6, Chapter 7, Chapter 8 and Chapter 9</b>
(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>Chapter 10 and Appendix C</b>
(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.	<b>Chapter 10, Appendix C and Appendix D</b>

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(iv)	The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	<b>Chapter 5 and Chapter 6</b>
(v)	The impacts and risks identified including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts – (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed or mitigated.	<b>Chapter 8</b>
(vi)	The methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.	
(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.	
(viii)	The possible mitigation measures that could be applied and level of residual risk.	
(ix)	If no alternative development footprints for the activity were investigated, the motivation for not considering such.	
(x)	A concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report.	
(i)	<b>A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including –</b>	
(i)	A description of all environmental issues and risks that were identified during the environmental impact assessment process.	
(ii)	An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adopted mitigation measures.	
(j)	<b>An assessment of each identified potentially significant impact and risk, including –</b>	
(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.	
(vii)	The degree to which the impact and risk can be mitigated.	
(k)	<b>Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;</b>	
(l)	<b>An environmental impact statement which contains –</b>	<b>Chapter 9 and Chapter 11</b>
(i)	A summary of the key finding of the environmental impact assessment.	
(ii)	A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities	

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)**

	of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers	
(iii)	A summary of the positive and negative impacts and risks of the proposed activity and identified alternative.	
(m)	<b>Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation</b>	<b>Chapter 11</b>
(n)	<b>The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment</b>	<b>Chapter 11</b>
(o)	<b>Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation</b>	<b>Chapter 11</b>
(p)	<b>A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.</b>	<b>Chapter 11</b>
(q)	<b>A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation</b>	<b>Chapter 11</b>
(r)	<b>Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised</b>	<b>NA</b>
(s)	<b>An undertaking under oath or affirmation by the EAP in relation to –</b>	
(i)	The correctness of the information provided in the report.	
(ii)	The inclusion of comments and inputs from stakeholders and I&APs.	
(iii)	The inclusion of inputs and recommendations from the specialist reports where relevant; and	
(iv)	Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	<b>Appendix A</b>
(t)	<b>Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.</b>	
(u)	<b>An indication of any deviation from the approved scoping report, including the plan of study, including –</b>	
(i)	Any deviation from the methodology used in determining the significance of potential environmental impacts and risks	<b>None</b>
(ii)	A motivation for the deviation.	
(v)	<b>Any specific information that may be required by the competent authority.</b>	<b>Throughout this Report</b>
(w)	<b>Any other matters required in terms of section 24 (4) (a) and (b) of the Act.</b>	<b>None</b>

## ENVIRONMENTAL IMPACT ASSESSMENT TEAM

<b>Environmental Consultants</b>	<p><b>Alan Carter</b>, Project Leader, Main Author &amp; The EAP <i>CES</i></p> <p><b>Caroline Evans</b>, Co-Author and technical input <i>CES</i></p> <p><b>Robyn Thomson</b>, Co-Author &amp; GIS Mapping <i>CES</i></p>
<b>Avifaunal Specialist</b>	<p><b>Owen Davies</b>, Avifaunal Specialist <i>Arcus Consulting</i></p>
<b>Bat Specialist</b>	<p><b>Craig Campbell</b>, Bat Specialist <i>Arcus Consulting</i></p>
<b>Ecological Specialist</b>	<p><b>Nicole Wienand</b> (floral) and <b>Elena Reljic</b> (faunal), Ecological Specialists <i>CES</i></p>
<b>Freshwater Specialist</b>	<p><b>Ryan Edwards</b>, Freshwater Specialist <i>Verdant Environmental</i></p>
<b>Heritage Specialist</b>	<p><b>Gavin Anderson</b>, Archaeological Specialist <i>Umlando Archaeological Surveys &amp; Heritage Management</i></p>
<b>Noise Specialist</b>	<p><b>Morné de Jager</b>, Acoustic Specialist <i>Enviro Acoustic Research, MENCO</i></p>
<b>Paleontological Specialist</b>	<p><b>Alan Smith</b>, Paleontological Specialist <i>Alan Smith Consulting</i></p>
<b>Traffic Specialist</b>	<p><b>Deon McQuirk</b>, Traffic Specialist <i>Emonti Consulting Engineers cc</i></p>
<b>Agricultural Specialist</b>	<p><b>Andries Gouws</b>, Agricultural Specialist <i>INDEX</i></p>
<b>Socio-Economic Specialist</b>	<p><b>Marchelle Terblanche</b>, Socio-economic Specialist <i>INDEX</i></p>
<b>Visual Specialist</b>	<p><b>Bryony van Niekerk</b>, Visual Specialist <i>NuLeaf Planning and Environmental</i></p>
<b>Traffic Specialist</b>	<p><b>Deon McQuirk</b>, Traffic Engineer <i>Emonthi Consulting Engineers</i></p>

## GENERAL SITE INFORMATION

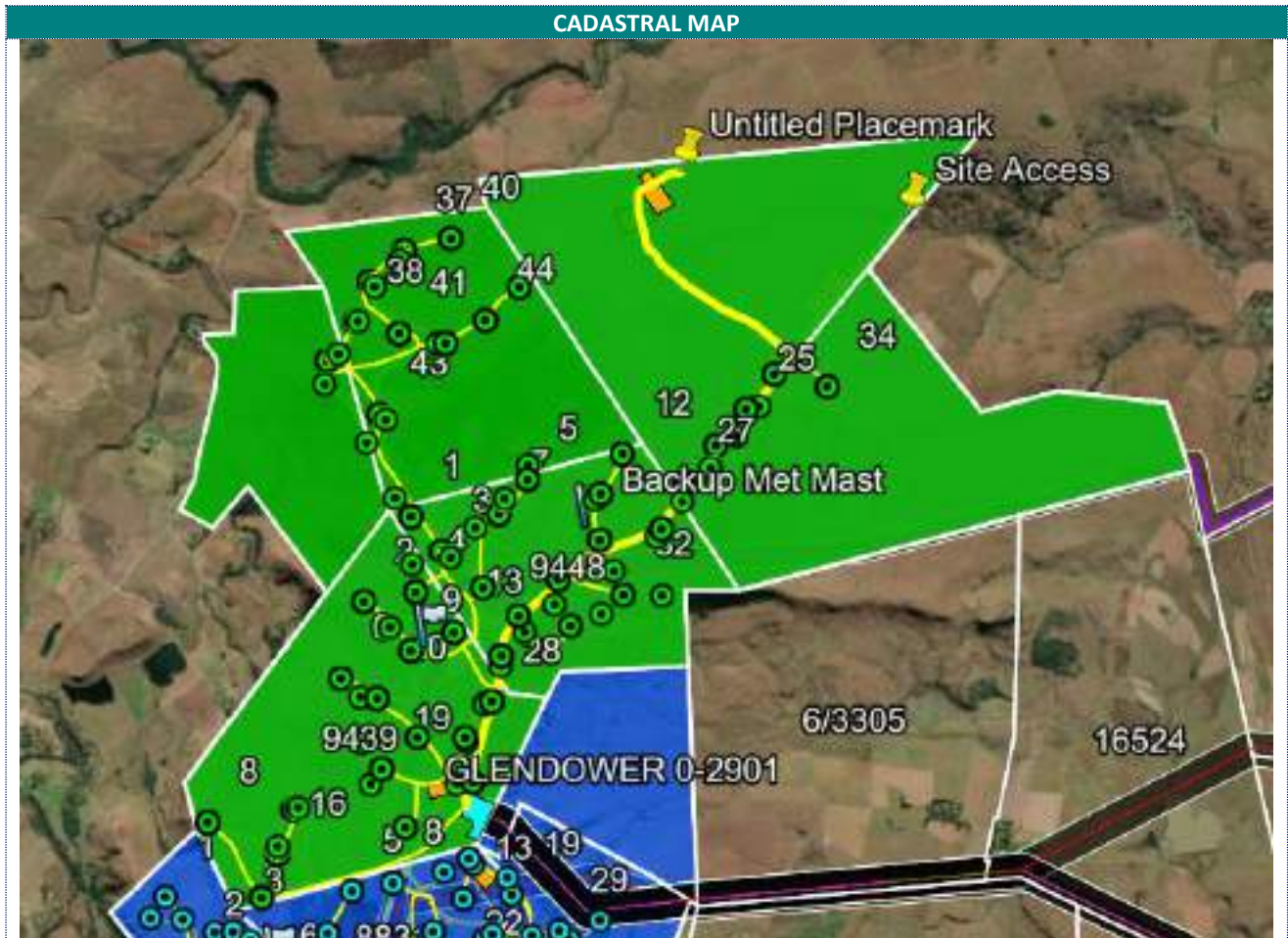
PROJECT SPECIFICATIONS																						
<b>Name of Facility</b>	Mulilo Newcastle Wind Power Wind Energy Facility																					
<b>Province</b>	KwaZulu-Natal																					
<b>District Municipality</b>	Amajuba District Municipality																					
<b>Local Municipality</b>	Newcastle Local Municipality																					
<b>Farm Numbers and Portions</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Farm Name</th> <th style="width: 20%;">Farm Number</th> <th style="width: 40%;">Area (ha)</th> </tr> </thead> <tbody> <tr> <td>Geelhoutboom</td> <td>3350</td> <td>647</td> </tr> <tr> <td>Geelhoutboom</td> <td>3350</td> <td>567</td> </tr> <tr> <td>Bernard</td> <td>9447</td> <td>465</td> </tr> <tr> <td>Spitskop</td> <td>16302</td> <td>587</td> </tr> <tr> <td>Cliffdale</td> <td>9439</td> <td>280</td> </tr> <tr> <td>Byron</td> <td>9448</td> <td>392</td> </tr> </tbody> </table>	Farm Name	Farm Number	Area (ha)	Geelhoutboom	3350	647	Geelhoutboom	3350	567	Bernard	9447	465	Spitskop	16302	587	Cliffdale	9439	280	Byron	9448	392
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Bernard	9447	465																				
Spitskop	16302	587																				
Cliffdale	9439	280																				
Byron	9448	392																				
<b>Study Area Extent (ha)</b>	2,940 ha																					
<b>Facility Footprint (ha)</b>	<p><b>CONSTRUCTION PHASE</b> Up to 105 ha</p> <p><b>OPERATIONAL PHASE</b> Up to 85 ha</p>																					
<b>Vegetation Types Present</b>	Northern KwaZulu-Natal Moist Grassland, KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland, and Southern Mistbelt Forest.																					
<b>Specialists Studies</b>	<p><b>MONITORING AND IMPACT ASSESSMENTS</b></p> <ul style="list-style-type: none"> <li>• Avifaunal Monitoring and Impact Assessment</li> <li>• Bat Monitoring and Impact Assessment</li> </ul> <p><b>IMPACT ASSESSMENTS</b></p> <ul style="list-style-type: none"> <li>• Agricultural Impact Assessment</li> <li>• Ecological Impact Assessment (faunal and floral)</li> <li>• Freshwater Impact Assessment</li> <li>• Heritage (Archaeological) Impact Assessment</li> <li>• Palaeontology Impact Assessment</li> <li>• Noise Impact Assessment</li> <li>• Socio-economic Impact Assessment</li> <li>• Visual Impact Assessment</li> <li>• Traffic Impact Assessment</li> </ul>																					



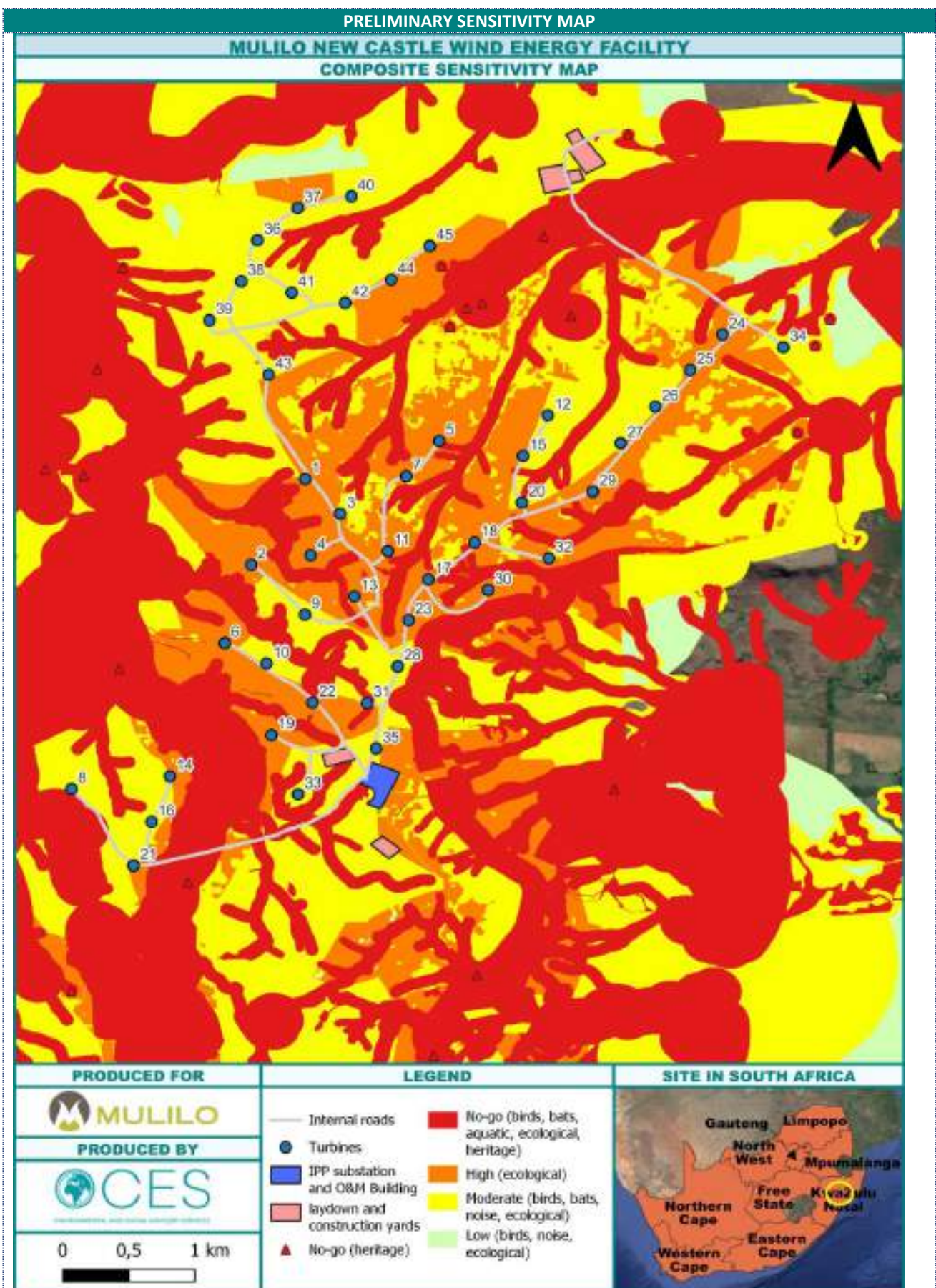
**MULILO NEWCASTLE WIND POWER WEF DESIGN SPECIFICATIONS**

<b>Number of turbines</b>	Up to 45 turbines
<b>Power output per turbine</b>	Unspecified
<b>Facility output</b>	Up to 200 MW
<b>Turbine hub height</b>	Up to 140 m
<b>Turbine rotor diameter</b>	Up to 200 m
<b>Turbine blade length</b>	Up to 100 m
<b>Turbine tip height</b>	Up to 240 m
<b>Turbine road width</b>	12m to be rehabilitated to 9m

**CADASTRAL MAP**







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# 1 INTRODUCTION

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## 1.1 BACKGROUND INFORMATION

Mulilo Renewable Project Developments (Pty) Ltd (Mulilo) is proposing to develop the Newcastle Wind Energy Facility (WEF) Complex near Newcastle in the Newcastle Local Municipality, in KwaZulu-Natal Province, comprising:

- **Mulilo Newcastle Wind Power WEF (up to 200 MW and 45 turbine positions) (Scoping and Environmental Impact Assessment process) (Reference 14/12/16/3/3/2/2212);**
- Mulilo Newcastle Wind Power 2 WEF (up to 200 MW and 35 turbine positions) (Scoping and Environmental Impact Assessment process) **(Reference 14/12/16/3/3/2/2213);**
- Mulilo Newcastle Wind Power grid connection to Eskom and associated powerlines (Basic Assessment process); and
- Mulilo Newcastle Wind Power 2 grid connection to Eskom and associated powerlines (Basic Assessment process).

A total of four (4) applications will be submitted to DFFE for Environmental Authorization for the Mulilo Newcastle WEF Complex. **The current draft Environmental Impact Assessment Report (EIAR) is for:**

- **Mulilo Newcastle Wind Power (Pty) Ltd (up to 200 MW and 45 possible turbine sites).**

### **IMPORTANT NOTE:**

It should be noted that Mulilo Newcastle Wind Power (Pty) Ltd has increased the number of turbines in the EA application the Scoping Report from up to 37 to up to 45 turbines in this EIAR. The generation capacity will remain the same at up to 200 MW output.

The Environmental Authorizations for the powerline connections to the Eskom grid at the Incandu Substation, will be subject to separate applications and the Basic Assessment process.

CES has been appointed by **Mulilo Newcastle Wind Power (Pty) Ltd** as the Environmental Assessment Practitioner (EAP) to conduct the necessary EIA Process required in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) EIA Regulations (2014 and subsequent 2017 amendments).

## 1.2 PURPOSE OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)

The objective of the EIA process, as set out by the 2014 EIA Regulations (as amended in 2017), 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;*

*(d) 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;*

*(e) 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;*

*(f) Identify, assess, and rank the impacts 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;*

*(g) Identify suitable measures to avoid, manage or mitigate identified impacts; and*

*(h) Identify residual risks that need to be managed and monitored”.*

### **1.3 NATURE AND STRUCTURE OF THIS REPORT**

The structure of this report is based on Appendix 3 of GN R. 982 (326), of the EIA Regulations (2014 and subsequent 2017 amendments), which clearly specifies the required content of an Environmental Impact Assessment Report (EIAr).

This report is the second of a number of reports which will be produced during the EIA Process. The Scoping Report, which was part of phase 1 of this process, has been completed and accepted by the DFFE. The EIA phase (phase 2) includes the following:

- ✦ EIAr (prepared in accordance with Appendix 3 of GN R. 982);
- ✦ Specialist reports (prepared in accordance with Appendix 6 of GN R. 982); and
- ✦ Environmental Management Programme (EMPr) (prepared in accordance with Appendix 4 of GN R. 982).

This phase must also undergo Public Participation Process in accordance with Chapter 6 of GN R. 982.

#### **1.3.1 STRUCTURE**

The structure of this EIAr is as per Table 1-2 below.

**Table 1-2: Structure of the EIAr.**

<b>CHAPTER</b>	<b>HEADING</b>	<b>CONTENT</b>
<b>1</b>	<b>Introduction</b>	Provides a brief overview of the proposed development, details of the EAP and project team and purpose of the EIA report.
<b>2</b>	<b>Project description</b>	Provides a description of the proposed development, the properties on which the development is to be undertaken and the location of the development on the property.
<b>3</b>	<b>Need and Desirability</b>	Provides a description of the need and desirability/motivation for the project.
<b>4</b>	<b>Legal and Policy Framework</b>	Identifies all the legislation and guidelines that have been considered in the preparation of this EIA Report. In addition, this chapter includes a description of the EIA process.

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

CHAPTER	HEADING	CONTENT
5	<b>Environmental and Socio-economic Baseline</b>	Provides a brief overview of the bio-physical and socio-economic characteristics of the site and its environs that may be impacted by the proposed development, compiled largely from published information.
6	<b>Alternatives</b>	Provides a description of the fundamental alternatives, incremental alternatives and the no-go alternative considered during all phases of the proposed development.
7	<b>Findings of the Specialist Reports</b>	Provides a summary of the key findings of each specialist assessment conducted as part of the EIA phase.
8	<b>Impacts and risks identified during the EIA phase</b>	<p>Provides a description of the key impacts that have been identified by the project team and through discussions with I&amp;APs thus far in the EIA Phase. In addition, this chapter covers the impacts identified by each specialist assessment. This chapter also includes mitigation measures that must be implemented.</p> <p>The chapter also describes the cumulative assessment methodology and a summary of the cumulative impacts as identified by each specialist assessment and in general by the EIA phase. This chapter also includes mitigation measures that should be implemented.</p>
9	<b>Sensitivity Analysis</b>	Provides the site development sensitivity map that was developed based on specialist and general site information gathered, where the site was classified into areas of GO (unrestricted development), GO-BUT (conditional development) and NO-GO (no development).
10	<b>Public Participation</b>	Provides a description of the Public Participation Process (PPP) conducted to date and that will be conducted as part of the EIA phase.
11	<b>Conclusions and Recommendations</b>	Provides the conclusions of the EIAr and recommendations on the way forward.
	<b>Appendix A</b>	EAP Affirmation and Declaration
	<b>Appendix B</b>	Curriculum vitae of EAP team
	<b>Appendix C</b>	PPP Documentation. Please note that the submitted comments and reports have been included as Appendix I due to volume.
	<b>Appendix D</b>	Comments and Response Report
	<b>Appendix E</b>	Specialist Reports
	<b>Appendix F</b>	Specialist Declarations
	<b>Appendix G</b>	Environmental Management Programme (EMPr) prepared in accordance with Appendix 4 of the EIA Regulations 2014, as amended. And a Generic EMPr prepared due to the presence of substations.
	<b>Appendix H</b>	Full Impacts Tables

### **1.3.2 ASSUMPTIONS AND LIMITATIONS**

This report is based on currently available information and, as a result, the following limitations and assumptions are implicit–

- ✦ This report is based on a project description and site plan, provided to CES by the applicant, which has not been approved by DFFE at this stage of the project. The project description and site plan may undergo iterations and refinements before being regarded as final. A project description based on the final design will be concluded once DFFE has provided feedback on the layout provided in this report.
- ✦ Descriptions of the natural and social environments are based on limited fieldwork and available literature.
- ✦ It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without a detailed investigation being undertaken.

## **1.4 DETAILS OF THE PROPONENT**

CES has been appointed by Mulilo Newcastle Wind Power (Pty) Ltd, as the independent Environmental Assessment Practitioner (EAP) to apply for an EA for the proposed MNWP WEF and associated infrastructure near Newcastle, KwaZulu-Natal Province.

### **Mulilo Newcastle Wind Project (Pty) Ltd**

Contact person: Mr Andrew Pearson

Address: Top Floor Golf Park, 4 Raapenberg Rd, Mowbray 7700, South Africa

Email: [andrew@mulilo.com](mailto:andrew@mulilo.com)

## **1.5 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER**

In fulfilment with the legislative requirements, the details of the Environmental Assessment Practitioner (EAP) and the environmental team that prepared this Environmental Impact Assessment Report (EIAr) are provided below.

Contact person: Dr Alan Carter, Pr.Sci.Nat, EAPASA,

Director - Coastal & Environmental Services (Pty) Ltd (CES)

Address: 39 Harewood Drive, Nahoon, East London, South Africa

Tel: +27 (43) 726 7809

Email: [a.carter@cesnet.co.za](mailto:a.carter@cesnet.co.za)

### **1.5.1 CES COMPANY PROFILE**

Coastal and Environmental Services (Pty) Ltd (CES) is a South African based company established in 1990, with offices in Grahamstown, Cape Town, Port Elizabeth, East London and Johannesburg, South Africa, as well as a wholly owned subsidiary in Maputo, Mozambique (CES is registered as an Environmental Practitioner with the Mozambican authorities).

CES has managed numerous large EIAs from pre-feasibility through to operation for international clients in South Africa and numerous other African countries. These have been rigorously reviewed by parties such as the World Bank, MIGA, European Investment Bank, IFC, German Investment Bank (KfW), African Development Bank, BHP Billiton international peer review team and the Dutch Development Bank (FMO).

CES has successfully completed EIAs for over 20 wind farms in South Africa and numerous other infrastructure projects.

### **1.5.2 ALAN CARTER (THE EAP & PROJECT LEADER)**

Alan is an Executive for the CES East London and Port Elizabeth offices. He holds a PhD in Marine Ecology and a BCom Honours in Financial Accounting and Auditing with extensive training and experience in both financial accounting and environmental science disciplines with CES for the past 20 years and with international accounting firms in South Africa and the USA for 10 years. He has over 30 years of experience in environmental management and has specialist skills in renewable energy, aquaculture, infrastructure, industrial processes, sanitation, coastal environments, waste management, climate change, environmental auditing and due diligence, and financial feasibility studies.

Alan has the following relevant professional registrations:

- Certified Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA);
- Registered as a Professional Environmental Scientist with the South African Council for Natural Scientific Professions (SACNASP);
- Certified ISO14001 Environmental Auditor with Exemplar Global (since 2001), formerly the Registrar Accreditation Board (USA) and Quality Systems Association (Australia) (RABQSA); and
- Certified Public Accountant (Licenced in Texas, USA).

### **1.5.3 CAROLINE EVANS (PROJECT MANAGER)**

Caroline is a Principal Environmental Consultant & Consultant Manager of CES and based in the Grahamstown branch with 10 years of consulting experience. She holds a BSc degree in Zoology and Environmental Science (with distinction) and a BSc Honours degree in Environmental Science (with distinction), both from Rhodes University. Caroline has completed accredited courses in Environmental Impact Assessments and Wetland Assessments.

Caroline's primary focuses include Project Management and the general Environmental Impact Assessment Process, particularly in the Renewable Energy and Agriculture fields. Examples of fields in which Caroline was the project manager and lead report writer include Wind Energy Facilities (WEF's) and the associated infrastructure (BESS, OHL and other ancillary infrastructure), Solar PV and Agricultural Developments. Her experience with wind energy facilities and associated infrastructure includes the project management and report writing for the Umsombomvu WEF, Coleskop WEF, Dassiesridge WEF, Scarlet Ibis WEF, Albany WEF, Haga Haga WEF, Grahamstown WEF, Kleinsee WEF, Waaihoek WEF and the Great Kei WEF. Caroline is well versed in South African policy and legislation relating to development, particularly in the Eastern Cape Province. In addition, Caroline's project management experience has helped her gain knowledge and experience in the technical and financial management and coordination of large specialist teams, competent authority and stakeholder engagement, and client liaison, Caroline has a strong focus on renewable energy and South African policy and legislation related to development.

### **1.5.4 ROBYN THOMSON (GIS)**

Robyn is a Principal Environmental Consultant with 16 Years of experience. She holds a BSc degree with majors in Archaeology, Environmental and Geographical Science, as well as a BSc Honours in Environmental Science from the University of Cape Town and Rhodes University respectively. Robyn's key experience includes renewable energy developments, linear developments, residential developments and mining developments, with her main interest being on renewable energy. Her areas of expertise include project management, basic assessment processes, scoping and EIA process, the environmental authorisation (EA)



amendment processes, the public participation process (PPP), water use licence applications and associated reports, and GIS mapping. Robyn completed both the Introduction to Environmental Impact Assessment Procedure and Introduction to Environmental Risk Assessment Short Courses by Coastal and Environmental Services and the Department of Environmental Science, Rhodes University, respectively. In addition, Robyn is a member of the International Association for Impact Assessment (IAIA).

Her experience with renewable energy facilities and associated infrastructure includes the management and report writing for various components of the Chaba, Haga Haga, and Great Kei WEFs in the Great Kei LM, Albany WEF in the Makana LM, and Ngxawabangu WEF in the Intsika Yethu LM, Eastern Cape; the Waaihoek WEF in the Emadlangeni LM, Kwa-Zulu Natal; and the Soyuz WEFs in the Pixley Ka Seme DM, Northern Cape.

**PLEASE FIND THE *CURRICULUM VITAE* ATTACHED AS APPENDIX B**

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## 2 PROJECT DESCRIPTION

### 2.1 PROPOSED ACTIVITY

Mulilo Newcastle Wind Power (Pty) Ltd proposes to develop, construct and operate the 200 MW Mulilo Newcastle Wind Power (MNWP) WEF as part of the Mulilo Newcastle Wind Energy Facility (WEF) Complex located near Newcastle in KwaZulu-Natal.

The MNWP WEF will comprise up to 45 possible positions and will have an anticipated lifespan of 20 – 25 years. The WEF will be located on six (6) land parcels with a total extent of 2,940 ha.

The current layout allows for up to 45 wind turbine sites with a maximum output capacity of 200 MW. The final design will be determined and amended based on the outcome of the specialist studies undertaken during the EIA process. The proposed turbine footprints and associated facility infrastructure will cover an area of up to 85 ha after rehabilitation, depending on final layout design.

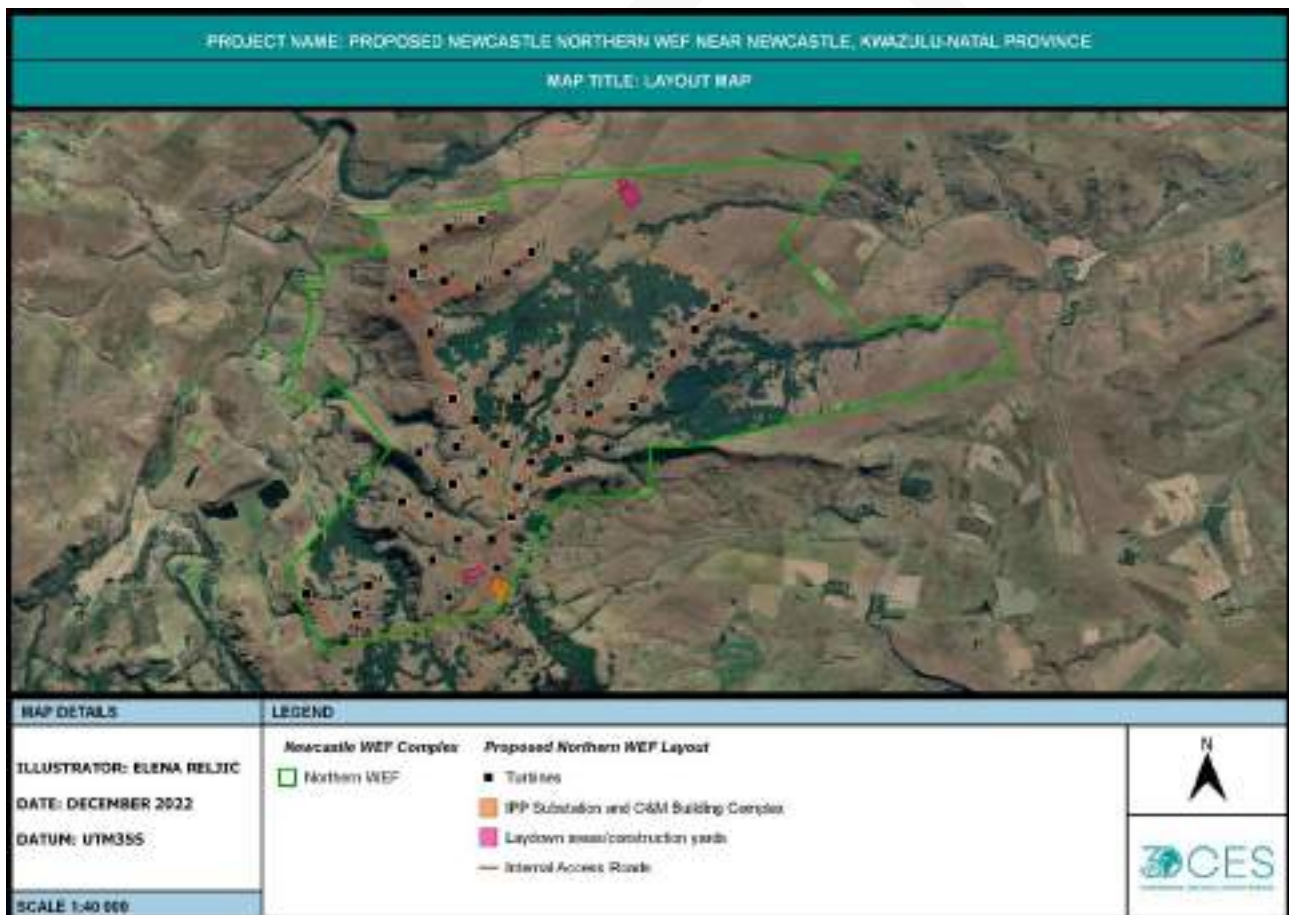


Figure 2-1: Layout map of the proposed MNWP WEF project.

The Environmental Authorizations for the powerline connections to the Eskom grid at the Incandu Substation, will be subject to separate applications and the Basic Assessment process.

Tables 2-1 to 2-3 below summarise the key technical details for the MNWP WEF project:

Table 2-1: Turbine specifications.

<b>Component</b>	<b>Specification</b>
WEF Capacity	Up to 200 MW
Number of Turbines	Up to 45 turbines
Power output per turbine	Unspecified
Hub Height	Up to 140 m
Rotor Diameter	Up to 200 m
Blade length	Up to 100 m
Turbine tip height	Up to 240 m

**Table 2-2: WEF component descriptions.**

<b>Facility Component</b>	<b>Description</b>
Crane platform and hardstand area	Crane platform and hardstand laydown for each turbine position.
Turbine Foundations	Reinforced Concrete Foundation. Depth: up to 3.5 m Diameter: up to 25 m per turbine Volume of concrete: up to 800 m <sup>3</sup> per turbine.
IPP Substation	33 kV to 132 kV collector substation to receive, convert and step-up electricity from the WEF to the 132 kV grid suitable supply. The substations maximum height will be Lightning Mast up to 25 m high. The facility will house control rooms and grid control yards for both Eskom and the IPP. Additional infrastructure includes parking, up to 2.8 m high fencing, storm water channels and culverts, ablutions, water storage tanks, septic tank, and borehole.
Construction/office yard	This includes bunded fuel areas, oil storage areas, general stores (containers) and skips.
WTG component laydown area	Temporary laydown area.
On-site concrete batching plant	Temporary on-site concrete batching plant.
Primary Site Access Roads	Site access will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads to be upgraded will be expanded to a width of up to 9 m.  New roads will be constructed (in areas where there are no existing roads) with a width of up to 9 m to the IPP substation and laydown areas.  V-drains will run on both sides of the road.

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Facility Component	Description
Internal roads	<p>Roads connecting the turbine positions will where possible make use of existing farm roads that will be upgraded and maintained for the life of the plant. The existing roads to be upgraded will be expanded to a width of up to 6 m.</p> <p>New roads will be constructed (in areas where there are no existing roads) with a width of up to 6 m and will connect all turbines.</p> <p>V-drains will run on both sides of the road.</p>
33 kV reticulation	A combination of 33 kV overhead lines and 33 kV underground cable (where technically feasible) will be used, aligned along the road network connecting each WTG position to the IPP substation.
Operations and maintenance (O&M) buildings	Includes other infrastructure such as parking, up to 2.8 m high fencing, storm water channels and culverts, ablutions, water storage tanks, septic tank and borehole.
Met masts	Two met masts (Up to 140 m height).

**Table 2-3: WEF component footprints.**

Facility Component	Construction footprint	Final footprint after rehabilitation
Crane platform and hardstand area	Up to 0.8 ha per turbine which equates to 36 ha.	Up to 0.8 ha per turbine which equates to 36 ha.
Turbine foundations	Up to 0.06 ha per turbine which equates to 2.7 ha (included in hardstand area).	Up to 0.06 ha per turbine which equates to 2.7 ha (Included in hardstand area).
IPP substation	Up to 1 ha	Up to 1 ha
Construction/office yard	Up to 2 ha	0 ha
WTG component laydown area	Up to 4 ha	0 ha
On-site concrete batching plant	Up to 1 ha	0 ha
Temporary stockpiles	Up to 2 ha	0 ha

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)**

<b>Facility Component</b>	<b>Construction footprint</b>	<b>Final footprint after rehabilitation</b>
Primary site access road and reticulation	<p>Total width of up to 15 m consisting of:</p> <ul style="list-style-type: none"> <li>Up to 12 m wide area prepared for road and v-drain</li> <li>Up to 3 m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</li> </ul> <p>Total length up to 8 km which equates to 12 ha.</p>	<p>Total width of up to 12 m consisting of:</p> <ul style="list-style-type: none"> <li>Up to 9 m wide road</li> <li>Up to 1.5 m wide v-drain on either side of road</li> </ul> <p>Total length up to 8 km, which equates to 9.6 ha.</p> <p>33 kV underground / overhead line reticulation and stockpile areas to be rehabilitated. Final footprint up to 0.25 ha to account for cable markers and/or overhead line foundations and stays along primary site access roads.</p>
Internal roads and reticulation	<p>Total width of up to 12 m consisting of:</p> <ul style="list-style-type: none"> <li>Up to 9 m wide area prepared for road and v-drain</li> <li>Up to 3 m wide area for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</li> </ul> <p>Total length up to 28 km which equates to 33.6 ha.</p>	<p>Total width of up to 9 m consisting of:</p> <ul style="list-style-type: none"> <li>Up to 6 m wide road</li> <li>Up to 1.5 m wide v-drain on either side of road</li> </ul> <p>Total length up to 28 km, which equates to 25.2 ha.</p> <p>33 kV underground / overhead line reticulation and stockpile areas to be rehabilitated. Final footprint up to 1 ha to account for cable markers and/or overhead line foundations and stays along internal roads.</p>
Operations and maintenance (O&M) buildings	Up to 0.5 ha	Up to 0.5 ha
Met masts	Up to 0.002 ha per met mast which equates to 0.004 ha.	Up to 0.002 ha per met mast which equates to 0.004 ha.
<b>Total</b>	<b>Up to approximately 105 ha</b>	<b>Up to approximately 85 ha</b>

## 2.2 PROJECT LOCALITY

The proposed MNWP WEF will be located approximately 15 km north west of the town of Newcastle in the Kwazulu-Natal Province. The study area is situated in Ward 1 of the Newcastle Local Municipality within the Amajuba District Municipality (ADM).

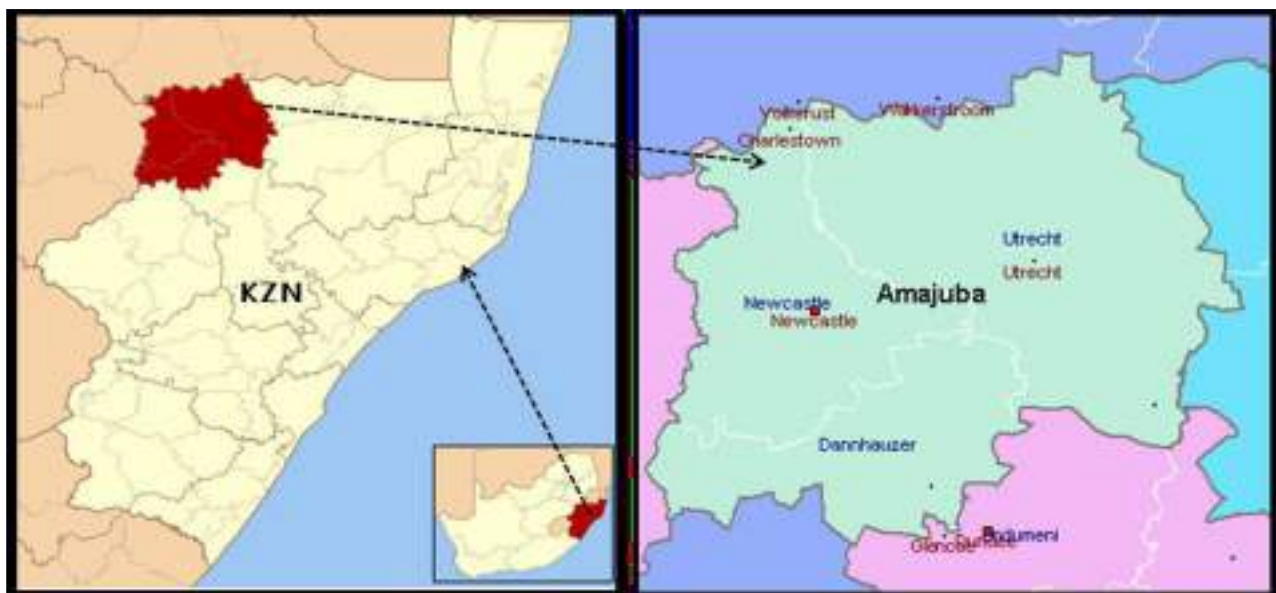


Figure 2-2: Location of the proposed MNWP WEF Complex within the KZN Province, Amajuba DM and Newcastle LM.

### MNWP WEF property portions

Table 2-4 indicates the property portions and farm names associated with the MNWP WEF project area. The proposed project is situated on approximately 2,940 ha of land consisting of six (6) farm portions.

Table 2-4: Affected properties for the MNWP WEF.

SG DIGIT NUMBER	FARM NAME	FARM NUMBER/PORCION	AREA (HA)
NOHS00000000335000002	Geelhoutboom	3350	647
NOHS00000000335000001	Geelhoutboom	3350	567
NOHS00000000944700000	Bernard	9447	465
NOHS00000000163020000	Spitskop	16302	587
NOHS00000000943900000	Cliffdale	9439	280
NOHS00000000944800000	Byron	9448	392
<b>TOTAL</b>			<b>2,940</b>



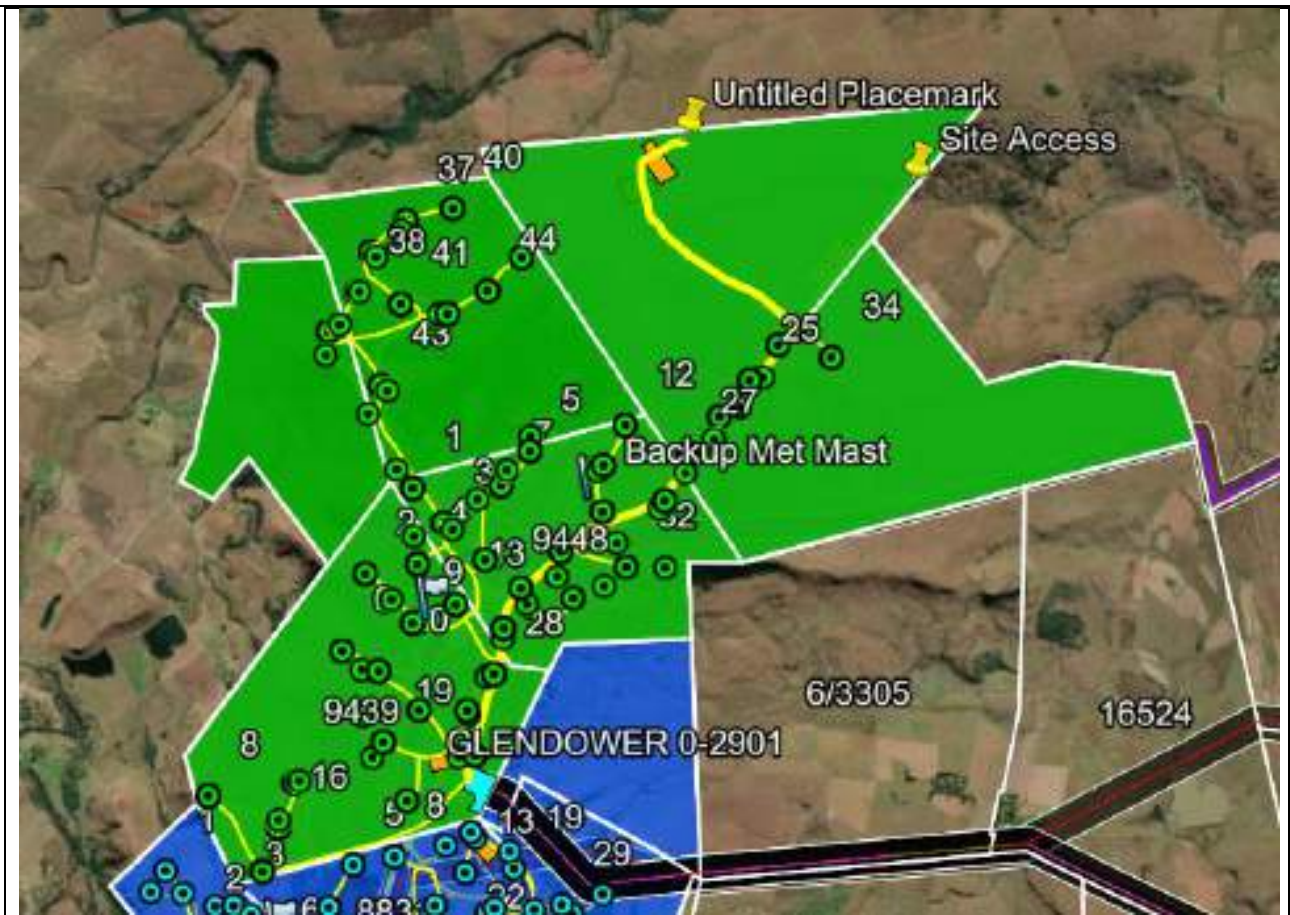


Figure 2-3: Cadastral Map of the Affected Properties within the Proposed Site.

**MNWP WEF property coordinates**

The following image shows the corner point coordinates of the proposed MNWP WEF. Please see Table 2-5 and Figure 2-4 below.

**Table 2-5: MNWP WEF Coordinates.**

POINT	LATITUDE (Y-cord)	LONGITUDE (X-cord)
Point 1	27°38'34.63"S	29°49'59.53"E
Point 2	27°39'14.79"S	29°50'35.52"E
Point 3	27°39'9.03"S	29°50'59.80"E
Point 4	27°39'12.44"S	29°51'34.44"E
Point 5	27°39'31.04"S	29°51'41.38"E
Point 6	27°40'4.66"S	29°49'18.63"E
Point 7	27°40'4.61"S	29°49'1.68"E
Point 8	27°40'25.93"S	29°49'2.63"E
Point 9	27°40'27.47"S	29°48'22.12"E
Point 10	27°41'16.06"S	29°47'55.43"E
Point 11	27°41'34.55"S	29°46'39.41"E
Point 12	27°41'11.76"S	29°46'26.96"E
Point 13	27°40'58.53"S	29°46'23.13"E
Point 14	27°40'5.25"S	29°47'8.32"E
Point 15	27°39'35.33"S	29°46'43.18"E
Point 16	27°39'46.97"S	29°46'32.08"E
Point 17	27°39'42.09"S	29°46'21.78"E
Point 18	27°39'33.40"S	29°46'26.52"E

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POINT	LATITUDE (Y-cord)	LONGITUDE (X-cord)
Point 19	27°39'28.32"S	29°46'27.33"E
Point 20	27°39'7.63"S	29°46'33.07"E
Point 21	27°39'2.36"S	29°46'33.62"E
Point 22	27°38'59.24"S	29°46'33.28"E
Point 23	27°38'54.99"S	29°46'29.49"E
Point 24	27°38'53.94"S	29°46'29.21"E
Point 25	27°38'53.08"S	29°46'29.31"E
Point 26	27°38'52.63"S	29°46'38.60"E
Point 27	27°38'40.48"S	29°46'39.37"E
Point 28	27°38'39.58"S	29°47'7.40"E
Point 29	27°38'24.02"S	29°46'55.44"E
Point 30	27°38'17.25"S	29°47'58.88"E
Point 31	27°38'9.44"S	29°47'57.03"E
Point 32	27°37'56.46"S	29°50'34.59"E

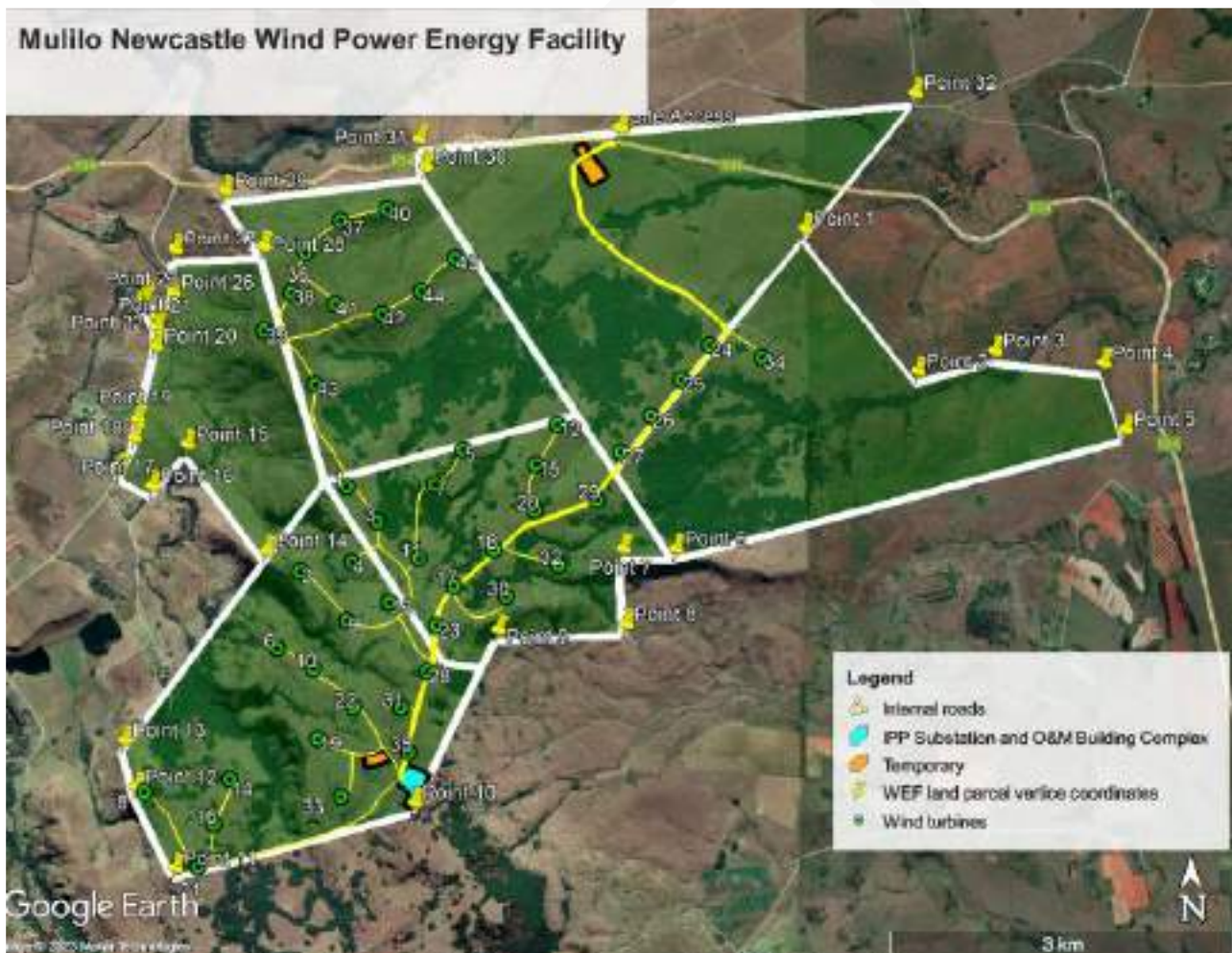


Figure 2-4: MNWP WEF Coordinates.

## 2.3 ENVIRONMENTAL AUTHORISATIONS IN SOUTH AFRICA

The regulation and protection of the environment within South Africa, occurs mainly through the application of various items of legislation, within the regulatory framework of the Constitution (Act No. 108 of 1996).

The primary legislation regulating EIAs within South Africa is the NEMA (Act No. 107 of 1998 and subsequent amendments). The NEMA makes provision for the Minister of Environmental Affairs to identify activities which may not commence prior to authorisation from either the Minister or the provincial Member of the Executive Council (“the MEC”). In addition to this, the NEMA also provides for the formulation of regulations in respect of such authorisations.

The NEMA EIA Regulations (2014 and subsequent 2017 amendments) allow for a Basic Assessment (BA) Process for activities with limited environmental impact (listed in GN R. 983/GN R. 327 & GN R. 985/GN R. 324) and a more rigorous two- tiered approach to activities with potentially greater environmental impact (listed in GN R. 984/GN R. 325). This two-tiered approach includes both a Scoping and EIA Process. The proposed MNWP WEF project activities trigger the need for a Scoping and EIA Process in accordance with the NEMA EIA Regulations (2014 and subsequent 2017 amendments) Listing Notices 1, 2 and 3 and published in Government Notices No. R. 983 (GN R. 327), R. 984 (GN R. 325) and R. 985 (GN R. 324) respectively. The listed activities which are being applied for are provided in Table 2-6 below.

**Table 2-6: Listed activities triggered by the proposed MNWP WEF.**

<b>Activity No(s):</b>	<b>Listing Notice 1 of the EIA Regulations, 2014 as amended:</b>	<b>Description of the portion of the proposed project to which the applicable listed activity relates:</b>
GNR. 327 Activity 11 (i):	<b>The development of facilities or infrastructure for the transmission and distribution of electricity—  (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.</b>	The proposed Mulilo Newcastle Wind Power WEF will be located outside an urban area. A combination of 33 kV overhead lines and 33 kV underground cable will be used, running along the road network connecting each turbine position to the Independent Power Producer (IPP) substation. However, a 33 kV to 132 kV collector substation will be necessary to receive, convert and step-up electricity from the WEF to the proposed 132 kV grid suitable supply, and then evacuated via an OHPL into the designated Eskom Point of Connection (POC).
GNR. 327 Activity 12 (ii)(a)(c):	<b>The development of— (ii) infrastructure or structures with a physical footprint of 100 square metres or more;  where such development occurs (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</b>	The total construction footprint of the Mulilo Newcastle Wind Power WEF will be up to 105 Ha. It is expected that infrastructure such as turbines and associated linear infrastructure (particularly internal roads) with a footprint substantially exceeding 100 m <sup>2</sup> will be required within the regulatory buffer of a wetland and water courses.



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<p>GNR. 327 Activity 19:</p>	<p><b>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 a watercourse;</b></p>	<p>The total construction footprint of the Mulilo Newcastle Wind Power WEF will be up to 105 Ha. It is expected that infrastructure such as turbines and associated linear infrastructure (particularly internal roads) will require excavation of material substantially exceeding 10 m<sup>3</sup> within the regulatory buffer of a wetland and water courses.</p>				
<p>GNR. 327 Activity 24(ii):</p>	<p><b>The development of a road— (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.</b></p>	<p>Site access to the Mulilo Newcastle Wind Power WEF will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads will be extended to a width of 9 m (after rehabilitation).</p> <p>New roads will be constructed (where there are no existing roads) with a width of 9 m (14 m servitude) and will connect all turbines. Total road length up to 36 km (primary access road 8 km and internal roads 28 km).</p> <table border="1"> <tr> <td> <p><b>Primary site access road &amp; reticulation</b></p> </td> <td> <p>Total width up to 15 m (12 m after rehabilitation) consisting of up to 3m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p> </td> </tr> <tr> <td> <p><b>Internal roads &amp; reticulation</b></p> </td> <td> <p>Total width up to 12 m (9 m after rehabilitation) consisting of up to 3 m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p> </td> </tr> </table>	<p><b>Primary site access road &amp; reticulation</b></p>	<p>Total width up to 15 m (12 m after rehabilitation) consisting of up to 3m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p>	<p><b>Internal roads &amp; reticulation</b></p>	<p>Total width up to 12 m (9 m after rehabilitation) consisting of up to 3 m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p>
<p><b>Primary site access road &amp; reticulation</b></p>	<p>Total width up to 15 m (12 m after rehabilitation) consisting of up to 3m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p>					
<p><b>Internal roads &amp; reticulation</b></p>	<p>Total width up to 12 m (9 m after rehabilitation) consisting of up to 3 m width for underground 33 kV reticulation. Overhead lines to be used where underground cables are not technically feasible.</p>					
<p>GNR. 327 Activity 28 (ii)</p>	<p><b>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (ii) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.</b></p>	<p>The proposed Mulilo Newcastle Wind Power WEF will entail the rezoning of land from agriculture to agriculture and renewable energy. The total construction footprint of the proposed WEF will be approximately 105 Ha in extent.</p>				

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GNR. 327 Activity 47	<b>The expansion of facilities or infrastructure for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.</b>	Existing infrastructure may be used (where technically feasible) as connection points from turbines to switching stations. Where this is the case the footprint of the existing infrastructure may be increased.										
GNR. 327 Activity 56	<b>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre.</b>	Site access to the Mulilo Newcastle Wind Power WEF will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads will be extended to a width of 9 m (after rehabilitation).										
<b>Activity No(s):</b>	<b>Listing Notice 2 of the EIA Regulations, 2014 as amended:</b>	<b>Description of the portion of the proposed project to which the applicable listed activity relates:</b>										
GNR. 325 Activity 1:	<b>The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.</b>	The proposed Mulilo Newcastle Wind Power WEF will each consist of a maximum of forty-five (45) wind turbines, with an unspecified individual turbine output capacity. The total output of the proposed WEF will be a maximum of 200 MW net generating capacity, which will be dependent on the final number of turbines and their output capacity.										
GNR. 325 Activity 15:	<b>The clearance of an area of 20 hectares or more of indigenous vegetation.</b>	The total construction footprint of the Mulilo Newcastle Wind Power WEF will be up to 105 Ha. It is expected that the area of vegetation to be cleared will exceed 20 ha in order to establish the WEFs and associated infrastructure. The main footprint elements for each WEF include: <table border="1"> <tr> <td>Crane platforms and hardstand laydown area</td> <td>36 ha</td> </tr> <tr> <td>Turbine foundations</td> <td>2.7 ha</td> </tr> <tr> <td>IPP Substation</td> <td>1 ha</td> </tr> <tr> <td>Primary access road</td> <td>12 ha</td> </tr> <tr> <td>Internal access roads</td> <td>34 ha</td> </tr> </table> <p>Technically roads don't apply in this activity because they are a linear activity.</p>	Crane platforms and hardstand laydown area	36 ha	Turbine foundations	2.7 ha	IPP Substation	1 ha	Primary access road	12 ha	Internal access roads	34 ha
Crane platforms and hardstand laydown area	36 ha											
Turbine foundations	2.7 ha											
IPP Substation	1 ha											
Primary access road	12 ha											
Internal access roads	34 ha											
<b>Activity No(s):</b>	<b>Listing Notice 3 of the EIA Regulations, 2014 as amended</b>	<b>Description of the portion of the proposed project to which the applicable listed activity relates.</b>										
GNR. 324 Activity 4(viii)&(xii)	<b>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</b> <b>d. KwaZulu-Natal</b>	Site access to the Mulilo Newcastle Wind Power WEF will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads will be extended to a width of 9 m (after rehabilitation).										

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	<p><b>viii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b></p> <p><b>xii. Outside urban areas:</b></p> <p><b>(aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.</b></p>	<p>New roads will be constructed (where there are no existing roads) with a width of 9 m (14 m servitude) and will connect all turbines. Road length may be up to 36 km.</p> <p>The Mulilo Newcastle Wind Power WEF will be located within the KwaZulu-Natal Province, outside the urban edge. The Mulilo Newcastle Wind Power WEF will be situated within a Critical Biodiversity Area (CBA) as identified in the Ezemvelo KZN Critical Biodiversity Map (2016).</p> <p>In addition, the affected properties are situated within 10 km of the Seekoei-vlei Protected Environment.</p>										
<p>GNR. 324 Activity 12(d)(v):</p>	<p><b>The clearance of an area of 300 square metres or more of indigenous vegetation</b></p> <p><b>d. KwaZulu-Natal</b></p> <p><b>v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b></p>	<p>The total construction footprint of each of the Mulilo Newcastle Wind Power WEF will be up to 105 Ha. It is expected that well in excess of 300 m<sup>2</sup> of indigenous vegetation will need to be cleared in order to establish the WEF and its associated infrastructure.</p> <p>The main WEF footprint elements include:</p> <table border="1"> <tr> <td>Crane platforms and hardstand laydown area</td> <td>36 ha</td> </tr> <tr> <td>Turbine foundations</td> <td>2.7 ha</td> </tr> <tr> <td>IPP Substation</td> <td>1 ha</td> </tr> <tr> <td>Primary access road</td> <td>12 ha</td> </tr> <tr> <td>Internal access roads</td> <td>34 ha</td> </tr> </table> <p>The proposed Mulilo Newcastle Wind Power WEF will also be located in a Critical Biodiversity Area (CBA) as identified in the Ezemvelo KZN Critical Biodiversity Map (2016).</p>	Crane platforms and hardstand laydown area	36 ha	Turbine foundations	2.7 ha	IPP Substation	1 ha	Primary access road	12 ha	Internal access roads	34 ha
Crane platforms and hardstand laydown area	36 ha											
Turbine foundations	2.7 ha											
IPP Substation	1 ha											
Primary access road	12 ha											
Internal access roads	34 ha											
<p>GNR. 324 Activity 14(ii)(a)(c); (d) (vii)&amp;(x)(aa):</p>	<p><b>The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—</b></p> <p><b>(a) within a watercourse;</b></p> <p><b>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</b></p>	<p>The total construction footprint of the Mulilo Newcastle Wind Power WEF will be up to 105 Ha. It is expected that infrastructure such as turbines and associated linear infrastructure (particularly internal roads) will require excavation of material exceeding 10 m<sup>3</sup> within the regulatory buffer of a wetland and water courses.</p> <p>The proposed Mulilo Newcastle Wind Power WEF will also be located in a Critical Biodiversity Area (CBA) as identified in the Ezemvelo KZN Critical Biodiversity Map (2016).</p> <p>In addition, the affected properties are situated within 10 km of the Seekoei-vlei Protected Environment.</p>										



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	<p><b>d. KwaZulu-Natal</b>  <b>vii. Critical biodiversity areas or ecological support areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b>  <b>x. Outside urban areas:</b>  <b>(aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;</b></p>	
<p>GNR. 324 Activity 18(d)(viii) &amp; (xii)(aa):</p>	<p><b>The widening of a road by more than 4 metres with a reserve less than 13,5 metres.</b></p> <p><b>d. KwaZulu-Natal</b>  <b>viii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</b>  <b>xii. Outside urban areas:</b>  <b>(aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve;</b></p>	<p>Site access to the Mulilo Newcastle Wind Power WEF will, where possible, make use of existing farm roads that will be upgraded and maintained for the life of the WEF. The existing roads will be extended to a width of 9 m (after rehabilitation).</p> <p>New roads will be constructed (where there are no existing roads) with a width of 9 m (14 m servitude) and will connect all turbines. Road length may be up to 36 km.</p> <p>The Mulilo Newcastle Wind Power WEF will be located within the KwaZulu-Natal Province, outside the urban edge. The Mulilo Newcastle Wind Power WEF will be situated within a Critical Biodiversity Area (CBA) as identified in the Ezemvelo KZN Critical Biodiversity Map (2016).</p> <p>In addition, the affected properties are situated within 10 km of the Seekoei-vlei Protected Environment.</p>

The Applicant, or the EAP on behalf of the Applicant, is initially required to submit a report detailing the Scoping Phase and set out the ToR for the EIA Process (Plan of Study for EIA). This is then followed by a report detailing the EIA Phase, the Environmental Impact Report (EIR). The Competent Authority will issue a final decision after their review of the Final EIR.

The Competent Authority that must consider and decide on the application for authorisation in respect of the activities, listed in Table 2-6 above, is the Department of Forestry, Fisheries and the Environment (DFFE) as the Department has reached an agreement with all Provinces that all electricity-related projects, including generation, transmission and distribution, are to be submitted to the National DFFE, irrespective of the legal status of the Applicant. This decision has been made in terms of Section 24(C)(3) of the NEMA (Act No. 107 of 1998 and subsequent amendments).

In addition to the requirements for an Environmental Authorisation (EA) in terms of the NEMA, there may be additional legislative requirements that need to be considered prior to commencing with the activity, these include but are not limited to:

- ▲ National Environmental Management Biodiversity Act (Act No. 10 of 2004);
- ▲ National Environmental Management: Waste Management Act (No. 59 of 2008);
- ▲ National Environmental Management: Protected Areas Act (Act No. 57 of 2003);
- ▲ National Environmental Management: Air Quality Act (No. 39 of 2004);
- ▲ National Water Act (Act No. 36 of 1998);
- ▲ National Forests Act (Act No. 84 of 1998); and
- ▲ National Heritage Resources Act (Act No. 25 of 1999); and
- ▲ Civil Aviation Act (Act No. 74 of 1962) as amended.

These are discussed in detail in Chapter 4 of this report.

## 2.4 TECHNICAL: PROPOSED ACTIVITY

### 2.4.1 WIND ENERGY FACILITY (WEF)

The proposed MNWP WEF will consist of up to 45 wind turbines, for a total combined maximum output capacity of up to 200 MW.

Wind energy is a form of solar energy. Winds are caused by the uneven heating of the atmosphere by the sun, the irregularities of the earth's surface, and the rotation of the earth. Wind flow patterns are modified by the earth's terrain, bodies of water, and vegetation. This wind flow or motion energy (kinetic energy) can be used for generating electricity. The term "wind energy" describes the process by which wind is used to generate mechanical power or electricity. Wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. The components of a typical wind turbine subsystem are depicted by Figure 2-5 below:

- ▲ A rotor, or blades, which are the portion of the wind turbine that collect energy from the wind and convert the wind's energy into rotational shaft energy to turn the generator. The speed of rotation of the blades is controlled by the nacelle, which has the ability to turn the blades to face into the wind ('yaw control') and change the angle of the blades ('pitch control') to make the most use of the available wind. The maximum rotor diameter for the MNWP WEF turbines is up to 200 m.
- ▲ A nacelle (enclosure) containing a drive train, usually including a gearbox (some turbines do not require a gearbox) and a generator. The generator converts the turning motion of a wind turbine's blades (mechanical energy) into electricity. Inside this component, coils of wire are rotated in a magnetic field to produce electricity. The nacelle is also fitted with brakes, so that the turbine can be switched off during very high winds, such as during storm events. This prevents the turbine from being damaged. All this information is recorded by computers and is transmitted to a control centre, which means that operators don't have to visit the turbine very often, but only occasionally for mechanical monitoring.
- ▲ A tower, to support the rotor and drive train the tower, on which a wind turbine is mounted is not only a support structure, but it also raises the wind turbine so that its blades safely clear the ground and can reach the stronger winds at higher elevations. The tower must also be strong enough to support the wind turbine and to sustain vibration, wind loading, and the overall weather elements for the 20-25 year life time of the turbine. The maximum hub height of the MNWP WEF turbines is up to 140 m.
- ▲ Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.

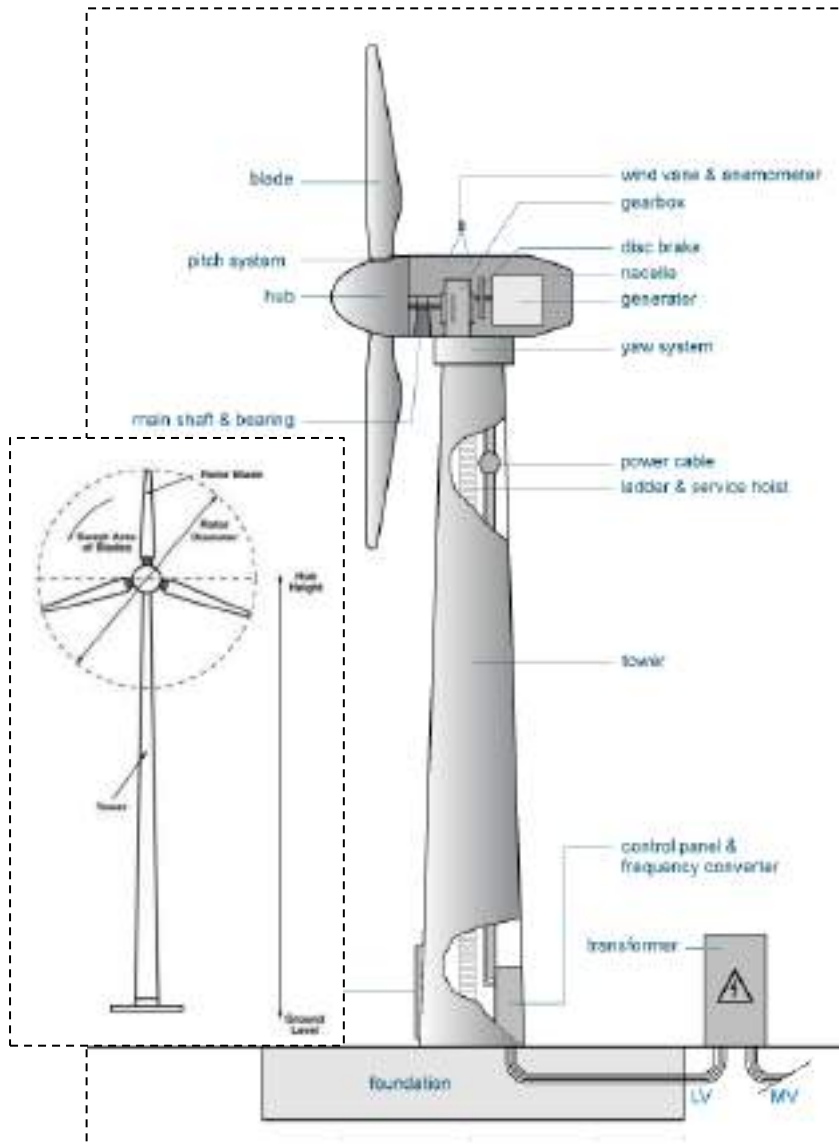


Figure 2-5: Illustrations of the main components of a typical wind turbine. \*Note that the transformer would typically be inside the tower (probably at the base). Sources: [www.newen.ca](http://www.newen.ca) and [www.soleai.com](http://www.soleai.com).

It is important to note that Figure 2-5 above is an example drawing only and the transformer may be located either outside or inside the turbine tower, but normally inside.

### 2.4.2 STAGES OF WIND FARM DEVELOPMENT

Typically, building a wind farm is divided into four (4) phases, namely:

- ▲ Preliminary civil works;
- ▲ Construction;
- ▲ Operation; and
- ▲ Decommission.

## PRELIMINARY CIVIL WORKS

Prior to the commencement of the main construction works, the Contractor will undertake various preliminary civil works including:

- ▲ Vegetation clearance and gate erection;
- ▲ Establishment of access roads;
- ▲ Establishment of buildings such as site office area, control building, warehousing and workshops, gatehouse and concrete batching plant;
- ▲ Establishment of temporary construction hardstand areas (assembly area, storage area, and pegging of structures);
- ▲ Temporary construction laydown area establishment; and
- ▲ Undertake detailed geotechnical studies and foundation works for the turbines.

An initial desktop geotechnical study will be conducted as part of the EIA process. However, a detailed geotechnical study of the area will need to be undertaken for detailed design and safety purposes. This comprises of drilling, penetration and pressure assessments. Please note that the detailed geotechnical investigations will only be conducted once (and if) the project receives environmental authorisation largely due to the large costs associated with these studies. Preliminary investigations by the applicant have revealed the underlying geology of the study area to be suitable for supporting the large turbine structures.

## CONSTRUCTION PHASE

The following steps are generally followed during the construction phase of the activity:

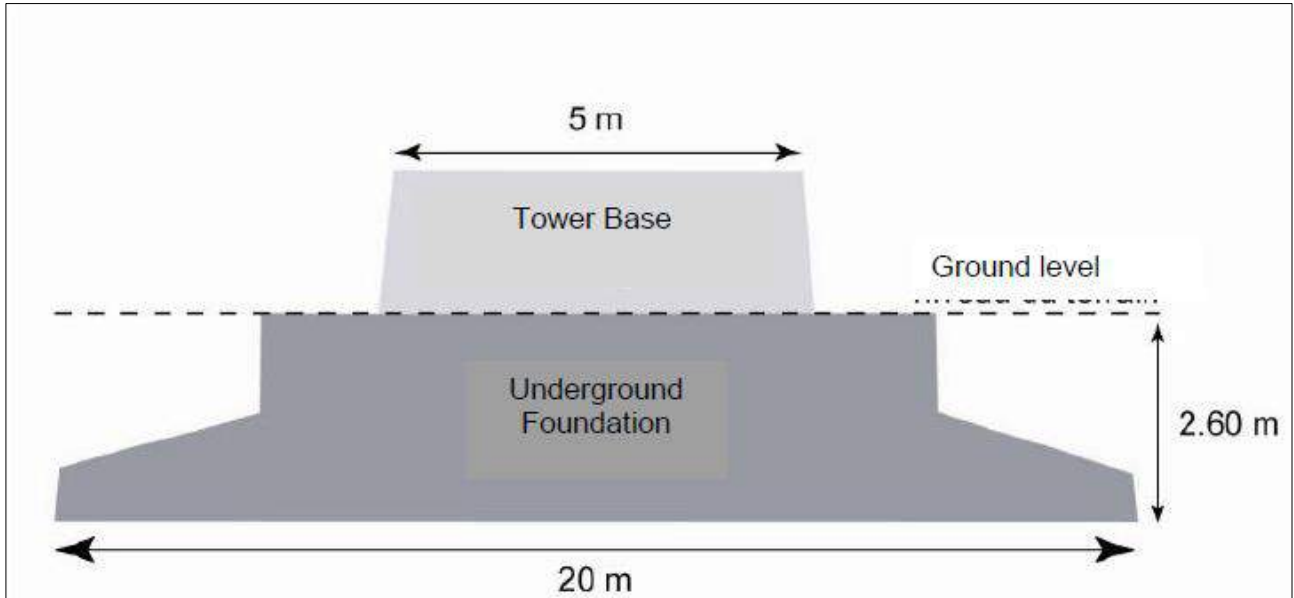
- ▲ Construction of turbine hardstands and platforms;
- ▲ Undertake detailed geotechnical studies and foundation works for the turbines;
- ▲ Establishment of foundations;
- ▲ Assembly and erection of structures;
- ▲ Undertake civil works for the substation and construct the substation;
- ▲ Stringing of conductors to the substation;
- ▲ Connection of the substation to the main grid; and
- ▲ Rehabilitation of disturbed areas (where applicable).

Construction is anticipated to be between 18 and 24 months. Each of the ancillary infrastructure required for the MNWP WEF is discussed in more detail below.

Approximately 500 – 1,000 m<sup>3</sup> of spoil substrate would need to be excavated for each turbine, depending on the quality of soil and turbine specification. These excavated areas are then filled with steel-reinforced concrete (typically 30-45 tons of steel reinforcement per turbine including a “bolt ring” to connect the turbine foundation to the turbine tower). Foundation design will vary according to the type and quality of the soil. Spoil heaps will be temporary and disposed of where excavated material cannot be recycled for use during construction of access roads or foundations.

Dimensions of the turbines components will be dependent on the technology used. It is anticipated that the hub height for each turbine will not exceed 140 m (worst case scenario). The rotor diameter is anticipated to be up to a maximum of 200 m (worst case scenario). The blade length of each turbine is anticipated to be approximately 85 m in length, but up to a maximum of 100 m. At the current phase of the project, the exact turbine technology has not yet been selected.

The typical wind turbine foundation dimensions of a 3 MW turbine, approximately 205 m high has been illustrated in Figure 2-6 below. However, the current MNWP WEF project may select a larger turbine model with a larger foundation



**Figure 2-6: Example of the typical dimension of a 3 MW/205 m high turbine foundation.**

#### ***Servitude, powerline and substation***

Underground cabling will be required to connect the various turbines to an onsite (facility) substation at medium voltage (MV) level. Here it will be stepped up to a high voltage (HV) level of 132 kV via the main power transformer, and then evacuated via overhead power line (OHPL) into the designated Eskom Point of Connection (POC).

The OHPL will be approximately 22 m above ground level and will be supported either on monopole or lattice tower structures (Figure 2.7). Currently there are two (2) options for the grid connection but these do not form part of the current EA or scoping report. The OHPL grid connections will be subject to separate EA applications.

An onsite substation will be required of approximately 1 ha in size, where all the turbines will connect to via overhead lines or underground MV cabling. Where required, bird flight deflectors may need to be fitted during the construction phase. The placement of these deflectors will be decided with input from an ornithologist that will do a walk-down on the final route of the power line before construction commences.

