

# ALBANY WIND ENERGY FACILITY NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE

*DFFE Reference Numbers: 14/12/16/3/3/2/1131 & 14/12/16/3/3/2/2088*

## FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**PREPARED FOR:**

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**NOVEMBER 2021**

**Report Title: Albany Wind Energy Facility – Environmental Impact Assessment Report**

**Report Version: Final**

**Department of Forestry, Fisheries and the Environment (DFFE) Reference Number: 14/12/16/3/3/2/1131**

**CES Project Code: P40700009**

**Environmental Assessment Practitioner (EAP) Details:**

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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	<i>EAP, Project Leader &amp; Author</i>	November 2021
Caroline Evans	<i>Project Manager &amp; Author</i>	November 2021
Rosalie Evans	<i>Co-Author &amp; GIS Mapping</i>	November 2021

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# THE 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>	<i>Chapter 1 and Appendix B</i>
(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>	<i>Chapter 2</i>
(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>	<i>Chapter 2</i>
(i)	<del>A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken.</del>	
(ii)	<del>On land where the property has not been defined, the coordinates within which the activity is to be undertaken.</del>	
<b>(d)</b>	<b>A description of the scope of the proposed activity, including –</b>	<i>Chapter 2</i>
(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>	<i>Chapter 4</i>
<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>	<i>Chapter 3</i>
<b>(g)</b>	<b>A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report.</b>	<i>Chapter 3 and Chapter 7</i>
<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>Chapter 7</i>
(i)	Details of the development footprint alternatives considered.	<i>Chapter 7, Chapter 8, Chapter 9 and Chapter 10</i>
(ii)	Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs.	<i>Chapter 11 and Appendix A</i>
(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.	<i>Chapter 11, Appendix A and Appendix H</i>
(iv)	The environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.	<i>Chapter 5 and Chapter 6</i>
(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	<i>Chapter 9</i>

	(cc) Can be avoided, managed or mitigated.	
(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.	
<b>(i)</b>	<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.	
<b>(j)</b>	<b>An assessment of each identified potentially significant impact and risk, including –</b>	
(i)	Cumulative impacts	<i>Chapter 8, Chapter 9 and Chapter 10</i>
(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.	
<b>(k)</b>	<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>	
<b>(l)</b>	<b>An environmental impact statement which contains –</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 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.	
<b>(m)</b>	<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>	<i>Chapter 12</i>
<b>(n)</b>	<b>The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment</b>	
<b>(o)</b>	<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>(p)</b>	<b>A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.</b>	
<b>(q)</b>	<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>(r)</b>	<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>(s)</b>	<b>An undertaking under oath or affirmation by the EAP in relation to –</b>	
(i)	The correctness of the information provided in the report.	<i>Chapter 13</i>
(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>(t)</b>	<b>Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.</b>	
<b>(u)</b>	<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	<i>None at this stage</i>
(ii)	A motivation for the deviation.	
<b>(v)</b>	<b>Any specific information that may be required by the competent authority.</b>	<i>Throughout this Report</i>
<b>(w)</b>	<b>Any other matters required in terms of section 24 (4) (a) and (b) of the Act.</b>	<i>None at this stage</i>

# ENVIRONMENTAL IMPACT ASSESSMENT TEAM

---

## Environmental Consultants

**Alan Carter**, EAP, Project Leader & Author  
*CES*

**Caroline Evans**, Project Manager & Author  
*CES*

**Rosalie Evans**, Co-Author & GIS Mapping  
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*SRK Consulting Engineers*

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**Traffic & Transport  
Specialists**

**Deon McQuirk**, Traffic Specialist  
*Emonti Consulting Engineers*

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## GENERAL SITE INFORMATION

FARM NAME	SG DIGIT NUMBER	FARM NUMBER/PORZION	AREA (HA)
(no name)	C0020000000022300002	Farm 223, Remaining Extent & Portion 2	84.5
The Orchards	C0020000000023300003	Farm 233, Portion 3	477.0
(no name)	C0020000000023400001	Farm 234, Portion 1	37.3
Collingham Towers	C0020000000023500000	Farm 235, Remaining Extent	142.0
Tempe	C0020000000024000010	Farm 240, Portion 10	82.4
Tempe	C0020000000024000011	Farm 240, Portion 11	167.0
Tempe	C0020000000024000012	Farm 240, Portion 12	116.0
Tempe	C0020000000024000007	Farm 240, Portion 7	117.0
Tempe	C0020000000024000008	Farm 240, Portion 8	416.0
Tempe	C0020000000024000009	Farm 240, Portion 9	543.0
Tempe	C0020000000024100000	Farm 241, Remaining Extent	672.0
Grobbelers Kloof	C0020000000033400001	Farm 334, Portion 1	204.0
Grobbelers Kloof	C0020000000033400002	Farm 334, Portion 2	210.0
Grobbelers Kloof	C0020000000033400003	Farm 334, Portion 3	75.4
Grobbelers Kloof	C0020000000033400004	Farm 334, Portion 4	54.4
(no name)	C0020000000035800001	Farm 358, Portion 1	8.31
(no name)	C0020000000035800003	Farm 358, Portion 3	6.73
Allandale	C0020000000058100000	Farm 581	36.0
Miniplaas	C0020000000058200000	Farm 582	51.7
Nutwood	C0020000000058300000	Farm 583, Remaining Extent	51.8
(no name)	C0020000000059900000	Farm 599, Remaining Extent	111.0
(no name)	C0020000000060100000	Farm 601, Remaining Extent	125.0
Green Hills	C0020000000066300000	Farm 663, Remaining Extent	437.0
Green Hills	C0020000000066300001	Farm 663, Remaining Extent & Portion 1	616.7
Green Hills	C0020000000066300002	Farm 663, Remaining Extent & Portion 2	575.8
Green Hills	C0020000000066300003	Farm 663, Remaining Extent & Portion 3	34.2
Green Hills	C0020000000066300004	Farm 663, Remaining Extent & Portion 4	641.2
(no name)	C00200020000480700000	Erf 4807, Remaining Extent	192.0
<b>TOTAL</b>			<b>6285.4 ha</b>

### TURBINE DESIGN SPECIFICATIONS

Number of turbines	Up to 43
Power output per turbine	Unspecified
Facility output	Up to 297 MW
Turbine hub height	Up to 130 m
Turbine rotor diameter	Up to 170 m
Turbine blade length	Up to 85 m
Turbine tip height	Up to 215 m
Turbine platform area	3 900 m <sup>2</sup>
Turbine road width	14 m to be rehabilitated to 8 m

TURBINE COORDINATES (AMENDED LAYOUT)		
WTG 01	33°14'09.82"S	26°34'06.03"E
WTG 02	33°14'13.02"S	26°34'25.00"E
<del>WTG 03</del>	<del>33°14'23.84"S</del>	<del>26°34'13.93"E</del>
WTG 04	33°14'15.29"S	26°34'51.10"E
WTG 05	33°14'27.71"S	26°34'35.82"E
WTG 06	33°14'24.09"S	26°35'17.35"E
WTG 07	33°14'43.27"S	26°35'17.05"E
<del>WTG 08</del>	<del>33°15'40.86"S</del>	<del>26°35'24.13"E</del>
WTG 09	33°15'00.34"S	26°35'32.52"E
WTG 10	33°15'06.39"S	26°36'18.77"E
WTG 11	33°14'29.33"S	26°35'35.55"E
<del>WTG 12</del>	<del>33°15'39.71"S</del>	<del>26°36'58.43"E</del>
WTG 13	33°15'00.08"S	26°36'52.25"E
<del>WTG 14</del>	<del>33°15'15.22"S</del>	<del>26°37'01.49"E</del>
WTG 15	33°15'22.35"S	26°36'57.79"E
WTG 16	33°15'09.14"S	26°37'13.13"E
WTG 17	33°15'29.29"S	26°37'24.39"E
<del>WTG 18</del>	<del>33°15'30.01"S</del>	<del>26°37'39.95"E</del>
WTG 19	33°15'43.89"S	26°37'35.47"E
WTG 20	33°15'37.48"S	26°37'50.49"E
WTG 21	33°15'50.69"S	26°36'40.41"E
<del>WTG 22</del>	<del>33°15'56.66"S</del>	<del>26°36'34.03"E</del>
WTG 23	33°16'53.21"S	26°38'04.52"E
WTG 24	33°16'52.17"S	26°37'26.69"E
<del>WTG 25</del>	<del>33°16'50.37"S</del>	<del>26°37'46.12"E</del>
WTG 26	33°16'59.85"S	26°38'36.57"E
WTG 27	33°17'05.88"S	26°38'57.08"E
<del>WTG 28</del>	<del>33°17'23.88"S</del>	<del>26°38'54.93"E</del>
WTG 29	33°16'11.48"S	26°39'27.24"E
<del>WTG 30</del>	<del>33°16'04.12"S</del>	<del>26°39'26.58"E</del>
WTG 31	33°16'03.70"S	26°39'45.12"E
WTG 32	33°16'11.49"S	26°40'00.25"E
WTG 35	33°17'21.99"S	26°40'22.31"E
<del>WTG 40</del>	<del>33°17'44.29"S</del>	<del>26°42'43.89"E</del>
WTG 41	33°18'06.70"S	26°42'35.98"E
<del>WTG 42</del>	<del>33°18'12.69"S</del>	<del>26°42'49.25"E</del>
<del>WTG 43</del>	<del>33°17'57.67"S</del>	<del>26°42'46.54"E</del>
WTG 44	33°17'57.82"S	26°43'04.30"E
WTG 46	33°18'23.62"S	26°42'50.71"E
<del>WTG 47</del>	<del>33°18'30.41"S</del>	<del>26°43'16.42"E</del>
WTG 50	33°18'38.06"S	26°43'36.88"E
WTG 51	33°18'51.26"S	26°43'44.74"E
WTG 52	33°19'01.86"S	26°44'15.33"E
<del>WTG 53</del>	<del>33°18'35.06"S</del>	<del>26°44'17.37"E</del>
WTG 55	33°18'15.92"S	26°44'36.33"E
<del>WTG 56</del>	<del>33°18'30.47"S</del>	<del>26°44'33.91"E</del>
<del>WTG 57</del>	<del>33°19'07.17"S</del>	<del>26°44'26.88"E</del>
WTG 58	33°18'35.91"S	26°44'47.44"E
WTG 59	33°18'26.59"S	26°45'05.29"E
WTG 60	33°18'44.05"S	26°45'06.16"E
WTG 61	33°19'12.12"S	26°44'44.32"E
WTG 62	33°19'22.91"S	26°45'00.65"E
WTG 63	33°18'38.79"S	26°45'28.54"E

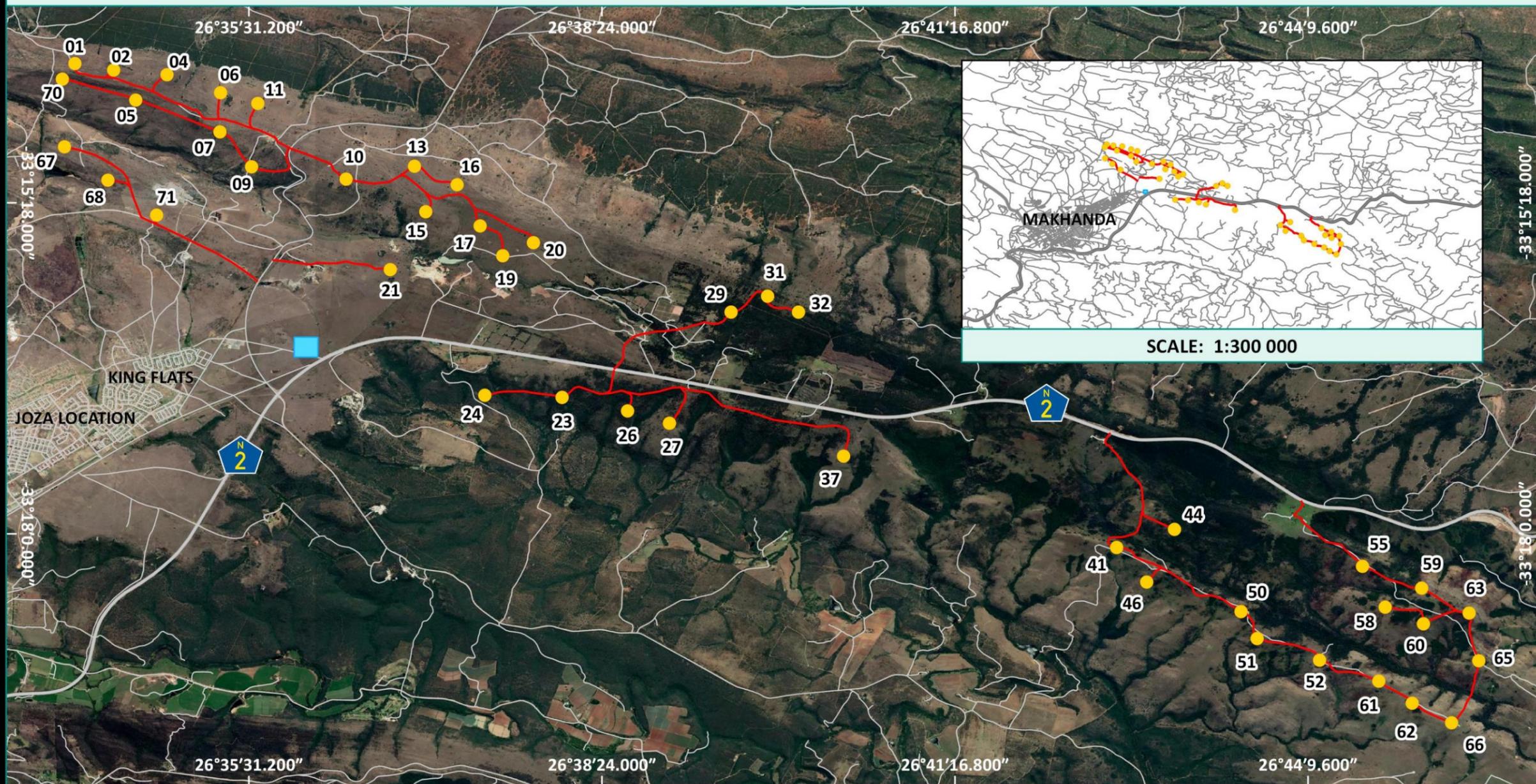
WTG 64	33°17'33.20"S	26°42'26.21"E
WTG 65	33°19'02.12"S	26°45'33.26"E
WTG 66	33°19'32.49"S	26°45'19.94"E
WTG 67	33°14'50.57"S	26°34'00.93"E
WTG 68	33°15'06.91"S	26°34'22.18"E
WTG 69	33°15'05.72"S	26°34'31.56"E
WTG 70	33°14'17.45"S	26°33'59.87"E
WTG 71	33°15'24.00"S	26°34'46.04"E
WTG 72	33°13'40.74"S	26°34'40.51"E
WTG 73	33°13'54.73"S	26°35'33.40"E
WTG 74	33°13'59.12"S	26°35'49.14"E
WTG 75	33°14'04.96"S	26°36'31.10"E
WTG 76	33°14'07.95"S	26°36'46.69"E

#### ONSITE MEASURED WIND PARAMETERS

85 m masts were installed on the 4<sup>th</sup> of November 2012 and decommissioned on the 5<sup>th</sup> of November 2013. A 120 m mast was then installed on the 3<sup>rd</sup> of March 2016 and it is still collecting data.

PROJECT NAME: PROPOSED ALBANY WIND ENERGY FACILITY NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE

MAP TITLE: LOCALITY MAP



MAP DETAILS:

Drawn by: Rosalie Evans  
 Date: August 2020  
 Datum: WGS84



SCALE: 1:50 000

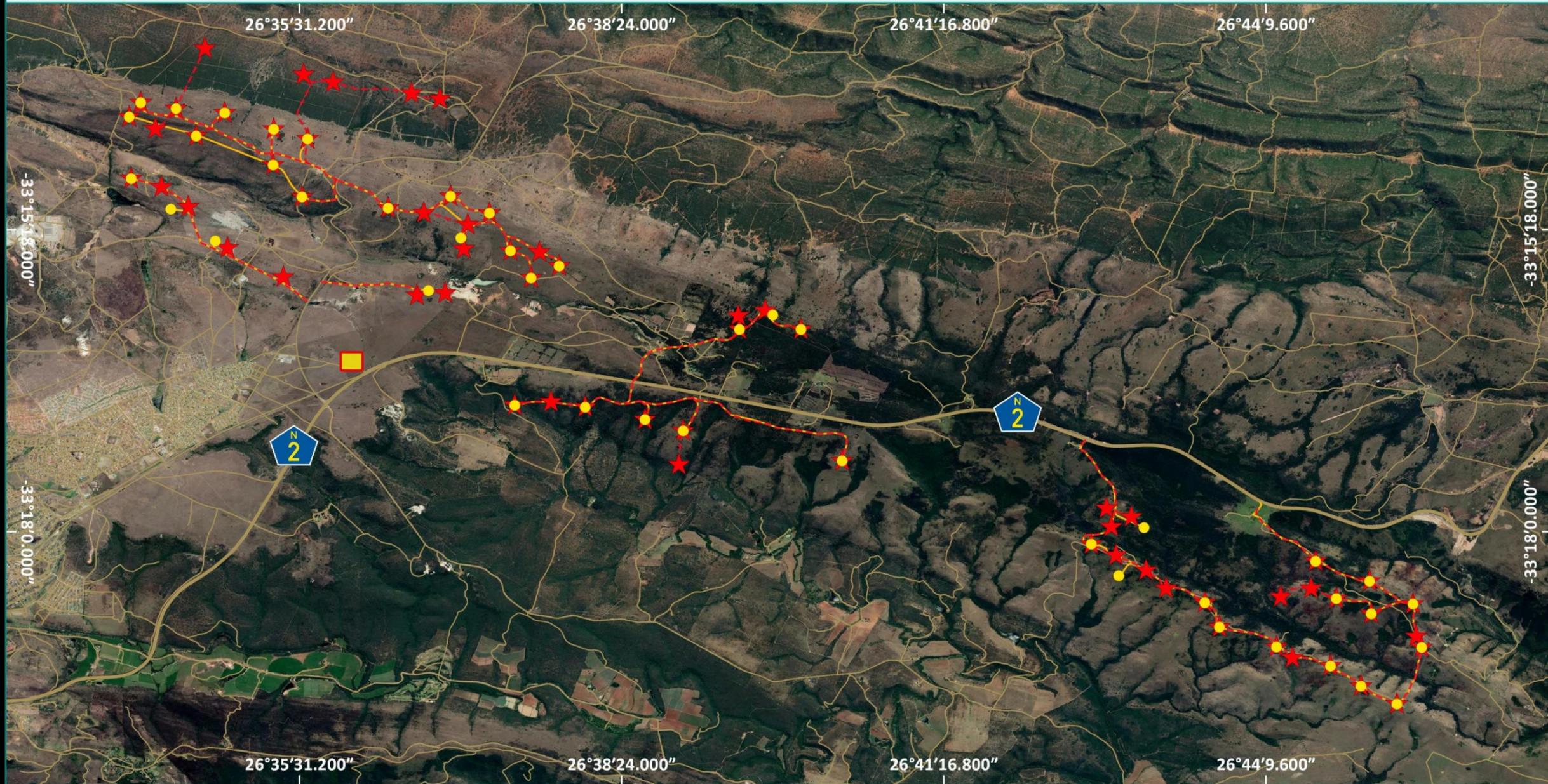
LEGEND:

- Proposed Turbine Layout
- Proposed Temporary Laydown Area, Batching Plant & Construction Compound
- Proposed Roads
- Existing Roads



PROJECT NAME: PROPOSED ALBANY WIND ENERGY FACILITY NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE

MAP TITLE: LAYOUT COMPARISON MAP



MAP DETAILS:

Drawn by: Rosalie Evans

Date: August 2020

Datum: WGS84



SCALE: 1:55 000

LEGEND:

- Current Proposed Turbine Layout
- Current Proposed Road Layout
- ★ Previous Proposed Turbine Layout
- Previous Proposed Road Layout
- Current & Previous Proposed Temporary Laydown Area, Batching Plant & Construction Compound
- Existing Roads



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# 1 INTRODUCTION

## 1.1 BACKGROUND INFORMATION

Albany Wind Power (Pty) Ltd. plans to develop, construct and operate a Wind Energy Facility (WEF) approximately seven kilometres (7 km) east of Makhanda (Grahamstown) in the Eastern Cape Province. The project site is situated in the Makana Local Municipality (LM) which forms part of the Sarah Baartman District Municipality (DM). According to the data recorded by the applicant in the area as well as the WASA (Wind Atlas for South Africa, CSIR, 2018) this project site appears to have favourable wind conditions to operate a wind farm.

The proposed Albany WEF will consist of up to forty-three (43) turbines (previously sixty-six turbines), with a maximum output generation capacity of 297 Mega Watts (MW) of power. The WEF will also include a short powerline and switching stations in order to connect the WEF to the existing Eskom Albany substation (this powerline will be applied for in a separate environmental application, however the project description of the application will appear in this document in order for the development to be considered as a whole). The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover a maximum area of approximately 55 ha (post rehabilitation) depending on the final layout design, should the project proceed to the construction phase.

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

The following table (Table 1-1) indicates the movement and removal of turbines based on a reduction in turbines from 66 (first Draft EIR) to 43 (second Draft EIR and final EIR).

**Table 1-1: Movement of Turbines Summary**

TURBINE COORDINATES		
WTG 01	33°14'09.82" S	26°34'06.03" E
WTG 02	33°14'13.02" S	26°34'25.00" E
<del>WTG 03</del>	<del>33°14'23.84" S</del>	<del>26°34'13.93" E</del>
WTG 04	33°14'15.29" S	26°34'51.10" E
WTG 05	33°14'27.71" S	26°34'35.82" E
WTG 06	33°14'24.29" S	26°35'17.78" E
WTG 07	33°14'43.27" S	26°35'17.05" E
<del>WTG 08</del>	<del>33°15'40.86" S</del>	<del>26°35'24.13" E</del>
WTG 09	33°15'00.37" S	26°35'32.41" E
WTG 10	33°15'06.39" S	26°36'18.77" E
WTG 11	33°14'28.98" S	26°35'35.76" E
<del>WTG 12</del>	<del>33°15'39.71" S</del>	<del>26°36'58.43" E</del>
WTG 13	33°15'00.08" S	26°36'52.25" E
<del>WTG 14</del>	<del>33°15'15.22" S</del>	<del>26°37'01.49" E</del>
<del>WTG 15</del>	<del>33°15'28.32" S</del>	<del>26°36'59.13" E</del>
WTG 15	33°15'22.35" S	26°36'57.79" E
WTG 16	33°15'48.73" S	26°37'30.37" E
WTG 17	33°15'29.29" S	26°37'24.39" E
<del>WTG 18</del>	<del>33°15'30.01" S</del>	<del>26°37'39.95" E</del>
WTG 19	33°15'43.94" S	26°37'35.45" E
WTG 20	33°15'37.74" S	26°37'50.44" E

<del>WTG 21</del>	<del>33°15'51.99" S</del>	<del>26°36'49.38" E</del>
WTG 21	33°15'50.69" S	26°36'40.41" E
<del>WTG 22</del>	<del>33°15'56.66" S</del>	<del>26°36'34.03" E</del>
WTG 23	33°16'53.30" S	26°38'04.42" E
WTG 24	33°16'52.17" S	26°37'26.69" E
<del>WTG 25</del>	<del>33°16'50.37" S</del>	<del>26°37'46.12" E</del>
WTG 26	33°17'00.14" S	26°38'34.84" E
WTG 27	33°17'05.76" S	26°38'56.88" E
<del>WTG 28</del>	<del>33°17'23.88" S</del>	<del>26°38'54.93" E</del>
WTG 29	33°16'12.86" S	26°39'26.89" E
<del>WTG 30</del>	<del>33°16'04.12" S</del>	<del>26°39'26.58" E</del>
<del>WTG 31</del>	<del>33°16'01.52" S</del>	<del>26°39'40.29" E</del>
WTG 31	33°16'03.70" S	26°39'45.12" E
WTG 32	33°16'11.49" S	26°40'00.25" E
WTG 37	33°17'21.99" S	26°40'22.31" E
<del>WTG 40</del>	<del>33°17'44.29" S</del>	<del>26°42'43.89" E</del>
WTG 41	33°18'06.70" S	26°42'35.98" E
<del>WTG 42</del>	<del>33°18'12.69" S</del>	<del>26°42'49.25" E</del>
<del>WTG 43</del>	<del>33°17'57.67" S</del>	<del>26°42'46.54" E</del>
<del>WTG 44</del>	<del>33°17'49.50" S</del>	<del>26°42'58.81" E</del>
WTG 44	33°17'57.82" S	26°43'04.30" E
<del>WTG 46</del>	<del>33°18'20.62" S</del>	<del>26°43'05.67" E</del>
WTG 46	33°18'23.62" S	26°42'50.71" E
<del>WTG 47</del>	<del>33°18'30.41" S</del>	<del>26°43'16.42" E</del>
WTG 50	33°18'38.06" S	26°43'36.88" E
WTG 51	33°18'51.26" S	26°43'44.74" E
WTG 52	33°19'01.82" S	26°44'15.48" E
<del>WTG 53</del>	<del>33°18'35.06" S</del>	<del>26°44'17.37" E</del>
WTG 55	33°18'15.61" S	26°44'36.26" E
<del>WTG 56</del>	<del>33°18'30.47" S</del>	<del>26°44'33.91" E</del>
<del>WTG 57</del>	<del>33°19'07.17" S</del>	<del>26°44'26.88" E</del>
WTG 58	33°18'36.32" S	26°44'47.82" E
WTG 59	33°18'26.21" S	26°45'05.18" E
WTG 60	33°18'43.89" S	26°45'06.04" E
WTG 61	33°19'12.12" S	26°44'44.32" E
WTG 62	33°19'22.91" S	26°45'00.65" E
WTG 63	33°18'39.09" S	26°45'29.19" E
<del>WTG 64</del>	<del>33°17'33.20" S</del>	<del>26°42'26.21" E</del>
WTG 65	33°19'01.52" S	26°45'32.96" E
WTG 66	33°17'15.25" S	26°41'49.15" E
WTG 67	33°14'50.57" S	26°34'00.93" E
<del>WTG 68</del>	<del>33°14'55.08" S</del>	<del>26°34'17.15" E</del>
WTG 68	33°15'06.91" S	26°34'22.18" E
<del>WTG 69</del>	<del>33°15'05.72" S</del>	<del>26°34'31.56" E</del>
WTG 70	33°14'17.45" S	26°33'59.87" E
<del>WTG 71</del>	<del>33°15'27.76" S</del>	<del>26°34'52.62" E</del>
WTG 71	33°15'24.00" S	26°34'46.04" E
<del>WTG 72</del>	<del>33°13'40.74" S</del>	<del>26°34'40.51" E</del>
<del>WTG 73</del>	<del>33°13'54.73" S</del>	<del>26°35'33.40" E</del>
<del>WTG 74</del>	<del>33°13'59.12" S</del>	<del>26°35'49.14" E</del>
<del>WTG 75</del>	<del>33°14'04.96" S</del>	<del>26°36'31.10" E</del>
<del>WTG 76</del>	<del>33°14'07.95" S</del>	<del>26°36'46.69" E</del>

SUMMARY

<b>TURBINES REMAINING IN ORIGINAL POSITION</b>	<b>1, 2, 4, 5, 6, 7, 9, 10, 11, 13, 16, 17, 19, 20, 23, 24, 26, 27, 29, 32, 35, 41, 50, 51, 52, 55, 58, 59, 60, 61, 62, 63, 65, 66, 67, 70</b>	<b>= 36 TURBINES</b>
<b>TURBINES RELOCATED</b>	<b>15, 21, 31, 44, 46, 68, 71</b>	<b>= 7 TURBINES</b>
<b>TURBINES REMOVED</b>	<b>3, 8, 12, 14, 18, 22, 25, 28, 30, 40, 42, 43, 47, 53, 56, 57, 64, 69, 72, 73, 74, 75, 76</b>	<b>= 23 TURBINES</b>

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

The objective of the EIA process, as set out by the 2014 EIA Regulations (as amended in 2017), is to, “through a consultative process-

- (a) 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;
- (b) 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;
- (c) 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 (EIR).

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 department. The EIA phase (phase 2) includes an EIR (prepared in accordance with Appendix 3 of GN R. 982), specialist reports (prepared in accordance with Appendix 6 of GN R. 982) and an 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 EIR is as per Table 1-2 below.

**Table 1-2: Structure of the EIR**

CHAPTER	HEADING	CONTENT
1	<b>Introduction</b>	Provides a brief overview of the proposed development, details of the EAP and project team and purpose of the EIA report.
2	<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.
3	<b>Need and Desirability</b>	A description of the need and desirability/motivation for the project.
4	<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.
5	<b>Environmental Baseline</b>	Provides a brief overview of the bio-physical characteristics of the site and its environs that may be impacted by the proposed development, compiled largely from published information.
6	<b>Social Baseline</b>	Provides a brief overview of the socio-economic characteristics of the site and its environs that may be impacted by the proposed development, compiled largely from published information.
7	<b>Alternatives</b>	A description of the fundamental alternatives, incremental alternatives and the no-go alternative considered during all phases of the proposed development have been detailed in this Chapter.
8	<b>Findings of the Specialist Reports</b>	This chapter provides a summary of the key findings of each specialist assessment conducted as part of the EIA phase.
9	<b>Impacts and risks identified during the EIA phase</b>	Provides a description of the key impacts that have been identified by the project team and through discussions with I&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.  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.
10	<b>Albany Wind Farm Sensitivity Analysis</b>	This chapter illustrates 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).
11	<b>Public Participation</b>	This chapter describes the Public Participation Process (PPP) conducted to date and that will be conducted as part of the EIA phase.
12	<b>Conclusions and Recommendations</b>	Concludes the report and provides recommendations on the way forward.
13	<b>EAP Affirmation</b>	EAP Affirmation and Declaration
14	<b>Appendix A</b>	PPP Documentation. Please note that the submitted comments and reports have been included as Appendix I due to volume.

15	<b>Appendix B</b>	Curriculum vitae of EAP team
16	<b>Appendix C</b>	Full impacts tables (A3)
17	<b>Appendix D</b>	Specialist reports and appendices
18	<b>Appendix E</b>	Specialist declarations
19	<b>Appendix F</b>	External review letters and appendices
20	<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 overhead lines.
21	<b>Appendix H</b>	Issues & Response Trail (IRT)
22	<b>Appendix I</b>	Comments and reports submitted by I&APs as per the IRT

### **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 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 EIR are provided below.

### **1.4.1 DR ALAN CARTER (THE EAP & PROJECT LEADER)**

Dr Alan Carter is an Executive and the East London Branch Manager at CES. He has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. He is also certified ISO14001 EMS Auditor with the American National Standards Institute. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 25 years. He is a registered professional with the South African Council for Natural Scientific Professionals (SACNASP) and through Environmental Assessment Practitioners Association of South Africa (EAPASA).

### **1.4.2 MS CAROLINE EVANS (PROJECT MANAGER & LEAD AUTHOR)**

Caroline is a Senior Environmental Consultant with more than 8 years' experience and she is based in the Grahamstown branch. She holds a BSc with majors in Environmental Science (distinction) and Zoology, as well as a BSc (Hons) in Environmental Science (distinction) both from Rhodes University. Her undergraduate degree included both commerce and natural sciences. Caroline's honours dissertation evaluated the economic impacts of degradation of the xeric subtropical thicket through farming practices, focusing on the rehabilitation potential of the affected areas in terms of carbon tax. She has a broad academic background

including statistics, economics, management, climate change, wetland ecology, GIS, rehabilitation ecology, ecological modelling and zoology. Caroline has a strong focus on renewable energy and South African policy and legislation related to development.

### ***1.4.3 Ms ROSALIE EVANS (CO-AUTHOR & GIS MAPPING)***

Rosalie is a Senior Environmental Consultant with 7 years' experience and she is based in the Port Elizabeth branch. She holds a BA degree in Social Dynamics with majors in Geography and Psychology as well as a BA Honours degree in Geography and Environmental Studies, both from Stellenbosch University. Rosalie's honours dissertation analysed the role of small grains in soil carbon sequestration in the agricultural sector of the Western Cape. Rosalie completed the Introduction to Environmental Impact Assessment Procedure Short Course by Coastal & Environmental Services and the Department of Environmental Science Rhodes University as well as the Estuary Management Short Course by Nelson Mandela University (NMU). In addition, Rosalie is a member of the Land Rehabilitation Society of Southern Africa (LaRSSA) and a member of the International Association for Impact Assessment (IAIA). Her focuses include the general Environmental Impact Assessment (EIA) process, the Public Participation Process, NEMA Section 24(G) Applications and associated rectification reports, Water Use Applications and accompanying Risk Assessments, GIS Mapping, Agriculture and Soils Assessments, Estuarine Assessments and Tourism Assessments.

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

## 2 PROJECT DESCRIPTION

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### 2.1 PROPOSED ACTIVITY

Albany Wind Power (Pty) Ltd. is proposing the development of the Albany WEF which will consist of up to forty-three (43) turbines. The proposed maximum power output of the facility is up to 297 MW. The proposed turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover an area of approximately 55 ha depending on final layout design should the project proceed to the construction phase.

In summary, the proposed Albany WEF includes (please see Figure 2-1):

- ✦ Up to forty-three (43) turbines with a maximum nominal power output of up to 297 MW;
- ✦ The proposed WEF will include turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m;
- ✦ A permanent laydown area next to the locations of the proposed wind turbines (3,900 m<sup>2</sup> for crane hardstand per turbine);
- ✦ Temporary additional laydown area next to the locations of the proposed wind turbines (3,100 m<sup>2</sup> for crane hardstand and blade laydown per turbine);
- ✦ Foundations (up to 900 m<sup>2</sup>) for each wind turbine;
- ✦ Permanent 25 m<sup>2</sup> area for switchgear and/or transformer at each turbine;
- ✦ Temporary infrastructure including a site camp and a laydown area of approximately 2500 m<sup>2</sup> (all to be rehabilitated post construction);
- ✦ Internal access roads of between 8 m (during operation) and 14 m (during construction, to be partly rehabilitated) wide to each turbine;
- ✦ Existing roads will be used as far as possible. However, where required, internal access roads will be constructed between the turbines;
- ✦ Temporary infrastructure including a site camp and a laydown area of approximately 30 m<sup>2</sup> per turbine (all to be rehabilitated post construction);
- ✦ A 25 m<sup>2</sup> area for switchgear and/or transformer at each turbine;
- ✦ Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;
- ✦ A temporary Concrete Tower Manufacturing Facility (CTMF), laydown area and construction compound, site camp area of 90 000m<sup>2</sup>; and
- ✦ An area of up to 100 000 m<sup>2</sup> for the substation, battery storage and site office area.

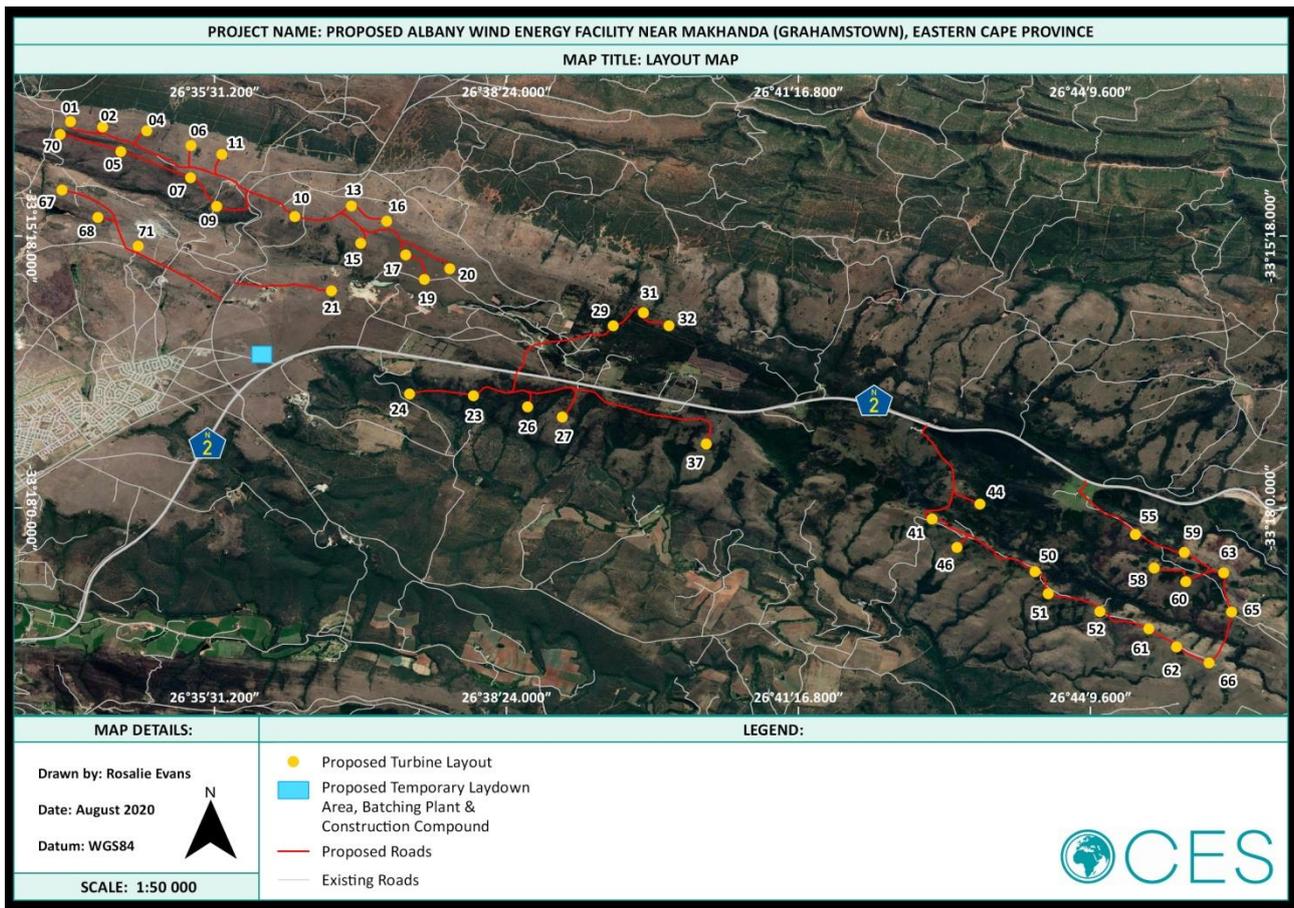


Figure 2-1: Combined Albany WEF Layout Map.

The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will potentially cover total combined area of approximately 90 ha during the construction phase. This footprint will be reduced through rehabilitation, resulting in a maximum final total combined footprint of approximately 55 ha.

The footprint of the facility is calculated as follows:

Table 2-1: Construction Footprint of the Albany WEF.

FACILITY COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION
Permanent Laydown Area	TOTAL 3 900 m <sup>2</sup> x 43 turbines = 167 700 m <sup>2</sup> which equates to <b>16.77 ha</b>	TOTAL 3 900 m <sup>2</sup> x 43 turbines = 167 700 m <sup>2</sup> which equates to <b>16.77 ha</b>
Temporary Laydown Area	TOTAL 3 100 m <sup>2</sup> x 43 turbines = 133 300 m <sup>2</sup> which equates to <b>13.33 ha</b>	TOTAL 0 m <sup>2</sup> which equates to <b>0 ha</b>
Turbine Foundation	TOTAL Up to 900 m <sup>2</sup> x 43 turbines = 38 700 m <sup>2</sup> which equates to <b>3.87 ha</b>	TOTAL Up to 900 m <sup>2</sup> x 43 turbines = 38 700 m <sup>2</sup> which equates to <b>3.87 ha</b>
Switchgear and/or Transformer	TOTAL 25 m <sup>2</sup> x 43 = 1 075 m <sup>2</sup> which equates to <b>0.11 ha</b>	TOTAL 25 m <sup>2</sup> x 43 = 1 075 m <sup>2</sup> which equates to <b>0.11 ha</b>
Temporary Laydown Area, Concrete Tower Manufacturing Facility and Construction Compound	TOTAL 90 000 m <sup>2</sup> which equates to <b>9.00 ha</b>	TOTAL 0 m <sup>2</sup> which equates to <b>0.00 ha</b>
Temporary Infrastructure (including a site camp and a laydown area)	TOTAL 2 500m <sup>2</sup> which equates to <b>0.25 ha</b>	TOTAL 0 m <sup>2</sup> which equates to <b>0.00 ha</b>

FACILITY COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION
New Internal Access Roads (14 m construction, rehabilitated to 8 m during operation)	TOTAL 32 000 m x 14 m = 448 000 m <sup>2</sup> which equates to <b>44.8 ha</b>	TOTAL 32 000 m x 8 m = 256 000 m <sup>2</sup> which equates to <b>25.6 ha</b>
Upgraded Existing Internal Access Roads	TOTAL 11 000 m x 14 m = 154 000 m <sup>2</sup> which equates to <b>15.4 ha</b>	TOTAL 11 000 m x 8 m = 88 000 m <sup>2</sup> which equates to <b>8.8 ha</b>
<b>TOTAL FOOTPRINT:</b>	<b>103.53 ha of clearing needed for the construction phase of the development of the proposed Albany WEF</b>	<b>55.15 ha of clearing remaining during the post-construction operational phase (after rehabilitation)</b>

The project will also require grid connection infrastructure. Due to the fact that this infrastructure will be owned and managed by Eskom, should the project receive Environmental Authorisation and be selected as a preferred bidder, it has been assessed in a separate report. The information regarding the grid infrastructure has been included in this report and in the specialist reports in order to ensure that the entire development is considered in each application, despite the applicant seeking separate authorisations for the two components.

Albany Wind Power plan to develop the following grid infrastructure (please see Figure 2-2):

- ✦ Option 1 (preferred) - An up to 23 000 m<sup>2</sup> Independent Power Producer (IPP) Substation (MV/132 kV) which will include, Battery Energy Storage System (BESS) and site office area, situated in the middle of the site.
  - The grid connection will be a Line-In-Line-Out (LILO) on the Pembroke-Albany 132 kV line.
- ✦ Option 2 – Direct connection, via the same corridor, to the potential 132 kV substation, adjacent to the Eskom Albany 132 kV substation, up to 23 000 m<sup>2</sup>, which will include Battery Energy Storage System (BESS) and a site office area situated in the middle of the site.
- ✦ Two (2) collector substations, each 10 000 m<sup>2</sup>, (Collector Substation West and Collector Substation East) will be constructed.
- ✦ Each collector will connect to the IPP substation via MV/132 kV overhead line(s) within the grid corridor.
- ✦ Grid corridor width is 500 m wide to allow for manoeuvrability for the final line position within the corridor.
- ✦ The corridor from Collector Substation West to the main corridor is 170 m in width with a flanking area to accommodate for the line turn in.

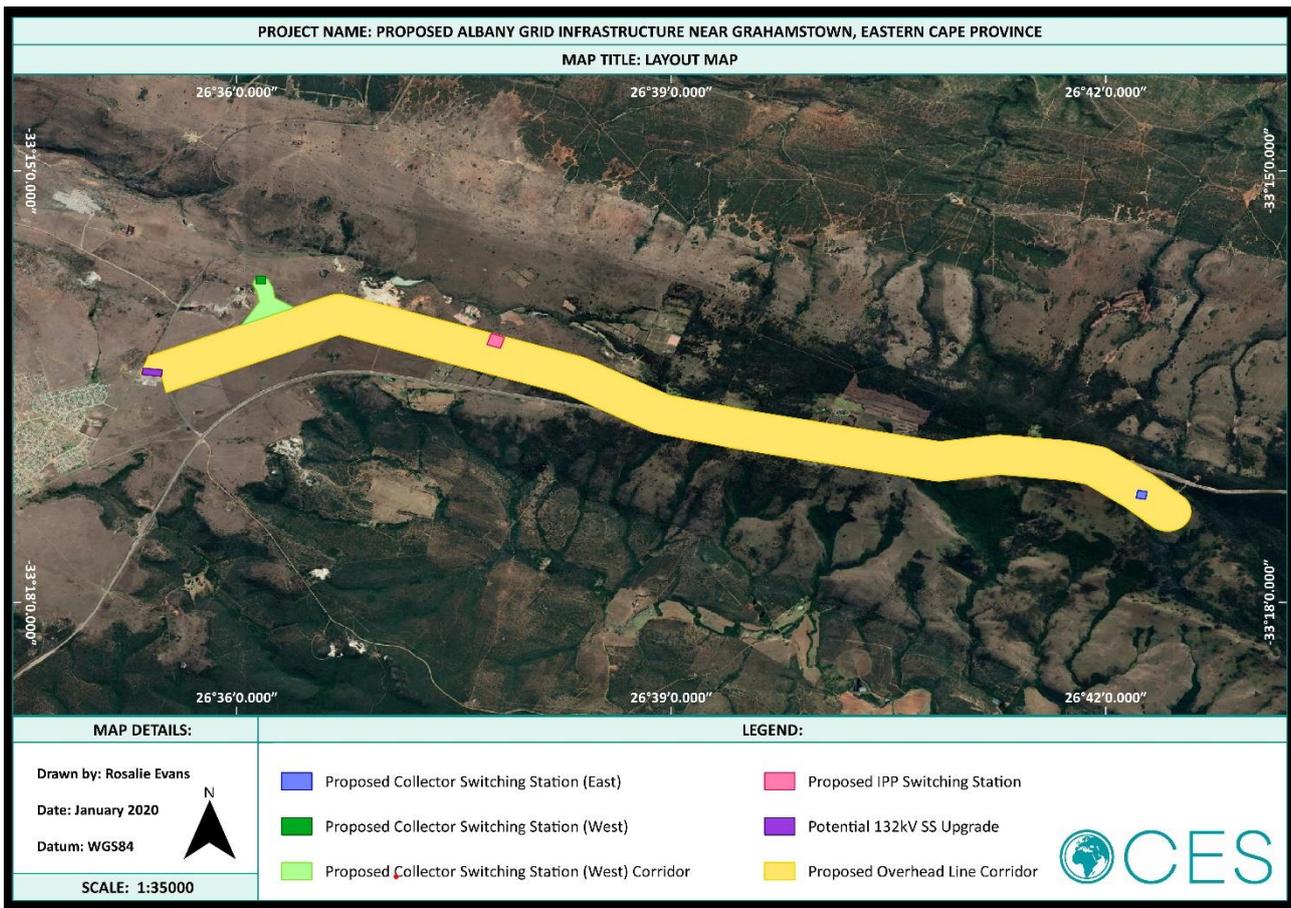


Figure 2-2: Albany Grid Connection Layout Map.

The grid connection footprint will potentially cover a total combined area of approximately 4.6 ha during the construction phase. This footprint will be reduced through rehabilitation, resulting in a maximum final total combined footprint of approximately 4.3 ha. The corridor, in which the powerline is proposed, covers of 34 ha in total. This corridor does not need to be cleared but will need to be trimmed to ensure that the line is accessible. Access will only be required for maintenance services. In order to better picture the facility a combined map has been included (Figure 2-3).

The footprint of the grid connection facility is calculated as follows:

Table 2-2: Proposed Albany Grid Infrastructure Development Footprint and Separate Corridor Requirements.

INFRASTRUCTURE COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION
Option 1: IPP Switching Station (battery storage and site office)	TOTAL 23 000 m <sup>2</sup> which equates to <b>2.3 ha</b>	TOTAL 23 000 m <sup>2</sup> which equates to <b>2.3 ha</b>
Option 2: Direct connection (battery storage and site office)		
Two (2) Collector Switching Stations (west and east)	TOTAL 10 000 m <sup>2</sup> x 2 = 20 000 m <sup>2</sup> which equates to <b>2 ha</b>	TOTAL 10 000 m <sup>2</sup> x 2 = 20 000 m <sup>2</sup> which equates to <b>2 ha</b>
Overhead Line (monopole placement every 250 m along line ONLY)	TOTAL 11 000 m/250 m = 44 monopoles 44 x 72 m <sup>2</sup> = 3 168 m <sup>2</sup> which equates to <b>0.3168 ha</b>	TOTAL 11 000 m/250 m = 44 monopoles 44 x 2 m <sup>2</sup> = 88 m <sup>2</sup> which equates to <b>0.0088 ha</b>
Collector Switching Station Collector Corridor (West)	TOTAL 500 m/250 m = 2 monopoles	TOTAL 500 m/250 m = 2 monopoles

INFRASTRUCTURE COMPONENT	CONSTRUCTION FOOTPRINT	FINAL FOOTPRINT AFTER REHABILITATION
	2 x 72 m <sup>2</sup> = 144 m <sup>2</sup> which equates to <b>0.0144 ha</b>	2 x 2 m <sup>2</sup> = 4 m <sup>2</sup> which equates to <b>0.0004 ha</b>
<b>TOTAL FOOTPRINT:</b>	<b>4.63 ha of clearing needed for the construction phase of the development of the proposed Albany Grid Infrastructure</b>	<b>4.31 ha of clearing remaining during the post-construction operational phase (after rehabilitation)</b>

Table 2-3: Proposed Albany Grid Maintenance Servitudes (as per Eskom Requirements).

INFRASTRUCTURE COMPONENT	CORRIDOR REQUIREMENTS
<b>Overhead Line (total length and width of line servitude)</b>	<u>TOTAL SERVITUDE</u> 11 000 m x 31 m = 341 000 m <sup>2</sup> which equates to <b>34.1 ha overhead line servitude area.</b>
	<u>TOTAL MAINTENANCE TRACKS (within the servitude)</u> 11 000 m x 4 m = 44 000 m <sup>2</sup> which equates to <b>4.4 ha maintenance tracks.</b>
<b>Collector Switching Station Collector Corridor (West)</b>	<u>TOTAL SERVITUDE</u> 500 m x 31 m = 15 500 m <sup>2</sup> which equates to <b>1.55 ha overhead line servitude area.</b>
	<u>TOTAL MAINTENANCE TRACKS (within the servitude)</u> 500 m x 4 m = 2 000 m <sup>2</sup> which equates to <b>0.2 ha maintenance tracks.</b>

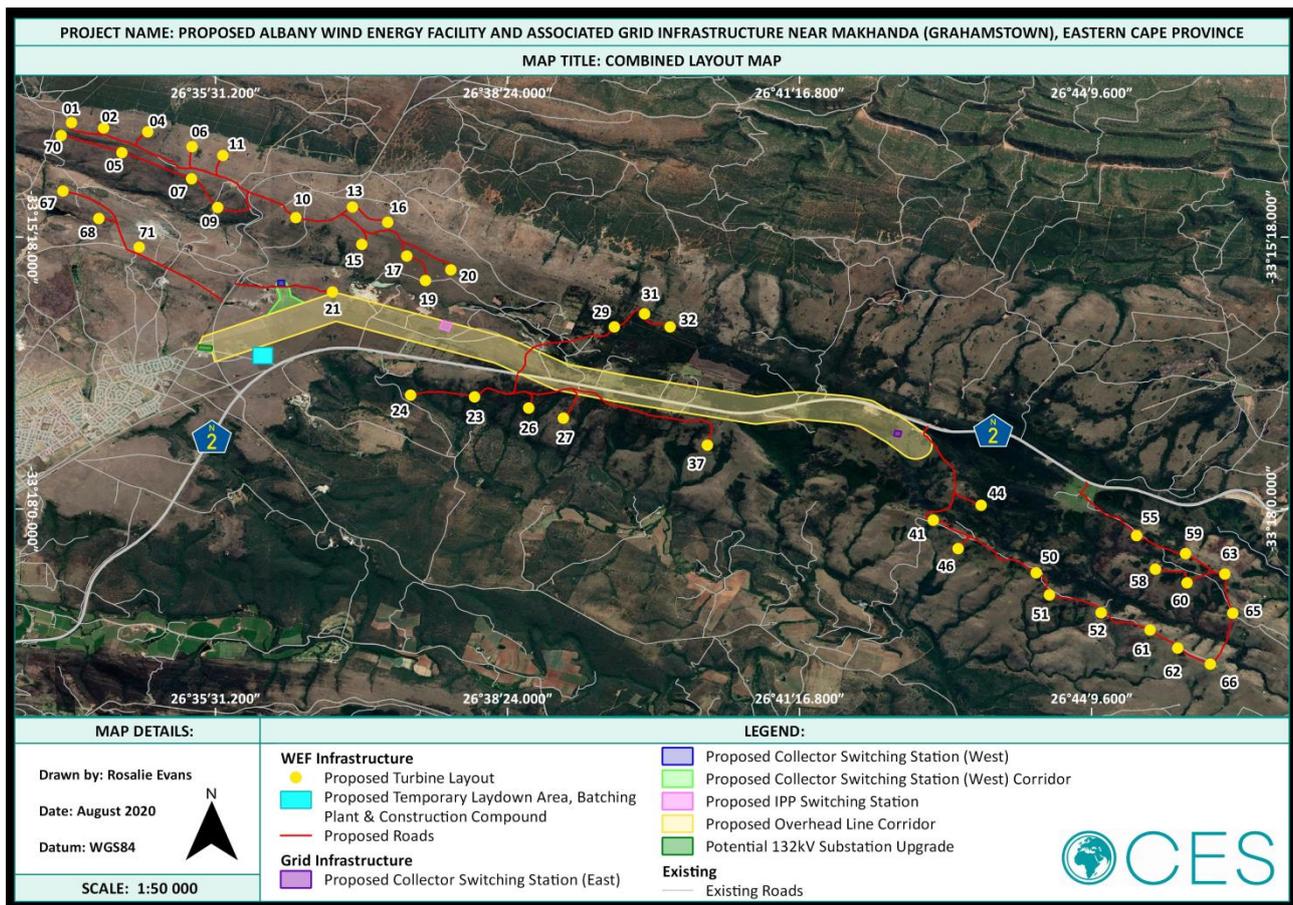


Figure 2-3: Layout Map of the Proposed Albany WEF and Grid Infrastructure.