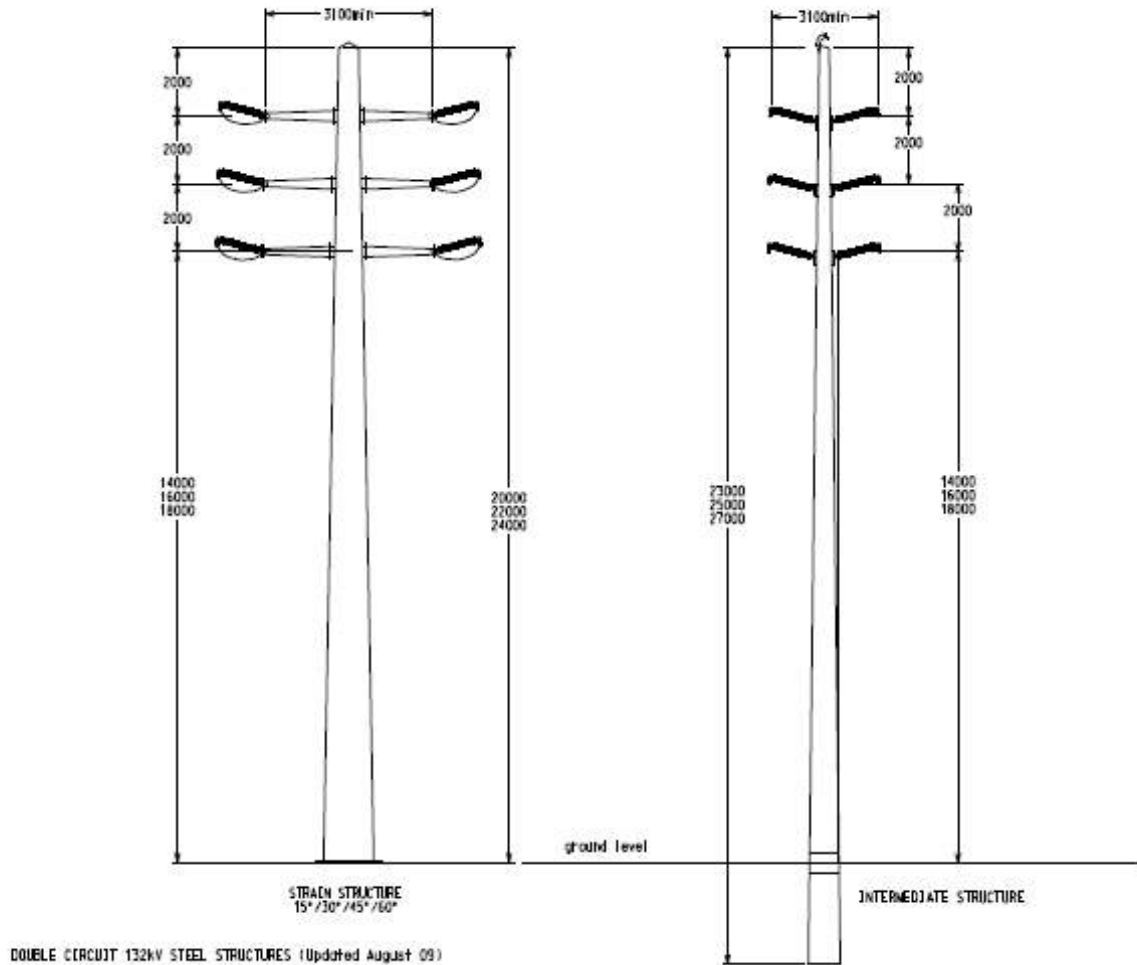


Figure 2-7: Example of the type of overhead 132 kV powerline structures.

**Water requirements**

For the construction period, water will be required for the purpose of concrete production (batching plant), roads and earthworks, and other ancillary requirements. The project will use up to approximately 90,000 kL during the construction period (approximately 45,000 kL annually), and 1,000 kL per year during the operational period of the project. A detailed breakdown will be provided at a later stage of the process.

Two (2) options are currently being investigated for water sourcing:

- Abstraction from an existing borehole within the study area (subject to NWA requirements); and
- Abstraction from existing surface water resources within the study area (subject to NWA requirements).

Should water be sourced from an external source, it will be trucked to the site.

**Waste requirements**

The following waste streams are anticipated during construction of the WEF.

*Solid waste*

Solid waste during the construction phase will mainly be in the form of construction material, excavated substrate and domestic solid waste. All waste will be disposed of in scavenger proof bins and temporarily placed in a central location for removal by the contractor. Any other waste and excess material will be removed once construction is complete and disposed of at a registered waste facility.



### *Sewerage*

During the construction phase, chemical abluion facilities will be utilised. These abluion facilities will be maintained, serviced and emptied by an appointed contractor, who will dispose of the effluent at a licensed facility off site. Once construction is complete, the chemical abluion facilities will be removed from the study area.

### *Hazardous substances*

During the construction phase use of the following hazardous substances are anticipated:

- ✦ Cement powder associated with the concrete batching plant;
- ✦ Petrol/diesel for trucks/ cranes/ bulldozers; and
- ✦ Limited amounts transformer oils.

The dangerous goods stored during construction will amount to approximately 20 m<sup>3</sup>. Final quantities of these will be confirmed at a later stage. Temporary storage and disposal of hazardous waste will be done in compliance with relevant legislation (i.e. stored in covered area/bin and disposal at registered hazardous waste site).

## OPERATIONAL PHASE

The proposed MNWP WEF is anticipated to have an operational life span of 20-25 years. During the operation phase of the WEF, activities onsite will include routine servicing, maintenance, monitoring and unscheduled maintenance. The number of opportunities and nature of employment during the operational phase will be refined as the development process progresses.

In terms of routine servicing, the operation of the WEF will be overseen by suitably qualified contractors. Regular site visits (or when necessary – at least twice a year) will be conducted to carry out routine servicing and maintenance of the Wind Farm components which may include:

- An initial service (inspections of blades, bolts, etc.)
- Routine maintenance and servicing;
- Gearbox oil changes (at least once a year); and
- Blade inspections.

Site tracks will be maintained in good order during the operational phase to ensure safe access for visitors and employees.

During unforeseen events unscheduled maintenance may be required which will be dealt with on an individual basis. It is unlikely that a main component failure will occur, however should this occur, cranes may be required to carry out the required repairs.

Water required during the operational phase will be minimal and will be primarily for drinking and sanitation purposes. Should the same water sources be utilised during the operational phase as was for the construction phase, these pipes will most likely be buried along road servitudes.

Solid waste during the operation phase will mainly be in the form of domestic waste such as food packaging, water bottles, etc. Solid waste during the operational phase should be stored in a central location for regular removal. During the operational phase, effluent will be collected in waterproof conservancy sumps/tanks and will be regularly emptied, typically with Honey-sucker trucks by a service provider. The effluent will be transported and disposed of at a registered Municipal Sewerage Treatment Facility in Newcastle Local Municipality.

Hazardous substances used during the operational phase for routine maintenance, will mainly consist of lubricating oils and hydraulic and insulating fluids. These would be stored in the onsite workshop, in lockable containers and is estimated at an amount of approximately 3 m<sup>3</sup>. Final quantities of these will be confirmed at a later stage.

#### **DECOMMISSIONING PHASE**

The MNWP WEF will have an anticipated life span of 20-25 years. Should the Wind Farm be decommissioned and not upgraded at the end of life, decommissioning will be as follows:

- Dismantle all wind turbines and foundations in line with all relevant legislation (cables and turbine foundations to be cut off below ground level and covered with topsoil);
- Some foundations may be left and covered with soil;
- Recycle as much of the decommissioned project components as possible;
- Access roads will either be left for use by landowners, or covered with topsoil or reduced in width; and
- Rehabilitate where required.

It should be noted that if the WEF is ever upgraded/repowered, a separate Environmental Authorisation would need to be applied for.

### **2.4.3 WIND MEASUREMENT**

It is necessary to erect wind measurement masts to gather wind speed data and correlate these measurements with other meteorological data in order to produce a final wind model of the proposed Newcastle WEF Complex study area. Mulilo Newcastle Wind Power has erected two 90 m high wind measurement masts on site. The first mast was erected in April 2021, the second in December 2021, and both are actively recording the meteorological conditions on-site to date.

Two additional met masts up to 140 m in height will be erected during the construction phase of the project to record reference wind speeds during the operational phase. These masts will be marked as per the requirements of the Civil Aviation Authority (CAA).

## 3 PROJECT NEED AND DESIRABILITY

### 3.1 BACKGROUND

The current section has taken note of the revised Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2014. DFFE Integrated Environmental Management Guidelines Series 9. 2017.

When considering an application for Environmental Authorisation (EA), the competent authority must comply with section 24O of the National Environmental Management Act, No 107 of 1998 (NEMA), and must have regard for any guideline published in terms of section 24J of the Act and any minimum information requirements for the application. This includes this need and desirability guideline.

Additionally, the Environmental Impact Assessment (EIA) regulations require environmental assessment practitioners (EAPs) who undertake environmental assessments, to have knowledge and take into account relevant guidelines. A person applying for an EA must abide by the regulations, which are binding on the applicant.

The Guideline contains information on best practice and how to meet the peremptory requirements prescribed by the legislation and sets out both the strategic and statutory context for the consideration of the need and desirability of a development involving any one of the NEMA listed activities. Need and desirability is based on the principle of sustainability, set out in the Constitution and in NEMA, and provided for in various policies and plans, including the National Development Plan 2030 (NDP). Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, that a development is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line.

The Guideline sets out a list of questions which should be addressed when considering need and desirability of a proposed development. These are divided into questions that relate to ecological sustainability and justifiable economic and social development. The questions that relate to ecological sustainability include how the development may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. When considering how the development may affect or promote justifiable economic and social development, the relevant spatial plans must be considered, including Municipal Integrated Development Plans (IDP), Spatial Development Frameworks (SDF) and Environmental Management Frameworks (EMF). The assessment reports will need to provide information as to how the development will address the socio-economic impacts of the development, and whether any socio-economic impact resulting from the development impact on people's environmental rights. Considering the need and desirability of a development entails the balancing of these factors.

Sustainable development refers to the integrated relationship between social, economic and environmental factors in planning, implementation and decision-making so as to ensure that development serves present and future generations (National Sustainable Development Framework). Sustainable development is a programme to change the process of economic development so that it ensures a basic quality of life for all people and protects the ecosystems and community systems that make life possible and worthwhile.

### 3.2 CURRENT CONTEXT

Increasing pressure is being placed on countries internationally to reduce their reliance on fossil fuels, such as oil and coal, which contribute towards greenhouse gases (GHG) being emitted into the atmosphere and

thus contributing to global climate change. Renewable energy resources such as wind energy facilities and solar PV farms are being implemented as alternative sources of energy at a global and national scale.

South Africa has recognised the need to expand electricity generation capacity within the country. This is based on national policy and informed by ongoing planning undertaken by the Department of Energy (DoE) and the National Energy Regulator of South Africa (NERSA).

The draft of the South African Integrated Resource Plan (IRP 2018) was released for public comment in August 2018, setting out a new direction in energy sector planning. The plan included a shift away from coal, increased adoption of renewables and gas, and an end to the expansion of nuclear power. The revised plan marks a major shift in energy policy. The draft policy aimed to decommission a total of 35 GW (of 42 GW currently operating) of coal generation capacity from Eskom by 2050, starting with 12 GW by 2030, 16 GW by 2040 and a further 7 GW by 2050.

The IRP 2019 was Gazetted in October 2019 and makes provision for the procurement of 1.6 GW of wind energy per annum from 2020 to 2030.

The implementation of the IRP constitutes significant progress in the transformation of the South African energy sector. To be in line with the Paris Agreement goals for mitigation, South Africa would still need to adopt more ambitious actions by 2050 such as expanding renewable energy capacity beyond 2030, fully phasing out coal by mid-century, and substantially limiting unabated natural gas use.

#### ***Emergency regulations in terms of the Disaster Management Act***

In addition to the above, South Africa has currently been experiencing severe electricity shortages causing frequent and prolonged loadshedding. Consequently, on the 27<sup>th</sup> February 2023, Government gazetted the Disaster Management Act (57/2002): Regulations issued in terms of Section 27 (2) of the Act.

The objects of these Regulations are to assist, protect and provide relief to the public; to protect property; to prevent and combat disruption; and to deal with the destructive nature and other effects of the disaster by:

- ▲ Minimising the impact of load shedding on livelihoods, the economy, policing functions, National security, security services, education services, health services, water services, food security, communications and municipal services, amongst others;
- ▲ Reducing and managing the impact of load shedding on service delivery to support lifesaving and specified essential infrastructure;
- ▲ Providing measures to enable the connection of new generation of electricity; and
- ▲ Providing measures to improve Eskom's plant performance.

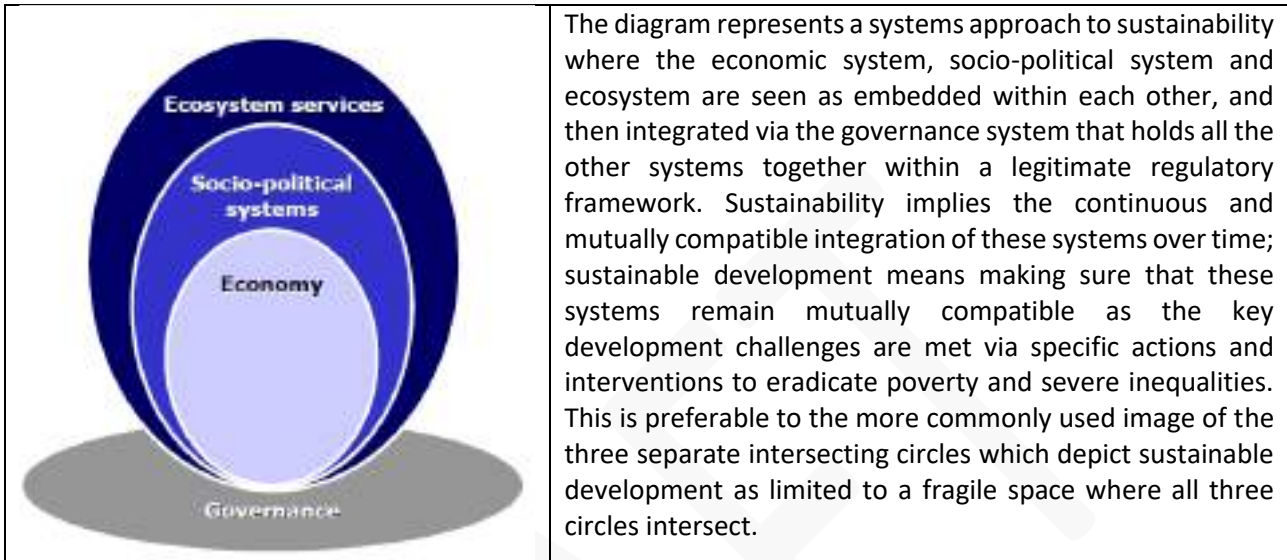
### **3.2.1 NATIONAL FRAMEWORK FOR SUSTAINABLE DEVELOPMENT (NFSD)**

The National Framework for Sustainable Development (NFSD) (2008) is a key National policy that should be considered in the ECPC diagnostic report, as it provides an overarching national strategy for sustainable development in South Africa. The NFSD is particularly relevant to the NDP and the KwaZulu Natal Provincial Growth and Development Plan 2012-2030 as it confirms that sustainable development in the South African context is about enhancing human well-being and quality of life for all time, in particular those most affected by poverty and inequality. Resource use efficiency and intergenerational equity are also the core principles.

Fundamental to understanding sustainable development is recognising the interdependence of our economic, social and environmental systems. In its draft policy on a framework for considering market-based instruments to support environmental fiscal reform in South Africa, the National Treasury notes that:

“As the South African economy continues to develop, it is increasingly important to ensure that it does so in a sustainable way and that, at the same time, issues of poverty and inequality are effectively addressed. It is, therefore, important to appreciate that it’s not just the quantity of growth that matters, but also its quality.”

The current understanding of sustainable development is illustrated by the diagram below:



The NFSD provides the following definitions for sustainable development relevant to KwaZulu Natal Provincial Growth and Development Plan 2012-2030:

***Sustainable shared and accelerated growth***

**Sustainable development that is appropriate and specific to the South African context will entail shared and accelerated growth, targeted interventions and community mobilisation to eradicate poverty, and ensure the ecologically sustainable use of our natural resources and eco-system services.**

***Sustainable development in terms of NEMA***

**“Sustainable development means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.”**

The NFSD notes that the achievement of sustainable development is not a once-off occurrence and its objectives cannot be achieved by a single action or decision. It is an ongoing process that requires a particular set of values and attitudes in which economic, social and environmental assets that society has at its disposal, are managed in a manner that sustains human well-being without compromising the ability of future generations to meet their own needs.

### 3.3 ELECTRICITY SUPPLY IN SOUTH AFRICA

South Africa’s current electricity generation and supply system is unreliable and in crisis, hence the gazetting in February 2023 of Regulations in terms of the Disaster Management Act to minimise the impacts of loadshedding. Currently, Eskom has a net output of 47,201 MW, and it produces 85% of South Africa’s electricity, which is an equivalent of 40% of Africa’s electricity. Renewable energy accounts for 5% of South

Africa's electricity. This is mainly due to the targets set in the IRP2010-2030 that aimed to change the electricity landscape from high coal (91.7%) to medium coal (48%) using electricity produced by the Independent Power Producers (IPP's), with the utility company, Eskom, as the single buyer of the electricity.

South Africa has a high level of renewable energy potential and presently has in place a target of 17,800 MW of renewable energy. The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has been designed to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

In terms of the REIPPPP, bidders will be required to bid on tariff and the identified socio-economic development objectives of the DoE. The tariff will be payable by the Buyer (currently ESKOM) pursuant to the Power Purchase Agreement (PPA) to be entered into between the Buyer and the Project Company of a Preferred Bidder.

The Sixth (6th) Bid Window under the REIPPPP was concluded in December 2022. Of the 56 bid submissions received by the Department in October 2022, only five (5) Solar PV projects were awarded Preferred Bidder status, at a total of 860 MW out of a target of 4,200 MW (expanded from an original 2,600 MW). Eskom listed grid constraints as a limiting factor to certain areas within South Africa and consequently, no wind energy projects were awarded preferred bidder status during Round 6.

### **3.4 PRIVATE OFFTAKE**

In 2022, in response to the emerging energy crisis, the President issued instructions where Independent Power Producers (IPPs) no longer require a NERSA generation licence. Thus, in addition to participating in the REIPPPP, energy developers are more readily able to enter into offtake agreements with private companies in order to enhance energy security and to contribute to decarbonisation of private intensive electricity users such as mines, chemical industries, smelters etc.

### **3.5 SOCIAL AND ECONOMIC DEVELOPMENT**

The MNWP WEF intends to promote local economic growth and development through direct and indirect employment, as well as the identification and implementation of social development schemes during the project's operational phase. A local community trust will be established in order to ensure that funds are channelled to these social development schemes.

The need and desirability of the proposed MNWP WEF project can be demonstrated in the following main areas:

- ▲ Move to green energy due to growing concerns associated with climate change and the on-going exploitation of non-renewable resources;
- ▲ Security of electricity supply, where over the last few years, South Africa has been adversely impacted by interruptions in the supply of electricity; and
- ▲ Stimulation of the green economy where there is a high potential for new business opportunities and job creation.

The above main drivers, for renewable energy projects, are supported by the following International, National and Provincial (KwaZulu-Natal Province) policy documents.



## 3.6 INTERNATIONAL

### 3.6.1 THE 1992 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

The UNFCCC is a framework convention which was adopted at the 1992 Rio Earth Summit. South Africa signed the UNFCCC in 1993 and ratified it in August 1997. The stated purpose of the UNFCCC is to, “achieve... stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system”, and to thereby prevent human-induced climate change by reducing the production of greenhouse gases defined as, “those gaseous constituents of the atmosphere both natural and anthropogenic, that absorb and re-emit infrared radiation”.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The UNFCCC is relevant in that the proposed MNWP WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity. South Africa has committed to reducing emissions to demonstrate its commitment to meeting international obligations.

### 3.6.2 THE KYOTO PROTOCOL (2002)

The Kyoto Protocol is a protocol to the UNFCCC which was initially adopted for use on the 11<sup>th</sup> of December 1997 in Kyoto, Japan, and which entered into force on the 16<sup>th</sup> of February 2005 (UNFCCC, 2009). The Kyoto Protocol is the chief instrument for tackling climate change. The major feature of the Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. This amounts to an average of 5% against 1990 levels over the five-year period 2008-2011. The major distinction between the Protocol and the Convention is that, “while the Convention encouraged industrialised countries to stabilize GHG emissions, the Protocol commits them to do so”.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The Kyoto Protocol is relevant in that the proposed MNWP WEF project will contribute to a reduction in the production of greenhouse gases by providing an alternative to fossil fuel-derived electricity and will assist South Africa to begin demonstrating its commitment to meeting international obligations in terms of reducing its emissions.

## 3.7 NATIONAL

### 3.7.1 NATIONAL DEVELOPMENT PLAN (2011)

The National Development Plan (NDP) (also referred to as Vision 2030) is a detailed plan produced by the National Planning Commission in 2011 that is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP represents a new approach by Government to promote sustainable and inclusive development in South Africa, promoting a decent standard of living for all, and includes twelve (12) key focus areas, those relevant to the current proposed WEF being:

- ▲ An economy that will create more jobs;
- ▲ Improving infrastructure; and

- Transition to a low carbon economy.

SECTOR	TARGET
Electrical infrastructure	<ul style="list-style-type: none"> <li>South Africa needs an additional 29,000 MW of electricity by 2030. About 10,900 MW of existing capacity will be retired, implying new build of about 40,000 MW.</li> <li>About 20,000 MW of this capacity should come from renewable sources.</li> </ul>
Transition to a low carbon economy	<ul style="list-style-type: none"> <li>Achieve the peak, plateau and decline greenhouse gas emissions trajectory by 2025.</li> <li>About 20,000 MW of renewable energy capacity should be constructed by 2030.</li> </ul>

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF will contribute towards additional energy capacity in South Africa and will contribute towards a reduction in greenhouse gas emissions.

### 3.7.2 NATIONAL CLIMATE CHANGE RESPONSE WHITE PAPER (2012)

The White Paper indicates that Government regards climate change as one of the greatest threats to sustainable development in South Africa and commits the country to making a fair contribution to the global effort to achieve the stabilisation of greenhouse gas concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system.

The White Paper also identifies various strategies in order to achieve its climate change response objectives, including:

- The prioritisation of mitigation interventions that significantly contribute to an eventual decline emission trajectory from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

The White Paper provides numerous specific actions for various Key Mitigation Sectors including renewable energy. The following selected strategies (amongst others) must be implemented by South Africa in order to achieve its climate change response objectives:

- The prioritisation of mitigation interventions that significantly contribute to a peak, plateau and decline emission trajectory where greenhouse gas emissions peak in 2020 to 2025 at 34% and 42% respectively below a business as usual baseline, plateau to 2035 and begin declining in absolute terms from 2036 onwards, in particular, interventions within the energy, transport and industrial sectors.
- The prioritisation of mitigation interventions that have potential positive job creation, poverty alleviation and/or general economic impacts. In particular, interventions that stimulate new industrial activities and those that improve the efficiency and competitive advantage of existing business and industry.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF project will provide an alternative to fossil fuel-derived electricity and will contribute to climate change mitigation.

### 3.7.3 WHITE PAPER ON RENEWABLE ENERGY POLICY (2003)

The White Paper on the Renewable Energy Policy (2003) commits the South African Government support for the development, demonstration and implementation of renewable energy sources for both small and large scale applications. It sets out the policy principles, goals and objectives to achieve, “An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation”.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed MNWP WEF is consistent with the White Paper and the objectives therein to develop an economy in which renewable energy has a significant market share and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.

### 3.7.4 INTEGRATED RESOURCE PLAN FOR ELECTRICITY 2010-2030 (REVISION 3, 2019)

The Integrated Resource Plan (IRP, 2019) for South Africa was initiated by the DoE and lays the foundation for the country's energy mix up to 2030, and seeks to find an appropriate balance between the expectations of different stakeholders considering a number of key constraints and risks, including:

- Reducing carbon emissions;
- New technology uncertainties such as costs, operability and lead time to build;
- Water usage;
- Localisation and job creation;
- Southern African regional development and integration; and
- Security of supply.

The IRP is an electricity infrastructure development plan based on the least-cost electricity supply and demand balance, taking into account security of supply and the environment through the minimisation of negative emission and water use. It is important because it is South Africa's plan for the procurement of generation capacity up to 2030. The last such plan was the Integrated Resource Plan 2010 (IRP 2010) promulgated in March 2011, and such plans are intended to be updated every two years.

Since the promulgation of IRP 2010, a total of 18 000 MW of new generation capacity has been committed comprising 9,564 MW of coal power at Medupi and Kusile, 1,332 MW of water pumped storage at Ingula, 6,422 MW of renewable energy by independent power producers (IPPs), and 1,005 MW of Open Cycle Gas Turbine (OCGT) peaking plants currently using diesel at Avon and Dedisa.

6,000 MW of new solar PV capacity and 14,400 MW of new wind power capacity will be commissioned by 2030 under IRP 2019. The current annual build limits on solar PV and wind have been retained pending a report on the just transition strategy. There will be no new concentrated solar power commissioned under IRP 2019 up to 2030 beyond the 300 MW already committed to being commissioned in 2019.

The following image outlines the steps taken between the last IRP Revision (2011) and the latest IRP Revision (2019). As per the CSIR summary (Online: <https://researchspace.csir.co.za/>)

## Key considerations and focus areas have shifted in some dimensions but remained largely unchanged in others

	IRP 2010-2030 (Promulgated 2011) t: 2010-2030	IRP Update 2013 (Not promulgated) t: 2013-2030	Draft IRP 2016 (Public consultation) t: 2016-2030	Draft IRP 2018 (Aug. 2018) t: 2016-2030	IRP 2019 (Gazetted Oct. 2019) t: 2018-2030
<b>Expected energy mix</b>	Scenario-based; <b>Big:</b> Coal, nuclear <b>Medium:</b> VRE, gas <b>Small:</b> imports (hydro)	Decision trees; <b>Big:</b> Coal, nuclear <b>Medium:</b> VRE, gas, CSP <b>Small:</b> imports (hydro, coal), others	Scenario-based; <b>Big:</b> Coal <b>Medium:</b> nuclear, Gas, VRE <b>Small:</b> imports (hydro), others	Scenario-based; <b>Big:</b> Coal, VRE <b>Medium:</b> Gas <b>Small:</b> Nuclear, DG/EG imports (hydro), others	Scenario-based; <b>Big:</b> Coal, VRE <b>Medium:</b> Gas, DG/EG <b>Small:</b> Nuclear, imports (hydro), Storage, others
<b>Demand</b>	454 TWh (2030)	409 TWh (2030) 522 TWh (2050)	350 TWh (2030) 527 TWh (2050)	313 TWh (2030) 502 TWh (2050)	307 TWh (2030) 502 TWh (2050)
<b>Emissions (CO<sub>2</sub>-eq)</b>	Peak only, EM1 (275 Mt from 2025)	PPD (Moderate)	PPD (Moderate)	PPD (Moderate)	PPD (Moderate)
<b>Nuclear options</b>	Commit to 9.6 GW	Delay option (2025-2030)	No new nuclear pre-2030; 1 <sup>st</sup> units (2037)	No new nuclear pre-2030; (pace/scale/affordability); 1 <sup>st</sup> units (2036-2037)	No new nuclear pre-2030; (pace/scale/affordability); 2.5 GW (2030)
<b>Import options</b>	Coal, hydro/PS, gas (fuel)	Coal, hydro/PS, gas (fuel)	Hydro, gas (fuel)	Hydro, gas (fuel)	Hydro, gas (fuel)

<sup>1</sup> Performance (energy production & cost level/certainty). <sup>2</sup> For each technology option: EM1 – Emissions Limit 1 ( whilst other scenarios EM2/EM3/CT (carbon-tax) with increasingly stricter CO2 emissions limits were explored (not were adopted); PPD – Peak plateau-decline; EAF – Energy Availability Factor; Sources: LC – least-cost; MES – minimum emissions standards; LT – long-term; ST – short-term; Ts – transmission networks; Ds – distribution networks; DG – distributed generation; EG – embedded generation; Sources: DoE, CSIR Energy Centre analysis

	IRP 2010-2030 (Promulgated 2011) t: 2010-2030	IRP Update 2013 (Not promulgated) t: 2013-2030	Draft IRP 2016 (Public consultation) t: 2016-2030	Draft IRP 2018 (Aug. 2018) t: 2016-2030	IRP 2019 (Gazetted Oct. 2019) t: 2018-2030
<b>Coal fleet performance</b>	>85% EAF	~80% EAF; LifeEx (10 yrs)	72-80% EAF; MES delay (2020/25)	72-80%; MES delay (2020/25)	67-78%; MES delay (2020/25)
<b>New-build coal</b>	1 <sup>st</sup> units forced earlier 1.0 GW (2014) 6.3 GW (2030)	Displaced by LifeEx (10 yrs) 1.0 GW (2025) <3.0 GW by 2030	1 <sup>st</sup> 1.5 GW (2028) 4.3 GW (2030)	0.5 GW (2023) 1.0 GW (2030)	0.75 GW (2023) 1.5 GW (2030)
<b>New technologies<sup>1</sup></b>	Uncertain VRE cost/perf. CSP (marginal); Annual constr.: 0.3-1.0 GW/yr (PV) 1.6 GW/yr (wind)	Uncertain VRE cost/perf. CSP (notable); Annual constr.: 1.0 GW/yr (PV) 1.6 GW/yr (wind)	VRE cost/perf. proven CSP (minimal); Battery/CAES (option); Annual constr.: 1.0 GW/yr (PV) 1.6 GW/yr (wind)	VRE cost/perf. proven CSP (minimal); Batteries (option); Annual constr.: 1.0 GW/yr (PV) 1.6 GW/yr (wind)	VRE cost/perf. proven CSP (minimal); Batteries (notable); Annual constr.: 1.0 GW/yr (PV) 1.6 GW/yr (wind)
<b>Security of supply</b>	LT (reserve margin); ST (hourly dispatch); Immediate ST need; Research: Fuel supply, base-load, backup, high VRE	LT (reserve margin); ST (hourly dispatch); Research: Fuel supply, base-load, backup, high VRE	Assumed similar Research: None highlighted	Assumed similar Research: Gas supply, high VRE, just transition	Assumed similar; Immediate ST need; Research: Gas supply, high VRE, just transition
<b>Network requirements<sup>2</sup></b>	Not considered; Tx/Ds research need	Not a concern (Tx power corridors); Ds networks research need (DG/EG)	None	Explicit Tx needs costed (per tech.)	Explicit Tx needs costed (per tech.)

<sup>1</sup> Performance (energy production & cost level/certainty). <sup>2</sup> For each technology option: EM1 – Emissions Limit 1 ( whilst other scenarios EM2/EM3/CT (carbon-tax) with increasingly stricter CO2 emissions limits were explored (not were adopted); PPD – Peak plateau-decline; EAF – Energy Availability Factor; Sources: LC – least-cost; MES – minimum emissions standards; LT – long-term; ST – short-term; Ts – transmission networks; Ds – distribution networks; DG – distributed generation; EG – embedded generation; Sources: DoE, CSIR Energy Centre analysis

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### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed MNWP WEF is in line with the IRP 2019 with respect to the energy mix and movement to a low carbon economy up to 2030 and beyond.

### 3.7.5 RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME (REIPPPP)

South Africa has a high level of renewable energy potential and presently has in place a target of 17 800 MW of renewable energy. The REIPPPP Programme has been designed so as to contribute towards the national target and towards socio-economic and environmentally sustainable growth, and to start and stimulate the renewable industry in South Africa.

In terms of the REIPPPP, bidders will be required to bid on tariff and the identified socio-economic development objectives of the DoE. The tariff will be payable by the Buyer (currently Eskom) pursuant to the Power Purchase Agreement (PPA) to be entered into between the Buyer and the Project Company of a Preferred Bidder.

The following table summarises the REIPPPP bidding windows which have already been completed.

Bidding Window 1	Bidding Window 2	Bidding Window 3	Bidding Window 3.5	Bidding Window 4	Bidding Window 5	Bidding Window 5	Bidding Window 6
Submission Date: 04/11/2011	Submission Date: 05/03/2012	Submission Date: 19/08/2013	Submission Date: 31/04/2014	Submission Date: 18/08/2014	Submission Date: 28/10/2021	Submission Date: 28/10/2021	Submission Date: 06/10/2022
28 Pref Bidders	19 Pref Bidders	17 Pref Bidders	2 Pref Bidders	26 Pref Bidders	25 Pref Bidders	25 Pref Bidders	5 Pref Bidders
1,425 MW of contracted capacity	1,040 MW of contracted capacity	1,457 MW of contracted capacity	200 MW of contracted capacity	2,205 MW of contracted capacity	2,205 MW of contracted capacity	2 205 MW of contracted capacity	860 MW of contracted capacity

The Sixth (6th) Bid Window under the REIPPPP was concluded in December 2022. Of the 56 bid submissions received by the Department in October 2022, only five (5) Solar PV projects were awarded Preferred Bidder status, at a total of 860 MW out of a target of 4,200 MW (expanded from an original 2,600 MW). Eskom listed grid constraints as a limiting factor to certain areas within South Africa and consequently, no wind energy projects were awarded preferred bidder status during Round 6.

Given the energy challenges the country is facing the qualification criteria have been developed to promote the participation of projects that are fully developed and will be able to be constructed and connected to the national grid as soon as possible, but not later than 24 months post Commercial Close.

#### RELEVANCE TO THE PROPOSED MNWP WEF

In terms of REIPPPP, bids would be awarded for renewable energy supply to Eskom through up to 6 bidding phases. The 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> round bidding processes have been completed where projects are currently reaching financial close in order to implement the projects.

### 3.7.6 LONG TERM MITIGATION SCENARIOS (2007)

The aim of the Long-Term Mitigation Scenarios (LTMS) was to set the pathway for South Africa’s long-term climate policy and will eventually inform a legislative, regulatory and fiscal package that will give effect to the policy package at a mandatory level. The overall goal is to “develop a plan of action which is economically risk-averse and internationally aligned to the world effort on climate change.”



The strategy assesses various response scenarios but concludes that the only sustainable option (“the preferred option”) for South Africa is the “Required by Science” scenario where the emissions reduction targets should target a band of between -30% to -40% emission reductions from 2003 levels by 2050 which includes increasing renewable energy in the energy mix by 50% by 2050.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF will contribute towards an overall reduction in emissions and aligns with the world stance on efforts towards the mitigation of climate change.

### **3.7.7 INDUSTRIAL POLICY ACTION PLAN 2011/12 – 2013/14**

The South African Industrial Policy Action Plan (IPAP 2) 2011/12 – 2013/14 represents a further step in the evolution of this work and serves as an integral component of government’s New Growth Path and notes that there are significant opportunities to develop new ‘green’ and energy-efficient industries and related services; and indicates that in 2007/2008, the global market value of the ‘Low-Carbon Green Sector’ was estimated at £3 trillion (or nearly US\$5 trillion), a figure that is expected to rise significantly in the light of climate-change imperatives, energy and water security imperatives.

Based on economic, social and ecological criteria, IPAP identified a number of sub-sectors and an initial round of concrete measures were proposed for development of the renewable energy sector with the following key action programmes:

- ▲ Solar and Wind Energy - Stimulate demand to create significant investment in renewable energy supply and the manufacturing of local content for this supply.
- ▲ Green Industries special focus: The South African Renewables Initiative (SARi) - SARi is an intra-governmental initiative set to catalyse industrial and economic benefits from an ambitious program of renewables development; including financing and associated institutional arrangements that would not impose an unacceptable burden on South Africa’s economy, public finances or citizens.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF will contribute towards an overall reduction in emissions and it aligns with the world stance on efforts towards the mitigation of climate change.

### **3.7.8 STRATEGIC INFRASTRUCTURE PROJECTS (2012)**

The National Infrastructure Plan that was adopted in 2012 together with the New Growth Path, which sets a goal of five million new jobs by 2020, identifies structural problems in the economy and points to opportunities in specific sectors and markets or "jobs drivers" resulted in the establishment of the Presidential Infrastructure Coordinating Committee (PICC) which in turn resulted in the development of 18 Strategic Infrastructure Projects (SIPS).

SIPS relevant to renewable energy include:

**SIP 8: Green energy in support of the South African economy**

- ▲ Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options as envisaged in the Integrated Resource Plan (IRP2010).

**SIP 9: Electricity generation to support socio-economic development**

- ▲ Accelerate the construction of new electricity generation capacity in accordance with the IRP2010 to meet the needs of the economy and address historical imbalances.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The MNWP WEF will contribute to SIP project role out.

### 3.8 PROVINCIAL

#### 3.8.1 KWAZULU NATAL PROVINCIAL GROWTH AND DEVELOPMENT PLAN 2012-2030 (2013)

The KZN Provincial Growth and Development Strategy (PGDS) 2012 – 2030, was adopted as a strategic guide for growth and development in KZN. The PGDS presents a long-term vision and outlines a strategic growth and development agenda for the Province. It identifies seven strategic goals and 34 strategic objectives aimed at ‘growing the economy for the development and the improvement of the quality of life of all people living in the province of KwaZulu-Natal’.



Figure 3-1: Strategic goals and objectives for KZN until the Year 2030.

The following PGDS goals and objectives are relevant to the development of renewable energy projects in the KZN.

#### 3.8.2 STRATEGIC GOAL 4: STRATEGIC INFRASTRUCTURE

Objective 6: Improve energy production and supply so that sufficient electricity is available for the growth and development needs of KZN including:

- ✦ Develop and implement the Provincial Energy Strategy;
- ✦ Investigate renewable energy sources;
- ✦ Provide base load alternative energy supply; and
- ✦ Programme and fund operations and maintenance.

### 3.8.3 STRATEGIC GOAL 5: ENVIRONMENTAL SUSTAINABILITY

Objective 4. Adapt to climate change so that KZN is able to effectively anticipate, mitigate and respond to the effects of climate change, including:

- Research and monitor climate change continuously to inform adaptation, response and mitigation;
- Formulate a climate change disaster response; and
- Strengthen district disaster management and mitigation capacity.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF will contribute towards the strategic goals and objectives of the KZN PGDS with respect to including renewable energy in the energy mix and climate change mitigation.

### 3.8.4 KWAZULU-NATAL PROVINCE GREEN ECONOMY STRATEGY (2012)

The KwaZulu-Natal Department of Economic Development and Tourism (DEDT) identified the need to transform the Province’s economy to a green economy, in line with national policy. DEDT therefore initiated a project in the second half of 2010 to better understand and promote the green economy in KwaZulu-Natal (KZN). The principal aim of this Green Economy Strategy is to support and direct the re-orientation and growth of the KwaZulu-Natal economy to become increasingly competitive and resilient, by:

- Increasing resource use efficiency in business and government infrastructure and development;
- Increasing the supply of renewable energy;
- Securing the supply of ecosystem services from the province’s natural assets; and
- Reducing environmental and climate related risks;
- Create sustainable jobs for local people;
- Reduce poverty; and
- Address social equity throughout all regions of the province.

The KZN Green Economic Strategy centres on three main goals as reflected below.

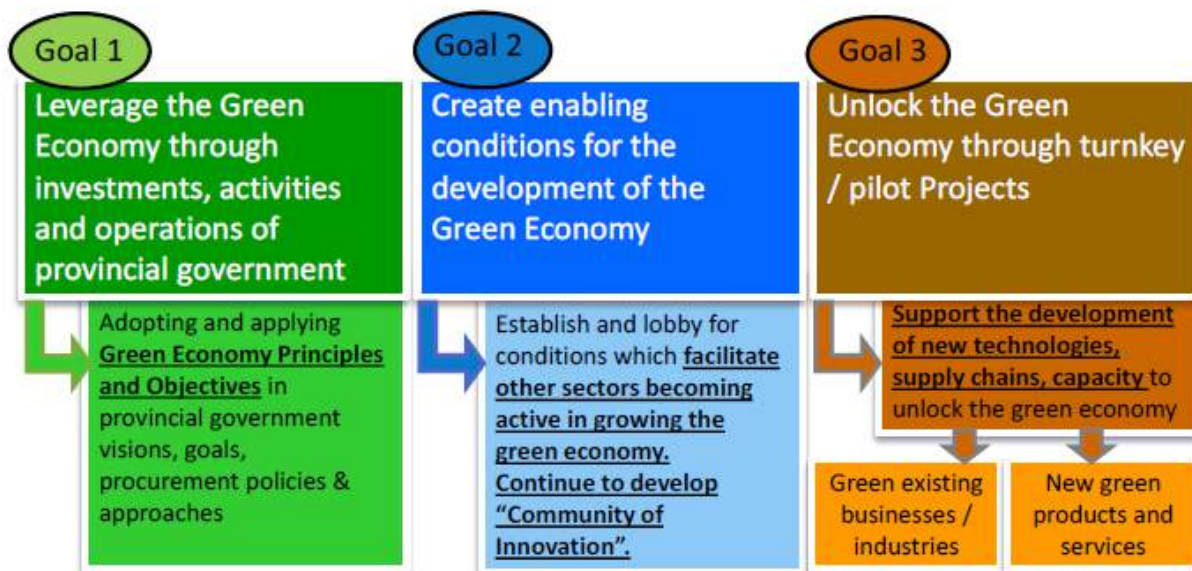


Figure 3-2: KZN Green Economic Strategy

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF will contribute towards the goals of KZN Green Economic Strategy particularly with respect to increasing the supply of renewable energy.

### 3.8.5 TRADE AND INVEST KWAZULU NATAL (2022)

Trade & Investment KwaZulu-Natal (TIKZN) was established by the Department of Trade & Investment to promote the province of KwaZulu-Natal as an investment destination and to facilitate trade by assisting local companies' access international markets.

TIKZN has called for a shift to renewable energy as part of a bigger plan to transition to a low carbon economy. It also aligns with undertakings given by South Africa's Government as a signatory to the Paris Agreement that would allow for a reduction of greenhouse gas emissions. Nationally, there is a commitment of systematic reduction towards 17,800 MW renewable energy generated by 2030, and a further reduction to 13,225 MW renewable energy generated by 2025. Importantly, it is reported that for each kilowatt hour of renewable energy that displaces fossil fuels in the national grid, 1.2 litres of water will be saved, allowing the Province to achieve both greenhouse gas emission and water demand reduction targets.

Globally, the case for the Green, renewable or Clean Economy has been made abundantly clear. Renewable energy is the only electricity generation technology whose price has decreased dramatically, with solar PV module prices falling by 80% during the past five years, while wind turbines have become 30% less expensive. South Africa's wind resources are regarded as amongst the top five in the world and could sustain 25% of our grid's capacity. Furthermore, it is estimated that by 2020 the price of wind and solar PV will be at least R0-50/kwh, unlike Eskom's Medupi power station, which - once completed - will charge close to R1-10/kwh.

KwaZulu-Natal is an energy-hungry province and consumes in excess of 6 700 MW of electricity and to maintain predicted economic growth rates of between 6% and 7%, the province requires between 400MW and 470MW more electricity every year. As part of the transition towards a low carbon economy, there is a need to consider alternative energy options at the district, provincial and industrial level. The province's renewable energy sector incorporates a host of sustainable solutions and includes the installation and supply of solar water heaters and heat pumps, solar energy, biomass, biogas, bio-fuels, wind, hydro, waste to energy, industrial symbiosis and also the circular economy and energy efficiency measures.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed MNWP WEF will contribute towards the goals of KZN Green Economic Strategy particularly with respect to increasing the supply of renewable energy.

## 3.9 LOCAL GOVERNMENT

### 3.9.1 AMAJUBA DISTRICT MUNICIPALITY GROWTH AND DEVELOPMENT PLAN VISION 2030 (2012)

The Amajuba District Municipality Growth and Development Plan Vision 2030 (Amajuba DGDP) has been developed with the following main objectives:

- To establish and outline long term vision and direction for development in the district (vision 2030);
- To provide an overarching and coordinating framework for planning and development initiatives within each of the local municipalities and across municipal boundaries;
- To provide a spatial context and justification for priority interventions;



- To guide resource allocation of various spheres of government, service delivery agencies and private sector working within the district;
- To develop institutional arrangement for an effective implementation of the Amajuba DGDP and the PGDS;
- To align and integrate departmental strategic plans at a district level;
- To facilitate commitment of resources (human, financial, etc) towards the implementation of strategic objectives, catalytic initiatives, and other district priorities.

The Amajuba DGDP *Vision 2030* identifies various strategic goals, objectives, and indicators. The Strategic goals are as follows:

- Strategic Goal 1: Job Creation
- Strategic Goal 2: Human Resource Development
- Strategic Goal 3: Human and Community Development
- Strategic Goal 4: Strategic Infrastructure
- Strategic Goal 5: Environmental sustainability

Strategic Goal 5 includes the need to reduce global greenhouse gas emissions and create social-ecological capacity to adapt to climate change. This goal recognises the undesirable situation which was created by past patterns of resource use in the province and the Constitutional imperative of the need "to secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

The relevant strategic objective is to:

- Advance alternative energy generation and reduce reliance on fossil fuels – programme for development of alternative energy demonstration projects.

Strategic Goal 5 also promotes alternative energy generation and reduce reliance on fossil fuels and that a greater proportion of renewable energy should be used in Amajuba. The rollout of alternative energy demonstration projects, such as biogas digesters, wind turbines and hydro projects, can be supported through the Green Economy Technical Assistance Fund (TAF). The TAF, managed by Trade and Investment KZN (TIKZN) is aimed at providing financial assistance to support projects which promote economic development within KZN province.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF is consistent with the Amajuba DGDP Vision 2030 particularly with strategic objective 5 to:

- Advance alternative energy generation and reduce reliance on fossil fuels – programme for development of alternative energy demonstration projects.

### **3.9.2 NEWCASTLE LOCAL MUNICIPALITY INTEGRATED DEVELOPMENT PLAN (2022)**

The Newcastle LM Integrated Development involves the development of strategies towards the attainment of the municipality's vision 2035.

The Newcastle LM development strategy is based on a long-term vision but acknowledges the significance of issues that need to be addressed in the short-to-medium term. As such, the municipality has formulated development goals that seek to address the challenges facing the institution currently and reposition the area in a developmental path as follows:

- ✦ To develop Newcastle as a service and industrial hub.



- ✦ To eradicate all forms of poverty and destitution/indigence.
- ✦ To be an example of service and governance excellence.
- ✦ To improve the quality of life.
- ✦ To achieve environmental sustainability.
- ✦ To promote gender equality and empowerment.

The Newcastle LM intends to initiate projects towards the attainment of these goals. It will accelerate delivery of services and gradually consolidate outcomes so as to attain the desired future situation. Particular focus will be paid to the following key areas of strategic intervention:

- ✦ Spatial integration and environmental sustainability;
- ✦ Local economic development;
- ✦ Service delivery and infrastructure development;
- ✦ Municipal transformation and organisational development;
- ✦ Financial viability and management; and
- ✦ Good governance and public participation.

There are various references in the Newcastle LM IDP to potential interventions to both mitigate against climate change through reduced greenhouse gas emissions and promoting energy security by way of promoting renewable energy, energy efficiency etc. In addition, the IDP indicates that the Municipal Systems Act empowers municipalities to pass by-laws for energy efficiency and renewable energy. However, the preferred approach by municipalities has been to develop policies, plans and strategies and to not implement projects. In this regard, the LM is about to initiate an Energy Services Development Plan (ESDP) to unpack in part the renewable energy opportunities in the LM, and also indicates that the proposed Wind Energy Plant in Emadlangeni Local Municipality, will increase opportunities for the diversification of energy sources, hence environmental sustainability.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed MNWP WEF will contribute towards the Newcastle LM IDP goals, such as follows:

- Spatial integration and environmental sustainability – climate change mitigation;
- Local economic development – local business stimulation and job creation; and
- Service delivery and infrastructure development – contribution to energy security both locally and nationally.

### 3.10 SITE SELECTION: WIND CAPABILITY

In order to determine the wind resource potential of a proposed WEF site, it is necessary to erect a wind measurement mast to gather wind speed data and correlate these measurements with other meteorological data. A measurement campaign of at least 12 months in duration is necessary to ensure verifiable data is obtained. This data has advised on the economics of the project and finalise the positions of the wind turbines. The masts are marked as per the requirements of the Civil Aviation Authority (CAA).

Figure 3.1 below shows the wind capability figures for the two Mulilo Newcastle WEF sites as per the Department of Energy High Resolution Wind Resource Map for South Africa (2018), which indicates that the area has an average wind speed of between 7.5 and 10 m/s. These high wind speeds have been confirmed by Mulilo Newcastle Wind Power who erected two 90 m high wind measurement masts on site. The first mast was erected in April 2021, the second in December 2021, and both are actively recording the meteorological conditions on-site to date.

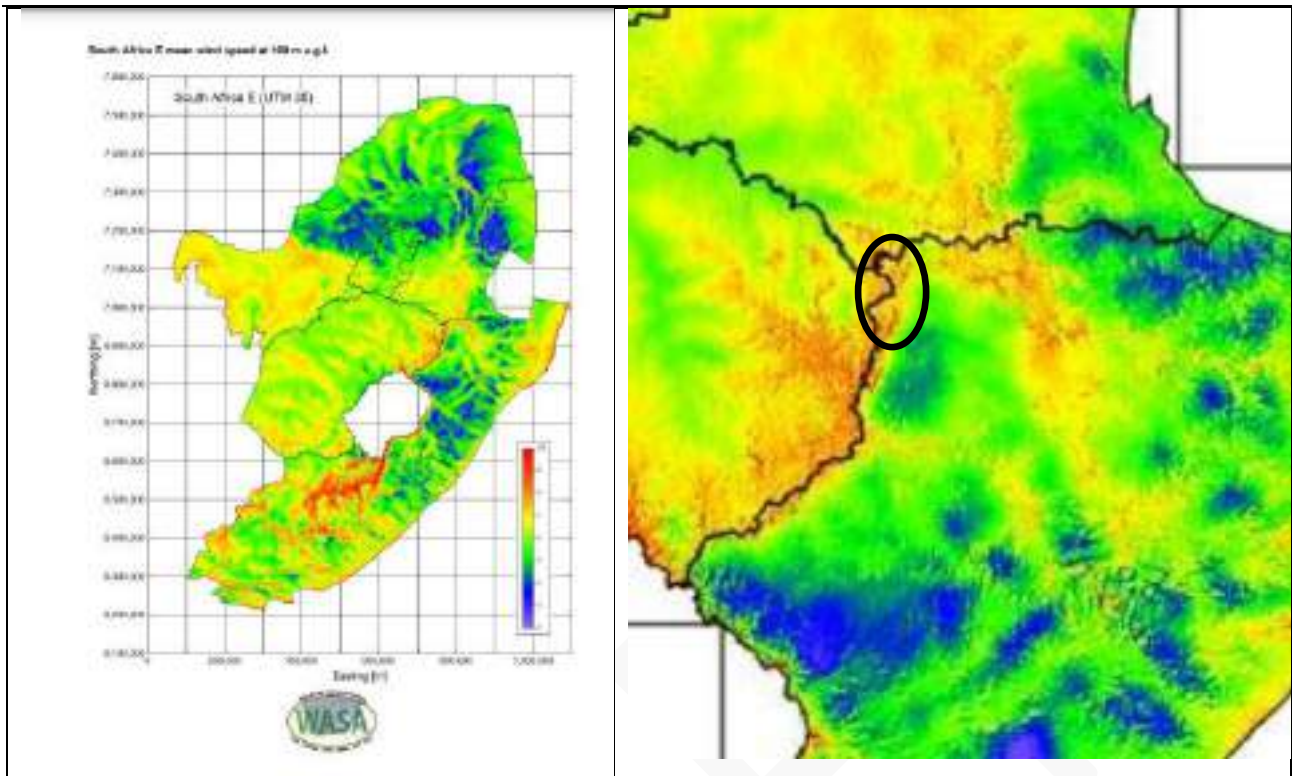


Figure 3-3: High Resolution Wind Resource Map for the Newcastle area (mean wind speed, ms<sup>-1</sup>, Department of Energy, 2018) with location of MNWP WEF circled.

### 3.11 RENEWABLE ENERGY DEVELOPMENT ZONES

In 2016, the Cabinet of the Republic of South Africa approved the gazetting of Renewable Energy Development Zones (REDZs) which refer to geographical areas where wind and solar PV development can occur in concentrated zones. The purpose of the REDZs was to accelerate renewable energy infrastructure development and contribute to creating a “predictable regulatory framework that reduces bureaucracy related to the cost of compliance”.

The DFFE approved the gazetting of eight (8) REDZs and five (5) Power Corridors in 2018 and identified a further three (3) REDZs in 2021. However, the proposed Mulilo Newcastle WEF Complex and the MNWP WEF are not located within either a REDZ or Power Corridor.

#### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed MNWP WEF does not occur within a REDZ area or Power Corridors and, therefore, does not benefit from the more streamlined regulatory process.

### 3.12 BIODIVERSITY CONSERVATION PROGRAMMES

The proposed MNWP WEF occurs within or is close to various important conservation areas as described below.

#### 3.12.1 NATIONAL VEGETATION MAP (SANBI)

As indicated in the baseline ecological assessment at Section 5.5 of this EIAR, according to SANBI’s National Vegetation Map (2018), the proposed Mulilo Newcastle WEF Complex occurs within four (4) vegetation types, namely Northern KwaZulu-Natal Moist Grassland, KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland, and Southern Mistbelt Forest (**Figure 3-4**).

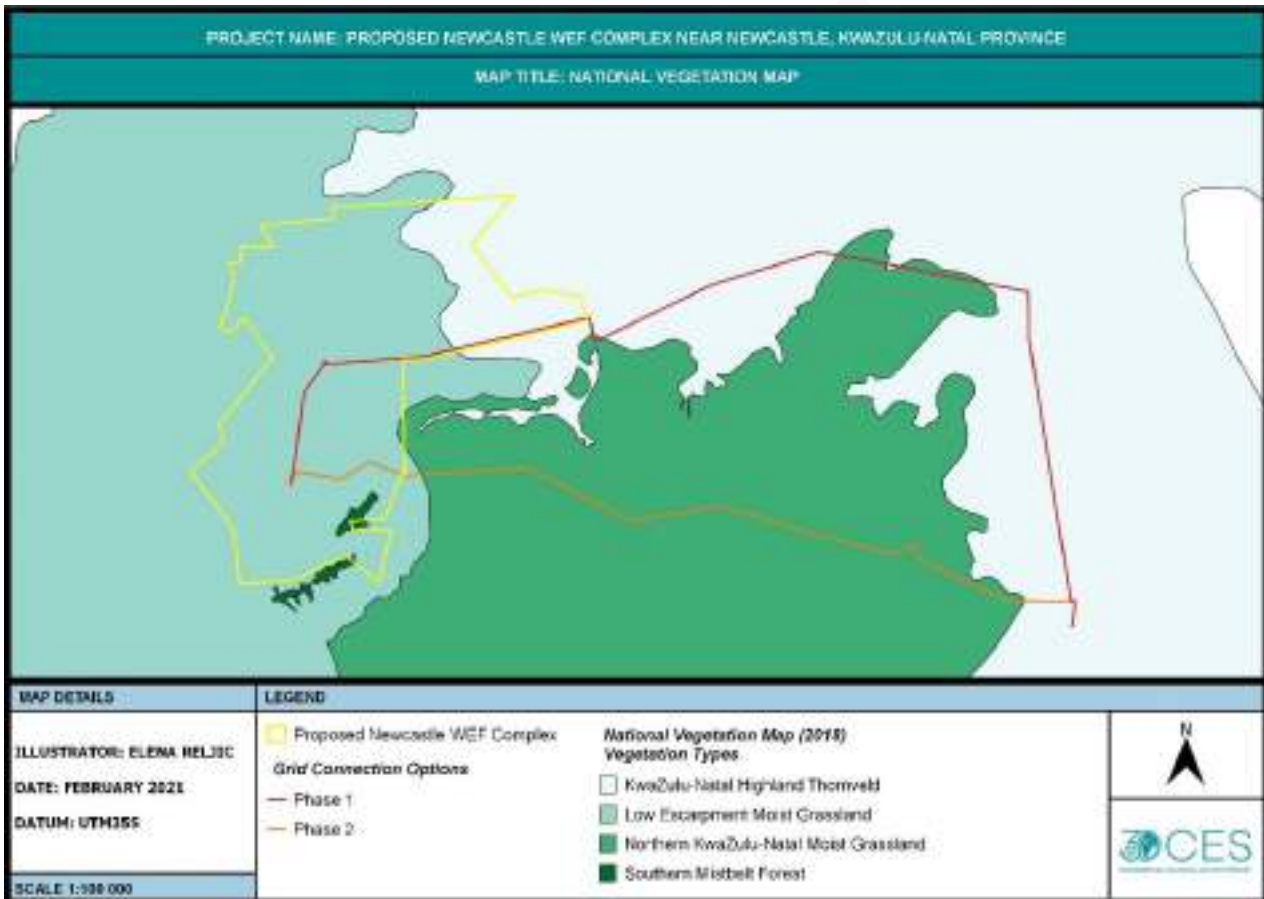


Figure 3-4: National Vegetation Map for the proposed Newcastle WEF Complex.

#### 3.12.2 CRITICAL BIODIVERSITY AREAS

As indicated in the baseline ecological assessment at Section 6 of this Scoping Report, portions of the Mulilo Newcastle WEF Complex occurs within both Irreplaceable and Optimal CBA categories.

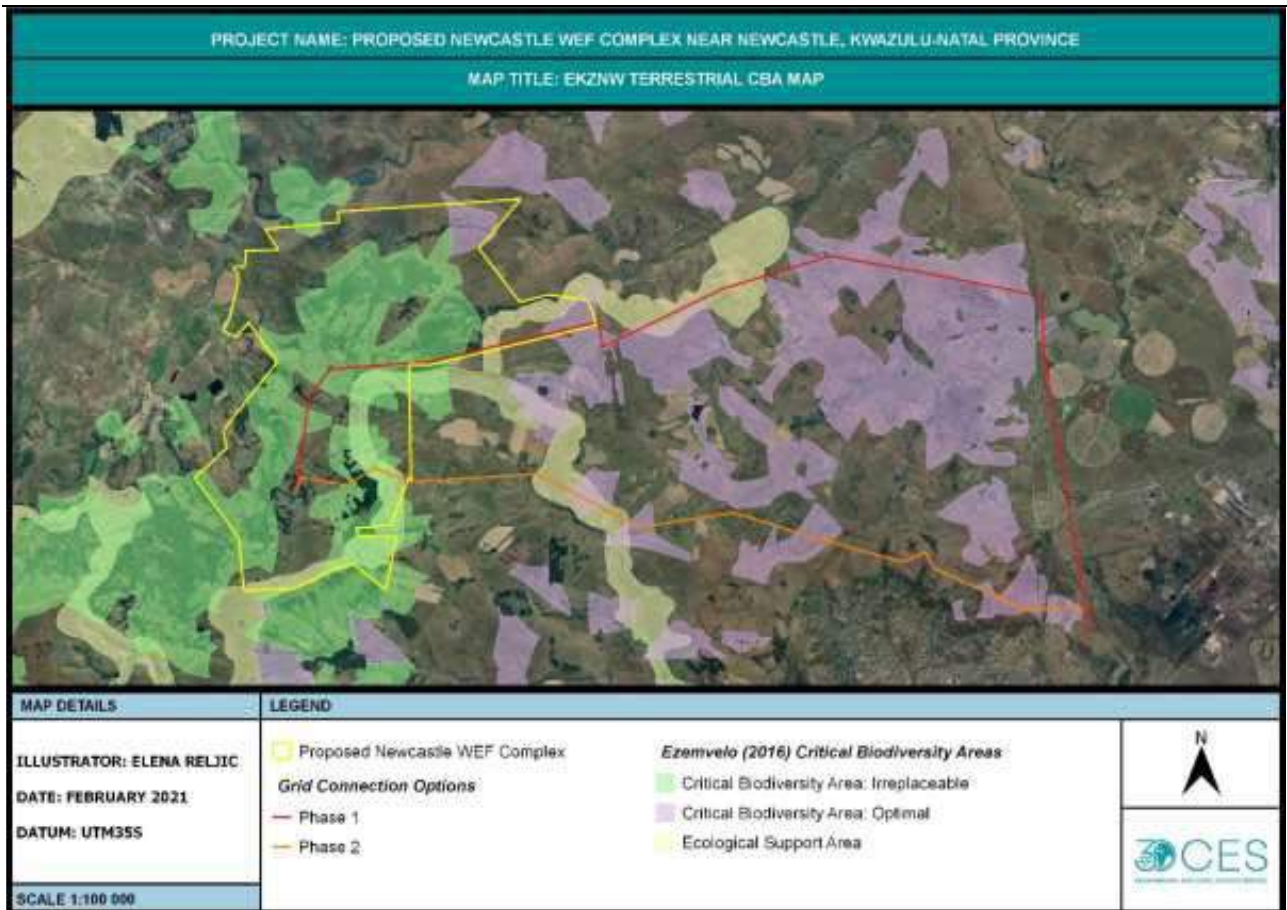


Figure 3-5: EKZNW (2016) Terrestrial CBAs within the Newcastle WEF Complex study area.

### 3.12.3 PROTECTED AREAS

As indicated in the baseline ecological assessment section, and in **Figure 3-6** below, the study area for the Mulilo Newcastle Wind Energy Complex is located within a National Protected Areas Expansion Strategy (NPAES) area, namely Moist Escarpment Grasslands. In addition, the study area occurs within 10 km of a protected or conservation area recognised by the South African Protected Areas Database (SAPAD, 2021), namely the Sneeuwberg Protected Environment. However, the site does not occur within a protected or conservation area recognised by the South African Conservation Areas Database (SACAD, 2021).

There are no provincially legislated Protected Areas occurring within the study area.





Figure 3-6 Legislated Protected Areas in or around the study area.

### 3.13 CONCLUDING REMARKS

Based on the above assessment, it is clear that the proposed MNWP WEF is consistent with various National, Provincial and local policies and programmes relating to economic and socio-economic development, infrastructure development (renewable energy) and climate change mitigation.

The construction and operation of the MNWP WEF will contribute to local developmental objectives of poverty eradication and other social and socio-economic benefits that are integral to the REIPPPP process. The development of wind farms attracts significant direct foreign financial investment into South Africa and local communities. REIPPPP local content requirements can lead to the creation of local industry and both skilled and un-skilled jobs in the RE industrial sector. Further positive social and socio-economic benefits will be realised by the landowners which will host turbines, in the form of rental income which in turn will have multiplier effects on the local economy due to local spend. In addition, farming activities can continue alongside the wind turbines, while rental income may also be used to enhance farming activities.

The MNWP WEF project developer has also indicated that local socio-economic benefits will be realised with the development of the WEF, specifically in line with the socio-economic development goals under the REIPPPP, which will include:

- The realisation of the local needs and requirements within the area;
- Job creation within an area;
- The creation of a second income for the affected landowners;
- An increase in the standard of living; and
- An overall economic and social upliftment within the area.



However, when considering the overall need for the development of the MNWP WEF project, it is also important to consider the potential costs of the proposed WEF. Relevant costs associated with the proposed WEF could be particularly applicable due to potential negative impacts on biodiversity conservation initiatives in the affected area (such as the NPAES) and on the commercial activities such as tourism, that rely on the scenic value of the area to attract tourists. These aspects have been thoroughly investigated in the EIR phase of the EIA process including the completion of relevant specialist studies.

DRAFT

## 4 RELEVANT LEGISLATION

The development of the proposed MNWP WEF will be subject to the requirements of various items of South African legislation. These are described below.

### 4.1 THE CONSTITUTION ACT (ACT NO. 108 OF 1996)

This is the supreme law of the land. As a result, all laws, including those pertaining to the proposed development, must conform to the Constitution. The Bill of Rights - Chapter 2 of the Constitution, includes an environmental right (Section 24) according to which, everyone has the right:

- (a) To an environment that is not harmful to their health or well-being.
- (b) To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:
  - (i) Prevent pollution and ecological degradation.
  - (ii) Promote conservation.
  - (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

#### RELEVANCE TO THE PROPOSED MNWP WEF

- ▲ The WEF developer has an obligation to ensure that the proposed activity will not result in pollution and ecological degradation.
- ▲ The WEF developer has an obligation to ensure that the proposed activity is ecologically sustainable, while demonstrating economic and social development.

### 4.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998 AND SUBSEQUENT AMENDMENTS)

The National Environmental Management Act (NEMA, Act No. 107 of 1998) provides for basis for environmental governance in South Africa by establishing principles and institutions for decision-making on matters affecting the environment.

A key aspect of the NEMA is that it provides a set of environmental management principles that apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. Section 2 of NEMA contains principles (see Table 4-1) relevant to the proposed WEF project, and likely to be utilised in the process of decision making by DFFE.

**Table 4-1. NEMA Environmental Management Principles**

<b>(2)</b>	Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
<b>(3)</b>	Development must be socially, environmentally and economically sustainable.
<b>(4)(a)</b>	Sustainable development requires the consideration of all relevant factors including the following: <ul style="list-style-type: none"> <li>i. That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>ii. That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</li> </ul>

	iii. That waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
<b>(4)(e)</b>	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
<b>(4)(i)</b>	The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
<b>(4)(j)</b>	The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
<b>(4)(p)</b>	The 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 must be paid for by those responsible for harming the environment.
<b>(4)(r)</b>	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.

As these principles are utilised as a guideline by the competent authority in ensuring the protection of the environment, the proposed development should, where possible, be in accordance with these principles. Where this is not possible, deviation from these principles would have to be very strongly motivated.

NEMA introduces the duty of care concept, which is based on the policy of strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons.

Employees who refuse to perform environmentally hazardous work, or whistle blowers, are protected in terms of NEMA.

**RELEVANCE TO THE PROPOSED MNWP WEF**

- ▲ The WEF developer must be mindful of the principles, broad liability and implications associated with NEMA and must eliminate or mitigate any potential impacts.
- ▲ The WEF developer must be mindful of the principles, broad liability and implications of causing damage to the environment.

### **4.3 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (ACT NO. 57 OF 2003)**

The National Environmental Management: Protected Areas Act (NEMPAA, Act No. 57 of 2003) mainly provides for the following:

- ▲ Declaration of nature reserves and determination of the type of reserve declared.
- ▲ Cooperative governance in the declaration and management of nature reserves.
- ▲ A system of protected areas in order to manage and conserve biodiversity.
- ▲ Utilization and participation of local communities in the management of protected areas.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The MNWP WEF is not within close proximity to any formal protected area.

## 4.4 NATIONAL ENVIRONMENT MANAGEMENT: BIODIVERSITY ACT (NO. 10 OF 2004)

The National Environment Management: Biodiversity Act (NEM:BA, Act No. 10 of 2004) provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection.

The objectives of this Act are to:

- ▲ Provide, within the framework of the National Environmental Management Act.
- ▲ Manage and conserve of biological diversity within the Republic.
- ▲ Promote the use of indigenous biological resources in a sustainable manner.

The Act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act 107 of 1998. In terms of the Biodiversity Act, the developer has a responsibility for:

- 1 The conservation of endangered ecosystems and restriction of activities according to the categorisation of the area (including The Endangered and Threatened Ecosystem Regulations, Government Notice R. 1002 dated 9th December 2011).
- 2 Application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
- 3 Limit further loss of biodiversity and conserve endangered ecosystems.

The Act's permit system is further regulated in the Act's Threatened or Protected Species Regulations Government Notice R. 152, dated the 23<sup>rd</sup> of February 2007.

### RELEVANCE TO THE PROPOSED MNWP WEF

- ▲ The WEF developer must not cause a threat to any endangered ecosystems and must protect and promote biodiversity;
- ▲ The WEF developer must assess the impacts of the proposed development on endangered ecosystems;
- ▲ The WEF developer may not remove or damage any protected species without a permit; and
- ▲ The WEF developer must ensure that the site is cleared of alien vegetation using appropriate means (AIS Regulations, Government Notice R. 598 of the 1<sup>st</sup> of April 2014 are applicable).

## 4.5 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (NO. 39 OF 2004)

The National Environmental Management: Air Quality Act (NEM:AQA, Act No. 39 of 2004) is the principal legislation regulating air quality in South Africa. The objects of the Act are to:

- ▲ Give effect to Section 24(b) of the Constitution in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people, and
- ▲ Protect the environment by providing reasonable measures for:
  - Protection and enhancement of the quality of air in the Republic.
  - Prevention of air pollution and ecological degradation.
- ▲ Securing ecologically sustainable development while promoting justifiable economic and social development.

The Air Quality Act empowers the Minister to establish a national framework for achieving the objects of this Act. The said national framework will bind all organs of state. The said national framework will inter alia have to establish national standards for municipalities to monitor ambient air quality and point, non-point and mobile emissions.

**RELEVANCE TO THE PROPOSED MNWP WEF**

Although no major air quality issues are expected, the WEF developer needs to be mindful of the Act as it also relates to potential dust generation during construction, etc.

## 4.6 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE MANAGEMENT ACT (No. 59 OF 2008)

The National Environmental Management: Waste Management Act (NEM:WA, Act No. 59 of 2008) gives legal effect to the Government's policies and principles relating to waste management in South Africa, as reflected in the National Waste Management Strategy (NWMS).

The objects of the Act are (amongst others) to protect health, well-being and the environment by providing reasonable measures for:

- ▲ Minimising the consumption of natural resources;
- ▲ Avoiding and minimising the generation of waste;
- ▲ Reducing, re-using, recycling and recovering waste;
- ▲ Treating and safely disposing of waste as a last resort;
- ▲ Preventing pollution and ecological degradation; and
- ▲ Securing ecologically sustainable development while promoting justifiable economic and social development.

**RELEVANCE TO THE PROPOSED MNWP WEF**

- ▲ The WEF developer must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act.
- ▲ The WEF developer must consult with the local municipalities to ensure that waste is disposed of at a registered landfill site.

## 4.7 NATIONAL FORESTS ACT (No. 84 OF 1998)

The objective of this Act is to monitor and manage the sustainable use of forests. In terms of Section 12 (1) (d) of this Act and GN No. 1012 (promulgated under the National Forests Act), no person may, except under licence:

- ▲ Cut, disturb, damage or destroy a protected tree.
- ▲ Possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree.

**RELEVANCE TO THE PROPOSED MNWP WEF**

If any protected trees or indigenous forest in terms of this Act occur on site, the WEF developer will require a licence from the Department of Forestry, Fisheries and the Environment (DFFE) to perform any of the above-listed activities.



## 4.8 NATIONAL HERITAGE RESOURCES ACT (No. 25 of 1999)

The protection of archaeological and paleontological resources is the responsibility of a provincial heritage resources authority and all archaeological objects, paleontological material and meteorites are the property of the State. “Any person who discovers archaeological or paleontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority”.

### RELEVANCE TO THE PROPOSED MNWP WEF

- ▲ SAHRA must be informed of the project and EIA process.
- ▲ A Heritage Impact Assessment (HIA) must be undertaken by a suitably qualified specialist.
- ▲ No person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or paleontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority.
- ▲ No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter or deface archaeological or historically significant sites.

## 4.9 ELECTRICITY REGULATION ACT (No. 4 of 2006)

The Electricity Regulation Act (Act No. 4 of 2006) came into effect on the 1<sup>st</sup> of August 2006 and the objectives of this Act are to:

- ▲ Facilitate universal access to electricity.
- ▲ Promote the use of diverse energy sources and energy efficiencies.
- ▲ Promote competitiveness and customer and end user choice.

### RELEVANCE TO THE PROPOSED MNWP WEF

The proposed WEF is in line with the call of the Electricity Regulation Act as it has the potential to improve energy security of supply through diversification.

## 4.10 OCCUPATIONAL HEALTH AND SAFETY ACT (No. 85 of 1993)

The objective of this Act is to provide for the health and safety of persons at work. In addition, the Act requires that, “as far as reasonably practicable, employers must ensure that their activities do not expose non-employees to health hazards”. The importance of the Act lies in its numerous regulations, many of which will be relevant to the proposed MNWP WEF. These cover, among other issues, noise and lighting.

### RELEVANCE TO THE PROPOSED MNWP WEF

The WEF developer must be mindful of the principles and broad liability and implications contained in the OHS Act and mitigate any potential impacts.

## 4.11 AVIATION ACT (NO. 74 OF 1962): 13TH AMENDMENT OF THE CIVIL AVIATION REGULATIONS 1997

Section 14 of obstacle limitations and marking outside aerodrome or heliport (CAR Part 139.01.33) under this Act specifically deals with wind turbine generators (wind farms). According to this section, “A wind turbine generator is a special type of aviation obstruction due to the fact that at least the top third of the generator is continuously variable and offers a peculiar problem in as much marking by night is concerned. The Act emphasizes that, when wind turbine generators are grouped in numbers of three or more, they will be referred to as “wind farms”.

Of importance to the proposed MNWP WEF project are the following:

- ✦ Wind farm placement: Due to the potential of wind turbine generators to interfere on radio navigation equipment, no wind farm should be built closer than 35 km from an aerodrome. In addition, much care should be taken to consider visual flight rules routes, proximity of known recreational flight activity such as hang gliders, en-route navigational facilities etc.
- ✦ Wind farm markings: Wind turbines shall be painted bright white to provide the maximum daytime conspicuousness. The colours grey, blue and darker shades of white should be avoided altogether. If such colours have been used, the wind turbines shall be supplemented with daytime lighting, as required.
- ✦ Wind farm lighting: Wind farm (3 or more units) lighting: In determining the required lighting of a wind farm, it is important to identify the layout of the wind farm first. This will allow the proper approach to be taken when identifying which turbines need to be lit. Any special consideration to the site’s location in proximity to aerodromes or known corridors, as well as any special terrain considerations, must be identified and addressed at this time.
- ✦ Turbine Lighting Assignment: The following guidelines should be followed to determine which turbines, need to be equipped with lighting fixtures. Again, the placement of the lights is contingent upon which type of configuration is being used.

### RELEVANCE TO THE PROPOSED MNWP WEF

Due to requirements of the Act to ensure the safety of aircrafts, the WEF developer must engage directly with the Civil Aviation Authority regarding the structural details of the facility. Turbine blade painting for bird mitigation will require approval from the CAA to deviate from relevant CAA requirements.

## 4.12 NATIONAL WATER ACT (NO. 36 OF 1998)

The National Water Act (NWA, Act No. 36 of 1998) provides for fundamental reform of the law relating to water resources in South Africa.

The purpose of the Act amongst other things is to:

- ✦ Ensure that the national water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:
  - Promoting equitable access to water.
  - Promoting the efficient, sustainable and beneficial use of water in the public interest.
  - Facilitating social and economic development.
  - Protecting aquatic and associated ecosystems and their biological diversity.
  - Reducing and preventing pollution and degradation of water resources.

The NWA is concerned with the overall management, equitable allocation and conservation of water resources in South Africa. To this end, it requires registration of water users and licenses to be obtained for

water use except for certain limited instances set out in the Act. These instances include domestic use, certain recreational use, where the use occurs in terms of an existing lawful use or where the Department of Water Affairs (DWA) has issued a general authorisation that obviates the need for a permit.

*Water use for which a permit is required*

For the purposes of this Act, water uses for which a permit is required (amongst other), are defined in Section 21 as follows:

- ▲ Taking water from a water resource (a).
- ▲ Storing water (b).
- ▲ Impeding or diverting the flow of water in a watercourse (c).
- ▲ Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit (f).
- ▲ Disposing of waste in a manner which may detrimentally impact on a water resource (g).
- ▲ Altering the bed, banks, course or characteristics of a watercourse (i).

**\* PLEASE NOTE THAT GENERAL AUTHORISATIONS (GAS) AND WULAS ARE ONLY PERMITTED TO BE SUBMITTED TO DWS ONCE A WIND ENERGY FACILITY HAS BEEN GRANTED PREFERRED BIDDER STATUS. SHOULD MNWP WEF BE GRANTED PREFERRED BIDDER STATUS THEN WULAs WILL BE SUBMITTED FOR CONSIDERATION BY THE DWS.**

**RELEVANCE TO THE PROPOSED MNWP WEF**

There may be certain instances where the WEF developer may need to obtain approval in terms of the Water Act.

## 4.13 CONSERVATION OF AGRICULTURAL RESOURCES ACT (NO. 43 OF 1983)

The Conservation of Agricultural Resources Act (CARA, Act No. 43 of 1983) is the main statute that deals with agricultural resource conservation.

The objects of the Act are to provide for the conservation of the natural agricultural resources of South Africa by the maintenance of the production potential of land. In order to maintain production potential of land, CARA provides for the following mechanisms; namely:

- ▲ Combating and prevention of erosion and weakening and destruction of water sources.
- ▲ Protection of vegetation.
- ▲ Combating of weeds and invader plants.

In order to give meaning to mechanisms aimed maintaining production potential of land provided for in CARA, Minister of Agriculture published regulations under CARA (CARA Regulations) which prescribes control measures which all land users have to comply, in respect of a number of matters, including the:

- ▲ Cultivation of virgin soil.
- ▲ Protection of cultivated land.
- ▲ Utilisation and protection of the veld.
- ▲ Control of weed and invader plants.
- ▲ Prevention and control of veld fires and the restoration and reclamation of eroded land.

**RELEVANCE TO THE PROPOSED MNWP WEF**

The proposed MNWP WEF site is not deemed to be situated on high agricultural land with high potential. Preventative measures must be considered as part of the EMP to ensure that farmers are able to continue using their land as livestock grazing as far as possible.

## 4.14 SUBDIVISION OF AGRICULTURAL LAND ACT (No. 70 OF 1970)

The Subdivision of Agricultural Land Act (Act No. 70 of 1970) controls the subdivision of all agricultural land in South Africa and prohibits certain actions relating to agricultural land. In terms of the Act, the owner of agricultural land is required to obtain consent from the Minister of Agriculture in order to subdivide agricultural land.

The purpose of the Act is to prevent uneconomic farming units from being created and degradation of prime agricultural land. The Act also regulates leasing and selling of agricultural land as well as registration of servitudes.

### RELEVANCE TO THE PROPOSED MNWP WEF

Approval will be required from the Department of Agriculture, Land Reform and Rural Development (DALRRD) for any activities on the land zoned for agriculture and any proposed rezoning or sub-divisions of agricultural land.

## 4.15 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (No. 28 OF 2002)

Mineral and Petroleum Resources Development Act (MPRDA, Act No. 28 of 2002) makes provision for equitable access to and sustainable development of the South Africa's mineral and petroleum resources and to provide for matters connected therewith.

The objects of this Act are (amongst others) to:

- ▲ Give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources.
- ▲ Promote equitable access to the nation's mineral and petroleum resources to all the people of South Africa.
- ▲ Give effect to Section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development.

### *Application for a mining right*

As per Section 27 (1) of the Act, the Department of Minerals Resources (DMR) must grant permission for all mining operations. Both the removal of sand and/or stone from a borrow pit or quarry requires an application for a mining permit or a mining right.

There are two (2) categories of permission relevant to borrow pits and hard rock quarries, namely; "Mining Permits" and secondly "Mining Rights." As is reflected in the table below, these categories are linked to the size of the proposed operation and the proposed operational period.

CATEGORY	SIZE	PERIOD OF OPERATION	DMRE REQUIREMENT
Mining Permit	< 1.5 ha	< 2 years	EIA: Basic Assessment Environmental Management Programme (EMPr)
Mining Right (Licence)	> 1.5 ha	< 30 years	EIA: Scoping and EIA Environmental Management Programme (EMPr)

In addition, Section 53 of the Act requires that Ministerial approval is attained for “any person who intends to use the surface of any land in any way which may be contrary to any object of this Act or is likely to impede any such object”.

**RELEVANCE TO THE PROPOSED MNWP WEF**

- ▲ Any activities associated with the WEF requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMRE for either a mining permit or mining licence.
- ▲ The MNWP WEF must apply to the Minister of Mineral Resources for approval to use the land for the purposes of the WEF.
- ▲ The DMRE has aligned its authorisation process with that of the DFFE, and from August 2015, all applications for mining activities require an Environmental Impact Assessment, as per the EIA Regulations.

## 4.16 NATIONAL ROAD TRAFFIC ACT (No. 93 of 1996)

The National Road Traffic Act (NRTA, Act No. 93 of 1996) provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

**RELEVANCE TO THE PROPOSED MNWP WEF**

All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed wind farm.

## 4.17 NATIONAL VELD AND FOREST FIRE ACT (No. 101 of 1998)

The aim of the Act is to “prevent and combat veld, forest and mountain fires” in South Africa. Of particular relevance to the proposed MNWP WEF development the following requirements of the Act need to be considered:

RELEVANT SECTION OF THE ACT	RELEVANT TO THE PROPOSED MNWP WEF:
<b>Section 3: Fire Protection Associations.</b>	The proposed MNWP WEF must register as a member of the fire protection association in the area.
<b>Chapter 4 Section 12-14: Veld fire prevention: duty to prepare and maintain firebreaks</b>	The proposed MNWP WEF will be required to take all practicable measures to ensure that fire breaks are prepared and maintained according to the specifications contained in Section 12 – 14.
<b>Section 17: Firefighting: readiness</b>	The proposed MNWP WEF must have the appropriate equipment, protective clothing and trained personnel for extinguishing fires.

## 4.18 OTHER RELEVANT NATIONAL LEGISLATION

Other legislation that may be relevant to the proposed MNWP WEF includes:

- ▲ The Environment Conservation Act No 73 of 1989 (ECA) Noise Control Regulations, which specifically provide for regulations to be made with regard to the control of noise, vibration and shock, including prevention, acceptable levels, powers of local authorities and related matters.



- ▲ The Telecommunication Act (1966) which has certain requirements with regard to potential impacts on signal reception.
- ▲ Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013 – came into force on 1 July 2015) aims to provide inclusive, developmental, equitable and efficient spatial planning at the different spheres of the government. This act repeals national laws on the Removal of Restrictions Act, Physical Planning Act, Less Formal Township Planning Act and Development Facilitation Act.
- ▲ KwaZulu-Natal Nature Conservation Management Act 9 of 1997 where the main objectives are to: To provide institutional structures for nature conservation in Kwazulu-Natal; to establish control and monitoring bodies and mechanisms, and to provide for matters incidental thereto.
- ▲ KwaZulu-Natal Planning and Development Act No. 6 of 2008. The objects of this Act are to, amongst others, to provide for the adoption, replacement and amendment of schemes; provide for the subdivision and consolidation of land; and provide for provincial planning and development norms and standards.

In addition to the above, aside from the environmental authorisation, there are other permits, contracts and licenses that will need to be obtained by the project proponent for the proposed project some of which fall outside the scope of the EIA. However, for the purposes of completeness, these include:

- ▲ National Energy Regulator of South Africa (NERSA): Generation License.
- ▲ Eskom: Connection agreement and Power Purchase Agreement (PPA).
- ▲ Newcastle Local Municipality Spatial Development Framework (SDF), Integrated Development Plan (IDP) and municipal by-laws.
- ▲ Amajuba District Municipality SDF and IDP.

## 5 DESCRIPTION OF THE BASELINE ENVIRONMENT

This chapter provides background information on the biological, physical (biophysical) and social environment of the proposed project site and surrounds. The section draws on existing available information within the immediate area as well as municipal and local planning tools and any additional published and unpublished material. The biophysical baseline section will look at aspects relating to climate, topography, geology, soils, flora, fauna and surface and groundwater resources, while the social baseline section will address the administrative and institutional structures, demographic profile, economy, land use, cultural heritage, infrastructure and services as well as noise and visual aspects of the area.

As already indicated above, the Mulilo Newcastle WEF Complex will comprise four (4) main elements:

- Mulilo Newcastle Wind Power (MNWP) WEF (up to 200 MW and 45 turbines);
- Mulilo Newcastle Wind Power (MNWP) 2 WEF (up to 200 MW and 35 turbines);
- Mulilo Newcastle Wind Power grid connection to Eskom and associated powerlines (up to 40 km); and
- Mulilo Newcastle Wind Power 2 grid connection to Eskom and associated powerlines (up to 40 km).

### IMPORTANT NOTE:

**The baseline information has been provided for ALL FOUR components of the Newcastle WEF Complex (OR THE STUDY AREA AS A WHOLE)** and has been sourced mainly by the EAP (CES) and the initial screening exercises conducted by the various appointed specialists (including both desktop and initial site assessments), including:

- Climate;
- Geology and soils;
- Agricultural potential and land use;
- Surface water features;
- Ecological sensitivity (flora and fauna);
- Conservation planning tools;
- Socio-economic environment.
- Heritage sites and resources; and
- Paleontological sites in terms of potential fossil deposits;

The locality has been covered in Chapter 2 above.

### 5.1 CLIMATE

According to the Köppen and Geiger climate classification system, the study area for the Newcastle WEF Complex, is classified as Cfb (Temperate oceanic climate). This is based on available climate data for Newcastle, which is the nearest town to the study area. The average annual temperature in Newcastle is 16.0°C, with an average maximum of 20.9°C in February (summer) and an average minimum of 12.5°C in July (winter). Newcastle is a summer rainfall region and receives an average of 895 mm of precipitation per annum. December receives the most rainfall, with an average of 163 mm, while June receives the least rainfall, with an average of 11 mm (Table 5.1) (Climate-Data.org).

Table 5-1: Climate data for Newcastle, KwaZulu-Natal Province (Source: Climate-Data.org).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	19.9 °C (67.7) °F	19.4 °C (67.1) °F	18.6 °C (65.5) °F	15.9 °C (60.6) °F	13.1 °C (55.5) °F	10.3 °C (50.6) °F	10.1 °C (50.1) °F	13 °C (55.3) °F	16 °C (60.9) °F	17.5 °C (63.5) °F	18.6 °C (65.4) °F	19.7 °C (67.5) °F
Min. Temperature °C (°F)	14.9 °C (58.8) °F	14.9 °C (58.8) °F	13.4 °C (56.2) °F	10.4 °C (50.7) °F	6.7 °C (44.1) °F	3.7 °C (38.7) °F	1.1 °C (37.5) °F	5.6 °C (42.2) °F	8.6 °C (47.5) °F	11 °C (51.8) °F	12.6 °C (54.8) °F	14.3 °C (57.8) °F
Max. Temperature °C (°F)	25.5 °C (77.9) °F	25.5 °C (77.5) °F	24.4 °C (76) °F	22 °C (71.6) °F	20.2 °C (68.3) °F	17.9 °C (64.2) °F	17.5 °C (64.2) °F	21 °C (69.8) °F	24 °C (75.2) °F	24.8 °C (76.6) °F	25.2 °C (77.3) °F	25.8 °C (78.5) °F
Precipitation / Rainfall mm (in)	140 (5.7)	105 (4.1)	104 (4.1)	44 (1.7)	19 (0.7)	11 (0.4)	14 (0.6)	25 (1)	42 (1.7)	99 (3.9)	123 (4.8)	163 (6.4)
Humidity (%)	72%	71%	68%	66%	57%	53%	49%	45%	46%	52%	54%	65%
Rainy days (d)	13	10	9	6	3	2	2	3	5	10	12	14
avg. Sunhours (hours)	8.3	8.6	8.2	8.1	8.6	8.4	8.5	8.9	8.8	8.6	8.7	9.1

## 5.2 TOPOGRAPHY

The study area is located on a topographically steep slope, with an average gradient of 12.7% (maximum) and 11.3% (minimum), sloping in a north westerly and south easterly direction (Figures 5.1 & 5.2). Several drainage lines flow from the top of the study area, which is on average 1,654 m above sea level.

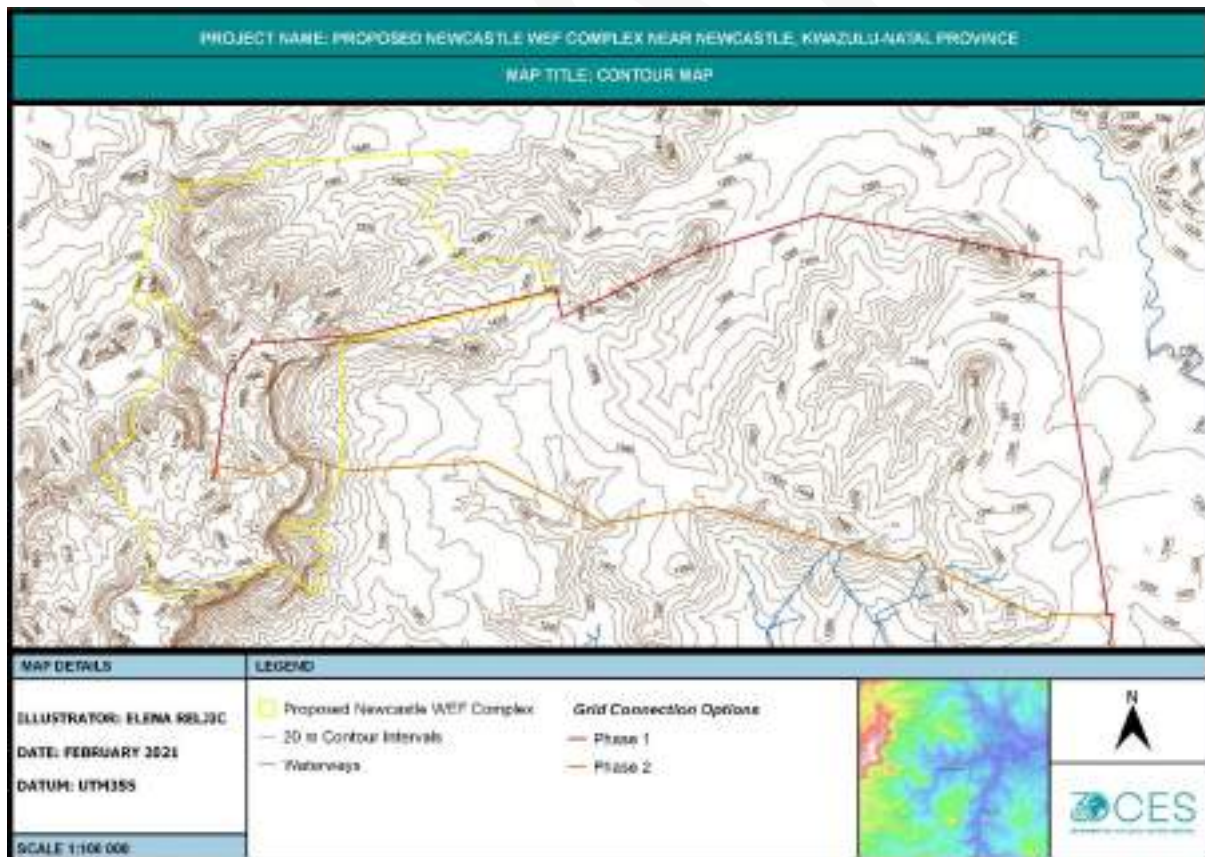


Figure 5-1: Contour Map of the study area.

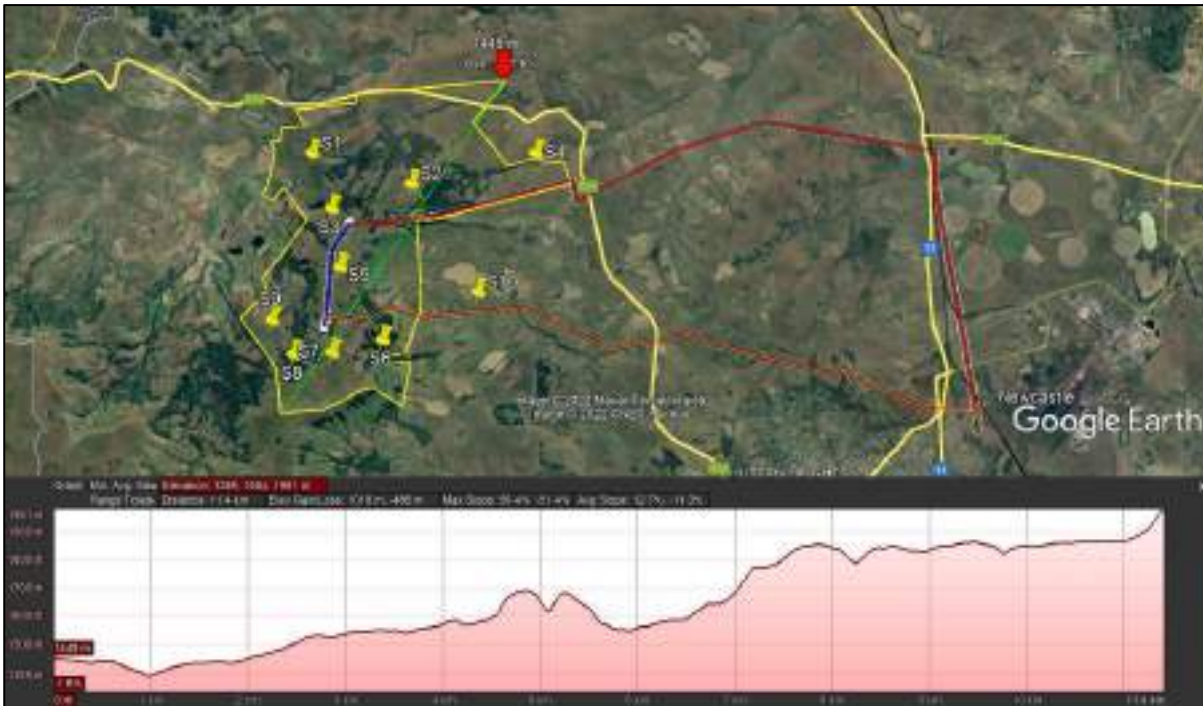


Figure 5-2: Elevation profile of the study area from south-west to north-east (Google Earth Imagery, 2022).

## 5.3 BASELINE GEOLOGY AND SOILS

This geology section has been sourced from the unpublished CES Geological Desktop Study. This section provides an overview of the geological setting of the project area as well as an indication of the types of lithology underlying the proposed study area based on relevant available literature. The potential for mineable commodities within the relevant lithology is also examined based on previous prospecting and/or mining operations which have been recorded in the Handbook for Mineral Resources of South Africa. The chapter will form the geological baseline against which the impact of the proposed project will be assessed.

### 5.3.1 GEOLOGY

The underlying geology of the study area comprises sedimentary deposits from the Beaufort Group and Volksrust Formation of the Karoo Supergroup and ECCA Group, respectively, as well as the Karoo Dolerite Suite (Figure 5.3).

**Beaufort Group** - covers a surface area of approximately 200 000 km<sup>2</sup> and is made up of fluvial rocks deposited about 250 million years ago within the Main Karoo Basin of South Africa. The strata in the Beaufort Group consist predominantly of mudstones and sandstones deposited by a variety of fluvial systems (Catuneanu *et al.*, 2005).

**Volksrust Formation** - Volksrust Formation is a transgressive argillaceous succession occurring about 252 million years ago that superimposes the Vryheid Formation in the northern part of the Karoo Basin (Catuneanu *et al.*, 2005). Rocks of the Volksrust Formation consist mainly of shale and mud-rocks, and minor coals.

**Karoo Dolerite Suite** - Karoo Dolerite Suite represents a network of igneous dykes and sills that intruded rocks of the Beaufort Group in the Karoo Basin about 180 million years ago (Neumann *et al.*, 2011).



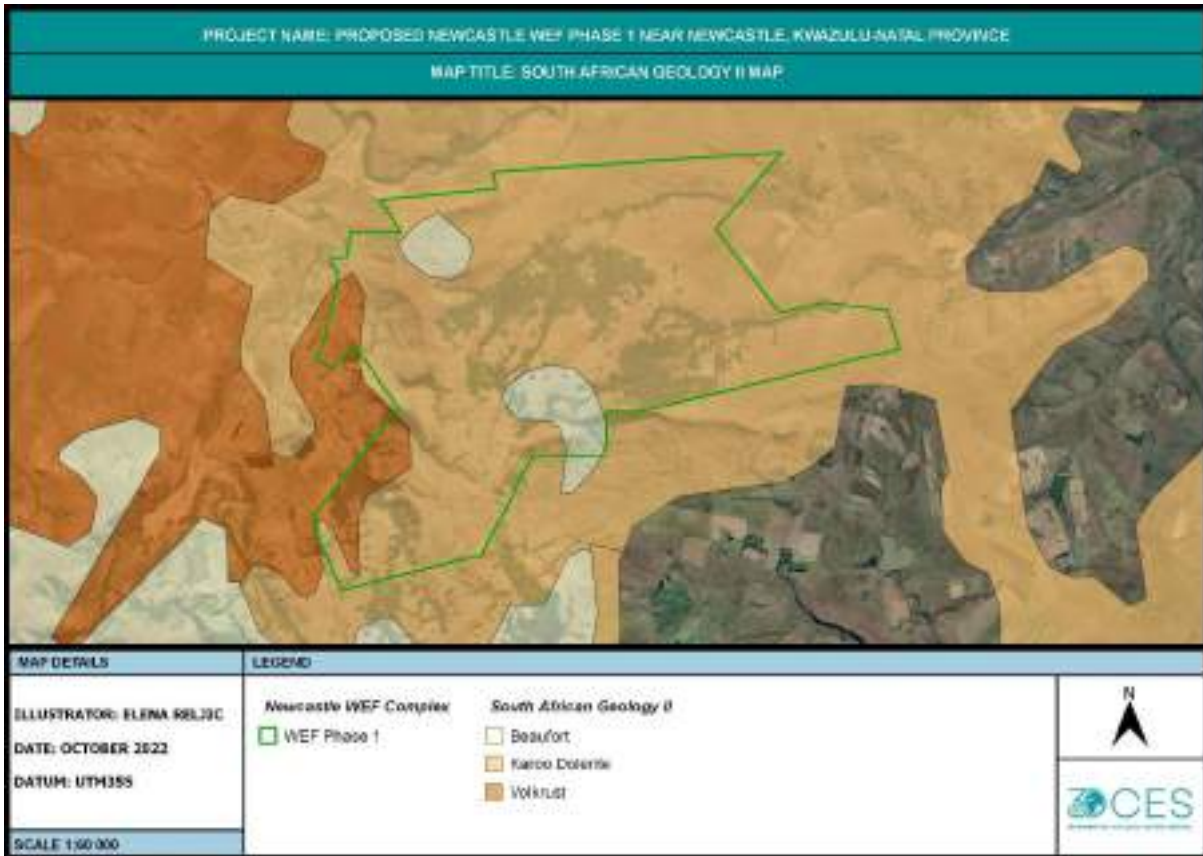


Figure 5-3: Geology Map of the study area.

### 5.3.2 SOILS

According to SOTER (1995), the soils within the study area are classified as Lithic Leptosols, Rhodic Ferralsols and Rhodic Nitisols (Figure 5-4).

**Leptosols** - are very shallow soils which overlie continuous hard rock and consist primarily of various kinds of rock or unconsolidated materials with less than 20 % fine earth. These soils generally occur in mountainous areas and are best kept underneath forests as they easily eroded (ISRIC, 2021).

**Ferralsols** - are deeply weathered, red or yellow, clayey soils found in humid tropical zones. These soils are typically found in low undulating areas and are low in fertility (ISRIC, 2021).

**Nitisols** - are deep, well-drained, red, clayey soils that are generally found in hilly landscapes under tropical forests or grasslands. These soils are strongly weathered and considered to be fertile, making them relatively good for farming and plantations (ISRIC, 2021).



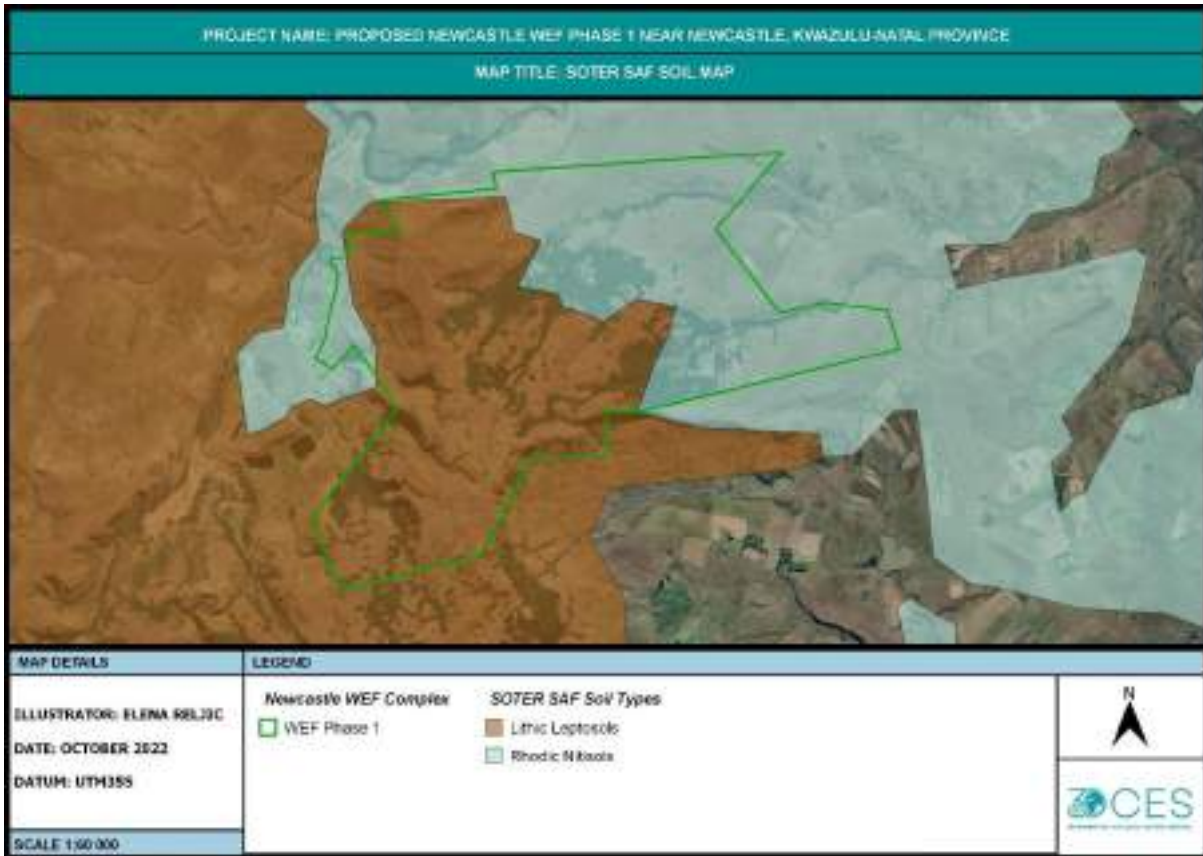


Figure 5-4: SOTER SAF Soil Map of the study area.

## 5.4 BASELINE AGRICULTURE AND LAND USE

All the land on which the Mulilo Newcastle WEF Complex infrastructure is located, is grazing land. Woodlands or afro-montane forests occur in the ravines. No cultivated land could be recognised on Google or Bing satellite images on any of the farms. Scars left from gully erosion occur in some areas. Most of the land consists of shallow and rocky soils that are not arable. Some attempts were made to establish pastures in the valleys where the soils are deeper and consists of colluvium or hill wash.

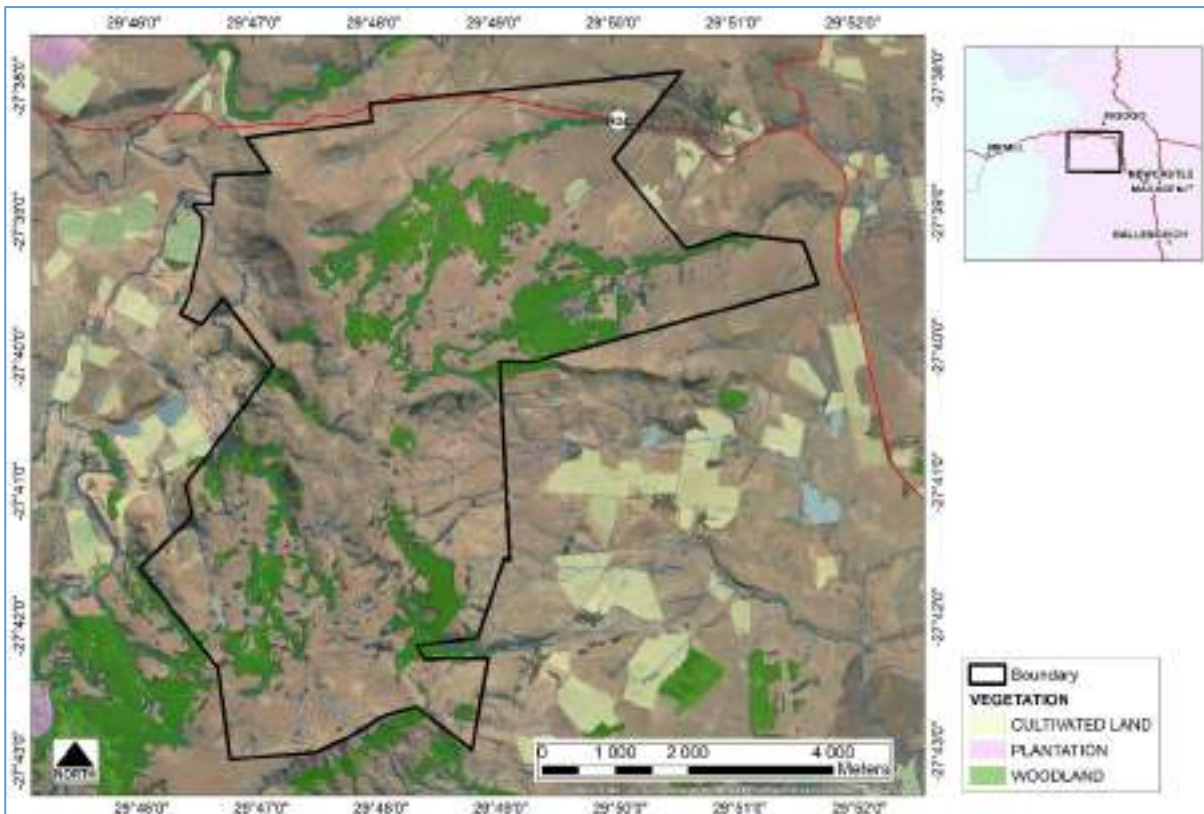


Figure 5-5: Vegetation on the farms comprising the Newcastle WEF Complex site.

The DFFE published Notice 648 of the National Environmental Management Act in May 2019 that describes the minimum criteria when applying for environmental authorisation. The notice relates specifically to energy generation projects.

This protocol provides the criteria for the assessment and reporting of impacts on agricultural resources for activities requiring environmental authorisation. The assessments requirements of this protocol are associated with a level of environmental sensitivity determined by the national web-based screening tool which for agricultural resources. It is based on the most recent land capability evaluation as provided by the DALRRD.

There are no towers located on highly sensitive land. The impacts are expected to be low and only temporary. It will impact only animal grazing. Considering a grazing capacity of 3 ha per livestock unit, installation of the towers will impact grazing for a maximum of 17 animals.

High and very high sensitive land is found along the routes of both the electricity transmission lines. The northern alignment is mostly medium sensitive with very high sensitive land only where the pivot irrigation occurs. The electricity pylons can be placed so cause minimum disruption of the farming operations.

Only the pivot irrigated areas may require mitigation measures to address potential loss of production and farming infrastructure.

## 5.5 BASELINE ECOLOGICAL ENVIRONMENT (FAUNA AND FLORA)

The following baseline ecological information and assessment is based on available desktop information and several initial site assessments conducted by the ecological specialists (faunal and floral) during February and March 2022.

### 5.5.1 BIOMES

The proposed Newcastle WEF Complex and the MNWP WEF area falls within two biomes, the Grassland Biome and the Forest Biome (Mucina *et al.*, 2018). Grasslands in South Africa boast remarkable biodiversity and cover approximately one third of South Africa's total land surface area, stretching over the majority of the Eastern Cape and KwaZulu-Natal Provinces. These ecosystems provide important habitat for a range of the country's rare, endangered and endemic animal and plant species, with plant diversity of the grassland biome only second to that of the fynbos biome. The incredible diversity and provision of ecosystem services has contributed to the classification of this ecosystem as an important biodiversity asset of global significance. Grasslands are considered important water production landscapes and provide various ecosystem services particularly for rural communities in South Africa (SANBI, 2013).

#### **Grassland biome**

Approximately 40% of the grassland biome in South Africa has been transformed, while almost 60% of the remaining grassland areas are classified as threatened due to the loss of vital aspects of their composition, structure, and functioning. Only 3% of this valuable ecosystem is formally conserved. The fragmentation and degradation of grassland ecosystem severely affects the ecosystems' ability to provide valuable ecosystem services such as soil formation, freshwater, climate regulation and erosion prevention. As such, development within the remaining natural grassland areas should be well informed and err on the side of caution (SANBI, 2013). The two (2) key ecological drivers of grassland ecosystems include climate and fire which influences their character, community structure, composition, and primary productivity. In addition to climate and fire, other ecological drivers influencing these factors include grazing, soil types, and nutrient status. Due to their high biodiversity and their suitability for human habitation, these ecosystems are often negatively impacted by various anthropogenic activities including grazing by livestock, over harvesting of natural resources, misappropriation of fire, mining, agriculture, urban and industrial expansion, amongst others (SANBI, 2013).

#### **Forest biome**

The indigenous forest biome in South Africa covers less than 0.1% of the land surface area and are defined as, "a generally multi-layered vegetation unit dominated by trees (largely evergreen or semi-deciduous), whose combined strata have overlapping crowns (i.e., crown cover is 75% or more), and where graminoids in the herbaceous stratum (if present) are generally rare" (Bailey *et al.*, 1999 and Shackleton *et al.*, 1999 in Rutherford *et al.*, 2006). In South Africa, forests typically occur in small, scattered patches of less than 10 ha, forming islands within large scale patches of temperate biomes such as Grassland, Savanah, Fynbos, and Albany Thicket, along the eastern and southern margins (Great Escarpment, mountain ranges and coastal lowlands) (Rutherford *et al.* 2006). The major factors determining the distribution of forest patches within South Africa include not only environmental factors such as rainfall and substrate, but also fire pattern which in turn is determined by the interaction between the topography and the prevailing wind direction during dry periods. Forests tend to persist in topographic or wind shadow areas (also called fire refugia) (Rutherford *et al.* 2006).

### 5.5.2 NATIONAL VEGETATION MAP (SANBI)

The South African Vegetation Map (SA VEGMAP) of 2018 is an important resource for biodiversity monitoring and conservation management in South Africa. Under the custodianship of the South African National Biodiversity Institute (SANBI) the SA VEGMAP, (2018) was updated to 'provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before'. The map provides a detailed description of each of South Africa's unique vegetation types along with a comprehensive list of the important species associated with each, including endemic and biologically important species.

According to SANBI's National Vegetation Map (2018), the proposed Newcastle WEF Project occurs within four (4) vegetation types, namely Northern KwaZulu-Natal Moist Grassland, KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland, and Southern Mistbelt Forest (Figure 5.6).



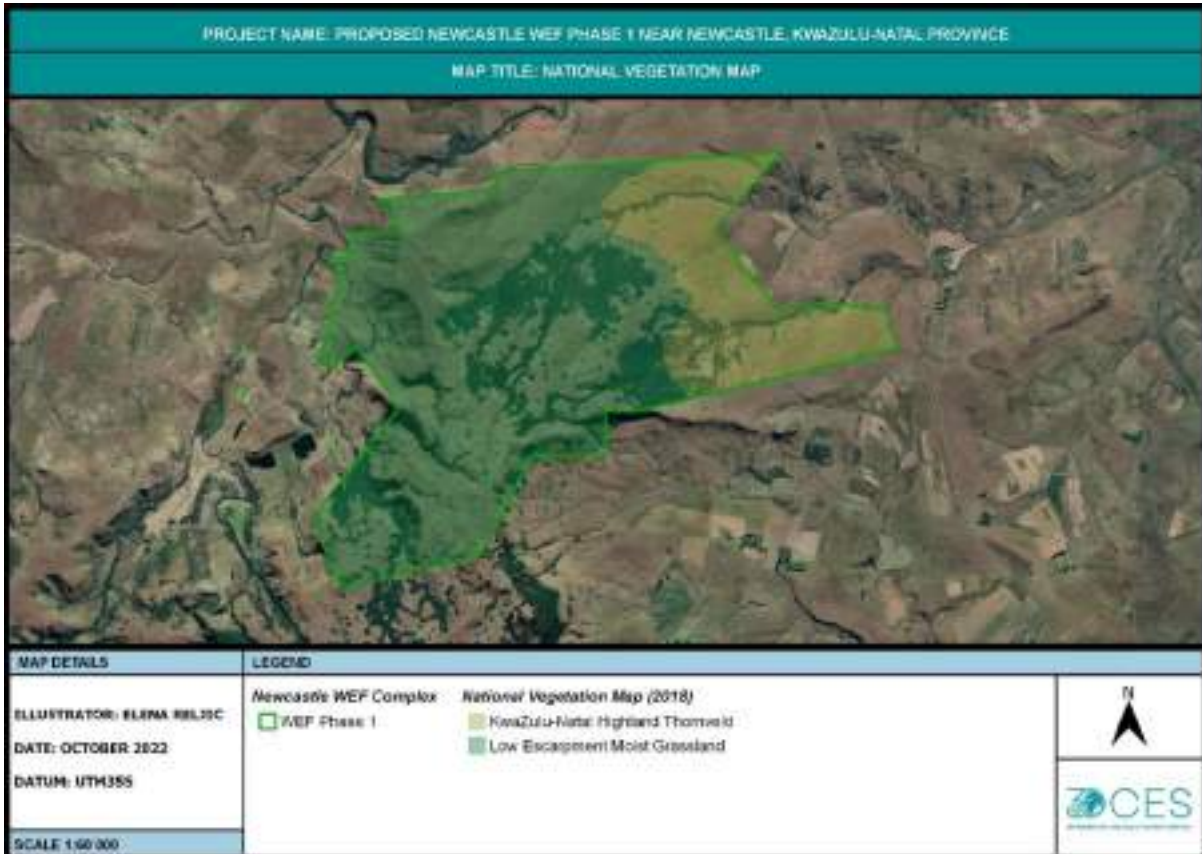


Figure 5-6: National Vegetation Map for the proposed MNWP WEF.

#### ***KwaZulu-Natal Highland Thornveld***

KwaZulu-Natal Highland Thornveld occurs in a series of patches in the central-northern regions of KwaZulu-Natal in dry valleys and moist uplands at an altitude of approximately 920-1440 m. This vegetation type falls within the summer rainfall region (MAP:  $\pm 750$  mm) and is characterised by tall tussock grassland dominated by *Hyparrhenia hirta*, with occasional savannoid woodlands with scattered *Vachellia sieberiana*, *V. karroo* and *V. nilotica* which usually occur in small pockets. It is typically underlain by a variety of Karoo Supergroup rocks (Mucina *et al.*, 2006).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), KwaZulu-Natal Highland Thornveld is classified as **Least Concern** (SANBI, 2021). The historical extent of this vegetation type amounted to 5,227 km<sup>2</sup> but only 63% of its natural extent remains. It is considered poorly protected and the conservation target for this vegetation type is 23% (SA VEGMAP, 2018). Major threats which lead to the loss of this ecosystem include cultivation, urban sprawl, the development of dams, bush encroachment and invasion by *Opuntia sp.*, *Eucalyptus sp.*, *Populus sp.*, *Acacia sp.* and *Melia sp.* (Mucina *et al.*, 2006).

#### ***Low Escarpment Moist Grassland***

Low Escarpment Moist Grassland occurs on complex mountain topography such as steep (generally east- and south-facing) slopes at a range of altitudes within the KwaZulu-Natal, Free State and Mpumalanga Provinces. It is characterised by tall, closed grassland dominated by *Hyparrhenia hirta* and *Themeda triandra* with patches of *Protea caffra* and Leucosidea scrub communities appearing at higher altitudes. This vegetation type falls within the summer rainfall region and is typically underlain by mudstone and shales of the Ecca and Beaufort Groups (Karoo Supergroups). Patches of Northern KwaZulu-Natal Mistbelt Forest occur within the sub-escarpment regions and deep-kloof positions (Mucina *et al.*, 2006).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), Low Escarpment Moist Grassland is classified as **Least Concern** (SANBI, 2021). Its historical extent was 1742 km<sup>2</sup> and the remaining natural extent amounts to 90%. It is considered poorly protected and the major threats which lead to the loss and degradation of this ecosystem includes plantations, cultivation, and invasion by *Acacia dealbata*.

### **Southern Mistbelt Forest**

Southern Mistbelt Forest is endemic to South Africa and occurs as patches in shadow habitats on south- and southeast-facing slopes along the Great Escarpment. In KwaZulu-Natal, this vegetation type is characterised by a tall (15-20 m) and multi-layered canopy typically composed of two layers of trees and a dense shrubby understory with a well-developed herbaceous layer. In low altitudes, these forests represent more of a scrub forest with a low, unstructured canopy characterised by high species diversity. In high altitudes, Southern Mistbelt Forest is characterised by a tall canopy, with a mixture coarse-grained canopy gap/disturbance driven dynamics and regeneration characteristics. Dominant species include emergent trees such as *Afrocarpus falcatus*, *Celtis africana*, *Calodendrum capense*, *Vepris lanceolata* and *Zanthoxylum davyi*, with *Podocarpus henkelii* becoming more prominent in the canopy layer of forests that fall within the KwaZulu-Natal Midlands (SANBI, 2021).

According to South Africa's Terrestrial Red List of Ecosystems (RLE), Southern Mistbelt Forest is classified as **Least Concern** (SANBI, 2021). Its historical extent was 1061.95 km<sup>2</sup> and the remaining natural extent amounts to 83%. This vegetation type has experienced low rates of natural habitat loss and biotic disruptions, placing this ecosystem at low risk of collapse. Southern Mistbelt Forest is classified as moderately protected.

## **5.5.3 CRITICAL BIODIVERSITY AREAS**

The Conservation Terms for the EKZNW Spatial Planning Products Document (2014) provides a map of important biodiversity areas within the KwaZulu-Natal Province, to guide sustainable development as well as focus conservation efforts within the province.

The aim of the document is to provide stakeholders with a simplified guide to Systematic Conservation Assessment (SCA) and the development of the KwaZulu-Natal Biodiversity Plan (KZN BP). The KZN BP consists of two primary spatial layers, namely Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), but also includes the legislated Protected Areas, modified areas and Natural Biodiversity Areas.

Critical Biodiversity Areas (CBAs) are defined as natural or near-natural features, habitats or landscapes that include terrestrial, aquatic and marine areas that are considered critical for the following reasons:

- ▲ Meeting national and provincial biodiversity targets and thresholds;
- ▲ Safeguarding areas required to ensure the persistence and functioning of species and ecosystems, including the delivery of ecosystem services; and/or
- ▲ Conserving important locations for biodiversity features or rare species. Conservation of these areas is crucial, in that if these areas are not maintained in a natural or near-natural state, biodiversity conservation targets cannot be met.

The KZN BP CBAs are divided into two subcategories, namely Irreplaceable and Optimal CBAs. Irreplaceable CBAs are areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. Optimal CBAs are areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding areas where the risk of biodiversity loss is high. Category driven primarily by process but is also informed by expert input. Unlike CBAs, ESAs are not entirely natural but are still required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within CBAs.



As illustrated in Figure 5-7 below, the study area occurs within both CBA categories and an ESA.

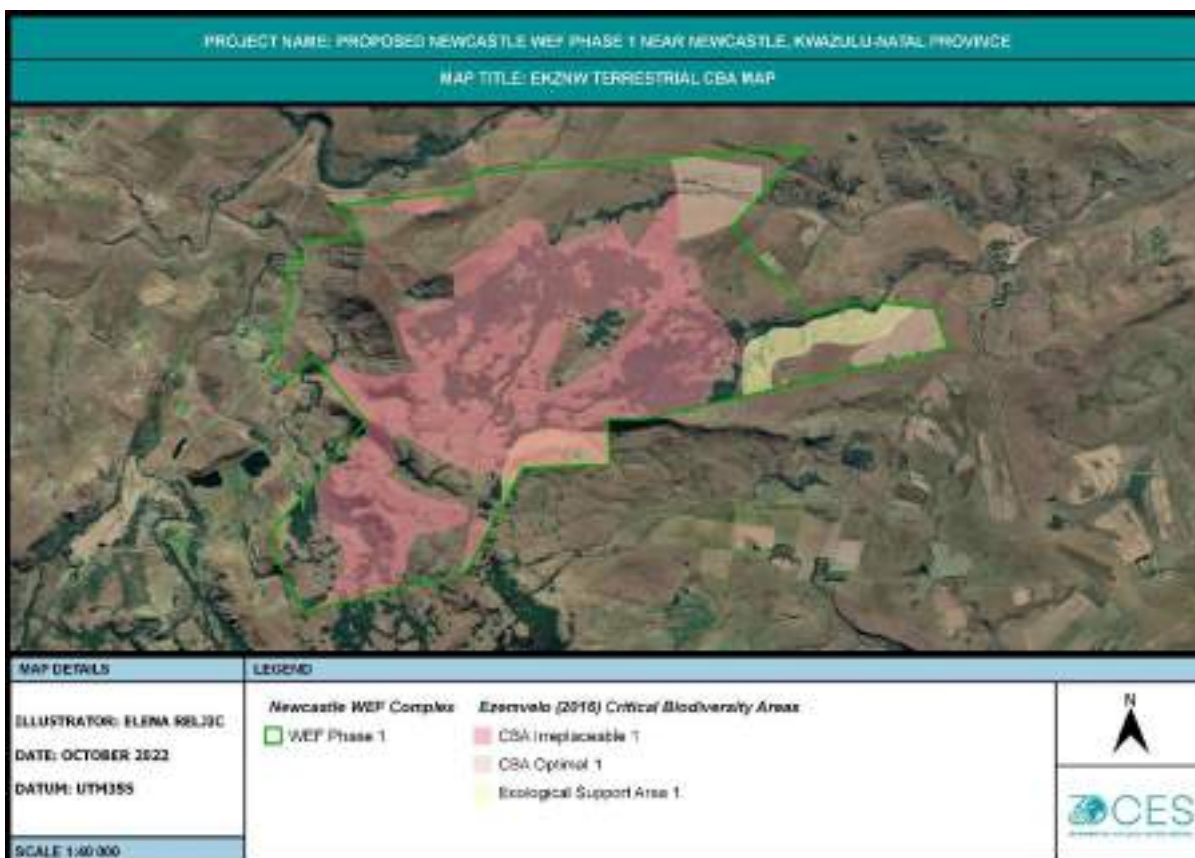


Figure 5-7: ESKNW (2016) Terrestrial CBAs within the MNWP WEF study area.

Table 5-2: Terrestrial biodiversity priority areas affected by the proposed Newcastle WEF Complex.

Category	Sensitivity Features	Desired Management Objective	Recommendation
<b>Draft KNZ BP CBAs/ESAs (2014)</b>			
<b>CBA: Irreplaceable</b>	Areas which are required to meet biodiversity conservation targets, and where there are no alternative sites available.	Maintain in a natural state with limited to no biodiversity loss.	Avoid where possible and minimise development within natural areas classified as CBA: Irreplaceable. Use existing access roads or other disturbed areas (e.g. alien plantations, kraals and heavily grazed areas) where possible.

Category	Sensitivity Features	Desired Management Objective	Recommendation
<b>CBA: Optimal</b>	Areas that are the most optimal solution to meet the required biodiversity conservation targets while avoiding high-cost areas as much as possible.	Maintain in a natural state with limited to no biodiversity loss.	Avoid where possible and minimise development within natural areas classified as CBA: Optimal. Use existing access roads or other disturbed areas (e.g. alien plantations, kraals and heavily grazed areas) where possible.
<b>Terrestrial Ecological Support Areas (ESAs)</b>	Functional but not necessarily entirely natural terrestrial land that is largely required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the Critical Biodiversity Areas. The area also contributes significantly to the maintenance of Ecological Infrastructure (EI).	Maintain ecosystem functionality and connectivity allowing for some loss of biodiversity.	Implement mitigation measures listed in the Terrestrial Biodiversity Impact Assessment Report and Environmental Management Programmes (EMPrs) for the proposed Newcastle WEF Complex. Using existing access roads and limiting the development footprint to that which is strictly necessary for construction will ensure that ecological processes such as dispersal are maintained.

#### 5.5.4 PROTECTED AREAS

The National Protected Areas Expansion Strategy (NPAES, 2008) was developed to “achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change.” The NPAES originated as Government recognised the importance of protected areas in maintaining biodiversity and ecosystem functions. The NPAES sets targets for expanding South Africa’s protected area network, placing emphasis on those ecosystems that are least protected.

As illustrated in Figure 5.7 below, the study area is located within an NPAES Focus Area (2010), namely Moist Escarpment Grasslands. In addition, the study area occurs within 10 km of a protected or conservation area recognised by the South African Protected Areas Database (SAPAD, 2021), namely the Sneeuberg Protected Environment. However, the site does not occur within a protected or conservation area recognised by the South African Conservation Areas Database (SACAD, 2021).

There are no provincially legislated Protected Areas occurring within the study area.

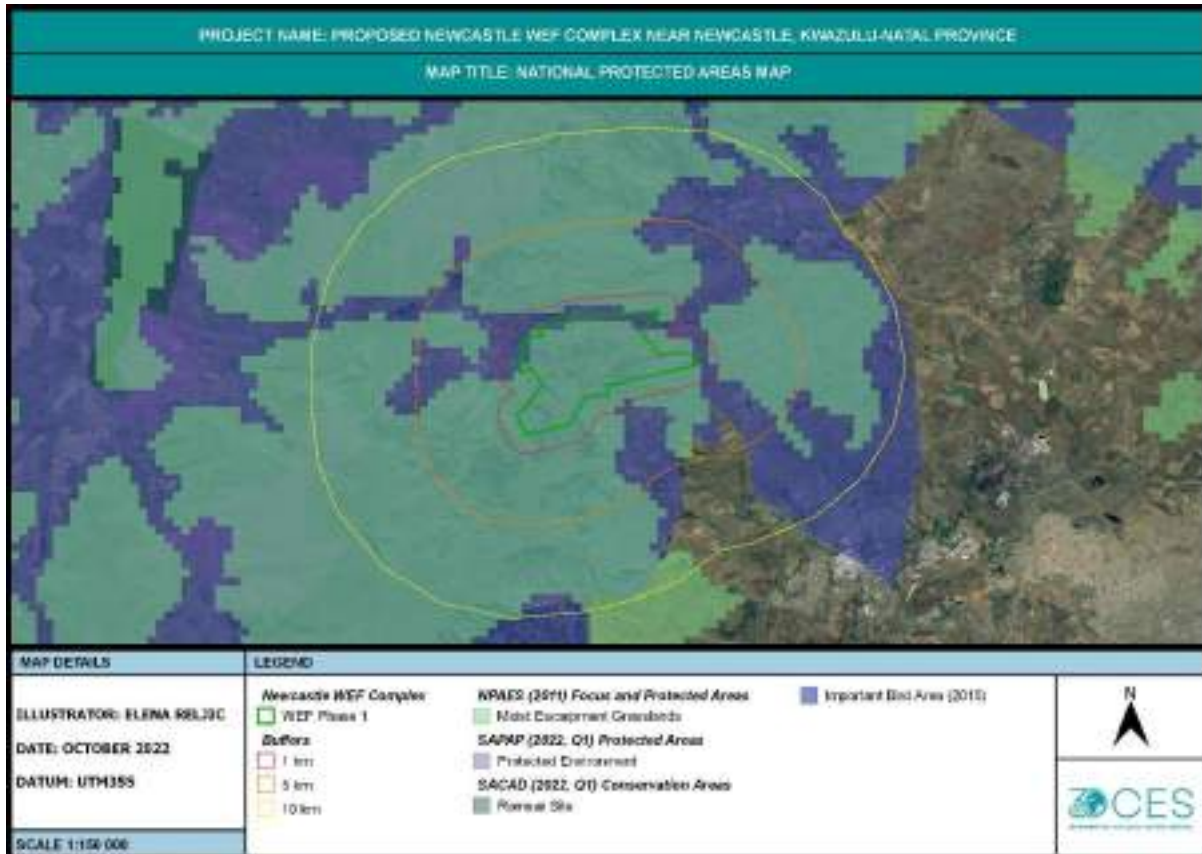


Figure 5-8: Legislated Protected Areas in or around the study area.

### 5.5.5 ECOSYSTEM THREAT STATUS

The National Environmental Management: Biodiversity Act, (Act No. 10 OF 2004) (NEM:BA) provides a National List of Ecosystems that are threatened and in need of protection – GN 1002 of 2011.

According to the NEM:BA List of threatened ecosystems for the Newcastle WEF Complex and MNWP WEF study area:

- ▲ Mainly the Grid Connection WEF Options, traverses a threatened ecosystem, namely Northern KwaZulu-Natal Moist Grassland, which is listed as **Vulnerable**.
- ▲ In addition, SANBI (2021) provides an updated Red List of South Africa’s Terrestrial Threatened Ecosystems (RLEs). According to this report, Northern KwaZulu-Natal Moist Grassland is classified as **Vulnerable** (B1(i)) due to its restricted distribution and rate of loss and.
- ▲ According to this list all other vegetation units occurring within the study area, namely KwaZulu-Natal Highland Thornveld, Low Escarpment Moist Grassland and Southern Mistbelt Forest, are classified as **Least Concern** (Figure 5-9).



Figure 5-9: RLEs (2021) Threatened Ecosystem Map of the study area.

### 5.5.6 SPECIES OF CONSERVATION CONCERN

Species of Conservation Concern (SCC) potentially present within the study area, were identified by the ecological specialists (faunal and floral) based on desktop information, such as the records obtained from the National Screening Report and the list of species recorded for each vegetation type in the Vegetation of Southern Africa (Mucina *et al.*, 2006), and initial site assessments. The likelihood of each species occurring within the study area has been determined.

Thirteen (13) threatened botanical SCC were recorded for the study area. Of the thirteen (13) botanical SCC potentially occurring on site, three (3) are classified as rare, three (3) are classified as Endangered (EN), six (6) are classified as Vulnerable (VU), and one (1) is classified as Near-threatened (NT).

### 5.5.7 FAUNA

The proposed Newcastle WEF Complex and MNWP WEF is situated in the KwaZulu-Natal Province. The study area is primarily characterised by the Grassland biome (*refer to Section 5.5.1 above*), which supports a diverse array of faunal species. This section provides a brief description of the herpetofauna (amphibians and reptiles) and mammals, excluding bats, which may occur within the study area.

A comprehensive desktop review was undertaken to assess the current threat status of the faunal species which may occur within the study area. This was done using the *Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland* (Minter *et al.* 2004), *Red Listing the Amphibians of South Africa* (Measey 2010), *Ensuring a Future for South Africa's Frogs: A Strategy for Conservation Research* (Measey 2014), *Atlas and Red List of Reptiles of South Africa, Lesotho and Swaziland* (Minter *et al.* 2014) and the *Red Data Book of Southern African Mammals: A Conservation Assessment* (EWT 2016 and 2020 updates).



**Amphibians and Reptiles**

The KwaZulu-Natal Province is home to about two-hundred-and-eleven (211) native herpetofauna species, which includes sixty-two (62) amphibian species and one-hundred-and-forty-nine (149) reptile species (iNaturalist, 2021). Of these, approximately seventy (70) species may occur within the study area, according to their known distributions.

A total of twenty-four (24) amphibian species and forty-six (46) reptile species were identified using the IUCN (2021) and ADU (2011) databases. Of these, six (6) amphibian and twelve (12) reptile species are Endemic, and two (2) amphibians and eight (8) reptiles are Near Endemic. Of the herpetofauna identified in this report, one (1) species, Spotted Shovel-nosed Frog (*Hemisus guttatus*), is Threatened and listed as Vulnerable, and one (1) species, Striped Harlequin Snake (*Homoroselaps dorsalis*), is listed as Near Threatened. The likelihood of these species occurring within the study area is assessed in Table 6.4 below.

In addition, four (4) reptile species are protected by the PNCO (Act No. 15 of 1974), namely Cape Terrapin (*Pelomedusa galeata*), Rock Monitor (*Varanus albigularis*), Water Monitor (*Varanus niloticus*) and Southern African Rock Python (*Python natalensis*).

**Table 5-4: List of Herpetofauna SCC which may occur within the study area.**

NAME	CONSERVATION STATUS	HABITAT (SANBI 2004 and 2014)	PROBABILITY OF OCCURRENCE (High, Medium, Low, Confirmed)
Spotted Shovel-nosed Frog ( <i>Hemisus guttatus</i> )	Vulnerable	Inhabits grassland and savanna habitats, breeding in seasonal pans, swampy areas, and in pools near rivers. This species nests in burrows in wet soil by temporary water and tadpoles move to water to develop. Based on the known distribution of this species it is unlikely to occur within the broad study area, however its range does overlap with a very small portion of the northern part of the study area. This portion of the study area needs to be investigated further to determine if the site conditions meet the habitat requirements of this species.	Low
Striped Harlequin Snake ( <i>Homoroselaps dorsalis</i> )	Near Threatened	Known to inhabit old termite mounds in grassland but sometimes burrows in the ground. Most of its range is at semi-high altitudes but it can be found at low elevations. While the known distribution of this species does not overlap with the study area, it has been recorded outside its range within the same QDS code as the study area (ADU, 2011). As the study area is characterised by this species preferred habitat (grassland), it could still potentially occur within the study area.	Medium

**Mammals (excluding bats)**

The distribution of sixty-nine (69) native mammal species overlaps with the study area. The mammal species identified as potentially occurring within the study area have been assessed against the Regional Red List (2016 and subsequent updates), and it has been determined whether they are endemic, near endemic or not endemic, as well as their status in the PNCO (Appendix 2 of the Terrestrial Biodiversity Desktop Assessment). Of these mammals, eight (8) species are Threatened and six (6) are Near Threatened. Of the Threatened species, five (5) are Vulnerable, namely Spotted-necked Otter (*Hydrictis maculicollis*), Leopard (*Panthera pardus*), White-tailed Rat (*Mystromys albicaudatus*), Makwassie Musk Shrew (*Crocidura maquassiensis*) and



Black-footed Cat (*Felis nigripes*), and three (3) are Endangered, namely Mountain Reedbuck (*Redunca fulvorufula fulvorufula*), Oribi (*Ourebia ourebi*) and Black Rhinoceros (*Diceros bicornis*). Near Threatened species include Grey Rhebok (*Pelea capreolus*), African Clawless Otter (*Aonyx capensis*), African Striped Weasel (*Poecilogale albinucha*), Brown Hyaena (*Parahyaena brunnea*), Vlei Rat (*Otomys auratus*) and White Rhinoceros (*Ceratotherium simum*).

Table 6-6 lists the mammal SCC identified as Endangered, Threatened or Near Threatened. A more comprehensive mammal list for the study site can be found in Appendix 2 of the Terrestrial Biodiversity Desktop Assessment (common and scientific names highlighted in red for mammal SCC and those that are legally protected). Nineteen (19) species are protected by PNCO (Act No. 15 1974) and thirteen (13) by NEM:BA (2007). In addition, five (5) species are Endemic and five (5) are Near Endemic.

**Table 5-6: Mammal SCC which may occur within the study area.**

NAME	CONSERVATION STATUS	HABITAT (EWT 2016)	PROBABILITY OF OCCURRENCE (High, Medium, Low, Confirmed)
African Clawless Otter ( <i>Aonyx capensis</i> )	Near Threatened	Occurs in forest, grassland, wetland (inland), and marine coastal areas. This species is predominantly aquatic and seldom found far from water. They are also found in many seasonal or episodic rivers in the Karoo. Based on the proximity of the nearest watercourse, it is unlikely that this species would occur on site.	Low
Spotted-necked Otter ( <i>Hydriectis maculicollis</i> )	Vulnerable	Inhabits freshwater habitats where water is unsilted, unpolluted, and rich in small to medium sized fishes. Suitable habitat constitutes of large lakes and open waters. Elsewhere, it is found in streams, rivers and impoundments up to altitudes of 2,500m. Wherever it occurs, this species prefers shallow to deep waters (Larivière 2002). Human presence negatively influences spotted-necked otter, but human presence alone cannot explain the absence of spotted-necked otters in an area, because other habitat features such as presence or absence of vegetation cover along the banks also determine the occurrence of otters. In riparian and lacustrine habitats adequate vegetation in the form of long grass, reeds, dense bushes, overhanging trees and large boulder piles are essential to provide cover during periods of inactivity and for denning. Based on the habitat requirements of this species, it is unlikely to occur within the study area.	Low
Black-footed Cat ( <i>Felis nigripes</i> )	Vulnerable	Inhabits dry, open savannah, grasslands and Karoo semi-desert with sparse shrub and tree cover. Predominantly ground dwellers and during the day use dens in termite mounds or made by other animals. The affected areas may contain this species preferred habitat, so it is possible this species occurs on site.	Medium

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NAME	CONSERVATION STATUS	HABITAT (EWT 2016)	PROBABILITY OF OCCURRENCE (High, Medium, Low, Confirmed)
Mountain Reedbuck ( <i>Redunca fulvorufula fulvorufula</i> )	Endangered	Live on grass-covered ridges and hillsides in broken rocky country and high-altitude grasslands often with some tree or bush cover. They are predominantly grazers and eat the greenest, softest parts of grasses such as Red Grass ( <i>Themeda triandra</i> ) and Thatch Grass ( <i>Hyparrhenia spp.</i> ). They tend to avoid very open areas with no cover and the availability of drinking water is crucial to their presence. As such, they are often associated with the lower slopes, making use of relatively moist, cool more southerly aspects.	Medium
Oribi ( <i>Ourebia ourebi</i> )	Endangered	Prefers open grassland in good condition containing a mosaic of both short grass for feeding and long grass for feeding and shelter. Most of the of the population exists on private land and can be considered wild and free roaming. Therefore, it is possible this species may occur within the study area.	Medium
Grey Rhebok ( <i>Pelea capreolus</i> )	Near Threatened	In the eastern extent of their distribution, this species is associated with rocky hills, grassy mountain slopes, and plateau grasslands. They require good grass cover within their home ranges for shelter and to hide from predators, but often use steep open areas with little cover when feeding.	Medium
Black Rhinoceros ( <i>Diceros bicornis</i> )	Vulnerable	Concentrated in fenced sanctuaries, conservancies, rhino conservation areas and intensive protection zones where law enforcement effort can be concentrated at effective levels. Rhinos are listed on CITES Appendix I.	None
White Rhinoceros ( <i>Ceratotherium simum</i> )	Near Threatened	Concentrated in fenced sanctuaries, conservancies, rhino conservation areas and intensive protection zones where law enforcement effort can be concentrated at effective levels. Rhinos are listed on CITES Appendix I.	None
African Striped Weasel ( <i>Poecilogale albinucha</i> )	Near Threatened	Mainly found in savannah and grassland habitats, although it probably has a wide habitat tolerance and has been recorded from lowland rainforest, semidesert grassland, fynbos (with dense grass) and pine plantations. Based on its known distribution and habitat preferences, it is possible this species may occur on site.	Medium
Brown Hyaena ( <i>Parahyaena brunnea</i> )	Near Threatened	Favours rocky, mountainous areas with bush cover. Based on its known distribution and habitat preferences, it is possible this species may occur on site.	Low

NAME	CONSERVATION STATUS	HABITAT (EWT 2016)	PROBABILITY OF OCCURRENCE (High, Medium, Low, Confirmed)
Vlei Rat ( <i>Otomys auratus</i> )	Near Threatened	Associated with mesic grasslands and wetlands within alpine, montane and sub-montane regions, typically occurring in dense vegetation in close proximity to water. This species is associated with sedges and grasses adapted to densely vegetated wetlands with wet soils. Vlei rats are exclusively herbivorous, with a diet mainly comprised of grasses. Based on the known distribution and habitat requirements of this species, it is likely to occur on site.	High
Leopard ( <i>Panthera pardus</i> )	Vulnerable	This species has a wide range of habitat tolerances but prefers densely wooded and rocky areas. This species also has a highly varied diets, ranging from arthropods to large antelope. Based on its known distribution and generalist behaviour, it is possible this species may occur within the study area.	Medium
White-tailed Rat ( <i>Mystromys albicaudatus</i> )	Vulnerable	Habitat requirements need further investigation but often associated with calcrete soils within grasslands. Based on its known distribution and association with grassland, it is possible this species may occur on site.	Medium
Makwassie Musk Shrew ( <i>Crocidura maquassiensis</i> )	Vulnerable	Found mostly in rocky, mountain habitats, but may tolerate a wider range of habitats as it has been found in gardens, mixed bracken and grassland alongside a river at 1,500 m and coastal forest.	Medium

## 5.6 BASELINE AQUATIC AND WETLAND SYSTEMS

The baseline assessment of the freshwater aquatic features and systems associated with of the proposed Mulilo Newcastle WEF Complex and MNWP WEF site was conducted by Verdant Environmental. The proposed activities associated with the proposed MNWP WEF Complex require a Water Use Licence (WUL) in terms of the National Water Act (Act 36 of 1998) (NWA) and Environmental Authorisation (EA) in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA). Verdant Environmental undertook a combined aquatic and wetland impact assessment to inform the WUL and EA applications. This document presents the desktop assessment with infield verification.

### Desktop PES Assessment

The PES of the river and wetlands units is shown in Figure 5.11 below.

The desktop PES assessment indicates that the majority of the watercourses on the higher lying plateau area and slopes in the southern half of the study area for the turbine sites are rated as being in good condition (Class A and B) with very little direct and indirect modification of ecosystem drivers and biotic response (vegetation and habitat condition). The only impacts observed on these systems were as a result of cattle grazing. Some of the larger wetlands and some mountain headwater streams in the southern half were rated as being moderately to largely modified (PES Class C – D) as a result of extensive wattle invasion of the wetlands.

In the northern half of the study area of the turbine sites, there are some wetlands and streams in good condition that are confirmed to the highest lying areas and slopes. However, most of the streams and wetlands are rated as being in moderately to seriously modified condition (PES C – D). This is largely due to extensive wattle invasion of these systems and widespread overgrazing that has resulted on erosion and sedimentation. Within the lower lying areas there is also widespread cultivation of some of the broader seep and valley bottom wetlands.

For the most part, the wetlands along the two powerline alignments are moderately to seriously modified (PES Class C – D) and substantially more impacted than the wetlands on the higher lying plateaus and mountain slopes of the turbine study area. Impacts in the eastern half of the alignments are most severe with most wetlands and streams / rivers assessed as being seriously modified (PES Class D) due to a mix of impacts that include: impacts of dams, widespread gully and channel erosion and overgrazing.

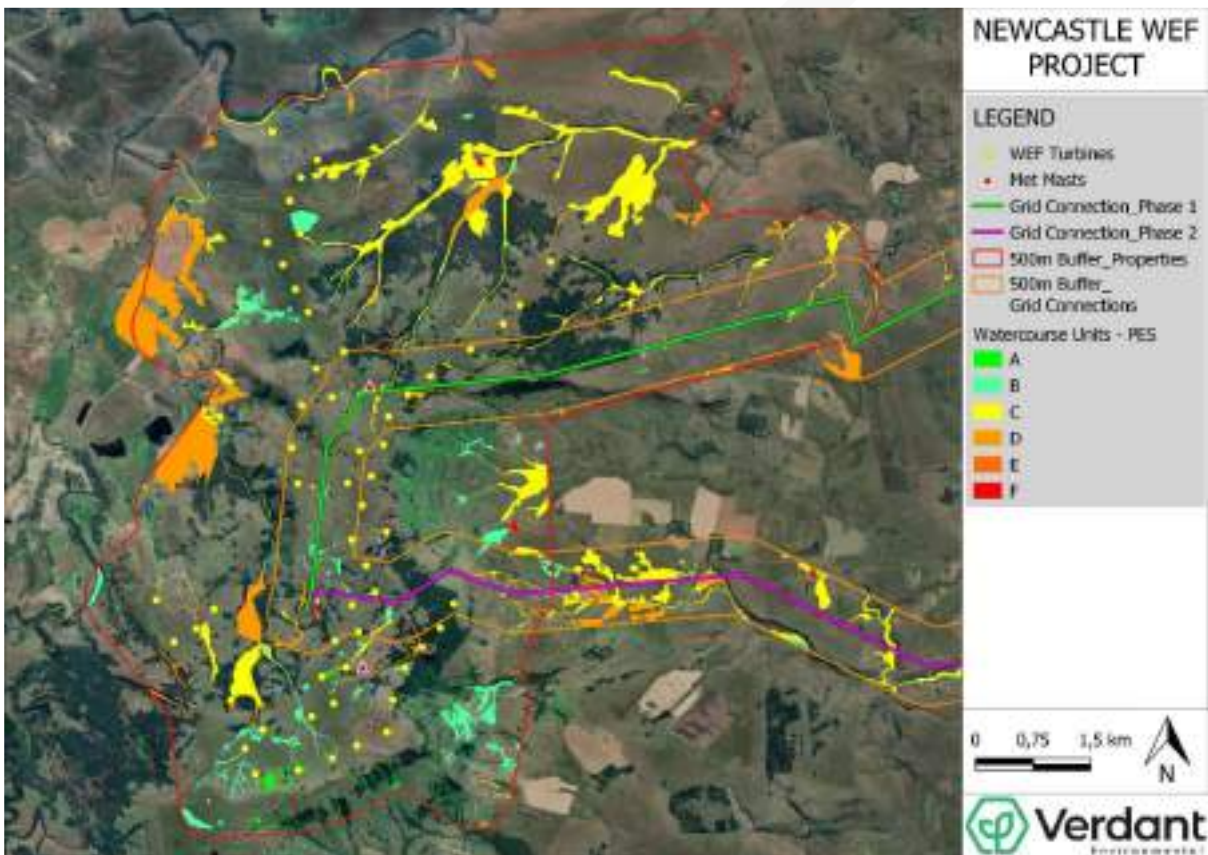


Figure 5-11: PES ratings of rivers and wetlands within 500m of the proposed turbine properties and western half of the grid connection alignments.

#### Desktop EIS Assessment

The EIS of the river and wetland units is shown in Figure 5.12 and Figure 5.13 below.

All intact wetlands of PES A – C were scored as high EIS considering that the threat status of the regional wetlands is critically endangered. Highly impacted wetlands (PES D – E) were generally rated as being of moderate EIS unless there was evidence that ecosystem system provision is still high.

The intact headwater, mountain headwater and upper foothills streams were rated as moderate EIS with some of the larger rivers (i.e. transitional rivers) in a good condition rated as high EIS.

The majority of the wetlands within the turbine study area are rated as high EIS with moderate EIS wetlands occurring to a lesser degree.

The wetlands crossed by the southern alignment were generally of higher EIS than those crossed by the northern alignment, although the initial north trending section of the northern alignment crosses some high EIS plateau seeps.

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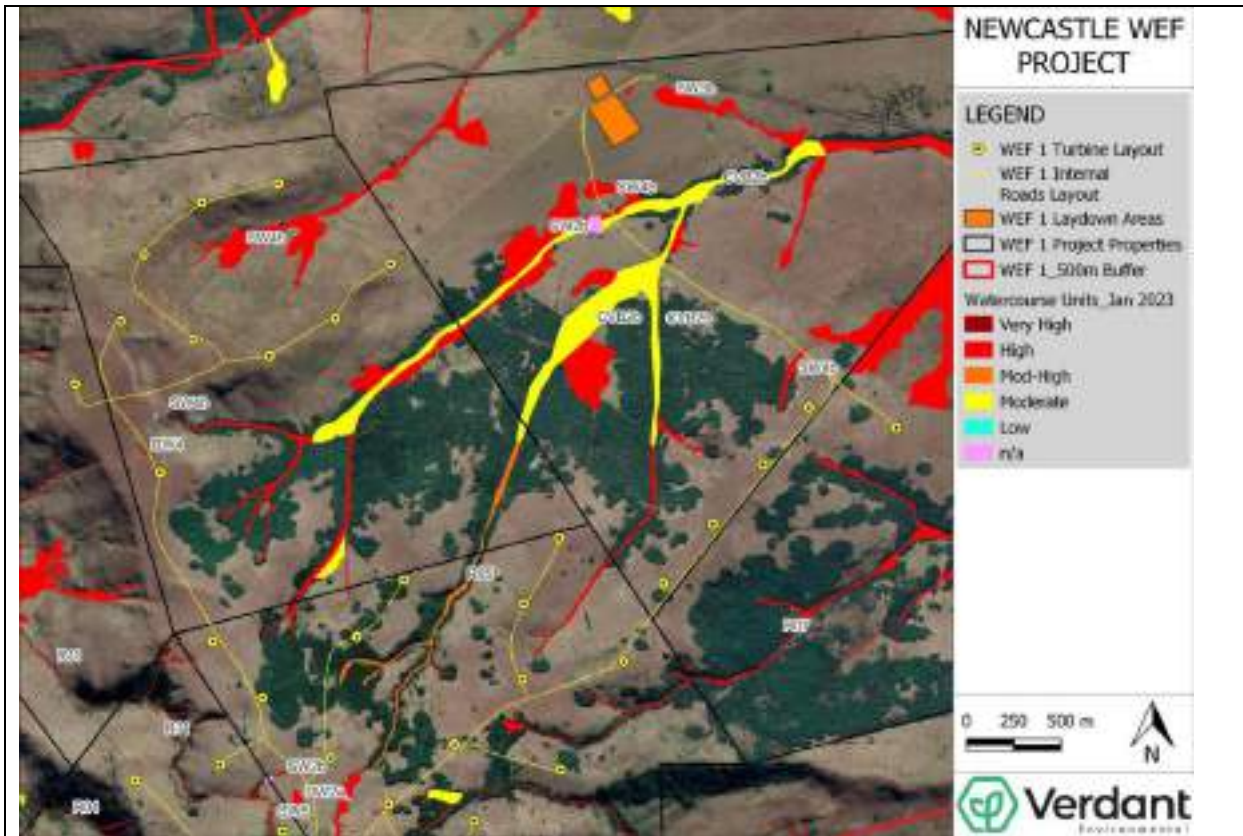


Figure 5-12: EIS ratings of rivers and wetlands within 500m of the proposed turbine properties and western half of the grid connection alignments. NORTH

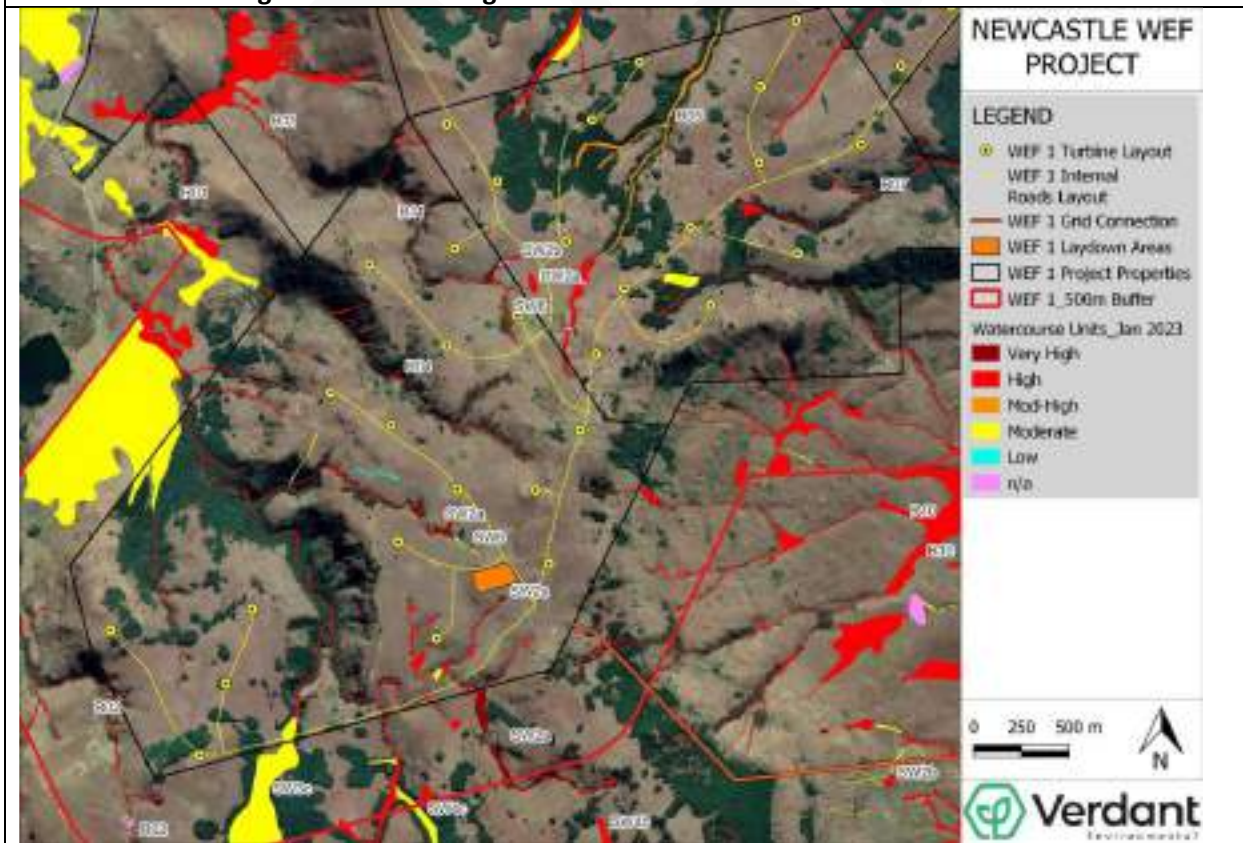


Figure 5-13: EIS ratings of rivers and wetlands within 500m of the proposed turbine properties and western half of the grid connection alignments. SOUTH

## 5.7 CONSERVATION PLANNING TOOLS

Several conservation planning tools are available for the area. These tools allow for the determination of any sensitive and important areas from a vegetation and faunal point of view. They allow for the fine-tuning of plans with a view to reducing potential environmental impacts at the planning stage of the development. The tools used are outlined in Table 5-3 below.

**Table 5-3: Conservation and planning tools considered for the proposed Newcastle WEF Complex.**

TOOL	MOTIVATION	RELEVANCE	IMPLICATIONS
<b>Vegetation Map of South Africa, Lesotho and Swaziland (Mucina &amp; Rutherford, 2012)</b>	The SANBI vegetation map provide floristically based vegetation units of South Africa (including Prince Edward and Marion Islands), Lesotho and Swaziland at a greater level of detail and includes the conservation status of these vegetation units.	<b>Relevant.</b> According to South Africa’s Terrestrial Red List of Ecosystems (RLE), Northern KZN Moist Grassland is classified as Vulnerable (B1(i)) due to its restricted distribution and rate of Terrestrial Biodiversity	Following the Species Environmental Assessment Guideline (SANBI, 2020), Site Sensitivity of the study area will be evaluated using findings from the desktop assessment, supplemented with on-site observations. The vegetation units and SCC identified will be investigated during the site visit and then assessed further based on their conservation importance, functional integrity and receptor resilience.
<b>National Environmental Management: Protected Areas (Act No. 57 of 2003), Protected areas</b>	Protected areas are areas that are already conserved. Areas in close proximity to the proposed development may be affected by the development and thus must be taken into account.	<b>Relevant.</b> The study area is located within 5-10 km of certain protected areas, namely the Sneeuberg Protected Environment.	Since there is a protected environment located within 5 kms and 10 kms, the impacts associated with the WEF on these areas will need to be assessed.
<b>National Protected Area Expansion Strategy</b>	The goal of the National Protected Area Expansion Strategy (NPAES) is to achieve cost effective protected area expansion for ecological sustainability and adaptation to climate change.	<b>Relevant.</b> The study area is located within a NPAES Focus Area (2010), namely Moist Escarpment Grasslands.	The impact of the proposed WEF complex on Moist Escarpment Grasslands will need to be assessed.
<b>National list of threatened terrestrial ecosystems for South Africa (NEMBA: GNR 1002, 2011)</b>	The Biodiversity Act (Act 10 of 2004) provides for listing of threatened or protected ecosystems, in one of four categories: Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and	<b>Relevant.</b> The study area is located within a threatened or protected terrestrial ecosystem as outlined by NEMBA: Northern KwaZulu-Natal Moist Grassland is classified as <b>Vulnerable</b> and there are thirteen (13) threatened botanical SCC in the area.	The impact of the proposed WEF complex on the Northern KwaZulu-Natal Moist Grassland and SCC will need to be assessed.