## 2.2 PROJECT LOCALITY

The project area is approximately 6300 hectares (ha) in extent (Table 2-5). The site is located in the Makana LM area and it is situated seven kilometres (7 km) to the east of Makhanda. The N2 freeway and the R67 road connect the study area to Makhanda. The direction and distance from the project area to some of the nearest towns are indicated in Table 2-4 below. Table 2-5 indicates the property portions and farm names associated with the Albany WEF project area. The proposed project is situated on approximately 6 300 ha, consisting of 28 farm portions. Table 2-6 includes the corner and central coordinate points of the proposed Albany WEF site.

**Table 2-4: Towns in the vicinity of the Albany WEF.**

TOWN NAME	APPROXIMATE DISTANCE	DIRECTION
Makhanda	7 km	West
Alicedale	62 km	West
Salem	35 km	South
Riebeeck East	53 km	West
Paterson	83 km	South-west
East London	147 km	East
Port Alfred	63 km	South-east

**Table 2-5: Albany WEF Properties.**

FARM NAME	SG DIGIT NUMBER	FARM NUMBER/PORCION	AREA (HA)
(no name)	C0020000000022300002	Farm 223, Remaining Extent & Portion 2	84.5
The Orchards	C0020000000023300003	Farm 233, Portion 3	477.0
(no name)	C0020000000023400001	Farm 234, Portion 1	37.3
Collingham Towers	C0020000000023500000	Farm 235, Remaining Extent	142.0
Tempe	C0020000000024000010	Farm 240, Portion 10	82.4
Tempe	C0020000000024000011	Farm 240, Portion 11	167.0
Tempe	C0020000000024000012	Farm 240, Portion 12	116.0
Tempe	C0020000000024000007	Farm 240, Portion 7	117.0
Tempe	C0020000000024000008	Farm 240, Portion 8	416.0
Tempe	C0020000000024000009	Farm 240, Portion 9	543.0
Tempe	C0020000000024100000	Farm 241, Remaining Extent	672.0
Grobbelers Kloof	C0020000000033400001	Farm 334, Portion 1	204.0
Grobbelers Kloof	C0020000000033400002	Farm 334, Portion 2	210.0
Grobbelers Kloof	C0020000000033400003	Farm 334, Portion 3	75.4
Grobbelers Kloof	C0020000000033400004	Farm 334, Portion 4	54.4
(no name)	C0020000000035800001	Farm 358, Portion 1	8.31
(no name)	C0020000000035800003	Farm 358, Portion 3	6.73
Allandale	C0020000000058100000	Farm 581	36.0
Miniplaas	C0020000000058200000	Farm 582	51.7
Nutwood	C0020000000058300000	Farm 583, Remaining Extent	51.8
(no name)	C0020000000059900000	Farm 599, Remaining Extent	111.0
(no name)	C0020000000060100000	Farm 601, Remaining Extent	125.0
Green Hills	C0020000000066300000	Farm 663, Remaining Extent	437.0
Green Hills	C0020000000066300001	Farm 663, Remaining Extent & Portion 1	616.7

FARM NAME	SG DIGIT NUMBER	FARM NUMBER/PORCION	AREA (HA)
Green Hills	C0020000000066300002	Farm 663, Remaining Extent & Portion 2	575.8
Green Hills	C0020000000066300003	Farm 663, Remaining Extent & Portion 3	34.2
Green Hills	C0020000000066300004	Farm 663, Remaining Extent & Portion 4	641.2
(no name)	C00200020000480700000	Erf 4807, Remaining Extent	192.0
<b>TOTAL</b>			<b>6285.4 HA</b>

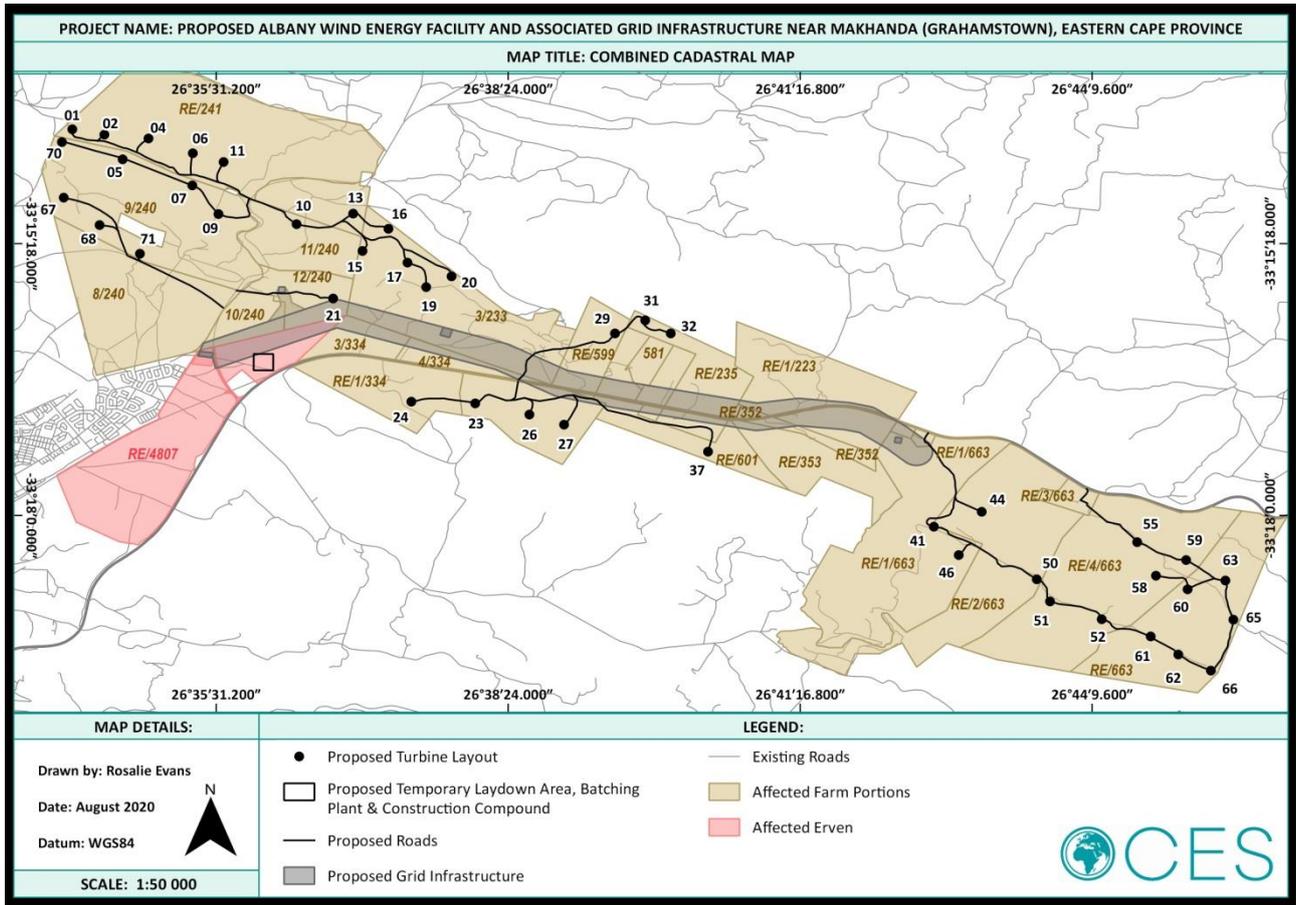


Figure 2-4: Cadastral Map of the Affected Properties within the Proposed Site.

Table 2-6: Corner Points of Proposed Albany WEF

POINTS	LATITUDE	LONGITUDE
Northwest Corner Point	33°13'41.56"S	26°34'29.27"E
Northern Central Point	33°16'44.07"S	26°41'15.60"E
Northwest Corner Point	33°18'45.44"S	26°45'52.61"E
Southwest Corner Point	33°14'52.54"S	26°33'29.51"E
Southern Central Point	33°17'36.77"S	26°38'49.75"E
Southeast Corner	33°19'45.67"S	26°45'23.60"E

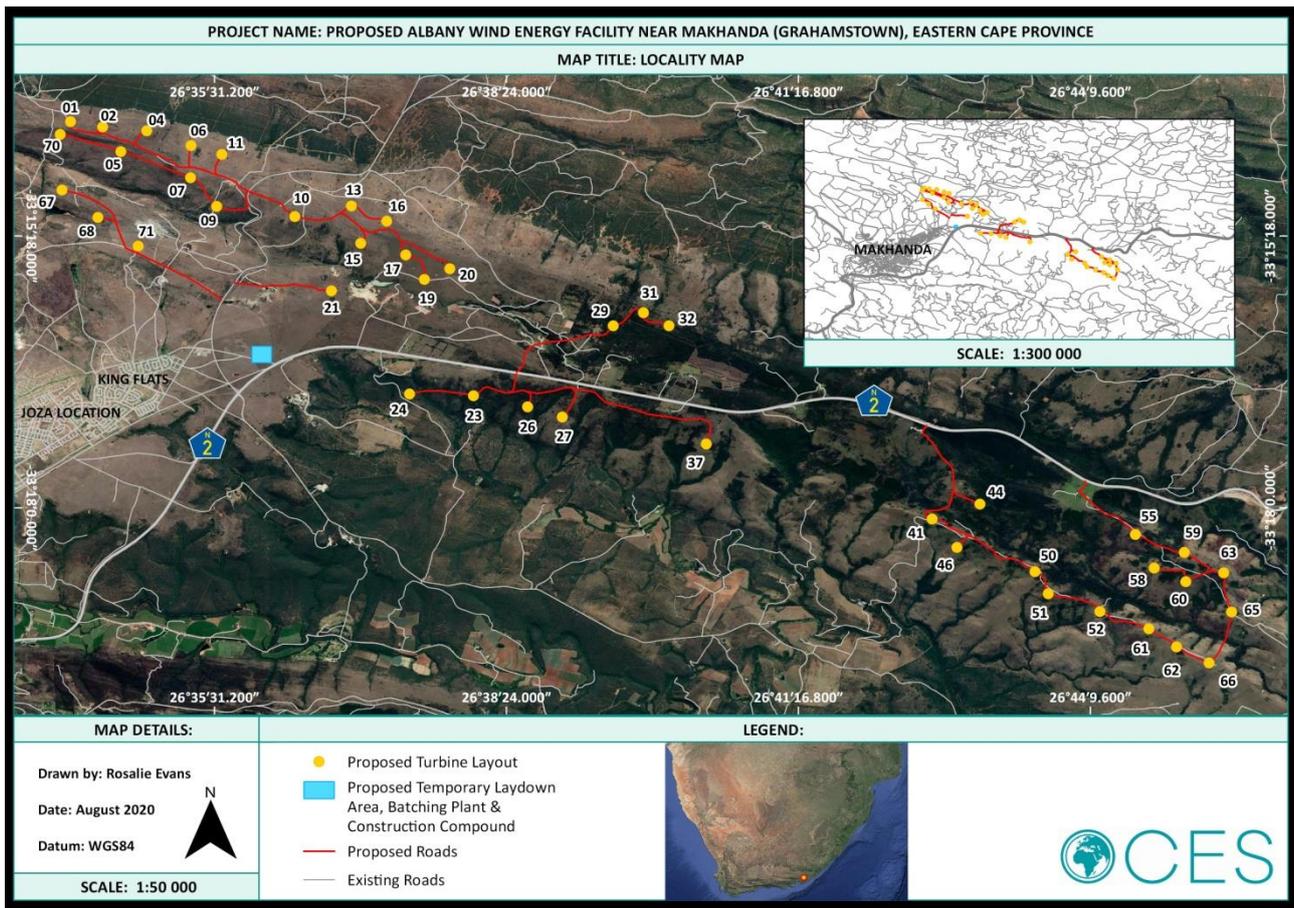


Figure 2-5: Locality Map of the Proposed Albany WEF Site.

## 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 Albany 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 2-7 below.

Table 2-7: Listed activities triggered by the proposed Albany WEF.

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
<b>GN R. 983 (BASIC ASSESSMENT)</b>	<b>11</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.	33kV underground (where possible) electrical cables will be laid to transmit electricity generated by the wind turbines to the onsite switching stations.
	<b>12</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; (b) In front of a development setback; or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	This relates to the proposed switching station, laydown areas and construction compound area which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process, during which this listed activity may become redundant.
	<b>14</b>	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.	This relates specifically to aspects such as storage of transformer oil at the switching station sites and at the maintenance storage facility during operations. Also, small volumes of other chemicals may be stored during construction (including diesel and petrol) which may trigger this activity.  The final layout will determine the volumes needed on site, but at this stage a rough estimate can be calculated as follows: the construction period is expected to last for approximately 24 months, during this time approximately 175m <sup>3</sup> of chemicals which can be classified as dangerous goods will be used. The operational phase is expected to require approximately 200m <sup>3</sup> of chemicals which can be classified as dangerous goods. This equates to a total of approximately 375m <sup>3</sup> of dangerous goods for the lifespan of the proposed WEF.
	<b>19</b>	The infilling or depositing of any material of more than 10 cubic meters 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.	This relates specifically to low level crossings that may be required during road construction and/or upgrading throughout the WEF road network.
	<b>24</b>	The development of a road–	The road network will need to be developed and upgraded (using all

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
		(ii) A road with a reserve wider the 13.5 metres, or where no reserve exists where the road is wider than 8 metres.	technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.
	28	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.	The proposed development will entail the rezoning of land from agriculture to agriculture and renewable energy. The total footprint of the proposed WEF will be approximately 55ha in extent (post-mitigation).
	47	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.	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.
	56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre– (ii) Where no road reserve exists, where the existing road is wider than 8 metres	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.
GN R. 984 (FULL SCOPING & EIR)	1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The proposed Albany WEF will include the construction of approximately 43 turbines with a maximum output capacity of up to 297MW. This wind energy facility is classified as a renewable energy facility.
	9	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	Connecting powerlines (connecting the turbines to switching stations) may need to be stepped up to more than 275kV in places. This listed activity may become redundant once the final layout has been informed by specialist input.

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
	15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed development will include the clearing of indigenous vegetation. The total footprint of the proposed WEF will be approximately 90ha in extent (pre-mitigation) and 55ha in extent (post-mitigation).
GN R. 985 (BASIC ASSESSMENT)	4 a. i. (ee) (gg)	<p>The development of a road wider than 4 metres with a reserves less than 13.5 metres.</p> <p>(a) In Eastern Cape:</p> <p>i. Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area</p>	<p>The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.</p> <p>The proposed site is situated in CBA areas.</p> <p><i>***NOTE: Please note that the newly revised and updated ECBCP has not been formally gazetted at this stage, but it is likely to be formalised within the next few months. Due to the fact that this will now be a formal Biodiversity Plan for the Eastern Cape we have included it as part of the listed activities.</i></p> <p>The proposed WEF is located adjacent to Beggars Bush Provincial Nature Reserve.</p>
	10 a. i. (ee) (gg)	<p>The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p>(a) In Eastern Cape:</p> <p>i. Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans***</p> <p>(gg) Areas within 10 kilometres from national</p>	<p>This relates specifically to aspects such as storage of transformer oil at the switching station sites and at the maintenance storage facility during operations. Also, small volumes of other chemicals may be stored during construction (including diesel and petrol) which may trigger this activity.</p> <p>The final layout will determine the volumes needed on site, but at this stage a rough estimate can be calculated as follows: the construction period is expected to last for approximately 24 months, during this time approximately 175m<sup>3</sup> of chemicals which can be</p>

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
		parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area	<p>classified as dangerous goods will be used. The operational phase is expected to require approximately 200m<sup>3</sup> of chemicals which can be classified as dangerous goods. This equates to a total of approximately 375m<sup>3</sup> of dangerous goods for the lifespan of the proposed WEF. This will be refined as the layout is refined during the EIA process.</p> <p>The proposed site is situated in CBA areas.</p> <p>The proposed WEF is located adjacent to Beggars Bush Provincial Nature Reserve.</p>
	<b>12 a. ii.</b>	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>(a) In Eastern Cape: ii. Within critical biodiversity areas identified in bioregional plans</p>	<p>The proposed development will include the clearing of indigenous vegetation. The total footprint of the proposed WEF will be approximately 55ha in extent.</p> <p>The proposed site is situated in CBA areas.</p>
	<b>14 ii. a. i. (ff) (hh)</b>	<p>The development of– ii. Infrastructure or structures with a physical footprint of 10 square metres or more Where such development occurs– (a) Within a watercourse; (b) In front of a development setback; or (c) If no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.</p> <p>(a) In Eastern Cape: i. Outside urban areas, in: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p>	<p>This relates to the proposed switching station, laydown areas and construction compound area which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process, during which this listed activity may become redundant.</p> <p>The proposed site is situated in CBA areas.</p> <p>The proposed WEF is located adjacent to Beggars Bush Provincial Nature Reserve.</p>

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
		(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area	
	<b>18 a. i. (ee) (gg)</b>	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p>(a) In Eastern Cape:</p> <p>i. Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area</p>	<p>The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.</p> <p>The proposed site is situated in CBA areas.</p> <p>The proposed WEF is located adjacent to Beggars Bush Provincial Nature Reserve.</p>

The Applicant, or the EAP on behalf of the Applicant, is initially required to submit a report detailing the Scoping Phase (Scoping Report – completed) 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 subsequent to 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 2-5 above, is the National Department 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 Heritage Resources Act (Act No. 25 of 1999);
- ✦ National Water Act (Act No. 36 of 1998);
- ✦ Civil Aviation Act (Act No. 74 of 1962) as amended;
- ✦ National Environmental Management Biodiversity Act (Act No. 10 of 2004);

- ✦ National Forests Act (Act No. 84 of 1998); and the
- ✦ Eastern Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974).

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

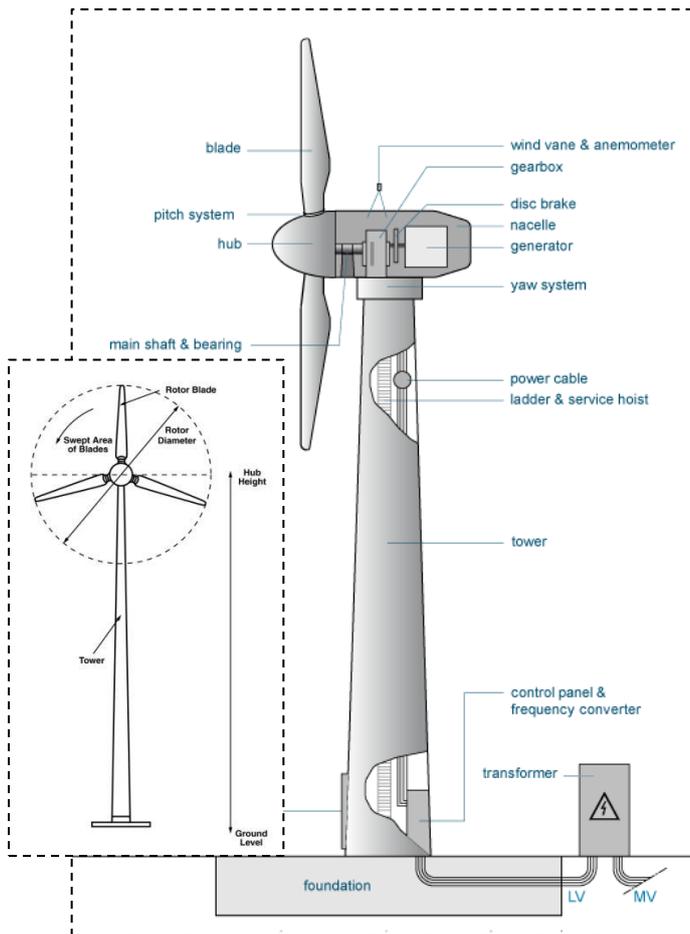
## 2.4 TECHNICAL: PROPOSED ACTIVITY

### 2.4.1 WIND ENERGY FACILITY (WEF)

The proposed Albany WEF will consist of up to forty-three (43) wind turbines with a proposed maximum output capacity of 297 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 2-6 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 Albany WEF turbines is approximately 170 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 lifetime of the turbine. The maximum hub height of the Albany WEF turbines is approximately 130 m.
- ✦ Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.



**Figure 2-6: 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).**

## **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.

### **A) PRELIMINARY CIVIL WORKS**

Prior to the commencement of the main construction works, the Contractor will undertake vegetation clearance and site establishment works. The site establishment works may include the construction of one, or more, temporary construction compounds and laydown areas and the connection of services such as power and water to these compounds.

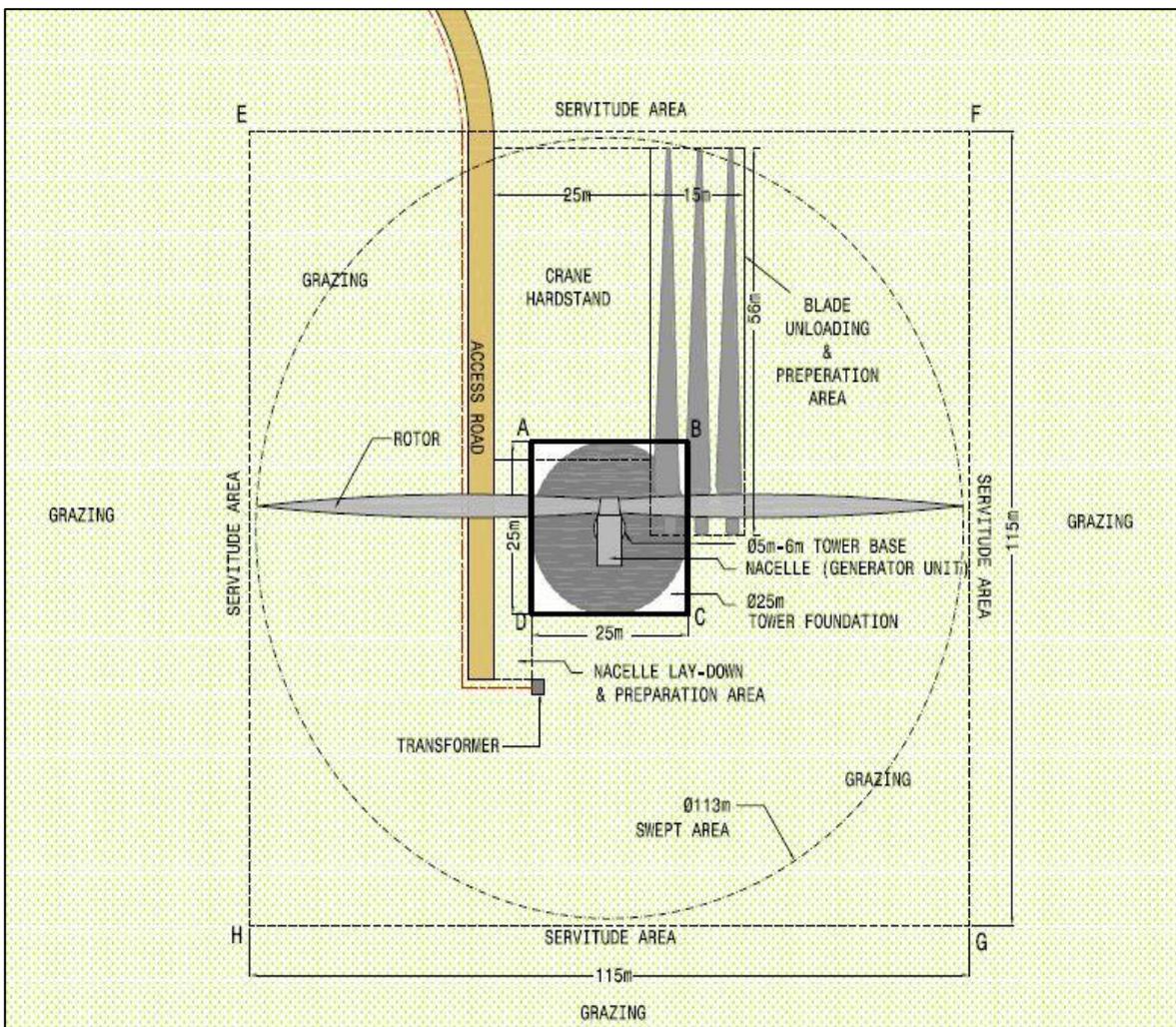
### **B) CONSTRUCTION**

The construction footprint will include the platforms, or “crane pads” required to construct the wind turbines, new or upgraded access roads, lay-bys, component storage areas, turning heads and a substation to evacuate the electricity generated to the municipal or national grid.

A typical platform for the assembly of the crane and construction of the turbine is shown in Figure 2-6. These platforms will be connected by access roads with the following requirements:

- ✦ Minimum of 8 m width (5 m running width and 1.5 m verge either side) on straight sections with widening required on corners;
- ✦ Should a “crawler” type crane be used, then road widths of up to 14 m on straight sections may be required, of which 8 m would be retained for the life of the wind farm;
- ✦ Typical 300 mm deep road section;
- ✦ Maximum 10% vertical gradient on gravel roads;
- ✦ Turning heads provided within 200 m of each crane pad (refer to Figure 2-7); and
- ✦ Passing places of c. 50 m length and 5 m width located approximately every 1 km.

The construction footprint required will be greater than the dimensions specified above to allow for construction of the wind farm infrastructure. These areas are used temporarily during the construction period – including temporary construction compound and road verges – and will be rehabilitated at the end of construction works to reduce the footprint on the land.



**Figure 2-7: Typical construction phase platform**

A platform of the dimensions indicated above needs to be laid down during the preliminary phase of a typical wind farm for access to the site during the construction phase by machines (bulldozers, trucks, cranes etc.).

Other works to be undertaken during the construction phase typically include:

(a) Geotechnical studies and foundation works

A geotechnical study of the area is undertaken for safety purposes. This comprises of drilling, penetration and pressure assessments. For the purpose of the foundations, approximately 1500 m<sup>3</sup> of soil would need to be excavated for each turbine. These excavations are then filled with steel-reinforced concrete (typically 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.

(b) Electrical cabling

Electrical and communication cables are laid approximately 1 m deep in trenches which run alongside the access roads as much as possible. All previous farming activities can continue unhindered on the ground above the cables during the operational phase.

(c) Establishment of hard standing surfaces and laydown areas

Laydown and storage areas will be required for the contractor’s construction equipment and turbine components on site.

(d) Site preparation

If not carried out in the preliminary works phase, this will include clearance of vegetation over the access roads, platforms, lay-bys, substation and any other laydown or hard-standing areas. These activities will require the stripping of topsoil which will be stock-piled, back-filled and/or spread on site.

(e) Establishment of substation and ancillary infrastructure

The establishment of these facilities/buildings will require the clearing of vegetation and levelling of the development site and the excavation of foundations prior to construction. A laydown area for building materials and equipment associated with these buildings will also be required.

(f) Turbine erection

Weather permitting; the erection of the turbines can be completed swiftly and erection rates generally average 1-2 turbines per week. This phase is the most complex and costly.

(g) Undertake site remediation

Once construction is completed and all construction equipment is removed, the site must be rehabilitated. On full commissioning of the facility, any access points to the site which are not required during the operational phase must be closed and rehabilitated.

(h) Electrical Connection

Each turbine is fitted with its own transformer that steps up the voltage usually to 22 or 33 kV. The entire wind farm is then connected to the “point of interconnection” which is the electrical boundary between the wind farm and the municipal or national grid. Most of these works will be carried out by Eskom or an Eskom-approved sub-contractor (line upgrade, connection to the sub-station, burial of the cables etc.)