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TOOL	MOTIVATION	RELEVANCE	IMPLICATIONS
	composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.		
<b>KwaZulu-Natal Biodiversity Plan (KZNBP, 2012).</b>	The KZNBP was developed to provide a basis for future bioregional plans within the KZN Province. Its aim is to integrate information from existing biodiversity plans and to fill in the gaps, thereby providing a single, user friendly, biodiversity land use decision support tool for the whole Province.	<b>Relevant.</b> A portion of the site is situated within Terrestrial CBA areas.	The impact of the proposed WEF complex on CBAs will need to be assessed.
<b>South African Protected Areas Database (SAPAD, 2021)</b>	Protected areas are areas that are already conserved. Areas in close proximity to the proposed development may be affected by the development and thus must be taken into account.	<b>Relevant.</b> The study area occurs within 5 km of a protected area or conservation area recognised by SAPAD, namely the Sneeuberg Protected Environment.	The impact of the proposed WEF complex on the Sneeuberg Protected Environment will need to be assessed.
<b>National Freshwater Ecosystem Priority Areas (NFEPA, 2011)</b>	The NFEPA project aims to identify a national network of freshwater priority areas (NFEPA) and to explore institutional mechanisms for their implementation.	<b>Relevant.</b> There are several NFEPA-defined wetlands located within the study area as well as a number of tributaries which feed into the NFEPA-defined rivers.	River and wetlands will need to be protected in terms of the National Water Act (Act No. 36 of 1998). Water Use Authorisation must be obtained from the DWS prior to any development within or within the regulatory buffers of rivers (50 m), drainage lines (50 m) and wetlands (500 m).
<b>Important Bird Area (IBA)</b>	Important Bird Areas are globally recognized areas essential for the protection of bird species. In order to be classified as an IBA, an area must contain Globally threatened species, restricted range species, biome restricted species or congregations of species.	<b>Irrelevant.</b> The study site does not occur within 10 km of any Important Bird Areas.	Regardless of the fact that the study site does not fall within 10 km of an IBA, an avifaunal specialist study, inclusive of long term monitoring, will be required during the EIA phase of the project as well as consultation with NGOs such as Bird Life SA, EWT, WESSA, etc.
Government Gazette 43110 (GN. 320) "Protocol for the Specialist Assessment and Minimum Report Content Requirements for	This protocol provides the criteria for the specialist assessment and minimum report content requirements for impacts on avifaunal species associated with the development of onshore wind energy generation facilities, where	<b>Relevant.</b> The Protocol must be adopted with respect to the pre-construction avifaunal monitoring and impact assessment.	The protocol is applicable to the proposed Mulilo Newcastle WEF Complex since the nature of the project poses risks to a number of avifaunal species.



TOOL	MOTIVATION	RELEVANCE	IMPLICATIONS
Environmental Impacts on Avifaunal Species by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more” dated 20 March 2020.	the electricity output is 20 megawatts or more, which require environmental authorisation. This protocol replaces the requirements of Appendix 6 of the Environmental Impact Assessment Regulations. The assessment and reporting requirements of this protocol are based on national and international best practice for the avoidance and mitigation of impacts on avifaunal species.		
Birds and Wind-Energy Best-Practice Guidelines, Jenkins, et al 2015.	BirdLife South Africa / Endangered Wildlife Trust developed these Birds and Wind-Energy Best-Practice Guidelines for assessing and monitoring the impact of wind energy facilities on birds in southern Africa Third Edition, 2015.	<b>Relevant.</b> The guidelines are not mandatory but are strongly recommended for use by special conducting impact assessment of avifauna species that could be impacted by a development project.	The guidelines are applicable to the proposed Mulilo Newcastle WEF Complex since the nature of the project poses risks to a number of avifaunal species.
DFFE Species Environmental Assessment Guideline (2022).	DFFE commissioned SANBI and the CSIR to develop biodiversity-related assessment and reporting protocols that provide a minimum set of assessment and reporting criteria that must form the basis of specialist investigations required for the environmental authorisation (EA) process. The protocol also provides taxon-specific guidelines include: flora, avifauna, mammals and terrestrial invertebrates.	<b>Relevant.</b> The guidelines are mandatory for use by special conducting impact assessment of species that could be impacted by a development project.	The guidelines are applicable to the proposed Mulilo Newcastle WEF Complex since the nature of the project poses risks to a number of avifaunal species.

## 5.8 BASELINE SOCIO-ECONOMIC ENVIRONMENT

### 5.8.1 SOCIAL ENVIRONMENT

The proposed Mulilo Newcastle WEF Complex will connect to the existing Eskom Incandu Substation, near Newcastle, via an approximately 20-25 km long 132 kV overhead transmission line. (Subject to a separate BA process and separate EA application). The proposed Newcastle WEF’s are located approximately 15 km north-west of the Newcastle CBD in the KZN Province.

The proposed Mulilo Newcastle WEF Complex projects are located in the Newcastle Local Municipality (LM), one of three (3) local municipalities in the Amajuba District Municipality (DM). The Newcastle LM is located in the inland region on the north-west corner of KwaZulu-Natal and borders onto Free State and Mpumalanga Provinces to the West and North respectively, in the foothills of the Drakensberg.

Newcastle is the third-largest urban centre in KwaZulu-Natal and, with a population of 389 116 (CS 2016) is categorized as a secondary city. The current annual population growth of 1,4%, translates to 5 176 people per year, and also includes a significant increase in the youth proportion of the population. Should this trend continue, Newcastle has a vision of becoming a city by the year 2035. The projected population for the year 2038 will be 502 988 (Newcastle LM IDP, 2021-22).

**Population size, growth and demographics**

The population of Newcastle is spread unevenly over 34 wards. The majority of the people (80%) within Newcastle reside within the Newcastle East area, which is predominantly township and semi-rural areas. At 844 km<sup>2</sup>, Ward 1, where the Project is located, is the largest, followed by Ward 21 at 792 km<sup>2</sup>. Ward 1, with a population of 10 768 people, is sparsely populated with a density of 12.8 people per km<sup>2</sup>.

The small town of Charlestown, with an estimated population of 4 392 people (Census 2011) is situated in Ward 1’s northern section, south of Volksrust.

Most of the land in the local study area is zoned Agriculture and with regards to agricultural potential. The study area and surrounds are characterized by farms and maize, livestock and dairy farms are the main farming activities. Farmsteads are located on the subject properties, albeit limited and scattered.

Population data of the Newcastle Local Municipality can be found in Table 5-4 below.

**Table 5-4: Population data for Newcastle Local Municipality.**

<b>Demographics</b>	<b>Amajuba DM</b>	<b>Newcastle LM</b>	<b>Ward 1</b>
Population	531 328	389 116	10 768
Households	117 257	90 347	2 174
Average household size	4.5	4.3	5
People per km <sup>2</sup>	76.3	209.3	12.8
Age structure (2016)			
- Under 15 years	35.4%	33.9%	-
- 15 to 64 years	60.9%	62.5%	-
- Over 65 years	3.7%	3.6%	-
Population growth per annum	1.35%	1.56%	-
Poverty levels (2012)	50.9%	44.4%	-

**Age and gender**

The age and gender structure of the population is a key determinant of population change and dynamics. The shape of the age distribution is an indication of both current and future needs regarding educational provision for younger children, health care for the whole population and vulnerable groups such as the elderly and children, employment opportunities for those in the economic age groups, and provision of social security services such as pension and assistance to those in need.

The age and sex structure of smaller geographic areas are even more important to understand given the sensitivity of small areas to patterns of population dynamics such as migration and fertility. An increase in the young and the economically active population (EAP) of a Municipality would thus mean the potential increase in income earnings. However, the growth would place pressure on educational resources and job



opportunities as there is the possibility for smaller and slower growing economies to provide work to the increasing population.

Newcastle Local Municipality is characterized by youthful population, with the age group of under 15 years constituting 33.9% of the total population and the EAP (15-64 years) comprising 62.5%. The elderly population over 65 years comprises 3.6%. Population growth per annum is 1.56% and the poverty levels in 2012 were 44.4%.

### 5.8.2 ECONOMIC ENVIRONMENT

#### Unemployment rate and employment status

Employment status refers to whether a person is employed, unemployed or not economically active. The official unemployment rate thus gives the number of unemployed as a percentage of the labour force. The labour force in its turn is the part of the 15 – 64 year population that's ready to work and excludes persons not economically active (scholars, housewives, pensioners, disabled) and discouraged work-seekers. It is worth noting that, in South Africa, high unemployment coincides with low economic growth.

The Newcastle LM had an youth (15-34 years) unemployment rate of 49% in 2011, unemployment rate of 37.4% in 2011, which decreased to 31.8% in 2017.

#### Income

In 2011 the total number of households earning less than R40 000 per annum was 68%, and it has since increased in 2018 to 70%, (Global Insight 2018; Newcastle LM IDP, 2021-22). This is significantly below the national average of household income (R103 204 per annum) and has implications on the Indigent Support provided by the municipality to the community of Newcastle.

#### Employment and economic sectors

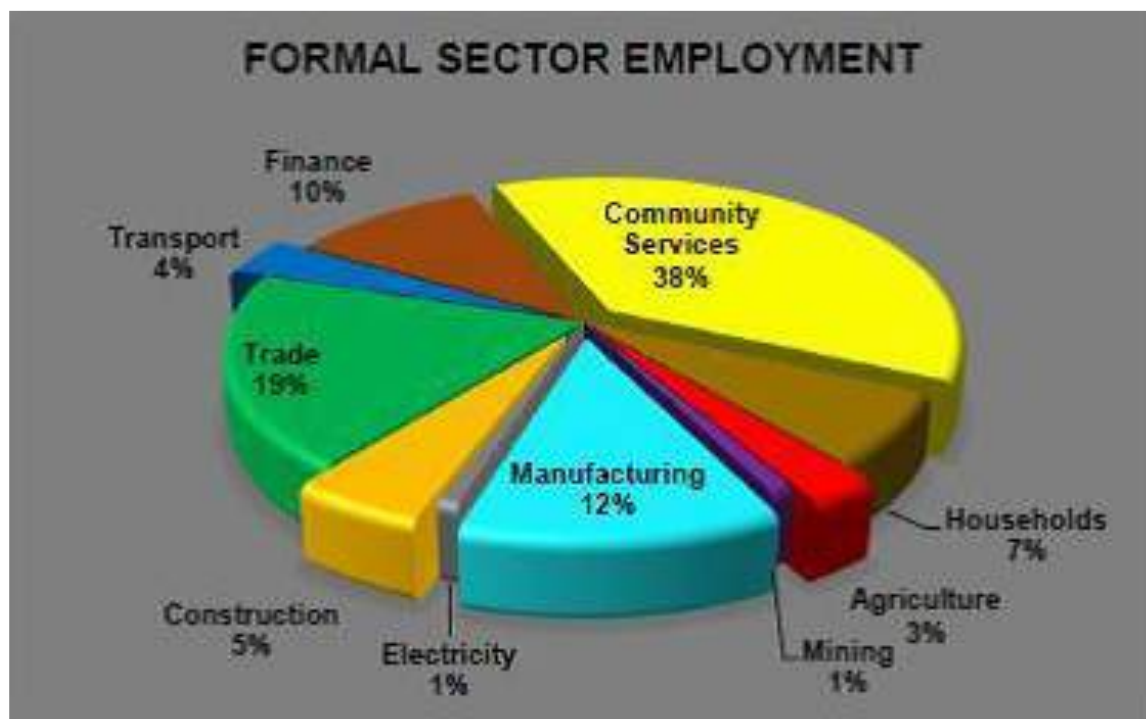
In terms of formal employment, the following sectors employ the majority of the population (Newcastle LM IDP, 2021-22):



Figure 5-14: Average household income (Stats SA, 2011 Census Data).

**Table 5-5: Number of people in Newcastle Local Municipality receiving formal employment.**

Employment sector	Formal employment
Trade / retail	8 888
Government services	18 324
Manufacturing	6 419
Finance	5 375



**Figure 5-15: Pie Chart of Newcastle Local Municipality formal sector employment.**

Of concern is the diminishing growth of formal employment within the agriculture sector due to a decrease in the levels of precipitation (climate change). The manufacturing sector, the sector that once made a significant contribution towards formal employment within Newcastle, contributes 12.2% to total formal employment (6 617 people). The manufacturing sector has also experienced negative growth trends largely attributed to the current global financial outlook. These trends are alarming as they highlight the decline in employment within the primary and secondary sectors, two of the sectors that form the foundation of the economy.

The main economic drivers in Newcastle are trade (24.9%), community services (22.1%), finance (14.71%), manufacturing (13.7%), construction (6.9%), transport (6.7%), agriculture (3.8%), mining (1%) (ww.municipalities.co.za).

**Energy**

The municipality, with the assistance of Eskom, has made substantial progress with the provision of electricity throughout its area of jurisdiction. Approximately 73 449 households are using electricity for cooking and lighting respectively. The number of people using sources of energy such as paraffin, wood, gas, coal, etc. has declined substantially. However, there are few areas where lack of services have been reported. These include informal settlements and areas that were settled after the electrification of the settlement (Newcastle LM IDP, 2021-22).

Eskom supplies in the order of 125,000 KVA per month. An alternative energy source is provided by International Power South Africa (IPSA) from gas turbines. IPSA has resumed operations at its cogeneration

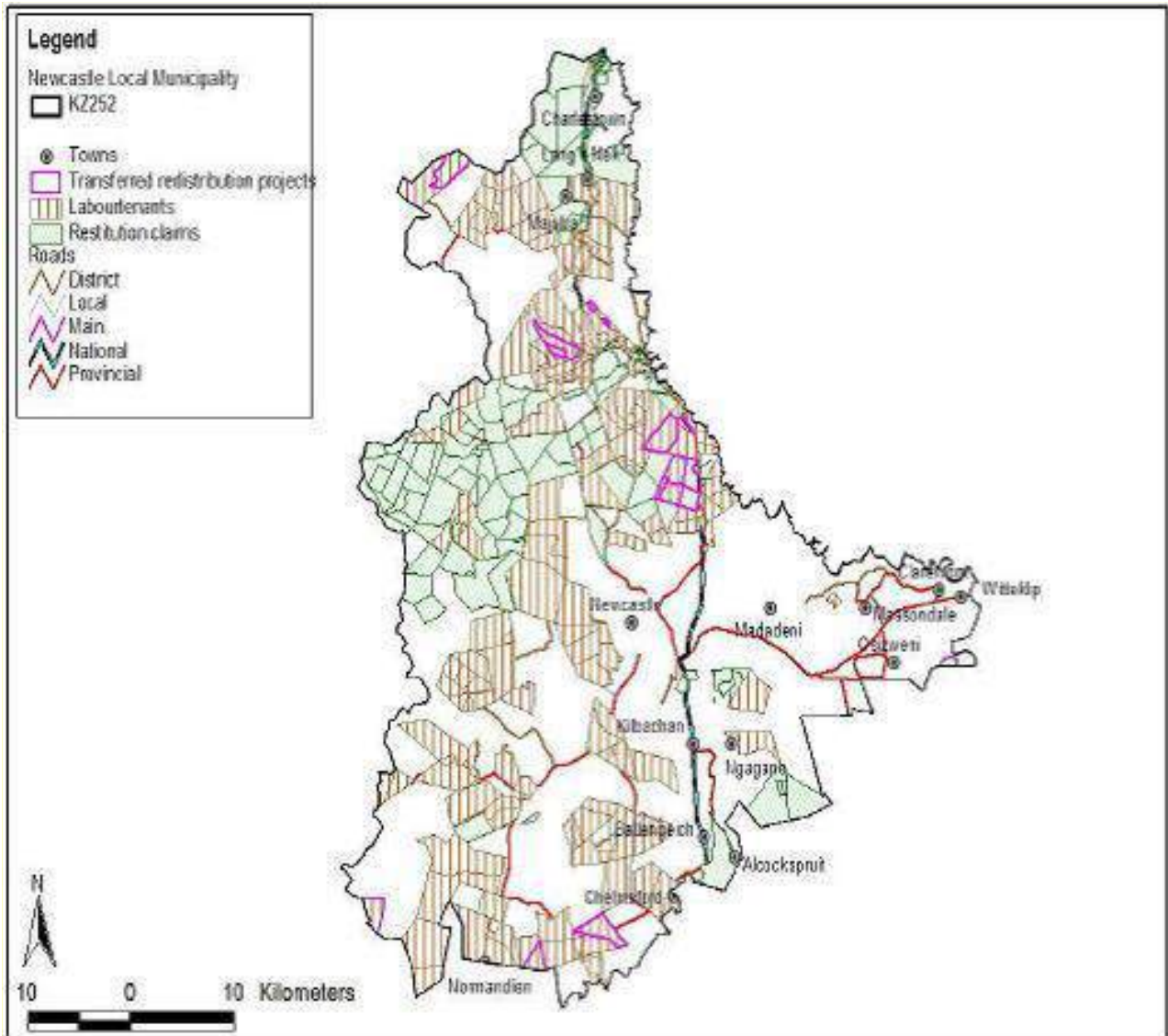
plant at Newcastle. The 18MW combined heat and power plant is now supplying electricity to the national grid under a medium-term power purchase agreement with Eskom dated 26 August 2010. IPSA has successfully restarted operations at its cogeneration plant at Newcastle, following a final agreement on a gas supply contract with Spring Lights Gas. According to ESKOM, there is limited capacity in the Newcastle East to accommodate the planned housing and commercial development (Newcastle LM IDP, 2021-22).

### Land Reform

According to the Amajuba District Municipality Area Based Plan, the Department of Rural Development and Land Reform is implementing the following projects within Newcastle Municipality:

- ▲ Land Redistribution (LRAD): There are 15 completed land restitution projects where 5 097ha of land has been transferred to 283 households (1,456 individuals);
- ▲ Land Restitution: There are 130 claims on farms in the Newcastle area, totalling 53,000 ha. Of this, 34 claims have been settled, making up 12 700 ha; and
- ▲ Tenure Security (Labour Tenants): There are tenure security claims on 99 farms, making up a total area of 973 ha.

The Amajuba District Municipality Area Based Plan further notes that 73 212ha of land has been transferred under the land reform programme. An application of the 30% target suggests that 109 447ha is required in order to bring the programme in Newcastle in line with the national targets.



**Figure 5-16: Newcastle Local Municipality Land Reform map.**

Figure 5.16 above indicates that the Project area includes land portions where successful redistribution projects have been concluded, as well as possible restitution and labour tenants claims. As part of the EIA public participation process a query has to be lodged with the Department of Rural Development and Land Reform to determine the validity of the claims and to ensure that relevant role-players and potential land owners form part of the process from the onset.

**Local Economic Development**

Through skills development and training the proposed Newcastle WEF Complex project will enhance skills of locals and enable them to secure alternative employment at similar developments. In line with Newcastle’s vision, the proposed Project will contribute to Newcastle becoming a city by 2035 by assisting to create favourable conditions to attract more people (Newcastle Local Municipality 4th Generation Integrated Development Plan). This will be done through new employment opportunities, enhancement of economic opportunities, attracting investments and through the Enterprise Development (ED) and Socio-economic Development (SED) component aimed at local communities.

## 5.9 BASELINE HERITAGE AND ARCHAEOLOGICAL ENVIRONMENT

A desktop assessment of heritage and archaeological features within the WEF study area was conducted by Umlando Archaeological Surveys and Heritage Management Services.

Heritage and archaeological resources that could potentially be of interest within the study area, could include:

- Palaeontological sites (refer to separate Palaeontological assessment below);
- Historical buildings;
- Battlefields and general Anglo-Zulu and Anglo-Boer sites;
- Graves and/or community cemeteries;
- Living heritage sites; and
- Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. Many archaeological sites occur in the general area. The archaeological sites tend to be open Stone Age and Iron Age sites of varying significance. Some historical buildings do exist in the general area. These are sites that have been recorded through systematic surveys. No known heritage sites occur within the study area, or nearby to be affected by a visual impact.

The Surveyor General Maps indicate that the farms were first surveyed between 1863 and 1908. This means the farms were rented before hand and sold thereafter. No buildings are shown on the Surveyor General maps, however, one can assume that buildings would have occurred once the farms were sold. Any buildings and/or ruins on the farms can thus be over 60 years in age and are protected by the heritage legislation. Similarly, any rubbish dumps associated with the older buildings would be protected as well.

The 1937 aerial photographs were not available. However, the 1968 topographical map indicates that there are buildings, ruins and settlements within the study area (Figure 5-17).

Human graves might be associated with some of these features which will be surveyed and assessed in the EIA phase. The graves, if they exist, can be avoided by 50m buffers, or alternatively possibly removed.

A Google Earth search indicates that there are several overhangs near the edge of the study area. These might contain rock art sites or shelters with archaeological deposits, however, these are unlikely to be impacted by the proposed WEF.

The desktop study indicates that there are some heritage sites within the study area. However, there are no red flags occur from the desktop study. The Farm Fransina might be related to (one of) the first farm building complex on Geelhoutboom, as does the ruin. These will probably require some form of excavation around the middens, as well as detailed survey and photographs.

Overall, the desktop heritage survey undertaken for the proposed Mulilo Newcastle WEF Complex area, has determined that there are no previously recorded heritage sites within the study area. However, several buildings and human settlements with possible graves were noted. These will be assessed during the site survey during the EIA phase.



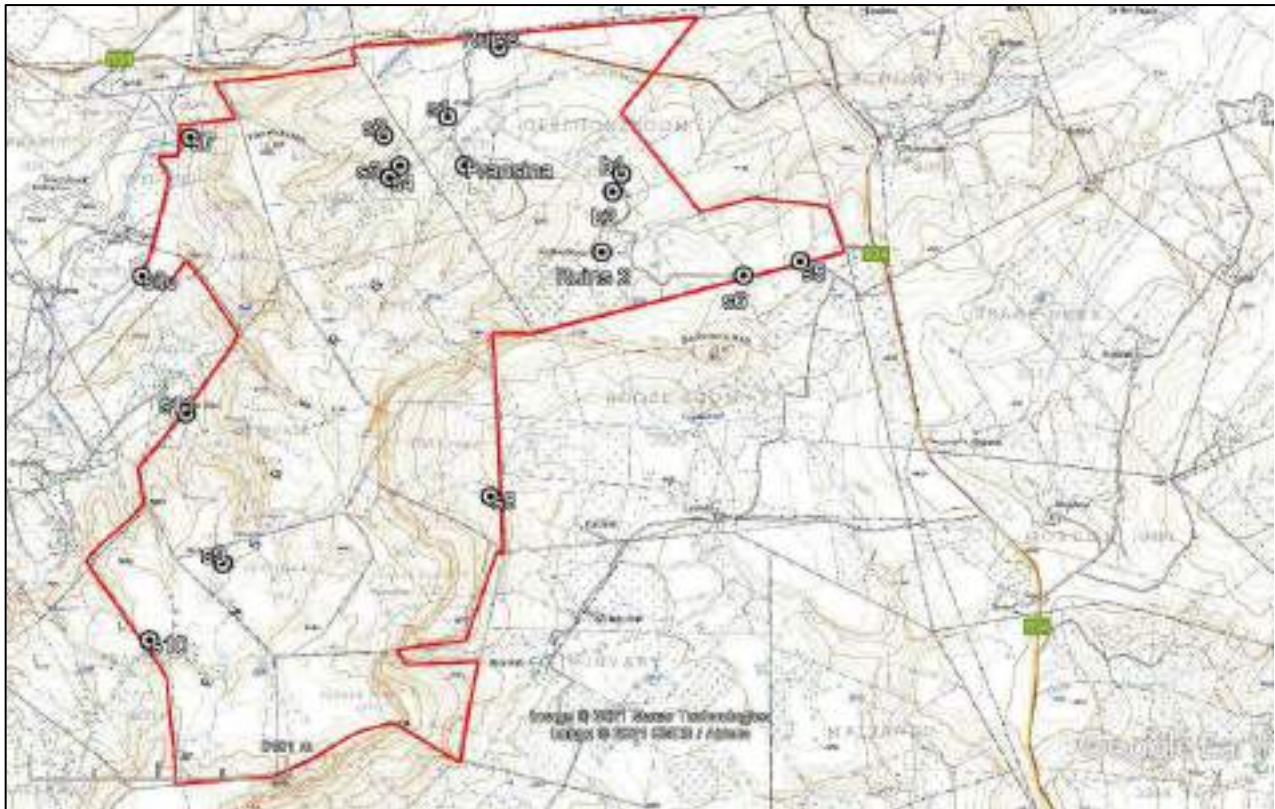


Figure 5-17: Potential heritage and archaeological sites within the Mulilo Newcastle WEF Complex study area, such as grave sites and historic buildings.

## 5.10 BASELINE PALAEOLOGICAL ENVIRONMENT

The palaeosensitivity of the Mulilo Newcastle WEF Complex and MNWP WEF area is shown in Figure 5-18 below. It is mostly grey, which is not fossiliferous, but also contains colour codes of red and yellow. According to SAHRIS, a Field Assessment is essential for the red shaded areas, and possibly for the yellow.



Figure 5-18: Palaeosensitivity of rocks in the Mulilo Newcastle WEF Complex footprint (blue outline).

Most of the area within the site is dolerite (grey) and of no concern. However, the thickness of the dolerite is unknown. Evidence of trace fossil bioturbation is common within the Volksrust Formation siltstones and mudstones, however, the various trace fossil (ichnofossil) types are not always identifiable. These are common and of little Palaeontological Significance.

The Adelaide Subgroup may contain Permo-Triassic Boundary if it has been preserved. The Adelaide Subgroup comprises terrestrial sediments as sedimentary rocks and preservation requires many geological processes coming together, which is less likely to take place during terrestrial deposition. Present evidence indicates that the Permo-Triassic Boundary is unlikely to be in the development area but must be considered.

The Tarkastad Subgroup is an important fossil bearing rock and is considered highly paleontologically sensitive. This level is known to contain paleontologically important Early Triassic terrestrial fossils from the period around 252 million years old, or post PT Boundary (Groenewald & Kitching 1995, Rubidge 2005, Smith et al. 2012). This fauna is dominated by therapsids or “mammal-like reptiles” and other tetrapods. Rare vascular plants and some trace fossils are known.

Karoo Dolerite is also present but cannot be fossiliferous. Reworked palaeontological Material could be found in the Quaternary alluvium sediments but is unlikely.

Overall, this site is dominated by Karoo Dolerite which is not fossiliferous. Similarly, any alluvium can also be ignored. However, the remaining lithologies may be fossiliferous. The Volksrust Formation could be fossiliferous but is also unlikely to be so as significant fossils are rare. In contrast, the Adelaide and Tarkastad Subgroups might contain significant fossil material. For this reason, it is the recommendation of this report that a Palaeontological Field Assessment by a competent palaeontologist be undertaken.

## 5.11 DESCRIPTION OF THE SOCIO-ECONOMIC PROCESS FOR RENEWABLE ENERGY PROJECTS

The Department of Mineral Resources and Energy’s (“DMRE’s”) Renewable Energy Independent Power Producers Procurement Program (“REI4P”) implements certain measures to ensure that a portion of the income generated through operational Renewable Energy (“RE”) projects is directed towards local economic development. In order to select winning bids, the DMRE uniformly ranks all projects submitted according to a scorecard in which (i) 70% of the score is based on the proposed energy Tariff of the respective projects; and (ii) 30% of the score is based on the Economic Development (“ED”) commitments made by the respective projects on the following seven (7) elements:

- ▲ Job Creation: Employment of South African Citizens, Black People, Skilled, Unskilled and people residing in the local communities where the project is located;
- ▲ Local Content: Components of the facility/project manufactured in South Africa;
- ▲ Preferential Procurement: Goods and services procured through South African companies that have a B-BBEE Generic scorecard or who are Qualifying Small Enterprises, Exempt Micro Enterprises and Woman Owned Venders;
- ▲ Black Ownership: The percentage of Black Ownership in the project;
- ▲ Black Top Management: Senior management that are Black people from the Independent Power Producer within the project;
- ▲ Enterprise Development: the monetary rand contributions made towards Enterprises in the local communities as a percentage of the revenue; and
- ▲ Socio-Economic Development: the monetary rand contribution made towards socio-economic challenges in the local communities as a percentage of the revenue.

The minimum criteria required for each of these elements do not always stay stagnant and are from time to time adjusted prior to each bidding window commencing.

Jobs and the inflow of funds to the local communities do not occur at once, as the process is staggered. During the bid development phase few project developers liaise with communities and cannot commit to promises in terms of local benefits, as the outcomes of the project proposals are uncertain. In the case of a preferred bidder, and during financial close, consultation will commence and construction will result in the employment of workers. Once operational, SED and ED spent will usually increase.

The Independent Power Producer (“IPP”) projects of the first five (5) bid windows (BW1, BW2, BW3, BW3.5, BW4) were distributed across all nine (9) provinces. Up to date, in the Northern Cape Province, the following economic investments and positive socio-economic impacts have been committed (IPPPP Overview, 31 December 2021):

- ▲ 48 projects, contributing 3 566 MW (compared with 17 projects in the Eastern Cape; and 11 in the Western Cape);
- ▲ Investment (equity and debt) to the value of R139 billion;
- ▲ Created 65 249 job-years for South African citizens to date;
- ▲ SED and ED contributions of R14 402 million; and
- ▲ Shareholding by South African entities and Black South Africans of R15 133 million.

### **5.11.1 IDENTIFICATION OF THE BENEFICIARY COMMUNITY**

The first step for project developers is usually to identify local communities that will benefit from the renewable energy project. Requirements of the renewable energy independent power producer procurement (REIPPP) programme oblige renewable energy companies to engage with the developmental opportunities and needs of communities around their project sites. The procurement documents define local communities as settlements in a 50km radius around the project site. It is usually the responsibility of the project developer to decide what constitutes the benefitting community. This could be specific villages or towns, or even the entire (qualifying) population within the 50km radius.

### **5.11.2 FINANCIAL AND SOCIO-ECONOMIC CONTRIBUTIONS**

The IPP will ensure community ownership and social responsibility as follow:

- ▲ **Community trust:** The mechanism established for the community to hold ownership of projects, which aims to ensure that a portion of the income generated is directed towards local economic development. At this stage at least 2,5% equity should be held by communities.
- ▲ **Employment:** The employment requirement ensures that at least 20% of the South African workforce in the Project comes from the local communities. During the construction phase direct benefits therefore mainly pertain to construction related employment opportunities and procurement as well as induced impacts that relate thereto.
- ▲ **Socio-economic development (“SED”) and Enterprise development (“ED”):** SED contributions are allocated towards activities that facilitate sustainable access to the economy for beneficiaries in the areas of rural development, the environment, infrastructure, enterprises, reconstruction of undeveloped areas, development programmes for women or youth, education, health care, arts and culture. ED refers to contributions to black-owned businesses with the specific objective of assisting or accelerating the development, sustainability and ultimate financial and operational independence of that enterprise. Currently, the target set by the Department in the last version of the tender documents was 2.1% of revenue.

## 5.12 STAKEHOLDERS FOR THE SOCIAL ASSESSMENT OF THE MNWP WEF

Stakeholders within the primary and secondary spheres of influence are identified throughout the public participation and SIA processes. The sphere of influence is determined by the degree of impact that will potentially manifest. Geographic location of the stakeholder can aid the categorisation but does not necessarily award a higher level of impact to a stakeholder that is located in closer proximity to the project. Stakeholders that have been identified thus far as relevant to the SIA include:

- ▲ PRIMARY SPHERE OF IMPACT
  - Land owners
  - Ward Councillors
  - Newcastle Local Municipality
  
- ▲ SECONDARY SPHERE OF IMPACT
  - Adjacent and surrounding landowners
  - Amajuba DM (ADM)
  - Road users on public and access roads
  - Fire and rescue services
  - Legitimate land claimants, if any
  - Agricultural unions
  
- ▲ INDIRECT IMPACT SPHERES
  - Labour unions
  - South African Police Service



## 6 ALTERNATIVES

### 6.1 REASONABLE AND FEASIBLE ALTERNATIVES

Alternatives should include consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. In all cases, the no-go alternative must be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- ▲ the property on which or location where it is proposed to undertake the activity.
- ▲ the type of activity to be undertaken.
- ▲ the design or layout of the activity.
- ▲ the technology to be used in the activity.
- ▲ the operational aspects of the activity.
- ▲ the option of not implementing the activity.

### 6.2 FUNDAMENTAL, INCREMENTAL AND NO-GO ALTERNATIVES

#### 6.2.1 FUNDAMENTAL ALTERNATIVES

Fundamental alternatives are developments that are totally different from the proposed project description and usually include the following:

- ▲ Alternative property or location where it is proposed to undertake the activity.
- ▲ Alternative type of activity to be undertaken.
- ▲ Alternative technology to be used in the activity.

#### 6.2.2 INCREMENTAL ALTERNATIVES

Incremental alternatives relate to modifications or variations to the design of a project that provide different options to reduce or minimise environmental impacts. There are several incremental alternatives that can be considered with respect to the current wind farm project, including:

- ▲ Alternative design or layout of the activity.
- ▲ Alternative operational aspects of the activity.

#### 6.2.3 NO-GO ALTERNATIVE

It is mandatory to consider the “no-go” option in the EIA process. The “no-go” alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable (e.g. an existing contaminated site earmarked for a development). The no-go is the continuation of the existing land use, i.e. maintain the status quo.



## 6.3 ANALYSIS OF ALTERNATIVES

Table 6.1 below illustrates the methodology used to assess the identified alternatives for the proposed MNMP WEF project. The table assesses the advantages and disadvantages, and provides further comments on the selected alternatives.

The categories of alternatives that are assessed include:

- ▲ Location;
- ▲ Activity;
- ▲ Associated technology;
- ▲ Design and layout; and
- ▲ No-go alternative.

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Table 6-1: Alternatives to be considered.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT														
<p><b>Property or location</b> This refers to the <b>fundamental location options</b>, and the environmental risks and impacts associated with such options.</p>	<p><b>Alternative location 1</b> - Current proposed site (<b>Preferred alternative</b>).</p> <table border="1"> <thead> <tr> <th>Farm Name</th> <th>Farm Number</th> </tr> </thead> <tbody> <tr> <td>Geelhoutboom</td> <td>3350</td> </tr> <tr> <td>Geelhoutboom</td> <td>3350</td> </tr> <tr> <td>Bernard</td> <td>9447</td> </tr> <tr> <td>Spitskop</td> <td>16302</td> </tr> <tr> <td>Cliffdale</td> <td>9439</td> </tr> <tr> <td>Byron</td> <td>9448</td> </tr> </tbody> </table> <p>This site has been selected based on good wind resource potential, land availability and the sites proximity to available Eskom electricity grid capacity.</p>	Farm Name	Farm Number	Geelhoutboom	3350	Geelhoutboom	3350	Bernard	9447	Spitskop	16302	Cliffdale	9439	Byron	9448	<ul style="list-style-type: none"> <li>• Located close to existing necessary Eskom electrical infrastructure, grid access is located nearby.</li> <li>• Suitable wind resource.</li> <li>• Land availability (Mulilo and landowners have formally agreed to the proposed development on the site and are in full support of the use of this area).</li> </ul>	<ul style="list-style-type: none"> <li>• Land previously undeveloped.</li> <li>• Potential visual intrusion on sensitive visual receptors including tourism accommodation, protected areas (such as Sneeuberg Protected Environment and Seekoeivlei Nature Reserve).</li> <li>• Potential impacts on avifauna and bats.</li> <li>• Loss of indigenous vegetation (portions of the site located in CBAs and North KZN Moist Grassland).</li> <li>• Located within NPAES area (Moist Escarpment Grassland).</li> </ul>	YES	<p>The main determining factors for selecting the proposed location were:</p> <ul style="list-style-type: none"> <li>• Proximity to an Eskom grid connection point.</li> <li>• Available land.</li> <li>• Quality of the wind resource.</li> </ul> <p>Preliminary investigations have identified that the proposed project site meets the above land specifications.</p>
	Farm Name	Farm Number																	
Geelhoutboom	3350																		
Geelhoutboom	3350																		
Bernard	9447																		
Spitskop	16302																		
Cliffdale	9439																		
Byron	9448																		
<p><b>Alternative location 2</b> - None identified as the rights to <b>sufficiently large enough contiguous parcels of</b> private land must be sought from local landowners. Location 1 has been agreed to.</p>	N/A	N/A	N/A	<p>Alternative locations for the current project are limited and were not deemed to be either reasonable or feasible due to the following:</p>															

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	Alternative sites in the area that are close to Eskom electrical grid infrastructure, do not yield the same wind resource potential.				<ul style="list-style-type: none"> <li>The available wind resource is the most critical aspect of a wind energy project since a feasible WEF must generate sufficient energy to be financially feasible in terms of REIPPPP.</li> <li>A feasible WEF must also be located close to a connection point into the Eskom grid and substation. This is a critical factor to the overall technical and financial feasibility of the WEF project.</li> <li>Therefore, alternative <u>locations</u> for the proposed WEF, were not assessed.</li> </ul>
<b>Type of technology</b> This refers to the fundamental technology options, such as energy generation from wind, vs. solar (PV and CSP), coal fired power plant, etc. and the environmental risks and impacts associated with such options.	<b>Alternative energy technology 1 – Wind turbines (Preferred alternative).</b>	<ul style="list-style-type: none"> <li>Clean and renewable energy.</li> <li>Mitigate climate change.</li> <li>Does not require large areas of land.</li> </ul>	<ul style="list-style-type: none"> <li>Visually intrusive</li> <li>Avifaunal impacts</li> <li>Bat impacts</li> </ul>	<b>YES</b>	The activity does not exclude all current land uses i.e. Wildlife and stock grazing can still take place between turbines.
	<b>Alternative energy technology 2 – Solar PV</b>	<ul style="list-style-type: none"> <li>Clean and renewable energy.</li> <li>Mitigate climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Visually intrusive (but less so than a WEF).</li> <li>Requires a large area of land (about 400 Ha for the same 200 MW generation capacity).</li> <li>Requires more water than wind does.</li> </ul>	<b>NO</b>	Wind and solar are not mutually exclusive, i.e. both developments can take place in close proximity to one another. The amount of land secured is not large enough to support a solar PV development. In terms of

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			<ul style="list-style-type: none"> <li>Generates less power per hectare than wind does.</li> </ul>		output, wind energy has a higher potential than solar PV based on suitable land available on the site. This site is also not optimally suited to solar energy such as other areas in South Africa. Areas such as the Northern Cape Province are more suited to this renewable energy resource.
	<b>Alternative energy technology 3 – Concentrated Solar Power (CSP)</b>	<ul style="list-style-type: none"> <li>Clean and renewable energy.</li> <li>Mitigate climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Visually intrusive.</li> <li>Requires large area of land.</li> <li>Water a significant limiting factor.</li> <li>Reflectivity of mirrors potentially a significant issue visually and in terms of avifauna.</li> </ul>	<b>NO</b>	There is not enough intense radiation in the area for CSP to be considered viable. The solar atlas shows the project area to occur in an area that receives <6.0 kWh/m <sup>2</sup> of solar radiation per day. Although favourable for solar radiation there are areas in South Africa that receive between 7 and 8 kWh/m <sup>2</sup> radiation per day which is preferable when compared to areas that receive 6kWh/m <sup>2</sup> .
	<b>Alternative energy technology 4 – Coal fired power plant</b>	<ul style="list-style-type: none"> <li>None identified</li> </ul>	<ul style="list-style-type: none"> <li>Air pollution from coal dust and smoke stack emissions (SO<sub>2</sub>).</li> <li>Contribution to climate change.</li> <li>Ground contamination from coal dust.</li> </ul>	<b>NO</b>	Not environmentally desirable and would not qualify for REIPPPP.

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	<b>Alternative energy technology 5 – Biomass</b>	<ul style="list-style-type: none"> <li>Clean and renewable energy.</li> <li>Mitigate climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Expensive source of energy, requiring large amounts of reliable biomass feedstock and are sources uncertain.</li> </ul>	<b>NO</b>	Sufficient suitable and reliable biomass sources may not be available in proximity to the site. Biomass energy is mutually exclusive.
	<b>Alternative energy technology 6 – Nuclear Power</b>	<ul style="list-style-type: none"> <li>Greater electricity generation with little raw material required.</li> </ul>	<ul style="list-style-type: none"> <li>Raw material highly radioactive.</li> <li>Water availability a severe limitation. In South Africa, which is a water scarce country, the most suitable sites for Nuclear Power are situated adjacent to the ocean.</li> </ul>	<b>NO</b>	The significant dependence of nuclear energy generation on high volumes of water preclude its development on the proposed site. Nuclear energy is mutually exclusive.
<b>Layout and design</b> This relates mostly to alternative ways in which the proposed development or activity can be physically laid out on the ground to minimise or reduce environmental risks or impacts. It would also relate to the design of the proposed infrastructure (e.g. size).	<b>Alternative layout 1:</b> Preliminary WEF layout (up to 45 turbines), access route, electrical switching stations and short connecting powerline ( <b>preferred alternative</b> ).	<ul style="list-style-type: none"> <li>The preliminary layout consists of 45 turbines which will undergo detailed assessment by specialists in the EIA phase. The number of turbines may be amended and locations changed to avoid sensitive areas based on the specialist assessments.</li> </ul>	<ul style="list-style-type: none"> <li>There may be impacts associated with upgrading and expanding road reserves in sensitive environments.</li> <li>Visual and other impacts may only be slightly reduced by a reduced number of turbines, but the impacts may remain high.</li> </ul>	<b>YES</b>	Considering the WEF layout: A maximum of 45 turbine structures is being proposed. The preferred layout (number of turbines and their locations) will be determined during the EIA process and associated specialist assessments. Thus, the final proposed WEF layout will be included in the final EIA report as the optimal layout from an environmental perspective, where all environmentally sensitive areas have been designated as NO-GO areas.
	<b>Alternative design 1:</b> The following turbine design specifications are proposed: <ul style="list-style-type: none"> <li>WEF Capacity - Up to 200 MW</li> </ul>	<ul style="list-style-type: none"> <li>The proposed turbine specifications are those of the most up-to-date turbine</li> </ul>	<ul style="list-style-type: none"> <li>Larger turbines may be more visible from a wider viewshed.</li> </ul>	<b>YES</b>	



**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	<ul style="list-style-type: none"> <li>• Number of Turbines - Up to 45</li> <li>• Hub Height - Up to 140 m</li> <li>• Rotor Diameter - Up to 200 m</li> <li>• Blade length - Up to 100 m</li> </ul> <p>(preferred alternative).</p>	<p>technology that is more efficient than earlier technologies in capturing wind energy and generating electricity.</p> <ul style="list-style-type: none"> <li>• Fewer turbines (and by default, fewer roads and a potentially smaller area) are necessary to generate an electricity output that is equivalent to smaller turbines. This can potentially reduce environmental impacts and risks to avifauna and bats.</li> </ul>			
	<p><b>Alternative design 2: Smaller wind turbines</b></p>	<ul style="list-style-type: none"> <li>• Smaller turbines may be less visible from a wider viewshed.</li> </ul>	<ul style="list-style-type: none"> <li>• Smaller turbines are less efficient. As technology has improved, and moved towards more efficient larger turbines, smaller turbines are not readily available from turbine suppliers.</li> <li>• More turbines are necessary to generate an electricity output that is equivalent to larger turbines.</li> <li>• The greater number of turbines may result in</li> </ul>	<b>NO</b>	

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			more impacts to biodiversity (especially birds and bats), and there is likely to be an overall larger footprint as more roads and associate infrastructure is required.		
<p><b>Operational aspects</b> This relates mostly to alternative ways in which the development or activity can operate in order to reduce environmental risks or impacts.</p>	<p><b>Alternative operational activities</b></p>	<ul style="list-style-type: none"> <li>Operational Management alternatives will be informed by specialist input (e.g. bird and bat monitoring) through on-going operational monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<p><b>YES</b></p>	<p>Operational alternatives will be informed by the specialists. The most pertinent specialists who will inform operational alternatives are the bat and avifaunal specialists. Should these specialists find that certain turbines require curtailment due to their location then this will be included as part of the operational management of the WEF. Should management stipulations be required for the proposed MNWP WEF then they will form part of the Environmental Management Programme (EMPr) of the proposed WEF.</p>
<p><b>No-go option</b> This refers to the current status quo and the risks and impacts associated to it.</p>	<p>Animal stock grazing.</p>	<ul style="list-style-type: none"> <li>The proposed project site and the activities associated with the site will remain relatively undisturbed.</li> </ul>	<ul style="list-style-type: none"> <li>The loss of the potential of this particular wind farms contribution towards the national renewable energy target.</li> </ul>	<p><b>YES</b></p>	<p>The no-go option has various positive and negative impacts associated with this alternative. All baseline information provided in this report relates to the current situation on site and can be</p>

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			<ul style="list-style-type: none"> <li>No financial benefit for the WEF landowners.</li> <li>Loss of local socio-economic growth opportunities.</li> </ul>		<p>considered the no-go alternative. Impacts are limited to the status quo. Positive and negative impacts are as follows.</p> <p>Positive:</p> <ul style="list-style-type: none"> <li>Agricultural activities will remain undisturbed;</li> <li>Tourism activities will remain undisturbed (i.e. no visual impacts);</li> <li>Ecological processes will continue as is (impacts associated with current agricultural practices will continue);</li> <li>Vegetation clearance will be limited to activities associated with the current agricultural practices;</li> <li>All negative impacts, specifically related to the development of the wind farm, discussed in this report will not materialise.</li> </ul> <p>Negative:</p>

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)**

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
					<ul style="list-style-type: none"> <li>• The economic impact of the rental received by farmers will be lost, meaning that agricultural activities will continue as is and will not be expanded;</li> <li>• The promotion of local socio-economic development opportunities will be lost;</li> <li>• All positive impacts, specifically related to the development of the wind farm, discussed in this report will not materialise.</li> </ul>

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## 6.4 PREFERRED ALTERNATIVE

Based on the assessment of alternatives, the preferred alternative for the MNWP WEF consists of:

- **Alternative location 1:** Turbines located on the following farms portions which were selected on the basis of good wind resource potential, land availability and the sites proximity to available Eskom electricity grid capacity (the final layout of the turbines will only be confirmed following the EIA phase of the project).

Farm Name	Farm Number
Geelhoutboom	3350/1
Geelhoutboom	3350/RE
Bernard	9447
Spitskop	16302
Cliffdale	9439
Byron	9448

- **Alternative energy technology 1:** Wind turbines as a preferred technology as a low carbon emitting and renewable energy resource.
- **Alternative layout 1:** Current proposed layout of up to 45 turbine WEF layout, access route, electrical switching stations and short connecting powerline.
- **Alternative design 1:** The following turbine design specifications are proposed:
  - WEF Capacity - Up to 200 MW
  - Number of Turbines - Up to 45
  - Hub Height - Up to 140 m
  - Rotor Diameter - Up to 200 m
  - Blade length - Up to 100 m



## 7 KEY FINDINGS OF THE SPECIALIST STUDIES

Appropriately qualified and experienced specialists were appointed to undertake the various assessments identified as being necessary. Specialists gathered baseline information relevant to the study and assessed impacts associated with the MNWP WEF. Specialists have also made recommendations to mitigate negative impacts and enhance benefits. The resulting information has been synthesised in the section below, whilst the full specialist reports have been attached to the EIR as a Specialist Report section in Appendix E.

The following Specialist Studies have been completed for the EIA Phase:

- ✦ Agricultural Impact Assessment;
- ✦ Terrestrial Ecology Impact Assessment (fauna and flora);
- ✦ Aquatic Impact Assessment;
- ✦ Avifaunal Impact Assessment;
- ✦ Bat Impact Assessment;
- ✦ Heritage (Archaeological) Impact Assessment;
- ✦ Paleontological Impact Assessment;
- ✦ Noise Impact Assessment;
- ✦ Socio-Economic Impact Assessment;
- ✦ Visual Impact Assessment; and
- ✦ Traffic Impact Assessment.

All specialists were provided with a Draft Layout to assess. The specialists used various sampling techniques (site visits, desktop analyses, long-term monitoring, short-term monitoring, etc.) in order to assess the Draft Layout. The results gathered from each of the specialists were then assessed by the developer in order to inform the EIR Layout presented in this report. This section summarises the key findings of the specialists on the MNWP WEF site and their opinion on the design of the layout by the developer to these findings (on the layout presented in this report). The sensitivity analysis, which includes the sensitive areas highlighted by the specialists, is illustrated and assessed in Chapter 10 of this report.

### 7.1 AGRICULTURAL IMPACT ASSESSMENT

<b>STUDY</b>	<b>Agricultural Impact Assessment</b>
<b>NATIONAL SCREENING TOOL</b>	<b>AGRICULTURE: VERY HIGH</b>
<b>SPECIALIST</b>	<b>Dr Andries Gouws</b>
<b>COMPANY</b>	<b>Index</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix F</b>

#### 7.1.1 CONCLUSION & SPECIALIST STATEMENT

The Agricultural Impact Assessment determined that the direct impact of creating the MNWP WEF is low on agriculture, there will be no loss of high potential land, the loss of grazing land and income from this source is low.

Security and stock theft has potentially a moderately high negative impact but may increase due to access that is created by the newly constructed roads. The increase in stock theft and poaching is an existing regional problem. It is possible that the proposed mitigation measures can reduce the significance of this impact to the status quo, which is of moderately negative significance.

The impact of the development on agriculture is low and mostly during the construction phase. It is, therefore, recommended that the project be approved for implementation.

### 7.1.2 IMPACTS

The Agricultural Impact Assessment determined the following impact severities before and after mitigation.

#### CONSTRUCTION AND OPERATIONAL PHASES

Potential Impact	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
Indirect impacts of development	LOW (-)	LOW (-)
Biological impacts	LOW (-)	LOW (-)
<b>OPERATION PHASE</b>		
Loss of cultivated or high potential agricultural land	LOW (-)	LOW (-)
Loss of grazing land	LOW (-)	LOW (-)
Loss of agricultural production (yield and income)	LOW (-)	LOW (-)
Loss of agricultural resources	LOW (-)	LOW (-)

#### CUMULATIVE IMPACTS

Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
Construction Phase	LOW (-)	LOW (-)
Operation Phase	LOW (-)	LOW (-)

More detailed descriptions of the nature of the impacts can be seen at Section 9 of the Agricultural Impact Assessment.

### 7.1.3 MITIGATION MEASURES

The following mitigation measures are recommended by the Agricultural Impact Assessment:

#### ***Loss of cultivated or high potential agricultural land***

- ▲ No mitigation necessary.

#### ***Loss of grazing land***

- ▲ Compensate farmers for what is lost.
- ▲ Keep the construction period as short as possible.
- ▲ Employ dust-suppressing practices to protect adjoining grazing land.
- ▲ Protect the land against soil erosion by following guidelines of the stormwater management plan.

#### ***Loss of agricultural production (yield and income)***

- ▲ Compensate farmers for what is lost; and
- ▲ Keep the construction period as short as possible.

#### ***Loss of agricultural resources***

- ▲ Replace topsoil during rehabilitation and ensure that the soil is well fertilised and rolled;
- ▲ Protect the land against soil erosion by following guidelines of the stormwater management plan;
- ▲ Sow seed of local plants that is adapted to the climate;
- ▲ Irrigate the soil to ensure germination and establishment of the seed occurs; and

- Remove all alien plants and weeds until the natural plants are well established.

***Indirect impacts of development***

- No unauthorised individuals should be allowed to access the site without permission from the landowners and/or the developers. Theft and vandalism can be reduced by providing additional security to farmers where necessary;
- The construction period is for a short period. Discuss the possible restriction of access to farm housing or farming infrastructure like watering facilities, boreholes, etc. with the farmers and come up with solutions;
- Maintenance workers must not handle or remove any livestock or wildlife from the site or the surrounding properties; and
- Police should be notified if any illegal actions take place.

***Biological impacts***

- Keep the construction period as short as possible; and
- Employ dust reduction practices.

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## 7.2 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

<b>STUDY</b>	Terrestrial Biodiversity Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	ANIMAL SPECIES: <b>HIGH</b> and PLANT SPECIES: <b>MEDIUM</b> TERRESTRIAL BIODIVERSITY: <b>VERY HIGH</b>
<b>SPECIALIST</b>	Nicole Wienand (flora) and Elena Reljic (fauna)
<b>COMPANY</b>	CES
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.2.1 CONCLUSION & SPECIALIST STATEMENT

The Terrestrial Biodiversity Impact Assessment assessed the impacts of the proposed MNWP WEF project on terrestrial faunal, floral and biodiversity.

According to the Terrestrial Biodiversity Impact Assessment, the DFFE Screening Report identified the Terrestrial Biodiversity Theme for the proposed Newcastle WEF Complex as VERY HIGH. Similarly, and based on findings from the Terrestrial Biodiversity Assessment, which included a desktop assessment and site investigations, the overall SEI for the proposed WEF Complex is considered relatively HIGH. Specifically, vegetated areas within the project area classified as:

- ✦ Eastern Mistbelt Forest (VU; Ezemvelo KZN Wildlife 2014);
- ✦ Northern KwaZulu-Natal Moist Grassland (VU; SANBI 2021); and
- ✦ Low Escarpment Moist Grassland (LC; SANBI 2021).

**Figure 7-1 below provides a map of the two vegetation types located found at the MNWP WEF site, namely:**

Low Escarpment Moist Grassland (LC; SANBI 2021); and  
KZN Highland Thornveld



Figure 7-1: KZN Vegetation Map of the MNWP WEF site.

In terms of SEI ratings, the KZN Highland Thornveld was given a MEDIUM SEI rating. These results are based on the methodology outlined in the Species Environmental Assessment Guideline (SANBI 2020) as per the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when Applying for Environmental Authorisation (2020).

The ecologically sensitive areas identified for the proposed project form part of a mosaic of grassland and forest habitat within the Moist Escarpment Grasslands (NPAES 2010). In South Africa, moist or mesic grasslands are important biodiversity areas, and support high plant and animal species diversity (SANBI 2013). Because of their high diversity, mesic grasslands also provide diverse ecological services and functions, which:

- (a) contribute to the continued existence of floral and faunal populations, including threatened species;
- (b) improve the livelihoods of people; and
- (c) support economic growth (Carbutt & Kirkman 2022).

Despite this, they are highly transformed, and continue to be transformed by human activities such as afforestation, mining, and agriculture, and yet remain poorly conserved (SANBI 2013). For example, only 1% of Northern KZN Moist Grassland (VU) is protected and approximately 43% of it is transformed (Ezemvelo KZN Wildlife, 2011). It is important to highlight that while major and minor disturbances were observed on site, including Black Wattle stands and cattle grazing, a common species found across the different grassland types within the project area was *Themeda triandra*, which is a keystone species indicative of healthy, biodiverse grasslands (Snyman et al. 2013).

We, therefore, recommend, based on the relatively poor conservation status of mesic Grasslands in South Africa and the many anthropogenic pressures they face, the proposed WEF Complex, where feasible, should be limited to areas where the least amount of intact indigenous will be impacted by the development



footprint(s), also to preserve conditions for grassland specialist species such as the Spotted Harlequin Snake most likely occurring within the project area.

For a high SEI rating, the following guidelines must be applied:

“Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted; limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.”

Impacts associated with high sensitivity areas must be avoided, and where these can't be avoided, they must be offset. Mistbelt Forest is naturally fragmented, however together, these forest patches operate as one ecological unit. Further fragmentation, i.e., due to the proposed development, would most likely disrupt important ecological processes such as dispersal, especially for threatened species reliant on Mistbelt Forest for their survival (e.g., Cape Parrot). Therefore, these patches within the MNWP WEF boundary are considered no-go areas.

In terms of a medium SEI rating, the following applies:

“Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.”

Compared with large-scale disturbances such as mining or logging, which clear large extents of vegetation, the placement of wind turbines and associated infrastructure (e.g., roads and pylons) can be compared to a small-scale disturbance because the loss of vegetation is localised. However, in terms of the fauna, roads and hardstands associated with the proposed WEF can fragment ground dwelling faunal species that are less mobile and/or grassland specialists. Currently, the landscape matrix currently consists of a mix of semi-pristine and degraded forest and grassland habitats, some of which are threatened and/or poorly protected in KZN. In this context, the loss and/or fragmentation of indigenous vegetation within key vegetation types may contribute to the cumulative loss of ecological structure and function within the Moist Escarpment Grassland NPAES Focus Area (2010). It is important then, from a Terrestrial Biodiversity perspective, that the proposed development take into consideration these factors when deciding on the development footprint(s), to maintain ecosystem function across the matrix.

To achieve this, the specialist(s) and developer(s) involved in the proposed project must follow the mitigation hierarchy and work together to avoid, and then reduce the impacts of the proposed WEF Complex and its associated infrastructure occurring in the SEI identified in this report. If EA is granted, impacts associated with the construction phase of the proposed development must be mitigated through (1) a micro-siting assessment before construction activities take place to ground truth the vegetation, and where populations of threatened SCC are found, infrastructure must be relocated to avoid destroying populations of threatened SCC, and (2) rehabilitating vegetation.

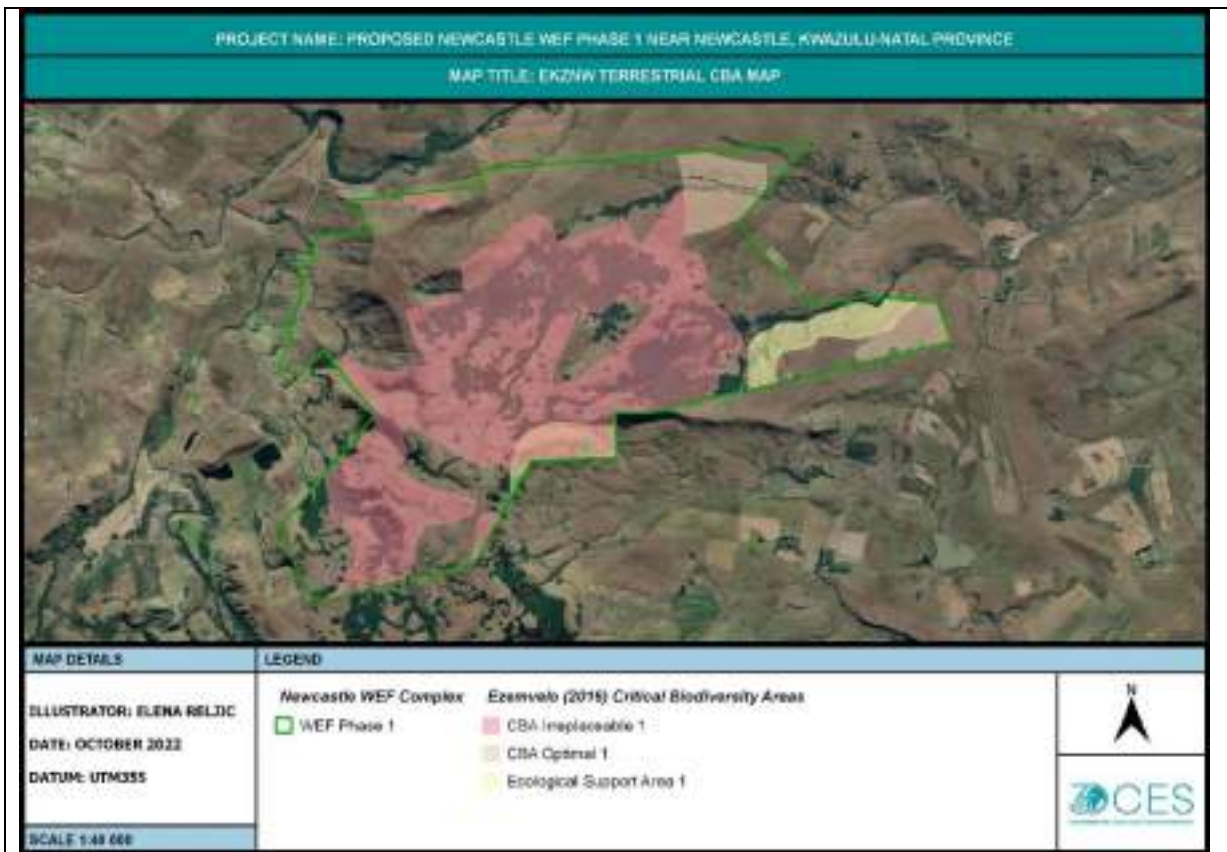


Figure 7-2 (a): EKZNW (2016) Terrestrial CBAs within MNWP WEF.

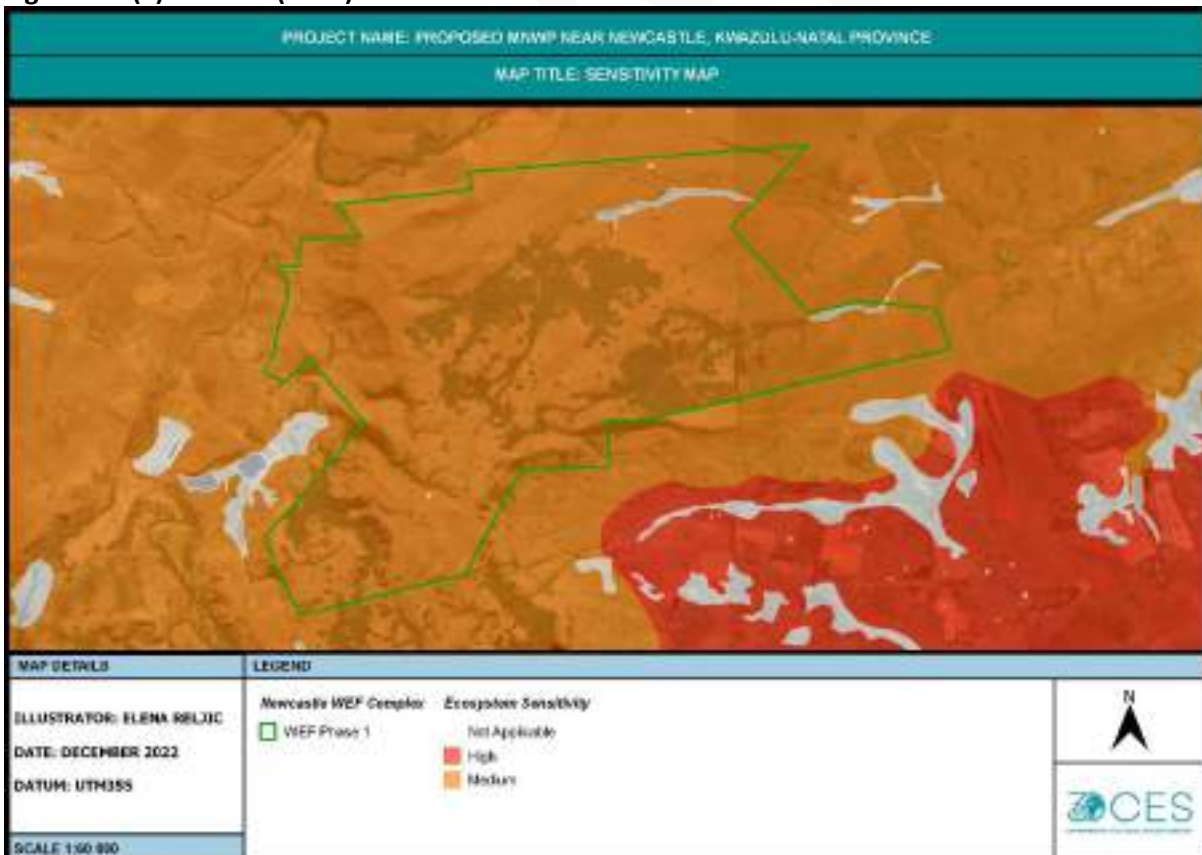


Figure 7-2 (b): Sensitivity map of the Mulilo Newcastle WEF.

In terms of the Species Environmental Assessment Guideline (SANBI, 2020), the following guidelines apply to areas with an SEI of HIGH or MEDIUM:

SEI	Interpretation in relation to proposed development activities
<b>Medium</b>	Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities
<b>High</b>	Avoidance mitigation wherever possible. Minimisation mitigation – changes to project infrastructure design to limit the amount of habitat impacted, limited development activities of low impact acceptable. Offset mitigation may be required for high impact activities.

### 7.2.2 IMPACTS

The Terrestrial Biodiversity Impact Assessment determined the following impact severities before and after mitigation.

#### **CONSTRUCTION AND OPERATIONAL PHASES**

Potential Impact	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
Loss of Low Escarpment Moist Grassland (LC)	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Loss of KwaZulu-Natal Highland Thornveld (LC)	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Loss of Southern Mist belt Forest (LC)	<b>HIGH (-)</b>	<b>LOW (-)</b>
Loss of Plant SCC	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Disturbance and/or death of herpetofauna and/or loss of habitats	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Disturbance and/or death of mammals and/or loss of habitats	<b>LOW (-)</b>	<b>LOW (-)</b>
Disturbance and/or loss of Herpetofauna SCC	<b>LOW (-)</b>	<b>LOW (-)</b>
Disturbance and/or loss of Mammal SCC	<b>LOW (-)</b>	<b>LOW (-)</b>
Compliance, compatibility, alignment with biodiversity and environmental planning tools	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Disruption of Ecosystem Function and Process	<b>MODERATE (-)</b>	<b>MODERATE (-)</b>
Establishment of Alien Plant Species	<b>MODERATE (-)</b>	<b>LOW (-)</b>
<b>OPERATIONAL PHASE</b>		
Establishment of Alien Plant Species	<b>HIGH (-)</b>	<b>LOW (-)</b>
Disturbance and/or death of faunal species	<b>MODERATE (-)</b>	<b>LOW (-)</b>

#### **CUMULATIVE IMPACTS**

The Terrestrial Biodiversity Impact Assessment determined the following cumulative impact severities before and after mitigation.

Potential cumulative impact	Significance without mitigation	Significance with mitigation
<b>CONSTRUCTION PHASE</b>		
Loss of Low Escarpment Moist Grassland (LC)	<b>MODERATE (-)</b>	<b>N/A</b>
Loss of KwaZulu-Natal Highland Thornveld (LC)	<b>LOW (-)</b>	<b>N/A</b>
Loss of Southern Mist belt Forest (LC)	<b>N/A</b>	<b>N/A</b>
Loss of Plant SCC	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Disturbance and/or death of herpetofauna and/or loss of habitats	<b>MODERATE (-)</b>	<b>N/A</b>

Potential cumulative impact	Significance without mitigation	Significance with mitigation
Disturbance and/or death of mammals and/or loss of habitats	LOW (-)	N/A
Disturbance and/or loss of Herpetofauna SCC	LOW (-)	LOW (-)
Disturbance and/or loss of Mammal SCC	LOW (-)	LOW (-)
Compliance, compatibility, alignment with biodiversity and environmental planning tools	HIGH (-)	N/A
Disruption of Ecosystem Function and Process	MODERATE (-)	N/A
Establishment of Alien Plant Species	MODERATE (-)	N/A
<b>OPERATIONAL PHASE</b>		
Establishment of Alien Plant Species	HIGH (-)	N/A
Disturbance and/or death of faunal species	MODERATE (-)	LOW (-)

More detailed descriptions of the nature of the impacts can be seen at Section 6 of the Terrestrial Biodiversity Impact Assessment.

### **7.2.3 MITIGATION MEASURES**

The following mitigation measures have been recommended by the Terrestrial Biodiversity Impact Assessment.

#### **CONSTRUCTION PHASE**

##### **Loss of Low Escarpment Moist Grassland (LC) and Loss of KwaZulu-Natal Highland Thornveld (LC)**

- The clearance of approximately 56 ha of Low Escarpment Moist Grassland vegetation must be strictly limited to that which is necessary for the construction of turbine hard stands, roads, pylons, and other project related infrastructure.
- Laydown areas and substations must be located within previously disturbed areas, such as previously cultivated lands or areas impacted by Black Wattle.
- Any impacted areas outside of the development footprint must be rehabilitated using indigenous plant species commonly occurring within Low Escarpment Moist Grassland in line with an approved Rehabilitation Management Plan.
- Permits for the removal of plant species protected in terms of the Natal Nature Conservation Ordinance (No. 15 of 1974) must be obtained prior to vegetation clearance.
- The footprint of turbine hardstands, pylons, roads, and other project related infrastructure must be micro-sited prior to construction. Should populations of threatened SCC be identified during micro-siting, the design and placement of the project components should be amended to avoid these populations.
- A permit needs to be obtained to remove any plant SCC.

##### **Loss of Southern Mist belt Forest (LC)**

- All forest patches have been delineated and declared no-go areas.
- A minimum of a 50 m no-go buffer must be established around all forest patches.
- Construction vehicles and machinery must not encroach into identified 'no-go' areas or areas outside the project footprint.

##### **Loss of Plant SCC**

- The footprint of turbine hardstands, pylons, roads, and other project related infrastructure must be micro-sited prior to construction. Should populations of threatened SCC be identified during micro-siting, the design and placement of the project components should be amended to avoid these populations. If this is not possible, permits for the removal and translocation of these populations must be obtained.



- Permits for the removal of plant species protected in terms of the Natal Nature Conservation Ordinance (No. 15 of 1974) must be obtained prior to vegetation clearance.
- Construction vehicles and machinery must not encroach into identified 'no-go' areas or areas outside the development footprint.

**Disturbance and/or death of herpetofauna and/or loss of habitats**

- It is illegal to remove or kill amphibians and reptiles within the study area listed as either Schedule I or II on the PNCO unless the relevant permit is acquired.
- All construction staff must be educated with regards to wildlife conservation, and all staff employed by the developer must ensure that any amphibians or reptiles encountered during construction of the proposed development are not harmed or killed.
- Amphibians and reptiles encountered must be allowed to move away from the construction area. In the event they need to be translocated, amphibians must be released in the same catchment areas while reptiles must be relocated to directly adjacent areas of the proposed development. No amphibian or reptile species may be removed off site without proper authorisation from the relevant authority.
- A rescue plan must be developed to protect reptiles which could fall into construction pits.
- The appointed ECO should be trained in snake handling and removal techniques.
- Any amphibian or reptile species that may die due to construction activities associated with the proposed development must be recorded (e.g., photographed and GPS coordinates taken) and reported to the appointed ECO and relevant authorities (i.e., EWT). Where needed, the carcass should be donated to SANBI.
- All individuals, including construction workers must sign a register prior to accessing the construction site.
- Construction workers must not be housed on site.
- Speed restrictions (40 km per hour is recommended) must be implemented to reduce the chance of road kills, as well as to reduce the amount of dust caused by vehicle movement along the roads.
- The construction of turbine handstands on rocky outcrops and/or permanent waterbodies must be avoided. Moreover, some amphibian species breed in temporary waterbodies, therefore it is recommended that construction activities should take place outside of the wet and rainy season.
- All reasonable and feasible measures should be implemented to reduce noise in ecologically sensitive areas.

**Disturbance and/or death of mammals and/or loss of habitats**

- It is illegal to remove or kill mammals within the study area listed as either Schedule I or II on the PNCO unless the relevant permit is acquired.
- All construction staff must be educated with regards to wildlife conservation, and all staff employed by the developer must ensure that any mammals encountered during construction of the proposed development are not harmed or killed.
- Any mammals encountered must be allowed to move away from the construction area. No mammal may be removed off site without proper authorisation from the relevant authority.
- Any mammal species that may die due to construction activities associated with the proposed development must be recorded (e.g., photographed and GPS coordinates taken) and reported to the appointed ECO and relevant authorities (i.e., EWT). Where needed, the carcass should be donated to SANBI.
- Speed restrictions (40 km per hour is recommended) must be implemented to reduce the chance of road kills, as well as to reduce the amount of dust caused by vehicle movement along the roads.
- The construction of turbine handstands on rocky outcrops and/or permanent waterbodies must be avoided.
- All reasonable and feasible measures should be implemented to reduce noise in ecologically sensitive areas.



#### **Disturbance and/or loss of Herpetofauna SCC**

- A Search and Rescue Operation should be undertaken for protected amphibian and reptile species.
- It is illegal to remove or kill any of the amphibians and reptiles within the study area that are listed as either Schedule I or II on the PNCO. Not all areas can be avoided, but it is recommended that construction staff are educated with regards to wildlife conservation and that all staff employed by the developer ensure that any amphibians or reptiles encountered are not harmed or killed.
- Amphibians or reptiles encountered must be allowed to move away from the construction area. In the event they need to be translocated, amphibians must be released in the same catchment area while reptiles must be relocated to directly adjacent areas of the proposed development. No amphibians or reptiles may be removed off site without proper authorisation from the relevant authority.
- Where possible, amphibian or reptile SCC observed on site must be recorded (photographed, GPS coordinates taken) and loaded onto iNaturalist by the appointed ECO.
- The construction of turbine handstands on permanent waterbodies must be avoided.
- A 500 m no-go buffer must be established around all wetlands.

#### **Disturbance and/or loss of Mammal SCC**

- Mammal SCC encountered must be allowed to move away from the construction area. No mammal SCC may be removed off site without proper authorisation from the relevant authority.
- All individuals, including construction workers must sign a register prior to accessing the construction area.
- Construction workers must not be housed on site.
- It is illegal to remove or kill any of the mammals within the study area that are listed as either Schedule I or II on the PNCO. Not all areas can be avoided, but it is recommended that construction staff are educated with regards to wildlife conservation and that all staff employed by the developer ensure that any mammals encountered are not harmed or killed.
- No hunting, baiting, or trapping of mammals shall be allowed within the affected properties or surrounding properties by construction staff.
- The appointed ECO should inquire and undertake an overview inspection of the site for the evidence of snares during the construction phase.
- Where possible, mammal SCC observed on site must be recorded (photographed, GPS coordinates taken) and loaded onto iNaturalist by the appointed ECO.

#### **Compliance, compatibility, alignment with biodiversity and environmental planning tools**

- Where possible, infrastructure should be placed outside of areas classified as CBA: Irreplaceable.
- Plantations of alien and invasive trees throughout the properties should be eradicated to ensure a net gain in terms of biodiversity, ecosystem function and natural condition.
- Laydown areas should be located within previously disturbed areas.
- Existing roads must be utilised as far as practically and feasibly possible.
- The footprint of turbine hardstands, pylons, roads, and other project related infrastructure must be micro-sited prior to construction. Should populations of threatened SCC be identified during micro-siting, the design and placement of the project components should be amended to avoid these populations. If this is not possible, permits for the removal and translocation of these populations must be obtained. Should translocation of threatened SCC be required, threatened SCC must be translocated within the same habitat type by a qualified botanist/horticulturalist.

#### **Disruption of Ecosystem Function and Process**

- The clearance of vegetation must be strictly limited to that which is necessary for the construction of turbine hard stands, roads, pylons, and other project related infrastructure.
- Laydown areas should be located within previously disturbed areas.
- Any impacted areas outside of the development footprint must be rehabilitated using indigenous plant species commonly occurring within vegetation types of the project area.

- Existing access roads should be utilised.

#### **Establishment of Alien Plant Species**

- The site must be checked regularly for the presence of alien invasive species.
- All alien invasive species that establish because of the proposed development must be removed and disposed of as per the Working for Water Guidelines.
- An Alien Invasive Management Plan must be compiled and implemented for Phase 1 of the proposed Newcastle WEF Complex.

#### **OPERATIONAL PHASE**

##### **Establishment of Alien Plant Species**

- The site must be checked regularly for the presence of alien invasive species. When alien invasive species are found, immediate action must be taken to remove them.
- The ECO must create a list with accompanying photographs of possible alien invasive species that could occur on site prior to construction. This photo guide must be used to determine if any alien invasive species are present.
- An Alien Invasive Management Plan must be compiled and implemented during the Operational Phase.

#### **CUMULATIVE**

It is difficult to implement mitigation measures specific to the cumulative impacts as the applicant only has jurisdiction over their development and not over other developments or farming activities in the area. However, it is imperative that the applicant implement the mitigation measures listed above for the direct impacts.

Where practical and feasible, place turbines and associated infrastructure in areas that are already to minimise cumulative loss of natural ecosystems and therefore import water source and biodiversity areas.

Further mitigation could involve eradicating alien invasive species from the properties, however, it is difficult to implement mitigation measures as the applicant only has jurisdiction over their development and not over other developments or farming activities in the area. However, this could be negotiated with the landowner.

## 7.3 AQUATIC IMPACT ASSESSMENT

<b>STUDY</b>	<b>Aquatic Impact Assessment</b>
<b>NATIONAL SCREENING TOOL</b>	<b>AQUATIC BIODIVERSITY: <b>VERY HIGH</b></b>
<b>SPECIALIST</b>	<b>Ryan Edwards</b>
<b>COMPANY</b>	<b>Verdant Consulting</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix F</b>

### 7.3.1 CONCLUSION & SPECIALIST STATEMENT

The Aquatic Impact Assessment assessed the impacts of the proposed MNWP WEF on the aquatic features of the study area including water courses and wetlands.

The infield baseline assessment of the watercourses to be impacted by the proposed development activities revealed that the study area has a high density and large abundance of watercourses that are in a good state, highly sensitive and of high ecological importance, especially associated with the higher lying mountain ridges and plateaus.

In terms of impact significance, the most significant impacts to freshwater ecosystems resulting from both activities is predicted to be the indirect erosion and sedimentation impacts of both the construction (Impacts C1-2 and C2-2) and operation (Impacts O1-2 and O2-2) of the new and upgraded watercourse road crossings and the turbine sites and access / haulage roads in close proximity to watercourses. To a lesser degree reduced water inputs of the interception of subsurface flows by access roads is also considered as part of these impacts as well. Impacts C1-2 and O1-2 were assessed as being of moderately-high significance and Impacts C2-2 and O2-2 were assessed as being of moderately-high significance, under a poor mitigation scenario. With the effective implementation of the mitigation measures provided in this report, the impact significance of Impacts C1-2, O1-2, C2-2 and O2-2 can be reduced to moderately-low and acceptable. The most important mitigation measures to implement and adhere to are the planning and design measures and the strict adherence to a detailed method statement for working in rivers and streams.

Under the realistic poor mitigation scenario, the potential water pollution impacts during the construction phase (Impacts C1-3 and C2-3) and the ecological connectivity impacts of the operation of the new and upgraded access / haulage road watercourse crossings (Impacts O1-4 and O2-4) were assessed as being of moderate significance. With the effective implementation of the mitigation measures provided in this report, the impact significance of Impacts C1-3, O1-4, C2-3 and O2-3 and can be reduced to low / moderately-low, and acceptable.

The remaining impacts were all assessed as being of low to moderately-low significance under a poor mitigation scenario due largely to the small area of physical watercourses to be directly impacted, the operational water quality impacts being negligible and the negative ecological connectivity impacts of the construction of the new / upgraded watercourse crossings being temporary in nature and short in duration. With the effective implementation of the mitigation measures provided in this report, the impact significance of these impacts can all be reduced.

Therefore, there are **no predicted fatal flaws** in terms of impacts to freshwater ecosystems and biodiversity as long as the mitigation measures provided in this report are effectively implemented.

In terms of the DWS risk matrix assessment, for both activities, (2) risks are predicted to be moderate under a good mitigation scenario, namely:

- ✦ C1-2: Indirect hydrological and geomorphological impacts.
- ✦ O1-2: Indirect hydrological and geomorphological impacts.

- ✦ C2-1: Direct impacts of watercourses crossings.
- ✦ C2-2: Indirect hydrological and geomorphological impacts.
- ✦ O2-2: Indirect hydrological and geomorphological impacts.

All remaining risks were assessed as being low. This assumes that all the mitigation measures recommended in this report will be adhered to. However, it is also assumed that even under a good mitigation scenario, approximately 10 watercourses road watercourse crossings will be required and, as such, the risks cannot be avoided.

The proposed development activities require both an Environmental Authorisation for several listed activities under the NEMA and a water use licenses under the NWA.

### **7.3.2 IMPACTS**

The Aquatic Impact Assessment determined the following impact severities before and after mitigation.

#### **CONSTRUCTION AND OPERATIONAL PHASES**

Possible Impact	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
<b>Turbines and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	MOD-LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	LOW (-)
<b>Internal access and haulage roads</b>		
Direct ecosystem destruction and modification impacts	MODERATE (-)	MOD-LOW (-)
Indirect hydrological and geomorphological impacts	MOD-HIGH (-)	MOD-LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	MOD-LOW (-)
<b>OPERATIONAL PHASE</b>		
<b>Turbines and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	LOW (-)	LOW (-)
<b>Internal access and haulage roads</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MOD-HIGH (-)	MOD-LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MODERATE (-)	MOD-LOW (-)

#### **CUMULATIVE IMPACTS**

Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
<b>Turbine and laydown areas</b>		

Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	LOW (-)	LOW (-)
<b>Internal Access and Haulage Roads</b>		
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	MOD - LOW (-)
Indirect hydrological and geomorphological impacts	MOD – HIGH (-)	MOD - LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MODERATE (-)	MOD-LOW (-)
<b>OPERATIONAL PHASE</b>		
<b>Turbine and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	MOD – LOW (-)
	MODERATE (-)	LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD – LOW (-)	LOW (-)
<b>Internal Access and Haulage Roads</b>		
Direct ecosystem destruction and modification impacts	MODERATE (-)	MOD - LOW (-)
Indirect hydrological and geomorphological impacts	MOD – HIGH (-)	MOD - LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	MOD-LOW (-)

More detailed descriptions of the nature of the impacts can be seen at Section 8 of the Aquatic Impact Assessment.

### 7.3.3 MITIGATION MEASURES

The following mitigation measures have been proposed by the Aquatic Impact Assessment.

#### PLANNING AND DESIGN

##### ***No-Go Areas for Turbine and Laydown Sites***

It is recommended that all turbines and laydown areas be located outside of the following features as shown in Figures 7-3 and 7-4 below (or Figures 50 and 51 in the Aquatic Impact Assessment report):

- All mapped watercourses; and
- 50m buffer zone to all watercourses.

According to the current plan, all turbines are located outside of the recommended 50m buffer zone, which is good environmental practice and planning.



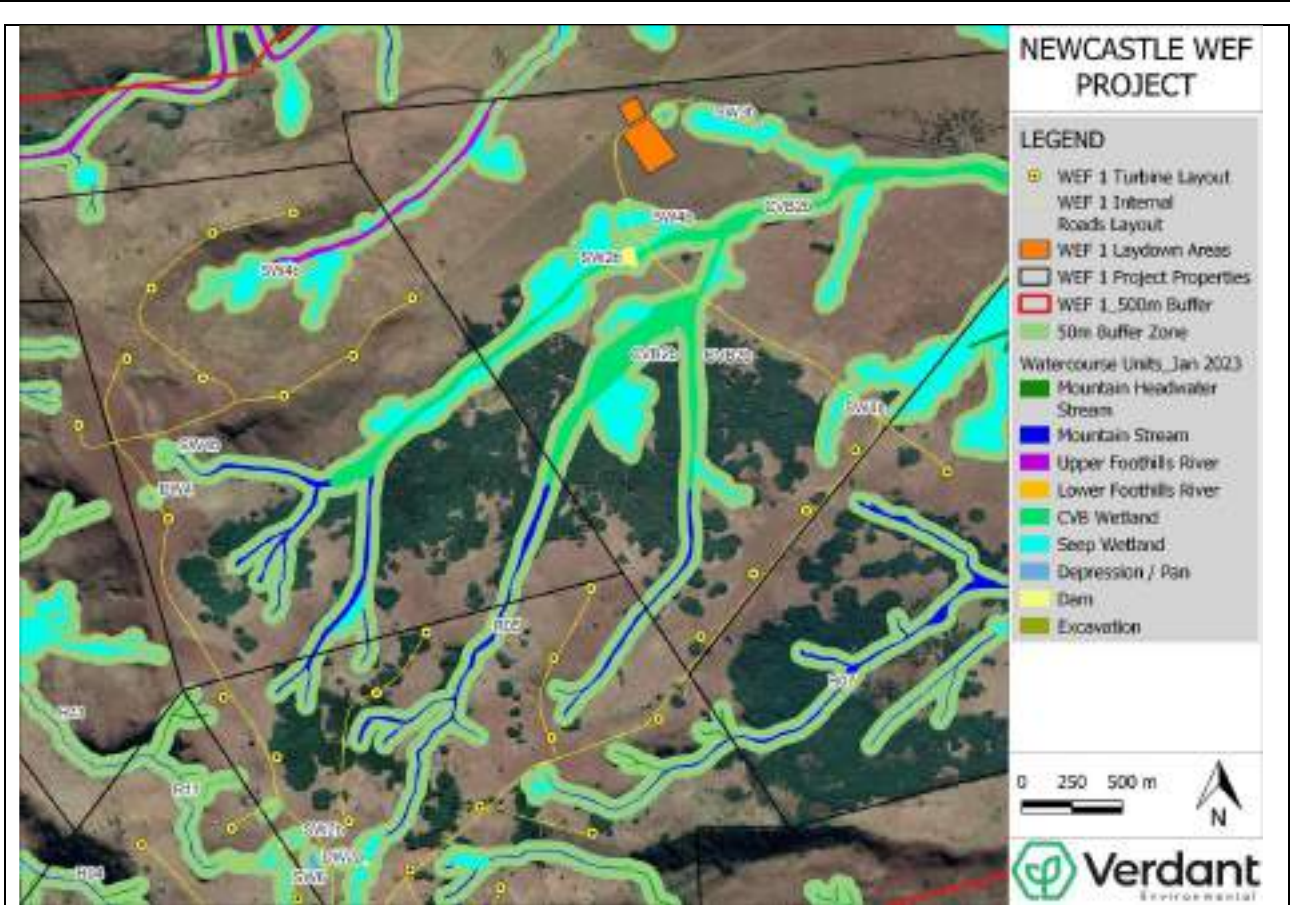


Figure 7-3. Location and extent of no-go areas i.e. watercourses and 50m buffer zones - north.

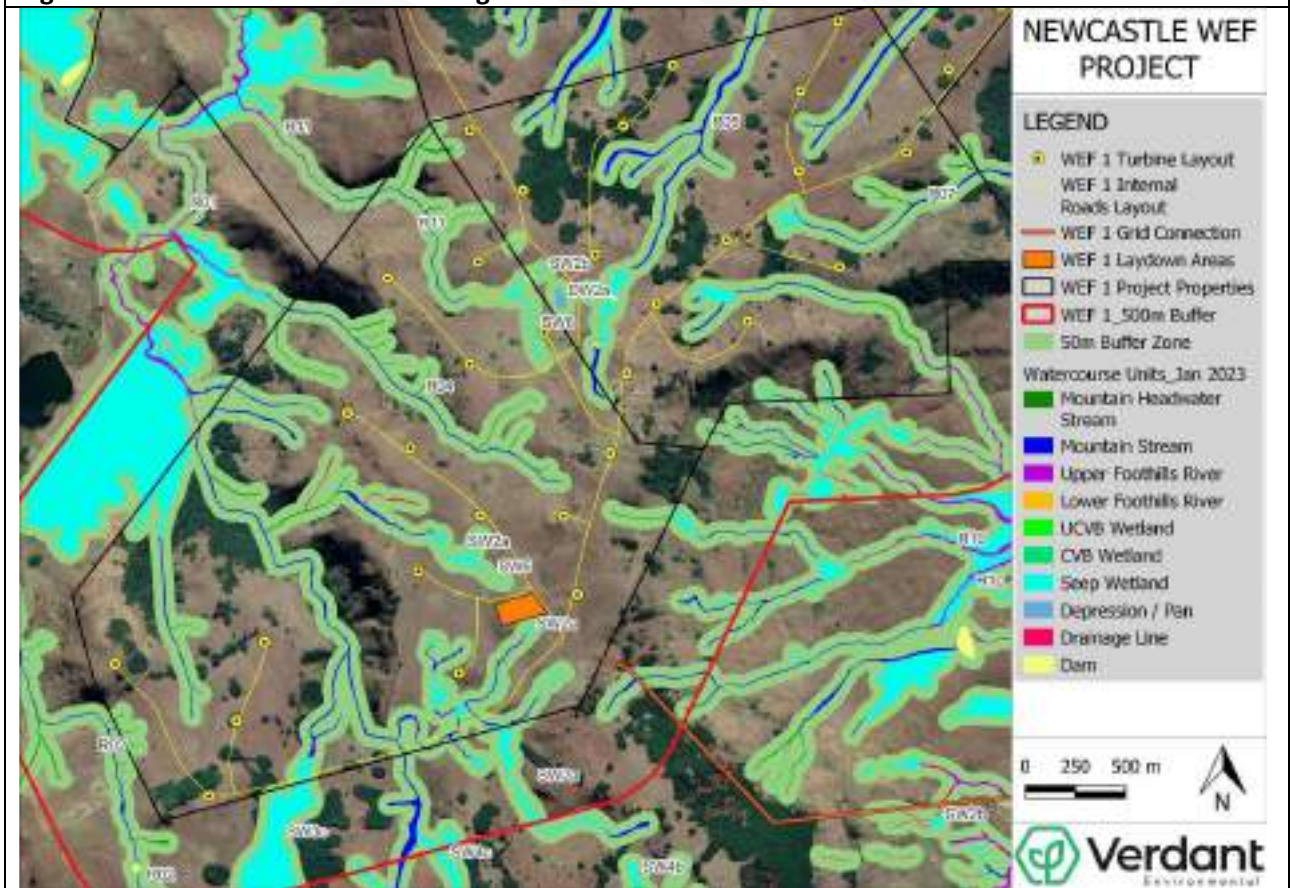


Figure 7-4: Location and extent of no-go areas i.e. watercourses and 50m buffer zones - south.

**Internal Access and Haulage Road Alignment Measures**

The following best practice planning and design measures should be investigated for inclusion into the internal road alignment and design:

- All service roads should follow the existing road network as far as practically possible.
- Where new service roads are aligned near wetlands and streams / rivers, a minimum buffer of 50m should be maintained between the wetland / riparian edge and the edge of the road as far as practically possible. This excludes where crossings are required.
- Where new wetland and stream / river crossings are required, every effort should be made to minimize the impacts by considering the following:
  - For all crossing types and designs, flow through road crossings should not be unnecessarily concentrated (or impeded) and flow velocity should not be increased. In this regard, wetland and stream / river crossings should be via box / portal culverts established across the entire width of the wetland or riparian zone to avoid flow narrowing and concentration. Open bottom box culverts should be used and they should be sized to transport not only water, but the other materials that might be mobilized (i.e. debris). Pipe culverts should be avoided.
  - Erosion protection and energy dissipation measures should be established at all road crossing outlets e.g. stilling basins and reno-mattresses.
  - All culvert inlets and outlets and associated outlet erosion protection structures must not be raised above the wetland/riparian surface and/or stream/river bed and must be established to reflect the natural downstream slope of the wetland / riparian surface and/or stream / river bed.
  - Crossing points should be aligned along areas or corridors of existing disturbance e.g. along existing informal road crossings or cattle crossing routes.
  - The length of wetlands and rivers / streams crossed at each crossing must be minimised by adjusting alignments to coincide with narrower sections and ensuring that crossings are straight and do not involve using long curves and are aligned at right angles to flow.
  - If any road fill is utilised at wetland crossings, a porous layer should be established within the road fill at the appropriate elevation to ensure that wetland interflow and overland flow is able to pass through the road fill.
- For existing watercourse crossings, every effort should be made to minimize the impacts by considering the following:
  - Undersized or under-designed pipe culverts must be replaced with sufficiently sized box or pipe culverts.
  - Erosion protection and energy dissipation measures should be established at all road crossing outlets e.g. stilling basins and reno-mattresses.
  - Every effort must be made to minimise the upgraded footprint of the existing roads at watercourse crossings.

According to the current plan, 10 watercourse crossings are proposed as shown in Figure 52 of the AIA. A summary of the details of the watercourses to be crossed at each crossing point is provided in Table 29 below.

Table 29. Summary of details of internal road watercourses crossings.



Table 29. Summary of details of internal road watercourses crossings.

No.	Type	Label	New or Existing
1	Seep Wetland	SW4b	Existing
2	Seep Wetland	SW4b	Existing
3	CVB Wetland	CVB2b	Existing
4	CVB Wetland	CVB2b	New
5	Seep Wetland	SW4b	New
6	Mountain Stream	-	New
7	Mountain Stream	-	New
8	Mountain Stream	-	New
9	Mountain Stream	-	New
10	Seep Wetland	SW3c	New

Several internal road realignments are recommended, with the following reasons provided in Table 30. The re-alignments are illustrated in Figures 54 – 57 of the AIA.

Table 30. Summary of details of recommended road re-alignments.

Table 30. Summary of details of recommended road re-alignments.

No.	Crossing No.	Reasons
1	4	Re-align along narrower section of wetland
2	n/a	Relocate outside of 50m buffer zone
3	n/a	Relocate outside of 50m buffer zone
4	6-10	Use the internal road layout / alignment of WEF 2 (with re-alignment recommendations) to avoid the crossing of sensitive mountain streams at crossings No. 6 - 10.

### **Service Road Stormwater Management**

The following road stormwater management measures are recommended:

- Stormwater generated by the upgraded and new roads should be discharged at regular intervals and many small outlets should be favoured over few large.
- Stormwater outlets must not be established within wetlands or riparian zones.
- As far as practically possible, stormwater conveyance should be via open drains rather than pipes and conveyance from the road drains to the outlets should via open drains with vegetated or rough surfaces that are armoured with erosion protection.
- All outlets must be designed to dissipate the energy of outgoing flows to levels that present a low erosion risk. In this regard, suitably designed energy for gravel roads will need to be installed at appropriate locations.
- All erosion protection measures must be established to reflect the natural slope of the surface and located at the natural ground-level.

### **CONSTRUCTION PHASE**

The following mitigation measures must be implemented in conjunction with any generic measures provided in the Environmental Management Programme (EMPr).

#### ***Demarcation of 'No-Go' areas and construction corridors***

- For all watercourses occurring within 50m of the development activities (e.g. turbine sites, access roads, powerline pylons, etc.), the outer edge of the 50m buffer zone to such watercourses must be staked out by a surveyor and demarcated using brightly coloured shade cloth. This must be completed and approved prior to the commencement of any construction activities.
- For all watercourses where activities encroach within the watercourses or buffer zones, the outer edge of the watercourses and/or remaining buffer zone must be staked out by a surveyor and demarcated using brightly coloured shade cloth. This must be completed and approved prior to the commencement of any construction activities.
- The construction corridor / footprint must be staked out by a surveyor and demarcated using brightly coloured shade cloth. The construction servitude should include the turbine footprints and working area and all new and existing access / haulage roads with a maximum 3m construction working area either side of the access/ haulage roads.
- All areas outside of the delineated construction servitude as defined above and/or the within / inside the 30m buffer zone of watercourses must be considered no-go areas for the entire construction phase. Any contractor found working within No-Go areas must be fined as per fining schedule/system setup for the project.
- The demarcation work must be signed off by the Environmental Control Officer (ECO) before any work commences.
- The demarcations are to remain until construction and rehabilitation is complete.

**Method Statements for working in watercourses**

A detailed method statement for the construction activities to be undertaken as part of establishment of new roads and/or upgrading of existing roads at watercourse crossings must be compiled and appended to the construction (EMPr) prior to construction commencing. The final method statement must be reviewed by a wetland / freshwater specialist prior to commencement and must include all measures provided in this section where relevant and applicable. The following guidelines should be included in the method statement:

**A. Wetland Crossings**

**Site Setup:**

- All demarcation measures provided in Section 7.2.1 above applicable to the demarcation of the construction corridor/servitude across the watercourse must be implemented.
- A photographic record of the state of the watercourses prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes.
- If applicable, the levels should be accurately pegged out by an engineer and the engineer should be onsite to guide the settling of the foundation.
- The location of the topsoil and subsoil stockpile areas, dewatering filtration areas and equipment laydown areas must be agreed to and demarcated to the satisfaction of the ECO prior to any clearing. These areas must be located outside of all watercourses and sufficiently removed from them that in the event of heavy rainfall, the soil will not be carried into the watercourse.
- Before any work commences in the wetland, sediment control/silt capture measures (e.g. bidim/silt curtains) must be installed downstream of the working areas within the wetland. Quantities of silt fences/curtains shall be decided on site with the engineer, contractor and ECO. The ECO should be present during the location and installation of the silt curtains.

**Site clearing and stripping:**

- Indigenous vegetation within the wetland and riparian areas that are desirable for re-vegetation must be identified upfront before clearing. This vegetation should be removed via sodding so that the sods can be replaced / replanted after the working areas are backfilled and reshaped. The plant sods should be removed taking care to remove the entire sods including root systems and rhizomes.

- For vegetation within the wetland that is not desirable for re-vegetation, this vegetation can be stripped.
- Topsoil and subsoil excavated and stripped must not be mixed and must be stored separately.

Running Track and Soil Stockpile Corridor Establishment:

- Firstly, geotextile/geofabric must be laid down along the soil stockpile corridors and running track corridors. This is to avoid the mixing of foreign material with the wetland and riparian zone soils.
- The running track must be established upstream of the road and must double up as a dam wall / berm / bund wall for flow diversion purposes.
- Where applicable, the active channel banks along the running track should be re-graded to a slope that will allow for safe access by workers to the channel bed.

Temporary flow diversion and dewatering:

- The diversion of flow away from construction works within the wetland should be done by the construction of temporary bunding to isolate compartments.
- Under no circumstances must new channels be created for flow diversion and conveyance purposes.
- The dam wall/bund wall should be established using sand bags.
- The dam should be high enough to cope with 1.5 times the nominal volume of the upstream flows.
- If pipe outlets are required, these should also be armoured against erosion using rip-rap and dump rock to reduce wetland scour.
- The dam wall must be built to specification to minimise failure/breaching and/or flow diversion around the dam that will lead to channel erosion.
- If dewatering is required, pumped water must be discharged back into the watercourses in a manner that does not cause erosion or elevated levels of sedimentation. In this regard, pumped water should be discharged into erosion control and sediment trap structure designed for such a purpose (i.e. series of silt traps or hay-bails). Such a structure should not be located near steep banks or slopes where water re-entering the watercourses could cause erosion.
- Once the working area is dry, the pump must be kept on standby.
- The location of the filtering area should be approved by the ECO.

Runoff, erosion and sediment control:

- The duration of construction work within the watercourses must be minimised as far as practically possible through proper planning and phasing.
- Construction work within the watercourses should be limited to the dry winter season wherever possible.
- When working within watercourses, downstream silt traps / curtains should be installed to capture sediment eroded from the working area prior to construction activities commencing within the watercourses. These silt traps must be regularly monitored and maintained and replaced / repaired immediately as and when required. These measures regularly checked, maintained and repaired when required to ensure that they are effective.

Rehabilitation:

- Once instream works are completed, subsoils and topsoils must be reinstated, and wetland surface including channel bed and banks reshaped.
- All surfaces must be adequately ripped/loosened where compacted, as informed by the ECO.
- The bund wall and running track within the watercourse must be removed systematically moving backwards out of the wettest areas. All foreign material (e.g. sand bags, rock fill, imported soils, aggregate, geofabric etc.) must be removed from the watercourse, taking care not to remove natural sediment/rock from the watercourse.
- The rescued sods must be replanted in wetland and an appropriate spacing as advised by a wetland ecologist, and if applicable, channel bank stabilisation and erosion protection should be applied where applicable.



- All channel banks must be protected with a biodegradable geofabric. Temporary measures to prevent soil loss on the banks must be implemented which may include laying rows of sand bags/silt fences and silt fences at the water's edge.
- If there are not enough rescued sods, the wetland must be re-vegetated by the translocation / transplanting of sods from the surrounding wetland as advised by a wetland ecologist.
- For dryland areas adjoining watercourses, the construction right-of-way should be re-vegetated by hydroseeding with a locally suitable grass mix that must be approved by the ECO or wetland specialist / ecologist.
- The re-vegetation should be timed to occur before the wet season (ideally at the onset of the wet season in early spring – August to October) so that watering requirements are minimized and plant growth is most vigorous.
- Watering should be gentle so that rill erosion is avoided and minimised.
- Any erosion damage resulting from watering/irrigation must be repaired immediately.
- Alien and weed vegetation that colonize the rehabilitation areas must be removed and eradicated immediately via hand pulling and should be adequately disposed of.
- Once the initial re-vegetation is completed, the planting contractor will need to conduct weekly site visits to remove alien plants (in accordance with the latest revised NEMBA requirements) and address any re-vegetation concerns until re-vegetation is considered successful (i.e. >90% indigenous cover). Thereafter, the rehabilitation must be signed off by the ECO.

***Runoff, erosion and sediment control***

- Wherever possible, existing vegetation cover on the development site should be maintained during the construction phase. The unnecessary removal of groundcover from slopes must be prevented, especially on steep slopes which will not be developed.
- Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected, clearing activities should be put on hold. In this regard, the contractor must be aware of weather forecasts.
- Sediment barriers (e.g.: silt fences/sandbags/hay bales) must be installed immediately downstream of active work areas (including soil stockpiles) as necessary to trap any excessive sediments generated during construction.
- All bare slopes and surfaces to be exposed to the elements during clearing and earthworks must be protected against erosion using rows of hay-bales, sandbags and/or silt fences aligned along the contours and spaced at regular intervals (e.g. every 2m) to break the energy of surface flows.
- Once shaped, all exposed/bare surfaces and embankments must be re-vegetated immediately.
- If re-vegetation of exposed surfaces cannot be established immediately due to phasing issues, temporary erosion and sediment control measures must be maintained until such a time that re-vegetation can commence.
- All temporary erosion and sediment control measures must be monitored for the duration of the construction phase and repaired immediately when damaged. All temporary erosion and sediment control structures must only be removed once vegetation cover has successfully recolonised the affected areas.
- After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gullies must be filled-in with appropriate material and silt fences or fascine work must be established along the gully for additional protection until vegetation has recolonised the rehabilitated area.
- Regular maintenance of any sediment control dams must be undertaken during the construction / establishment period to ensure that these structures continue to function appropriately.

***Hazardous substances / materials management***

- The proper storage and handling of hazardous substances (e.g. fuel, oil, cement, etc.) needs to be administered.

- Mixing and/or decanting of all chemicals and hazardous substances must take place on a tray, shutter boards or on an impermeable surface and must be protected from the ingress and egress of stormwater.
- Drip trays should be utilised at all dispensing areas.
- No refuelling, servicing or chemical storage should occur within 30m of any watercourse.
- No vehicles transporting concrete, asphalt or any other bituminous product may be washed on site.
- Vehicle maintenance should not take place on site unless a specific bunded area is constructed for such a purpose.
- Hazardous storage and refuelling areas must be bunded prior to their use on site during the construction period following the appropriate SANS codes. The bund wall should be high enough to contain at least 110% of any stored volume. The surface of the bunded surface should be graded to the centre so that spillage may be collected and satisfactorily disposed of.
- All necessary equipment for dealing with spills of fuels/chemicals must be available at the site. Spills must be cleaned up immediately and contaminated soil/material disposed of appropriately at a registered site.
- Contaminated water containing fuel, oil or other hazardous substances must never be released into the environment. It must be disposed of at a registered hazardous landfill site.
- Spills must be cleaned up immediately and contaminated soil/material disposed of appropriately at a registered site.

#### ***Invasive Alien Plant control***

- All alien invasive vegetation that colonise the construction site must be removed, preferably by uprooting. The contractor should consult the ECO regarding the method of removal.
- All bare surfaces across the construction site must be checked for IAPs every two weeks and IAPs removed by hand pulling/uprooting and adequately disposed.
- Herbicides should be utilised where hand pulling/uprooting is not possible. ONLY herbicides which have been certified safe for use in wetlands by independent testing authority are to be used. The ECO must be consulted in this regard. The herbicide contractor must be certified to apply/utilise the herbicide in question.

#### ***Noise, dust and light pollution minimisation***

- Temporary noise pollution due to construction works should be minimized by ensuring the proper maintenance of equipment and vehicles and tuning of engines and mufflers as well as employing low noise equipment where possible.
- Water trucks will be required to suppress dust by spraying water on affected areas producing dust. This will likely be required daily in the drier months or during dry periods.
- No lights must be established within the construction area near the watercourses and buffer zones.

#### ***Prohibitions related to animals***

- The handling and/or killing of any animal species present is strictly prohibited and all staff/personnel must be notified of such incidents.
- Wetland fauna (e.g. snakes, frogs, small mammals) that are encountered during the construction phase must be relocated to other parts of the wetland under the guidance of the EO or ECO.
- Poaching/snaring is strictly prohibited.

#### ***General rehabilitation guidelines***

- All disturbed areas beyond the construction site that are intentionally or accidentally disturbed during the construction phase must be rehabilitated immediately to the satisfaction of the ECO.
- All land impacted by the proposed development must be rehabilitated by undertaking the following general tasks:
  - All foreign material must be removed from site.

- Land must be regraded / re-shaped and topsoils must be reinstated.
- Compacted soils must be adequately ripped/loosened where compacted, as informed by the ECO.
- Re-vegetation should take place as follows:
- For any permanently and seasonally saturated areas - via translocation / transplanting of resecured sods and, where there are not enough rescued sods, via the translocation / transplanting of sods from the surrounding wetland as advised a wetland ecologist.
- For temporary and dryland areas - via hydroseeding using an appropriate indigenous seed mix as advised by a qualified ecologist.

**Construction phase monitoring measures**

- Compliance monitoring will be the responsibility of a suitably qualified/trained ECO (Environmental Control Officer) with any additional supporting EO's (Environmental Officers) having the required competency skills and experience to ensure that monitoring is undertaken effectively and appropriately.
- A photographic record of the state of the onsite wetlands prior to the commencement of clearing/construction must be kept for reference and rehabilitation monitoring purposes.
- The ECO must undertake bi-monthly compliance monitoring audits. Freshwater ecosystem aspects that must be monitored related to monitoring freshwater ecosystem impacts include:
  - The condition of the demarcation fence.
  - Evidence of any no-go area incursions.
  - The condition of the temporary runoff, erosion and sediment control measures and evidence of any failures.
  - Evidence of sedimentary deposits / plumes and elevated rates of sedimentation (i.e. vegetation smothering / burial).
  - Evidence of elevated river / stream turbidity levels.
  - Evidence of gully or bed/bank erosion.
  - Visual assessment of stormwater quality and instream water quality.
  - The condition of waste bins and the presence of litter within the working area.
  - Evidence of solid waste within the no-go areas.
  - Evidence of hazardous materials spills and soil contamination.
  - Presence of alien invasive and weedy vegetation within the working area.
  - Rehabilitation and re-vegetation methods and success.
- Once the construction and rehabilitation has been completed, the ECO should conduct a close out site audit 1 month after the completion of rehabilitation.

**OPERATIONAL PHASE**

***Maintenance and management***

- It is the applicant's responsibility to ensure the proper functioning of infrastructure that is likely to require regular on-going maintenance. This includes the stormwater management infrastructure and road infrastructure.
- It is important that the location and extent of the rivers and wetlands in the vicinity of project activities be incorporated into all formal maintenance and repair plans for the project.
- In terms of management, alien invasive plant control must be practiced on an on-going basis in line with the requirements of Section 2(2) and Section 3 (2) the National Environmental Management: Biodiversity Act (NEM:BA), which obligates the landowner/developer to control IAPs on their property.

***Monitoring***

It will be important that long-term monitoring of the potential freshwater ecosystem impacts be undertaken to proactively to identify any environmental issues and impacts that may arise as a result of the operational phase of the project. The following key aspects should be monitored:

- Erosion and/or sedimentation in the onsite and downstream wetlands;
- Water table monitoring to determine any impacts to subsurface inputs; and
- Presence of alien invasive plants.

***Remediation / Rehabilitation***

Where appreciable direct vegetation/habitat impacts and/or indirect erosion/sedimentation impacts or hydrological impacts occur resulting from project activities, these must be reported immediately to the relevant environmental authorities, and an independent aquatic or wetland specialist appointed to conduct a site inspection to assess the residual impacts and determine the need for any onsite remediation or rehabilitation requirements. Following this assessment, an implementable remediation and/or wetland rehabilitation plan may need to be compiled and implemented to the satisfaction of KZN EDTEA and DWS.

DRAFT

## 7.4 AVIFAUNAL IMPACT ASSESSMENT

STUDY	Avifaunal Impact Assessment
NATIONAL SCREENING TOOL	AVIAN: <b>LOW</b>
SPECIALIST	Dr Owen Davies
COMPANY	Arcus Consulting
QUALIFICATIONS	Specialist Declaration and CV, Appendix F

### 7.4.1 CONCLUSION & SPECIALIST STATEMENT

The Avifaunal Impact Assessment determined that overall, the proposed MNWF WEF site has a lower avifaunal sensitivity than anticipated during the initial desktop study and scoping phase. No active Verreaux's Eagle or Martial Eagle territories were evident by the nest- or flight activity surveys, and smaller passerine species such as Botha's Lark, Rudd's Lark and Yellow-breasted Pipit were not observed across the site. The majority of the thicket/woodland areas are invaded by dense stands of alien woody vegetation, including the drainage lines and habitats could be improved through an alien eradication programme across the site. Similarly, the upgrade of roads to appropriate flow control measures would reduce the existing levels of erosion and habitat degradation.

The mitigation of potential impacts is relatively easy to implement and likely to be highly effective at reducing the risk to habitats and avifauna. For example, the potential alteration of flow/infiltration regimes can be mitigated through avoidance of placing hard surfaces near sensitive aquatic features and use of appropriate flow control measures where required. The low overall SCC passage rates indicate that collisions can be mitigated through a combination of blade painting and shut down-on-demand. The latter need only be implemented if significant impacts are observed during operational monitoring. This requirement in areas of Medium Avifaunal Sensitivity is not considered a primary mitigation measure (as avoidance mitigation has been applied), but rather a complimentary measure likely to be effective to reduce the risk for both resident birds (e.g. Southern Bald Ibis and Jackal Buzzard), as well as any less frequent incursions by flocking species onto the site (e.g. Amur Falcon and Cape Vulture), should they occur.

Based on the desktop study, reconnaissance study and results of the pre-application avifaunal monitoring programme conducted for the MNWP WEF and associated infrastructure (including cumulative impacts), it is the avifaunal specialist's informed opinion that the proposed development will **not likely have a significant negative impact** on the viability or persistence of avifaunal populations (particularly avifaunal SCCs) in the area should the mitigation and monitoring measures included in this report be implemented. The indicative positions of all 45 WTGs provided in the layout are acceptable.

The encroachment of woody alien invasive species across the site should be managed through an alien plant removal and eradication programme to restore local avifaunal grassland habitats and functionality.



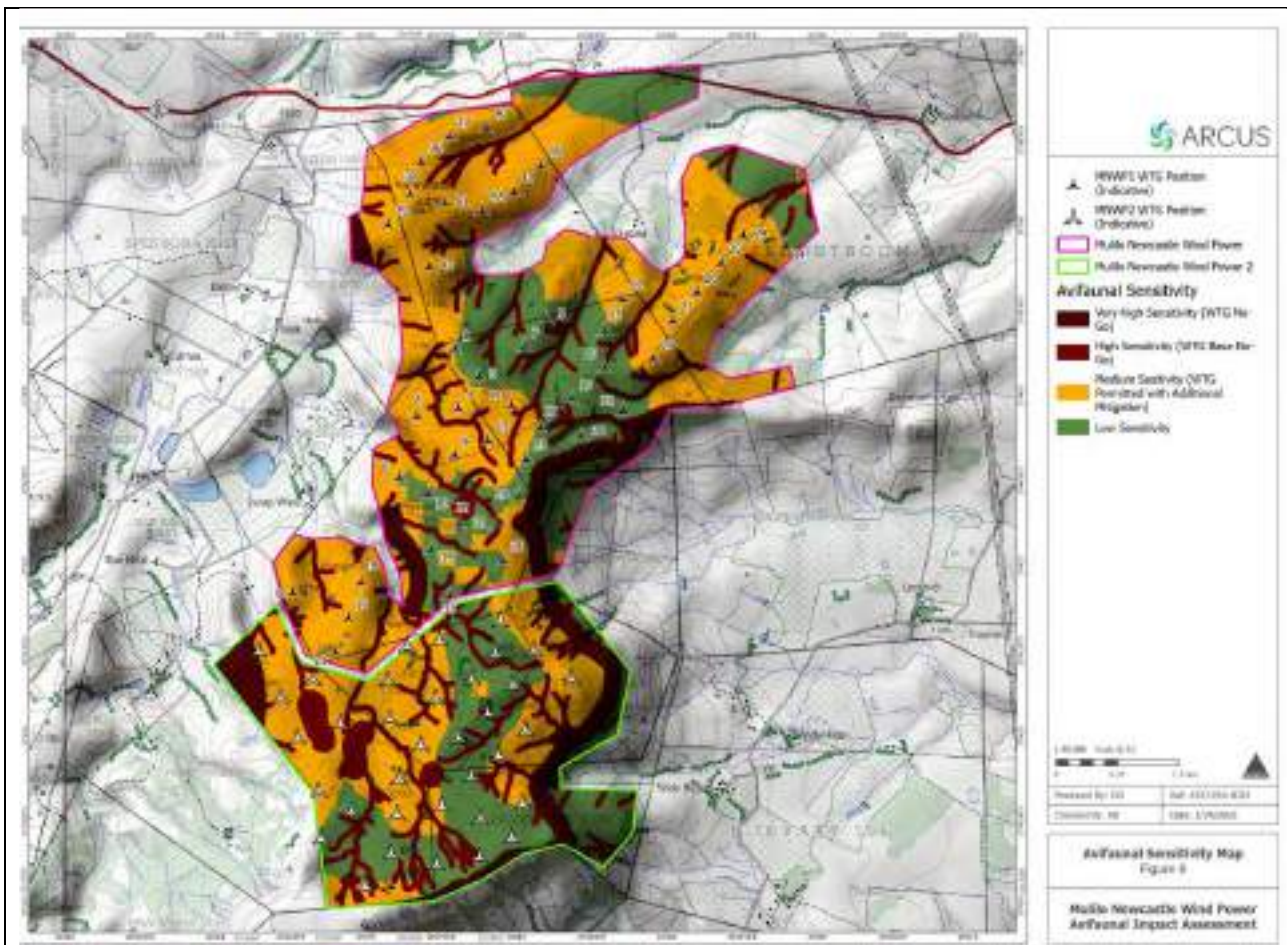


Figure 7-5: MNWP WEF avifaunal sensitivity map.

### 7.4.2 IMPACTS

The Avifaunal Impact Assessment determined that the following impact severities before and after mitigation.

#### CONSTRUCTION AND OPERATIONAL PHASES

Potential Impacts	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
Direct habitat destruction	LOW (-)	LOW (-)
Disturbance and displacement	LOW (-)	LOW (-)
Direct mortality	LOW (-)	LOW (-)
<b>OPERATIONAL PHASE</b>		
Direct habitat destruction	MODERATE (-)	LOW (-)
Disturbance and displacement	LOW (-)	LOW (-)
Direct Mortality – Collision with Infrastructure	MODERATE (-)	LOW (-)
Direct Mortality – Electrocutation	LOW (-)	LOW (-)

#### CUMULATIVE IMPACTS

Potential Impacts	Significance	Significance
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	<b>before mitigation</b>	<b>after mitigation</b>
<b>OPERATIONAL PHASE</b>		
Cumulative impacts on avifaunal habitat, Displacement and direct mortality	<b>LOW (-)</b>	<b>LOW (-)</b>

More detailed descriptions of the nature of the impacts can be seen at Section 4 of the Avifaunal Impact Assessment.

### **7.4.3 MITIGATION MEASURES**

The following mitigation measures have been recommended by the Avifaunal Impact Assessment:

#### **CONSTRUCTION PHASE**

##### ***Direct habitat destruction***

- Infrastructure to avoid Very High Sensitivity areas, linear infrastructure permitted;
- The footprint within High Sensitivity areas must be minimized and avoided wherever possible;
- Laydown and other temporary infrastructure to be placed within Low or Medium sensitivity areas, preferably previously transformed areas, wherever possible;
- Appropriate run-off and erosion control measures must be implemented where required;
- A site-specific environmental management programme (EMPr) must be developed and implemented. The EMPr must give appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction of habitat (e.g. no open fires outside of designated areas);
- All contractors are to adhere to the EMPr and must apply good environmental practice during construction;
- All hazardous materials must be stored in the appropriate manner to prevent contamination of the site and downstream environments. Any accidental chemical, fuel and oil spills that occur at the site must be cleared as appropriate for the nature of the spill;
- Existing roads and farm tracks must be used where possible;
- The minimum footprint areas of infrastructure must be used wherever possible, including road widths and lengths;
- No off-road driving must be permitted in areas not identified for clearing;
- An Environmental Site Officer (ESO) must form part of the on-site team to ensure that the EMPr is implemented and enforced and an Environmental Control Officer (ECO) must be appointed to oversee the implementation activities and monitor compliance for the duration of the construction phase; and
- Following construction, rehabilitation of areas disturbed by temporary laydown areas and facilities must be undertaken.

##### ***Disturbance and displacement***

- A site specific EMPr must be developed and implemented. The EMPr must give appropriate and detailed description of how construction activities must be conducted;
- All contractors are to adhere to the EMPr and must apply good environmental practice during construction;
- The ECO must oversee activities and ensure that the site specific EMPr is implemented and enforced;
- Maximum use of existing access road and servitudes;
- Existing and novel access roads are to be suitably upgraded or constructed to prevent damage and erosion resulting from increased vehicular traffic and construction vehicles;
- No off-road driving in undesignated areas;
- Speed limits (50 km/h) must be strictly enforced on site to reduce unnecessary noise;

- Construction camps must be lit with as little light as practically possible, with the lights directed downwards where appropriate;
- The movement of construction personnel must be restricted to the construction areas on the project site;
- No dogs or cats other than those of the landowners must be allowed on site;
- The appointed ECO must be trained to identify the potential Red Data species, as well as the signs that indicate possible breeding by these species;
- The ECO must during audits/site visits make a concerted effort to look out for such breeding activities of SCCs (e.g. cranes, Secretarybird). Additional efforts must include the training of construction staff (e.g. in Toolbox talks) to identify Red Data species, followed by regular questioning of staff as to the regular whereabouts on site of these species; and
- If any avifaunal SCCs are confirmed to be breeding (e.g. if a nest site is found), construction activities within 500 m of the breeding site must cease, and an avifaunal specialist is to be contacted immediately for further assessment of the situation and instruction on how to proceed.

***Direct mortality***

- Maximum use of existing access road and servitudes;
- No off-road driving in undesignated areas;
- Speed limits (50 km/h) must be strictly enforced on site to reduce probability of vehicle collisions;
- The movement of construction personnel must be restricted to the construction areas on the project site;
- No dogs or cats other than those of the landowners must be allowed on site;
- Any holes dug e.g. for foundations of pylons must not be left open for extended periods of time to prevent entrapment by ground dwelling avifauna or their young and only be dug when required and filled in soon thereafter;
- Temporary fencing must be suitably constructed, e.g. if double layers of fencing are required for security purposes, they must be positioned at least 2 m apart to reduce the probability of entrapment by larger bodied species that may find themselves between the two fences; and
- Roadkill must be reported to the ECO and removed as soon as possible.

**OPERATIONAL PHASE**

***Direct habitat destruction***

- Flow- and erosion control measures must be implemented where appropriate to reduce uncontrolled runoff from hard surfaces;
- Infrastructure must be designed in a manner that is compatible with the continuation of burn regimes implemented in the surrounding grasslands;
- No open fires are to be permitted outside of designated areas; and
- The operational EMPr must be developed and implemented and should include site specific measures for the effective management and treatment of any wastewater to be produced by the project.

***Disturbance and displacement***

- A site specific operational EMPr must be developed and implemented, which gives appropriate and detailed description of how operational and maintenance activities must be conducted to reduce unnecessary disturbance;
- All contractors are to adhere to the EMPr and must apply good environmental practice during all operations; and
- Operational phase bird monitoring, in line with the latest available guidelines, must be implemented.

***Direct Mortality – Collision with Infrastructure***

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- WTGs must not be constructed within any designated Very High Sensitivity (WTG no-go) areas;
- Additional mitigation (as detailed below) must be implemented for WTGs placed within High and Medium sensitivity areas;
- Blade painting (contingent on approval by the Civil Aviation Authority) or similar technology must be implemented for all WTGs that are positioned within or encroach on High and Medium Sensitivity areas;
- Shut down-on-demand may need to be implemented if significant impacts are observed during operational monitoring;
- Internal power lines must be buried wherever technically feasible;
- Appropriate (approved) Bird Flight Diverters (BFDs) must be affixed to the entire length of novel overhead power lines (in all sensitivity categories);
- If one or more avifaunal SCC carcasses are located and determined likely to have resulted from collisions with infrastructure in any sensitivity area over the lifespan of the facility, the fatality is to be appropriately recorded and reported to an avifaunal specialist to determine the most appropriate action;
- If double layers of fencing are required for security purposes, they should be positioned at least 2m apart to reduce the probability of entrapment by larger bodied species that may find themselves between the two fences;
- Develop and implement a carcass search and bird activity monitoring programme in-line with the latest applicable guidelines;
- Regular reviews of operational phase monitoring data (activity and carcass) and results to be conducted by an avifaunal specialist;
- The above reviews should strive to identify sensitive locations including WTGs and areas of increased collisions that may require additional mitigation;
- An operational monitoring programme for any novel overhead power lines must be implemented to locate potential collision fatalities; and
- Any fatalities located must be reported to Birdlife South Africa (BLSA) and the Endangered Wildlife Trust (EWT).

#### ***Direct Mortality – Electrocutation***

- Internal power lines should be buried wherever possible;
- All new overhead power line pylons must be of a design that minimizes electrocution risk. This can be achieved by using adequately insulated ‘bird friendly’ structures, with sufficient clearances between live components; and
- An operational monitoring programme for the overhead power line route must be implemented to locate potential collision fatalities.

#### **CUMULATIVE IMPACTS**

Cumulative impacts on avifaunal habitat, displacement and direct mortality

- All appropriate mitigation measures listed above should be implemented;
- The project should collaborate with other developments (current and proposed) in the broader project area. Companies in the area should share lessons learnt, align strategies and agree coordinated approaches to responding to environmental issues;
- A data sharing agreement should be setup with other wind farm projects in the region to share operational monitoring data. Data should be shared with regulators and interested stakeholders to allow cumulative impacts to be documented and to inform adaptive operational management; and
- Implement an alien woody plant removal and eradication programme to restore currently degraded grassland and aquatic habitats.

## 7.5 BAT IMPACT ASSESSMENT

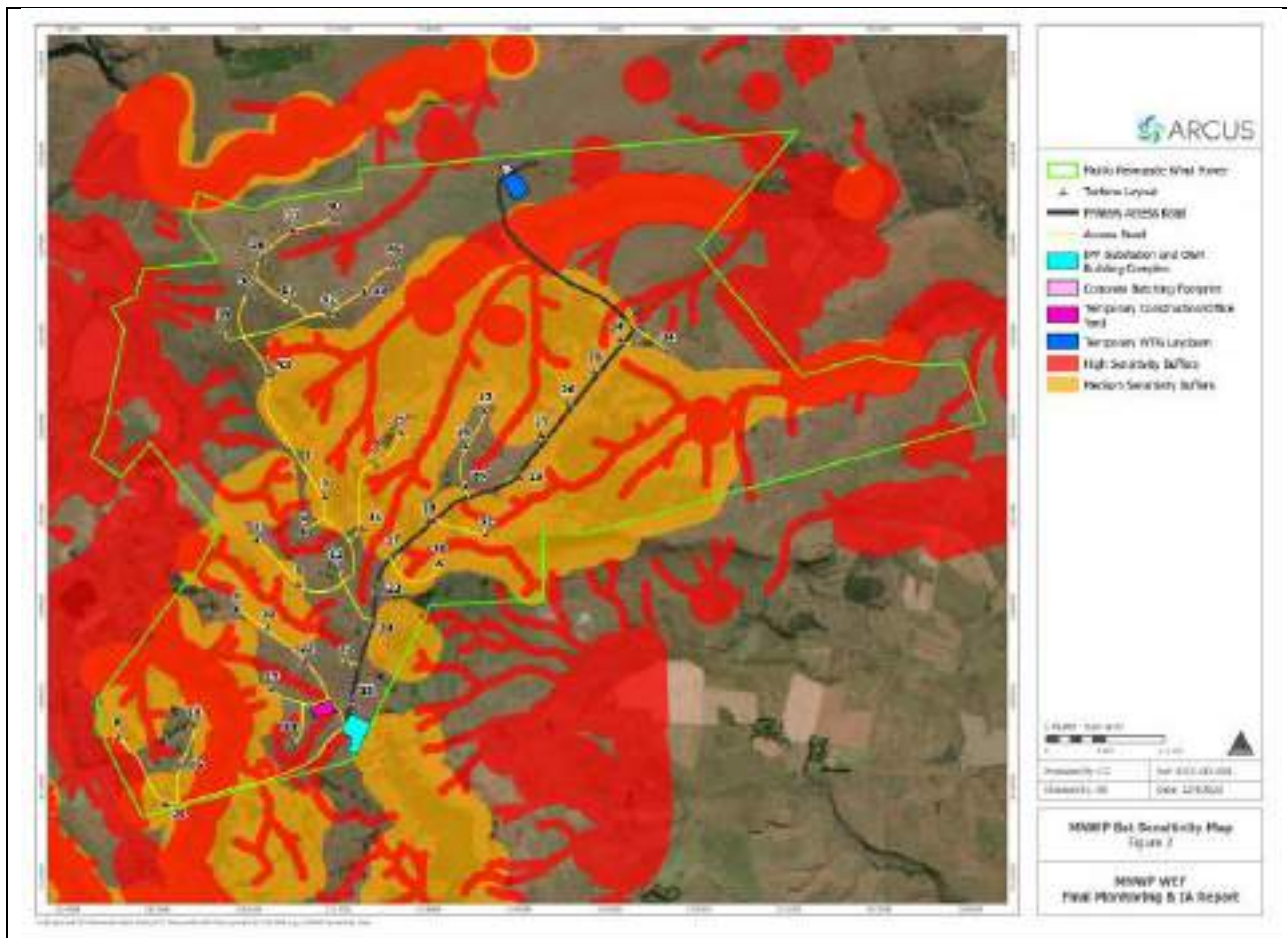
<b>STUDY</b>	<b>Bat Impact Assessment</b>
<b>NATIONAL SCREENING TOOL</b>	<b>BATS: HIGH</b>
<b>SPECIALIST</b>	<b>Craig Campbell</b>
<b>COMPANY</b>	<b>Arcus Consulting</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix F</b>

### 7.5.1 CONCLUSION & SPECIALIST STATEMENT

The Bat Impact Assessment determined that bat activity at the proposed MNWP WEF was generally moderate overall, throughout the duration of the full bat monitoring campaign. The site did, however, have periods of high risk to bats, particularly during parts of the spring season. Activity was generally higher during spring and summer. Free-tailed bats are likely to face the highest risk of impacts at the proposed site due to their prevalence. Sensitive design and mitigation will be needed to reduce risk to these (and other) bats.

With regards to bat mortality, it can be highlighted that all high sensitive areas (including those used by bats for foraging, roosting and commuting) defined for the MNWP WEF (Figure 7-6) must be avoided from turbine placement (inclusive of the full blade length). Medium sensitive areas should be avoided as far as possible (inclusive of the full blade length). If not possible to avoid, then turbines may be sited in these areas, provided that the features (associated with medium sensitivity buffers) are removed. If these features are not removed, then strict minimisation measures (such as wind turbine curtailment and/or acoustic deterrence mechanisms) must be implemented as soon as the first turbine has been erected and starts spinning. All associated infrastructures (i.e. laydown areas, construction camps, O&M buildings etc.) are permitted to be placed in high and medium sensitive areas, provided that all construction, operational and decommissioning activities adhere to the mitigation measures defined in the Bat Impact Assessment.





**Figure 7-6: Bat sensitivity map for the proposed MNWP WEF.**

It is recommended for the choice of turbine design, inclusive of the hub height and rotor diameter, to be carefully chosen to reduce potential interactions between bats and turbine blades, as far as possible. The hub-height should preferably be maximised with the height of the lowest possible blade tip being raised above the ground, as far as possible, as turbines with a lower ground clearance run the risk of reaching the fatality thresholds sooner.

Blade feathering should be implemented from the start of operation, as this mitigation has no impact on energy production. Curtailment and acoustic deterrents are the remaining mitigation measures to reduce residual impacts to bats during operation and must be continuously refined and adapted based on incoming bat fatality data. The need for curtailment and/or deterrents to address residual impacts will only be determined during operations, following analysis of the operational phase monitoring results by the project bat specialist. A suitable curtailment plan with relevant parameters must be drawn up at the time that the requirement becomes necessary. It is considered mandatory for the MNWP WEF to undertake a suitable operational phase bat monitoring programme, by an appropriately qualified bat specialist, particularly in the first two years of project operation.

Thereafter, this monitoring programme must be repeated in the fifth year, and every five years thereafter – for the lifespan of the facility. All monitoring must be undertaken in accordance with the most relevant/recent operational phase bat monitoring and threshold guidelines available at the time.

The data suggests that there could be a risk to bats posed by the MNWP WEF, particularly during spring and summer. At this stage, however, with the information gathered to date from the full bat pre-construction monitoring campaign, the development of the proposed MNWP WEF and its associated infrastructures is not

expected to cause irreplaceable loss to bat biodiversity on site, provided that the above considerations are met. The application process may therefore proceed onto submission for environmental authorisation.

### **7.5.2 IMPACTS**

The Bat Impact Assessment determined that the following impact severities of the MNWP WEF before and after mitigation. The detailed nature of the impacts is described in the Impact Assessment report.

#### **CONSTRUCTION AND OPERATIONAL PHASES**

Possible impact	Severity before mitigation	Severity before mitigation
<b>CONSTRUCTION PHASE</b>		
Habitat modification	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Disturbance/Displacement	<b>MODERATE (-)</b>	<b>LOW (-)</b>
<b>OPERATIONAL PHASE</b>		
Mortality due to wind Turbine collision and/or barotrauma	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Disturbance/Displacement	<b>MODERATE (-)</b>	<b>LOW (-)</b>
<b>DECOMMISSIONING</b>		
Disturbance/Displacement	<b>MODERATE (-)</b>	<b>LOW (-)</b>

#### **CUMULATIVE IMPACTS**

Possible impact	Severity before mitigation	Severity before mitigation
<b>OPERATIONAL PHASE</b>		
Bat Fatality Impacts on a cumulative scale during the Operational Phase.	<b>HIGH (-)</b>	<b>MODERATE (-)</b>

More detailed descriptions of the nature of the impacts can be seen at Section 4 of the Bat Impact Assessment.

### **7.5.3 MITIGATION MEASURES**

The following mitigation measures have been recommended by the Bat Impact Assessment.

#### **CONSTRUCTION PHASE**

##### ***Habitat modification***

- The removal of vegetation and manmade buildings should be avoided in all high sensitive areas, as far as possible, and reduced across the project site in all other areas.

##### ***Disturbance/Displacement***

- Limit construction activities to daylight hours.
- Avoid all construction activities within potential roosting habitats, if identified at the time when construction activities (for wind turbines and associated infrastructures) take place. Although no confirmed roosts have been identified on site to date, it is recommended for a final specialist site walk-through to take place prior to construction to confirm this.

#### **OPERATIONAL PHASE**

***Mortality due to wind turbine collision and/or barotrauma***

- Implement blade feathering (up to the manufacturers cut-in speed) as soon as operation begins, to prevent freewheeling.
- The placement of all turbines, as well as their full blade length, should avoid high sensitivity areas.
- The placement of all turbines, as well as their full blade length, should avoid medium sensitivity areas, as far as possible. However, if unavoidable, then the associated features should be removed prior to turbines becoming operational. Should these features not be removed, then strict minimisation techniques (i.e. turbine curtailment and/or acoustic deterrence mechanisms) are to be implemented as soon as the first turbine starts spinning.
- If residual impacts reach the threshold limit (at any wind turbine), then appropriate minimisation measures are to be implemented (turbine curtailment and/or acoustic deterrence mechanisms).
- Lighting at the project should be kept to a minimum at all associated infrastructures. Appropriate types of lighting are to be used to avoid attracting insects, and hence, bats. This includes downward facing low pressure.

***Disturbance/Displacement***

- Limit operational and maintenance activities to daylight hours.
- Avoid all operational and maintenance activities for wind turbines and associated infrastructures within potential bat roosting habitats.
- Although no confirmed bat roosts have been identified on site to date, it is recommended that a suitably qualified bat specialist (appointed to conduct the operational phase bat monitoring programme) is to further advise on refining these recommendations as new information becomes available, during the project's operational phase.

**DECOMMISSIONING**

***Disturbance/Displacement***

- Limit decommissioning activities to daylight hours.
- Avoid all decommissioning activities within potential roosting habitats, if identified during the projects' operational phase bat monitoring campaign, when decommissioning wind turbines and associated infrastructures.
- Consult with the appointed bat specialist on further management measures, should this be required.

**CUMULATIVE**

***Bat Fatality Impacts on a cumulative scale during the Operational Phase***

All mitigation measures, as listed in Table 5 of the bat specialist report, are to be strictly adhered to, to reduce the probability of significant mortality impacts occurring at MNWP WEF, and subsequently on a cumulative scale as well. This will be relevant for the MNWP WEF, as well as all surrounding WEF's. Fatalities should be considered across all WEF's as far as possible, and transparency / data sharing of operational results is recommended to further consider cumulative impacts.

## 7.6 HERITAGE IMPACT ASSESSMENT

<b>STUDY</b>	Heritage Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	ARCHAEOLOGY AND CULTURE: <b>VERY HIGH</b>
<b>SPECIALIST</b>	Gavin Anderson
<b>COMPANY</b>	Umlando Heritage Consulting
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.6.1 CONCLUSION & SPECIALIST STATEMENT

A Heritage Impact Assessment (HIA) of the proposed MNWP WEF was undertaken at a desktop and field survey level. The Heritage Impact Assessment concluded that most of the heritage sites recorded during the survey will not be directly affected by the proposed WEF.

The desktop noted several heritage sites using topographical maps and aerial photographs. These desktop sites were surveyed in addition to the rest of study area. Most of the wind turbine locations are situated in areas that would not be used for human occupation due to the height, except for MUL012. The access roads will not affect any known heritage sites.

All recorded sites will have an initial 100m buffer around them. This will flag sites that need to be resurveyed at a later date. The servitudes should be at least 50m from the heritage sites wherever possible.

The infrastructure such as roads and power grids will, however, occur close to several of the sites. See Figure 7-7 below showing the location of heritage sites relative to WEF turbines and infrastructure.

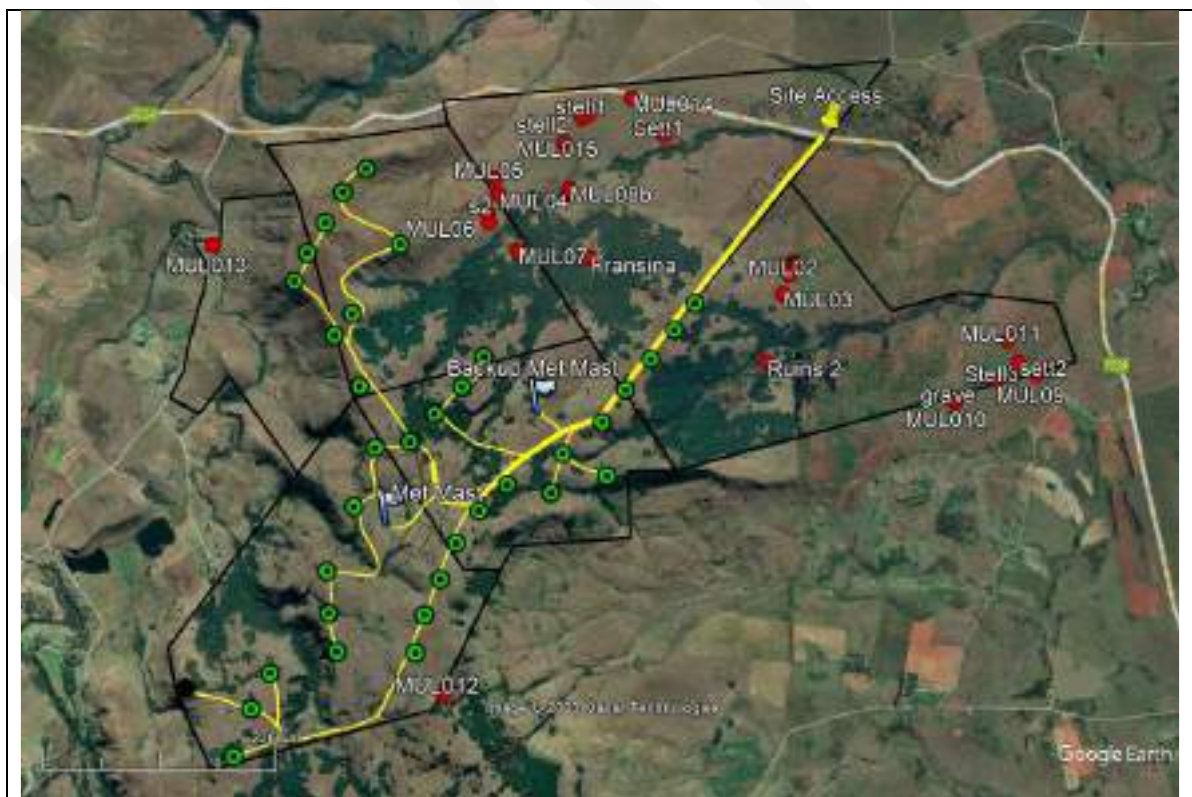


Figure 7-7: Location of heritage sites relative to MNWP WEF turbines and infrastructure.



All graves, or assumed graves, need to be avoided. Any grave within 50m of a servitude needs to have a 20m buffer. This buffer needs to be clearly demarcated before construction begins. In addition, built structures need to be mapped and photographed, if they are to be affected.

Access roads will need to be reviewed under a desktop study first and then a possible field survey. This would be especially important in areas that had dense grassland vegetation during the initial survey. Any future surveys should occur near the end of winter or after the area has had a controlled burn. Any site that will be affected by the WEF will need a permit from KZNARI.

### **7.6.2 IMPACTS**

The Heritage Impact Assessment determined that the following impact severities of the MNWP WEF before and after mitigation. The detailed nature of the impacts is described in the HIA report.

#### **PLANNING AND DESIGN PHASE**

Planning and Design Impacts	Significance before mitigation	Significance after mitigation
The planned layout and siting of construction activities and infrastructure could affect known heritage sites such as: <ul style="list-style-type: none"> <li>• Preferred Buildings</li> <li>• Grave sites</li> <li>• Non-colonial stone walled features</li> </ul>	<b>LOW (-)</b>	<b>LOW (-)</b>

### **7.6.3 MITIGATION MEASURES**

The following mitigation measures are recommended by the HIA.

- A servitude of at least 50m should be maintained around all identified heritage sites wherever possible.



## 7.7 PALAEOLOGICAL IMPACT ASSESSMENT

<b>STUDY</b>	Palaeontological Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	PALAEONTOLOGY: <b>VERY HIGH</b>
<b>SPECIALIST</b>	Dr Alan Smith
<b>COMPANY</b>	NA
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.7.1 CONCLUSION & SPECIALIST STATEMENT

According to the Palaeontological Impact Assessment, the MNWP WEF site is dominated by Karoo Dolerite, which is an intrusive igneous rock and not fossiliferous. However, the remaining lithologies may be fossiliferous. The areas underlain by significant fossiliferous lithologies are restricted to deep depressions and steep slopes, areas where turbine construction is very unlikely. These lithologies are adequately catered for by the “Chance find protocol”. The gridlines will cross Vryheid Formation. Although this is considered sensitive by the SAHRIS Palaeosensitivity Map, in practice no significant palaeontological material has been encountered. The gridlines follow existing industrial corridors (railway and Eskom powerline routes). For this reason it is the recommendation of this Field Report that no further palaeontological work needs to be undertaken, unless the “Chance Find Protocol” is triggered.

On a separate note, road access to the site was extremely difficult. It is presumed that a road may need to be constructed from the northern side in order to gain access to the site for the transport and assembly of heavy wind turbine equipment. A palaeontological investigation may need to be undertaken, depending on the route selected.

### 7.7.2 IMPACTS

The Palaeontological Impact Assessment determined that since the areas underlain by significant fossiliferous lithologies are restricted to deep depressions and steep slopes, areas where turbine construction is very unlikely to impact on fossil resources and has determined the impact risk to be **ZERO to LOW**.

Possible impacts	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
<ul style="list-style-type: none"> <li>Construction of turbines and other infrastructure can result in damage to underlain fossiliferous lithologies.</li> </ul>	<b>LOW (-)</b>	<b>LOW (-)</b>

### 7.7.3 MITIGATION MEASURES

The Palaeontological Impact Assessment has recommended that no further palaeontological work needs to be undertaken, unless the “Chance Find Protocol” is triggered.

## 7.8 NOISE IMPACT ASSESSMENT

<b>STUDY</b>	Noise Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	NOISE: <b>VERY HIGH</b>
<b>SPECIALIST</b>	Morne de Jager
<b>COMPANY</b>	Enviro Acoustic Research
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.8.1 CONCLUSION & SPECIALIST STATEMENT

The Noise Impact Assessment of the noise impacts due to the proposed development, operation and decommissioning of the Mulilo Newcastle Wind Power WEF (and associated infrastructure) west of Newcastle in KwaZulu Natal Province. It is based on a predictive model to estimate potential noise levels due to the various activities and to assist in the identification of potential issues of concern.

The proposed layout (turbine placement) is considered acceptable from a noise perspective (subject to the condition that the applicant implement mitigation measures to reduce total noise level below 45 dBA at all Noise Sensitive Receptors (NSR), including the cumulative noise levels).

### 7.8.2 IMPACTS

The Noise Impact Assessment determined that the following impact severities of the MNWP WEF before and after mitigation. The detailed nature of the impacts is described in the NIA report.

#### CONSTRUCTION AND OPERATIONAL PHASES

Possible impact	Severity before mitigation	Severity after mitigation
<b>CONSTRUCTION PHASE</b>		
Daytime activities relating to the construction of access roads	LOW (-)	LOW (-)
Daytime construction traffic passing NSR	LOW (-)	LOW (-)
Daytime construction activities at the WEF	LOW (-)	LOW (-)
Night-time construction activities at the WEF	MODERATE (-)	LOW (-)
<b>OPERATIONAL PHASE</b>		
Operation of WEF (worst-case SPL)	MEDIUM (-)	LOW (-)
Operation of WEF (reported SPL)	MEDIUM (-)	LOW (-)

#### CUMULATIVE IMPACTS

Possible impact	Severity before mitigation	Severity after mitigation
<b>CONSTRUCTION PHASE</b>		
Daytime activities relating to the construction of access roads	LOW (-)	LOW (-)
Daytime construction traffic passing NSR	LOW (-)	LOW (-)
Daytime construction activities at the WEF	LOW (-)	LOW (-)
Night-time construction activities at the WEF	MODERATE (-)	LOW (-)
<b>OPERATIONAL PHASE</b>		
Operation of WEF (worst-case SPL)	HIGH (-)	LOW (-)
Operation of WEF (reported SPL)	HIGH (-)	LOW (-)

### 7.8.3 MITIGATION MEASURES

The following mitigation measures are recommended by the Noise Impact Assessment:

#### CONSTRUCTION PHASE

##### **Daytime activities relating to the construction of access roads**

- ✦ The significance of the noise impact is Low, and additional mitigation measures are not recommended or required.

##### **Daytime construction traffic passing NSR**

- ✦ The significance of the noise impact is Low, and additional mitigation measures are not recommended or required.

##### **Daytime construction activities at the WEF**

- ✦ The significance of the noise impact is Low, and additional mitigation measures are not recommended or required.

##### **Night-time construction activities at the WEF**

- ✦ The significance of the noise impact is Medium and additional mitigation measures are recommended as follows:
- ✦ The applicant should get written confirmation from NSR08 and 40 that the dwelling will not be used for residential purposes in the future.
- ✦ Only allow construction activities at one WTG location (closer than 1,200m from an NSR);
- ✦ The Applicant can reduce the total number of WTG located within 2,000m from NSR08 and 40; and
- ✦ Minimise active equipment at night, planning the completion of noisiest activities (such a pile driving, rock breaking and excavation) during the daytime period.

#### OPERATIONAL PHASE

##### **Operation of the WEF (worst-case SPL)**

- ✦ The applicant should get written confirmation from NSR08 and 40 that the dwelling(s) will not be used for residential purposes in the future.
- ✦ For the layout as evaluated, the applicant can select a WTG with a SPL less than 108 dBA (as per the IEC 61400-14 certificate) to reduce noise levels at NSR 09 and 22.
- ✦ The Applicant can reduce the total number of WTG located within 2,000m from NSR08 and 40.
- ✦ The applicant should get written confirmation from NSR08 & 40 that the dwelling(s) will not be used for residential purposes in the future; or
- ✦ The applicant can change the layout to reduce the number of WTG located within 2,000m from NSR08 & 40 (in co-operation with Mulilo Newcastle Wind Power 2 WEF).
- ✦ For the layout as evaluated, the applicant should try to select a WTG with a SPL less than 108 dBA (as per the IEC 61400-14 certificate).

##### **Operation of the WEF (reported SPL)**

- ✦ The applicant should get written confirmation from NSR08 and 40 that the dwelling(s) will not be used for residential purposes in the future.
- ✦ The Applicant can reduce the total number of WTG located within 2,000m from NSR08 & 40.
- ✦ The applicant should get written confirmation from NSR08 & 40 that the dwelling(s) will not be used for residential purposes in the future.
- ✦ The applicant can change the layout to reduce the number of WTG located within 2,000m from NSR08 & 40 (in co-operation with MNWP 2 WEF).
- ✦ For the layout as evaluated, the applicant should try to select a WTG with a SPL less than 108 dBA (as per the IEC 61400-14 certificate).

## 7.9 SOCIO-ECONOMIC IMPACT ASSESSMENT

<b>STUDY</b>	<b>Socio-Economic Impact Assessment (SEIA)</b>
<b>NATIONAL SCREENING TOOL</b>	<b>NONE RELEVANT</b>
<b>SPECIALIST</b>	<b>Marchelle Terblanche</b>
<b>COMPANY</b>	<b>INDEX</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix F</b>

### 7.9.1 CONCLUSION & SPECIALIST STATEMENT

The Socio-Economic Impact Assessment (SEIA) concluded that from a social and socio-economic perspective negative impacts that could manifest for the MNWP WEF project are either of LOW or MODERATE significance, or can be mitigated to acceptable levels. Sense of place is the only impact with high negative significance but can be mitigated to a certain degree. Based on the findings of this SEIA it is the opinion of the Specialist that the construction and operation of the MNWP WEF may proceed, provided that the mitigation, management measures and requirements as set out in this report be incorporated in the EMPr and implemented wherever applicable.

### 7.9.2 IMPACTS

The SEIA determined that the following impact severities of the MNWP WEF before and after mitigation. The detailed nature of the impacts is described in the SEIA report.

#### CONSTRUCION PHASE

During the 24-month construction period various positive and negative social and socio-economic impacts are likely to manifest. A summary of construction related impacts and their significance ratings, pre and post-mitigation, are provided in the table below.

Possible impact	Significance before mitigation	Significance after mitigation
Temporary employment	MODERATE (+)	MODERATE (+)
Local procurement	MODERATE (+)	MODERATE (+)
Induced local economic impacts	LOW (+)	LOW (+)
Impacts on livelihoods for directly benefitting landowners	LOW (-)	LOW (+)
Training / skills development / capacity building	LOW (+)	MODERATE (+)
Employment equity	LOW (+)	MODERATE (+)
Impacts associated with an influx of jobseekers / temporary construction workers	MODERATE (-)	LOW (-)
Land use and resource impacts	LOW (-)	LOW (-)
Impacts on tourism / accommodation facilities / Protected Areas	LOW (-)	LOW (+)
Intrusion impacts	MODERATE (-)	LOW (-)
Health and safety risks	MODERATE (-)	LOW (-)

Positive impacts ranges from low to moderate and pertain to short-term employment (approximately 1 500 person-month job opportunities), local procurement, employment equity, skills development and subsequent induced local economic impacts that will realize locally and nationally.

Perceived negative impacts (low to moderate negative) are those typically associated with construction activities and can generally be mitigated successfully, such as an influx of jobseekers, intrusion impacts and health and safety risks. Landowners may incur net income losses during construction (low negative), but this will be off-set by compensation earned through the long-term lease agreements, thereby becoming beneficial after mitigation (low positive). It is likely that a large portion of the skilled workforce will be sourced nationally and accommodated in local accommodation establishments, with positive impacts on tourism revenue for the duration of construction (low positive). The positive off-set when workers are housed in local establishments will thus be greater when measured against potential tourism losses as a result of nuisance / intrusion impacts (dust, noise, visual, traffic, etc.) caused by construction activities.

**OPERATIONAL PHASE**

Following is a summary of the positive and negative impacts associated with the operational phase of the MNWP WEF.

Possible Impact	Significance before mitigation	Significance after mitigation
New employment and economic impacts	<b>MODERATE (+)</b>	<b>MODERATE (+)</b>
Impacts on livelihoods for directly benefitting landowners	<b>LOW (+)</b>	<b>LOW (+)</b>
Socio-economic contribution / community development	<b>LOW (+)</b>	<b>MODERATE (+)</b>
Training / skills development / capacity building	<b>LOW (+)</b>	<b>MODERATE (+)</b>
Land use and resource impacts	<b>LOW (-)</b>	<b>LOW (-)</b>
Impacts on tourism / accommodation facilities / Protected Areas	<b>LOW (-)</b>	<b>LOW (-)</b>
Impacts on land values	<b>LOW (-)</b>	<b>LOW (-)</b>
Intrusion impacts	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Impacts on sense of place	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Contribution to national power supply	<b>MODERATE (+)</b>	<b>MODERATE (+)</b>

Positive impacts during operations (low to moderate significance) are associated with employment and local economic impacts and the benefits that will be attained through Socio-economic Development (SED) and Economic Development (ED) contributions (approximately 2.1% of revenue) towards activities that facilitate sustainable access to the economy for beneficiaries in the areas of rural development, the environment, infrastructure, enterprises, reconstruction of undeveloped areas, development programmes for women or Youth, education, health care, arts and culture and so forth. By establishing the MNWP WEF in the KZN province, the first of its kind, economic investments and positive socio-economic impacts will be able to reach a new range of beneficiary recipients. In addition, the WEF will generate up to 200MW electricity and enhance the reliability and stability of supply that would contribute to economic development in the country as a whole (moderate positive).

Negative impacts on current land use activities and resources are negligible (low negative), as no residential and agricultural land uses will be affected directly. Impacts on tourism was also rated as low negative,



primarily due to the limited number of facilities that would be affected. It is however possible that Grey Goose Game Farm and Newcastle Country Lodge perceive the close proximity and visual impact of specific turbine localities as problematic for their function venues. It is therefore recommended that negotiations take place with these establishments, should complaints be raised. Impacts of wind farms on land values is an indecisive matter. However, based on local and international research and the SEIA Specialist’s consultation with estate agents and other experts in the field, the impact on farmland values due to the MNWP WEF is rated with a low negative significance. Intrusion impacts (visual, noise, dust, traffic, indirect impacts on agricultural land uses, etc.) can be mitigated from moderate to low negative. From a social perspective the impact on sense of place is rated as high negative and can be reduced to moderate. The degree of confidence is however ‘undecided’ as sense of place remains a personal experience.

Negative social and socio-economic impacts associated with decommissioning are expected to be similar to those experienced during the construction phase and can usually be mitigated successfully. It is not possible to accurately rate and assess decommissioning impacts at this early stage of the process due to a changing social environment and it is therefore recommended that a detailed SEIA be undertaken at the time of decommissioning to determine the actual impacts. No rating is thus be provided for impacts associated with decommissioning.

**CUMULATIVE IMPACTS**

Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
Employment, economic contribution and induced impacts	HIGH (+)	HIGH (+)
Impacts on the livelihoods of directly benefitting landowners	LOW (+)	LOW (+)
Impacts for the local and district municipalities	MODERATE (+)	MODERATE (+)
Impacts associated with an influx of jobseekers / temporary construction workers	MODERATE (-)	LOW (-)
Impacts on tourism / accommodation facilities / Protected Areas	LOW (-)	LOW (-)
Intrusion impacts	MODERATE (-)	MODERATE (-)
Impacts on sense of place	HIGH (-)	HIGH(-)
Contribution to national power supply	HIGH (+)	HIGH (+)

More detailed descriptions of the nature of the impacts can be seen at Sections 7-9 of the Socio-economic Impact Assessment.

**7.9.3 MITIGATION MEASURES**

The SEIA proposes the following mitigation measures:

**CONSTRUCTION PHASE**

**Temporary employment**

Enhance benefit:

- Maximise local employment and local content (the Project’s direct sending area) through the Preferential Procurement Plan and Contractor Social Management Plan (CSMP) for all contractors that are used.
- Involve local government structures from the early processes (from financial close already if possible). Determine their existing process with regards to a labour desk and streamline employment processes between the various stakeholders.
- Appoint a Community Employer Relations Officer / Community Liaison Officer (CLO). Communicate with

communities through this one channel to ensure transparency, limit unrealistic expectations and to avoid conflict.

### ***Local procurement***

Enhance benefits:

- Maximise local content of procurement by procuring from the local and regional study areas as far as possible.
- Do a value-chain analysis of services required (directly and indirectly related to construction such as transport, laundry, catering, etc.). Communicate this to the relevant Municipal LED Units at least 4 months prior to the tender process commencing in order for SMME's to prepare.
- Join the existing Newcastle LED Forum to establish links with the local trade and industry sectors and suppliers.
- Include minimum thresholds in the CSMP for local employment, BBEEE procurement, SMME targets, local services providers, etc.

### ***Induced local economic impacts***

Enhance benefits:

- Maximise the Project's local content as much as possible.

### ***Impacts on livelihoods of directly affected landowners***

Avoid/prevent impact:

- Commence with the long-term lease agreements as soon as construction starts to ensure that temporary income losses are being off-set by compensation.

### ***Training / skills development / capacity building***

Enhance benefits:

- Include the Newcastle, Dannhauser, Emadlangeni, Phumelela and the Dr Pixley Ka Isaka Seme LM's LED Units in all relevant processes from the onset of the Project.
- The developer is encouraged to take part / slot in with the various municipal initiatives and interventions to develop SMME's to enable them to take part in the Project's construction phase.
- Where feasible the developer should:
  - Make the skill requirements clear to the municipalities in advance and do a skills analysis of the available labour force.
  - Do a Value-chain analysis of services required (directly and indirectly related to construction) and communicate this to local and district municipalities in advance so that they are prepared and equipped to take part in the tender process.
  - Require larger contractors to work with small SMMEs to train and transfer skills and include this in their respective CSMP's.
  - Implement on-the-job training for unskilled workers.
  - Capacitate the local government structures by involving them as early as possible in the Project; remain transparent throughout the processes.
  - Negotiate a MoU with the municipalities so that each role-player is clearly aware of its roles, responsibilities and timelines in the Project processes.
  - Establish an EMC or similar Forum for the duration of construction to aid communication and transparency with local government. Members of the EMC / Forum to meet on a quarterly basis to discuss issues that may arise during the course of the construction period (if feasible).

### **Employment Equity**

Enhance benefits:

- Obtain inputs from the respective local and district municipalities on the contents of the Procurement strategy and Employment Equity Plan to be implemented.
- Set targets for the employment of Youth, women and the disabled in the CSMPs.