### **C) OPERATIONAL PHASE**

During the period when the turbines are up and running, on-site human activity drops to a minimum, and includes routine maintenance requiring only light vehicles to access the site. Only major breakdowns would necessitate the use of cranes and trucks.

(a) Facility re-powering

The Wind turbines are expected to have a lifespan of approximately 20 years (with appropriate maintenance). The infrastructure would only be decommissioned once it has reached the end of its economic

or technological life. If economically feasible, the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time will take place.

**D) DECOMMISSIONING OF THE WIND FARM**

The infrastructure would only be decommissioned once it has reached the end of its economic or technological life. If economically feasible, the decommissioning activities would comprise the disassembly and replacement of the individual components with more appropriate technology/infrastructure available at the time. This operation is referred to as 'facility re-powering'. However, if not deemed so, then the facility would be completely decommissioned which would include the following decommissioning activities.

(a) Site preparation

Activities would include confirming the integrity of the access to the site to accommodate the required equipment and the mobilisation of decommissioning equipment.

(b) Disassemble all individual components

The components would be disassembled and reused and recycled or disposed of in accordance with regulatory requirements.

### 3 PROJECT NEED AND DESIRABILITY

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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 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.

#### 3.1 ELECTRICITY SUPPLY IN SOUTH AFRICA

South Africa's current electricity generation and supply system is unreliable. The Eastern Cape Province is reliant on the import of power from other provinces, and hence constrained by the availability and stability of electricity supply.

Currently, Eskom has a net output of 47,201MW, 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, with the utility company, Eskom, as the single buyer of the electricity.

The REIPPP programme procured over 6.3GW by 2017 and of this, 3.8GW was already feeding into the grid. A further 2.4GW was procured in 2018, which included 27 projects signed by the minister. The REIPPP attracted \$14.4 billion investment by December 2017. The concept is based on the public-private partnership model to increase new generation capacity. It also encourages industrialisation as it requires that at least 40% of the technologies involved should have local content. This results in job creation for the local communities where manufacturing takes place.

#### 3.2 SOCIAL AND ECONOMIC DEVELOPMENT

Albany Wind Power 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.

The need and desirability of the proposed Albany 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 (Eastern Cape Province) policy documents.

### 3.3 INTERNATIONAL

#### 3.3.1 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 ALBANY WEF

*The UNFCCC is relevant in that the proposed Albany 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.*

#### 3.3.2 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 ALBANY WEF

*The Kyoto Protocol is relevant in that the proposed Albany 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.*

## 3.4 NATIONAL

### 3.4.1 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 ALBANY WEF

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

### 3.4.2 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; and
- ✦ 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; and
- ✦ 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 ALBANY WEF

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

### 3.4.3 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 ALBANY WEF

*The proposed Albany 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.*

### 3.4.4 INTEGRATED ENERGY PLAN FOR THE REPUBLIC OF SOUTH AFRICA (2003)

The former Department of Minerals and Energy (DME) commissioned the Integrated Energy Plan (IEP) in response to the requirements of the National Energy Policy in order to provide a framework by which specific energy policies, development decisions and energy supply trade-offs could be made on a project-by-project basis. The framework is intended to create a balance between energy demand and resource availability so as to provide low cost electricity for social and economic development, while taking into account health, safety and environmental parameters.

In addition to the above, the IEP recognised the following: -

- ✦ South Africa is likely to be reliant on coal for at least the next 20 years as the predominant source of energy;
- ✦ New electricity generation will remain predominantly coal based but with the potential for hydro, natural gas, renewables and nuclear capacity;
- ✦ Need to diversify energy supply through increased use of natural gas and new and renewable energies;
- ✦ The promotion of the use of energy efficiency management and technologies;
- ✦ The need to ensure environmental considerations in energy supply, transformation and end use;
- ✦ The promotion of universal access to clean and affordable energy, with the emphasis on household energy supply being coordinated with provincial and local integrated development programme;
- ✦ The need to introduce policy, legislation and regulations for the promotion of renewable energy and energy efficiency measures and mandatory provision of energy data; and
- ✦ The need to undertake integrated energy planning on an on-going basis.

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The Albany WEF is in line with the IEP with regards to diversification of energy supply and the promotion of universal access to clean energy.*

### 3.4.5 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 Integrated Resource Plan 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: 2013-2050	Draft IRP 2016 (Public consultation) t: 2016-2050	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) 392 TWh (2050)	307 TWh (2030) 382 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 (2025-2035)	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 non were adopted); PPD - Peak-plateau-decline; EAF – Energy Availability Factor; Sources: LC – least-cost; MES – minimum emissions standards; LT – long-term; ST – short-term; Tx – transmission networks; Dx – 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: 2013-2050	Draft IRP 2016 (Public consultation) t: 2016-2050	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)	67-76%; 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/Dx research need	Not a concern (Tx power corridors) Dx 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 non were adopted); PPD - Peak-plateau-decline; EAF – Energy Availability Factor; Sources: LC – least-cost; MES – minimum emissions standards; LT – long-term; ST – short-term; Tx – transmission networks; Dx – distribution networks; DG – distributed generation; EG – embedded generation;

10 Sources: DoE; CSIR Energy Centre analysis

#### RELEVANCE TO THE PROPOSED ALBANY WEF

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

### 3.4.6 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
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
28 Preferred Bidders	19 Preferred Bidders	17 Preferred Bidders	2 Preferred Bidders	26 Preferred 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

Media reports have suggested that Bidding Window 5 (BW5) of the REIPPPP will be launched in 2020 and it is estimated that it will secure 1 800 MW of renewable energy.

#### RELEVANCE TO THE PROPOSED ALBANY WEF

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

### 3.4.7 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 ALBANY WEF

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

### 3.4.8 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 ALBANY WEF

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

### 3.4.9 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 ALBANY WEF**

*The Albany WEF will contribute to SIP project role out.*

## 3.5 PROVINCIAL

### 3.5.1 EASTERN CAPE PROVINCIAL DEVELOPMENT PLAN (2014)

The Eastern Cape Provincial Development Plan 2014 (Eastern Cape Vision 2030) is a strategic policy which has been designed to identify strategic goals for implementation in the province. There are five goals, one of which will be expanded in detail as it relates to the growth of the economy, from a renewable energy and ecotourism perspective. The Sarah Baartman (was Cacadu) District is earmarked for the development of both renewable energy (specifically wind) and ecotourism (private, national and provincial). This makes the region particularly difficult to navigate in terms of need and desirability.

As per the EC PDP the following goals encompass the 2030 vision.

1. Goal 1: A growing, inclusive and equitable economy – “The Eastern Cape has a growing, inclusive and equitable economy, which is larger and more efficient, and optimally exploits the competitive advantages of the province, increases employment, and reduces inequalities of income and wealth. This vision will be realised addressing the key constraints to unlocking economic potential: production costs, economic development support, infrastructure, workforce issues, and land and water challenges.”

The focus will be on seven high-potential sectors:

- i. Agriculture
- ii. Mining and energy
- iii. Construction related to large infrastructure, new property developments and the upgrading of human settlements.
- iv. Manufacturing
- v. Tourism, including eco-tourism, heritage, conferences and sports.
- vi. The social economy, including public works and asset-based community development.
- vii. Knowledge-based services, including R&D, professional services and business services

The economic goal will be achieved through five strategic objectives:

- i. Improved economic infrastructure that promotes new economic activity
  - ii. Stronger industry and enterprise support
  - iii. An accelerated and completed land-reform process
  - iv. Rapid development of high-potential economic sectors
  - v. Rapid economic development of rural areas and all regions.
2. Goal 2: An educated, empowered and innovative citizenry
  3. Goal 3: A healthy population
  4. Goal 4: Vibrant, equitably enabled communities

## 5. Goal 5: Capable, conscientious and accountable institutions

The following strategic objectives form part of the EC PDP 2030 Vision. These strategic objectives have been copied verbatim from the PDP. All those which are relevant to the proposed development area have been highlighted and discussed. Those which are not relevant are not expanded on.

### 1. Strategic objective 1.1: Improved economic infrastructure that promotes new economic activity

#### **Strategic action 1.1.1: Develop stronger provincial infrastructure planning capacities**

*Infrastructure planning is a complex process, involving large long-term investments, projected benefits that are difficult to quantify, and a combination of engineering and economic thinking. While the theory of allocating available capital among alternative infrastructure projects is straightforward (select projects with the highest socioeconomic return on investment using a standardised methodology), the practice is much more difficult. The province needs to build infrastructure planning capacity to ensure the following:*

- ▲ *New infrastructure investments are aligned with the provincial development agenda.*
- ▲ *New investments optimise potential economic benefits, encouraging new private-sector investment, increasing local content supply and creating local jobs.*
- ▲ *New investments are responsive to changing economic circumstances.*
- ▲ *Investments contribute to equitable development – all regions of the province must benefit from the infrastructure programme (see strategic objective 5 for more on this point).*
- ▲ *Infrastructure planning and delivery by state-owned entities and others around water, energy, logistics and ICT need to be integrated because different types of infrastructure are usually required jointly.*
- ▲ *More capacitated infrastructure planning is required to present convincing arguments to potential investors and to enable effective lobbying.*

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF is in line with the Sarah Baartman renewable energy goals. It also comprises new infrastructure investment for the Eastern Cape province as a whole. In addition to this, the REIPPPP process includes stringent socioeconomic goals for which the WEF developer will be responsible if the proposed project is successful. In terms of equitable investment across the province, the proposed renewable energy development will benefit the provincial energy supply by supplying up to 297 MW of electricity to the Eskom Grid.*

#### **Strategic action 1.1.2: Work with the Presidential Infrastructure Coordinating Committee to plan and implement improved infrastructure**

*The Presidential Infrastructure Coordinating Committee has done considerable work on the National Infrastructure Plan. A summary of this plan in the province is presented in Annexure E.*

*We support much of what the Presidential Infrastructure Coordinating Committee is planning for the province. Large elements of the plan in the Eastern Cape are unfunded and preliminary; therefore the province will work with the Presidential Infrastructure Coordinating Committee to ensure that the National Infrastructure Plan responds fully to development priorities.*

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF is in line with the National Infrastructure Plan which aims to improve energy supply across the whole of South Africa. One of the regions earmarked for wind development is the Sarah Baartman district of the Eastern Cape province.*

#### **Strategic action 1.1.3: Improve maintenance of existing infrastructure**

*Infrastructure in the province is generally poorly maintained, reducing the value of infrastructure assets. Responsible public bodies should correct this by making the necessary budgetary adjustments. Increased maintenance activity would also contribute to increased employment, as infrastructure maintenance is employment-intensive.*

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF would contribute towards both road and electrical/substation maintenance of existing infrastructure surrounding the WEF site.*

**Strategic action 1.1.4: A major new provincial irrigation programme**

This strategic action would not be impeded by the proposed WEF.

**Strategic action 1.1.5: Investment in strategic freight and passenger corridors**

This strategic action would not be impeded by the proposed WEF.

**Strategic action 1.1.6: Position the province as a key investment hub in the energy sector and ensure reliable energy supply to high-potential sectors.**

*The province is positioning itself as an investment hub in the energy sector (wind farms, imported liquefied natural gas, shale-gas and nuclear energy). This will provide opportunities to develop the capital goods sector and heavy industries. This new investment could become a major catalyst for provincial economic development, particularly if the benefits and costs are well managed. Regional and local benefits accruing from new investment in the energy sector could include:*

- ▲ *Cheaper energy (fuel and electricity), leading to cheaper food and transport, and more competitive labour markets.*
- ▲ *Employment in the construction, operation and maintenance of new energy facilities.*
- ▲ *Employment in the supply of manufactured components for the new energy facilities.*
- ▲ *Downstream linkages (for example, in the petro-chemicals industry based on shale gas).*
- ▲ *New rental collection systems to capture a portion of the surplus from these new investments.*

*The province will need to position itself very carefully to ensure that these regional and local benefits are maximised, and costs (including externalities) are minimised.*

*Approved wind energy projects already account for 63 percent of the average provincial energy demand (1 700 megawatts [MW]). There are serious institutional hindrances to wind-farm developments (a reported 35 permits are required), particularly in the former homelands where there are land-tenure issues. Pre-authorisation arrangements in “renewable energy zones” (to be located in Cacadu and Chris Hani districts) will allow this industry to expand to its full potential (500MW).*

*In addition, municipalities need to improve their maintenance and upgrading of electricity distribution, and review their mark-ups on electricity prices. This work should be spearheaded by the Department of Economic Development, Environmental Affairs and Tourism.*

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF is in line with the Eastern Cape Vision 2030 Provincial Development Plan, specifically Strategic Action 1.1.6, as it entails the development of a wind farm which could potentially contribute up to 297 MW of electricity to the Eskom Grid. As stated in the PDP the DEDEAT must carefully review each strategic position of WEFs are proposed to ensure that they align with the provincial plan. The Sarah Baartman (was Cacadu) District is important from both an ecotourism and renewable energy perspective. Based on the proposed Albany Biodiversity Corridor Network which has been put forward by Indalo PE, ECPTA and SANParks, the proposed Albany WEF does not impede on this corridor network.*

**Strategic action 1.1.7: Universal and affordable broadband access**

This strategic action would not be impeded by the proposed WEF.

## 2. Strategic objective 1.2: Rapid economic development of rural areas and all regions

*Strategic action 1.2.1: All regions to develop and implement regional development strategies*

*Different development approaches are required for different regions of the province. As previously noted, the former Bantustans, where the majority of the province's people live, have extremely low levels of economic production and high poverty rates.*

*Each region has significant economic potential. For example:*

- ▲ *The Nelson Mandela Bay/Cacadu region has energy potential (fracking, nuclear, wind), knowledge services, industrial manufacturing (Coega, smelters, petro-chemicals), agribusiness, tourism/property developments. It has potential as a primary trading hub, with Jeffreys Bay as a growth node.*
- ▲ *The Buffalo City Municipality/Amathole region has potential as a secondary export hub in agribusiness, knowledge services, light manufacturing, tourism and property/small-town development. Gcuwa and Alice are growth nodes.*
- ▲ *OR Tambo is expected to grow to become the province's third economic centre, with King Sabata Dalindyebo Municipality working towards metro status, based on ICT/knowledge services, logistics, agribusiness, tourism and property/small-town development. Port St Johns is a growth node.*
- ▲ *Chris Hani could become an agricultural region, with Sakhisizwe, Engcobo and Emalahleni as agriculture growth nodes.*
- ▲ *Alfred Nzo and Joe Gqabi regions could follow the provincial growth path, with stronger local state capacities contributing to increased economic opportunities. Sterkspruit, Burgersdorp and Mbizana are growth nodes.*

### RELEVANCE TO THE PROPOSED ALBANY WEF

*The Albany WEF is proposed in the Sarah Baartman (was Cacadu) District Municipality. This aligns with the plan proposed in strategic objective 1.2.1. Tourism is also listed as having significant economic potential in the district. Suitable areas, which do impede on future growth of both industries must be earmarked as suitable. The proposed Albany WEF site does not occur within the Albany Biodiversity Corridor Network which is proposed to link the Great Fish River Reserve (ECPTA) with the Addo Elephant National Park (SANParks) via the Indalo PE PGRs. The PDP is clear that both streams of economic development are vital for the economic growth of the Eastern Cape Province.*

*Strategic action 1.2.2: Increase rural economic production, particularly in the former Bantustans*

*This strategic action would not be impeded by the proposed WEF.*

*Strategic action 1.2.3: Use infrastructure investment to promote more equitable regional Development*

*New infrastructure investment is crucial for shaping regional development. Each of the eight regions has at least one mega-project in the pipeline:*

- ▲ *Nelson Mandela Bay: Port Elizabeth Waterfront; manganese channel; transshipment hub*
- ▲ *Cacadu: Nuclear plant; wind farms*
- ▲ *Buffalo City Municipality: East London sleeper site; airport to N2 road*
- ▲ *Amathole: Wild Coast Meander; irrigation schemes (Kat River and so on)*
- ▲ *OR Tambo: Mzimvubu project; N2 highway; Wild Coast Meander*
- ▲ *Alfred Nzo: N2 highway*
- ▲ *Chris Hani: Irrigation schemes (rehabilitation, extension and new projects)*
- ▲ *Joe Gqabi: Boskraai Dam/Orange River mega-project*

### RELEVANCE TO THE PROPOSED ALBANY WEF

*The Albany WEF is proposed in the Sarah Baartman (was Cacadu) District Municipality. This aligns with the plan proposed in strategic objective 1.2.2. The proposed Albany WEF would be considered a new wind farm infrastructure development within the district.*

### 3. Strategic objective 1.3: Stronger industry and enterprise support

*Strategic action 1.3.1: Create partnerships to drive economic development*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.2: Improve use of public resources for industry and enterprise support*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.3: Increase public resources for industry and enterprise support*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.4: Support micro, small, medium and large-scale enterprises*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.5: Ensure supply of skills to growth sectors*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.6: Support R&D and innovation initiatives*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.7: Develop new policy instruments*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.3.8: Improve capacity for economic policy analysis*

This strategic action would not be impeded by the proposed WEF.

### 4. Strategic objective 1.4: Accelerate and complete the land-reform process

*Strategic action 1.4.1: Design, implement and complete a new land redistribution plan*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.4.2: Address communal land tenure reform*

This strategic action would not be impeded by the proposed WEF.

*Strategic action 1.4.3: Finalise restitution process*

This strategic action would not be impeded by the proposed WEF.

### 5. Strategic objective 1.5: Rapid development of high-potential economic sectors

The PDP's diagnostic process identified seven economic sectors with strong development potential.

The table below summarises the suggested high-level sector strategies:

<b>SECTOR</b>	<b>SUGGESTED STRATEGIES</b>
<b>Agriculture</b>	Address land ownership and water issues to enable rapid capital accumulation (multi-scale and complete value chains). Focus on irrigation opportunities and value addition.
<b>Mining and Energy</b>	Optimise benefits from Karoo shale-gas, including feedstock for provincial petrochemicals, and position the Province as an energy hub
<b>Construction</b>	Ensure present infrastructure pipeline is properly planned, resourced and implemented; create enabling conditions for property development and build skills base.

<b>Manufacturing</b>	<i>Exploit coastal competitive advantages and realise potential of industrial development zones/special economic zones; create multi-agency partnerships to drive industrial expansion and diversification</i>
<b>Tourism</b>	<i>Use competitive advantages to grow volume and value of eco-tourism, heritage and sports tourism; improve access infrastructure and build stronger local tourism networks</i>
<b>Social Economy</b>	<i>Transform public works (EPWP/CWP) into a major platform for sustainable enterprise development (asset-based community development)</i>
<b>Knowledge-based Services</b>	<i>Increase quantity and quality of skills formation; form multi-agency partnerships around strategic R&amp;D and deepen ICT access and usage</i>

*Strategic action 1.5.1: Grow and develop the agriculture sector*

*This strategic action would not be impeded by the proposed WEF.*

*Strategic action 1.5.2: Grow and develop the mining sector*

*This strategic action would not be impeded by the proposed WEF.*

*Strategic action 1.5.3: Grow and develop the construction industry*

*This strategic action would not be impeded by the proposed WEF.*

*Strategic action 1.5.4: Grow and develop manufacturing industry*

*Nine identified manufacturing industries have potential for expansion. These should be examined in light of the Industrial Policy Action Plan with a view to multi-agency partnership formation. The nine industries are:*

- ▲ Maritime – connected to the province’s three ports (ship repairs)*
- ▲ Pharmaceutical – Aspen in Port Elizabeth employs 2 500 people*
- ▲ Green/renewables – based on the existing pipeline of new wind-farms*
- ▲ Agro-processing – based on increasing primary production*
- ▲ Materials – products for the future through innovative R&D projects*
- ▲ Light manufacturing – based on specialised clothing and footwear enterprises*
- ▲ Automotive – increase manufacturing depth (first- and second-tier)*
- ▲ Petro-chemicals – based on Karoo shale-gas and offshore resources*
- ▲ Capital goods – based on investment plans of state-owned enterprises and heavy industry at Coega.*

*Possible interventions include:*

- ▲ Improving regional competitiveness (logistics, skills, energy, R&D).*
- ▲ Reviewing the Provincial Industrial Development Strategy (2009).*
- ▲ Retaining and expanding the automotive industry, ensuring the auto cluster arrangement works effectively.*
- ▲ Ensuring proper support for the growth of existing industrial development zones; expanding these zones to include other industrial areas in the metros; designing and implementing new agroindustrial special economic zones; and piloting a new rural industries programme.*
- ▲ Reviving old labour-intensive industries, such as clothing and footwear.*
- ▲ Promoting new-wave industries (green and maritime).*
- ▲ Strengthening industrial cluster/multi-agency partnership initiatives.*
- ▲ Ensuring the province’s industrial development is environmentally sustainable and building industrial recycling enterprises (for example, platinum recycling).*

#### **RELEVANCE TO THE PROPOSED ALBANY WEF**

*The Albany WEF is proposed in the Sarah Baartman (was Cacadu) District Municipality. This aligns with the plan proposed in strategic objective 1.5.4. for growth in the provincial manufacturing industry. The proposed Albany WEF would be considered a new wind farm infrastructure development within the district.*

#### *Strategic action 1.5.5: Grow and develop the tourism industry*

*The tourism industry has high potential for growth, based on eco-tourism, heritage tourism, conferencing and sports tourism. The provincial tourism economy grew rapidly after 1994 until the global recession in 2009. Tourism investment accounts for about 10 percent of annual fixed investment and most of this is in the two metros. It is estimated that 70 percent of provincial tourism economy is in the coastal zone. Six of the Eastern Cape's eight districts/metros have coastal access. Top attractions for international tourists are game reserves (58 percent), beaches (52 percent), tree-top canopy tours in Tsitsikamma (16 percent) and the Nelson Mandela Museum in Mthatha (10 percent). International tourism spending is 40 percent greater than domestic tourism spending.*

*Strategic interventions include:*

- ▲ Ensuring stronger support for heritage (including newly discovered archaeology sites of early humans) and sports tourism.*
- ▲ Expediting the Eastern Cape Parks and Tourism Agency's commercialisation of provincial nature reserves.*
- ▲ Unlocking Wild Coast tourism potential (the Wild Coast Meander) and addressing tenure issues for new investment in tourism facilities.*
- ▲ Protecting the Wild Coast (and other sensitive areas) from environmental degradation.*
- ▲ Improving tourist access (Port Elizabeth international airport).*
- ▲ Focusing on the development of domestic tourism, particularly budget beach holidays (near Port Elizabeth and East London).*
- ▲ Upgrading inner-city environments, beachfronts and associated tourism attractions in Port Elizabeth and East London, and throughout the province, including the Wild Coast.*  
*Investigating the development of marina and waterfront developments at Port Elizabeth, East London and Port St Johns.*
- ▲ Electronic marketing of the province's unique combination: nature, beaches and state subsidisation of high-potential tourism geographic clusters (marketing).*

#### **RELEVANCE TO THE PROPOSED ALBANY WEF**

*The ECPTA is proposing an amalgamation of provincial reserves in associated within Indalo PE and SANParks. One of the proposed biodiversity corridors is known as the Albany Biodiversity Corridor Network. Tourism is a value and necessary part of the Eastern Cape economic contribution. The Albany WEF would not impede the connection of the proposed reserves, it would be situated adjacent to this corridor. Based on the "Wilderness Value" assigned to the land on which the proposed WEF is situated it is considered to have a LOW value. It is assumed that this land is therefore not aligned to being part of this expansion project due to existing industrial infrastructure such as Eskom infrastructure, mines and telecommunication towers. In terms of biodiversity value, and based on the Ecological Report (Appendix D) the conservation value is of low to moderate significance due to existing landuses and the presence of alien vegetation.*

#### *Strategic action 1.5.6: Grow and develop the social economy*

*This strategic action would not be impeded by the proposed WEF.*

#### *Strategic action 1.5.7: Grow and develop knowledge-based services*

*This strategic action would not be impeded by the proposed WEF.*

#### *Strategic action 1.5.8: Grow and develop the ocean economy*

*This strategic action would not be impeded by the proposed WEF.*

#### **RELEVANCE TO THE PROPOSED ALBANY WEF**

*The proposed Albany WEF is in line with the Eastern Cape Vision 2030 Provincial Development Plan, potential conflicts can be managed at a local spatial level.*

### 3.5.2 EASTERN CAPE CLIMATE CHANGE STRATEGY (2011)

According to the Eastern Cape Climate Change Response Strategy, wind energy was the fastest growing energy technology sector, which accounted for more than 50% of worldwide clean energy investment, in 2009 as well as almost half of the installed clean energy capacity worldwide. The South African Wind Energy Association called for 25% of the overall electricity generation mix by 2025 to be derived from renewable energy, with 80% of this target potentially coming from wind power.

The Eastern Cape Climate Change Response Strategy developed a set of pragmatic Greenhouse Gas (GHG) mitigation programmes. These consisted of the following mitigation categories:

- ✦ Mainstreaming GHG mitigation in provincial and local government and in industry
  - Mainstreaming GHG mitigation in decision-making at all levels of government within the Eastern Cape Province;
  - Promoting GHG mitigation in provincial and local government operations; and
  - Promoting GHG reporting in industry.
- ✦ Promotion of renewable energy in the Eastern Cape
  - Create an enabling environment for investment in, implementation and use of clean energy in the Eastern Cape.
- ✦ Mitigation and opportunities for rural livelihoods
  - Facilitate integrated lead projects that promote sustainable livelihoods and local economic development while achieving (tradable) emission reductions.
- ✦ Mitigation in solid waste and wastewater treatment
  - Reduction in organic waste to landfill, renewable energy from waste, and methane use or destruction.
- ✦ Greenhouse gas mitigation in transport
  - Facilitate shift to low GHG modes of transport and transport systems.

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF supports the Eastern Cape Climate Change Response Strategy as it is in line with the mitigation measures that have been developed in an effort to reduce GHG emissions.*

### 3.5.3 EASTERN CAPE SUSTAINABLE ENERGY STRATEGY (2012)

The Eastern Cape Sustainable Energy Strategy identifies six (6) goals which will assist in achieving the Province's vision, "The Eastern Cape provides the most enabling environment for sustainable energy investment and implementation in the country", and these goals include:

- ✦ Goal 1: Job creation and skills development
- ✦ Goal 2: Alleviate energy poverty
- ✦ Goal 3: Alleviate CO2 emissions and environmental pollution
- ✦ Goal 4: Improve industrial competitiveness
- ✦ Goal 5: Promote renewable energy production in the Province
- ✦ Goal 6: Promote the development of a renewable energy manufacturing industry and technology development

In addition, Section 6.2.2: Future Supply Options for the Eastern Cape of the Eastern Cape Sustainable Energy Strategy states that "60 wind farms with a combined capacity of about 4 253 MW have applied to Eskom for connection quotations in the Province (as at March 2012); this is the most promising short- and medium-term source of locally generated energy for the Eastern Cape."

#### RELEVANCE TO THE PROPOSED ALBANY WEF

*The proposed Albany WEF could potentially contribute, directly and/or indirectly, to all six (6) sustainable energy goals as stipulated in the Eastern Cape Sustainable Energy Strategy.*

### 3.6 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).

The following image (Figure 3-1) indicates the wind capability figures for the Albany WEF site as per the CSIR data. The South African Wind Atlas (CSIR *et al*, 2014) indicates that the area has an average wind speed of between 7.5 and 10 m/s as illustrated by the mesoscale map below. These high wind speeds have been confirmed by Albany Wind Power who erected two wind measurement masts on site, an 85 m mast and a 120 m mast. The 85 m mast collecting data from September 2012 until November 2013, and the 120 m mast has been collecting data since the 8th of August 2015 to date.