### **Impacts associated with an influx of jobseekers / temporary construction workers**

Minimize/reduce impact:

#### Employment / Temporary construction workers:

- Clearly identify the beneficiary communities / labour sending area and compile the employment strategy in collaboration with the affected municipalities' LED Units.
- Encourage the affected local municipalities to draw up a cooperation agreement that specifies the percentages of the workforce that will be sourced from each municipality.
- Ensure that the Community Employer Relations Officer /CLO has knowledge of the local communities, is educated with good public relation skills, committed to the cause and is accessible for community members.
- Contractually oblige contractors and sub-contractors to only source labour through the labour desk / job registration database and make this known to the target communities.
- Work through limited communication channels (e.g. Ward Councillors and the Employer Relations Officer / CLO).
- Be vigilant not to raise unrealistic expectations amongst the local communities and workers with regards to employment, skills requirements, local procurement and so forth. Ensure transparency through the Ward Councillors, CLO and the EMC / Forum.
- No recruitment of temporary workers at the access to the construction site.
- As part of their CSMP's, contractors to provide a transport and housing plan: (i) no workers are allowed to be housed on site or in informal housing / settlements; (ii) allow workers that do not live nearby time to return to their families at regular intervals or over weekends.
- No workers to remain on site after shifts.
- No informal traders to be allowed on or near the construction site/s.
- It is also recommended that the Developer embarks on a Social Awareness Campaign for the workforce that focuses on sexual health, unwanted pregnancies and related social issues.

#### Security, safety and environmental health:

- Do a security risk assessment (if required) and base the exact security measures on the detailed assessment of the risks at the site.
- 24-hour security, demarcate and fence the construction site (if possible), material stores to be secured, access control and no trespassing of workers outside designated construction areas.
- Join the local community policing forum and similar initiatives (e.g. Amajuba District Fire Technical Task Team) for the duration of construction.
- Keep the local SAPS, other emergency services, Ward Councillors, landowners and other relevant stakeholders informed about the construction progress and time-lines.
- Develop a Fire / Emergency Management Plan in conjunction with affected and neighbouring landowners.
- Dispose of the various types of waste generated in the appropriate manner at licensed waste landfill sites at regular intervals. Comply with the waste management plan compiled for the construction phase.
- Display "danger" warning signs and "no public access" signs at all potential accesses, paths and along the periphery of the
- construction areas in English and the local languages.

- If water for construction is obtained from a natural water resource, comply with the Water Use Licence conditions for the duration of the construction period.
- Ensure implementation of the provisions of the Occupational Health and Safety Act No. 85 of 1993 and adhere to the Emergency and Safety plan procedures for the duration of the construction phase.

Awareness / community engagement:

- Keep open communication channels with the landowners and address any potential issues as a matter of priority.
- Make contact details of the main contractor and procedures to lodge complaints available to landowners and the local communities through the Ward Councillors and EMC / Forum.
- Make a complaints register / log book available at the entrance to the construction site and act immediately should issues arise.
- Consult with surrounding landowners whose livestock, private residences and other infrastructure could be affected by dust, noise and other impacts that result from traffic movement and general construction activities.
- Where required, draw up a land use management plan with individual landowners to protect livestock and farmland, which addresses restricted access areas, procedures when farm gates are opened and closed and so forth.

Remediate/rehabilitate impact:

- Rehabilitate the veld to its original state post construction.

***Land use and resource impacts***

Minimise/reduce impact:

- Implement all the mitigation and management measures as proposed in the Agricultural Study.
- Implement the Stormwater Management Plan for the duration of construction.

Remediate/rehabilitate impact:

- Rehabilitate the veld to its original state post construction.

***Impacts on tourism / accommodation facilities / Protected Areas***

Minimize/reduce impact:

- Implement all measures proposed in the SEIA and other Specialist Assessments to mitigate intrusion impacts (dust, noise, visual) during construction.
- Implement all mitigation measures related to awareness/community engagement as proposed in the section dealing with '*Impacts associated with an influx of jobseekers / temporary construction workers*'; keep open communication channels with affected tourism establishments and address potential issues proactively.
- Give preference to accommodation establishments in the local study area when workers are housed.

***Intrusion impacts***

Minimize/reduce impact:

- Comply with the EMPr requirements to address any noise and dust impacts, such as the implementation of appropriate dust alleviation methods and to restrict construction activities to daytime hours, where possible.
- Collaborate with the necessary road management authorities when road closures are required and advertise alternative routes in advance.
- Impose penalties for reckless drivers as a way to enforce compliance to traffic rules.

- Inspect trucks and other heavy vehicles on a regular basis to avoid oil spillages and un-roadworthy vehicles that could lead to accidents.
- Display a contact number on the construction vehicles where motorists can report reckless driving.
- Erect signboards indicating accesses to the construction site/s.
- Maintain access roads during the length of the construction period and ensure damaged road surfaces have been repaired sufficiently post construction.

Remediate/rehabilitate impact:

- Proper planning, management and rehabilitation of all construction sites to forego the visual impacts of the construction activities.

### ***Health and safety risks for workers***

Minimise/reduce impact:

- Ensure implementation of the provisions of the Occupational Health and Safety Act (Act No. 85 of 1993) and adhere to the Emergency and Safety plan procedures for the duration of the construction phase.
- Promote good conduct of employees through awareness campaigns. It is also recommended that the Developer embarks on a Social Awareness Campaign for the workforce that focuses on sexual health, unwanted pregnancies and related social issues.
- Contractors to provide a housing plan that makes provision for workers that do not live nearby to return to their families at regular intervals or over weekends.
- Suitable fire fighting equipment should be on-site and workers should be appropriately trained for fire fighting.
- Construction workers to wear protective clothing (e.g. masks that minimize dust inhalation, clothing that protects against sunburn) and earplugs.
- Lock away dangerous plant, equipment and material when not supervised or in use.
- Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated.
- Provide sufficient ablution facilities (chemical/portable toilets, etc.) at strategic locations that are cleaned regularly.
- Keep the local police, emergency and ambulance services informed of construction times and progress.
- Implement measures to suppress dust.

## **OPERATIONAL PHASE**

### ***New employment and economic impacts***

Enhance benefits:

- Maximise local employment and procurement (from the local and district municipalities) wherever possible.
- Coordinate the effort to obtain temporary employment, service providers, SMME's etc. required for maintenance work, with the municipal LED Unit.
- Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. If feasible, make ED funding available to assist the existing municipal initiatives with skills training and capacity building of SMME's.
- Make employment creation one of the SED program's targets, aims and objectives. Local businesses that apply for SED funding have to demonstrate their commitment to employment creation (criteria for evaluation by the Implementing and Monitoring Agent).

### ***Impacts on livelihoods of directly benefitting landowners***

Minimize/reduce impact:

- Consider the potential increase in rates and taxes during the negotiation processes with landowners.



***Socio-economic contribution / Community development***

Enhance benefits:

- Involve the local and district municipalities' LED Units in all processes when SED and ED projects and suitable candidates for projects and/or training programmes are identified.
- Join the existing Newcastle LED Forum and align projects with the goals and objectives identified for the region's trade and industry sectors.
- Make gender and Youth issues a specific outcome of the needs analysis to ensure that these groups are targeted.
- Ensure further transparency and effective information sharing through industry associated websites, emailed newsletters, municipal noticeboards, information events and meetings and existing community channels used by the various wards.
- Become involved in local initiatives that address existing backlogs to ensure that real community based needs are met.

***Training / skills development / capacity building***

Enhance benefits:

- Link with existing NGO's to assist in skills transfer to new projects, community groups, Officials and project processes.
- Link with existing training workshops and programmes for SMME development that are done by municipal LED Units.
- Link with bigger institutions such as Universities and FET institutes to increase the impact of training and skills development in the region.

***Land use and resource impacts***

Remediate/rehabilitate impact:

- Implement all mitigation measures as proposed in the Agricultural Study and EMPr.

***Impacts on tourism / accommodation facilities / Protected Areas***

Avoid/prevent impact:

- Based on the Specialist VIA findings, consult with individual tourism establishments that would experience a high or very high visual impact and/or who are concerned that revenues will be affected. Consider eliminating specific turbines from the development if feasible.

***Impacts on land values***

- No mitigation is proposed.

***Intrusion impacts***

Minimize/reduce impact:

- Implement an effective Land Use Management programme (procedures when gates are opened and closed, road maintenance, implementation of methods to address potential veld fires, no-go areas, etc.) in collaboration with the landowners.
- Implement all mitigation and management measures as proposed by the VIA and NIA Specialists.

***Impacts on sense of place***

Minimize/reduce impact:

- Implement all relevant mitigation measures as proposed to reduce intrusion impacts.
- Implement all measures as proposed in the VIA and NIA Reports.
- As far as possible, avoid turbines to be located in direct view of residences and / tourist and holiday accommodation establishments.
- Implement measures to increase communication and transparency between the land owners and Project as proposed in the previous sections of this report.

***Contribution to national power supply***

- No mitigation required.

**CUMULATIVE IMPACTS**

***Employment, economic contribution and induced impacts***

- No mitigation is required.

***Impacts on the livelihoods of directly benefitting landowners***

- No mitigation is required.

***Impacts for the local and district municipalities***

Enhance the benefit:

- Link with existing NGO's to assist in skills transfer to new projects, community groups, Officials and project processes.
- Link with existing training workshops and programmes for SMME development that are done by municipal LED Units.
- Link with bigger institutions such as Universities and FET institutes to increase the impact of training and skills development in the region. This type of strategic partnership was also listed in the NLM IDP as one of the SMME Development interventions required to uplift and formally develop the skills of all contractors and service provider doing business with the municipality.

***Impacts associated with an influx of jobseekers / temporary construction workers***

Minimize/reduce impact:

- Maximise local employment.
- Implement all the mitigation measures as proposed in Section 7.7 of the SEIA.

***Impacts on tourism / accommodation facilities / Protected Areas***

- No mitigation is proposed.

***Impacts on land values***

- No mitigation is proposed.

***Intrusion impacts***

Minimize/reduce impact:

- Implement an effective Land Use Management programme (procedures when gates are opened and closed, road maintenance, implementation of methods to address potential veld fires, no-go areas, etc.) in collaboration with the landowners.
- Implement all mitigation and management measures as proposed by the VIA and NIA Specialists.

**Impacts on sense of place**

Minimize/reduce impact:

- Implement all relevant measures to reduce intrusion impacts and as proposed in the Specialist NIA and VIA reports.
- As far as possible, avoid turbines to be located in direct view of residences and / or tourist and holiday accommodation establishments.
- Implement measures to increase communication and transparency between the land owners and IPP, as proposed in the previous sections of this report.

***Contribution to national power supply***

- No mitigation is required.

## 7.10 VISUAL IMPACT ASSESSMENT

<b>STUDY</b>	Visual Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	LANDSCAPE FEATURES: <b>VERY HIGH</b> and SHADOW FLICKER: <b>MEDIUM</b>
<b>SPECIALIST</b>	Peter Velcich
<b>COMPANY</b>	Nuleaf Planning and Environmental
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.10.1 CONCLUSION & SPECIALIST STATEMENT

The visual assessment, including photomontages of the proposed MNWP WEF, indicates that the construction and operation of the proposed MNWP WEF will have a VERY HIGH visual effect on both the rural landscape and on sensitive receptors in the study area. The visual impact will differ amongst places, depending on the distance from the facility, but it is expected to be of the highest significance within (but not restricted to) a 5km radius of the proposed facility. Within this distance it will generally be restricted to residents of homesteads as well as observers travelling along the R34 regional road. This is largely due to the relatively close distance between the observers and the wind turbines as well as the elevated location of the turbines.

In spite of the predominantly high residual ratings (see Section 8 of the VIA) and the likelihood that the proposed development will be met with concern and objections from some of the affected sensitive receptors and landowners in the region, this report cannot categorically state that any of the above conditions were transgressed. As such these visual impacts are not considered to be fatal flaws for a development of this nature. It is, therefore, suggested that the proposed MNWP WEF, as per the assessed layout be supported from a visual perspective, subject to the implementation of the suggested best practice mitigation measures, as provided in the VIA.

### 7.10.2 IMPACTS

In light of the results and findings of the VIA undertaken for the proposed MNWP WEF, it is acknowledged that the receiving environment will be significantly visually transformed for the entire operational lifespan of the facility.

The following is a summary of the impacts assessed:

- ▲ The potential visual impact of construction on sensitive visual receptors in close proximity to the facility is likely to be of **high** significance before mitigation and **moderate** significance post mitigation.
- ▲ The potential visual impact of facility operations on sensitive visual receptors within 5km (residents of farm and homestead, as well as observers travelling along the R34), in close proximity to the proposed facility is likely to be of **very high** significance. No mitigation is possible for a facility of this scale.
- ▲ The possible visual impact of facility operations on the users of the R34 and other secondary roads, residents of farm and homesteads and visitors to sections of the Sneeuwberg Protected Environment on the periphery of the 5km offset and within the region beyond is likely to be of **high** significance. No mitigation is possible within this environment and for a facility of this scale.
- ▲ The anticipated visual impact of operational lighting at night on sensitive visual receptors within the study area is likely to be of **high** significance and may be mitigated to **moderate** should the possible best practice mitigation measures be implemented and approval for changes to the CAA lighting is approved.
- ▲ The expected visual impact of shadow flicker on sensitive receptors in close proximity to the proposed development is likely to be of **high** significance.
- ▲ The expected visual impact of ancillary infrastructure on sensitive receptors in close proximity to the proposed development is likely to be of **moderate** significance.

- ▲ The potential visual impact of the proposed facility operations on the visual quality of the landscape and sense of place of the region is likely to be of **high** significance. No mitigation is possible for a facility of this scale.
- ▲ The anticipated visual impact of facility operations on protected/ conservation areas within the region is likely to be of **moderate** significance. No mitigation is possible for a facility of this scale.
- ▲ The potential cumulative visual impact of the proposed Newcastle WEF Complex on sensitive visual receptors within the region is likely to be of **high** significance.

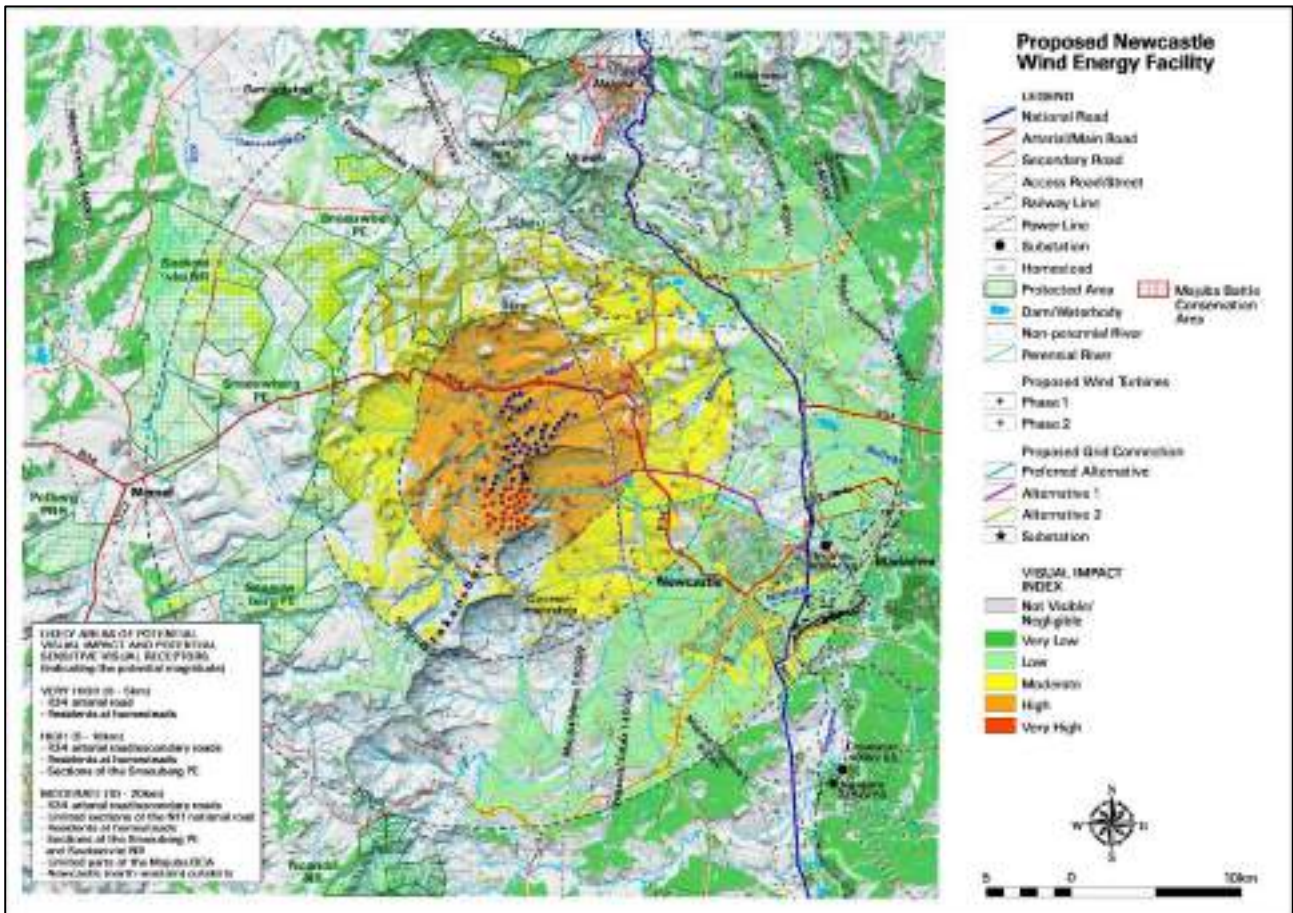


Figure 7-7: Visibility Index illustrating the frequency of exposure of the proposed MNWP WEF layout.

Overall, the significance of the visual impacts is predominately HIGH as a result of the generally undeveloped and natural character of the landscape. A significance of VERY HIGH is expected on sensitive receptors in close proximity (within 5km) of the proposed facility during the operational phase. Some impacts are expected to be of MODERATE significance (visual impacts of construction, lighting at night, protected conservation areas, etc.). The facility would be visible within an area that contains certain sensitive visual receptors who would consider visual exposure to this type of infrastructure to be intrusive. Such visual receptors include people travelling along roads, residents of the rural homesteads, residents of the town of Newcastle, and visitors to the protected areas within the region.

The Visual Impact Assessment determined that the following impact severities before and after mitigation.

**CONSTRUCTION AND OPERATIONAL PHASES**



POSSIBLE IMPACT	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION PHASE</b>		
Potential visual impact of construction on sensitive visual receptors in close proximity to the facility	HIGH (-)	MODERATE (-)
<b>OPERATIONAL PHASE</b>		
Potential visual impact of facility operations on sensitive visual receptors in close proximity to the proposed development	VERY HIGH (-)	VEWERY HIGH (-)
Potential visual impact of facility operations on sensitive visual receptors within the region	HIGH (-)	HIGH (-)
Potential visual impact of operational lighting at night on sensitive visual receptors in the region	HIGH (-)	MODERATE (-)
Potential visual impact of shadow flicker on sensitive visual receptors in close proximity to the proposed development	HIGH (-)	MODERATE (-)
Ancillary infrastructure	MODERATE (-)	MODERATE (-)
Potential visual impact of facility operations on the visual character of the landscape and sense of place of the region	HIGH (-)	HIGH (-)
Potential visual impact of facility operations on protected/conservation areas within the region.	MODERATE (-)	MODERATE (-)

### CUMULATIVE IMPACTS

Potential Cumulative Impacts	Significance before mitigation	Significance after mitigation
Operational phase	MODERATE (-)	HIGH (-)

More detailed descriptions of the nature of the impacts can be seen at Section 8 of the Visual Impact Assessment.

### 7.10.3 MITIGATION MEASURES

The primary visual impact, namely the appearance of the WEF (the wind turbines) is not possible to mitigate. The functional design of the turbines cannot be changed in order to reduce visual impacts.

Alternative colour schemes (i.e. painting the turbines sky-blue, grey or darker shades of white) are not permissible as the CAA's *Marking of Obstacles* expressly states, "Wind turbines shall be painted bright white to provide the maximum daytime conspicuousness". Failure to adhere to the prescribed colour specifications will result in the fitting of supplementary daytime lighting to the wind turbines, once again aggravating the visual impact.

The overall potential for mitigation is therefore generally low or non-existent. The following mitigations are, however, possible:

#### Planning and design

- ▲ Retain / re-establish and maintain natural vegetation in all areas outside of the development footprint.
- ▲ Plan ancillary infrastructure (i.e. substation and workshop) in such a way and in such a location that clearing of vegetation is minimised. Consolidate existing infrastructure as much as possible, and make use of already disturbed areas rather than pristine sites wherever possible.
- ▲ Use existing roads wherever possible. Where new roads are required to be constructed, these should be planned carefully, taking due cognisance of the local topography. Roads should be laid out along the

contour wherever possible, and should never traverse slopes at 90 degrees. Construction of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.

- ▲ Access roads, which are not required post-construction, should be ripped and rehabilitated.
- ▲ No mitigation is possible for visual impacts associated with the on-site monitoring and telecommunications masts.
  
- ▲ The Civil Aviation Authority (CAA) prescribes that aircraft warning lights must be mounted on the turbines. However, it is possible to obtain permission to mount these lights on the turbines representing the outer perimeter of the facility. In this manner, fewer warning lights can be utilised to delineate the facility as one large obstruction, thereby lessening the potential visual impact. It is therefore recommended that the possibility of this be investigated.
- ▲ Install aircraft warning lights that only activate when the presence of an aircraft is detected, if permitted by CAA.

### **CONSTRUCTION PHASE**

Mitigation of visual impacts associated with the construction phase, albeit temporary, entails proper planning, management and rehabilitation of all construction sites. Construction should be managed according to the following principles:

- ▲ Ensure that vegetation is not unnecessarily cleared or removed during the construction period.
- ▲ Reduce the construction period through careful logistical planning and productive implementation of resources.
- ▲ Plan the placement of lay-down areas and any potential temporary construction camps along the corridor in order to minimise vegetation clearing.
- ▲ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.
- ▲ Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- ▲ Reduce and control construction dust through the use of approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).
- ▲ Restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.
- ▲ Ensure that all infrastructure and the site and general surrounds are maintained and kept neat.
- ▲ Rehabilitate all disturbed areas, construction areas, roads, slopes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.
- ▲ Monitor all rehabilitated areas for at least a year for rehabilitation failure and implement remedial action as required. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.

Mitigation of other lighting impacts includes the pro-active design, planning and specification lighting for the facility. The correct specification and placement of lighting and light fixtures will go far to contain rather than spread the light. Additional measures include the following:

- ▲ Shielding the sources of light by physical barriers (walls, vegetation, or the structure itself);
- ▲ Limiting mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights;
- ▲ Making use of minimum lumen or wattage in fixtures;
- ▲ Making use of down-lighters, or shielded fixtures;
- ▲ Making use of Low-Pressure Sodium lighting or other types of low impact lighting.

- ▲ Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.

### **OPERATIONAL PHASE**

During Operations, monitor the general appearance of the facility as a whole, as well as, all rehabilitated areas.

- ▲ The maintenance of the turbines and ancillary structures and infrastructure will ensure that the facility does not degrade, thus aggravating visual impact. Implement remedial action where required.
- ▲ Where sensitive visual receptors are likely to be affected, it is recommended that the developer enter into negotiations regarding the potential screening of visual impacts at the receptor site. This may entail the planting of vegetation, trees or even the construction of screens. Ultimately, visual screening is most effective when placed at the receptor itself.
- ▲ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as and when required.

With regards to the shadow flicker likely to be experienced by homesteads that are located nearby, it is recommended, as per the IFC Performance Standards, that further consultation is undertaken as part of the EIA consultation process with these specific sensitive receptors of the identified homesteads, in order to establish their understanding and concerns regarding this possible impact. Should it be found during the consultation process that these specific receptors are concerned with the impact associated with shadow flicker, it is then recommended that the positioning of these specific turbines be revised or removed.

### **DECOMMISSIONING PHASE**

After decommissioning, all infrastructure should be removed and all disturbed areas appropriately rehabilitated. Monitor rehabilitated areas post-decommissioning and implement remedial actions and consult an ecologist regarding rehabilitation specifications if necessary.

The possible mitigation of both primary and secondary visual impacts as listed above should be implemented and maintained on an on-going basis.

## 7.11 TRAFFIC IMPACT ASSESSMENT

<b>STUDY</b>	Traffic Impact Assessment
<b>NATIONAL SCREENING TOOL</b>	NA
<b>SPECIALIST</b>	Deon McQuirk
<b>COMPANY</b>	Emonthi Consulting Engineers
<b>QUALIFICATIONS</b>	Specialist Declaration and CV, Appendix F

### 7.11.1 CONCLUSION & SPECIALIST STATEMENT

The Traffic Impact Assessment (TIA) makes the following conclusions based on their investigation and analysis of the traffic conditions in the project area:

- The current operating conditions on the road network within the study area are found to be acceptable with no LOS or capacity failures.
- Certain localised road improvements may be required in order to facilitate the temporary accesses to the site to accommodate the expected abnormal loads.
- The posted speed limit of 100 km/h along the R34, in the vicinity of the site access, is appropriate for the current and expected future traffic conditions, although not always observed by speeding motorists.
- The existing critical peak, in terms of traffic volume, was found to be the PM peak hour while the AM peak hour tested similarly but with marginally lower demands.
- Once developed and fully occupied, the proposed development may be expected to generate less than 50 new vehicle trips in each of the AM and PM commuter peak hours.
- The combined critical peak hour of existing and development trips is found to be the PM peak hour.
- The network is not overloaded when development trips are assigned for any of the given tested peak hours, subject to the recommended road network improvements being undertaken.
- The proposed changes to the layout and road network, as shown in Figure 5.1 of the TIA, adequately serve the proposed development.

### 7.11.2 IMPACTS

The Traffic Impact Assessment considered the following main traffic impacts related to the following aspects:

- ▲ Existing operating conditions;
- ▲ Traffic volumes;
- ▲ Internal traffic circulation and parking;
- ▲ Access proposals;
- ▲ Road improvements;
- ▲ Building lines; and
- ▲ Abnormal loads.

#### CONSTRUCTION AND OPERATIONAL PHASES

Potential impacts	Significance without mitigation	Significance with mitigation
Construction Phase	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Operational Phase	<b>LOW (-)</b>	<b>LOW (-)</b>

**CUMULATIVE IMPACTS**

Potential cumulative impact	Significance without mitigation	Significance with mitigation
Construction Phase	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Operational Phase	<b>LOW (-)</b>	<b>LOW (-)</b>

**7.11.3 MITIGATION MEASURES**

The Traffic Impact Assessment makes the following recommendations:



Figure 7-8: Proposed MNWP WEF access point layout.

**CONSTRUCTION PHASE**

**Traffic and Transportation Management Plan**

- The Traffic and Transportation Management Plan provided in the TIA must be followed and implemented during the construction phase of the WEF.

**Building lines**

- All other structures shall be erected at least 60m from a national or provincial road reserve fence and 500m from an intersection.

**R34/Access Road intersection**

- There must be no vehicular accesses permitted onto the R34 other than at the proposed/existing access. It is therefore recommended that a suitable barrier be erected to prohibit such access. In this regard, the current fence serves such purpose.
- Vegetation should be cleared (in the form of cutting the long grass) on the two southern corners of the R34 access intersection.

**Abnormal load vehicles**



- During the construction stage the abnormal load vehicles expected at the site will require the bell mouth of the R34/Access Road intersection to be increased to accommodate the large turning radius of these vehicles. The extent of the widening must be determined at the detailed design stage.

#### ***Internal roads***

- The internal gravel roadways should be designed in accordance with the Guidelines for Human Settlement Planning and Design ("The Redbook"). Geometric designs of the roads should ensure that the requirements of all types of vehicles expected to visit the site are met, i.e. minimum turning radii, roadway widths, etc. The pavement design, where necessary, will form part of the detailed design stage.

#### ***General traffic and transportation***

- All road works must comply with the SARTSM, Chapter 13 and Volume 2.
- Temporary traffic control zone signs must be adequate in order to convey both general and specific messages to the road users.
- Adequate signage must be placed on the roads, such as: speed limits, caution: electrical road works in progress, use of alternative roads, stop/go signs, flagman ahead, etc.

#### ***Transporting of construction staff***

- Company transport must be in the form of appropriate transportation vehicle/s. No persons must be transported in the back of a bakkie.

#### ***Site access control***

- Access control must be managed at the gate to ensure that no authorized person enters the site unless a valid access card is presented at the gate to the security guards.
- Control at pick-up locations prior to entering the transportation vehicle/s, must ensure that no unauthorized person enters the site.
- All persons must be inducted before entering the gate and proof of induction must be kept for inspection purposes.
- Upon entering the site all persons must undergo alcohol testing.
- All vehicles entering the site must have a beacon light and a whip and flag to ensure that these vehicles are visible.
- Necessary signage must be placed where needed and only vehicles designated as construction vehicles will be allowed to travel on the main roads.
- No private vehicles should be allowed to travel on the main roads. Those travelling with private vehicles should be escorted to the site with their vehicles and from there escorted in designated construction vehicles.

#### ***Parking areas***

- Designated parking areas must be identified on site where vehicles will park during the day.
- A designated walkway should also be created which should be barricaded, whereby workers can walk to access their work areas.

### **OPERATIONAL PHASE**

#### ***Transporting of operation staff***

- Company transport must be in the form of appropriate transportation vehicle/s. No persons must be transported in the back of a bakkie.

## 7.12 GAPS IN KNOWLEDGE

Due to the complex and dynamic nature of the environment, uncertainty and gaps in our knowledge are inevitable. The Precautionary Principle has been adopted to account for this uncertainty throughout the EIA Phase of the proposed WEF.

The Precautionary Principle ensures that:

- ▲ Uncertainty surrounding impacts are identified and addressed appropriately;
- ▲ Preventative measures are taken into account throughout the project;
- ▲ Various alternatives are thoroughly explored;
- ▲ Adequate and transparent public participation is conducted;
- ▲ A holistic approach is adopted to ensure social, economic and ecological impacts are explored, and mitigation measures are determined, through an integrated and balanced approach; and
- ▲ An adaptive approach is adopted to account for the complexities and dynamism inherent in environmental processes.

The Precautionary Principle ensures that potential impacts are predicted, avoided and mitigated to avoid threats of a serious or irreversible nature (IUCN, 2007).

## 8 IMPACT ASSESSMENT

### 8.1 IMPACT ASSESSMENT METHODOLOGY

The following standard rating scales have been defined for assessing and quantifying the identified impacts. This is necessary since impacts have a number of parameters that need to be assessed. The identified impacts have been assessed against the following criteria:

Six factors are considered when assessing the significance of the identified issues, namely:

- 1. Significance** - Each of the below criterion (points 2-6 below) are ranked with scores assigned, as presented in Table 1 to determine the overall significance of an activity. The total scores recorded for the effect (which includes scores for duration; extent; consequence and probability) and reversibility / mitigation are then read off the matrix presented in Table 8-1, to determine the overall significance of the issue. The overall significance is either negative or positive.
- 2. Consequence** - the consequence scale is used in order to objectively evaluate how severe a number of negative impacts might be on the issue under consideration, or how beneficial a number of positive impacts might be on the issue under consideration.
- 3. Extent** - the spatial scale defines the physical extent of the impact.
- 4. Duration** - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
- 5. The probability** of the impact occurring - the likelihood of impacts taking place as a result of project actions arising from the various alternatives. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident) and may or may not result from the proposed development and alternatives. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.
- 6. Reversibility / Mitigation** – The degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. The four categories used are listed and explained in Table 8-1 below. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

The relationship of the issue to the temporal scale, spatial scale and the severity are combined to describe the overall importance rating, namely the significance of the assessed impact.

The impact is first classified as a positive (+) or negative (-) impact. The impact then undergoes an evaluation according to a set of criteria.

**Table 8-1: Ranking of Evaluation Criteria.**

Effect	<b>Duration</b>	
	Short term	Less than 5 years
	Medium term	Between 5-20 years
	Long term	More than 20 years
	Permanent	Over 40 years or resulting in a permanent and lasting loss
	<b>Extent</b>	
	Localised	Impacts affect a small area of a few hectares in extent. Often only a portion of the project area.
	Study area	The proposed site and its immediate surroundings.
	Municipal	Impacts affect the Nelson Mandela Bay Metropolitan Municipality, or any towns within the municipality.
	Regional	Impacts affect the wider area or the Northern Cape Province as a whole.
National	Impacts affect the entire country.	

	International/Global	Impacts affect other countries or have a global influence.
	<b>Consequence</b>	
	Slight	Slight impacts or benefits on the affected system(s) or party(ies)
	Moderate	Moderate impacts or benefits on the affected system(s) or party(ies)
	Severe/ Beneficial	Severe impacts or benefits on the affected system(s) or party(ies)
	<b>Probability</b>	
	Definite	More than 90% sure of a particular fact. Should have substantial supportive data.
	Probable	Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
	Possible	Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.
	Unsure/Unlikely	Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.
<b>Reversibility/ Mitigation</b>	<b>Impact Reversibility / Mitigation</b>	
	Easy	The impact can be easily, effectively and cost effectively mitigated/reversed
	Moderate	The impact can be effectively mitigated/reversed without much difficulty or cost
	Difficult	The impact could be mitigated/reversed but there will be some difficulty in ensuring effectiveness and/or implementation, and significant costs
	Very Difficult	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly

**Table 8-2: Impacts Severity Rating**

<b>Impact severity (The severity of negative impacts, or how beneficial positive impacts would be on a affected system or affected party)</b>	
<b>Very severe</b>	<b>Very beneficial</b>
An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated. For example the permanent loss of land.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit. For example the vast improvement of sewage effluent quality.
<b>Severe</b>	<b>Beneficial</b>
Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these. For example, the clearing of forest vegetation.	A long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example an increase in the local economy.
<b>Moderately severe</b>	<b>Moderately beneficial</b>
Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated. For example constructing a sewage treatment facility where there was vegetation with a low conservation value.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example a 'slight' improvement in sewage effluent quality.
<b>Slight</b>	<b>Slightly beneficial</b>
Medium or short term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary. For example a temporary fluctuation in the water table due to water abstraction.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.

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<b>No effect</b>	<b>Don't know/Can't know</b>
The system(s) or party(ies) is not affected by the proposed development.	In certain cases it may not be possible to determine the severity of an impact.

**Table 8-3: Overall Significance Rating**

<b>OVERALL SIGNIFICANCE (THE COMBINATION OF ALL THE ABOVE CRITERIA AS AN OVERALL SIGNIFICANCE)</b>	
<b>VERY HIGH NEGATIVE</b>	<b>VERY BENEFICIAL (VERY HIGH +)</b>
<p>These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in severe or very severe effects, or beneficial or very beneficial effects. Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance. Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.</p>	
<b>HIGH NEGATIVE</b>	<b>BENEFICIAL (HIGH +)</b>
<p>These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light. Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated. Example: The change to soil conditions will impact the natural system, and the impact on affected parties (such as people growing crops in the soil) would be HIGH.</p>	
<b>MODERATE NEGATIVE</b>	<b>SOME BENEFITS (MODERATE +)</b>
<p>These impacts will usually result in medium to long term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial. Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.</p>	
<b>LOW NEGATIVE</b>	<b>FEW BENEFITS (LOW +)</b>
<p>These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect. Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels. Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.</p>	
<b>NO SIGNIFICANCE</b>	
<p>There are no primary or secondary effects at all that are important to scientists or the public. Example: A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.</p>	
<b>DON'T KNOW</b>	
<p>In certain cases, it may not be possible to determine the significance of an impact. For example, the primary or secondary impacts on the social or natural environment given the available information. Example: The effect of a development on people's psychological perspective of the environment.</p>	

All feasible alternatives and the “no-go option” will be equally assessed in order to evaluate the significance of the “as predicted” impacts (prior to mitigation) and the “residual” impacts (that remain after mitigation measures are taken into account). The reason(s) for the judgement will be provided when necessary.

All impacts must have a “cause and comment”, a significance rating before mitigation, after mitigation and for the no-go option. Impacts should also indicate applicable mitigation measure/ recommendations to reduce the impact significance.



### 8.1.1 CUMULATIVE IMPACT APPROACH

While individual development activities can have minor impacts, the combined impacts of many developments can have serious local, regional, and even global repercussions. In this regard, Appendix 3 section 3 on the EIA process included in the 2014 EIA Regulations as amended in 2017, indicates that an EIR must contain information that is necessary for the Competent Authority to consider and come to a decision on an application and must include:

(j) An assessment of each identified potentially significant impact and risk, including: (i) cumulative impacts.

The Regulations define cumulative impacts as follows: “cumulative impacts”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

The International Finance Corporation (IFC) (2013:21) of the World Bank defines a Cumulative Effects Assessment (CEA) as the process of:

- ✦ Analysing the potential impacts and risks of proposed developments in the context of the potential effects of other human activities and natural environmental and social external drivers on the chosen [valued component] over time; and
- ✦ Proposing concrete measures to avoid, reduce, or mitigate such cumulative impacts and risks to the extent possible.

Ecological and socio-economic systems can absorb or adapt to change, but not indefinitely. The increased pace and intensity of development activities in many regions of the world, combined with increased concern for environmental protection, has elevated the importance of CEA and management in recent years. Governments, nongovernment organizations, and project proponents are seeking innovative ways to address cumulative effects arising from climate change, worsening air quality, freshwater shortages, deforestation, noise and light pollution, and wildlife habitat fragmentation.

Cumulative effects are typically the result of incremental changes to the environment caused by multiple human activities and natural processes. For example, wildlife habitat fragmentation has many possible causes such as road building, clearing native vegetation for land development, and water diversion projects. However, cumulative effects can also result from repetitive actions such as cyclical or episodic discharges of liquid waste or sewage into a water body or many wells tapping and depleting an aquifer. There are many different types of cumulative effects including additive, interactive, and synergistic, and they manifest in different ways whereby the ability of the environment to absorb or adapt to the effect is ultimately exceeded. Ideally, CEA leads to decisions that maintain environmental resiliency.

The purpose of a CEA process is to identify the relative contribution of a proposed activity to the total stresses on the affected environment and to determine whether that environment will be able to sustain the additional stress. To accomplish this, CEA methodology typically involves scoping, baseline studies and analysis of change trends, mitigation, significance determination and adaptive follow-up including monitoring.

For the purposes of the current CEA, high reliance was placed on the results of the various specialist studies, where a specific requirement for each was to identify and assess the contribution of the proposed MNWP WEF to the cumulative impacts on the affected environment.

The properties affected by the MNWP WEF are zoned as agriculture. The current land-use includes agriculture in the form of livestock and game farming. Surrounding land-uses include game farms (photographic and

hunting safaris), other proposed WEFs, roads, open space / natural areas, mining areas, and other agricultural land.

Sadler (1996) defines cumulative impacts as the “the net result of environmental impact from a number of projects and activities”. The impact of the proposed WEF may not be significant or be a serious threat to the environment, but a large number of projects in one area, or occurring in the same vegetation type may have significant impacts (DEAT, 2004). The IFC Good Practice Handbook for Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets were used to compile the section below.

The International Finance Corporation Standards (IFC) recognises Cumulative Impact Assessment (CIA) and management as essential in risk management. However, CIA is also “One of the biggest risk management challenges currently facing project developers in emerging markets...”. According to the IFC, “cumulative effects (or impacts) are typically the result of incremental changes to the environment caused by multiple human activities and natural processes”.

These challenges include: a lack of basic baseline data, uncertainty associated with anticipated developments, limited government capacity, and absence of strategic regional, sectoral, or integrated resource planning schemes. Considerable debate exists as to whether CIA should be incorporated into good practice of Environmental and Social Impact Assessment, or whether it requires a separate stand-alone process. As a minimum, according to the IFC, developers should assess whether their projects could contribute to cumulative impacts or be impacted upon by other projects and as such the IFC recommends that developers conduct a Rapid Cumulative Impact Assessment (RCIA) either as part of the EIA or as a separate study. This RCIA should follow six (6) general steps:

#### STEP 1 & 2 – Scoping level Issues identification that could have a cumulative impact

According to the IFC the first step in conducting a Cumulative Impact Assessment (CIA) is to identify what are referred to as Valued Environmental and Social Components (VECs) i.e. biophysical or social amenities that may be affected by cumulative impacts associated with a development. This is typically done through interaction with relevant stakeholders. In terms of a wind farm the following main cumulative impacts that are likely to influence decision making are anticipated:

- ▲ Visual Impacts;
- ▲ Impacts on birds and bats; and
- ▲ Impacts on the loss of indigenous vegetation and SCCs.

According to the Scottish Natural Heritage Council Guidance Notes on assessing the cumulative impact of onshore wind energy developments, the cumulative impact of a wind farm development in regard to visual impacts is a product of the distance between wind farms, the distance over which they are visible, the overall character of the landscape, the siting and design of the wind farms and the way in which the landscape is experienced. These aspects need to be assessed during the Scoping Phase to determine if the cumulative impact would be significant and thus would require a CIA during the EIA phase.

In terms of birds, collision risk, barrier effect, disturbance and displacement effects, and habitat loss would need to be determined cumulatively for the area of influence. For example, an increase in turbine numbers, as a result of multiple wind farms, could force birds to fly through the windfarm increasing collisions risk as the energetic cost of going around multiple wind farms are too high. Species that needs to be included in the assessment are those specifically sensitive to windfarms and protected species in terms of the relevant legislation. Identifying the range of species likely to be present and/or affected should be completed during

the Scoping Phase and this list should be signed-off on by the relevant stakeholders prior to the commencement of the CIA.

In terms of the ecological environment, the cumulative impact of the removal of the same types of vegetation for the proposed, may result in the irreplaceable loss of indigenous species and protected or rare SCCs.

In addition, the removal of indigenous vegetation with a limited distribution range, also increases the risk of invasion by alien species to the point where alien vegetation can displace entire sections of indigenous vegetation leading to local extinctions.

The physical extent to which the impacts need to be assessed will depend on past, existing and potential new (application submitted, under construction, etc.) wind farm and other developments surrounding the current proposed development. Within the proposed WEF development area and a 50 km radius around it, only the following single MNWP 2 WEF is applicable (Table 8-4).

**Table 8-4: WEFs Located within a 50km radius of the Proposed Site, Inclusive of Reference, Distance and Status.**

Wind Energy Facility	Reference	Distance	Status
Mulilo Newcastle Wind Power 2 WEF	DFFE Ref: 14/12/16/3/3/2/2213	Same Developer	Draft EIAR Submitted

In such areas, where multiple facilities will be constructed, it is important to consider the overall or cumulative impact of these facilities on various aspects such as birds and bats, and visual impacts. Consideration of each project in isolation may not adequately judge the effect that the combined capacity of these developments will have on the abovementioned aspects.

**STEP 3 – Baseline Determination**

The next step in the CIA process would be to obtain baseline information from the entire affected area, which can be completed in one of two ways:

- ▲ Information sharing, i.e. specialist reports pertaining to the wind farms within the affected area can be used as a baseline and the relevant specialists will then be required to review this information and ensure that the gaps are filled within his/her specialist report to ensure that the study covers the affected area in order to complete the CIA
- ▲ Baseline information can be obtained and analysed for the affected area.

It is imperative that baseline information does not only consist of recent data collection but also include any historical data available for the area in order to identify the trends or changes over time in order to ensure that recent data is not representative of an already shifted baseline.

**STEP 4 – Assessment of the contribution of the development under evaluation to the predicted cumulative impacts**

The next step would be to use the baseline data obtained for the area of influence to assess the impact of the development on the relevant environmental / social variables. The methods used for the assessment would be dependent on the variable being assessed. For example, for visual impacts, maps and photomontages can be used to determine what the visual impact from a number of wind farm will be on sensitive receptors, whereas in the case of birds information required would relate to migration corridors,

population viability, nesting sites, etc. From a visual impact perspective, the relevant specialist would need to look at combined visibility, i.e. are a number of developments visible from a single viewpoint as well as sequential effects, i.e. does the observer have to move to another viewpoint in order to see other developments in the area (SNHC Guidance Notes).

**STEP 5 – Evaluation of the significance of predicted cumulative impacts to the viability or sustainability of the affected environmental components**

Step 5 entails setting thresholds for the variables to be assessed. This could for example relate to the maximum number of turbines in a landscape before visual impacts become unacceptable. If setting specific thresholds or targets for environmental variable are not possible then another option would be to identify the limits of acceptable change. This needs to be done in conjunction with the various stakeholders so that agreement can be reached with regards to these limits. The concept of thresholds of acceptable change would then be used to assess the significance of the cumulative impact by considering the level of change associated with all developments within the applicable geographical scope relative to the limit of acceptable change. It is important to bear in mind that the cumulative impact of two similar developments may be less or greater than the sum of the impacts of the individual developments.

Impacts with regards to the visual impact of the area will vary in degree based on the sensitivity of the visual receptors, the landscape context, residents and/or visitors to the area, the magnitude of change in terms of scale, nature, duration, and frequency of combined and sequential views (SNHC Guidance Notes).

Impacts with regards to birds / bats should be assessed based on species population size, population trends and range. The spatial scale would be dependent on the conservation objectives, i.e. maintain conservation of a national scale or on a local scale.

Cumulative impacts can be desirable and undesirable. Desirable cumulative impacts of development can, for example, lower rates of unemployment and accessibility to clean renewable energy.

**STEP 6 – Design and implementation of mitigation measures to manage the development’s contribution to the cumulative impacts and risks**

The final step would include the management and mitigation of potential impacts. This may include negotiations with other project proponents to reduce the overall mitigation required by a single project, additional mitigation measures to further reduce impacts identified in the EIA, project design changes, etc.

**8.1.2 NO-GO ALTERNATIVE IMPACT APPROACH**

It is mandatory to consider the “no-go” option in the EIA process. The “no-go” alternative refers to the current status quo and the risks and impacts associated with it. Some existing activities may carry risks and may be undesirable (e.g. an existing contaminated site earmarked for a development). The no-go is the continuation of the existing land use, i.e. maintain the status quo.

The status quo for the proposed MNWP WEF site would include the following:

**IMMEDIATE AREA OF THE PROPOSED WEF:**

- ✦ Livestock grazing (proposed WEF would have a negligible impact).
- ✦ Alien vegetation (proposed WEF would have a positive impact if alien wattle is removed).

- ✦ Ecological processes (proposed WEF would have a negative impact).

ADJACENT AREA OF THE PROPOSED WEF:

- ✦ Tourism (proposed WEF could have a negative impact).
- ✦ Job creation (proposed WEF could have a positive and a negative impact).
- ✦ Electricity stabilization (proposed WEF would have a positive impact).

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## 8.2 GENERAL IMPACTS

The current section provides an overview of the scope and scale of the general impacts that been identified and assessed in this MNWP WEF EIA Report (as opposed to those impacts identified and assessed by the various specialists).

The table at Appendix H1 provides the detailed assessment of the general impacts associated with the proposed MNWP WEF. For each impact identified, this table includes:

- ✦ Direct/indirect impacts
- ✦ Cumulative impacts
- ✦ No-go alternative

For each identified general impact, the table at Appendix H1 includes the following detail: issues, impact description, nature of impact, duration, extent, consequence, probability, reversibility, mitigation potential, significance of impact pre- and post-mitigation, and mitigation measures.

The following section provides a summary of the full assessment at Appendix H1 for:

- ✦ Direct/indirect impacts
- ✦ Cumulative impacts
- ✦ No-go alternative

### 8.2.1 DIRECT/INDIRECT GENERAL IMPACTS

Table 8-5 below provides a summary of **direct and indirect general impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-5: General Direct and Indirect Impacts Significance, Pre-mitigation and Post-mitigation.**

Potential Direct and Indirect Impact	Direct/indirect	Significance after mitigation	Significance before mitigation
<b>PLANNING &amp; DESIGN</b>			
Traffic & transport	DIRECT	MODERATE -	LOW -
	DIRECT	LOW -	LOW -
Storage of hazardous substances	DIRECT	MODERATE -	LOW -
Environmental legal and policy compliance	DIRECT	HIGH -	LOW -
Stormwater management and erosion	INDIRECT	MODERATE -	LOW -
Management of general waste	DIRECT	HIGH -	LOW -
Scheduling of construction	INDIRECT	MODERATE -	LOW -
<b>CONSTRUCTION</b>			
Nuisance dust	DIRECT	MODERATE -	LOW -
Fire	DIRECT	HIGH -	MODERATE -
Stormwater management	DIRECT	MODERATE -	LOW -
Degradation of drainage lines from earthworks	DIRECT	HIGH -	LOW -
Management of general waste	INDIRECT	MODERATE -	LOW -
Hazardous substances	DIRECT	MODERATE -	LOW -
Management of construction waste	DIRECT	MODERATE -	LOW -
Water quality	DIRECT	MODERATE -	LOW -
Infilling/ excavation in a watercourse	INDIRECT	MODERATE -	LOW -
Disposal of spoil material	DIRECT	MODERATE -	LOW -
<b>OPERATIONAL</b>			

Potential Direct and Indirect Impact	Direct/indirect	Significance after mitigation	Significance before mitigation
Air quality climate change	DIRECT	HIGH +	HIGH +
Architecture of ancillary infrastructure	DIRECT	MODERATE -	LOW -
Hazardous chemical storage	DIRECT	HIGH -	MODERATE -
Increased stormwater run-off	DIRECT	MODERATE -	LOW -
Waste management	DIRECT	MODERATE -	LOW -
<b>DECOMMISSIONING</b>			
Pollution	DIRECT	MODERATE -	LOW -
	DIRECT	MODERATE -	LOW -
Dust	DIRECT	MODERATE -	LOW -
Traffic & transport	DIRECT	MODERATE -	LOW -
Soil erosion	DIRECT	MODERATE -	LOW -
Land-use	DIRECT	LOW +	LOW +

It can be seen from the above table that most of the direct and indirect general impacts associated with the proposed MNWP WEF are MODERATE (20) to LOW (1) pre-mitigation with five (5) HIGH impacts pre-mitigation. However, ALL negative impacts can be reduced to either MODERATE (2) or LOW (24) post-mitigation.

### 8.2.2 CUMULATIVE GENERAL IMPACTS

Table 8-6 below provides a summary of **cumulative general impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-6: General Cumulative Impacts Significance, Pre-mitigation and Post-mitigation.**

Potential Cumulative Impact	Significance after mitigation	Significance before mitigation
<b>PLANNING &amp; DESIGN</b>		
Traffic & transport	HIGH -	MODERATE -
	MODERATE -	LOW -
Storage of hazardous substances	HIGH -	LOW -
Environmental legal and policy compliance	HIGH -	LOW -
Stormwater management and erosion	MODERATE -	LOW -
Management of general waste	HIGH -	LOW -
Scheduling of construction	MODERATE -	LOW -
<b>CONSTRUCTION</b>		
Nuisance dust	MODERATE -	LOW -
Fire	HIGH -	MODERATE -
Stormwater management	HIGH -	LOW -
Degradation of drainage lines from earthworks	HIGH -	LOW -
Management of construction waste	MODERATE -	LOW -
Water quality	HIGH -	LOW -
Infilling/ excavation in a watercourse	MODERATE -	LOW -
Disposal of spoil material	MODERATE -	LOW -
<b>OPERATION</b>		
Air quality climate change	HIGH +	HIGH +
Architecture of ancillary infrastructure	MODERATE -	LOW -

Potential Cumulative Impact	Significance after mitigation	Significance before mitigation
Hazardous chemical storage	HIGH -	MODERATE -
Increased stormwater run-off	MODERATE -	LOW -
Waste management	MODERATE -	LOW -
<b>DECOMMISSIONING</b>		
Pollution	MODERATE -	LOW -
Dust	MODERATE -	LOW -
Traffic & transport	MODERATE -	LOW -
Soil erosion	MODERATE -	LOW -
Land-use	LOW +	LOW +

It can be seen from the above table that there are a number of HIGH cumulative impacts pre-mitigation (9) with the remainder mostly MODERATE (14). However, ALL negative cumulative impacts can be reduced to either MODERATE (3) or LOW (20) post-mitigation.

### 8.2.3 NO-GO ALTERNATIVES GENERAL IMPACTS

Table 8-7 below provides a summary of **no-go general impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-7: General No-go Impacts Significance, Pre-mitigation and Post-mitigation.**

Potential No-Go Impact	Significance after mitigation	Significance before mitigation
<b>PLANNING &amp; DESIGN</b>		
Traffic & transport	NA	NA
Storage of hazardous substances	NA	NA
Environmental legal and policy compliance	LOW -	LOW -
Stormwater management and erosion	LOW -	LOW -
Management of general waste	NA	NA
Scheduling of construction	NA	NA
<b>CONSTRUCTION</b>		
Nuisance dust	NA	NA
Fire	HIGH -	MODERATE -
Stormwater management	LOW -	LOW -
Degradation of drainage lines from earthworks	NA	NA
Management of general waste	NA	NA
Hazardous substances	NA	NA
Management of construction waste	NA	NA
Water quality	NA	NA
Infilling/ excavation in a watercourse	NA	NA
Disposal of spoil material	NA	NA
<b>OPERATION</b>		
Air quality climate change	LOW -	LOW -
Architecture of ancillary infrastructure	NA	NA
Hazardous chemical storage	NA	NA
Increased stormwater run-off	LOW -	LOW -
Waste management	NA	NA
<b>DECOMMISSIONING</b>		

<b>Potential No-Go Impact</b>	<b>Significance after mitigation</b>	<b>Significance before mitigation</b>
Pollution	<b>NA</b>	<b>NA</b>
Dust	<b>NA</b>	<b>NA</b>
Traffic & transport	<b>NA</b>	<b>NA</b>
Soil erosion	<b>NA</b>	<b>NA</b>
Land-use	<b>NA</b>	<b>NA</b>

It can be seen from the above table that most activities do not result in any no-go impacts. There is only one (1) HIGH no-go impact pre-mitigation which relates to fire risks, with the remainder all LOW (5).

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## 8.3 SPECIALIST IMPACTS

The current section provides an overview of the scope and scale of the impacts that been identified and assessed by the various specialist studies, including:

- ✦ Agricultural Impact Assessment;
- ✦ Terrestrial Ecology Impact Assessment (fauna and flora);
- ✦ Aquatic Impact Assessment;
- ✦ Avifaunal Impact Assessment;
- ✦ Bat Impact Assessment;
- ✦ Heritage (Archaeological) Impact Assessment;
- ✦ Paleontological Impact Assessment;
- ✦ Noise Impact Assessment;
- ✦ Socio-Economic Impact Assessment;
- ✦ Visual Impact Assessment; and
- ✦ Traffic Impact Assessment.

The table at Appendix H2 provides the detailed results of the various specialist impact assessments associated with the proposed MNWP WEF. For each impact identified, this table includes:

- ✦ Direct/indirect impacts
- ✦ Cumulative impacts
- ✦ No-go alternative

For each identified specialist impact, the table at Appendix H2 includes the following detail: issues, impact description, nature of impact, duration, extent, consequence, probability, reversibility, mitigation potential, significance of impact pre- and post-mitigation, and mitigation measures.

The following section provides a summary of the specialist assessments at Appendix H2 for:

- ✦ Direct/indirect impacts
- ✦ Cumulative impacts
- ✦ No-go alternative

### 8.3.1 DIRECT/INDIRECT SPECIALIST IMPACTS

Table 8-8 below provides a summary of **direct and indirect specialist impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-8: Summary of Direct and Indirect Specialist Impacts Significance, Pre-mitigation and post-mitigation.**

Potential Direct and Indirect Impacts	Significance before mitigation	Significance after mitigation
<b>PLANNING AND DESIGN PHASE</b>		
<b>Heritage Impact Assessment</b>		
The planned layout and siting of construction activities and infrastructure could affect known heritage sites.	LOW (-)	LOW (-)
<b>CONSTRUCTION</b>		
<b>Agricultural Impact Assessment</b>		
Indirect impacts of development	LOW (-)	LOW (-)
Biological impacts	LOW (-)	LOW (-)
<b>Terrestrial Biodiversity Impact Assessment</b>		



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<b>Potential Direct and Indirect Impacts</b>	<b>Significance before mitigation</b>	<b>Significance after mitigation</b>
Loss of Low Escarpment Moist Grassland (LC)	MODERATE (-)	LOW (-)
Loss of KwaZulu-Natal Highland Thornveld (LC)	MODERATE (-)	LOW (-)
Loss of Southern Mist belt Forest (LC)	HIGH (-)	LOW (-)
Loss of Plant SCC	MODERATE (-)	LOW (-)
Disturbance and/or death of herpetofauna and/or loss of habitats	MODERATE (-)	LOW (-)
Disturbance and/or death of mammals and/or loss of habitats	LOW (-)	LOW (-)
Disturbance and/or loss of Herpetofauna SCC	LOW (-)	LOW (-)
Disturbance and/or loss of Mammal SCC	LOW (-)	LOW (-)
Compliance, compatibility, alignment with biodiversity and environmental planning tools	HIGH (-)	MODERATE (-)
Disruption of Ecosystem Function and Process	MODERATE (-)	MODERATE (-)
Establishment of Alien Plant Species	MODERATE (-)	LOW (-)
<b>Aquatic Impact Assessment</b>		
<b>Turbines and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	MOD-LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	LOW (-)
<b>Internal access and haulage roads</b>		
Direct ecosystem destruction and modification impacts	MODERATE (-)	MOD-LOW (-)
Indirect hydrological and geomorphological impacts	MOD-HIGH (-)	MOD-LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	MOD-LOW (-)
<b>Avifaunal Impact Assessment</b>		
Direct habitat destruction	LOW (-)	LOW (-)
Disturbance and displacement	LOW (-)	LOW (-)
Direct mortality	LOW (-)	LOW (-)
<b>Bat Impact Assessment</b>		
Habitat modification	MODERATE (-)	LOW (-)
Disturbance/Displacement	MODERATE (-)	LOW (-)
<b>Heritage Impact Assessment</b>		
None specified	NA	NA
<b>Palaeontological Impact Assessment</b>		
Construction of turbines and other infrastructure can result in damage to underlain fossiliferous lithologies.	LOW (-)	LOW (-)
<b>Noise Impact Assessment</b>		
Daytime activities relating to the construction of access roads	LOW (-)	LOW (-)
Daytime construction traffic passing NSR	LOW (-)	LOW (-)
Daytime construction activities at the WEF	LOW (-)	LOW (-)
Night-time construction activities at the WEF	MODERATE (-)	LOW (-)
<b>Socio-Economic Impact Assessment (SEIA)</b>		
Temporary employment	MODERATE (+)	MODERATE (+)
Local procurement	MODERATE (+)	MODERATE (+)
Induced local economic impacts	LOW (+)	LOW (+)
Impacts on livelihoods for directly benefitting landowners	LOW (-)	LOW (+)
Training / skills development / capacity building	LOW (+)	MODERATE (+)

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<b>Potential Direct and Indirect Impacts</b>	<b>Significance before mitigation</b>	<b>Significance after mitigation</b>
Employment equity	LOW (+)	MODERATE (+)
Impacts associated with an influx of jobseekers / temporary construction workers	MODERATE (-)	LOW (-)
Land use and resource impacts	LOW (-)	LOW (-)
Impacts on tourism / accommodation facilities / Protected Areas	LOW (-)	LOW (+)
Intrusion impacts	MODERATE (-)	LOW (-)
Health and safety risks	MODERATE (-)	LOW (-)
<b>Visual Impact Assessment</b>		
Potential visual impact of construction on sensitive visual receptors in close proximity to the facility	HIGH (-)	MODERATE (-)
<b>Traffic Impact Assessment</b>		
Construction traffic congestion	MODERATE (-)	LOW (-)
<b>OPERATIONAL</b>		
<b>Agricultural Impact Assessment</b>		
Loss of cultivated or high potential agricultural land	LOW (-)	LOW (-)
Loss of grazing land	LOW (-)	LOW (-)
Loss of agricultural production (yield and income)	LOW (-)	LOW (-)
Loss of agricultural resources	LOW (-)	LOW (-)
<b>Terrestrial Biodiversity Impact Assessment</b>		
Establishment of Alien Plant Species	HIGH (-)	LOW (-)
Disturbance and/or death of faunal species	MODERATE (-)	LOW (-)
<b>Aquatic Impact Assessment</b>		
<b>Turbines and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	LOW (-)	LOW (-)
<b>Internal access and haulage roads</b>		
Direct ecosystem destruction and modification impacts	MOD-LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MOD-HIGH (-)	MOD-LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MODERATE (-)	MOD-LOW (-)
<b>Avifaunal Impact Assessment</b>		
Direct habitat destruction	MODERATE (-)	LOW (-)
Disturbance and displacement	LOW (-)	LOW (-)
Direct Mortality – Collision with Infrastructure	MODERATE (-)	LOW (-)
Direct Mortality – Electrocution	LOW (-)	LOW (-)
<b>Bat Impact Assessment</b>		
Mortality due to wind Turbine collision and/or barotrauma	HIGH (-)	MODERATE (-)
Disturbance/Displacement	MODERATE (-)	LOW (-)
<b>Heritage Impact Assessment</b>		
None specified	NA	NA
<b>Palaeontological Impact Assessment</b>		
None specified	NA	NA
<b>Noise Impact Assessment</b>		

<b>Potential Direct and Indirect Impacts</b>	<b>Significance before mitigation</b>	<b>Significance after mitigation</b>
Operation of WEF (worst-case SPL)	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Operation of WEF (reported SPL)	<b>MODERATE (-)</b>	<b>LOW (-)</b>
<b>Socio-Economic Impact Assessment</b>		
New employment and economic impacts	<b>MODERATE (+)</b>	<b>MODERATE (+)</b>
Impacts on livelihoods for directly benefitting landowners	<b>LOW (+)</b>	<b>LOW (+)</b>
Socio-economic contribution / community development	<b>LOW (+)</b>	<b>MODERATE (+)</b>
Training / skills development / capacity building	<b>LOW (+)</b>	<b>MODERATE (+)</b>
Land use and resource impacts	<b>LOW (-)</b>	<b>LOW (-)</b>
Impacts on tourism / accommodation facilities / Protected Areas	<b>LOW (-)</b>	<b>LOW (-)</b>
Impacts on land values	<b>LOW (-)</b>	<b>LOW (-)</b>
Intrusion impacts	<b>MODERATE (-)</b>	<b>LOW (-)</b>
Impacts on sense of place	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Contribution to national power supply	<b>MODERATE (+)</b>	<b>MODERATE (+)</b>
<b>Visual Impact Assessment</b>		
Potential visual impact of facility operations on sensitive visual receptors in close proximity to the proposed development	<b>VERY HIGH (-)</b>	<b>VERY HIGH (-)</b>
Potential visual impact of facility operations on sensitive visual receptors within the region	<b>HIGH (-)</b>	<b>HIGH (-)</b>
Potential visual impact of operational lighting at night on sensitive visual receptors in the region	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Potential visual impact of shadow flicker on sensitive visual receptors in close proximity to the proposed development	<b>HIGH (-)</b>	<b>MODERATE (-)</b>
Ancillary infrastructure	<b>MODERATE (-)</b>	<b>MODERATE (-)</b>
Potential visual impact of facility operations on the visual character of the landscape and sense of place of the region	<b>HIGH (-)</b>	<b>HIGH (-)</b>
Potential visual impact of facility operations on protected/conservation areas within the region.	<b>MODERATE (-)</b>	<b>MODERATE (-)</b>
<b>Traffic Impact Assessment (TIA)</b>		
Operational Phase – traffic congestion	<b>LOW (-)</b>	<b>LOW (-)</b>
<b>DECOMMISSIONING</b>		
None specified		

**Planning and design**

The following observations are made relating to the above table with respect to direct and indirect planning and design impacts:

- ✦ The planned layout and siting of construction activities and infrastructure could affect known heritage sites is rated as LOW impact pre- and post-mitigation.

**Construction**

The following observations are made relating to the above table with respect to direct and indirect construction impacts:

- ✦ Most negative impacts are rated as LOW (15) or MODERATE (20) pre-mitigation.
- ✦ Four (4) negative impacts are rated as HIGH pre-mitigation. These include:
  - Loss of Southern Mist belt Forest.
  - Compliance, compatibility, alignment with biodiversity and environmental planning tools.
  - Indirect hydrological and geomorphological impacts.
  - Potential visual impact of construction on sensitive visual receptors in close proximity to the facility.

- ✦ All negative impacts are rated as either LOW (30) or MODERATE (7) post-mitigation.
- ✦ A number of positive impacts relate to socio-economic benefits such as employment opportunities and local economic development.

### Operations

The following observations are made relating to the above impact table with respect to direct and indirect operational impacts:

- ✦ Most negative impacts are rated as LOW (13) or MODERATE (13) pre-mitigation.
- ✦ Eight (8) negative impacts are rated as HIGH pre-mitigation. These include:
  - Establishment of alien plant species.
  - Indirect hydrological and geomorphological impacts.
  - Mortality of bats due to wind turbine collision and/or barotrauma.
  - Impacts on sense of place.
  - Potential visual impact of facility operations on sensitive visual receptors within the region.
  - Potential visual impact of operational lighting at night on sensitive visual receptors in the region.
  - Potential visual impact of shadow flicker on sensitive visual receptors in close proximity to the proposed development.
  - Potential visual impact of facility operations on the visual character of the landscape and sense of place of the region.
- ✦ Most negative impacts and six (6) of the HIGH are rated as either LOW (24) or MODERATE (8) post-mitigation.
- ✦ The following two (2) impacts rated as HIGH pre-mitigation, remain HIGH post-mitigation due to limited mitigation options:
  - Potential visual impact of facility operations on sensitive visual receptors within the region.
  - Potential visual impact of facility operations on the visual character of the landscape and sense of place of the region.
- ✦ There is one (1) impact rated as VERY HIGH. This includes:
  - Potential visual impact of facility operations on sensitive visual receptors in close proximity to the proposed development.
  - This impact remains VERY HIGH post-mitigation due to limited mitigation options.
- ✦ A number of positive impacts relate to socio-economic benefits such as employment opportunities and local economic development.

### Decommissioning

- ✦ Although no impacts were generally specified by the specialists relating to decommissioning, it is generally acknowledged by the specialists that the same impacts and mitigation measures associated with construction, are also applicable during decommissioning.

## 8.3.2 CUMULATIVE SPECIALIST IMPACTS

Table 8-9 below provides a summary of **cumulative specialist impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-9: Summary of Cumulative Specialist Impacts Significance, Pre-mitigation and Post-mitigation.**

Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
<b>PLANNING AND DESIGN</b>		
<b>Heritage Impact Assessment</b>		
The planned layout and siting of construction activities and infrastructure could affect known heritage sites.	LOW (-)	LOW (-)

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Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
<b>CONSTRUCTION</b>		
<b>Agricultural Impact Assessment</b>		
Loss of cultivated or high potential agricultural land	LOW (-)	LOW (-)
Loss of grazing land	LOW (-)	LOW (-)
Loss of agricultural production (yield and income)	LOW (-)	LOW (-)
Loss of agricultural resources	LOW (-)	LOW (-)
<b>Terrestrial Biodiversity Impact Assessment</b>		
Loss of Low Escarpment Moist Grassland (LC)	MODERATE (-)	N/A
Loss of KwaZulu-Natal Highland Thornveld (LC)	LOW (-)	N/A
Loss of Southern Mist belt Forest (LC)	N/A	N/A
Loss of Plant SCC	MODERATE (-)	LOW (-)
Disturbance and/or death of herpetofauna and/or loss of habitats	MODERATE (-)	N/A
Disturbance and/or death of mammals and/or loss of habitats	LOW (-)	N/A
Disturbance and/or loss of Herpetofauna SCC	LOW (-)	LOW (-)
Disturbance and/or loss of Mammal SCC	LOW (-)	LOW (-)
Compliance, compatibility, alignment with biodiversity and environmental planning tools	HIGH (-)	N/A
Disruption of Ecosystem Function and Process	MODERATE (-)	N/A
Establishment of Alien Plant Species	MODERATE (-)	N/A
<b>Aquatic Impact Assessment</b>		
<b>Turbine and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	LOW (-)	LOW (-)
<b>Internal Access and Haulage Roads</b>		
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	MOD – LOW (-)
Indirect hydrological and geomorphological impacts	MOD – HIGH (-)	MOD – LOW (-)
Water quality impacts	LOW (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MODERATE (-)	MOD -LOW (-)
<b>Avifaunal Impact Assessment</b>		
None specified		
<b>Bat Impact Assessment</b>		
None specified		
<b>Palaeontological Impact Assessment</b>		
Construction of turbines and other infrastructure can result in damage to underlain fossiliferous lithologies.	LOW (-)	LOW (-)
<b>Noise Impact Assessment</b>		
Daytime activities relating to the construction of access roads	LOW (-)	LOW (-)
Daytime construction traffic passing NSR	LOW (-)	LOW (-)
Daytime construction activities at the WEF	LOW (-)	LOW (-)
Night-time construction activities at the WEF	MODERATE (-)	LOW (-)
<b>Socio-Economic Impact Assessment</b>		
Employment, economic contribution and induced impacts	HIGH (+)	HIGH (+)
Impacts associated with an influx of jobseekers / temporary	MODERATE (-)	LOW (-)



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Potential Cumulative Impact	Significance before mitigation	Significance after mitigation
construction workers		
<b>Visual Impact Assessment</b>		
None specified	NA	NA
<b>Traffic Impact Assessment (TIA)</b>		
Construction Phase – traffic congestion	HIGH (-)	MODERATE (-)
<b>OPERATIONAL</b>		
<b>Agricultural Impact Assessment</b>		
Loss of cultivated or high potential agricultural land	LOW (-)	LOW (-)
Loss of grazing land	LOW (-)	LOW (-)
Loss of agricultural production (yield and income)	LOW (-)	LOW (-)
Loss of agricultural resources	LOW (-)	LOW (-)
<b>Terrestrial Biodiversity Impact Assessment</b>		
Establishment of Alien Plant Species	HIGH (-)	LOW (-)
Disturbance and/or death of faunal species	MODERATE (-)	LOW (-)
<b>Aquatic Impact Assessment</b>		
<b>Turbine and laydown areas</b>		
Direct ecosystem destruction and modification impacts	MOD – LOW (-)	LOW (-)
Indirect hydrological and geomorphological impacts	MODERATE (-)	MOD – LOW (-)
	MODERATE (-)	LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD – LOW (-)	LOW (-)
<b>Internal Access and Haulage Roads</b>		
Direct ecosystem destruction and modification impacts	MODERATE (-)	MOD - LOW (-)
Indirect hydrological and geomorphological impacts	MOD – HIGH (-)	MOD - LOW (-)
Water quality impacts	MODERATE (-)	LOW (-)
Fragmentation and ecological disturbance impacts	MOD-LOW (-)	MOD-LOW (-)
<b>Avifaunal Impact Assessment</b>		
Cumulative impacts on avifaunal habitat, Displacement and direct mortality	LOW (-)	LOW (-)
<b>Bat Impact Assessment</b>		
Bat Fatality Impacts on a cumulative scale during the Operational Phase.	HIGH (-)	MODERATE (-)
<b>Heritage Impact Assessment</b>		
None specified	NA	NA
<b>Palaeontological Impact Assessment</b>		
None specified	NA	NA
<b>Noise Impact Assessment</b>		
Operation of WEF (worst-case SPL)	HIGH (-)	LOW (-)
Operation of WEF (reported SPL)	HIGH (-)	LOW (-)
<b>Socio-Economic Impact Assessment (SEIA)</b>		
Employment, economic contribution and induced impacts	HIGH (+)	HIGH (+)
Impacts on the livelihoods of directly benefitting landowners	LOW (+)	LOW (+)
Impacts for the local and district municipalities	MODERATE (+)	MODERATE +
Impacts on tourism / accommodation facilities / Protected Areas	LOW (-)	LOW (-)
Intrusion impacts	MODERATE (-)	MODERATE (-)
Impacts on sense of place	HIGH (-)	HIGH (-)

<b>Potential Cumulative Impact</b>	<b>Significance before mitigation</b>	<b>Significance after mitigation</b>
Contribution to national power supply	<b>HIGH (+)</b>	<b>HIGH (+)</b>
<b>Visual Impact Assessment</b>		
Operational phase	<b>MODERATE (-)</b>	<b>HIGH (-)</b>
<b>Traffic Impact Assessment (TIA)</b>		
Operational Phase – traffic congestion	<b>LOW (-)</b>	<b>LOW (-)</b>
<b>DECOMMISSIONING</b>		
None specified		

**Planning and design**

The following observations are made relating to the above table with respect to cumulative planning and design impacts:

- ✦ The planned layout and siting of construction activities and infrastructure could affect known heritage sites is rated as LOW impact pre- and post-mitigation.

**Construction**

The following observations are made relating to the above table with respect to cumulative construction impacts:

- ✦ Most negative impacts are rated as LOW (15) or MODERATE (11) pre-mitigation.
- ✦ Three (3) negative impacts are rated as HIGH pre-mitigation. These include:
  - Compliance, compatibility, alignment with biodiversity and environmental planning tools.
  - Indirect hydrological and geomorphological impacts.
  - Construction phase traffic congestion.
- ✦ All negative impacts are rated as either LOW (25) or MODERATE (4) post-mitigation.
- ✦ A number of positive impacts relate to socio-economic benefits such as employment opportunities and local economic development.

**Operations**

The following observations are made relating to the above impact table with respect to cumulative operational impacts:

- ✦ Most negative impacts are rated as LOW (7) or MODERATE (11) pre-mitigation.
- ✦ Six (6) negative impacts are rated as HIGH pre-mitigation. These include:
  - Establishment of alien plant species.
  - Indirect hydrological and geomorphological impacts.
  - Mortality of bats due to wind turbine collision and/or barotrauma.
  - Noise impacts (X2)
  - Impacts on sense of place.
- ✦ Most negative impacts and five (5) of the HIGH are rated as either LOW (16) or MODERATE (6) post-mitigation.
- ✦ The following two (2) impacts rated as HIGH pre-mitigation, remain HIGH post-mitigation due to limited mitigation options:
  - Impacts on sense of place.
  - Potential visual impact of facility operations on sensitive visual receptors within the region.
- ✦ There are NO VERY HIGH cumulative impact ratings.
- ✦ A number of positive impacts relate to socio-economic benefits such as employment opportunities and local economic development.

**Decommissioning**

Although no impacts were generally specified by the specialists relating to decommissioning, it is generally acknowledged by the specialists that the same impacts and mitigation measures associated with construction, are also applicable during decommissioning.

### 8.3.3 NO-GO ALTERNATIVES SPECIALIST IMPACTS

Table 8-10 below provides a summary of **no-go specialist impacts** before and after mitigation during planning and design, construction, operations and decommissioning phases of the proposed MNWP WEF project.

**Table 8-10: Summary of No-Go Specialist Impacts Significance, Pre-mitigation and Post-mitigation.**

Potential No-Go Impacts	Significance before mitigation	Significance after mitigation
<b>PLANNING AND DESIGN PHASE</b>		
Heritage Impact Assessment	No impacts	NA
<b>CONSTRUCTION</b>		
Agricultural Impact Assessment	No impacts	NA
Terrestrial Biodiversity Impact Assessment		
Loss of Low Escarpment Moist Grassland (LC)	LOW (-)	NA
Loss of KwaZulu-Natal Highland Thornveld (LC)	LOW (-)	NA
Loss of Southern Mist belt Forest (LC)	LOW (-)	NA
Disruption of Ecosystem Function and Process	LOW (-)	NA
Establishment of Alien Plant Species	MODERATE (-)	NA
Aquatic Impact Assessment	No impacts	NA
Avifaunal Impact Assessment	No impacts	NA
Bat Impact Assessment	No impacts	NA
Heritage Impact Assessment	No impacts	NA
Palaeontological Impact Assessment	No impacts	NA
Noise Impact Assessment	No impacts	NA
Socio-Economic Impact Assessment (SEIA)		
Temporary employment (loss of opportunity)	MODERATE (-)	NA
Local procurement (loss of opportunity)	MODERATE (-)	NA
Induced local economic impacts (loss of opportunity)	LOW (-)	NA
Employment Equity (loss of opportunity)	LOW (-)	NA
Visual Impact Assessment	No impacts	NA
Traffic Impact Assessment	No impacts	NA
<b>OPERATIONAL</b>		
Agricultural Impact Assessment	No impacts	NA
Terrestrial Biodiversity Impact Assessment		
Establishment of Alien Plant Species	LOW (-)	NA
Aquatic Impact Assessment	No impacts	NA
Avifaunal Impact Assessment	No impacts	NA
Bat Impact Assessment	No impacts	NA
Heritage Impact Assessment	No impacts	NA
Palaeontological Impact Assessment	No impacts	NA
Noise Impact Assessment	No impacts	NA
Socio-Economic Impact Assessment		
New employment and economic impacts (loss of opportunity)	MODERATE (-)	NA
Impacts on livelihoods of directly benefitting landowners (loss of opportunity)	LOW (-)	NA

Potential No-Go Impacts	Significance before mitigation	Significance after mitigation
Socio-economic contribution / Community development (loss of opportunity)	LOW (-)	NA
Contribution to national power supply (loss of opportunity)	MODERATE (-)	NA
<b>Visual Impact Assessment</b>	<b>No impacts</b>	<b>NA</b>
<b>Traffic Impact Assessment (TIA)</b>	<b>No impacts</b>	<b>NA</b>
<b>DECOMMISSIONING</b>		
Decommissioning after life of WEF.	<b>No impacts</b>	<b>NA</b>

Based on the above table, the specialists generally did not identify many any no-go cumulative impacts. Those that were, were all rated as LOW (9) or MODERATE (5).