Figure 3-1: An example of a meteorological mast (Albany 120m).

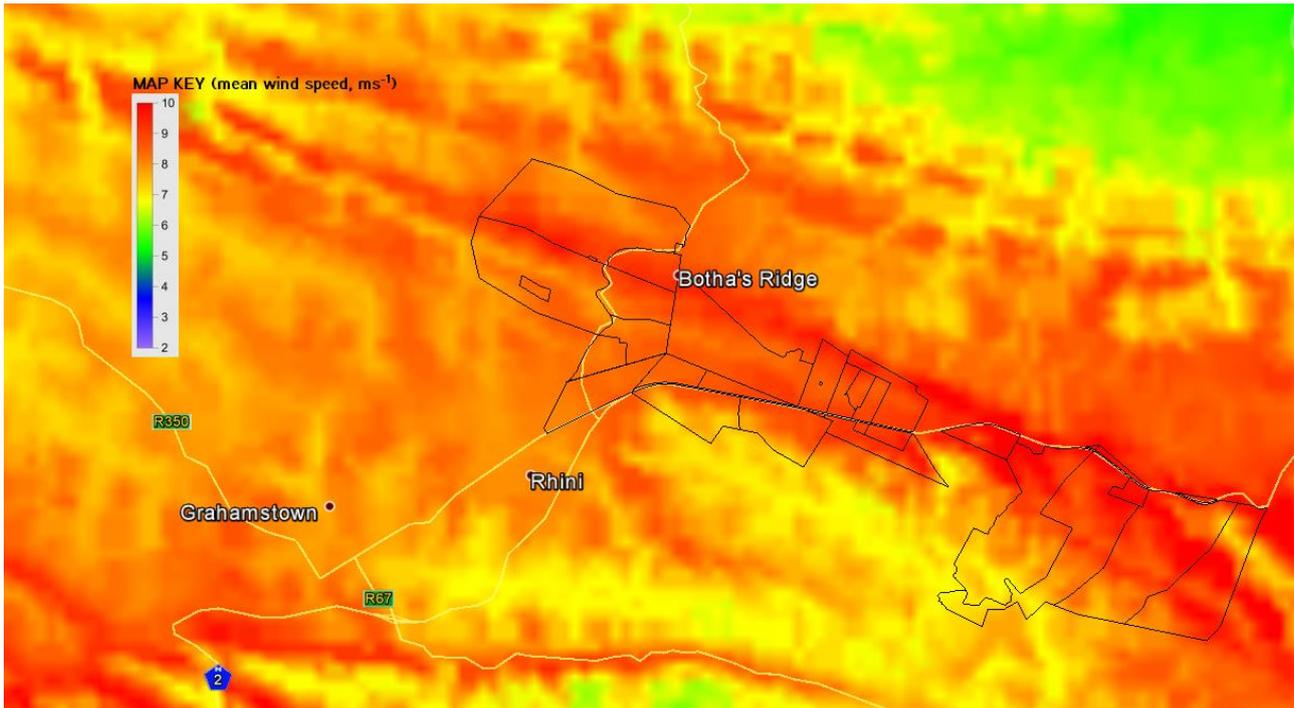


Figure 3-2: Wind Capability Statistics (mean wind speed, ms-1, CSIR).

### 3.7 ALBANY WEF DISTANCE FROM REDZS

On the 17<sup>th</sup> of February 2016, the Cabinet of the Republic of South Africa (Cabinet) approved the gazetting of Renewable Energy Development Zones (REDZs).

REDZs refer to geographical areas where wind and solar PV development can occur in concentrated zones, which will lead to:

- ✦ a reduction of negative environmental consequences;
- ✦ alignment of authorisation and approval processes;
- ✦ attractive incentives; and
- ✦ focused expansion of the South African electricity grid.

Cabinet further stated that the REDZs will, among others, accelerate infrastructure development and contribute in creating a “predictable regulatory framework that reduces bureaucracy related to the cost of compliance”.

The DFFE’s media statement issued in respect of the approved gazetting of the REDZs provided that 8 REDZs and 5 Power Corridors have been identified. The REDZs are located in Overberg (Western Cape), Komsberg (Western Cape), Cookhouse (Eastern Cape), Stormberg (Eastern Cape), Kimberley (Free State/Northern Cape), Vryburg (North West), Upington (Northern Cape) and Springbok (Northern Cape).

The 5 Power Corridors are planned as follows: The central corridor runs for the first time from the south of the country to the north. Two corridors run along the east and west coasts, while the fourth and fifth include interconnections with Botswana, Namibia and Zimbabwe to accommodate current and forecasted imports and exports of electricity. Eskom estimates that the thousands of kilometres of transmission lines and infrastructure needed to create these corridors of power will take eight years to construct and cost approximately R213bn.

The REDZs and Power Corridors support 2 of the 18 Strategic Integrated Projects (SIPs), which were identified

in the Infrastructure Development Plan which is aimed at promoting catalytic infrastructure development to stimulate economic growth and job creation.

The proposed Albany WEF falls within a small section of REDZ 3 (Cookhouse) on the western side of the proposed WEF. Approximately 20% of the site falls within this REDZ.

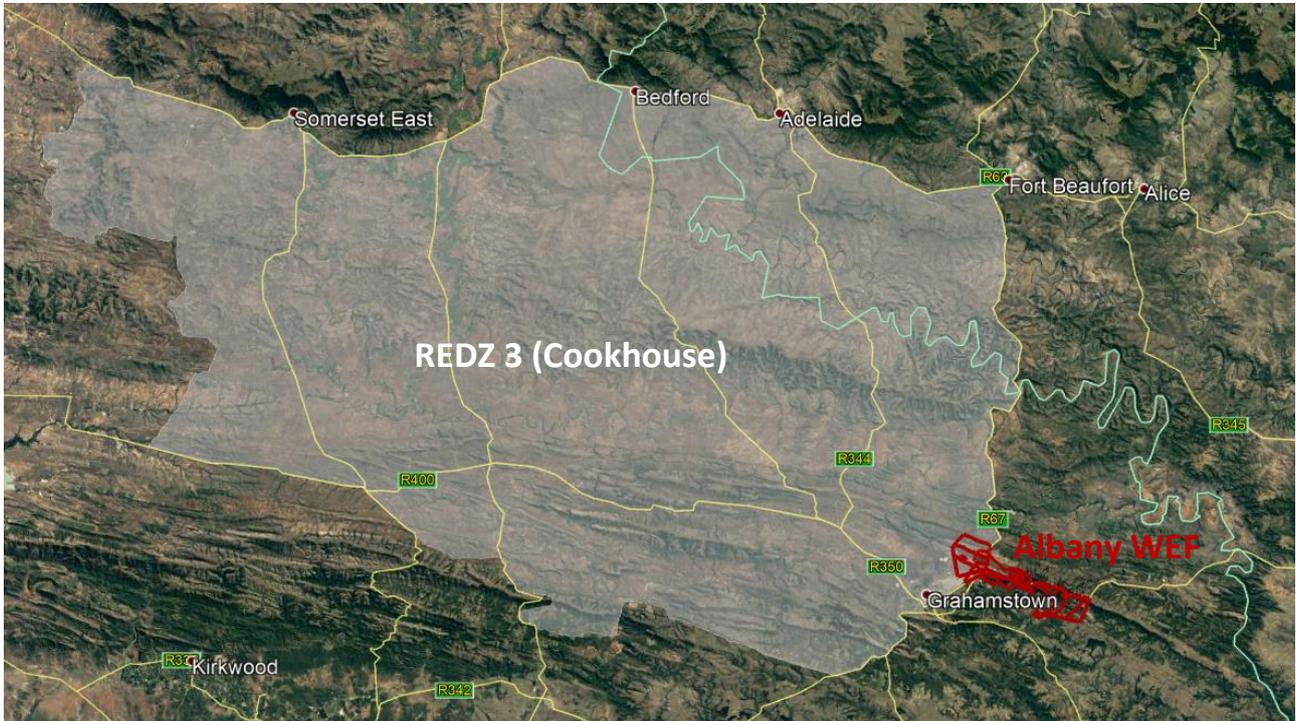


Figure 3-3: Albany WEF in Proximity to the legislated REDZ (specifically REDZ 3)

REDZ were designed as pre-screened renewable energy hot-spots in which developers are able to follow a more streamlined EIA process in the form of a Basic Assessment, despite triggering Listing Notice 2 activities. A large portion of South Africa's renewable energy developments fall outside of these zones and these developments are subject to the more rigorous EIA process. The decision to development outside of REDZ is taken when developers identify wind resources which are economically desirable coupled with sites which are situated within close proximity to existing Eskom distribution infrastructure. The decision, by Albany Wind Power, to investigate the proposed site stemmed from the high wind potential of the site combined with the available capacity of the Eskom substation.

### 3.8 OTHER LOCAL FUTURE PROJECT: ALBANY WEF IN RELATION TO THE PROPOSED ALBANY BIODIVERSITY CORRIDOR NETWORK

The proposed Albany WEF is situated outside of the Albany Biodiversity Corridor Network, as developer by Indalo PE, ECPTA and SANParks (see Figure 3-4 below). In addition to the fact that the proposed WEF is situated outside of the proposed linking strategy, the WEF is situated on land classified, by the amalgamation, as LOW from a "Wilderness Value" perspective. This is likely due to the fact that the majority of the proposed Albany WEF site is transformed land, with existing industrial infrastructure such as the Eskom Albany Substation, Eskom Albany Distribution line, numerous telecommunication towers and mining.

Based on the Eastern Cape Provincial Development plan both tourism and renewable energy are key economic sectors in the Eastern Cape province, particularly within the Sarah Baartman (was Cacadu) District Municipality

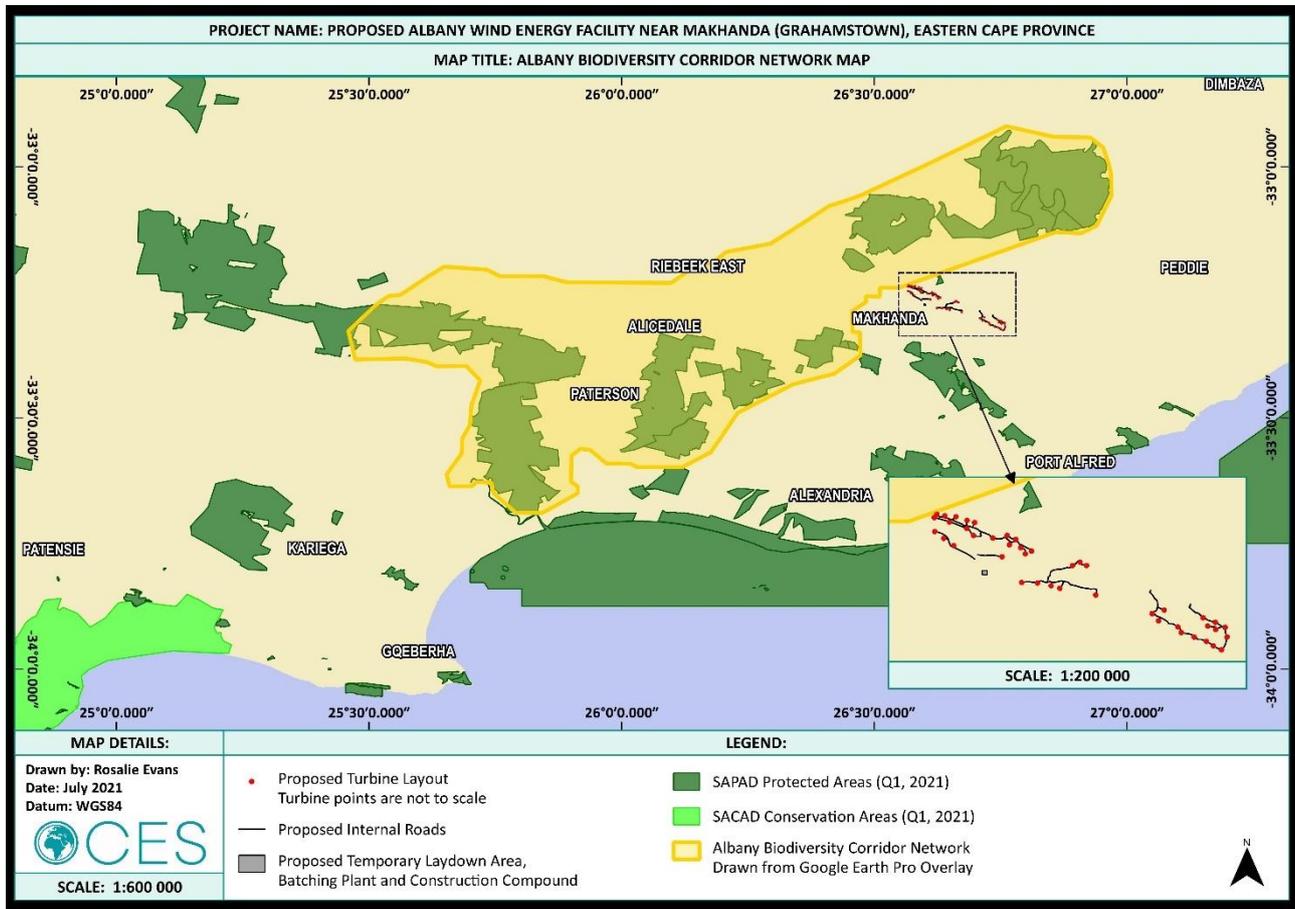


Figure 3-4: Albany WEF in Proximity to Proposed “Albany Biodiversity Corridor Network”, SAPAD Protected Areas and SACAD Conservation Areas

### 3.9 CONCLUDING REMARKS

When considering the overall need for the development of the Albany WEF, it is important to consider the potential costs of the proposed WEF too. While the above policy (at a national, provincial and local level) support renewable energy, local industry may be affected by its presence. This is particularly relevant to the tourism industry in the area.

Indalo, Private Game Reserve Association, is a collection of private game reserves based in the Eastern Cape, South Africa. Originally formed as a forum to address conservation and social issues, Indalo has recently evolved into the Indalo Protected Environment (<https://www.indaloreserves.com/>). Indalo’s policy on renewable energy is as follows: “Indalo is pro renewable energy but wind farms in the wrong places present a clear danger to our natural environment and eco-tourism. We support windfarms in non-ecologically sensitive areas.” Based on the contents of the biophysical specialist reports the site is not considered ecologically sensitive, however, it is still vital to consider the socio-economic impacts of the proposed WEF on the surrounding game farms which form part of the Eastern Cape’s tourism industry from both an eco-tourism and hunting perspective. The potential socio-economic sector has been well outlined and assessed as part of the Social Impact Assessment (please refer to Appendix D for the Social Impact Assessment). This report draws on evidence and conclusions obtained during an extensive study.

The proposed Albany WEF is situated outside of the proposed expansion corridor network which is being developed in a joint venture between ECPTA, Indalo PE and SANParks. The portion of land on which the Albany WEF is situated is not desirable from a protected environment perspective due to existing conflicting landuses such as mining, electrical infrastructure, agriculture and various other infrastructure such as telecommunication towers. From an ecological perspective the land on which the Albany WEF is proposed is neither pristine nor of high conservation value (please refer to Appendix D for the Ecological Impact Assessment).

The Albany 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.

The construction and operation of the Albany 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.

Therefore, considering the above it has been imperative for the EIR to consider this project not only from a policy (national, provincial and local level) perspective, but also from a bio-physical and socio-economic perspective. The aim of this process has been to ensure a balance between these three spheres and the key chapters of this report (Chapter 8, 9, 10 and 12) draw on both the positive and negative consequences of the proposed development.

From a cumulative perspective the WEF would both negatively and positively contribute towards existing and proposed WEF impacts within a 30km radius of the proposed Albany WEF. The primarily negative cumulative impact would be from a visual perspective, specifically related to the tourism industry within the area. The primary positive cumulative impact would be a higher renewable energy output from this area and the use of land which is already degraded.

## 4 RELEVANT LEGISLATION

The development of the proposed Albany 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 ALBANY 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>	<p>Sustainable development requires the consideration of all relevant factors including the following:</p> <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> <li>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.</li> </ul>

(4)(e)	Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
(4)(i)	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.
(4)(j)	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.
(4)(p)	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.
(4)(r)	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 ALBANY 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 ALBANY WEF

*The Act is relevant as the proposed Albany WEF is proposed within 5km of a Provincial Protected Area (Beggars Bush). Albany WEF is also situated within the vicinity of the Kwandwe and Buffalo Kloof Protected Areas. The potential impact of the WEF has been investigated from a Visual and Socio-Economic perspective.*

## 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 ALBANY 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 ALBANY 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 ALBANY 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 ALBANY 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 (DAFF) 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 ALBANY WEF

- ✦ SAHRA/ECHRA 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 ALBANY 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 Albany WEF. These cover, among other issues, noise and lighting.

### RELEVANCE TO THE PROPOSED ALBANY WEF

*The WEF developer must be mindful of the principles and broad liability and implications contained in the OHSA 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 Albany 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 ALBANY 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.*

## 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 consider 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; and
  - 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.
- ✦ Storing water.
- ✦ Impeding or diverting the flow of water in a watercourse.

- ✦ Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
- ✦ Disposing of waste in a manner which may detrimentally impact on a water resource.
- ✦ Altering the bed, banks, course or characteristics of a watercourse.

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

**RELEVANCE TO THE PROPOSED ALBANY 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 ALBANY WEF**

*An agricultural potential assessment has been conducted to determine how the proposed development is likely to impact on the agricultural production potential of the WEF site.*

## 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 ALBANY WEF**

Approval will be required from the DAFF 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	DMR 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 ALBANY 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 DMR for either a mining permit or mining licence.
- ✦ The Albany WEF must apply to the Minister of Mineral Resources for approval to use the land for the purposes of the WEF.
- ✦ The DMR 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 ALBANY 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 Albany WEF development the following requirements of the Act need to be considered:

RELEVANT SECTION OF THE ACT	RELEVANT TO THE PROPOSED ALBANY WEF:
<b>Section 3: Fire Protection Associations.</b>	The proposed Albany 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 Albany 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 Albany 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 Albany 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.
- ✦ Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974), which lists species of special concern which require permits for removal. Schedules 1 to 4 list protected and endangered plant and animal species.
- ✦ 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.

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:

- ✦ Local Municipality: Land Rezoning Permit. LUPO Ordinance 15 of 1985.
- ✦ National Energy Regulator of South Africa (NERSA): Generation License.
- ✦ Eskom: Connection agreement and Power Purchase Agreement (PPA).

- ✦ Makhana Local Municipality Spatial Development Framework (SDF), Integrated Development Plan (IDP) and municipal by-laws.
- ✦ Sarah Baartman District Municipality SDF and IDP.

## 5 DESCRIPTION OF THE ENVIRONMENT: BIOPHYSICAL

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The following chapter outlines the biophysical features of the property portions on which the Albany WEF is being proposed.

### 5.1 GEOLOGY AND LANDFORM

The Eastern Cape Province contains a wide variety of landscapes, from the Karoo (the semi-desert region of the central interior) to mountain ranges and gentle hills rolling down to the sea. The climate and topography gives rise to the great diversity of vegetation types and habitats found in the region.

### 5.2 TOPOGRAPHY

The project site is characterised by undulating hills with the elevation ranging from 480 to 760 metres above sea level (asl). Project site is generally steep with a maximum slope of 43.2% and average slope of 6.7%.

### 5.3 GEOLOGY

The project area is underlain mainly by rocks of the Lake Mentz of the Subgroup of the Witteberg Formation. Giving rise to the prevalent shale bedrock which is found occur on most of the project area. Soils in this region are sandy, generally of Glenosa and Mispah formations which are lithic soils, these are said to be young soils occurring on weathered rock (Mucina and Rutherford, 2006; Fey, 2010).

Small portions of the silcrete rocks of the Grahamstown Group, Tillite soils of the Dwyka group of the Karoo Supergroup and Arenite rocks of the Weltevrede Group of the Cape Supergroup are also found to occur in the project area. Please see Figure 5-1.

The Grahamstown silcrete is said to be a result of chemical processes undergone by the soil profile during an extensive period of weathering and erosion (Büttner et al, 2015). As a result of these chemical processes, these areas have clay-rich weathered rock which are a residue left by silica leaching out of the underlying shale and tillite (Büttner et al, 2015).

SANBI (2016) describes tillite soils as hard stony clay which drain poorly, are generally acidic and waterlogged during the wet season. Whilst Arenite is medium sized sedimentary rocks which are sandy.

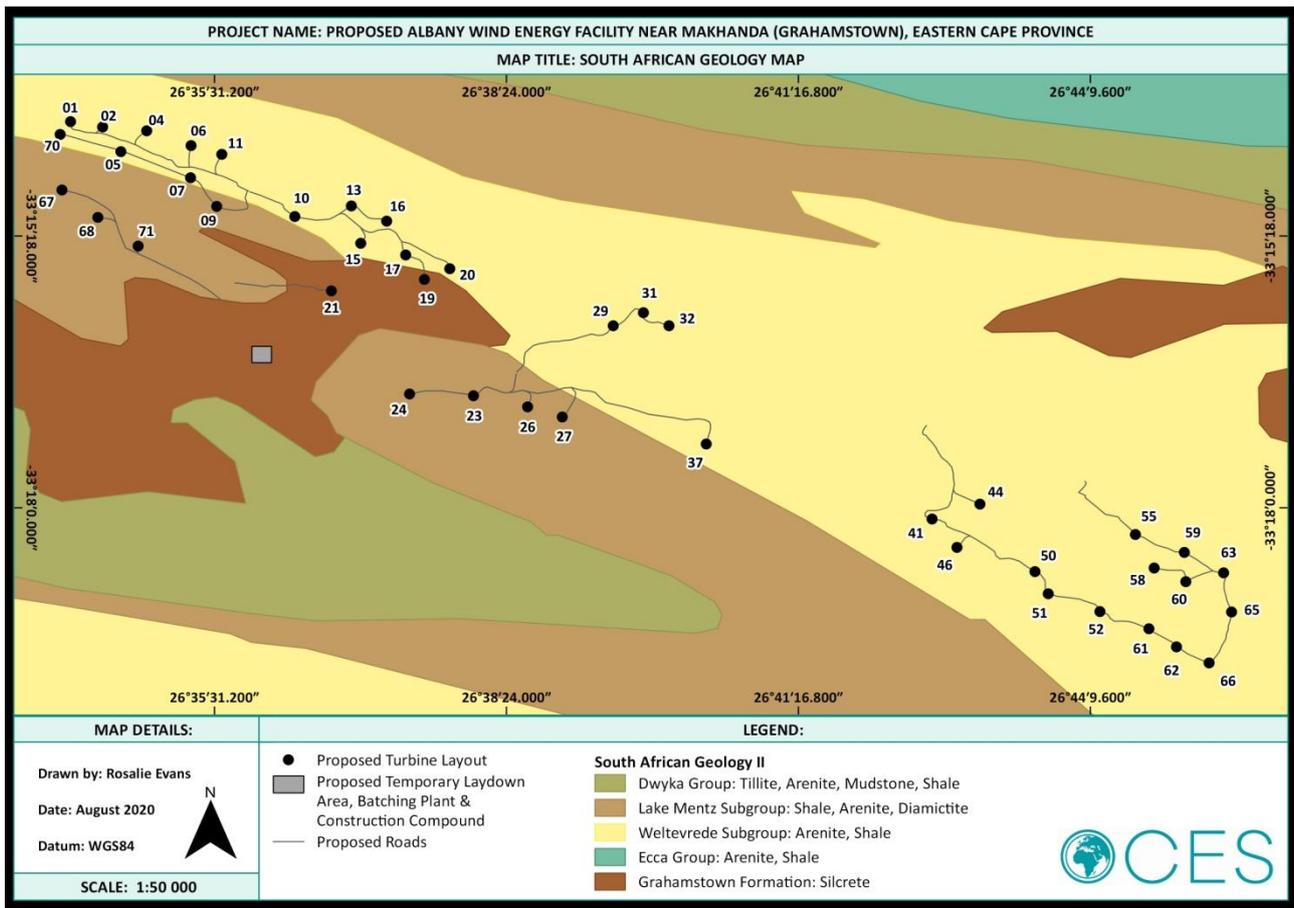


Figure 5-1: Geology Map of the Albany WEF site.

## 5.4 CLIMATE

The Eastern Cape Province of South Africa has a complex climate due to its location at the confluence of two climatic regimes, namely temperate and subtropical. As a result, there are wide variations in temperature, rainfall and wind patterns, mainly as a result of movements of air masses, altitude, mountain orientation and the proximity of the Indian Ocean.

The Makana region falls in the heart of three major transitional climatic regions:

- ✦ From the south-western region there is a maritime influence of winter rainfall. In this region it changes to spring and autumn rainfall with south easterly winds bringing torrential rains which are very variable and inconsistent.
- ✦ From Makhanda north-eastwards the rainfall changes to a general summer rainfall.
- ✦ The interior south of the Winterberg is affected by both these climatic patterns, with cold fronts and little winter rain, but summer rain from sporadic thunder showers.

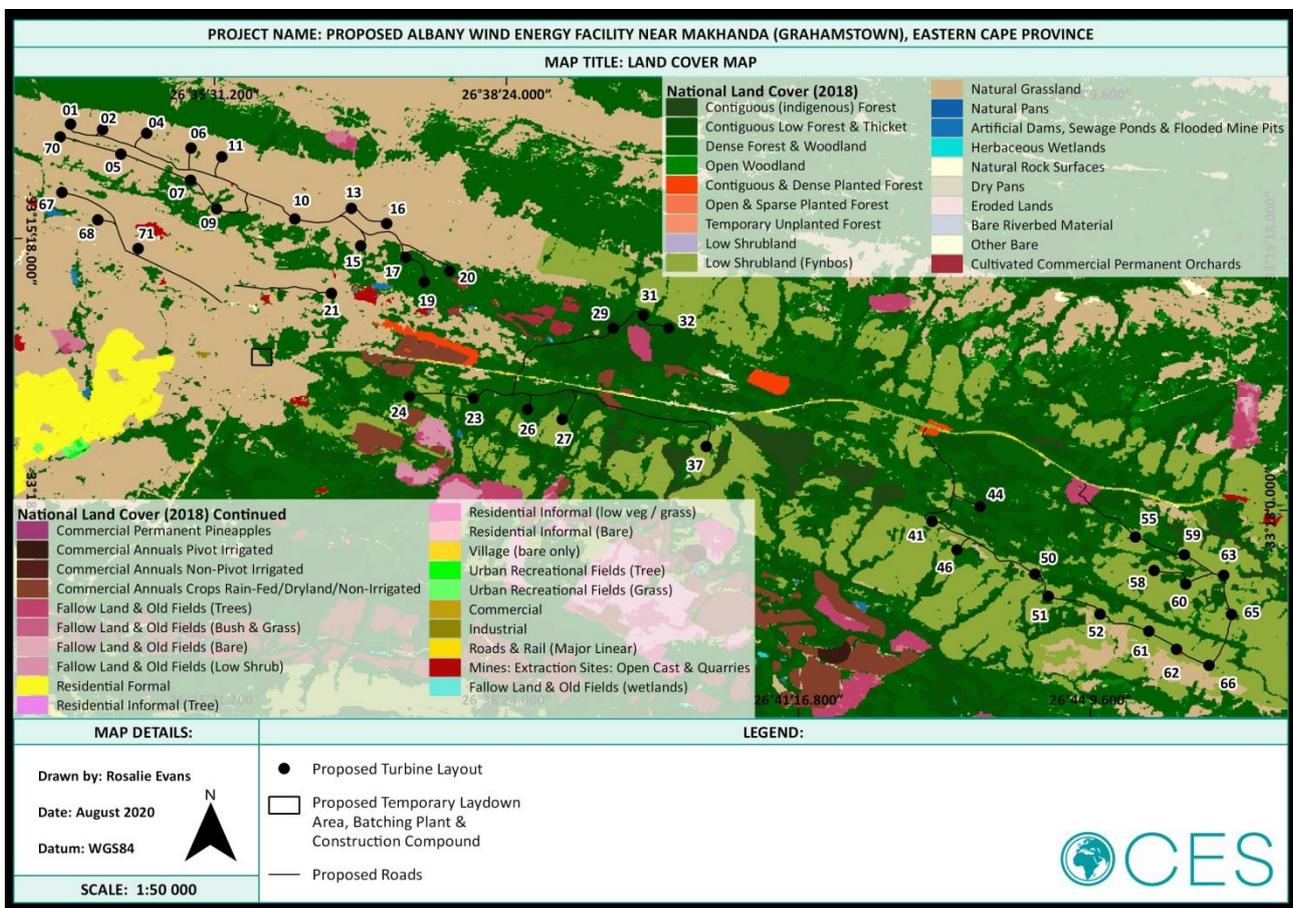
Winds and alternating cold and warm fronts thus make for a very variable climate throughout the region. The area normally receives approximately 466 mm of rainfall per year and because it receives most of its rainfall during autumn/early winter it has a Mediterranean climate. The lowest rainfall (16 mm) occurs in July and the highest (57 mm) in March. The monthly distribution of average daily maximum temperatures indicates that the average midday temperatures range from 18.9 °C in July to 26.8 °C in February (saexplorer, 2016). The region is the coldest during July with average night-time temperatures of 5.6 °C (saexplorer, 2016).

**Table 5-1: Makhanda/Grahamstown Climate Table (Source: en.climate-data.org).**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Avg. Temp (°C)</b>	20.7	20.9	20	17.6	15.3	13	12.4	13.5	15.1	16.1	17.9	19.5
<b>Min. Temp (°C)</b>	14.6	15.1	14.4	11.3	8.6	5.9	5.4	6.4	8.5	10	12.2	13.5
<b>Max. Temp (°C)</b>	26.8	26.8	25.7	24	22	20.1	19.4	20.7	21.8	22.3	23.6	25.6
<b>Precipitation / Rainfall (mm)</b>	60	68	75	47	43	33	36	51	61	75	68	66

## 5.5 LANDCOVER

The site visit illustrated that the project area is used for various activities such as livestock farming, mining land, agriculture (plantation and cultivated land) and households. Figure 5-2 illustrates the landcover of the Albany WEF site and surrounding areas (Eastern Cape Land Use Data, AGIS).



**Figure 5-2: Landcover Map of the Albany WEF site and surrounding areas.**

## 5.6 VEGETATION & FLORISTICS

The project area falls within three (3) biomes, namely:

- ✦ Fynbos Biome (Suurberg Shale Fynbos and Suurberg Quartzite Fynbos);
- ✦ Savanna Biome (Bisho thornveld vegetation); and
- ✦ Thicket biome (Kowie Thicket vegetation).

The Fynbos Biome which takes its name from the dominant vegetation in the region – fynbos (Mucina and Rutherford, 2006). This biome consists of three (3) quite different, naturally fragmented vegetation types (fynbos, renosterveld and strandveld) that occur in the summer and winter rainfall areas. Fynbos comprises of species that are typically small-leaved, evergreen shrubs and that rely on fire for regeneration. This Biome is endemic to South Africa and occupies most of the Cape Fold Belt, the adjacent lowlands between mountains and the Atlantic Ocean in the west and south as well as between the mountains and the Indian Ocean in the south.

The Savannah Biome is the most widespread biome in Africa occurring in eight provinces namely; the Northern Cape, North-West Province, Free-state, Gauteng, Limpopo, Mpumalanga, Kwa-Zulu Natal and the Eastern Cape, covering about 32.8% of South Africa (Mucina and Rutherford, 2006). This vegetation type generally has an herbaceous layer which is dominated by grasses and a tree layer which ranges from sporadic to very open (Mucina and Rutherford, 2006).

The Subtropical thicket biome occurs within the Western and the Eastern Cape, and is one of the seven biomes found in South Africa (Knight and Cowling, 2003). Its distribution ranges down the coast, up the river valleys and into the dry mountainous areas of the South-west. The Valley thicket in which most of the project area lies is said to be one of the most common vegetation types of the Eastern Cape, where its distribution range is restricted to the hot dry river valleys of the southern and south-eastern Cape.

The Thicket biome is described by Lubke (in Low and Rebelo,1998) as a closed shrubland to low forest dominated by evergreen, sclerophyllous or succulent trees, shrubs and vines, where several of these species have stem spines. It is often dense, generally divided into strata and has little herbaceous cover. Some thicket types are referred to as “transitional thicket” due to them having similar floristic components with many other phytochoria and occurring within almost all formal biomes (Low and Rebelo, 1998). The Thicket vegetation contains a small number of endemic species, most of which are succulents of karoo origin such as Plakkies (*Crassula* spp.) and Sheep Fig (*Delosperma* spp.) (Low and Rebelo,1998).

### **5.6.1 SANBI VEGETATION MAP**

Mucina and Rutherford (2006) developed the National Vegetation map as part of a South African National Biodiversity Institute (SANBI) funded project: “It was compiled in order 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 was developed using a wealth of data from several contributors and has allowed for the best national vegetation map to date, the last being that of Acocks developed over 50 years ago. The SANBI Vegetation map informs finer scale bioregional plans such as STEP. This SANBI Vegmap project has two main aims:

- ✦ “to determine the variation in and units of southern African vegetation based on the analysis and synthesis of data from vegetation studies throughout the region, and
- ✦ to compile a vegetation map. The aim of the map was to accurately reflect the distribution and variation on the vegetation and indicate the relationship of the vegetation with the environment. For this reason the collective expertise of vegetation scientists from universities and state departments were harnessed to make this project as comprehensive as possible.”

The map and accompanying book describes each vegetation type in detail, along with the most important species including endemic species and those that are biogeographically important. This is the most comprehensive data for vegetation types in South Africa. According to this spatial planning tool, five vegetation types are found to occur within the project area (Figure 5-3).

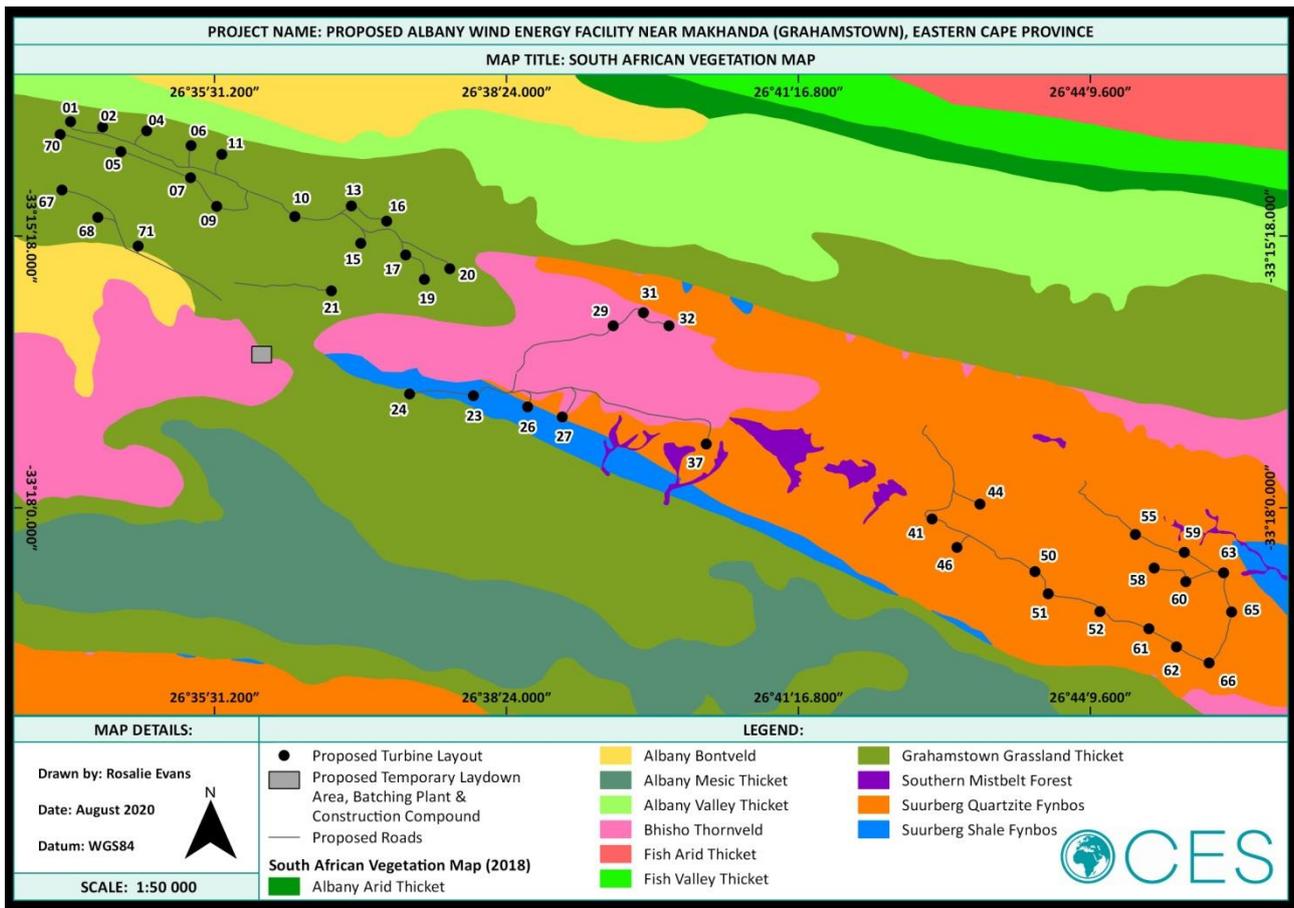


Figure 5-3: SANBI Vegetation Map of the Albany WEF site and surrounding areas.

#### A) SUURBERG QUARTZITE FYNBOS

This vegetation type occurs in the Eastern Cape Province, from Baroe to Kapriverberge which is east of Makhanda. It is associated with low rounded hills and mountains and supports low to medium-high, closed, ericoid shrubland or grassland with a closed restioid and/or grass understory. This vegetation type is characterised by Grassy fynbos which is interspersed with localised patches of dense proteoid and ericaceous fynbos (Mucina and Rutherford, 2006). It is classified as LEAST THREATENED, with a conservation target of 30%. It is statutorily conserved in the Greater Addo Elephant National Park (15%) and an additional 16% in a number of private reserves.

#### B) SUURBERG SHALE FYNBOS

This vegetation type occurs in highly fragmented patches on low mountains or hills around Riebeeck East and Makhanda (Eastern Cape Province). It is associated with low to medium high, closed, ericoid shrubland or grassland, with a closed restioid and/or grass understory. Graminoid fynbos, with localised patches of dense proteoid fynbos is also present. This vegetation type is classified as LEAST THREATENED with a conservation target of 23%. About 40% is statutorily conserved in the Greater Addo Elephant National Park and in a number of private reserves.

#### C) SOUTHERN MISTBELT FOREST (NO TURBINES OR INFRASTRUCTURE PLACED IN THIS VEGETATION TYPE)

These forests occur in the Kwa-Zulu Natal and Eastern Cape Provinces. They occur as patches of varying size in fire-shadow habitats on south- and southeast-facing slopes and along the Great Escarpment. At high altitudes these forests are up to 15-20 m tall and multi-layered while forests found at lower altitudes are low and less structured but are still species-rich. *Afrocarpus falcatus* is a dominant tree species. Other deciduous and semi-deciduous species that are dominant include *Celtis africana*, *Calodendrum capense*, *Vepris*

*lanceolata* and *Zanthoxylum davyi*. This vegetation type is classified as LEAST THREATENED with a conservation target of 30% and about 8% statutorily conserved in a number of reserves.

#### **D) GRAHAMSTOWN GRASSLAND THICKET**

This vegetation type occurs on coastal forelands of the Albany region, spanning from around Makhanda toward the Great Fish River in the east, Port Alfred and Alexandria in the south, and Sidbury in the west. A small isolated patch also occurs at the southern foot of the Swartwatersberg north of Alicedale. The vegetation is dominated by a mosaic of low thicket, which consists of small bush clumps in a matrix of short grassland vegetation. Grahamstown Grassland Thicket is poorly protected with approximately 19 % being conserved in the Buffalo Kloof Protected Environment and Indalo Protected Environment.

#### **E) BHISHO THORNVELD**

This vegetation type is found to occur on dissected hills and low mountains around Makhanda. This vegetation is open savannah characterised by small trees of *Acacia natalia* with a short to medium, dense, sour grassy understory, usually dominated by *Themeda triandra* when in good condition. A diversity of other woody species are usually present and often increase under conditions of overgrazing. This vegetation type is considered as LEAST THREATENED. Only 0.2% statutory conserved in the Great Fish River Reserve and about 2% conserved in private game reserves.

#### **F) ALBANY BONTVELD**

This vegetation type occurs to the north and northeast of Makhanda; mainly on flat-topped hills between Table Hill and the southern end of the Ecca Pass. The vegetation is dominated by a mosaic of low thicket, which consists of bush clumps in a matrix of shrubland which includes a mixture of fynbos and karroid elements. Albany Bontveld is poorly protected with approximately 19 % being conserved in the Ecca Nature Reserve and Indalo Protected Environment.

#### **G) ALBANY VALLEY THICKET**

This vegetation type mainly occurs on the forelands of the Albany Region where it occurs along the middle to upper reaches of the river valleys of the Bushmans, Kariega, Kowie, Kleinemonde and Kap Rivers, extending past the Zuurberg Mountains north- and eastward of Alicedale and Riebeeck East. Also in open valleys around Nanaga. The vegetation consists of medium-sized to tall thicket, including small trees and woody shrubs. Albany Valley Thicket is moderately protected with approximately 19 % being conserved in the Addo Elephant National Park, Buffalo Kloof Protected Environment and Indalo Protected Environment.

## **5.7 EASTERN CAPE BIODIVERSITY CONSERVATION PLAN**

In addition to national legislation, some of South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution (Act No. 108 of 1996). The relevant biodiversity plan in the Eastern Cape is the Eastern Cape Biodiversity Conservation Plan (ECBCP) (2007), with a complete revision of the first version (ECBCP2007) undertaken in 2019. The revisions included: an updated land cover map, changes to provincial borders, consideration of the large body of environmental and biodiversity data that has been generated over the past 10 years; and the development of approximately 29 other environmental and biodiversity plans for parts of the Province that require integration.

In addition, significant strides have been made with respect to defining and mapping biodiversity pattern and biodiversity processes, which have been standardised to ensure a level of consistency throughout the country (SANBI, 2017). The ECBCP2019 has replaced the ECBCP2007 in its entirety.

The ECBCP has been adopted by the provincial department of Economic Development, Environmental Affairs and Tourism (DEDEAT) as a strategic biodiversity plan for the Eastern Cape.

The main outputs of the ECBCP are the identification of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), also known as a “CBA’s”, for both terrestrial and freshwater realms. Table 5-2 below provides further defines and provides the allocated land management objectives for each map category.

**Table 5-2: ECBCP CBA Management Requirements (ECBCP Handbook, 2019)**

CBA AREA	DESIRED STATE	LAND MANAGEMENT OBJECTIVES
Protected Areas	Natural	Protected Areas are managed through Protected Area Management Plans and are therefore not managed through the ECBCP2019.
CBA 1	Natural	<p>Maintain in a natural state (or near-natural state if this is the current condition of the site) that secures the retention of biodiversity pattern and ecological processes:</p> <ul style="list-style-type: none"> <li>- For areas classified as CBA1, the following objectives must apply:</li> <li>- Ecosystem and species must remain intact and undisturbed;</li> <li>- Since these areas demonstrate high irreplaceability, if disturbed or lost, biodiversity targets will not be met;</li> <li>- Important: these biodiversity features are at, or beyond, their limits of acceptable change.</li> </ul> <p>If land use activities are unavoidable in these areas, and depending on expert opinion of the condition of the site, a Biodiversity Offset must be designed and implemented</p>
CBA 2	Natural	<p>Protected Areas are managed through Protected Area Management Plans and are therefore not managed through the ECBCP2019.</p> <p>For areas classified as CBA2, the following objectives must apply:</p> <ul style="list-style-type: none"> <li>- Ecosystem and species must remain intact and undisturbed;</li> <li>- There is some flexibility in the landscape to achieve biodiversity targets in these areas. It must be noted that the loss of a CBA2 area may elevate other CBA 2 areas to a CBA 1 category.</li> <li>- These biodiversity features are at risk of reaching their limits of acceptable change.</li> </ul> <p>If land use activities are unavoidable in these areas, and depending on the condition of the site, set-aside areas must be designed in the layout and implemented. If site specific data confirms that biodiversity is significant, unique and/or highly threatened or that a Critically Endangered or Endangered species is present, Biodiversity Offsets must be implemented.</p>
ESA 1	Functional	<p>Maintain ecological function within the localised and broader landscape. A functional state in this context means that the area must be maintained in a semi-natural state such that ecological function and ecosystem services are maintained.</p> <p>For areas classified as ESA1, the following objectives apply:</p> <ul style="list-style-type: none"> <li>- These areas are not required to meet biodiversity targets, but they still perform essential roles in terms of connectivity, ecosystem service delivery and climate change resilience.</li> <li>- These systems may varying in condition and maintaining function is the main objective, therefore:</li> <li>- Ecosystems still in natural, near natural state should be maintained.</li> </ul>

CBA AREA	DESIRED STATE	LAND MANAGEMENT OBJECTIVES
		<ul style="list-style-type: none"> <li>- Ecosystems that are moderately disturbed/degraded should be restored.</li> </ul>
ESA 2	Functional	<p>Maintain current land use with no intensification</p> <p>For areas classified as ESA2, the following objectives apply:</p> <ul style="list-style-type: none"> <li>- These areas have already been subjected to severe and/or irreversible modification.</li> <li>- These areas are not required to meet biodiversity targets, but they may still perform some function with respect to connectivity, ecosystem service delivery and climate change resilience.</li> <li>- Objective is to maintain remaining function, therefore:</li> <li>- Areas should not undergo any further deterioration in ecological function.</li> <li>- Opportunities to change land use practices to improve ecological function (i.e. cultivation agriculture to livestock grazing agriculture) are desirable in ESA2 areas.</li> </ul>
Other Natural Areas (ONAs) and No Natural habitat Remaining (NNR)	Production	No desired state or management objective is provided for ONA or NNR.

According to the ECBCP spatial planning tool the project area occurs in an area categorised as a CBA 1 and CBA 2 area (Figure 5-4).

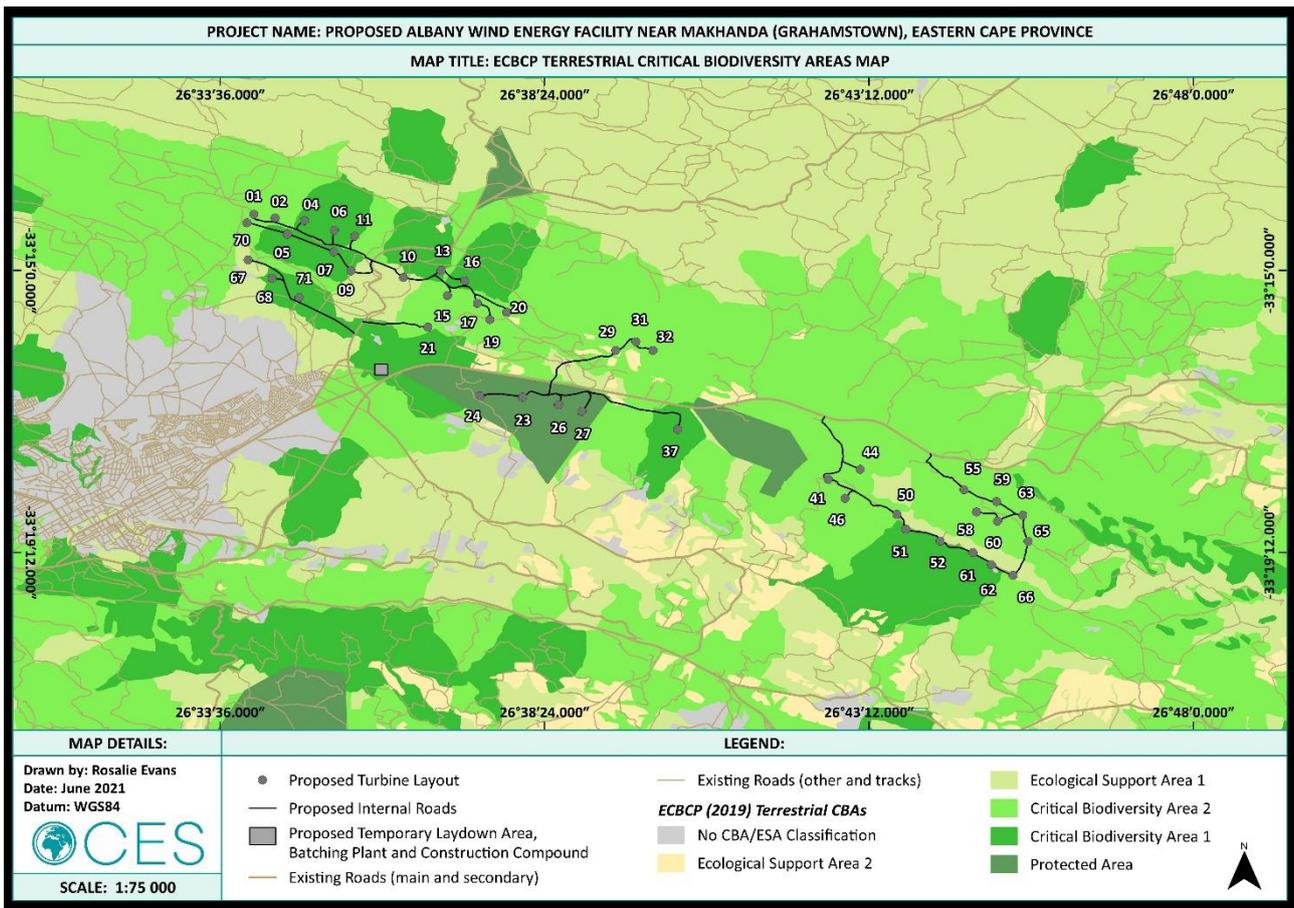


Figure 5-4: Terrestrial CBA (ECBCP) Map of the Albany WEF site and surrounding areas

**CBA 1** areas are those which should be maintained in a near natural state. The ECBCP recognizes that some of the areas that are classified as CBAs were in a degraded state, in such cases those classified as CBA 1 areas, are areas which are said to be “important remaining (degraded) areas”, where the area has little or no intact biodiversity remaining but is said to have potential to regain a CBA 1 status through rehabilitation. When related to the Biodiversity Land Management Classes (BLMCs), a degraded CBA 1 area needs to be maintained in a near natural state (landscape).

Whilst the CBA 1 categorised areas, had areas with rocky outcrop, SCC and watercourses, forest patches. Sections in the Eastern section (lower portion of the project) area had high invasion of Alien invasive species and was not in pristine condition. With that one would not deem it as a CBA 1 as there is high invasion of Alien invasive species, which have altered the vegetation found in these areas.

**CBA 2** areas should be managed to maintain the environment in a near-natural state. The proposed project area is classified as a CBA 2 (i.e. in a near natural state) varies from areas.

## 5.8 FAUNA

Amphibians and reptiles are well represented in sub-Saharan Africa. However, distribution patterns in southern Africa are uneven both in terms of species distribution and in population numbers (du Preez and Carruthers, 2009). Climate, centres of origin and range restrictions are the three main factors that determine species distribution. The eastern coast of South Africa has the highest amphibian diversity and endemism while reptile diversity is generally highest in the north eastern extremes of South Africa and declines to the south and west (Alexander and Marais, 2010).

### 5.8.1 REPTILES

South Africa has 350 species of reptiles, comprising 213 lizards, 9 worm lizards, 105 snakes, 13 terrestrial tortoises, 5 freshwater terrapins, 2 breeding species of sea turtle and 1 crocodile (Branch, 1998). Of those 350 reptile species, the Eastern Cape is home to 133 which include 21 snakes, 27 lizards and eight chelonians (tortoises and turtles). The majority of these are found in Mesic Succulent Thicket and riverine habitats.

Consultation of the Animal Demography Unit (ADU) historical records indicates that 62 species of reptiles are likely to occur in the project site (QDS 3326 BA, 3326 BC, and 3326BD). None of these species are conserved under the IUCN and only the Southern African Python (*Python natalensis*) is listed as PROTECTED on the National Environmental Management: Biodiversity Act (NEMBA). However, all lizards and tortoises are listed as a SCHEDULE II species on the PNCO list and will therefore require permits for their removal. Table 5-3 lists all of the reptilian Species of Conservation Concern (SCC) which are likely to occur within the study site.