### 8.3.1 WAKE IMPACTS

As noted previously in this EIAr, the MNWP WEF project and the adjacent proposed MNWP 2 WEF project, are being developed as a cluster by the same developer, Mulilo Renewable Project Developments (Pty) Ltd. The developer will, therefore, design both projects so that the wake effects are minimal, should both projects ever be constructed.

It is noted that there are no other proposed WEF developments (as far as the EAP and developer are aware) within 50 km of the Mulilo Newcastle WEF cluster. Furthermore, prevailing wind conditions are from a NW direction and any wake losses will be 'downwards' or leeward of the mountain range, which will not have an impact on a potential neighbouring wind farm as the elevation on the farms to the south-east are low, and the wind speed would be too low to make a wind farm positioned there to be economically viable.

For these reasons above, it is the EAP's reasonable opinion that a detailed wake loss study is not required for this development, as there are no sensitive receptors (now and future), that can or would be impacted by the wake effect.

## 9 SENSITIVITY ANALYSIS

The MNWP WEF sensitivity analysis is based on the preceding results of the specialist and general impact assessment process. The main objective of the analysis is to guide development away from sensitive areas and focus the development footprint in areas with lower sensitivity where possible.

The analysis also aims to identify No-Go areas where no development should take place. However, in certain cases, development may be necessary in No-Go areas. A road crossing over a stream, or other linear infrastructure, may be acceptable provided there is sound mitigation and other constraints are applied.

The MNWP WEF sensitivity map (Figure 9-1) include the inputs from the following six specialist studies:

- ✦ Terrestrial Ecological Impact Assessment
- ✦ Aquatic Impact Assessment
- ✦ Avifaunal Impact Assessment
- ✦ Bat Impact Assessment
- ✦ Noise Impact Assessment
- ✦ Heritage Impact Assessment

Table 9-1 below summarises the main four (4) rating categories adopted for the sensitivity map and provides reasons for the rating scale and recommendations.

**Table 9-1: Summary of the sensitivity rating categories, reasons and recommendations.**

SENSITIVITY CATEGORY	REASON FOR SEVERITY RATING	RECOMMENDATION
<b>TERRESTRIAL ECOLOGY</b>		
<b>No-go</b>	Southern Mist-belt Forest and some vulnerable faunal species (e.g. frogs)	No turbines
<b>High</b>	CBA irreplaceable	Avoid if possible but mitigation possible
<b>Moderate</b>	Low Escarpment Moist Grassland	Avoid if possible but mitigation possible
<b>Low</b>	Degraded areas	Turbines permitted with no mitigation
<b>AVIFAUNA</b>		
<b>No-go</b>	100 m buffer around cliffs and ridges 32 m buffer of water courses and 100 m buffer of wetlands	No turbines
<b>High</b>	None specified	NA
<b>Moderate</b>	Avifaunal movement corridors	Avoid if possible but mitigation possible
<b>Low</b>	Remaining area	Turbines permitted with no mitigation
<b>BATS</b>		
<b>No-go</b>	200 m buffers around buildings, wetlands, perennial rivers and cultivated land	No turbines
<b>High</b>	None specified	NA



SENSITIVITY CATEGORY	REASON FOR SEVERITY RATING	RECOMMENDATION
<b>Moderate</b>	200 m buffer around woodland habitats 50 m buffer around small non-perennial rivers	Avoid if possible but mitigation possible
<b>Low</b>	Remaining area	Turbines permitted with no mitigation
<b>AQUATIC</b>		
<b>No-go</b>	All mapped water course units (i.e., delineated wetlands and rivers/streams) 50 m buffer around all watercourses	No turbines
<b>High</b>	None specified	NA
<b>Moderate</b>	500 m buffer around all wetlands	Avoid if possible but mitigation possible
<b>Low</b>	Remaining area	Turbines permitted with no mitigation
<b>NOISE</b>		
<b>No-go</b>	None specified	NA
<b>High</b>	None specified	NA
<b>Moderate</b>	2000 m buffer from NSR's	Mitigation possible
<b>Low</b>	Remaining area	Turbines permitted with no mitigation
<b>HERITAGE</b>		
<b>No-go</b>	50 m buffer around identified heritage sites	No turbines
<b>High</b>	None specified	NA
<b>Moderate</b>	None specified	NA
<b>Low</b>	Remaining area	Turbines permitted with no mitigation

Table 9-2 below provides the proposed approach to implementing activities on the respective sensitivity categories.

**Table 9-2: Activity recommendations for sensitivity categories.**

SENSITIVITY CATEGORY	ACTIVITY RECOMMENDATIONS
<b>NO-GO</b>	No turbines should be located in no-go areas. However, internal roads may cross these areas if no other alternative route exists, and with the appropriate mitigation.
<b>HIGH</b>	Development in these areas should avoided if possible. However, if not possible, development may occur but with strict constraints. Mitigation and management will be required to reduce significant environmental impacts to acceptable levels. Sound arguments as to why the development cannot be located in less sensitive areas will be required to justify locating development in these high sensitivity areas.

SENSITIVITY CATEGORY	ACTIVITY RECOMMENDATIONS
<b>MODERATE</b>	These areas can accommodate development, but there will be constraints. Mitigation and management will be required to reduce significant environmental impacts to acceptable levels. Sound arguments as to why the development cannot be located in less sensitive areas will be required to justify locating development in moderately sensitive areas.
<b>LOW</b>	These areas can be developed but require mitigation and management as per the general management conditions of the EMPr.

**Overall MNWP WEF Sensitivity**

Based on the sensitivity map at Figure 9-1, it is evident that the proposed MNWP WEF has avoided all No-Go areas identified by the various specialists. However, certain internal access roads may need to cross various water courses, in which case the appropriate mitigation measures recommended by the aquatic specialist, must be implemented.

Table 9-3 below summarises the sensitivity of the MNWP WEF 45 turbine layout and indicates the main reason for the sensitivity rating and recommendation.

**Table 9-2: Turbine Sensitivities: MNWP WEF 45 Turbine Layout.**

TURBINE NUMBER	SENSITIVITY (REASON)	RECOMMENDATION
1	High (ecological)	Acceptable with mitigation
2	High (ecological)	Acceptable with mitigation
3	Moderate (noise)	Acceptable with mitigation
4	High (ecological)	Acceptable with mitigation
5	High (ecological)	Acceptable with mitigation
6	High (ecological)	Acceptable with mitigation
7	High (ecological)	Acceptable with mitigation
8	Moderate (birds, bats, noise, ecological)	Acceptable with mitigation
9	Moderate (birds, bats, noise, ecological)	Acceptable with mitigation
10	Moderate (bats, noise, ecological)	Acceptable with mitigation
11	High (ecological)	Acceptable with mitigation
12	Moderate (birds, noise, ecological)	Acceptable with mitigation
13	High (ecological)	Acceptable with mitigation
14	High (ecological)	Acceptable with mitigation
15	High (ecological)	Acceptable with mitigation
16	Moderate (birds, noise)	Acceptable with mitigation
17	High (ecological)	Acceptable with mitigation
18	High (ecological)	Acceptable with mitigation
19	High (ecological)	Acceptable with mitigation
20	Moderate (noise)	Acceptable with mitigation
21	High (ecological)	Acceptable with mitigation
22	High (ecological)	Acceptable with mitigation
23	High (ecological)	Acceptable with mitigation
24	High (ecological)	Acceptable with mitigation

TURBINE NUMBER	SENSITIVITY (REASON)	RECOMMENDATION
25	High (ecological)	Acceptable with mitigation
26	Moderate (birds, ecological)	Acceptable with mitigation
27	Moderate (birds, ecological)	Acceptable with mitigation
28	Moderate (bats, noise, ecological)	Acceptable with mitigation
29	High (ecological)	Acceptable with mitigation
30	High (ecological)	Acceptable with mitigation
31	High (birds, ecological)	Acceptable with mitigation
32	High (ecological)	Acceptable with mitigation
33	Moderate (noise)	Acceptable with mitigation
34	Moderate (birds, ecological)	Acceptable with mitigation
35	Moderate (noise)	Acceptable with mitigation
36	Moderate (birds, ecological)	Acceptable with mitigation
37	Moderate (birds, ecological)	Acceptable with mitigation
38	Moderate (birds, ecological)	Acceptable with mitigation
39	Moderate (birds, ecological)	Acceptable with mitigation
40	Moderate (birds, ecological)	Acceptable with mitigation
41	Moderate (birds, ecological)	Acceptable with mitigation
42	Moderate (birds, ecological)	Acceptable with mitigation
43	Moderate (birds, ecological)	Acceptable with mitigation
44	High (ecological)	Acceptable with mitigation
45	Moderate (birds, noise, ecological)	Acceptable with mitigation

**Cumulative Sensitivity**

There are no known other WEF developments within 30 km of the proposed MNWP WEF, apart from the MNWP 2 WEF located south of the current project. Figure 9-2 below provides the sensitivity map for the MNWP 2 WEF which together with the map at Figure 9-1 for MNWP WEF, would represent the cumulative impact by the two adjacent WEFs.

Figure 9-1: MNWP WEF Site Sensitivity Map.

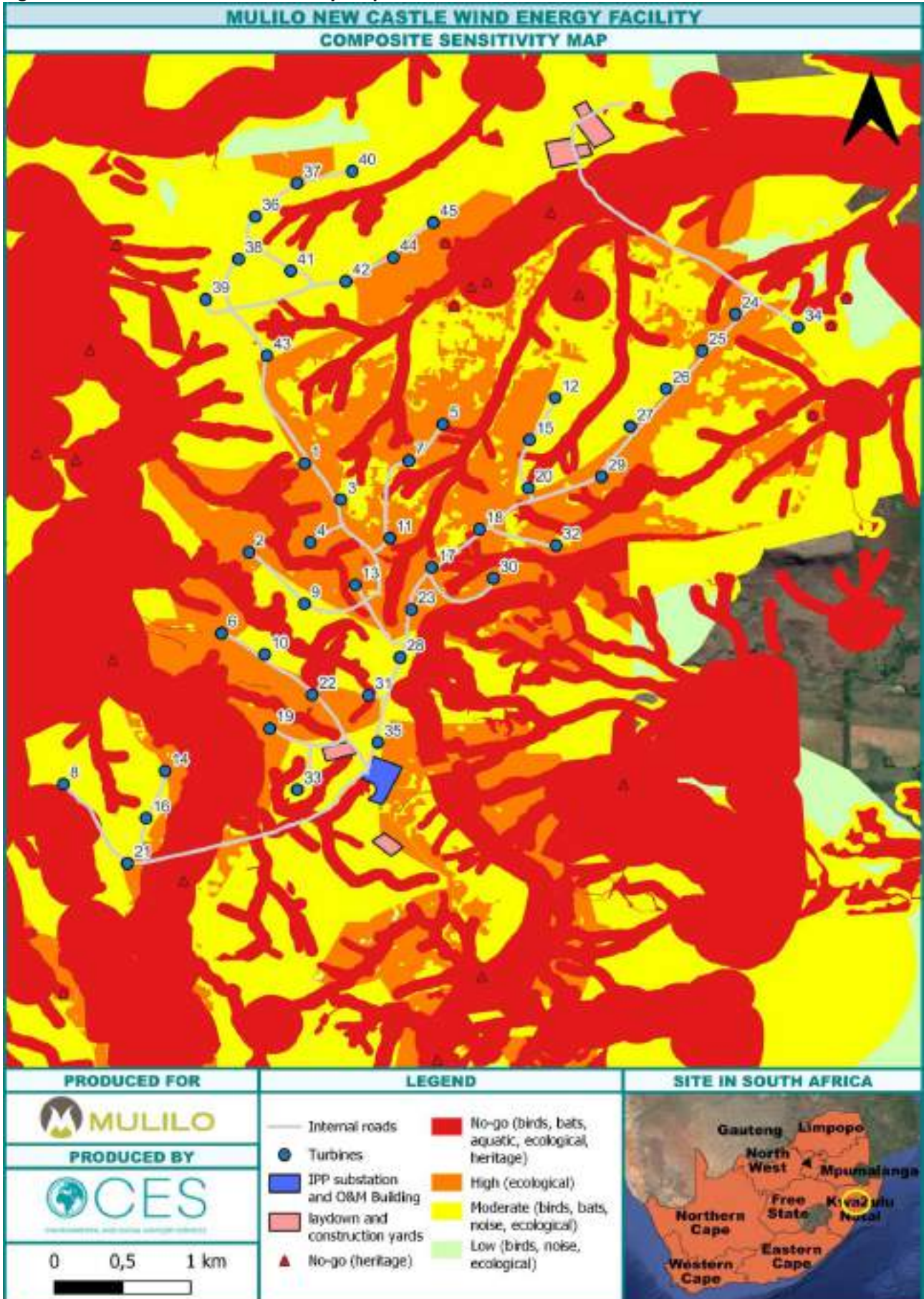
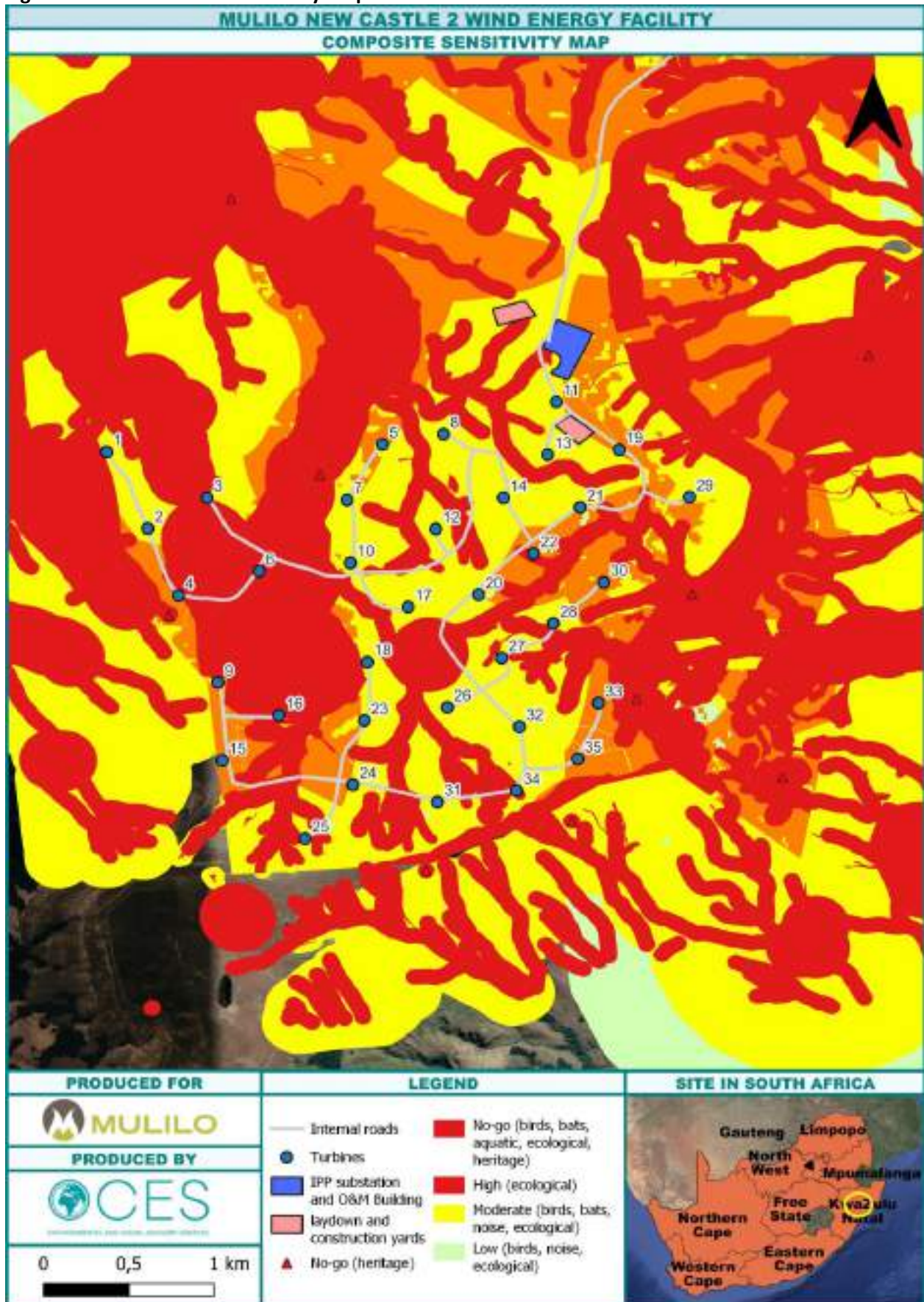




Figure 9-2: MNWP 2 Site Sensitivity Map.





## 10 PUBLIC PARTICIPATION

### 10.1 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

Public consultation is a legal requirement throughout the EIA process. Developers are required to conduct public consultation throughout the Scoping and EIR phase. Formal EIA documents are required to be made available for public review and comment by the proponent, these include the Project Brief, Scoping Report and Terms of Reference for the EIA, the draft and final EIA reports and the decision of the Competent Authority (DFFE). The method of public consultation to be used depends largely on the location of the development and the level of education of those being impacted on by the project. Required means of public consultation include:

- ▲ Site notice(s);
- ▲ Newspaper advertisement(s);
- ▲ Letter of Notification and information to affected landowner(s), stakeholders and registered I&APs;
- ▲ Background Information Document (BID) distribution;
- ▲ Public meeting if deemed necessary (Attendance register and meeting minutes); and
- ▲ Authority and Stakeholder engagement (DFFE, DWS, SAHRA, DMRE, etc.).

Please note that all proof of public notification has been attached as [APPENDIX C](#).

#### 10.1.1 *NEWSPAPER ADVERTISEMENT*

An advertisement relating to the proposed MNWP WEF projected was placed in the Newcastle Advertiser on 9<sup>th</sup> September July 2022. Please see proof at [APPENDIX C](#).

#### 10.1.2 *ONSITE NOTICES*

Sites notices have been placed at various locations surrounding the proposed MNWP WEF site including at the entrance to the site: See [APPENDIX C](#).

#### 10.1.3 *INTERESTED AND AFFECTED PARTIES (I&APs) IDENTIFICATION AND NOTIFICATION*

In addition to the above notification, certain I&APs were identified based on their potential interest in the project. In Table 10-1, all relevant organisations will be invited to comment on the draft EIA report as and when available (as they have for other previous scoping reports). This list is considered a “living” document and names will be added and/removed based on the consultation process. Proof of correspondence has been added to [APPENDIX C](#).

**PLEASE NOTE THAT DUE TO THE POPIA ACT, AND THE LIST BEING POPULATED BY THE EAP, ONLY FARM NAMES AND STAKEHOLDER NAMES ARE VISIBLE, NO PERSONAL INFORMATION WILL BE SHARED UNTIL CORRESPONDENCE HAS BEEN CIRULATED DURING PPP.**

**Table 10-1: Stakeholder and Organisational Database.**

<b>STAKEHOLDER</b>
<b>GOVERNMENT</b>
SANRAL
Department of Forestry, Fisheries and the Environment (DFFE) (Forestry)
Eskom: Renewable Energy
Eskom: Land & Rights Section
Eskom: Transmission
Department of Water Affairs
Department of Energy
Department of Forestry, Fisheries and the Environment (DFFE): various
Department of Forestry, Fisheries and the Environment (DFFE): Biodiversity & Conservation
Department of Rural Development and Land Reform (DRDLR)
KZN Department of Economic Development & Tourism and Environmental Affairs: EIA
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office
KZN Department of Economic Development & Tourism and Environmental Affairs: Acting Chief Director: Environmental Management
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office
KZN Department of Economic Development & Tourism and Environmental Affairs: Southern Region
KZN Department of Economic Development, Tourism and Environmental Affairs
KZN Department of Economic Development & Tourism and Environmental Affairs: Tourism department
KZN Department of Economic Development & Tourism and Environmental Affairs: Trade and Investment department
KZN Department of Economic Development & Tourism and Environmental Affairs: HoD
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Trade and Sector Development
KZN Department of Economic Development & Tourism and Environmental Affairs: Deputy Director General Sector Dev. & Business Governance
KZN Department of Economic Development & Tourism and Environmental Affairs: Deputy Director General: Integrated Economic Development Services
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Local Economic Development
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Tourism Development
KZN Department of Economic Development & Tourism and Environmental Affairs: person in charge of Amajuba District Municipality
Amajuba DM Municipal Manager
Newcastle Local Municipality: Municipal Manager, Dev. Planning & Human Settlements, and Community Services (Env)
Civil Aviation Authority
Air Traffic and Navigation Services (ATNS): Vryheid and Newcastle airports
Ezemvelo KZN Wildlife: various
Ezemvelo KZN Wildlife: Integrated Environmental Management
Ezemvelo KZN Wildlife: District Conservation Officer, Underberg Region
Ezemvelo KZN Wildlife: Regional Ecologist

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Ezemvelo KZN Wildlife: Ecological Advice Division
Ezemvelo KZN Wildlife: KZN Biodiversity Stewardship Programme
Ezemvelo KZN Wildlife: Avifaunal unit
Ezemvelo KZN Wildlife: District Ecologist
AMAFA / Heritage KwaZulu Natal
South African Heritage Resources Agency (SAHRA)
SANParks
<b>ENVIRONMENTAL NGOS</b>
Birdlife South Africa: various
Birdlife South Africa: Birds and Renewable Energy Manager
Endangered Wildlife Trust: CEO
Endangered Wildlife Trust: Head of Conservation Science
Endangered Wildlife Trust: African Crane Conservation Programme Manager
Endangered Wildlife Trust: African Crane Conservation Programme Field Officer
Endangered Wildlife Trust: Wildlife & Energy Programme
WESSA KZN Region: Conservation Project Manager
WESSA KZN Region: Conservation Director
WESSA KZN Regional Representative
WESSA KZN Regional Committee: Regional Chair
WESSA KZN Branch Sani Wildlife
WESSA KZN Regional Representatives in northern areas
WESSA KZN Regional Committee in northern areas
WESSA KZN Regional Committee in northern areas
Wildlife Ranching RSA
<b>PROTECTED AREAS</b>
Elandsberg Protected Environment
Sneeuwberg Protected Environment - protected under Birdlife SA
Seekoeivlei Nature Reserve (Destea) resort
Potberg Private Nature Reserve (potberg Game Ranch)
WWF: Enkangala Grasslands Project South Africa
<b>INTEREST GROUPS</b>
The Bat Interest Group of KwaZulu-Natal
Utrecht Farmers Association
Ingogo Farmers Association
Groenvlei Farmers Association
Vryheid Farmers Association
Battlefields Route Association KZN
Mulilo Renewable Project Developments
G7 Energies
WWF SA Ecosystems Partnership Manager
WWF SA Grasslands Programme Manager
WWF SA Grasslands Programme Assistant
SANBI Coordinator - National Grassland Programme
SANBI - National Grassland Programme
<b>FARM OWNERS</b>
Portion 1 of the Farm Geelhoutboom No. 3350

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Remainder Farm Bernard No. 9447	
Remainder Farm Cliffdale No. 9439	
Remainder Farm Spitskop No. 16302	
Remainder Farm Byron No. 9448	
Remainder Farm Geelhoutboom No. 3350	
<b>NEIGHBOURING FARM OWNERS</b>	
3350	
3352	
12272	
12272	
16300	
18734	
4563	
4563	
16846	
18734	
16301	
16299	
4563	
3305	
3350	
<b>OTHER REGISTERED I&amp;APs</b>	
I&AP	Affiliation
Bradley Gibbons	Endangered Wildlife Trust
Eskom KZN	Land Development Division
Wynand De Kock	Private
David Nicol	RedCap
Jadon Schmidt	RedCap
Cas Joubert	ALS Group
Peter Hair	NC Ratepayers Association
Willie van den berg	NC Ratepayers Association
Darrel Brown	Financial Planner
Thys Joubert Junior	ALS Group
Thys Joubert Senior	ALS Group
J F Smith	I&AP
Annette Craffert	Secretary at Ingogo Boerevereniging
Herman Louw	potential I&AP
W. Outer	potential I&AP
W. Hugo	potential I&AP
Kate Leonard	potential I&AP
Petrus Boshoff	potential I&AP
Samukelo Zwane	potential I&AP
Trevor Ehrens	potential I&AP

#### **10.1.4 SURROUNDING AND AFFECTED LANDOWNERS**

The residents of the surrounding areas were provided with an initial letter of introduction to the project during the site meetings. These documents included the contact details of the EAP for the landowners to register themselves and/or submit their comments on the proposed development.

#### **10.1.5 REGISTERED I&APS**

Other than I&APs initially identified and any persons requesting to be registered as I&APs have been and will continue to be included in the I&AP database (Table 10-1).

#### **10.1.6 THE PUBLIC PARTICIPATION PROCESS FOLLOWED**

##### ***Release of the Draft Scoping Report for Authority, Stakeholder and Public review.***

The Draft Scoping Report was made available for public review from the 29<sup>th</sup> of July 2022 to 10<sup>th</sup> of September 2022 (30 days, inclusive of one public holiday).

- ▲ Hard copies of the Draft Scoping Report were made available at the Newcastle Public Library.
- ▲ Soft copies were made available on the CES website ([www.cesnet.co.za](http://www.cesnet.co.za)).

##### ***Submission of the Final Scoping Report to DFFE.***

The Final Scoping Report was submitted and received by the DFFE on the 2<sup>nd</sup> November 2022. The following PPP actions were conducted:

- ▲ All registered I&APs were notified of the submission of the Final Scoping Report;
- ▲ PDF copies of the EIA Report were e-mailed to I&APs on request (a hard copy was couriered to Ezemvelo);
- ▲ Hard copies of the Final Scoping Report were made available at the Newcastle Public Library.
- ▲ Soft copies were made available on the CES website ([www.cesnet.co.za](http://www.cesnet.co.za)).

##### **Release of the Draft Environmental Impact Assessment Report for Authority, Stakeholder and Public review**

The Draft EIR will be made available for public review: anticipated dates – **7<sup>th</sup> March 2023 to 6<sup>th</sup> April 2023** (30 days):

- ▲ All registered I&APs will be notified of the submission of the Draft EIA Report;
- ▲ PDF copies of the EIA Report will be e-mailed to I&APs on request;
- ▲ As specifically requested by Ezemvelo, a copy of the Draft EIA Report will be couriered on a flash-stick);
- ▲ Hard copies of the Draft Environmental Impact Assessment Report will be available at the Newcastle Public Library; and
- ▲ Electronic copies will be made available on the CES website ([www.cesnet.co.za](http://www.cesnet.co.za)).

## **10.2 COMMENTS AND RESPONSE REPORT**

The comments and response report will be continuously updated details of all comments received and the responses there to. This report has been included as Appendix D of the Draft EIA Report and includes responses to comments received throughout the process to date.



# 11 CONCLUSIONS AND RECOMMENDATIONS

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## 11.1 DESCRIPTION OF THE PROPOSED ACTIVITY

Mulilo Newcastle Wind Power (Pty) Ltd proposes to develop, construct and operate the 200 MW Mulilo Newcastle Wind Power (MNWP) WEF as part of the Mulilo Newcastle Wind Energy Facility (WEF) Complex located near Newcastle in KwaZulu-Natal. According to the wind data in the area, this project site appears to have favourable conditions to operate a wind farm.

The MNWP WEF will comprise up to 45 possible turbine sites and will have an anticipated lifespan of 20 – 25 years. The WEF will be located on six (6) land parcels with a total extent of 2,940 ha. The proposed turbine footprints and associated facility infrastructure will cover an area of up to 85 ha after rehabilitation, depending on final layout design.

The current layout allows for up to 45 wind turbine sites with a maximum output capacity of up to 200 MW. The final design and turbine layout was determined based on the outcome of the specialist studies undertaken during the EIA process (see Section 9: Sensitivity Analysis).

The nature of the proposed site for the establishment of the WEF is located on land currently used for livestock grazing. However, the establishment of the proposed MNWP WEF raises various environmental issues which are assessed in this EIAr.

## 11.2 NEED AND DESIRABILITY

Section 3 of the EIAr provides a detailed synopsis of the need for and desirability of the MNWP WEF. Overall, the proposed MNWP WEF is aligned with numerous National, Provincial and Municipal policies and plans aimed at contributing to climate change mitigation and transitioning to a cleaner energy mix in South Africa. It also aligned with the goals of the KZN Green Economic Strategy and of Trade Invest KZN to transition to a low carbon economy but at the same time meeting the growing future energy demand to sustain economic development in the Province.

In addition to the above, South Africa has currently been experiencing severe electricity shortages causing frequent and prolonged loadshedding. Consequently, on the 27<sup>th</sup> February 2023, Government gazetted the Disaster Management Act (57/2002): Regulations issued in terms of Section 27 (2) of the Act with the main objective of minimising the impact of load shedding on livelihoods, the economy, policing functions, National security, security services, education services, health services, water services, food security, communications and municipal services, amongst others.

## 11.3 CONSIDERATION OF ALTERNATIVES

Section 6 of the EIAr provides a detailed analysis of all reasonable and feasible alternatives identified for the MNWP WEF. Based on the analysis, it is concluded that, given the need to increase South Africa's energy security and to transition to cleaner technology, that the current proposed MNWP WEF project is the Preferred Alternative, comprising up to 45 turbines with an output capacity of up to 200 MW, and with the specified turbine dimensions. The preferred layout has been informed by the limitations recommended by the various specialist studies.

## 11.4 ASSUMPTIONS, LIMITATIONS AND GAPS IN KNOWLEDGE

This report is based on currently available information and, as a result, the following limitations and assumptions are implicit–

- ✦ This report is based on a project description and site plan, provided to CES by the applicant, which has not been approved by DFFE at this stage of the project. The project description and site plan may undergo iterations and refinements before being regarded as final. A project description based on the final design will be concluded once DFFE has provided feedback on the layout provided in this report.
- ✦ Descriptions of the natural and social environments are based on limited fieldwork and available literature.
- ✦ It should be emphasised that information, as presented in this document, only has reference to the study area as indicated on the accompanying maps. Therefore, this information cannot be applied to any other area without a detailed investigation being undertaken.

## 11.5 IMPACT ASSESSMENT

The current EIA process included 11 specialist impact studies, all conducted in line with the relevant legislated protocols and best practice guidance, including:

- ✦ Agricultural Impact Assessment;
- ✦ Terrestrial Ecology Impact Assessment (fauna and flora);
- ✦ Aquatic Impact Assessment;
- ✦ Avifaunal Impact Assessment;
- ✦ Bat Impact Assessment;
- ✦ Heritage (Archaeological) Impact Assessment;
- ✦ Paleontological Impact Assessment;
- ✦ Noise Impact Assessment;
- ✦ Socio-Economic Impact Assessment;
- ✦ Visual Impact Assessment; and
- ✦ Traffic Impact Assessment.

Sections 7 and 8 of the EIAR describe the various impacts that have been identified and assessed for severity during the MNWP WEF EIA process (both general and specialist). Table 11-1 below provides a summary of the impacts that are rated either HIGH or VERY HIGH pre- and post-mitigation.

**Table 11-1: Summary of high impacts identified during the MNWP WEF EIA process.**

Potential Impact	Nature of impact	Significance after mitigation	Significance before mitigation
<b>GENERAL IMPACTS</b>			
<b>PLANNING &amp; DESIGN</b>			
Environmental legal and policy compliance	DIRECT/ CUMULATIVE	HIGH (-)	LOW (-)
Management of general waste	DIRECT	HIGH (-)	LOW (-)
Traffic & transport	CUMUALTIVE	HIGH (-)	MODERATE (-)
Storage of hazardous substances	CUMUALTIVE	HIGH (-)	LOW (-)
Management of general waste	CUMUALTIVE	HIGH (-)	LOW (-)
<b>CONSTRUCTION</b>			
Fire	DIRECT/ CUMULATIVE	HIGH (-)	MODERATE (-)

Potential Impact	Nature of impact	Significance after mitigation	Significance before mitigation
Degradation of drainage lines from earthworks	DIRECT/ CUMUALTIVE	HIGH (-)	LOW (-)
Stormwater management	CUMUALTIVE	HIGH (-)	LOW (-)
Water quality	CUMUALTIVE	HIGH (-)	LOW (-)
<b>OPERATIONAL</b>			
Hazardous chemical storage	DIRECT/ CUMUALTIVE	HIGH (-)	MODERATE (-)
<b>SPECIALIST IMPACTS</b>			
<b>CONSTRUCTION</b>			
<b>Terrestrial Biodiversity Impact Assessment</b>			
Loss of Southern Mist belt Forest (LC)	DIRECT	HIGH (-)	LOW (-)
Compliance, compatibility, alignment with biodiversity and environmental planning tools	DIRECT/ CUMULATIVE	HIGH (-)	MODERATE (-)
<b>Aquatic Impact Assessment</b>			
<b>Internal access and haulage roads</b>			
Indirect hydrological and geomorphological impacts	DIRECT/ CUMULATIVE	MOD-HIGH (-)	MOD-LOW (-)
<b>Visual Impact Assessment</b>			
Potential visual impact of construction on sensitive visual receptors in close proximity to the facility	DIRECT	HIGH (-)	MODERATE (-)
<b>Traffic Impact Assessment</b>			
Construction Phase – traffic congestion	DIRECT/ CUMULATIVE	HIGH (-)	MODERATE (-)
<b>OPERATIONAL</b>			
<b>Terrestrial Biodiversity Impact Assessment</b>			
Establishment of Alien Plant Species	DIRECT/ CUMULATIVE	HIGH (-)	LOW (-)
<b>Aquatic Impact Assessment</b>			
<b>Internal access and haulage roads</b>			
Indirect hydrological and geomorphological impacts	DIRECT/ CUMULATIVE	MOD-HIGH (-)	MOD-LOW (-)
<b>Bat Impact Assessment</b>			
Mortality due to wind Turbine collision and/or Barotrauma during the operational phase	DIRECT/ CUMULATIVE	HIGH (-)	MODERATE (-)
<b>Noise Impact Assessment</b>			
Operation of WEF (worst-case and reported SPL)	CUMULATIVE	HIGH (-)	LOW (-)
<b>Socio-Economic Impact Assessment</b>			
Impacts on sense of place	DIRECT	HIGH (-)	MODERATE (-)
	CUMULATIVE		HIGH (-)
<b>Visual Impact Assessment</b>			
Potential visual impact of facility operations on sensitive visual receptors in close proximity to the proposed development	DIRECT/ CUMULATIVE	VERY HIGH (-)	VERY HIGH (-)
Potential visual impact of facility operations on sensitive visual receptors within the region	DIRECT	HIGH (-)	HIGH (-)
	CUMULATIVE	MODERATE (-)	
Potential visual impact of operational lighting at	DIRECT/	HIGH (-)	MODERATE (-)

Potential Impact	Nature of impact	Significance after mitigation	Significance before mitigation
night on sensitive visual receptors in the region	CUMULATIVE	HIGH (-)	MODERATE (-)
Potential visual impact of shadow flicker on sensitive visual receptors in close proximity to the proposed development	DIRECT/ CUMULATIVE	HIGH (-)	MODERATE (-)
Potential visual impact of facility operations on the visual character of the landscape and sense of place of the region	DIRECT/ CUMULATIVE	HIGH (-)	HIGH (-)

Based on the above table, it should be noted that most HIGH direct and cumulative impacts can be reduced to either MODERATE or LOW with the implementation of effective mitigation measures. Three (3) direct impacts and one (1) cumulative impact remain either HIGH or VERY HIGH post-mitigation. All these impacts relate to visual impacts on sensitive visual receptors both locally and regionally and a change in the visual character and sense of place of the affected area. It should also be noted that the cumulative visual impact of the WEF on a regional basis, increases from MODEARTE to HIGH when considering the combined impact of both the MNWP WEF and the adjacent MNWP 2 WEF.

It should be noted, however, that even though the visual impacts will be HIGH, the visual specialist indicated that this does not represent a fatal flaw for a development of this nature (i.e. wind farm) and goes further to recommend that the proposed MNWP WEF, as per the assessed layout, be supported from a visual perspective, subject to the implementation of the suggested best practice mitigation measures, as provided in the VIA. In addition, although the socio-economic specialist determined that the WEF could have a HIGH impact on sense of place, from a social perspective, this can be reduced to a MODERATE impact severity. The degree of confidence is, however, ‘undecided’ as sense of place remains a personal experience.

In addition to the above, over time, the HIGH visual impact may reduce as the community becomes used to and more accepting of the sight of the wind turbines. Some may even regard them as being a positive sight.

## **11.6 ENVIRONMENTAL COST-BENEFIT ANALYSIS**

A cost/benefit analyses can take many forms and that there is no prescribed methodology for conducting such an analysis as part of an EIA process. The approach is generally limited by the difficulty in attaching economic values to environmental and social impacts (costs) or benefits and the availability of relevant quantitative information. Most environmental cost/benefit analyses, therefore, adopt a qualitative approach, where one simply identifies the types of costs and benefits associated with a particular activity and then apply a simple ranking system to assist in reaching an overall conclusion.

Consequently, the current EIA impact assessment provides a good basis for conducting an environmental and social cost/benefit analysis for the MNWP WEF, as the full range of positive and negative impacts is integral to the process.

### ***Direct and indirect impacts***

A total of 113 impacts were identified during the EIA process. Of the identified impacts 101 are NEGATIVE pre-mitigation and 12 are POSITIVE pre-mitigation.

Table 11-2 provides an overall summary of the direct and indirect negative (cost) and positive (benefit) environmental impacts associated with the proposed MNWP WEF.

**Table 11-2: Summary of positive and negative direct and indirect impacts associated with the MNWP WEF.**

PHASE	IMPACT PRE-MITIAGTION									IMPACT POST-MITIAGTION								
	LOW		MODERATE		HIGH		V HIGH		TOTAL	LOW		MODERATE		HIGH		V HIGH		TOTAL
Positive/negative	(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)		(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)	
Planning & Design	2		4		2					8								
Construction	15	3	28	2	6					39	3	8	4					
Operation	13	3	16	2	9	1	1			27	1	9	4	2	1	1		
Decommission		1	5							5	1							
<b>TOTAL</b>	<b>30</b>	<b>7</b>	<b>53</b>	<b>4</b>	<b>17</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>113</b>	<b>79</b>	<b>5</b>	<b>17</b>	<b>8</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>113</b>

The purpose of the EIA process is to ensure that a site and proposed activity are assessed and then mitigated in terms of the mitigation hierarchy. In terms of the mitigation hierarchy, Table 11.2 above illustrates the following:

- ▲ Avoid: Sensitive areas have been avoided as per Section 9 of this report (sensitivity analysis) and no critical un-mitigatable impacts remain (apart from visual). No turbines are situated within areas rated above MODERATE sensitivity.
- ▲ Minimise: Most of the 101 negative impacts are MODERATE or LOW post-mitigation (96 or 95%) having been reduced from predominantly HIGH (17) to MODERATE (53) pre-mitigation.
- ▲ Offset: N/A as no HIGH biodiversity impacts remain post mitigation.

Given the reduction in impact significance (negative impacts) through the mitigation hierarchy and the number of positive impacts associated with the development, the EAP is of the opinion that the environmental, social and economic cost does not outweigh the environmental, social and economic benefit of the proposed MNWP WEF.

As has already been described above, two (2) HIGH impacts remain HIGH post-mitigation and one (1) VERY HIGH impact remains VERY HIGH post-mitigation relate to visual impacts where there are limited visual mitigation options to reduce the impact severity. However, as already been indicated above, the visual specialist does not consider this to be a fatal flaw. In addition, over time, the impact may reduce as the community becomes used to and more accepting of the sight of the wind turbines.

**Cumulative**

Table 11-3 below provides an overall summary of the cumulative negative (cost) and positive (benefit) environmental impacts associated with the proposed MNWP WEF.

In terms of cumulative impacts, these do not differ materially from the direct impacts, where two (2) HIGH impacts remain HIGH post-mitigation and relate to visual impacts where there are limited visual mitigation options to reduce the impact severity. The cumulative visual impact of the WEF on a regional basis does increase from MODEARTE to HIGH when considering the combined impact of both the MNWP WEF and the adjacent MNWP 2 WEF.

**Table 11-3: Summary of positive and negative cumulative impacts associated with the MNWP WEF.**

PHASE	IMPACT PRE-MITIAGTION									IMPACT POST-MITIAGTION								
	LOW		MODERATE		HIGH		V HIGH		TOTAL	LOW		MODERATE		HIGH		V HIGH		TOTAL
Positive/negative	(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)		(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)	
Planning & Design	1								1	1								1
Construction	15		11		3	1			30	25		4		2				31
Operation	7	1	11	1	6	2			28	16	1	6	1	2	1			27
Decommission									0									0
<b>TOTAL</b>	<b>23</b>	<b>1</b>	<b>22</b>	<b>1</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>42</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>59</b>



### ***No-Go alternative***

Generally, the no-go option will eliminate the risk of any negative impacts associated with the MNWP WEF. However, the very important potential socio-economic benefits of the project will not materialise, such as:

- ▲ Job creation;
- ▲ Skills development (technical);
- ▲ Local economic development;
- ▲ Climate change mitigation (transition to low carbon energy generation); and
- ▲ Access to clean energy and improved energy security.

The positive impacts of the project relating to climate change mitigation and energy security are particularly important due to the current South African energy crisis and State of Disaster, and the ever increasing climate change crisis.

## **11.7 FATAL FLAWS**

It is the opinion of the EAP that based on the information gathered and assessed during the course of the EIA process, including specialist studies and PPP, the severity of any negative impacts associated with the proposed MNWP WEF do not represent a fatal flaw for the project.

## **11.8 OPINION OF THE EAP**

Based on the results of this EIA process, it is the opinion of the EAP that the proposed MNWP WEF should be authorised provided that all specialist mitigations and recommendations are implemented and the conditions stipulated in Section 11.9 below are included in the EA. It is also the opinion of the EAP that while the site is sensitive from a visual perspective, the potential negative impacts on the natural environment such as critical biodiversity areas, aquatic features, avifauna and bats, can be effectively mitigated to an acceptable level. In addition, the project will result in significant socio-economic benefits.

## **11.9 RECOMMENDATIONS OF THE EAP**

Please note that this list is limited to general impact mitigation recommendations. The specialist mitigation recommendations (Refer to Section 7: Key Findings of Specialist Studies and Appendix H2) have been included in the EMP, which must be implemented and adhered to.

### ***11.9.1 PLANNING AND DESIGN RECOMMENDATIONS***

The following general mitigation measures must be implemented as part of the planning and design phase:

- ▲ Project planning must include a plan for traffic control that will be implemented, especially during the construction phase of the development. Consultation with the local Road Traffic Unit in this regard must be done early in the planning phase. The necessary road traffic permits must be obtained for transporting parts, containers, materials and construction equipment to the site.
- ▲ Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified, these areas must be upgraded if necessary.
- ▲ All hazardous substances such as paints, diesel and cement must be stored in a bunded area with an impermeable surface beneath them.
- ▲ Cement mixing must be conducted at a single location which must be centrally located, where practical. This mixing must take place on an impermeable surface, and dried waste cement must be disposed of with building rubble.
- ▲ The applicant must ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy. These must include (but not restricted to):
  - Local and District Spatial Development Frameworks

- Local Municipal bylaws
- ✦ In addition, planning for the construction and operation of the proposed energy facility must consider available best practice guidelines, up to date at the proposed time of construction.
- ✦ Structures must be located at least 32m away from identified drainage lines.
- ✦ A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of water flow.
- ✦ The Stormwater Management Plan must also include management mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by considering the applicability of contouring, etc.
- ✦ A Waste Management Plan must be developed for handling onsite waste. This plan must designate an appropriate area where waste can be stored before disposal.
- ✦ All general waste must be disposed of at a registered landfill site.
- ✦ Wherever possible, construction activities must be undertaken during the driest part of the year to minimize downstream sedimentation due to excavation, etc. When not possible, suitable stream diversions structures must be used to ensure that rivers/streams are not negatively impacted by construction activity.

### **11.9.2 CONSTRUCTION RECOMMENDATIONS**

The following general mitigation measures must be implemented during the construction phase:

- ✦ Fugitive/nuisance dust must be reduced by implementing one of or a combination of the following
  - Damping down of un-surfaced and un-vegetated areas;
  - Retention of vegetation where possible;
  - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;
  - A speed limit of 40km/h must not be exceeded on dirt roads;
- ✦ Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
- ✦ There must be no burning of construction waste or debris onsite. Cooking is not permitted on site. Smoking on site must be confined to a designated area in the vicinity of the site office which must be equipped with the necessary fire extinguishers.
- ✦ The Stormwater Management Plan must be implemented. There must be no earthworks within 32m of the drainage lines to avoid contamination of water sources.
- ✦ The Waste Management Plan, incorporating recycling and waste minimisation, must be implemented. The plan must be explained to all employees as part of the environmental induction training. All waste must be disposed of at an appropriately licensed landfill site.
- ✦ The storage of fuels and hazardous materials must be located away from sensitive water resources. All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area.
- ✦ All construction materials must be stored in a central and secure location with controlled access with an appropriate impermeable surface.
- ✦ The recommendations of the Stormwater Management Plan must be implemented to mitigate the impacts of run-off water on pollution.
- ✦ The concrete batching plant must be clearly demarcated, and no sprawl must be tolerated.
- ✦ Stockpiled excavated material must not be stored within 32m of a watercourse.
- ✦ Stockpile areas must be suitably bunded to prevent waterborne erosion of exposed soils where there is a likelihood that the soils will be washed into a watercourse.
- ✦ Materials used for infilling must be suitably stabilized to ensure that scour and erosion of the existing bed/banks is exacerbated.
- ✦ Subsoil cannot be disposed of onsite without the appropriate Waste License in terms of the NEMA: Waste Act. This must be stipulated in the Waste Management Plan.

- ✦ Spoil could be used to rehabilitate open borrow pits or erosion features. Disposal of spoil material to a registered landfill must be the last option. No spoil stockpiles will be allowed to remain onsite once construction activities have ceased.

### **11.9.3 OPERATIONAL RECOMMENDATIONS**

The following general mitigation measures must be implemented during the operational phase:

- ✦ All project structures and buildings must be maintained.
- ✦ All hazardous substances must be stored in appropriately bunded locations.
- ✦ Recommendations of the Stormwater Management Plan must be implemented throughout the lifespan of the project.
- ✦ Recommendation of the Waste Management Plan, incorporating recycling and waste minimisation, must be implemented throughout the lifespan of the project.

### **11.9.4 DECOMMISSIONING RECOMMENDATIONS**

The following general mitigation measures must be implemented during the decommissioning phase:

- ✦ This section of mitigation measures must be reassessed by a suitably qualified EAP and specialists prior to decommissioning.
- ✦ Littering must be avoided, and litter bins must be made available at various strategic points on site. Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill.
- ✦ Fugitive/nuisance dust must be reduced by implementing one of or a combination of the following
  - Damping down of un-surfaced and un-vegetated areas;
  - Retention of vegetation where possible;
  - Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;
  - A speed limit of 40km/h must not be exceeded on dirt roads;
- ✦ Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
- ✦ Construction vehicles and machinery must make use of existing infrastructure such as roads as far as possible to minimise disturbance on the receiving environment.
- ✦ After the removal of all wind turbine-related structures, the disturbed soils must be re-vegetated to avoid unnecessary soil erosion.

Based on current available information the turbines will be removed as per the above specifications. It is recommended that a new and up-to-date impact assessment is undertaken prior to this process to ensure that the latest relevant guidelines and policy on wind farm decommissioning are factored into the process. Should new technology be available to replace the structures then, depending on the legislation relevant at the time, the EAP recommends a new impact assessment process prior to being able to do so. The DFFE would be required to approve any decommissioning or replacement process.

### **11.9.5 MONITORING RECOMMENDATIONS**

#### **Avifaunal Monitoring**

Section 6 of the Avifaunal Impact Assessment provides specifications for post construction monitoring, including:

- ✦ Avifaunal Abundance and Flight Activity Monitoring
- ✦ Fatality Monitoring
- ✦ Carcass Searching
- ✦ Searcher Efficiency and Scavenger Trials
- ✦ Reporting

**Bat Monitoring**

The bat specialist study indicated that post-construction/ operational bat monitoring must be performed according to the South African Good Practise Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (Aronson *et al* 2014) or later version valid at the time of monitoring. IWS recommends the initial 2 years and then every third year for the remainder of the project.

Similar to avifauna, the post construction bat monitoring should cover the following:

- ✦ Bat Abundance and Flight Activity Monitoring
- ✦ Fatality Monitoring
- ✦ Carcass Searching
- ✦ Searcher Efficiency and Scavenger Trials
- ✦ Reporting

**Aquatic Monitoring**

Section 7.3 of the Aquatic Impact Assessment provides specifications for operational phase monitoring, where the following key aspects should be monitored:

- ✦ Erosion and/or sedimentation in the onsite and downstream wetlands;
- ✦ Water table monitoring to determine any impacts to subsurface inputs; and
- ✦ Presence of alien invasive plants.

## APPENDIX A | EAP DECLARATION

### Environmental Assessment Practitioner (EAP) Details:

**EAP:** Dr Alan Carter  
**Address:** 39 Harewood Drive, Nahoon, East London, 5241  
**Telephone:** +27 (0)43 726 7809  
**E-mail:** [a.carter@cesnet.co.za](mailto:a.carter@cesnet.co.za)

### EAP Declaration

- ▲ I act as the independent environmental practitioner in this application;
- ▲ I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- ▲ I declare that there are no circumstances that may compromise my objectivity in performing such work;
- ▲ I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- ▲ I will comply with the Act, Regulations and all other applicable legislation;
- ▲ I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- ▲ I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- ▲ I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- ▲ All of the particulars furnished by me in this form are true and correct; and
- ▲ I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations.



ENVIRONMENTAL CONSULTANT	RESPONSIBILITY	DATE
Alan Carter	Project Leader & The EAP	February 2023



## APPENDIX B | EAP CVs

### ALAN ROBERT CARTER

*Curriculum Vitae*



#### CONTACT DETAILS

<b>Name of Company</b>	CES – Environmental and Social Advisory Services
<b>Designation</b>	Executive - East London and Port Elizabeth branches of CES
<b>Profession</b>	Environmental consultant and financial accountant
<b>Years with firm</b>	20 (twenty) + years
<b>E-mail</b>	a.carter@cesnet.co.za
<b>Office number</b>	+27 (0) 43 726-7809
<b>Mobile</b>	+27 (0) 83 379-9861
<b>Nationality</b>	South African
<b>Professional Body</b>	<ul style="list-style-type: none"> <li>➤ SACNASP: South African Council for Natural Scientific Profession</li> <li>➤ EAPASA: Environmental Assessment Practitioners Association of South Africa</li> <li>➤ IWMSA: Institute Waste Management Southern Africa</li> <li>➤ TSBCPA: Texas State Board of Certified Public Accountants (USA)</li> <li>➤ AICPA: American Institute of Certified Public Accountants (USA)</li> <li>➤ Exemplar Global: Environmental Management Systems Auditor</li> </ul>
<b>Key areas of expertise</b>	<ul style="list-style-type: none"> <li>➤ Environmental Impact Assessment</li> <li>➤ Marine Ecology</li> <li>➤ Environmental and coastal management</li> <li>➤ Waste management</li> <li>➤ Climate change and emissions inventories</li> <li>➤ Financial accounting and project feasibility studies</li> <li>➤ Environmental management systems, auditing and due-diligence</li> </ul>

#### PROFILE

Alan has extensive training and experience in both financial accounting and environmental science disciplines with CES over the past 20 years and prior to that, with international accounting firms in South Africa and the USA. He holds a PhD in marine ecology and BCom Honours degree in financial accounting and auditing. He is also a member of the American Institute of Certified Public Accountants (licensed in Texas) and is a certified ISO14001 EMS auditor with Exemplar Global (formerly the American National Standards Institute). Alan has been responsible for leading and managing numerous and varied environmental and financial consulting projects over the past 30 years.

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**EMPLOYMENT EXPERIENCE**

- January 2001 – Present: Executive (Coastal & Environmental Services, East London, South Africa)
- January 1999 – December 2001: Manager (Arthur Andersen LLP, Public Accounting Firm, Chicago, Illinois USA)
- December 1996 – December 1998: Senior Accountant/Auditor (Ernst & Young LLP, Public Accounting Firm, Austin, Texas, USA.)
- January 1994 – December 1996: Senior Accountant/Auditor (Ernst & Young, Chartered & Barnes, Chartered Accountants, East London, South Africa)
- July 1991 – December 1994: Associate Consultant (Coastal & Environmental Services, East London, South Africa)
- March 1989 – June 1990: Data Investigator (London Stock Exchange, London, England, United Kingdom)

**ACADEMIC QUALIFICATIONS**

- Ph.D. Plant Science (Marine) - Rhodes University 1987
- B. Compt. Hons. Accounting Science - University of South Africa 1997
- B. Com. Financial Accounting - Rhodes University 1995
- B.Sc. Hons. Plant Science - Rhodes University 1983
- B.Sc. Plant Science & Zoology - Rhodes University 1982

**COURSES**

- Environmental Management Systems Lead Auditor Training Course - American National Standards Institute and British Standards Institute (2000)
- ISO 14001:2015 Implementing Changes - British Standards Institute (2015)
- Numerous other workshops and training courses.

**CONSULTING EXPERIENCE**

**Environmental Impact Assessment**

- Managed numerous environmental impact assessment (EIA) projects (estimated at over 200 EIAs) and prepared EIA reports in terms of relevant EIA legislation and regulations (including World Bank and IFC Standards) for development proposals including: bulk water and waste water, roads, electrical, mining, ports, aquaculture, renewable energy (over 20 solar facilities and over 20 wind farms), industrial processes, housing developments, golf estates and resorts, etc. (2002 – present).
- Projects have also included preparation of applications in terms of other statutory requirements, such as water-use and mining licence /permit applications.
- Assisted City of Johannesburg in the process to proclaim four nature reserves in terms of relevant legislation (2015-2016).

**Feasibility and Pre-feasibility Assessments**

- Managed projects to develop pre-feasibility and feasibility assessments for various projects, including various tourism developments, aquaculture, infrastructure projects, etc.
- Managed project for the East London Industrial Development Zone (ELIDZ) to develop a Conceptual Framework for a Mariculture Zone within the ELIDZ (2009).
- Managed the following aquaculture feasibility studies:
  - Mariculture Zone at Qoloha on the South African Wild Coast (2013).
  - Mariculture Zone within the Coega Industrial Development Zone (2014).
  - Aquaponics Zone within the Coega Industrial Development Zone (2017).
  - Finfish cage farming within the Port of Richards Bay (2019).

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- Multispecies aquaculture hatchery and demonstration facility in the Eastern Cape Province (2019).
- Managed project to determine the financial feasibility of various proposed tourism developments for the Kouga Development Agency in the Eastern Cape Province (2006)
- Contributed significantly to a study to determine the financial and environmental feasibility of three proposed tourism development projects at Coffee Bay on the Wild Coast (2004).

**Strategic Environmental Assessment**

- Managed Strategic Environmental Assessment (SEA) project toward the development of a Biofuel industry in the Eastern Cape Province of South Africa (2014-2016)
- Managed Strategic Environmental Assessment (SEA) projects for two South African ports (2006 – 2007).
- Managed Strategic Environmental Assessment (SEA) projects for five (5) local municipalities in the Eastern Cape as part of the municipal Spatial Development Framework plans (2004 – 2005).
- Involved in the financial assessment of various land-use options and carbon credit potential as part of a larger Strategic Environmental Assessment (SEA) for assessing forestry potential in Water Catchment Area 12 in the Eastern Cape of South Africa (2006).

**Climate change, emissions trading and renewable energy**

- Provided specialist peer review services for National Department of Environmental Affairs relating to climate change impact assessments for large infrastructure projects (2017-2018).
- Conducted climate change impact assessment for a proposed coal-fired power station in Africa (2017-2018).
- Participated in the development of a web-based Monitoring & Evaluation (M&E) system for climate change Mitigation and Adaptation in South Africa for National Department of Environmental Affairs (DEA) (2015-2016).
- Managed project to develop a Climate Change Strategy for Buffalo City Metro Municipality (2013).
- Managed projects to develop climate change strategies for two district municipalities in the Eastern Cape Province (2011).
- Conducted specialist carbon stock and greenhouse gas emissions impact and life cycle assessment as part of the Environmental, Social and Health Impact Assessment for a proposed sugarcane to ethanol project in Sierra Leone (2009 - 2010) and a proposed Jatropha bio-diesel project in Mozambique (2009 - 2010).
- Managed project to develop the Eastern Cape Province Climate Change Strategy (2010).
- Managed project to develop a Transnet National Ports Authority Climate Change Risk Strategy (2009).
- Participated in a project to develop a Renewable Energy roadmap for the East London Industrial Development Zone (ELIDZ) (2013).
- Participated in a project for the East London Industrial Development Zone (ELIDZ) and Eastern Cape Government to prepare a Renewable Energy Strategy (2009).
- Contributed to the development of Arthur Andersen LLP's International Climate Change and Emissions Trading Services (2001).
- Conducted carbon credit (Clean Development Mechanism - CDM) feasibility assessment for a variety of renewable energy projects ranging from biogas to solar PV.



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- Participated in the preparation of CDM applications for two solar PV projects in the Eastern Cape.

**Waste Management**

- Managed project to develop Integrated Waste Management Plans for six local municipalities on behalf of the Sarah Baartman District Municipality in the Eastern Cape Province (2016).
- Managed project to develop Integrated Waste Management Plans for four local municipalities on behalf of Alfred Nzo District Municipality in the Eastern Cape Province (2015).
- Managed project to develop Integrated Waste Management Plans for eight local municipalities on behalf of Chris Hani District Municipality in the Eastern Cape Province (2011).
- Managed a project to develop a zero-waste strategy for a community development in the Eastern Cape Province (2010).
- Managed waste management status quo analysis for a District Municipality in the Eastern Cape Province (2003).
- For three consecutive years, managed elements of the evaluation of the environmental financial reserves of the three largest solid waste companies (Waste Management, Inc., Republic Services, Inc., Allied Waste, Inc.) and number of smaller waste companies in the USA as part of the annual financial audit process for SEC reporting purposes. Ensured compliance with RCRA and CERCLA environmental regulations.
- Managed elements of the evaluation of the environmental financial reserves of the largest hazardous waste company in the USA (Safety-Kleen, Inc.), as part of the audit process for SEC reporting purposes. Ensured compliance with RCRA and CERCLA environmental regulations.

**Environmental auditing and compliance**

- Conducted environmental legal compliance audit for various large Transnet Freight Rail facilities (2018).
- Lead auditor for numerous Environmental Control Officer (ECO) projects, including construction of wind and solar farms, road infrastructure, bulk water and sewage infrastructure, port infrastructure, cemeteries, etc.
- Participated in numerous ISO14001 Environmental Management System (EMS) audits for large South African corporations including SAPP, BHP Billiton, SAB Miller, Western Platinum Refinery, Dorbyl Group and others (2002 – present).
- Reviewed the SHE data reporting system of International Paper, Inc. (IP) for three successive years as part of the verification of the IP SHE Annual Report, which included environmental assessments of 12 IP pulp and paper mills located throughout the USA.

**Environmental Due Diligence and Business Risk**

- Participated in project on behalf of the CDC Group (UK) to conduct a due diligence on the ESG systems and mechanisms in place for an agro-industry investment entity with considerable agricultural investments throughout Africa (2021).
- Conducted environmental due diligence projects on behalf of the German Development Bank for a forestry pulp and paper operation in Swaziland (2010) and for a large diversified South African agricultural/agro-processing company (2011).
- Managed project for the Transnet National Ports Authority to identify the environmental risks and liabilities associated with the operations of the Port of Durban

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as part of a broader National initiative to assess business and financial risks relating to environmental management (2006).

- Conducted sustainability and cost/benefit analysis of various waste water treatment options (including a marine pipeline at Hood Point) for the West Bank of East London (2004).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).
- Involved in the determination of the historical cost element of environmental remediation insurance claims for a number of multinational companies, including Dow Chemicals, Inc. and International Paper, Inc.
- Evaluated the environmental budgeting process of the US Army and provided best practice guidance for improving the process.

**Policy and Guidelines**

- Managed project to develop an Estuarine Management Plan for the Quinera Estuary for the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (2021).
- Development of Administration / Application Fee Structure for the Reclamation of Land, Coastal Use Permits, Coastal Waters Discharge Permits, Dumping of Waste at Sea, Off-Road Vehicle Regulations Promulgated in Terms of the National Environmental Management Act: Integrated Coastal Management Act (Act No. 24 Of 2008) (2017).
- Managed project to develop an Estuarine Management Plan for the Buffalo River Estuary for the National Department of Environmental Affairs (2017).
- Managed project to develop a Coastal Management Programme for Amathole District Municipality, Eastern Cape (2015 – 2016).
- Managed project to develop a sustainability diagnostic report as part of the development of the Eastern Cape Development Plan and Vision 2030 (2013).
- Managed project for the Department of Environmental Affairs and Tourism, Marine & Coastal Management to determine the cost implications associated with the implementation of the Integrated Coastal Management Act (2007).
- Managed project to develop a Conservation Plan and Municipal Open Space System (MOSS) for Buffalo City Municipality (2007)
- Managed project to develop a Sanitation Policy and Strategy for Buffalo City Municipality, Eastern Cape (2004 – 2006).
- Managed project to develop an Integrated Environmental Management Plan and Integrated Coastal Zone Management Plan for Buffalo City Municipality, Eastern Cape (2004 – 2005).
- Managed projects to develop and implement an Environmental Management System (EMS) for the Chris Hani and Joe Gqabi (formerly Ukhahlamba) District Municipalities in the Eastern Cape generally in line with ISO14001 EMS standards (2004 – 2005).
- Managed project to develop a State of the Environment Report and Environmental Implementation Plans for Amathole, Chris Hani, OR Tambo and Joe Gqabi District Municipalities in the Eastern Cape Province (2005 – 2010).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).

**Environmental & Social Management Systems**



## ALAN ROBERT CARTER

### Curriculum Vitae



#### PUBLICATIONS

- Managed project to develop Environmental & Social Management Systems (ESMS) in line with IFC Performance Standards for an agricultural equipment supplier in Malawi on behalf of Nortund (2021).
- Managed projects to develop Environmental Management Systems (EMS) in line with ISO14001 EMS Standard for a South African water utility (2019).
- Managed projects to develop Environmental & Social Management Systems (ESMS) in line with IFC Performance Standards for four (4) wind farms in South Africa (2015-2018).
- Managed project to develop an Environmental & Social Management System (ESMS) in line with IFC Performance Standards for a telecoms company in Zimbabwe on behalf of the German Development Bank (2013).
- Conducted Environmental Management System (EMS) reviews for a number of large US corporations, including Gulfstream Aerospace Corporation.

#### Public financial accounting

- While with Ernst & Young LLP, (USA), functioned as lead financial auditor for various public and private companies, mostly in the technology business segment of up to \$200 million in annual sales. Client experience included assistance in a \$100 million debt offering, a \$100 million IPO and SEC annual and quarterly reporting requirements.
- Completed three years of articles (training contract) in fulfilment of the certification requirements of the South African Institute of Chartered Accountants which included auditing, accounting and preparation of tax returns for many small to medium sized commercial entities.

#### Refereed Publications

- Carter, A.R. 1985. Reproductive morphology and phenology, and culture studies of *Gelidium pristoides* (Rhodophyta) from Port Alfred in South Africa. *Botanica Marina* 28: 303-311.
- Carter, A.R. 1993. Chromosome observations relating to bispore production in *Gelidium pristoides* (Gelidiales, Rhodophyta). *Botanica Marina* 36: 253-256.
- Carter, A.R. and R.J. Anderson. 1985. Regrowth after experimental harvesting of the agarophyte *Gelidium pristoides* (Gelidiales: Rhodophyta) in the eastern Cape Province. *South African Journal of Marine Science* 3: 111-118.
- Carter, A.R. and R.J. Anderson. 1986. Seasonal growth and agar contents in *Gelidium pristoides* (Gelidiales, Rhodophyta) from Port Alfred, South Africa. *Botanica Marina* 29: 117-123.
- Carter, A.R. and R.H. Simons. 1987. Regrowth and production capacity of *Gelidium pristoides* (Gelidiales, Rhodophyta) under various harvesting regimes at Port Alfred, South Africa. *Botanica Marina* 30: 227-231.
- Carter, A.R. and R.J. Anderson. 1991. Biological and physical factors controlling the spatial distribution of the intertidal alga *Gelidium pristoides* in the eastern Cape Province, South Africa. *Journal of the Marine Biological Association of the United Kingdom* 71: 555-568.

#### Published reports

- Water Research Commission. 2006. Profiling Estuary Management in Integrated Development Planning in South Africa with Particular Reference to the Eastern Cape. Project No. K5/1485.
- Turpie J., N. Sihlophe, A. Carter, T. Maswime and S. Hosking. 2006. Maximising the socio-economic benefits of estuaries through integrated planning and management: A

## ALAN ROBERT CARTER

### Curriculum Vitae



rationale and protocol for incorporating and enhancing estuary values in planning and management. Un-published Water Research Commission Report No. K5/1485

#### Conference Proceedings

- Carter, A.R. 2002. Climate change and emission inventories in South Africa. Invited plenary paper at the 5th International System Auditors Convention, Pretoria. Held under the auspices of the South African Auditor & Training Certification Association Conference (SAATCA).
- Carter, A.R. 2003. Accounting for environmental closure costs and remediation liabilities in the South African mining industry. Proceedings of the Mining and Sustainable Development Conference. Chamber of Mines of South Africa, Vol. 2: 6B1-5
- Carter, A.R. and S. Fergus. 2004. Sustainability analysis of wastewater treatment options on the West Bank of East London, Buffalo City. Proceedings of the Annual National Conference of the International Association for Impact Assessment, South African Affiliate: Pages 295-301.
- Carter, A., L. Greyling, M. Parramon and K. Whittington-Jones. 2007. A methodology for assessing the risk of incurring environmental costs associated with port activities. Proceedings of the 1st Global Conference of the Environmental Management Accounting Network.
- Hawley, GL, AR McMaster and AR Carter. 2009. Carbon, carbon stock and life-cycle assessment in assessing cumulative climate change impacts in the environmental impact process. Proceedings of the Annual National Conference of the International Association for Impact Assessment, South African Affiliate.
- Hawley, GL, AR McMaster and AR Carter. 2010. The Environmental and Social Impact Assessment and associated issues and challenges. African, Caribbean and Pacific Group of States (ACP), Science and Technology Programme, Sustainable Crop Biofuels in Africa.
- Carter, AR. 2011. A case study in the use of Life Cycle Assessment (LCA) in the assessment of greenhouse gas impacts and emissions in biofuel projects. 2nd Environmental Management Accounting Network- Africa Conference on Sustainability Accounting for Emerging Economies. Abstracts: Pages 69-70.

#### CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

ALAN ROBERT CARTER

Date: August 2022

Environmental Assessment  
Practitioners Association  
of South Africa



Registration No. 2019/1807

*Herewith certifies that*

Alan Carter

*is registered as an*

Environmental Assessment Practitioner

*Registered in accordance with the prescribed criteria of Regulation 15. (1)  
of the Section 24H Registration Authority Regulations  
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the  
National Environmental Management Act (NEMA), Act No. 107 of 1998, as  
amended).*

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar







C2 – Notice of Application for EA

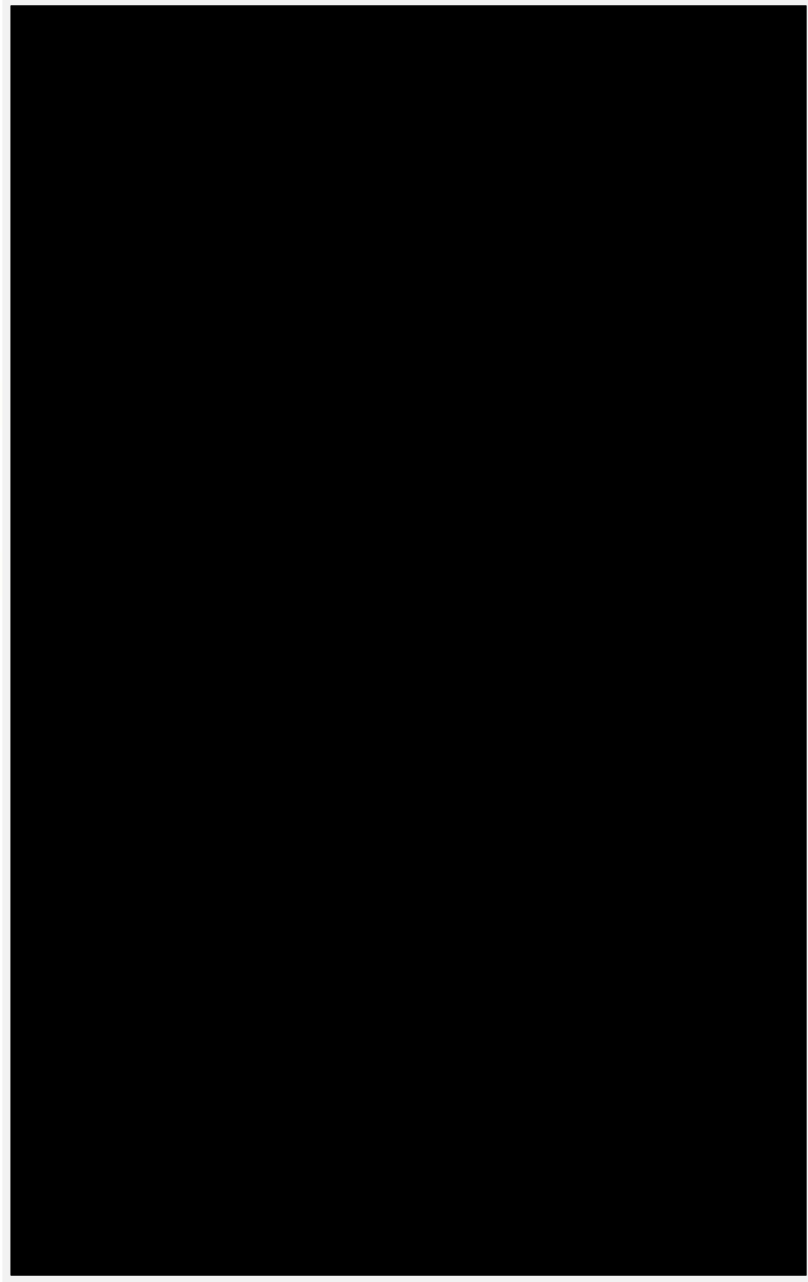
**Sage Wansell**

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**From:** reppp  
**Sent:** Wednesday, 14 September 2022 16:20  
**To:** reppp  
**Subject:** NOTIFICATION OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION AND AVAILABILITY OF DRAFT SCOPING REPORT: •MULILO NEWCASTLE WIND POWER (PTY) LTD WIND ENERGY FACILITY; and • MULILO NEWCASTLE WIND POWER 2 (PTY) LTD WIND FACILITY, NEAR NEWCASTLE, KZN

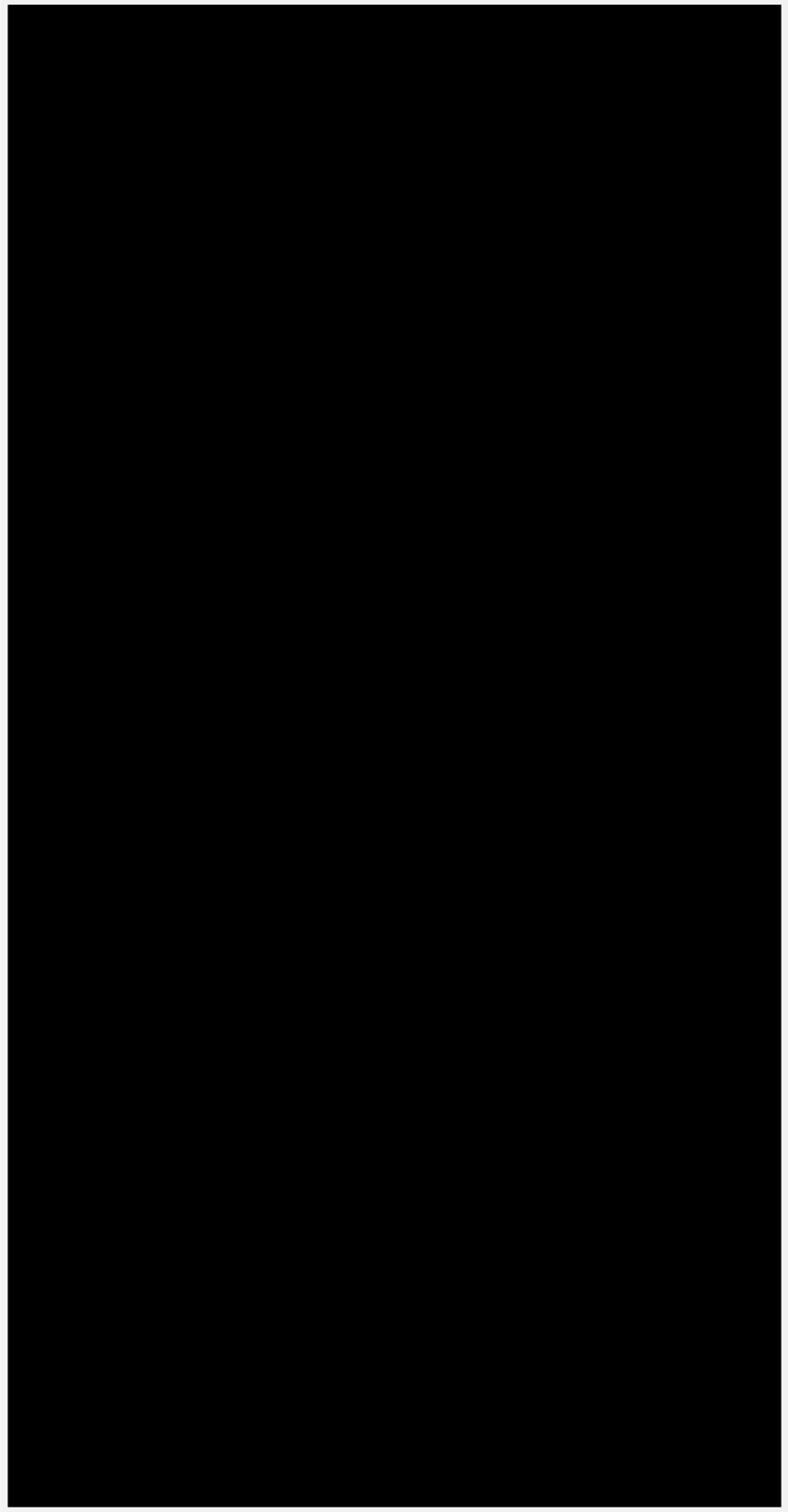
**Attachments:** Mulilo Newcastle WEF Complex\_Background Information Document Sept 2022.pdf

**Bcc:**

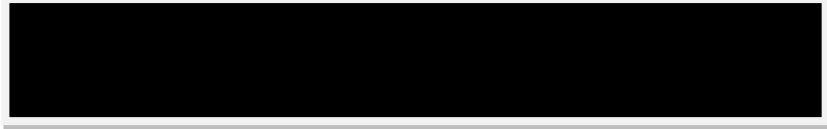




Bcc:



Bcc:



Dear Landowners, Adjacent Landowners, Stakeholders and I&APs

Kindly note that two new applications have been lodged for the Newcastle Wind Energy Facility (WEF) Complex near Newcastle in the Newcastle Local Municipality, KwaZulu-Natal Province, comprising:

1. Mulilo Newcastle Wind Power WEF (200 MW) (Scoping and Environmental Impact Assessment process); and
2. Mulilo Newcastle Wind Power 2 WEF (200 MW) (Scoping and Environmental Impact Assessment process)
- 3.

*Mulilo Newcastle Wind Power WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Portion 1 of Geelhoutboom Farm 3350, Remaining Extent (RE) of Bernard Farm 9447, RE of Cliffdale Farm 9439, RE of Spitskop Farm 16302, RE of Byron Farm 9448, and RE of Geelhoutboom Farm 3350. The expected WEF footprint will be up to 82 Ha after rehabilitation. Associated infrastructure will include an onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

*Mulilo Newcastle Wind Power 2 WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Remaining Extent of Farm 17421, Farm 8831, Farm Paardeplaat B 9390, Farm Franzhoek 8800, Farm Glendower 2901 and Farm Paardeplaat A 9389. The expected WEF footprint will be up to 82 Ha after rehabilitation. Associated infrastructure will include an onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

Please find attached the combined Background Information Document (BID) for the project.