**Table 5-3: Reptile species of conservation concern that are likely to occur in the project area (ADU).**

SCIENTIFIC NAME	COMMON NAME	SA RED LIST CATEGORY (SARCA)	IUCN	NEMBA	CITES	PNCO	REGION ENDEMIC	RECORDED ON SITE
<i>Boaedon capensis</i>	Brown House Snake	Least Concern	-	-	-	Sch. II	-	Yes
<i>Bradypodion ventrale</i>	Eastern Cape Dwarf Chameleon	Least Concern	-	-	App. II	-	Yes	-
<i>Chamaesaura anguina anguina</i>	Cape Grass Lizard	Least Concern	-	-	-	Sch. II	Yes	-
<i>Chersina angulata</i>	Angulate Tortoise	Least Concern	-	-	App. II	Sch. II	-	-
<i>Cordylus cordylus</i>	Cape Girdled Lizard	Least Concern	-	-	App. II	Sch. II	Yes	Yes
<i>Dasypeltis scabra</i>	Rhombic egg-eater	Least Concern	-	-	-	Sch. II	-	-
<i>Dasypeltis inornata</i>	Southern Brown Egg-eater	Least Concern	-	-	-	Sch. II	Yes	-
<i>Duberria lutrix lutrix</i>	South African Slug-eater	Least Concern	-	-	-	Sch. II	Yes	Yes
<i>Homopus areolatus</i>	Parrot-beaked Tortoise	Least Concern	-	-	App. II	Sch. II	Yes	Yes
<i>Lamprophis fuscus</i>	Yellow-bellied House Snake	Least Concern	-	-	-	Sch. II	Yes	-
<i>Lycodonomorphus rufulus</i>	Brown Water Snake	Least Concern	-	-	-	Sch. II	-	Yes
<i>Lycodonomorphus inornatus</i>	Olive House Snake	Least Concern	-	-	-	Sch. II	Yes	-
<i>Lycodonomorphus laevisissimus</i>	Dusky-bellied Water Snake	Least Concern	-	-	-	Sch. II	Yes	-
<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern	-	-	-	Sch. II	-	-
<i>Nucras lalandii</i>	Delalande's Sandveld Lizard	Least Concern	-	-	-	Sch. II	-	Yes
<i>Nucras taeniolata</i>	Albany Sandveld Lizard	Near Threatened	-	-	-	Sch. II	Yes	-
<i>Pedioplanis burchelli</i>	Burchell's Sand Lizard	Least Concern	-	-	-	Sch. II	Yes	Yes

SCIENTIFIC NAME	COMMON NAME	SA RED LIST CATEGORY (SARCA)	IUCN	NEMBA	CITES	PNCO	REGION ENDEMIC	RECORDED ON SITE
<i>Pedioplanis lineocellata pulchella</i>	Common Sand Lizard	Least Concern	-	-	-	Sch. II	-	-
<i>Philothamnus natalensis occidentalis</i>	Western Natal Green Snake	Least Concern	-	-	-	Sch. II	Yes	-
<i>Philothamnus semivariegatus</i>	Spotted Bush Snake	Least Concern	-	-	-	Sch. II	-	-
<i>Python natalensis</i>	Southern African Python	Least Concern	-	P	App. II	-	-	-
<i>Stigmochelys pardalis</i>	Leopard Tortoise	Least Concern	-	-	App. II	Sch. II	-	-
<i>Tropidosaura montana rangeri</i>	Ranger's Mountain Lizard	Not listed	-	-	-	Sch. II	-	Yes
<i>Varanus niloticus</i>	Water Monitor	Least Concern	-	-	App. II	-	-	-

## 5.8.2 AMPHIBIANS

Amphibians are an important and often neglected component of terrestrial vertebrate faunas. They are well represented in sub-Saharan Africa, from which approximately 600 species have been recorded (Frost, 1985). A relatively rich amphibian fauna occurs in the Eastern Cape, where a total of 32 species and sub-species occur. This represents almost a third of the species known from South Africa. Knowledge of amphibian species diversity in the study area is limited. However, according to the Animal Demographics Unit's Reptile Database, 17 species of frog have been documented in the Quarter Degree Squares that the project area falls in. Of these 17 species, none are listed as Schedule 1 on the PNCO list. However, all frogs and toads are listed as SCHEDULE II species on the PNCO list and will therefore require permits for their removal. None of these species are listed on NEMBA, and only the Giant Bull Frog (*Pyxicephalus adspersus*) is listed as NEAR THREATENED on IUCN's Red Data List. Please see Table 5-4 below for a full species list of frogs and toads which are likely to be found within the project area.

**Table 5-4: Amphibian species of conservation concern that are likely to occur in the project area (ADU).**

SCIENTIFIC NAME	COMMON NAME	IUCN	NEMBA	CITES	PNCO	RECORDED ON SITE
<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern	-	-	Schedule II	
<i>Breviceps adspersus</i>	Bushveld Rain Frog	Least Concern	-	-	Schedule II	Yes
<i>Cacosternum boettgeri</i>	Boettger's Caco	Least Concern	-	-	Schedule II	Yes
<i>Cacosternum nanum</i>	Bronze Caco	Least Concern	-	-	Schedule II	Yes
<i>Hyperolius marmoratus</i>	Painted Reed Frog	Least Concern	-	-	Schedule II	Yes
<i>Hyperolius semidiscus</i>	Yellowstriped Reed Frog	Least Concern	-	-	Schedule II	
<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern	-	-	Schedule II	Yes
<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Near Threatened	-	-	Schedule II	

SCIENTIFIC NAME	COMMON NAME	IUCN	NEMBA	CITES	PNCO	RECORDED ON SITE
<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern	-	-	Schedule II	Yes
<i>Sclerophrys pardalis</i>	Leopard Toad	Least Concern	-	-	Schedule II	
<i>Semnodactylus wealii</i>	Rattling Frog	Least Concern	-	-	Schedule II	
<i>Strongylopus fasciatus</i>	Striped Stream Frog	Least Concern	-	-	Schedule II	
<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern	-	-	Schedule II	
<i>Tomopterna tandyi</i>	Tandy's Sand Frog	Least Concern	-	-	Schedule II	
<i>Vandijkophrynus gariensis gariensis</i>	Karoo Toad (subsp. gariensis)	Not listed	-	-	Schedule II	
<i>Xenopus laevis</i>	Common Platanna	Least Concern	-	-	Schedule II	Yes
<i>Strongylopus grayii</i>	Clicking Stream Frog	Least Concern	-	-	Schedule II	Yes

### 5.8.3 MAMMALS

Large game makes up less than 15% of the mammal species in South Africa and a much smaller percentage in numbers and biomass. In developed and farming areas, this percentage is greatly reduced, with the vast majority of mammals present being small or medium-sized.

According to NEMBA, four PROTECTED terrestrial mammal species and two VULNERABLE terrestrial species have distributions that coincide with the project area (Table 5-5). Four (4) species are listed as either ENDANGERED or VULNERABLE on the South African Red Data List, and three (3) species are listed as either ENDANGERED or VULNERABLE on the IUCN Red Data List. Most terrestrial mammal species will tend to avoid areas disturbed during anthropogenic activities. However, there is the possibility that smaller and less mobile mammal species, such as moles, will be encountered. The Giant Golden Mole (*Chrysoxalax trevelyani*) is listed as an ENDANGERED species in the IUCN Red Data List, VULNERABLE on the SA Red Data List, and has a VULNERABLE status according to NEMBA.

**Table 5-5: Terrestrial Mammal species of conservation concern that are likely to occur in the project area (ADU).**

SCIENTIFIC NAME	COMMON NAME	SA RED LIST	IUCN	NEMBA	PNCO
<i>Atelerix frontalis</i>	South African Hedgehog	NT	LC	PR	Schedule II
<i>Chrysoxalax trevelyani</i>	Giant Golden Mole	VU	EN	VU	-
<i>Felis nigripes</i>	Black-footed Cat	LC	VU	PR	
<i>Mellivora capensis</i>	Honey Badger	NT	LC	PR	Schedule II
<i>Myosorex sclateri</i>	Sclater's Tiny Mouse Shrew	EN	LC	-	Schedule II
<i>Mystromys albicaudatus</i>	White-tailed Mouse	EN	EN	-	-
<i>Philantomba monticola</i>	Blue Duiker	VU	LC	VU	Schedule II
<i>Vulpes chama</i>	Cape Fox	LC	LC	PR	Schedule II

According to the 6-Month Progress Report compiled by Inkululeko Wildlife Services, 14 bat species have a high likelihood of occurring on site. Of these species, 7 are found on either the South African Red Data List or the IUCN Red Data List (Table 5-6).

**Table 5-6: Bat species of conservation concern likely to be found within the project area.**

SCIENTIFIC NAME	COMMON NAME	SA RED LIST	IUCN	NEMBA	PNCO
<i>Kerivoula lanosa</i>	Lesser Woolly Bat	NT	LC	-	Schedule II
<i>Myotis tricolor</i>	Temminck's Mouse-eared Bat	NT	LC	-	Schedule II
<i>Miniopterus schreibersii</i>	Schreibers Long-fingered bat	LC	NT	-	Schedule II
<i>Miniopterus fraterculus</i>	Lesser Long-fingered bat	NT	LC	-	Schedule II
<i>Miniopterus natalensis</i>	Natal Long-fingered bat	NT	LC	-	Schedule II
<i>Rhinolophus capensis</i>	Cape Horseshoe Bat	NT	LC	-	Schedule II
<i>Rhinolophus swinnyi</i>	Swinny's Horseshoe Bat	EN	LC	-	Schedule II

#### 5.8.4 AVIFAUNA

While there are nine (9) bird species are endemic to South Africa, there are no species that are endemic to the Eastern Cape. However, there are 62 threatened species within the Eastern Cape Province (Barnes, 2000). Most of these species occur in grasslands or are associated with wetlands, indicating a need to conserve what is left of these ecosystems (Barnes, 2000). According to SABAP2, for the QDS 3326BA, 3326BC and 3326BD, 277 bird species have distributions which incorporate the project area. Species include:

- ✦ Blue Crane (*Anthropoides paradiseus*), which is a CRITICALLY ENDANGERED species according to NEMBA, as well as a listed species on APPENDIX II of CITES;
- ✦ Denham's Bustard (*Neotis denhami*) which is listed as PROTECTED on the NEMBA list; and
- ✦ Martial Eagle (*Polemaetus bellicosus*) which is listed as THREATENED.

Sixteen (16) bird SCC are likely to occur in the project area. Ten (10) of these species are considered to be of high importance with regard to Wind Energy Facilities (Table 5-7).

The proposed Albany WEF is **NOT** situated within 50 km of any of the South African Important Bird and Biodiversity Areas (IBAs).

**Table 5-7: Bird species of conservation concern that are likely to occur in the project area which are considered to be of 'high importance' with regard to WEFs.**

SCIENTIFIC NAME	COMMON NAME	RED LIST STATUS	CITES	NEMBA	PNCO
<i>Afrotis afra</i>	Korhaan, Southern Black	VU	-	-	Schedule II
<i>Anthropoides paradiseus</i>	Blue Crane	VU	Appendix II	Critically Endangered	Schedule II
<i>Ciconia nigra</i>	Stork, Black	VU	Appendix II	Vulnerable	Schedule II
<i>Circus maurus</i>	Black Harrier	VU	-	-	Schedule II
<i>Falco biarmicus</i>	Falcon, Lanner	VU	-	-	Schedule II
<i>Mycteria ibis</i>	Stork, Yellow-billed	EN	-	-	Schedule II
<i>Neotis denhami</i>	Denham's Bustard	NT	-	Protected	Schedule II
<i>Polemaetus bellicosus</i>	Martial Eagle	NT	-	Threatened	Schedule II

<i>Sagittarius serpentarius</i>	Secretary Bird	VU	Appendix II	-	Schedule II
<i>Stephanoaetus coronatus</i>	Crowned Eagle	NT	-	-	Schedule II

## 5.9 RIVERS, WATERCOURSES AND DRAINAGE LINES

### 5.9.1 NFEPA WETLANDS AND RIVERS

After several years of development and testing, a National Wetland Classification System (NWCS) was completed in 2013. The South African National Biodiversity Institute (SANBI), through its National Wetland Inventory project, initiated a collaborative process to develop a classification by which wetland habitat types with shared natural attributes can be grouped together. The classification system is intended to be used throughout the country for a number of different applications, with a view to provide wetland specialists, academics, government and other role players with a common language when distinguishing different types of wetlands for management and conservation purposes. The National Wetland Inventory maps are provided by SANBI through National Freshwater Ecosystem Priority Area (NFEPA) wetland maps, which classify the major wetlands and water bodies in the country at a coarse spatial scale. The classification was applied to the wetlands included in the inventory's National Wetland Map after extensive field testing throughout the country and through the National Freshwater Ecosystem Priority Areas (NFEPA) project. Please refer to Figure 5-5 for a map illustrating the NFEPA Wetlands and Rivers.

According to the NFEPA a number of wetlands were found to occur within 500 m of the project boundary. No rivers are found to occur within 32 m of the project area, but numerous drainage lines will be impacted by the proposed Albany WEF. Water Use Licences (WUL) will have to be obtained from DWA prior to the commencement of any construction activity within this area.

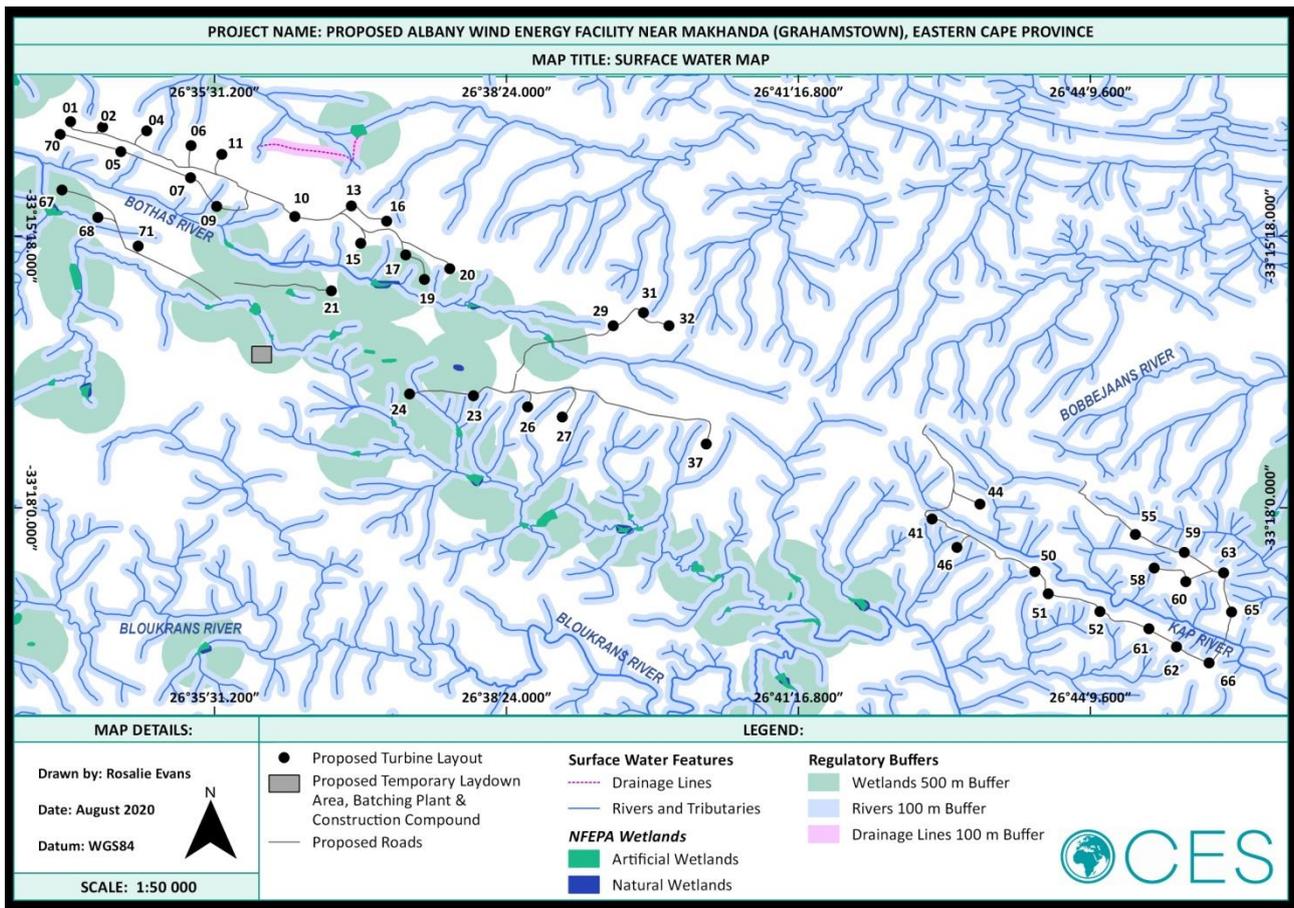


Figure 5-5: Surface Water Map of the Albany WEF site and surrounding areas.

The following wetland types are found within the project boundary (these wetlands will be assessed in the Ecological Specialist Report:

#### A) BENCH FLAT

A near-level wetland area (i.e. with little or no relief) with little or no gradient, situated on a plain or a bench in terms of landscape setting. The primary source of water is precipitation, with the exception of flats along the coast (usually in a plain setting) where the water table (i.e. groundwater) may rise to the surface or near to the surface in areas of little or no relief because of the location near to the base level of the land surface represented by the presence of the ocean. Dominant hydrodynamics are bidirectional vertical fluctuations, although there may be limited multidirectional horizontal water flow in some cases. Water exits in a flat through evaporation and infiltration.

#### B) BENCH DEPRESSION

A near-level wetland area (i.e. with little or no relief) with little or no gradient, situated on a plain or a bench in terms of landscape setting. A depression is a landform with closed elevation contours that increases in depth from the perimeter to the central area of the greatest depth, where water accumulates. Water sources are precipitation, ground water discharge, interflow and overland flow.

#### C) SLOPE SEEP

An inclined stretch of ground that is not part of a valley floor, typically located on the side of a mountain, hill or valley. A slope seep is a wetland area located on gently sloping land dominated by the gravity driven movement of material down-slope. Seeps are generally associated with strong, unidirectional flow of water horizontally. Water input is primarily groundwater or precipitation.

#### **D) VALLEY FLOOR: CHANNELLED VALLEY-BOTTOM WETLAND**

Small depressional areas within a channelled valley-bottom wetland can result in the temporary containment and storage of water within the wetland. Water generally exits in the form of diffuse surface flow and interflow, with the infiltration and evaporation of water from these wetlands also being potentially significant

Water bodies play an important ecological role which is associated with the vegetation that is found to occur in these areas, this vegetation plays a role in the improvement of the water quality and the trapping of sediment (Daily,1997). Bulrushes said to be generally beneficial species as they play a role in controlling erosion and filtering mudding floodwaters (Bromilow, 2010).

The maintenance of these water bodies is important as it provides suitable habitat for hydrophytic (water loving) vegetation and riparian vegetation found to occur in the wetland area.

## 6 DESCRIPTION OF THE ENVIRONMENT: SOCIO-ECONOMIC

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

By May 2015 the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) had approved 79 wind, solar and hydro projects and tasked each of them to contribute towards local community development through socio-economic and enterprise development, local ownership and local job creation (Wlokas, 2015). 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, the companies could consult more with regards to recruitment of workers and trustees for the community trust. Construction follows with the employment of workers and some project companies could even start spending on limited socio-economic development (SED) and enterprise development (ED) projects at this early stage. Once operational, SED and ED spend will usually increase.

From a socio-economic perspective, the project will thus undergo the following processes:

#### **6.1.1 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 (REIPPPP) 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.

#### **6.1.2 EMPLOYMENT**

The employment requirement ensures that a percentage of the South African workforce (12 to 20%) in the project should come from the local community. Figures obtained for BW 1 to 4 (17 IPPs) for the Eastern Cape province indicate that 53% of jobs were retained in local communities, compared with 51 and 45% in the Northern Cape and Western Cape provinces respectively (McDaid, 2016). In general the local employment component of the renewable energy projects fares much better than originally anticipated.

### 6.2 STAKEHOLDERS FOR THE SOCIAL ASSESSMENT OF THE ALBANY 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
- Makana LM: Directorates: Local Economic Development & Planning; Public Safety & Community Services
- ✦ SECONDARY SPHERE OF IMPACT
  - Adjacent and surrounding landowners
  - Sarah Baartman DM (SBDM)
  - 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

## 6.3 BASELINE INFORMATION OF THE STUDY AREA

### 6.3.1 MAKANA LOCAL MUNICIPALITY

Makana LM is strategically located between East London and Port Elizabeth, two of the Eastern Cape's largest industrial centres, and is one of the nine Municipalities that form the Sarah Baartman DM (formerly Cacadu DM). The coastal cities of East London and Port Elizabeth are served by well-equipped container ports and have major airports linking them to Cape Town, Durban and Johannesburg ([www.localgovernment.co.za](http://www.localgovernment.co.za)).

In 2011 the Makana LM population figure was 80 390 with the largest concentration of people living in Makhanda. The LM covers an area of 4 375.62 km<sup>2</sup> and constitutes 7.5% of the SBDM.

Makhanda is famous as one of the leading cultural, educational and tourist centres and hosts the National Arts Festival in South Africa. It is the primary location of Rhodes University and other prominent and internationally acclaimed primary and high schools/colleges are found in Makhanda (Makana LM IDP Revision 5).

Makana LM continues to confront various challenges in terms of service delivery, administration and financial management, and many of these have recurred over long periods of time. Development priorities that emerged through the IDP public participation processes are:

- ✦ Infrastructure Development
- ✦ Capacity Building and Support to local municipalities
- ✦ Economic Development
- ✦ Community Services
- ✦ Institutional Development

### 6.3.2 DESCRIPTION OF THE STUDY AREA AND LAND USES

In 2011, Makana LM was delineated into fourteen Wards. The largest portion of the study area is located in Ward 13, a portion is in Ward 11 and it borders Wards 9 and 6 in Makhanda. The majority of the land uses in the study area pertain to agriculture, gaming and residential land uses. This will be expanded on in the Social Specialist Report and in the Agriculture & Social Impact Assessment Report.

## 6.4 KEY DEMOGRAPHIC INFORMATION

Where available the statistics and data of Makhanda are included and analysed, as it is expected that many of the socio-economic impacts will manifest here due to the town's proximity to the project.

### 6.4.1 POPULATION SIZE

Census 2011 determined the Sarah Baartman DM population to be 450 584. The DM houses 6.8% of the Eastern Cape Province's population; it is sparsely populated with eight people per square kilometre (Sarah Baartman DM IDP, 2015/16 Review). This results in high costs per capita of providing services in the District. Population concentrations are in Makana, Kouga and Ndlambe, with more than 50% of residents in the District residing in these Municipalities. One explanation for this distribution is the variation in land types, agricultural practices and associated income generating opportunities that are characteristic of Sarah Baartman's inland and coastal areas.

Geographically the Makana LM has a relatively large population living in a relatively small area with a population density of 18.4 per square kilometre. It has a population of 80 390 with 21 388 households, that accounts for 17.8% of the District's population (Makana LM IDP Revision 5; Census 2011). The 2016 population is estimated at 82 060 ([www.localgovernment.co.za](http://www.localgovernment.co.za); StatsSA).

With a population of 50 220, Makhanda accounts for 62.5 % of the local Municipal population (StatsSA, Census 2011). This geographic area has 13 428 households with an average of 3.7 members in each household. However, the Makana LM IDP (Revision 5) indicates that a larger section of the local Municipal population, approximately 80%, is located in Makhanda. 10% are located in Alicedale, 5% in Riebeeck East and 4% in the rural areas. The population is highly urbanised.

### 6.4.2 POPULATION GROWTH

The Makana LM population increased from 74 529 in 2001 to 80 390 in 2011, indicating a 0.8% growth per annum and a 7.9% population growth over the 10-year period. The population has increased at a slower pace between 2011 and 2016 at 0.47% per annum ([www.localgovernment.co.za](http://www.localgovernment.co.za)).

The Sarah Baartman DM IDP (2015/16 Review) states that the Makana LM population growth can be attributed to the number of informal settlements as a result of general urbanisation and farm evictions. However, it is evident that an influx of people from other countries also takes place. The 2011 Makana LM population comprised of 90% South Africans, but the overall SA population decreased with 0.1% per annum. In contrast to this, there was a 7.6% growth per annum in the population that originates from the broader Africa, and a 69% increase per annum in the number of people from Asia (Makana LM IDP Revision 5; StatsSA). The Makana LM IDP further indicates that the larger Metropolis such as Buffalo City Metropolitan Municipality and Nelson Mandela Bay Metropolitan Municipality receive the larger bulk of migrants, due to the possibility of employment opportunities.

Even though the Makana LM population growth remains below the average national population growth of 35.7% from 2001 to 2011, the local population increase remains a concern as it has an impact on grant funding allocation, housing and service delivery.

### 6.4.3 AGE AND GENDER

The age and sex 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

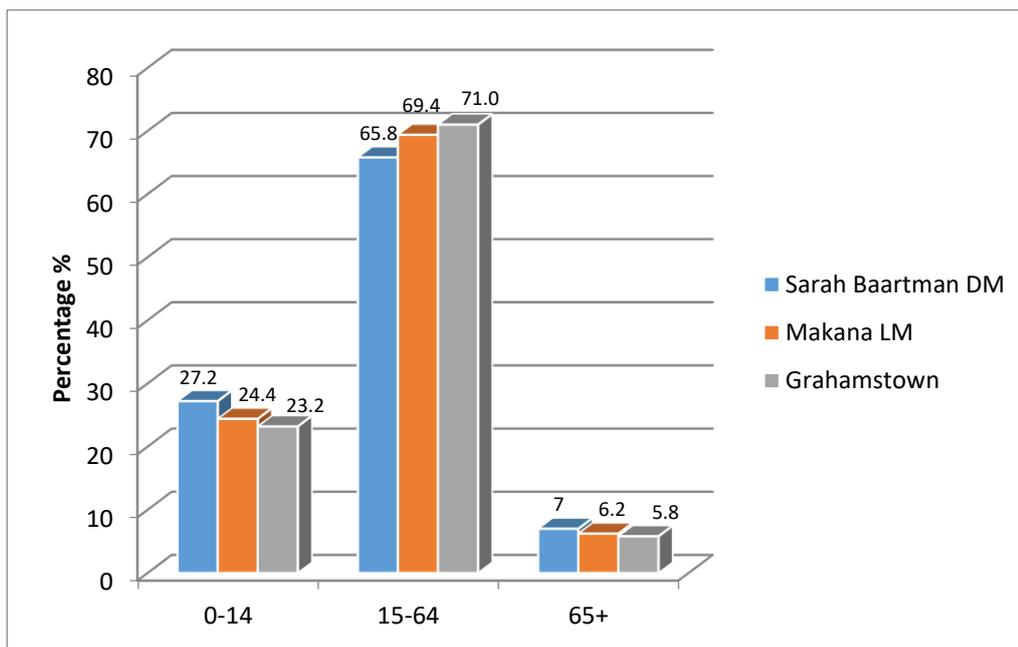
elderly and children, employment opportunities for those in the economic age groups, and provision of social security services such as pension and assistance to those in need.

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 LM 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.

The local Municipal sex ratio is fairly even with 9 males for every 10 females (Makana LM IDP Revision 5).

Stats SA 2011 reflects that 27.2% of the Sarah Baartman DM and 24.4% of the Makana LM population is young and less than 15 years of age, which requires intergovernmental planning efforts to jointly focus on improved education and providing sport and recreation facilities. Sport in particular plays an important part in youth development and relevant role-players should form partnerships to promote sport initiatives and youth programs in Makana. The high number of children could also be an indication of a dependency on child support grants (Makana LM IDP Revision 5).

When the local statistics of Makhanda are compared with the age breakdown of the broader Municipality and District (Figure 6-1), it is evident that Makhanda has a slightly larger EAP group (aged between 15 and 65 years). This age group tends to settle in and near the urban centres where job opportunities are more easily accessible and pressure is thus placed on public and private business to generate job opportunities.



**Figure 6-1: Age and Gender of DM, LM and Makhanda.**

The 2016 district and local Municipal population age analysis has shown an increase in the young (0-15 years), and a decline in the EAP as well as the elderly ([www.localgovernment.co.za](http://www.localgovernment.co.za)). The importance of education, sport and recreation for youth development is continuously increasing. 2016 statistics for Makhanda could not be obtained.