The Draft Scoping Report will be available for a review and comment period of 30 days 14<sup>th</sup> September 2022 and will end on 13<sup>th</sup> October 2022. The documentation can be accessed at:

- Soft Copy: CES website at <http://www.cesnet.co.za/public-documents>
- Hard Copy: Newcastle Library, 66 Scott St, Newcastle CBD, Newcastle, KZN

Please kindly address all comments as follows:

Email: [reppp@cesnet.co.za](mailto:reppp@cesnet.co.za)

Subject Line: MULILO NEWCASTLE WIND POWER OR MULILO NEWCASTLE WIND POWER 2

You are also hereby reminded of the following important information:

**NOTICE: POPIA (Protection of Personal Information Act) Disclaimer. All Stakeholder and I&AP Databases need to adhere to the Act from the 1st of July 2021. Should you wish to register as an I&AP on the Stakeholder and I&AP Database, as the administrators of the Mulilo Newcastle Wind Power and Mulilo**

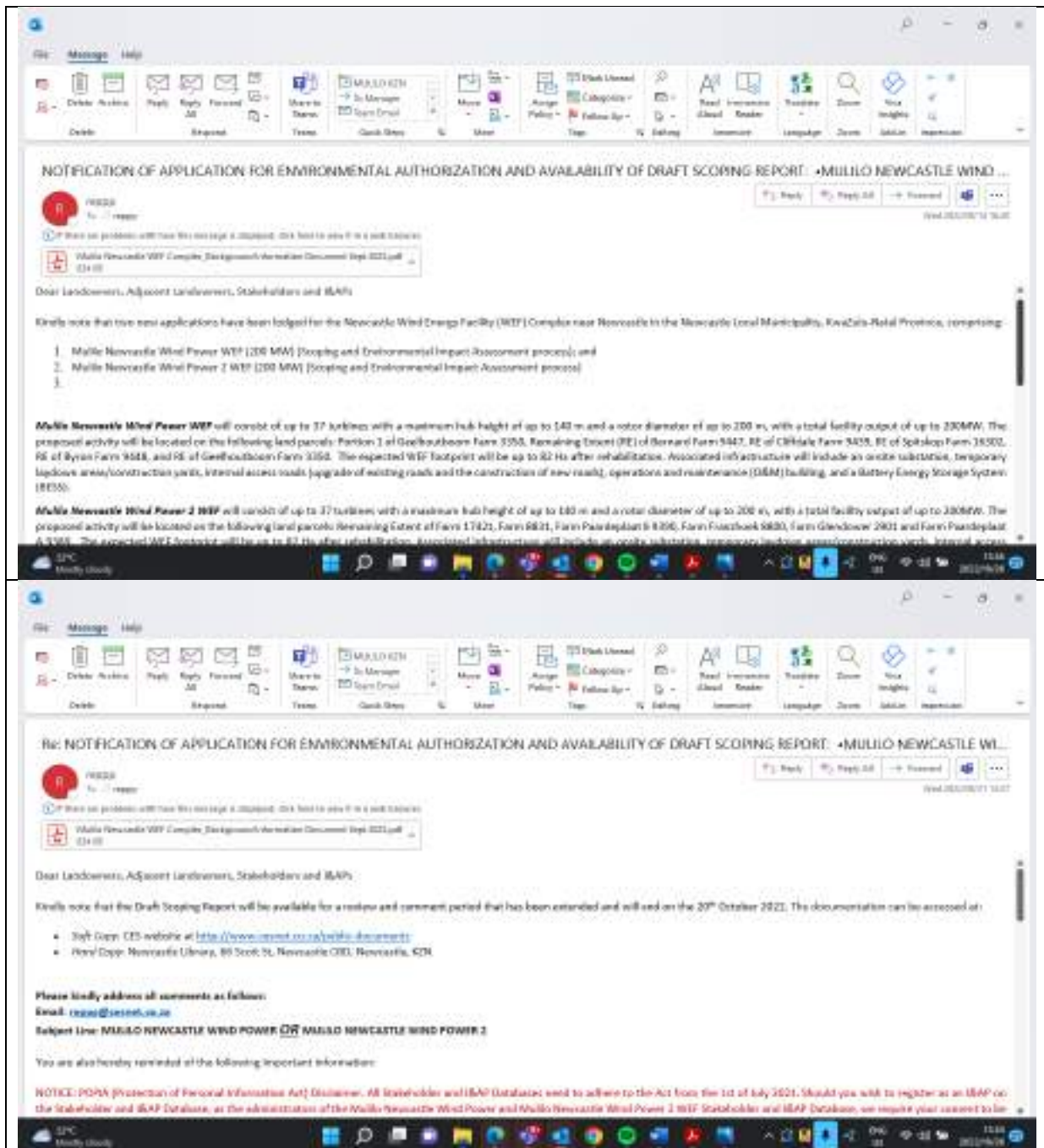
Newcastle Wind Power 2 WEF Stakeholder and I&AP Database, we require your consent to be part of this database. As such you are herewith notified that you are entitled to refuse such consent and you may exercise such a right by withdrawing from this database in writing at any stage of the process. Should you elect to remain in this group, it will be accepted that you have consented to being a part of this database and to your personal information (being your name, affiliation, contact details and written comments) being noticeable to any person interested in this project and in the public domain. In this regard, we implore all members of this database NOT to make use of such personal information for whatsoever reason without obtaining the consent from the relevant person(s).

Please do not hesitate to contact me should you have any queries.

Kind regards

Alan Carter – PhD, CPA (USA), Pr.Sci.Nat, EAPASA

# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)





C3 – Site notices







#### **C4 – Identified stakeholders and I&APs**

The following stakeholders and I&APs have been identified and notified about the proposed application for an EA:

DRAFT

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

<b>STAKEHOLDERS &amp; I&amp;APs</b>
<b>GOVERNMENT</b>
SANRAL
Department of Forestry, Fisheries and the Environment (DFFE) (Forestry)
Eskom: Renewable Energy
Eskom: Land & Rights Section
Eskom: Transmission
Department of Water Affairs
Department of Energy
Department of Forestry, Fisheries and the Environment (DFFE): various
Department of Forestry, Fisheries and the Environment (DFFE): Biodiversity & Conservation
Department of Rural Development and Land Reform (DRDLR)
KZN Department of Economic Development & Tourism and Environmental Affairs: EIA
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office
KZN Department of Economic Development & Tourism and Environmental Affairs: Acting Chief Director: Environmental Management
KZN Department of Economic Development & Tourism and Environmental Affairs: Director: Environmental Management Head Office
KZN Department of Economic Development & Tourism and Environmental Affairs: Southern Region
KZN Department of Economic Development, Tourism and Environmental Affairs
KZN Department of Economic Development & Tourism and Environmental Affairs: Tourism department
KZN Department of Economic Development & Tourism and Environmental Affairs: Trade and Investment department
KZN Department of Economic Development & Tourism and Environmental Affairs: HoD
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Trade and Sector Development
KZN Department of Economic Development & Tourism and Environmental Affairs: Deputy Director General Sector Dev. & Business Governance
KZN Department of Economic Development & Tourism and Environmental Affairs: Deputy Director General: Integrated Economic Development Services
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Local Economic Development
KZN Department of Economic Development & Tourism and Environmental Affairs: Chief Director: Tourism Development
KZN Department of Economic Development & Tourism and Environmental Affairs: person in charge of Amajuba District Municipality
Amajuba DM Municipal Manager
Newcastle Local Municipality: Municipal Manager, Dev. Planning & Human Settlements, and Community Services (Env)
Civil Aviation Authority
Air Traffic and Navigation Services (ATNS): Vryheid and Newcastle airports
Ezemvelo KZN Wildlife: various
Ezemvelo KZN Wildlife: Integrated Environmental Management
Ezemvelo KZN Wildlife: District Conservation Officer, Underberg Region
Ezemvelo KZN Wildlife: Regional Ecologist
Ezemvelo KZN Wildlife: Ecological Advice Division
Ezemvelo KZN Wildlife: KZN Biodiversity Stewardship Programme

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Ezemvelo KZN Wildlife: Avifaunal unit
Ezemvelo KZN Wildlife: District Ecologist
AMAFA / Heritage KwaZulu Natal
South African Heritage Resources Agency (SAHRA)
SANParks
<b>ENVIRONMENTAL NGOS</b>
Birdlife South Africa: various
Birdlife South Africa: Birds and Renewable Energy Manager
Endangered Wildlife Trust: CEO
Endangered Wildlife Trust: Head of Conservation Science
Endangered Wildlife Trust: African Crane Conservation Programme Manager
Endangered Wildlife Trust: African Crane Conservation Programme Field Officer
Endangered Wildlife Trust: Wildlife & Energy Programme
WESSA KZN Region: Conservation Project Manager
WESSA KZN Region: Conservation Director
WESSA KZN Regional Representative
WESSA KZN Regional Committee: Regional Chair
WESSA KZN Branch Sani Wildlife
WESSA KZN Regional Representatives in northern areas
WESSA KZN Regional Committee in northern areas
WESSA KZN Regional Committee in northern areas
Wildlife Ranching RSA
<b>PROTECTED AREAS</b>
Elandsberg Protected Environment
Sneeuwberg Protected Environment - protected under Birdlife SA
Seekoivlei Nature Reserve (Destea) resort
Potberg Private Nature Reserve (potberg Game Ranch)
WWF: Enkangala Grasslands Project South Africa
<b>INTEREST GROUPS</b>
The Bat Interest Group of KwaZulu-Natal
Utrecht Farmers Association
Ingogo Farmers Association
Groenvlei Farmers Association
Vryheid Farmers Association
Battlefields Route Association KZN
Mulilo Renewable Project Developments
G7 Energies
WWF SA Ecosystems Partnership Manager
WWF SA Grasslands Programme Manager
WWF SA Grasslands Programme Assistant
SANBI Coordinator - National Grassland Programme
SANBI - National Grassland Programme
<b>FARM OWNERS</b>
Portion 1 of the Farm Geelhoutboom No. 3350
Remainder Farm Bernard No. 9447
Remainder Farm Cliffdale No. 9439

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Remainder Farm Spitskop No. 16302	
Remainder Farm Byron No. 9448	
Remainder Farm Geelhoutboom No. 3350	
<b>NEIGHBOURING FARM OWNERS</b>	
3350	
3352	
12272	
12272	
16300	
18734	
4563	
4563	
16846	
18734	
16301	
16299	
4563	
3305	
3350	
<b>OTHER REGISTERED I&amp;APs</b>	
<b>I&amp;AP</b>	<b>Affiliation</b>
Bradley Gibbons	Endangered Wildlife Trust
Eskom KZN	Land Development Division
Wynand De Kock	Private
David Nicol	RedCap
Jadon Schmidt	RedCap
Cas Joubert	ALS Group
Peter Hair	NC Ratepayers Association
Willie van den berg	NC Ratepayers Association
Darrel Brown	Financial Planner
Thys Joubert Junior	ALS Group
Thys Joubert Senior	ALS Group
J F Smith	I&AP
Annette Craffert	Secretary at Ingogo Boerevereniging
Herman Louw	potential I&AP
W. Outer	potential I&AP
W. Hugo	potential I&AP
Kate Leonard	potential I&AP
Petrus Boshoff	potential I&AP
Samukelo Zwane	potential I&AP
Trevor Ehrens	potential I&AP



C5 – BACKGROUND INFORMATION DOCUMENT

**THE MULILO NEWCASTLE WIND ENERGY FACILITY COMPLEX  
COMPRISING:  
MULILO NEDWCASLE WIND POWER WIND FARM;  
MULILO NEDWCASLE WIND POWER 2 WIND FARM; AND  
MULILO NEWCASTLE GRID CONNECTIONS (NORTHERN AND  
SOUTHERN ROUTES).  
LOCATED NEAR NEWCASTLE, NEWCASTLE LOCAL MUNICIPALITY,  
KWAZULU-NATAL PROVINCE.**

**BACKGROUND INFORMATION DOCUMENT (BID) & INVITATION TO REGISTER**



*Return address for comments:*

CES - Coastal & Environmental Services

Attention: Ms S. Wansell  
P.O Box 8145, Nahoon, East London, 5210  
Tel: (043) 726 7809  
Fax: (086) 410 7822  
Email: [reppp@cesnet.co.za](mailto:reppp@cesnet.co.za)



## AIM OF THIS DOCUMENT

Mulilo Renewable Project Developments (Pty) Ltd (Mulilo) is proposing to develop the Newcastle Wind Energy Facility (WEF) Complex near Newcastle in the Newcastle Local Municipality, in KwaZulu-Natal Province, comprising the following four elements:

- Mulilo Newcastle Wind Power WEF (200 MW) (Scoping and Environmental Impact Assessment process);
- Mulilo Newcastle Wind Power 2 WEF (200 MW) (Scoping and Environmental Impact Assessment process);
- Mulilo Newcastle southern (preferred) route grid connection to Eskom and associated powerlines (Basic Assessment process); and
- Mulilo Newcastle northern grid connection to Eskom and associated powerlines (Basic Assessment process).

The purpose of this document is to ensure that people that are interested in or affected by the proposed wind energy project are provided with information about the proposal, the process being followed and provided with an opportunity to be involved in the Scoping and Environmental Impact Assessment (EIA) process for the two Mulilo Newcastle WEFs and Basic Assessment for the Mulilo Newcastle WEF Complex Grid Connection.

Registering as an Interested and/or Affected Party (I&AP) allows individuals or groups the opportunity to contribute ideas, issues, and concerns relating to the project. I&APs also have an opportunity to review all the reports and submit their comments on those reports. All the comments that are received will be included in both the final scoping and EIR reports that are submitted to the relevant Competent Authority.

## THE APPLICANTS

The applicants for the four elements of the Mulilo Newcastle WEF Complex include:

- Mulilo Newcastle Wind Power (Pty) Ltd (200 MW WEF);
- Mulilo Newcastle Wind Power 2 (Pty) Ltd WEF (200 MW WEF);
- Mulilo Newcastle Wind Power (Pty) Ltd (northern grid connection route); and
- Mulilo Newcastle Wind Power 2 (Pty) Ltd (southern grid connection route).

## CES PROFILE AND PROJECT TEAM

Coastal and Environmental Services (Pty) Ltd (CES) is a South African based company established in 1990, with offices in Grahamstown, Cape Town, Port Elizabeth, East London and Johannesburg, South Africa, as well as a wholly owned subsidiary in Maputo, Mozambique (CES is registered as an Environmental Practitioner with the Mozambican authorities).

CES has managed numerous large EIAs from pre-feasibility through to operation for international clients in South Africa and numerous other African countries. These have been rigorously reviewed by parties such as the World Bank, MIGA, European Investment Bank, IFC, German Investment Bank (KfW), African Development Bank, BHP Billiton International peer review team and the Dutch Development Bank (FMO).

CES has successfully completed EIAs for over 20 wind farms in South Africa and numerous other infrastructure projects ([www.cesnet.co.za/public-documents](http://www.cesnet.co.za/public-documents))

The CES team on the current project have all had considerable experience in conducting EIAs for renewable energy projects, including wind farms, and includes:

- Dr Alan Carter (The EAP & Project Leader)
- Ms Robyn Thomson (Project Manager)
- Ms Caroline Beer (nee Evans) (Reviewer and Quality Control)

Please refer to the CES website for further information: [www.cesnet.co.za](http://www.cesnet.co.za)

### THE EIA PROCESS

According to the EIA Regulations (2017) promulgated under the National Environmental Management Act (NEMA, Act No. 107 of 1998) the potential impacts on the environment will have to be assessed in terms of the listed activities. These environmental listed activities, initially published on 21st of April 2006, were amended in 2010, 2014, 2017, and 2021 as Government Notice (GN) Numbers R.324, R.325, and R.327, which define the activities that require, a Basic Assessment (GN R. 324 and GN R. 327 listed activities which apply to activities with limited environmental impacts), or a Scoping and Environmental Impact Assessment (GN R. 325 listed activities which apply to activities which are significant in extent and duration).

The proposed Mulilo Newcastle Wind Power WEF and the Mulilo Newcastle Wind Power 2 WEF trigger activities in Listing Notice 2 (the generation of electricity from a renewable resource with an output of 20 megawatts or more), thereby requiring a **Scoping Report** and **Environmental Impact Assessment** process be undertaken in accordance with Regulation 6 of the EIA Regulations (2014, as amended). Various activities in Listing Notices 1 and 3 are also triggered.

The two proposed Mulilo Newcastle WEF Complex grid connection routes (northern and southern), trigger various listed activities in terms of the NEMA EIA Regulations (2014, as amended) in Listing Notices 1 and 3, and consequently require that a **Basic Assessment**.

### PROJECT DESCRIPTION

Mulilo Renewable Project Developments (Pty) Ltd (Mulilo) is proposing to develop the Mulilo Newcastle Wind Energy Facility (WEF) Complex comprising:

- Mulilo Newcastle Wind Power WEF;
- Mulilo Newcastle Wind Power 2 WEF;
- Mulilo Newcastle Wind Power northern grid connection route and associated powerlines; and
- Mulilo Newcastle Wind Power 2 southern grid connection route and associated powerlines.

The various elements of the project are described below.

The anticipated lifespan of the WEF complex is 20-25 years and construction is anticipated to be between 18 and 24 months.

#### LOCALITY OF MULILO NEWCASTLE WEF COMPLEX

The proposed Mulilo Newcastle Wind Power and Wind Power 2 WEFs will be located approximately 15 km northwest of the town of Newcastle in the KwaZulu-Natal Province.

The study area is situated in Ward 1 of the Newcastle Local Municipality (LM) within the Amajuba District Municipality (ADM).

The two Mulilo Newcastle WEFs will connect to the existing Eskom Incandu Manual Transfer Switch (MTS) within Ward 1, 2, and 5 of Newcastle LM.



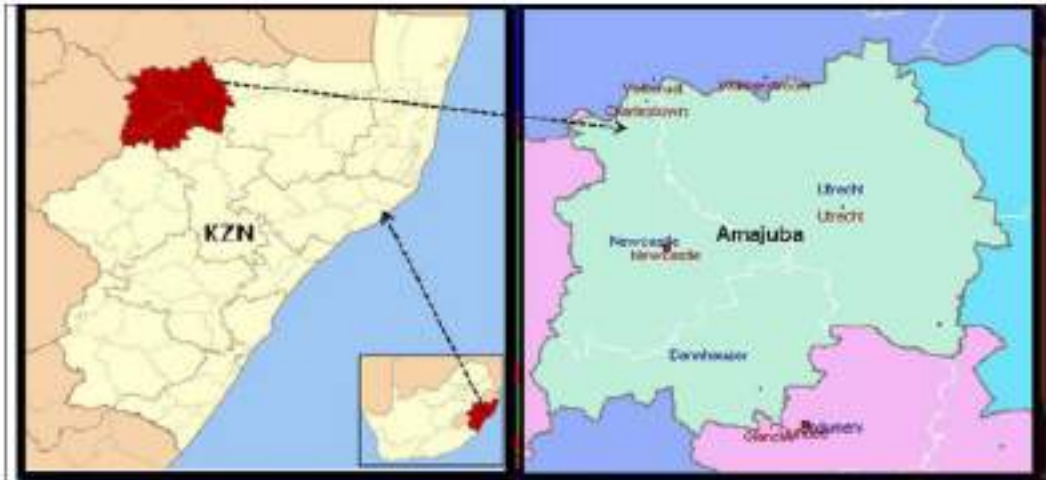


Figure 1: Location of the proposed Mulilo Newcastle WEF Complex within the KZN Province, Amajuba DM and Newcastle LM.

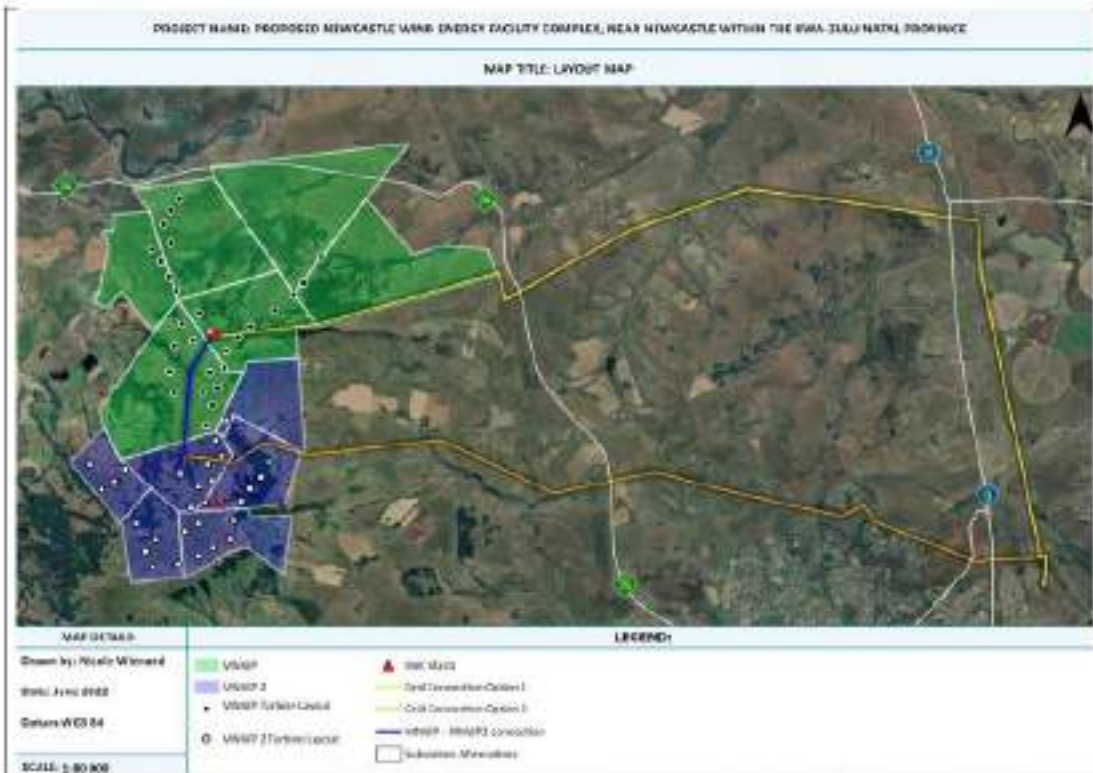


Figure 2: Location of the proposed Mulilo Newcastle WEF Complex showing the Mulilo Newcastle Wind Power (GREEN) and Wind Power 2 (BLUE) affected properties, and two alternative Eskom grid connection routes, north (BLUE) and south (RED).

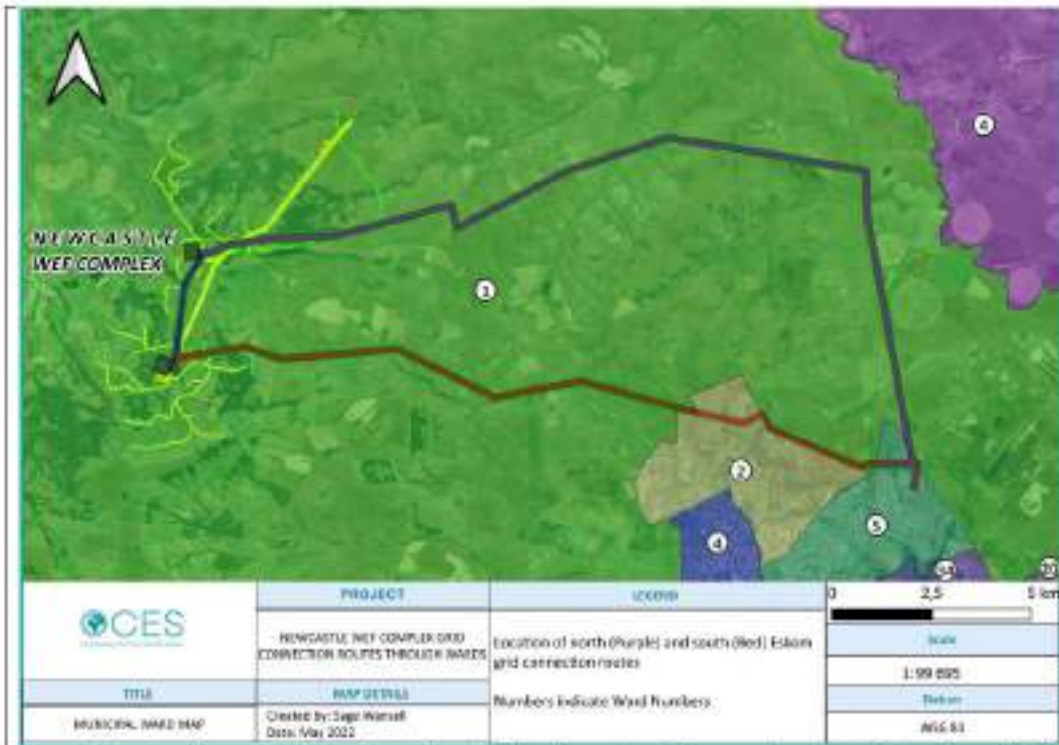


Figure 3: Newcastle municipal ward map showing the alternative grid connection routes through ward 1, 2, and 5.

#### MULILO NEWCASTLE WIND POWER WEF

The Mulilo Newcastle Wind Power WEF will consist of up to thirty-seven (37) wind turbine generators. The current proposed layout allows for a maximum generating output of up to 200 MW. However, the final design may be reduced based on the outcome of the specialist studies undertaken during the EIA process. The proposed turbine footprints and associated facility infrastructure will cover an area of up to approximately 82 ha after rehabilitation, depending on final layout design. The generation capacity and turbine specifications are dependent on the type of turbine selected.

The properties affected by Mulilo Newcastle Wind Power are all zoned as Agriculture and mostly used for livestock grazing. Woodlands or afro-montane forests occur in the ravines. No cultivated land could be identified on any of the farms.

Infrastructure required for the Mulilo Newcastle Wind Power WEF includes operational and maintenance buildings, internal roads, underground electrical cabling linking turbines, and an on-site switching station.

#### Turbine specifications

WEF Capacity	Up to 200 MW
No. Turbines	Up to 37
Hub Height	Up to 140 m
Rotor Diameter	Up to 200 m
Blade length	Up to 100 m



The Mulilo Newcastle Wind Power WEF will be located on six (6) land portions with a total extent of 2,393 ha. These properties are included in the table below:

Farm Name	Farm Number	Area (ha)
Geelhoutboom	3350	647
Geelhoutboom	3350	567
Bernard	9447	465
Spitskop	16302	587
Cliffdale	9439	280
Byron	9448	392

#### MULILO NEWCASTLE WIND POWER 2 WEF

The Mulilo Newcastle Wind Power 2 WEF project will consist of up to thirty-seven (37) wind turbine generators. The current proposed layout allows for a maximum generating output of up to 200 MW. However, the final design may be reduced based on the outcome of the specialist studies undertaken during the EIA process. The proposed turbine footprints and associated facility infrastructure will cover an area of up to approximately 83 ha (after rehabilitation) depending on final layout design. The generation capacity and turbine specifications are dependent on the type of turbine selected.

The properties affected by the Mulilo Newcastle Wind Power 2 WEF are all zoned as Agriculture and mostly used for livestock grazing. Woodlands or afro-montane forests occur in the ravines. No cultivated land could be identified on any of the farms.

Infrastructure required for the Mulilo Newcastle Wind Power 2 WEF includes operational and maintenance buildings, internal roads, underground electrical cabling linking turbines, and an on-site switching station.

#### Turbine specifications

WEF Capacity	Up to 200 MW
No. Turbines	Up to 37
Hub Height	Up to 140 m
Rotor Diameter	Up to 200 m
Blade length	Up to 100 m

The Mulilo Newcastle Wind Power 2 WEF will be located on six (6) land portions that have a total extent of 1,333 ha. These properties are included in the table below:

Farm Name	Farm Number	Area (ha)
Embosweni	RE/17421	156
Paardeplaas A Dene Heights	RE/8831	232
Paardeplaas B	RE/9390	244
RE Portion 1 of Franzhoek	RE/8800	208
Glendower	RE/2901	223
Lot B of Paardeplaas A	RE/9389	270

#### MULILO NEWCASTLE GRID CONNECTION AND OVERHEAD POWERLINE (OHPL)

The proposed Mulilo Newcastle Wind Power and Mulilo Newcastle Wind Power 2 WEF projects will connect to the existing Eskom Incandu MTS, near Newcastle, via two 132 kV onsite switching stations and a double circuit 132 kV overhead transmission line with a total length of up to 40 km.

The overhead powerlines include the following main elements:

- Overhead Power Line (OHPL) (132 kV);
- Switching station;
- Expansion works at existing Eskom substation; and
- Loop-In/Loop-Out option to existing Eskom OHPL.

Various grid connection route alternatives are being considered, which will cross a large number of properties (Table 5), and possible extension of cables from Ward 1 into Wards 2, and 5 (Figure 3 above) of Newcastle LM to the Eskom Incandu Substation.

The properties affected by the grid connection are all zoned as Agriculture and mostly used for livestock grazing. No cultivated land could be identified on any of the farms. There are a few cultivated dry lands along the southern alignment. Although not directly on the route, some farmhouses were identified within the 100 m buffer reserved for construction. The two alternative routes (Figure 2: Blue and Red lines) will affect the farms listed in the table below.

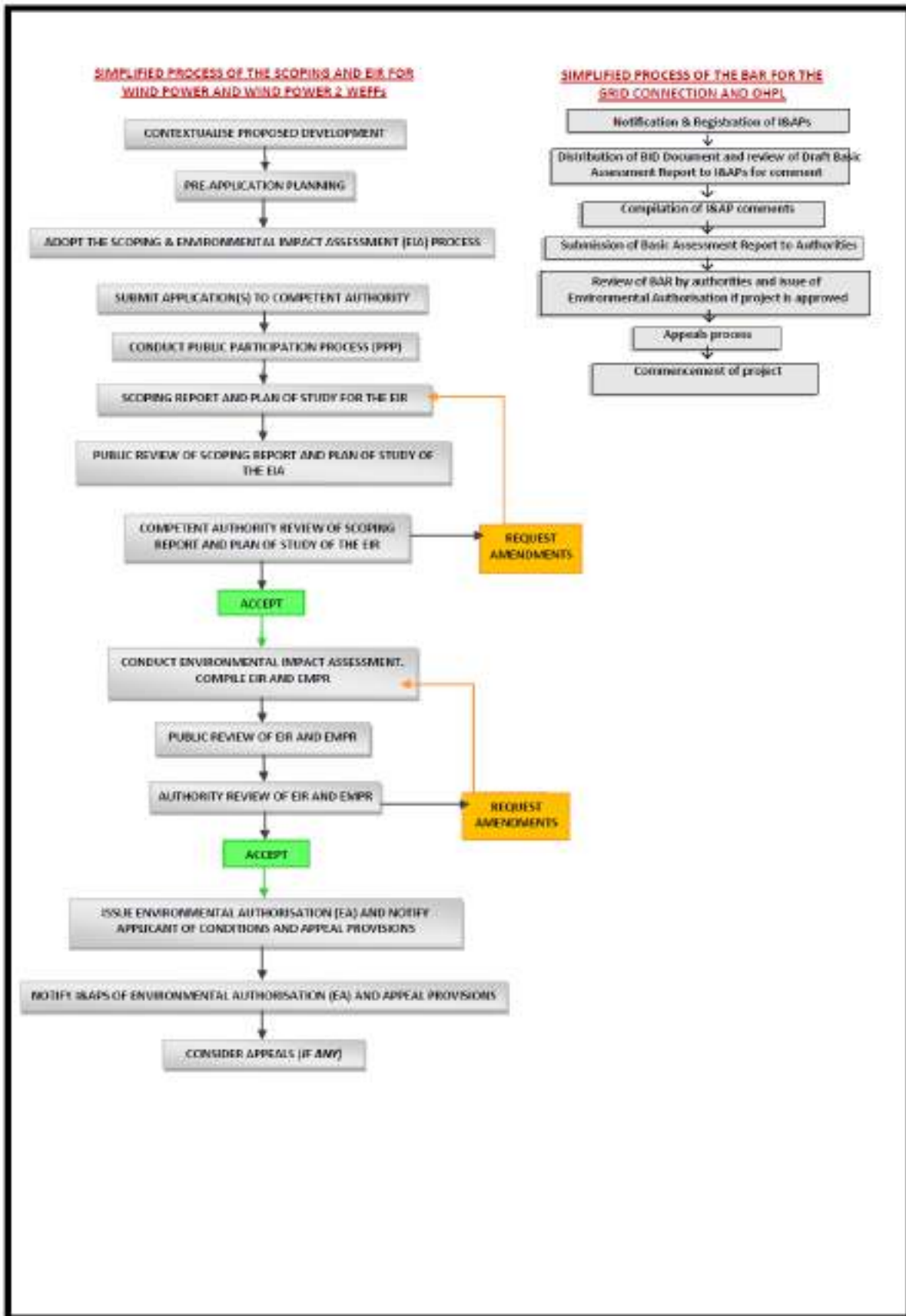
Farm Name	Farm Number	Farm portion
Rose boom	3305	6
Invary	2067	3
UNK	2001	1
Lestevlei	16524	0
Mattandu	2987	0
Tweefontein	16423	0
Gordan	9481	5
Tweefontein	3344	12
Gordan	9481	3
Tweefontein	3344	13
Highton	8501	1
Parksville	4307	0 (Remaining Extent)
Northdown	4306	1
UNK	1768	UNK
Buffalo River	4308	36
Northdown	4306	15
Buffalo River	4308	3
Wykom	15763	0
Wykom	2368	0

Farm Name	Farm Number	Farm portion
Buffalo River	4308	0 (Remaining Extent)
Wykom	2368	10 (Remaining Extent)
Wykom	2368	9 (Remaining Extent)
Wykom	2368	4 (Remaining Extent)
Wykom	2368	0
Schaap Vlakte	2988	0
Schaap Vlakte	2988	14
Wykom	10558	0
Wykom	2368	5
Schaap Vlakte	2988	5 (Remaining Extent)
Imbizana	4292	0
van Niekerks Stroom	15790	0
Schuuris Hoogte	2250	1
Brack Hoek	2271	1
Brack Hoek	2271	0 (Remaining Extent)
Pomeroy	4294	1
Pomeroy	4294	2
UNK	1579	UNK

## APPROACH TO THE ENVIRONMENTAL REPORT

The NEMA EIA Regulations (2014, as amended) listed activities identified by CES, namely Listing Notice 1, 2, and 3 (i.e., GN R.324, R.325, and R.327, respectively) stipulate that the application for Environmental Authorisation for the **Mulilo Newcastle Wind Power and Wind Power 2 WEFs will be subjected to the Scoping and Environmental Impact Assessment**. The NEMA EIA Regulations (2014, as amended) listed activities identified by CES, namely Listing Notice 1 and 3 (i.e., GN R.324 and GN R.327, respectively), which apply to activities with limited impacts, stipulate that the application for Environmental Authorisation for the two **Mulilo Newcastle WEF Complex grid connections [north and south] will be subjected to a Basic Assessment Process**. The relevant Competent Authority (CA) is the National Department of Forestry, Fisheries, and the Environment (DFFE).

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)





## HOW CAN YOU BE INVOLVED?

A Public Participation Process (PPP) is being conducted as part of both the Scoping Phase and the EIA Phase of the Mulilo Newcastle Wind Power and Wind Power 2 and the Basic Assessment Process for the Mulilo Newcastle WEF Complex grid connection and OHPL. The aim of the PPP is to allow everyone who is interested in, or likely to be affected by the proposed development to provide input into the processes.

The PPP includes, but is not limited to:

- Advertisement(s);
- Onsite signage;
- Circulation of the BID (*this document*) to all Registered I&APs;
- Comment periods; and
- Review of the reports by all registered I&APs.

If you consider yourself an interested and/or affected person/party, it is important that you become and remain involved in the PPP. In order to do so please follow the steps below to ensure that you are continually informed of the project developments and to ensure your opportunity to raise issues and concerns pertaining to the project.

**STEP 1:** Please register by responding to our notification and invitation, with your name and contact details (details provided on cover page and below). As a registered I&AP, you will be informed of all report review periods and project developments throughout the Scoping Phase and the EIA Phase of the Newcastle WEF Complex Phase 1 & 2 Mulilo Newcastle Wind Power and Wind Power 2, and the Basic Assessment Phase of the Newcastle Mulilo Newcastle WEF Complex Eskom grid connection.

**STEP 2:** Register by contacting Miss S. Wansell with your name and contact details via post, email, phone or fax.

CES is required to engage with all private and public parties that may be interested and/or affected by the Mulilo Newcastle Wind Power and Wind Power 2 WEFs and Mulilo Newcastle WEF Complex Eskom grid connection in order to distribute information for review and comment in a transparent manner.

It is important for I&APs to also note the following:

1. In order for CES to continue engaging with you, please ENSURE that you register on our database by contacting Ms S. Wansell.
2. As the Scoping Phase and the EIA Phase of the Mulilo Newcastle Wind Power and Wind Power 2 WEFs and Basic Assessment Report for the two Mulilo Newcastle WEF Complex grid connections (north and south) are regulated by specific review and comment timeframes, it is your responsibility to submit your comments within these timeframes.

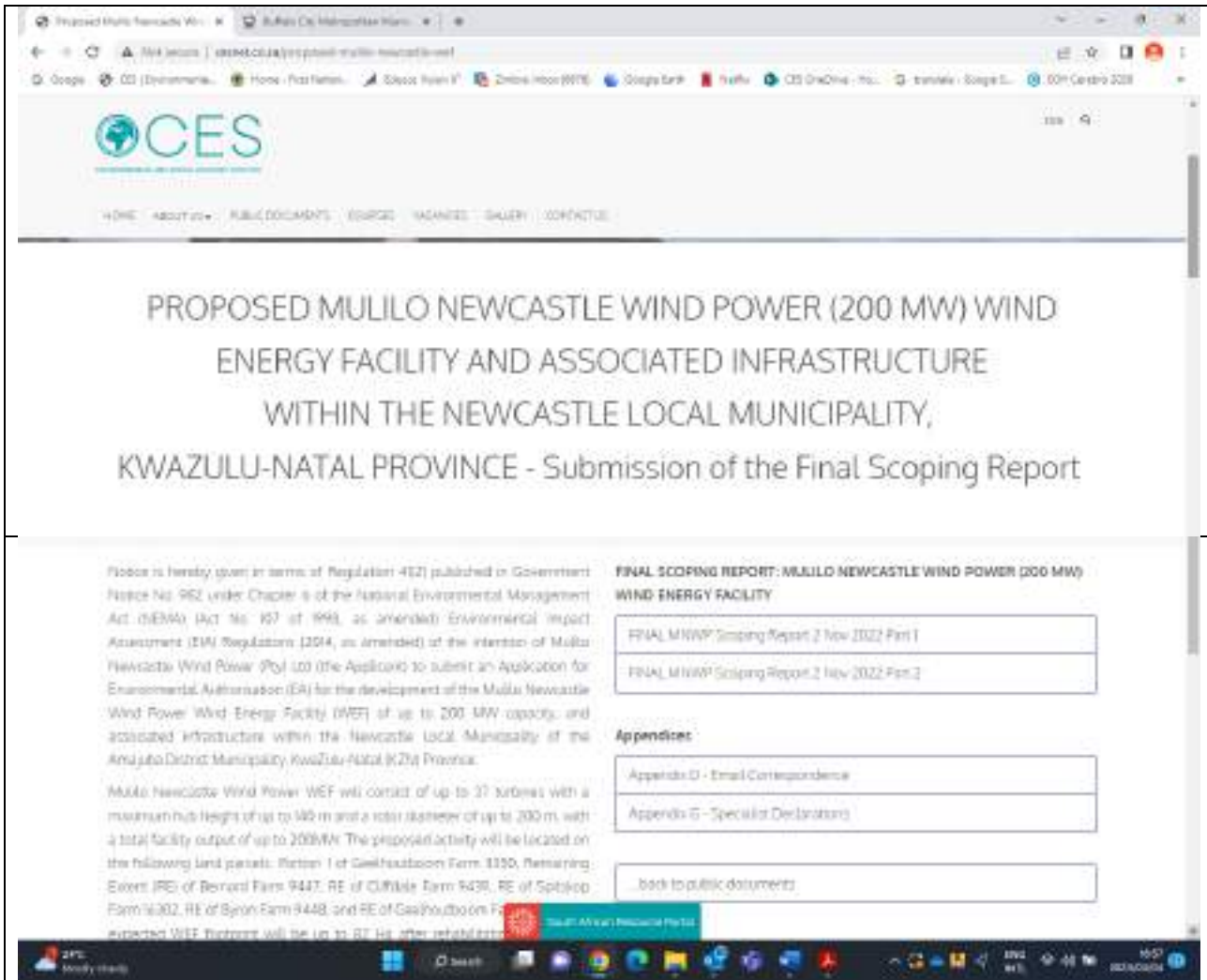
Please contact Ms S. Wansell to register as an I&AP for the Mulilo Newcastle WEF Complex project and EIA process, and for enquiries and/or for the submission of your written comments.

**NOTE: For ALL submissions use the subject line: MULILO NEWCASTLE WIND ENERGY FACILITY COMPLEX**

Ms S. Wansell  
P.O Box 8145, Nahoon, East London, 5210  
Tel: (043) 726 7809 or Fax: (086) 410 7822  
Email: [reppp@cesnet.co.za](mailto:reppp@cesnet.co.za)

**TRANSLATIONS OF THIS DOCUMENT INTO AFRIKAANS OR ISIZULU CAN BE PROVIDED ON REQUEST**

C6 – DRAFT SCOPING REPORT ON CES WEBSITE





C7 – PROOF OF DELIVERY OF DRAFT SCOPING REPORT TO NEWCASTLE LIBRARY



Waybill Date: 15-09-2022 Service: ONX- Overnight Express TOTAL PIECES: 1

Sender name: Coastal and Environmental Services (Pty) Ltd. t/a CES		Consignee name: NEWCASTLE LIBRARY	
Address: 39 Harewood Drive Nahoon Mouth East London 5214 5201 EAST LONDON, Eastern Cape		Address: 66 SCOTT STREET NEWCASTLE CBD NEWCASTLE 2940 2940 NEWCASTLE, KwaZulu Natal	
Contact: LYNN SMIT		Contact: MRS MARLIE LYNDE	
Tel: 0437267809 /		Tel: 0343287620 /	
Account No: COA001		Ref P40700752	
Cost Centre:		No:	
Service: Overnight Express		ONX	
Special Instructions:			
TOTAL PIECES: 1		TOTAL VOL. MASS: 0,00	
		TOTAL ACT. MASS: 1	
Pieces	Description	Dimensions	Vol. Mass Act. Mass
1	ENVIRON & SOCIAL ADVISORY	X X	0,00 1,00

We Have seen and agree to the standard conditions of carriage of Seabourne Express:

Signature:

Print Name: Lynn Smit

Date: 15.09.22 Time: \_\_\_\_\_

Collected in good order by Seabourne Express:

Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Consignment received in good order and condition by:

Signature:

Print Name: M. Lynde

Date: 19/9/22 Time: 11:00

C8 – DFFE ACKNOWLEDGEMENT OF RECEIPT OF APPLICATION

**From:** Ephron Maradwa <[EMaradwa@dffe.gov.za](mailto:EMaradwa@dffe.gov.za)>  
**Sent:** Wednesday, September 21, 2022 1:51 PM  
**To:** Sage Wansell <[Sage.Wansell@cesnet.co.za](mailto:Sage.Wansell@cesnet.co.za)>  
**Cc:** Herman Alberts <[HALBERTS@dffe.gov.za](mailto:HALBERTS@dffe.gov.za)>; Salome Mambane <[SMAMBANE@dffe.gov.za](mailto:SMAMBANE@dffe.gov.za)>;  
EIAAdmin <[EIAAdmin@dffe.gov.za](mailto:EIAAdmin@dffe.gov.za)>  
**Subject:** 14/12/16/3/3/2/2212

Dear Sage.

14/12/16/3/3/2/2212

**ACKNOWLEDGEMENT OF RECEIPT OF THE NEW APPLICATION AND DRAFT SCOPING REPORT FOR ENVIRONMENTAL AUTHORISATION FOLLOWING A SCOPING ASSESSMENT PROCESS FOR THE PROPOSED MULILO NEWCASTLE WIND POWER (PTY) LTD - 200 MW WIND ENERGY FACILITY, IN THE KWAZULU-NATAL PROVINCE.**

The Department confirms having received the Application form and Draft Scoping Report for Environmental Authorisation for the abovementioned project on 20 September 2022. You have submitted these documents to comply with the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.

Kindly note that your application for Environmental Authorisation falls within the ambit of an application applied for in terms of Part 3 of Chapter 4 of the EIA Regulations, 2014, as amended. You are therefore referred to Regulation 21 of the EIA Regulations, 2014 as amended.

Please take note of Regulation 40(3) of the EIA Regulations, 2014, as amended, which states that potential Interested & Affected Parties, including the Competent Authority, may be provided with an opportunity to comment on reports and plans contemplated in Regulation 40(1) of the EIA Regulations, 2014, as amended, prior to the submission of an application but must be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority.

Note that in terms of Regulation 45 of the EIA Regulations, 2014, as amended, this application will lapse if the applicant fails to meet any of the time-frames prescribed in terms of these Regulations, unless an extension has been granted by the Department in terms of Regulation 3(7) of the EIA Regulations, 2014, as amended.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.

Kindly quote the abovementioned reference number in any future correspondence in respect of the application.

**EIA Applications**

Integrated Environmental Authorisations

Department of Forestry, Fisheries and the Environment

Please note that this email is for the receipt and processing of online applications only, and is not monitored for responses. All queries must be directed to [EIAAdmin@dfe.gov.za](mailto:EIAAdmin@dfe.gov.za).

You are advised that this mailbox has a 48 hour response time.

DRAFT

## C9 – REQUEST FOR COMMENT FROM DFFE PROTECTED AREAS DIRECTORATE

**Alan Carter**

**From:** rpppp  
**Sent:** Monday, 24 October 2022 15:41  
**To:** RMagodi@dffe.gov.za; tleballo@dffe.gov.za  
**Subject:** NOTIFICATION OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION AND AVAILABILITY OF DRAFT SCOPING REPORT: •MULILO NEWCASTLE WIND POWER (PTY) LTD WIND ENERGY FACILITY; and • MULILO-NEWCASTLE WIND POWER 2 (PTY) LTD WIND FACILITY, NEAR NEWCASTLE, KZN

Dear Mr Magodi and Mr/Ms Leballo

DFFE: Integrated Environmental Authorisations Directorate has made us aware of your Directorate (see DFFE Comment below) and has requested that we notify you of this project and obtain comments. Please note that the project is not located within a Protected Area in terms of National Environmental Management: Protected Areas Act (NEMPA), however, it is located within a National Protected Areas Expansion Strategy (NPAES) area. Please could you provide comment soonest. You have been registered on the Stakeholder and I&AP Database and will receive all notifications going forward.

DFFE Comment (a)

(iv) The proposed site is located within a National Protected Areas Expansion Strategy (NPAES) area, namely Moist Escarpment Grasslands and falls within 10km of a protected or conservation area recognised by the South African Protected Areas Database (SAPAD, 2021), namely the Sneeuberg Protected Environment. Approval from the Management Authority in terms of the National Environmental Management: Protected Areas Act, 2003; Section 50(5) for commercial and community activities in the National Park, and/or World Heritage Site may be required. Comments from this Department's Protected Areas Directorate must be obtained to confirm whether Approval from the Management Authority in terms of the National Environmental Management: Protected Areas Act, 2003; Section 50(5) is required.

Kindly note that two new applications have been lodged for the Newcastle Wind Energy Facility (WEF) Complex near Newcastle in the Newcastle Local Municipality, KwaZulu-Natal Province, comprising:

1. Mulilo Newcastle Wind Power WEF (200 MW) (Scoping and Environmental Impact Assessment process, Ref. No.: 14/12/16/3/3/2/2212); and
2. Mulilo Newcastle Wind Power 2 WEF (200 MW) (Scoping and Environmental Impact Assessment process, Ref. no.: 14/12/16/3/3/2/2213)

*Mulilo Newcastle Wind Power WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Portion 1 of Geelhoutboom Farm 3350, Remaining Extent (RE) of Bernard Farm 9447, RE of Cliffdale Farm 9439, RE of Spitskop Farm 16302, RE of Byron Farm 9448, and RE of Geelhoutboom Farm 3350. The expected WEF footprint will be up to 82 Ha after rehabilitation. Associated infrastructure will include an onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

*Mulilo Newcastle Wind Power 2 WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Remaining Extent of Farm 17421, Farm 8831, Farm Paardeplaas B 9390, Farm Franzhoek 8800, Farm Glendower 2901 and Farm Paardeplaas A 9389. The expected WEF footprint will be up to 82 Ha after rehabilitation. Associated infrastructure will include an

onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

Documentation pertaining to this project can be accessed at:

<http://www.cesnet.co.za/proposed-mulilo-newcastle-wef>

<http://www.cesnet.co.za/proposed-mulilo-newcastle-wef-2>

Please kindly address all comments as follows:

Email: [reppp@cesnet.co.za](mailto:reppp@cesnet.co.za)

Subject Line: MULILO NEWCASTLE WIND POWER OR MULILO NEWCASTLE WIND POWER 2

You are also hereby reminded of the following important information:

NOTICE: POPIA (Protection of Personal Information Act) Disclaimer. All Stakeholder and I&AP Databases need to adhere to the Act from the 1st of July 2021. Should you wish to register as an I&AP on the Stakeholder and I&AP Database, as the administrators of the Mulilo Newcastle Wind Power and Mulilo Newcastle Wind Power 2 WEF Stakeholder and I&AP Database, we require your consent to be part of this database. As such you are herewith notified that you are entitled to refuse such consent and you may exercise such a right by withdrawing from this database in writing at any stage of the process. Should you elect to remain in this group, it will be accepted that you have consented to being a part of this database and to your personal information (being your name, affiliation, contact details and written comments) being noticeable to any person interested in this project and in the public domain. In this regard, we implore all members of this database NOT to make use of such personal information for whatsoever reason without obtaining the consent from the relevant person(s).

Please do not hesitate to contact me should you have any queries.

Kind regards

Alan Carter – PhD, CPA (USA), Pr.Sci.Nat, EAPASA



C10 – REQUEST FOR COMMENT FROM DFFE BIODIVERSITY DIRECTORATE

Alan Carter

**From:** reppp  
**Sent:** Monday, 24 October 2022 14:13  
**To:** BC Admin  
**Cc:** smunzhedzi@dffe.gov.za; smaleta@dffe.gov.za; Portia Makotla; Mashudu Mudau  
**Subject:** Fw: NOTIFICATION OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION AND AVAILABILITY OF DRAFT SCOPING REPORT: •MULILO NEWCASTLE WIND POWER (PTY) LTD WIND ENERGY FACILITY; and • MULILO NEWCASTLE WIND POWER 2 (PTY) LTD WIND FACILITY, NEAR NEWCASTLE, KZN  
**Attachments:** Mulilo Newcastle WEF Complex\_Background Information Document Sept 2022.pdf

Good day

As per below, we have been requested by the DFFE: EIA sector to secure comment from BCAdmin for the proposed MULILO NEWCASTLE WIND POWER (PTY) LTD (Ref. No.: 14/12/16/3/3/2/2212) and the proposed MULILO NEWCASTLE WIND POWER 2 (PTY) (Ref. no.: 14/12/16/3/3/2/2213). Individuals from the Department's Biodiversity Conservation Directorate were included in the stakeholders notification below. Please could you provide comment soonest.

DFFE General Comment (a)  
(v) Comments must be obtained from this Department's Biodiversity Conservation Directorate at BCAdmin@dffe.gov.za.

Warm regards,  
Sage

**From:** reppp  
**Sent:** Wednesday, September 14, 2022 2:19 PM  
**To:** reppp <reppp@cesnet.co.za>  
**Subject:** NOTIFICATION OF APPLICATION FOR ENVIRONMENTAL AUTHORIZATION AND AVAILABILITY OF DRAFT SCOPING REPORT: •MULILO NEWCASTLE WIND POWER (PTY) LTD WIND ENERGY FACILITY; and • MULILO NEWCASTLE WIND POWER 2 (PTY) LTD WIND FACILITY, NEAR NEWCASTLE, KZN

Dear Landowners, Adjacent Landowners, Stakeholders and I&APs

Kindly note that two new applications have been lodged for the Newcastle Wind Energy Facility (WEF) Complex near Newcastle in the Newcastle Local Municipality, KwaZulu-Natal Province, comprising:

1. Mulilo Newcastle Wind Power WEF (200 MW) (Scoping and Environmental Impact Assessment process); and
2. Mulilo Newcastle Wind Power 2 WEF (200 MW) (Scoping and Environmental Impact Assessment process)
- 3.

*Mulilo Newcastle Wind Power WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Portion 1 of Geelhoutboom Farm 3350, Remaining Extent (RE) of Bernard Farm 9447, RE of Cliffdale Farm 9439, RE of Spitskop Farm 16302, RE of Byron Farm 9448, and RE of Geelhoutboom Farm 3350. The expected WEF footprint will be up to 82 Ha after

rehabilitation. Associated infrastructure will include an onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

*Mulilo Newcastle Wind Power 2 WEF* will consist of up to 37 turbines with a maximum hub height of up to 140 m and a rotor diameter of up to 200 m, with a total facility output of up to 200MW. The proposed activity will be located on the following land parcels: Remaining Extent of Farm 17421, Farm 8831, Farm Paardeplaat B 9390, Farm Franzhoek 8800, Farm Glendower 2901 and Farm Paardeplaat A 9389. The expected WEF footprint will be up to 82 Ha after rehabilitation. Associated infrastructure will include an onsite substation, temporary laydown areas/construction yards, internal access roads (upgrade of existing roads and the construction of new roads), operations and maintenance (O&M) building, and a Battery Energy Storage System (BESS).

Please find attached the combined Background Information Document (BID) for the project.

The Draft Scoping Report will be available for a review and comment period of 30 days 14<sup>th</sup> September 2022 and will end on 13<sup>th</sup> October 2022. The documentation can be accessed at:

- *Soft Copy:* CES website at <http://www.cesnet.co.za/public-documents>
- *Hard Copy:* Newcastle Library, 66 Scott St, Newcastle CBD, Newcastle, KZN

Please kindly address all comments as follows:

Email: [reppp@cesnet.co.za](mailto:reppp@cesnet.co.za)

Subject Line: MULILO NEWCASTLE WIND POWER OR MULILO NEWCASTLE WIND POWER 2

You are also hereby reminded of the following important information:

**NOTICE: POPIA (Protection of Personal Information Act) Disclaimer. All Stakeholder and I&AP Databases need to adhere to the Act from the 1st of July 2021. Should you wish to register as an I&AP on the Stakeholder and I&AP Database, as the administrators of the Mulilo Newcastle Wind Power and Mulilo Newcastle Wind Power 2 WEF Stakeholder and I&AP Database, we require your consent to be part of this database. As such you are herewith notified that you are entitled to refuse such consent and you may exercise such a right by withdrawing from this database in writing at any stage of the process. Should you elect to remain in this group, it will be accepted that you have consented to being a part of this database and to your personal information (being your name, affiliation, contact details and written comments) being noticeable to any person interested in this project and in the public domain. In this regard, we implore all members of this database NOT to make use of such personal information for whatsoever reason without obtaining the consent from the relevant person(s).**

Please do not hesitate to contact me should you have any queries.

Kind regards

Alan Carter – PhD, CPA (USA), Pr.Sci.Nat, EAPASA

**C11 – SAHRA**

Included in Notice of Application submitted to all identified stakeholders.

**C12 - ESKOM**

Included in Notice of Application submitted to all identified stakeholders. Responses received per the CRR at Appendix D.

DRAFT

C13 - DFFE (COMPETENT AUTHORITY)



forestry, fisheries  
& the environment

Department:  
Forestry, Fisheries and the Environment  
REPUBLIC OF SOUTH AFRICA

Private Bag X 447, PRETORIA 0001, Environment House, 473 Steve Biko Road, Arcadia, PRETORIA

DFFE Reference: 14/12/16/3/3/2/2212

Enquiries: Herman Alberts

Telephone: (012) 310 9371 E-mail: HAlberts@dffe.gov.za

Dr Alan Carter  
Coastal and Environmental Services (Pty) Ltd  
39 Harewood Drive  
Nahoon  
EAST LONDON  
5241

Telephone Number: (043) 726 7809  
Email Address: a.carter@cesnet.co.za

PER E-MAIL

Dear Dr Carter

**ACCEPTANCE OF THE SCOPING REPORT FOR THE PROPOSED MULILO NEWCASTLE WIND POWER (PTY) LTD, 200MW WIND ENERGY FACILITY (WEF) WITHIN THE NEWCASTLE LOCAL MUNICIPALITY IN THE KWAZULU-NATAL PROVINCE**

The final Scoping Report (SR) and the Plan of Study for Environmental Impact Assessment dated November 2022 and received by the Department on 02 November 2022, refer.

The Department has evaluated the submitted final SR and the Plan of Study for Environmental Impact Assessment dated November 2022 and is satisfied that the documents comply with the minimum requirements of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended. The final SR is hereby accepted by the Department in terms of Regulation 22(1)(a) of the EIA Regulations, 2014, as amended.

You may proceed with the environmental impact assessment process in accordance with the tasks contemplated in the Plan of Study for Environmental Impact Assessment as required in terms of the EIA Regulations, 2014, as amended.

In addition, the following amendments and additional information are required for the EIAr:

**(a) Listed Activities**

- (i) The EIAr must provide an assessment of the impacts and mitigation measures for each of the listed activities applied for.
- (ii) The listed activities represented in the EIAr and the application form must be the same and correct.
- (iii) The EIAr must assess the correct sub listed activity for each listed activity applied for.

JCA



**(b) Public Participation**

- (i) Please ensure the language used to inform potential I&APs in the newspaper advertisement is not only communicated in the language English but should also utilise other dominant languages spoken in the study area. The EAP must ensure that the newspaper medium adequately caters for all potential I&APs in the study area. This should also apply to any site notification boards as well.
- (ii) Please ensure that comments from all relevant stakeholders are submitted to the Department with the EIAr. This includes but is not limited to the KZN Department of Economic Development, Tourism and Environmental Affairs, the Newcastle Local Municipality, the Department of Water and Sanitation (DWS), the South African Heritage Resources Agency (SAHRA), Ezemvelo KZN Wildlife, the Endangered Wildlife Trust (EWT), BirdLife SA, the Department of Mineral Resources, the Department of Forestry, Fisheries and the Environment: Directorate Biodiversity and Conservation, and the Directorate Protected Areas.
- (iii) Please ensure that all issues raised and comments received during the circulation of the draft SR and draft EIAr from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final EIAr. Proof of correspondence with the various stakeholders must be included in the final EIAr. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments.
- (iv) A Comments and Response trail report (C&R) must be submitted with the final EIAr. The C&R report must incorporate all comments for this development. The C&R report must be a separate document from the main report and the format must be in the table format as indicated in Appendix 1 of this comments letter. Please refrain from summarising comments made by I&APs. All comments from I&APs must be copied verbatim and responded to clearly. Please note that a response such as "noted" is not regarded as an adequate response to I&AP's comments.
- (v) Comments from I&APs must not be split and arranged into categories. Comments from each submission must be responded to individually.
- (vi) The Public Participation Process must be conducted in terms of Regulation 39, 40, 41, 42, 43 & 44 of the EIA Regulations, 2014, as amended.

**(c) Layout & Sensitivity Maps**

- (i) The EIAr must provide coordinate points for the proposed development site and all proposed infrastructure (note that if the site has numerous bend points, at each bend point coordinates must be provided) as well as the start, middle and end point of all linear activities.
- (ii) All preferred turbine positions must be clearly numbered. The turbine position numbers must be consistently used in all maps to be included in the reports.
- (iii) The EIAr must provide a copy of the final preferred layout map. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g., roads. The layout map must indicate the following:
  - a) A clear indication of the envisioned area for the proposed wind energy facility;
  - b) Position of the wind turbines;
  - c) Powerlines;
  - d) Internal roads;
  - e) All supporting onsite infrastructure such as laydown area, guard house and control room etc.;
  - f) Substations, transformers, switching stations and inverters;
  - g) Battery Energy Storage System;
  - h) The location of sensitive environmental features on site e.g. CBAs, heritage sites, wetlands, drainage lines etc. that will be affected by the facilities and its associated infrastructure;
  - i) Connection routes (including pylon positions) to the distribution/transmission network;
  - j) All existing infrastructure on the site, especially railway lines and roads; and
  - k) Buildings, including accommodation.



- (iv) Please provide an environmental sensitivity map which indicates the following:
  - a) The location of sensitive environmental features identified on site, e.g. CBAs, protected areas, heritage sites, wetlands, drainage lines etc. that will be affected by the facility and its associated infrastructure;
  - b) Buffer areas; and
  - c) All "no-go" areas.
- (v) The above layout map must be superimposed (overlain) with the sensitivity map and a cumulative map which shows neighbouring and existing infrastructure.
- (vi) Google maps will not be accepted.

**(d) Specialist assessments**

- (i) The list provided for the specialist studies to be undertaken in the EIAr on Page 179 of the Scoping Report fails to list Traffic Impact Assessment as a study that will be undertaken. It is imperative to conduct a Traffic Impact Assessment to assess the potential impacts on traffic in the area caused by the development and whether the development can be accommodated by the transportation system.
- (ii) The EAP must ensure that the terms of reference for all the identified specialist studies must include the following:
  - a) A detailed description of the study's methodology; indication of the locations and descriptions of the development footprint, and all other associated infrastructures that they have assessed and are recommending for authorisation.
  - b) Provide a detailed description of all limitations to the studies. All specialist studies must be conducted in the right season and providing that as a limitation will not be allowed.
  - c) Please note that the Department considers a 'no-go' area, as an area where no development of any infrastructure is allowed; therefore, no development of associated infrastructure including access roads is allowed in the 'no-go' areas.
  - d) Should the specialist definition of 'no-go' area differ from the Department's definition; this must be clearly indicated. The specialist must also indicate the 'no-go' area's buffer if applicable.
  - e) **All specialist studies must be final, and provide detailed/practical mitigation measures for the preferred alternative and recommendations, and must not recommend further studies to be completed post EA.**
  - f) **Bird and bat specialist studies must have support from Birdlife South Africa and SABAA.**
  - g) Should a specialist recommend specific mitigation measures, these must be clearly indicated.
- (iii) Should the appointed specialists specify contradicting recommendations, the EAP must clearly indicate the most reasonable recommendation and substantiate this with defensible reasons; and were necessary, include further expertise advice.
- (iv) It is further brought to your attention that Procedures for the Assessment and Minimum Criteria for Reporting in identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation, which were promulgated in Government Notice No. 320 of 20 March 2020 (i.e. "the Protocols") and in Government Notice No. 1150 of 30 October 2020 (i.e. protocols for terrestrial plant and animal species), have come into effect. **Please note that specialist assessments must be conducted in accordance with these protocols.**
- (v) Please also ensure that the EIAr includes the Site Verification Report and Compliance Statements (where applicable) as required by the relevant themes.
- (vi) Please note further that the protocols, if applicable, require certain specialists' to be SACNASP registered. Please ensure that the relevant specialist certificates are attached to the relevant reports.
- (vii) As such, the Specialist Declaration of Interest forms must also indicate the scientific organisation registration/member number and status of registration/membership for each specialist.

(viii) The following Specialist Assessments will form part of the EIAr:

- Agricultural Impact Assessment;
- Ecological Impact Assessment;
- Aquatic Impact Assessment;
- Archaeological Impact Assessment;
- Palaeontological Impact Assessment;
- Avifaunal Impact Assessment and Monitoring;
- Bat Impact Assessment and Monitoring;
- Visual Impact Assessment;
- Noise Impact Assessment; and
- Socio-economic Impact Assessment.

**(e) Cumulative Assessment**

- (i) Should there be any similar projects within a 30km radius of the proposed development site, a cumulative impact assessment for all identified and assessed impacts must be conducted to indicate the following:
  - a) Identified cumulative impacts must be clearly defined, and where possible the size of the identified impact must be quantified and indicated, i.e. hectares of cumulatively transformed land.
  - b) Detailed process flow and proof must be provided, to indicate how the specialist's recommendations, mitigation measures and conclusions from the various similar developments in the area were taken into consideration in the assessment of cumulative impacts and when the conclusion and mitigation measures were drafted for this project.
  - c) The cumulative impacts significance rating must also inform the need and desirability of the proposed development.
  - d) A cumulative impact environmental statement on whether the proposed development must proceed.

**(f) General**

- (ii) The EIAr must provide the technical details for the proposed facilities in a table format as well as their description and/or dimensions. A sample for the minimum information required is listed under Annexure 2 below.
- (iii) The EAP must provide landowner consent for all farm portions affected by the proposed project i.e. all farm portions where the access road, wind turbines and associated infrastructure are to be located.
- (iv) A construction and operational phase EMPr that includes mitigation and monitoring measures must be submitted with the final EIAr, including the Generic EMPs for substations and powerlines.

The applicant is hereby reminded to comply with the requirements of Regulation 45 of GN R982 of 04 December 2014, as amendment, with regard to the time period allowed for complying with the requirements of the Regulations.

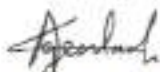


## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAr)

Chief Directorate: Integrated Environmental Authorisations

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours faithfully



**Ms Milicent Solomons**  
Acting Chief Director: Integrated Environmental Authorisations  
Department of Forestry, Fisheries and the Environment  
Signed by: Mr Coenrad Agenbach  
Designation: Deputy Director: Priority Infrastructure Projects  
Date: 09 December 2022

cc:	Constantin Hatzilambros	Mulilo Newcastle Wind Power 2 (Pty) Ltd	Email: Constantin@mulilo.com
	Zama Mbanjwa	KZN EDTEA	Email: Zama.Mbanjwa@kznedtea.gov.za
	Zamokwako Wesley Monoka	Newcastle Local Municipality	Email: zamani.mcinoka@newcastle.gov.za,

DFFE Reference: 14/12/18/3/3/22212 5  
ACCEPTANCE OF THE SCOPING REPORT FOR THE PROPOSED MULILO NEWCASTLE WIND POWER (PTY) LTD. 200MW WIND ENERGY FACILITY WITHIN NEWCASTLE LOCAL MUNICIPALITY IN KWAZULU-NATAL PROVINCE

**Annexure 1**

Format for Comments and Response Trail Report:

Date of comment, format of comment, name of organisation/I&AP	Comment	Response from EAP/Applicant/Specialist
27/01/2016 Email Department of Environment, Forestry and Fisheries: Priority Infrastructure Projects (John Doe)	Please record C&R trail report in this format  Please update the contact details of the provincial environmental authority	EAP: (Noted) The C&R trail report has been updated into the desired format, see Appendix K  EAP: Details of provincial authority have been updated, see page 16 of the Application form

**Annexure 2: Sample of technical details for the proposed facility**

Component	Description / dimensions
Location of the site	
The total area of the site	
Total disturbance footprint	
Maximum generation capacity for facility	
Number of Turbines	
Hub Height from ground level	
Rotor top tip height	
Rotor bottom tip height	
Blade Length	
Rotor Diameter	
Turbine Foundations	
Turbine Hardstands and Laydown Areas	
Capacity of on-site substation and footprint	
Battery Energy Storage System (BESS) and footprint	
Cables and Overhead Power line	
Area occupied by both permanent and construction laydown areas	
Length of internal roads	
Width of internal roads	

## APPENDIX D | COMMENTS AND RESPONSE REPORT

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PLEASE FIND THE COMMENTS AND RESPONSE REPORT

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## **APPENDIX E | SPECIALIST IMPACT ASSESSMENT REPORTS**

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PLEASE FIND THE SPECIALIST REPORTS HERE WITHIN

**E1 - AGRICULTURAL IMPACT ASSESSMENT**

**E2 - AQUATIC IMPACT ASSESSMENT**

**E3 - TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT**

**E4 - AVIFAUNAL IMPACT ASSESSMENT**

**E5 - BAT IMPACT ASSESSMENT**

**E6 - HERITAGE (ARCHAEOLOGICAL) IMPACT ASSESSMENT**

**E6 - PALEONTOLOGICAL IMPACT ASSESSMENT**

**E7 - NOISE IMPACT ASSESSMENT**

**E8 - SOCIO-ECONOMIC IMPACT ASSESSMENT**

**E9 - VISUAL IMPACT ASSESSMENT**

**E10 - TRAFFIC IMPACT ASSESSMENT**

## **APPENDIX F | SPECIALIST DECLARATIONS**

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PLEASE FIND THE SPECIALIST DECLARATIONS HERE WITHIN

**AGRICULTURAL IMPACT ASSESSMENT**

**TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT**

**AQUATIC IMPACT ASSESSMENT**

**AVIFAUNAL IMPACT ASSESSMENT**

**BAT IMPACT ASSESSMENT**

**HERITAGE (ARCHAEOLOGICAL) IMPACT ASSESSMENT**

**PALEONTOLOGICAL IMPACT ASSESSMENT**

**NOISE IMPACT ASSESSMENT**

**SOCIO-ECONOMIC IMPACT ASSESSMENT**

**VISUAL IMPACT ASSESSMENT**

**TRAFFIC IMPACT ASSESSMENT**

## APPENDIX G | ENVIRONMENTAL MANAGEMENT PROGRAMMES (EMPRs)

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PLEASE FIND THE ENVIRONMENTAL MANAGEMENT PROGRAMMES HERE WITHIN

### G1 - EMPR (WEF SITE)

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## APPENDIX H | FULL IMPACTS TABLES

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PLEASE FIND THE ENVIRONMENTAL MANAGEMENT PROGRAMMES HERE WITHIN

**H1 - GENERAL IMPACTS TABLE**

**H2 - SPECIALIST IMPACTS TABLE**

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## APPENDIX I | PROJECT COORDINATES

### TURBINE LOCATIONS

Turbine Number	X AXIS	Y AXIS
1	29,79315	-27,66212
2	29,78900	-27,66872
3	29,79584	-27,66480
4	29,79358	-27,66798
5	29,80341	-27,65921
6	29,78697	-27,67473
7	29,80089	-27,66192
8	29,77524	-27,68593
9	29,79313	-27,67255
10	29,79017	-27,67630
11	29,79949	-27,66766
12	29,81174	-27,65724
13	29,79691	-27,67114
14	29,78278	-27,68495
15	29,80985	-27,66035
16	29,78137	-27,68846
17	29,80259	-27,66984
18	29,80612	-27,66700
19	29,79056	-27,68179
20	29,80977	-27,66393
21	29,77998	-27,69183
22	29,79371	-27,67931
23	29,80108	-27,67295
24	29,82513	-27,65103
25	29,82266	-27,65375
26	29,81999	-27,65657
27	29,81732	-27,65938
28	29,80024	-27,67653
29	29,81520	-27,66310
30	29,80717	-27,67064
31	29,79789	-27,67934
32	29,81182	-27,66821
33	29,79260	-27,68633
34	29,82981	-27,65200
35	29,79858	-27,68282
36	29,78949	-27,64379
37	29,79258	-27,64132
38	29,78824	-27,64694
39	29,78580	-27,64993



Turbine Number	X AXIS	Y AXIS
40	29,79668	-27,64041
41	29,79211	-27,64782
42	29,79621	-27,64860
43	29,79035	-27,65411
44	29,79973	-27,64681
45	29,80270	-27,64422

**ACCESS ROADS**

ID	NAME	X AXIS	Y AXIS
1	Primary Access Road	29,81686	-27,63528
2	Primary Access Road	29,81682	-27,63535
3	Primary Access Road	29,81678	-27,63540
4	Primary Access Road	29,81668	-27,63541
5	Primary Access Road	29,81648	-27,63543
6	Primary Access Road	29,81621	-27,63543
7	Primary Access Road	29,81609	-27,63543
8	Primary Access Road	29,81598	-27,63544
9	Primary Access Road	29,81583	-27,63549
10	Primary Access Road	29,81486	-27,63599
11	Primary Access Road	29,81331	-27,63680
12	Primary Access Road	29,81325	-27,63685
13	Primary Access Road	29,81321	-27,63688
14	Primary Access Road	29,81316	-27,63693
15	Primary Access Road	29,81312	-27,63699
16	Primary Access Road	29,81309	-27,63705
17	Primary Access Road	29,81305	-27,63713
18	Primary Access Road	29,81304	-27,63718
19	Primary Access Road	29,81303	-27,63723
20	Primary Access Road	29,81305	-27,63819
21	Primary Access Road	29,81306	-27,63827
22	Primary Access Road	29,81307	-27,63838
23	Primary Access Road	29,81309	-27,63855
24	Primary Access Road	29,81313	-27,63872
25	Primary Access Road	29,81320	-27,63891
26	Primary Access Road	29,81326	-27,63904
27	Primary Access Road	29,81334	-27,63927
28	Primary Access Road	29,81351	-27,63972
29	Primary Access Road	29,81355	-27,63987
30	Primary Access Road	29,81357	-27,64005
31	Primary Access Road	29,81356	-27,64018
32	Primary Access Road	29,81358	-27,64032
33	Primary Access Road	29,81359	-27,64039

<b>ID</b>	<b>NAME</b>	<b>X AXIS</b>	<b>Y AXIS</b>
34	Primary Access Road	29,81360	-27,64046
35	Primary Access Road	29,81364	-27,64059
36	Primary Access Road	29,81373	-27,64095
37	Primary Access Road	29,81377	-27,64103
38	Primary Access Road	29,81384	-27,64115
39	Primary Access Road	29,81394	-27,64125
40	Primary Access Road	29,81406	-27,64149
41	Primary Access Road	29,81426	-27,64160
42	Primary Access Road	29,81455	-27,64178
43	Primary Access Road	29,81462	-27,64188
44	Primary Access Road	29,81475	-27,64216
45	Primary Access Road	29,81512	-27,64262
46	Primary Access Road	29,81722	-27,64417
47	Primary Access Road	29,81791	-27,64456
48	Primary Access Road	29,81828	-27,64472
49	Primary Access Road	29,81857	-27,64499
50	Primary Access Road	29,81910	-27,64525
51	Primary Access Road	29,82027	-27,64598
52	Primary Access Road	29,82314	-27,64716
53	Primary Access Road	29,82540	-27,64883
54	Primary Access Road	29,82589	-27,64920
55	Primary Access Road	29,82615	-27,64945
56	Primary Access Road	29,82626	-27,64959
57	Primary Access Road	29,82631	-27,64970
58	Primary Access Road	29,82638	-27,64984
59	Primary Access Road	29,82642	-27,64996
60	Primary Access Road	29,82642	-27,64998
61	Primary Access Road	29,82644	-27,65008
62	Primary Access Road	29,82640	-27,65019
63	Primary Access Road	29,82631	-27,65036
64	Primary Access Road	29,82615	-27,65054
65	Primary Access Road	29,82382	-27,65300
66	Primary road access	29,82382	-27,65301
67	Primary road access	29,81769	-27,65981
68	Primary road access	29,81481	-27,66308
69	Primary road access	29,81461	-27,66328
70	Primary road access	29,81440	-27,66341
71	Primary road access	29,81414	-27,66353
72	Primary road access	29,81078	-27,66465
73	Primary road access	29,80880	-27,66523
74	Primary road access	29,80606	-27,66742
75	Primary road access	29,80277	-27,66994
76	Primary road access	29,80229	-27,67027

ID	NAME	X AXIS	Y AXIS
77	Primary road access	29,80182	-27,67079
78	Primary road access	29,80132	-27,67149
79	Primary road access	29,80108	-27,67211
80	Primary road access	29,80092	-27,67306
81	Primary road access	29,80077	-27,67424
82	Primary road access	29,80068	-27,67567
83	Primary road access	29,80038	-27,67662
84	Primary road access	29,79981	-27,67779
85	Primary road access	29,79977	-27,67787
86	Primary road access	29,79910	-27,67998
87	Primary road access	29,79866	-27,68166
88	Primary road access	29,79838	-27,68283
89	Primary road access	29,79811	-27,68380
90	Primary road access	29,79781	-27,68482
91	Primary road access	29,79777	-27,68514
92	Untitled Path	29,79696	-27,67104
93	Untitled Path	29,79713	-27,67138
94	Untitled Path	29,79737	-27,67186
95	Untitled Path	29,79918	-27,67485
96	Untitled Path	29,79941	-27,67515
97	Untitled Path	29,79972	-27,67540
98	Untitled Path	29,80071	-27,67565
99	Primary Access Road	29,79784	-27,68475
100	Primary Access Road	29,79763	-27,68497
101	Primary Access Road	29,79742	-27,68516
102	Primary Access Road	29,79708	-27,68545
103	Primary Access Road	29,79693	-27,68560
104	Primary Access Road	29,79655	-27,68589
105	Primary Access Road	29,79602	-27,68629
106	Primary Access Road	29,79565	-27,68683
107	Primary Access Road	29,79538	-27,68725
108	Primary Access Road	29,79500	-27,68772
109	Primary Access Road	29,79327	-27,68861
110	Primary Access Road	29,79291	-27,68874
111	Primary Access Road	29,79194	-27,68903
112	Primary Access Road	29,79134	-27,68926
113	Primary Access Road	29,79103	-27,68944
114	Primary Access Road	29,79027	-27,68965
115	Primary Access Road	29,78931	-27,68990
116	Primary Access Road	29,78814	-27,69017
117	Primary Access Road	29,78731	-27,69035
118	Primary Access Road	29,78656	-27,69052
119	Primary Access Road	29,78583	-27,69074

ID	NAME	X AXIS	Y AXIS
120	Primary Access Road	29,78430	-27,69108
121	Primary Access Road	29,78396	-27,69116
122	Primary Access Road	29,78185	-27,69163
123	Primary Access Road	29,78121	-27,69177
124	Primary Access Road	29,78059	-27,69178
125	Primary Access Road	29,78004	-27,69171
126	Primary Access Road	29,77973	-27,69155
127	Primary Access Road	29,77950	-27,69136
128	Primary Access Road	29,77888	-27,69083
129	Primary Access Road	29,77867	-27,69058
130	Primary Access Road	29,77839	-27,69009
131	Primary Access Road	29,77723	-27,68780
132	Primary Access Road	29,77709	-27,68762
133	Primary Access Road	29,77686	-27,68745
134	Primary Access Road	29,77652	-27,68719
135	Primary Access Road	29,77600	-27,68671
136	Primary Access Road	29,77538	-27,68614
137	Primary Access Road	29,77518	-27,68581

**IPP SUBSTATION AND O&M BUILDING COMPLEX**

29.80042, -27.68468
29.79893, -27.68745
29.79790, -27.68708
29.79740, -27.68554
29.79830, -27.68390