**Table 6-1: Local and District Municipality Age Analysis.**

	0-15 YEARS	16-64 YEARS	65+
Sarah Baartman DM			
2011	27.2	65.8	7
2016	30.1	63.6	6.3
Makana LM			
2011	24.4	69.4	6.2
2016	26.8	67.6	5.6

#### **6.4.4 RACE AND LANGUAGE**

In Makana LM 78% of the population is Black African, followed by Coloured (12.1%) and White (8.7%). On a local level, the Makhanda population consists of 72.8% Black Africans, 14.3% Coloureds and 11.2% Whites (Census 2011). The most popular languages spoken in the Municipality are isiXhosa (66.5%), Afrikaans (13.8%) and then English (9.7%) (Makana LM IDP Revision 5).

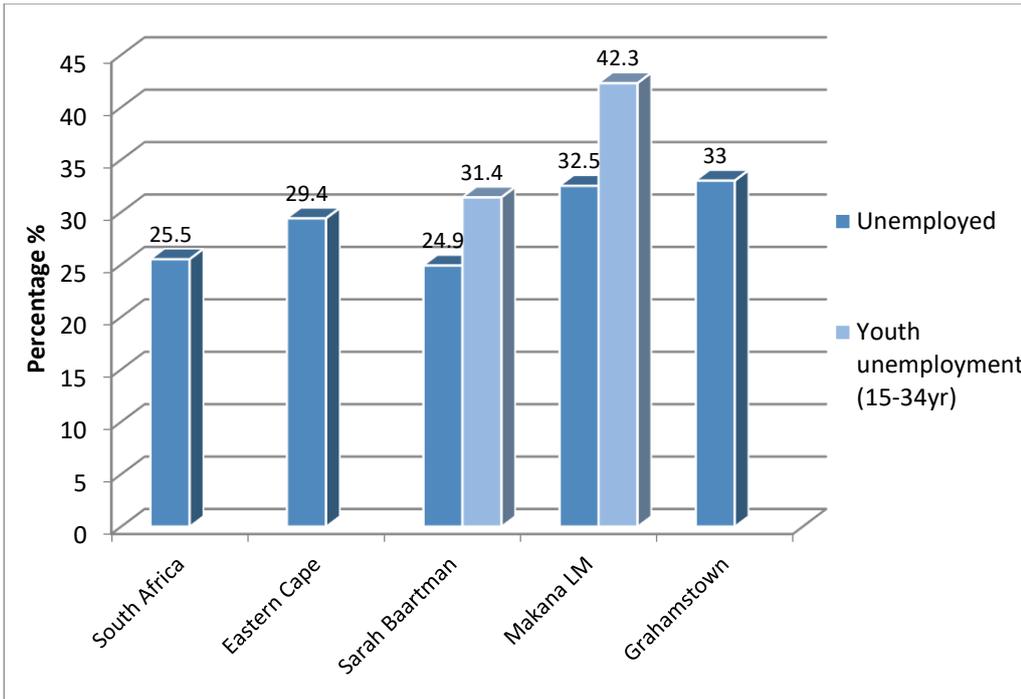
### **6.5 ECONOMIC BACKGROUND**

#### **6.5.1 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 Eastern Cape Province has a reasonably high official unemployment rate at 29.4% relative to the overall official unemployment rate for South Africa of 25.5%. It has increased from 28.7% in 2014 to 29.4% in 2015. Approximately 4 out of 5 people in the Province's economically active population are employed (IPP Quarterly Report, September 2016).

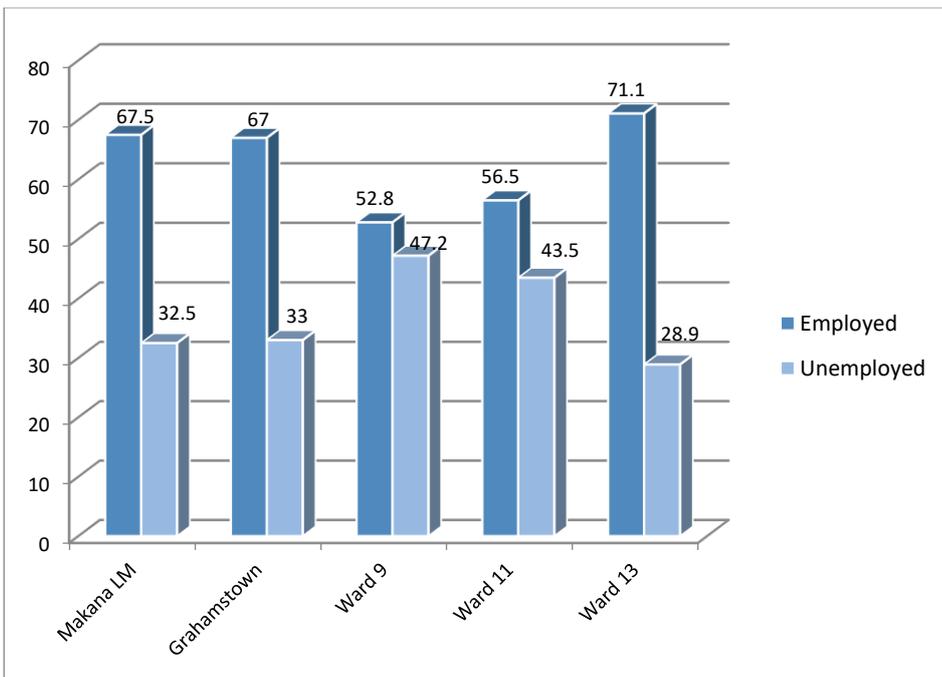
The official unemployment rate of Sarah Baartman DM is 24.9% (Census 2011), which is lower than the Province and much lower than the Local Municipal unemployment of 32.5%. StatsSA 2011 concludes that 5 705 of the youth (aged 15 to 34 years) in Makana LM are unemployed (Makana LM IDP Revision 5). Youth unemployment is higher than the overall unemployment in both the district and local Municipality, as depicted below.



**Figure 6-2: Youth Unemployment Percentage of RSA, EC, DM, LM and Makhanda.**

In terms of gender, Sarah Baartman DM IDP reflects that in the district African male official unemployment is relatively low by rural South African standards (21%). African and Coloured females experience slightly higher unemployment at around 25%. The problem is less serious in the case of Coloured Males which is below 20%.

Interesting to note is that in Ward 13 (where a large section of the project site lies) 71.1% of the labour force is employed. This could perhaps be the result of employment opportunities available on farms in this Ward and that the unemployed population prefer to settle near the urban centres. The figure below compares employment in the affected Wards with local employment in the region.



**Figure 6-3: Employed vs Unemployed of Makana LM, Relevant Wards and Makhanda.**

## 6.5.2 INCOMES

Annual household incomes for Makana LM and Makhanda are compared in the figure below.

Annual household incomes are generally higher in Makhanda when compared with the broader local Municipality. Of the 387 households in Makana that earn more than R614 001 annually, 303 reside in Makhanda (Census 2011).

According to the Makana LM IDP (StatsSA 2011) 45% of the local Municipal population (individual income) earn no income, and 10.5% earn less than R801 per month. The majority of the population earn between R801 – R1 600 per month (16.8%). Only 9.6% earn more than R6 401 p/m.

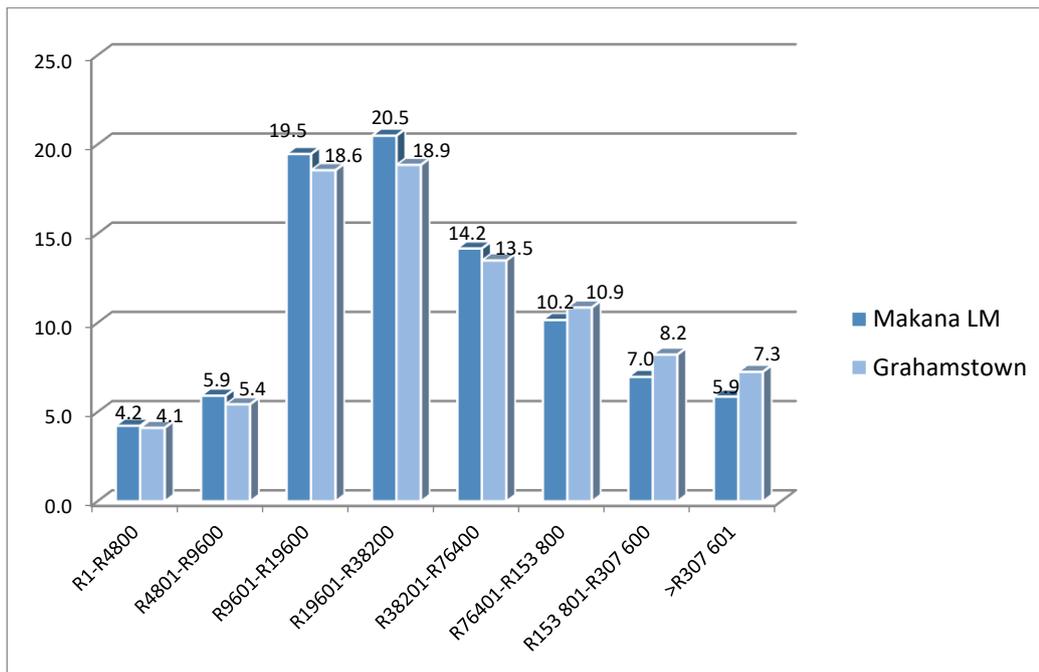


Figure 6-4: Income Level of Makana LM and Makhanda.

## 6.5.3 ECONOMIC SECTORS & EMPLOYMENT

During 2014 the largest employer in the Eastern Cape Province was the community and social services sector which accounts for 29.9% of the labour market in the Province. Thereafter, most employment opportunities were offered within the trade sector (16.6%), finance (12.0%) and manufacturing (11.6%). Electricity only accounted for 0.5% of total employment in the Province (IPP Quarterly Report, September 2016).

Sarah Baartman DM's major employers are community and social services (54%), trade (13%), which includes retail and tourism, followed by finance (12%) and manufacturing (8%). Electricity accounts for 1% of total employment in the District (Sarah Baartman DM IDP, 2015/16 Review).

Agriculture is a low employment contributor in the DM at 4%. This could partly be attributed to the land mass that is dominated by semi-desert Karoo landscape, which restricts agricultural production to extensive practices that uses low labour inputs relative to the land area being farmed.

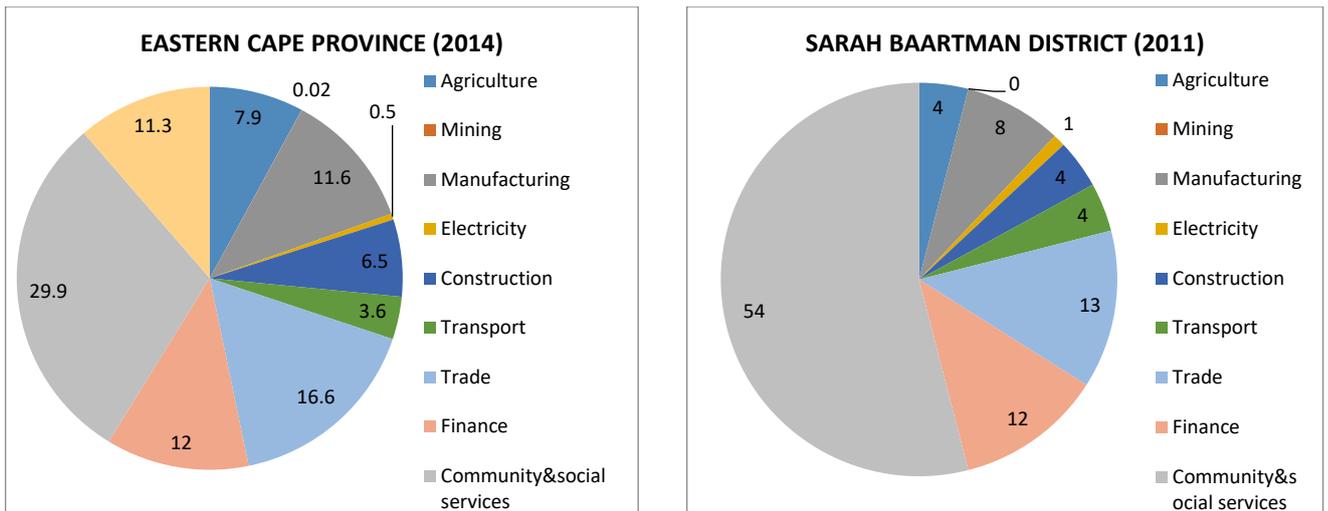


Figure 6-5: Employment Sectors of EC and DM.

While government services is the dominant sector in the Province’s economy, financial services, trade, automotive and component manufacturing, agro-processing and tourism also contribute significantly to total provincial output. The Province has a relatively diverse economy, but economic activity is largely concentrated around the urban metropolitan centres of Nelson Mandela Bay and Buffalo City. The Province is exploring opportunities for economic development in the remainder of the Province. Electrical power generation presents an excellent opportunity to enhance economic activities in rural areas (IPP Quarterly Report, September 2016).

At this stage, the electricity sector only contributes 3% to the Sarah Baartman DM economy. Community services (36%), trade (18%) (including tourism) and finance (17%) are the main economic contributors, whilst Government, trade, finance and business are the main economic sectors in Makana LM (Figure 6-6).

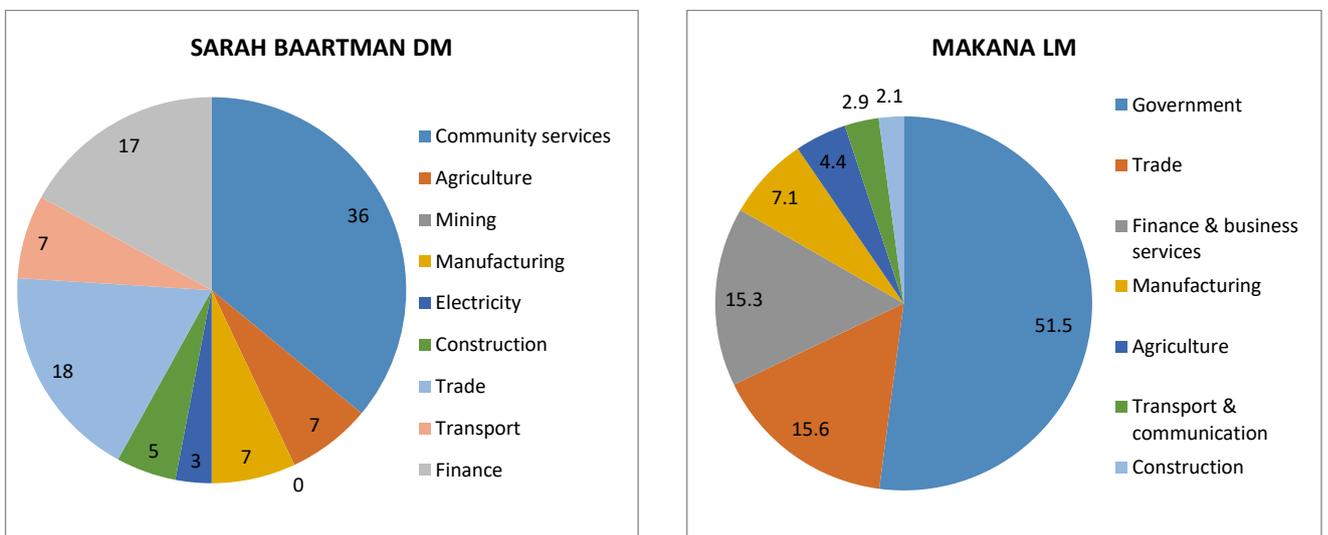


Figure 6-6: Economic Sectors of DM and LM.

### 6.5.4 ECONOMIC DEVELOPMENT

The Sarah Baartman DM and Makana LM have identified specific focus areas with economic development potential that could contribute significantly to economic growth and employment creation within the Municipalities. The most important sectors are discussed below. Some of these initiatives have already been executed, but the implementation and progress of Renewable Energy projects are especially noteworthy.

## A) INDEPENDENT POWER PRODUCTION PROJECTS

The Eastern Cape has attracted almost a quarter of the Independent Power Producers Procurement Programme (IPPPP) projects in South Africa to date. The electrical energy that will become available from the investments in bid windows (BW) 1, 2, 3, 3.5, 4 and 5 will equate to more than 60% of the Eastern Cape's own needs. Although production is only ramping up as IPPs become operational, 3 698 GWh have already been generated by the renewable energy portfolio in the Eastern Cape since inception to date, thereby offsetting 3.75 Million tons of CO<sub>2</sub> emissions. In this quarter alone, the projects generated 483 GWh (IPP Quarterly Report, September 2016).

Of the 17 renewable energy IPPs in the Eastern Cape Province, wind has the dominant share with 16 wind IPPs or 95% of total IPP capacity, with only one sizable solar PV project of 70 MW. The Province has attracted 43% of the total wind capacity procured in BW1 to BW4 and BW5 under the REIPPPP in South Africa, contributing 1 440 MW of the national total 3 366 MW wind power (IPP Quarterly Report, September 2016).

In addition to renewable energy power production and the offset of CO<sub>2</sub> emissions, far-reaching socio-economic advantages manifest. These include procurement, enterprise development, employment creation, local equity and socio-economic development for local communities. The total foreign equity and financing invested in REIPPs (BW1 - BW4 & BW5) in the Eastern Cape Province reached R9.2 billion. This is 17% of total investment attracted into South Africa by the REIPPPP.

The IPP Quarterly Report for Eastern Cape Province states that the committed procurement spent in the Province, during both construction and production, amounts to R 25.1 billion. Of this, R7.4 billion (29%) has already been spent. 41% of the total project value in the Eastern Cape has been allocated for local procurement, with the intent of stimulating the development of localised industries and the 'green' economy. 62% of the committed local spend have already been realised.

The commitments made towards local enterprise development in the Province for BW1 to BW4 and BW5 is R1.2 billion. This contribution will accrue over the operational life of the projects which has only started. As a result, only a small percentage has been realised at this early stage of the 20-year portfolio operational life.

Employment remains a top priority in the Eastern Cape. IPP investments within the Province alone have contributed to new employment opportunities for SA citizens estimated more than 18 000 job years over the construction and operational life of the plants. 42% of these new employment opportunities have been retained within local communities. The Reports indicate that local employment creation has surpassed expectations, achieving 116% of what was planned. Employment for South African citizens, including people from communities local to the IPP operations in the Eastern Cape were 4 806 job years as at end September 2016.

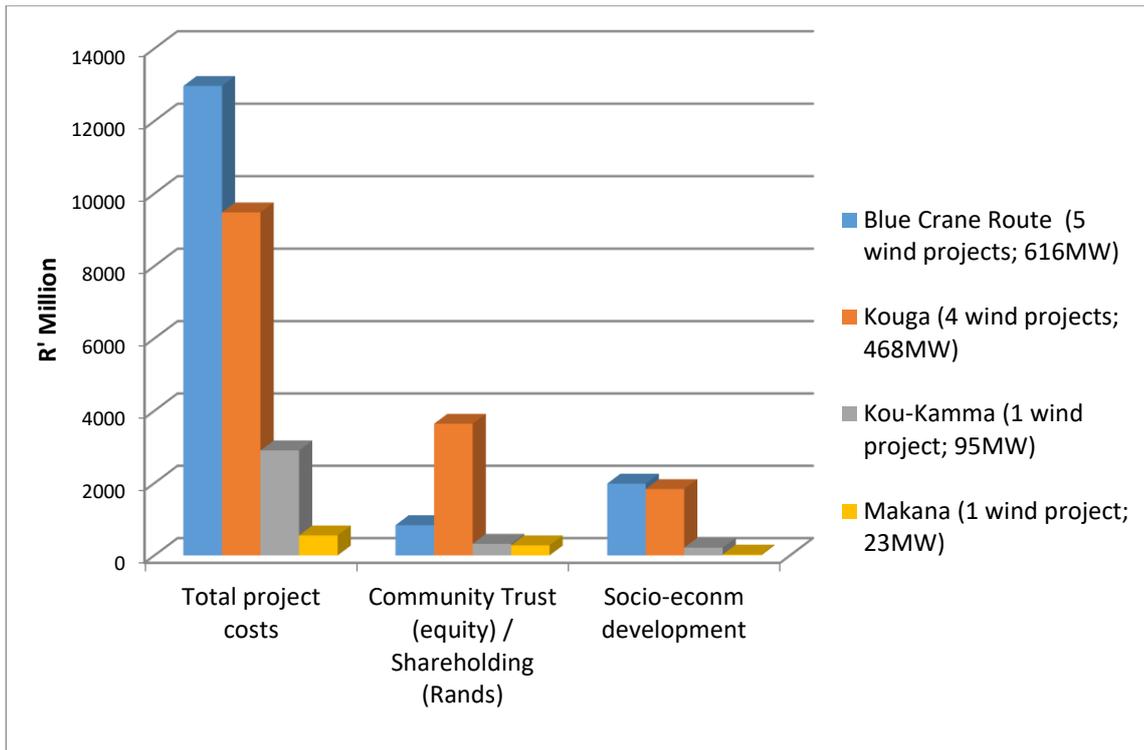
In addition to direct employment, the Strategy also recognised employment opportunities in manufacturing and supporting industries associated with the electrical energy industry and the development of new electricity generation capacity. The Province is therefore proactively promoting renewable energy manufacturing and technology development opportunities and positioning the Coega industrial development zone (IDZ) as the 'green' technology hub in South Africa in this regard.

Socio-economic development (SED) and economic development (ED) expenditure under the IPPPP are focused on education and skills development, social welfare, healthcare, general administration, and enterprise development. The IPP projects procured in the Eastern Cape will make a combined socio-economic commitment of R4.5 billion over the 20-year project life. Of this SED contribution, R3.9 billion has been committed to local communities located within the vicinity of the IPP projects in the Eastern Cape. SED distribution takes place as follows (IPP Quarterly Report, September 2016):

**Table 6-2: Socio-Economic Development Distribution.**

EDUCATION AND SKILLS	SOCIAL AND WELFARE	HEALTH CARE	GENERAL ADMINISTRATION	ENTERPRISE DEVELOPMENT
44%	20%	5%	12%	19%

The figure below demonstrates that contributions of the eleven executed Wind Energy Projects towards Local Municipalities and communities in the Sarah Baartman DM have been significant. In addition to SED, Black South Africans in Eastern Cape hold 38% of the shares across the complete supply chain (for the 13 projects in BW1, BW2 and BW3). Local communities hold 17% equity in the IPPs of BW1, BW2 and BW3.



**Figure 6-7: IPP Project Finances comparison.**

Some constraints have been identified. The accessibility of the interior is problematic and may impede the development of new power infrastructure under the IPPPPP in rural areas. Transportation and regional development growth corridors have been identified, as well as plans to strengthen the transmission grid, but prioritised delivery on these plans will be critical to fully capture the opportunities offered by the REIPPPP.

Besides its infamous wind potential, the Province has also identified potential for bio-fuel production and electrical power generation from small hydro, solar, biomass and possibly tidal or wave energy. However, large scale biomass production is dependent on agricultural infrastructure, sustainability and possible environmental impact. The Hydro power generation capacity / potential exists in the Blue Crane Route region along the Fish River (Sarah Baartman DM IDP, 2015/16 Review).

**B) TOURISM**

Tourism is well established in the DM and contributes R680 million to the Gross Geographic Product (GGP) of the District. Tourism attractions include the well-known Tsitsikamma National Park, the Baviaanskloof Mega-Reserve (a World Heritage Site) and the Addo Elephant National Park and the coastal resorts of

Jeffrey's Bay and Port Alfred. Farm tourism is beginning to develop in the Karoo, and Graaff-Reinet is commonly visited for its history and architecture.

Tourism spend in the District has shown rapid growth and has reached a plateau at about R3 Billion per annum. After a sharp decline, international tourism is rising again with domestic tourism remaining buoyant (Sarah Baartman DM IDP, 2015/16 Review).

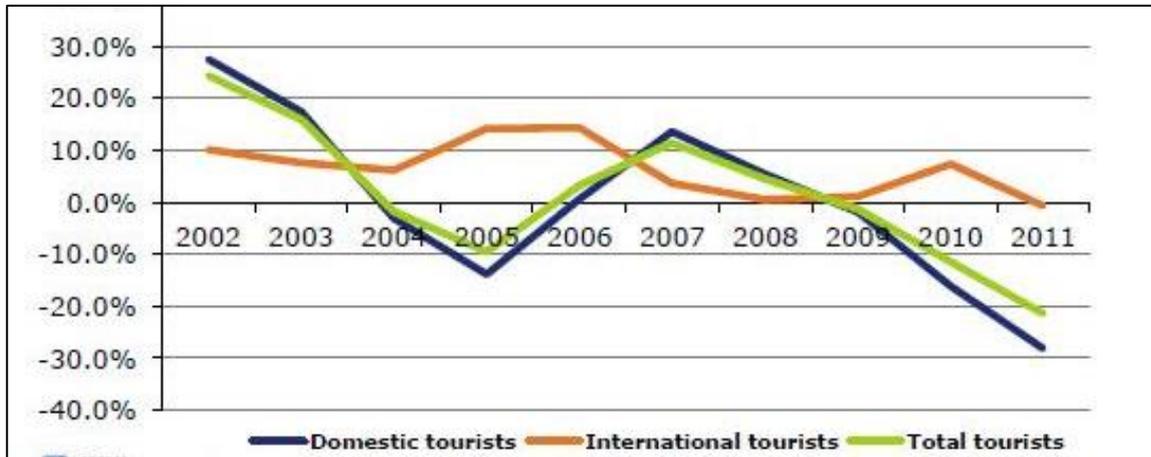


Figure 6-8: Tourism GDP in the DM.

Bed nights sold to foreign tourists are staying relatively constant at about 500 000 per annum whilst bed nights sold to domestic tourists are heading towards the 3.5 million mark. This economic sector has massive potential for growth.

According to the Sarah Baartman DM Tourism Master Plan, it can be calculated that tourism contributes as follows to the local economy:

- Supports 1 936 jobs in the tourism industry;
- Supports a total of 4 413 jobs within the tourism economy;
- Supports the equivalent of 294 SMMEs in the tourism economy.

On a more local level, the heritage resources of the Makana LM is significant and needs to be conserved in terms of the provisions of the National Heritage Resources Act (Act 25 of 1999 - NHRA) as it contributes to the local economy and has potential for growth. Heritage resources comprise not only worthy buildings and urban precincts, but also include physical and cultural landscapes. In addition to this, the Makana area has nearly a million hectares devoted to game. A range of public and private nature reserves span the area, from the world-famous Shamwari in the west to the magnificent Double Drift and Kwandwe Reserves in the east (Makana LM IDP Revision 5).

Makhanda is the hub of the Makana LM and has more than 70 declared National Heritage Sites. One of these is the highest church spire in the country. Makhanda was founded in 1812 and is entrenched in historical events, from the 1820 Settlers to a 100-year-old University. It also hosts some of the oldest schools ([www.localgovernment.co.za](http://www.localgovernment.co.za)). Each year, Makhanda comes alive with activity when the National Arts Festival comes to town. Visitors get the chance to see performances from national artists, experience the local markets, and get a taste of culture and indigenous cuisines ([www.localgovernment.co.za](http://www.localgovernment.co.za)).

### C) AGRICULTURE

Agriculture contributes approximately R690 million to the Gross Geographic Product (GGP) of the District (Sarah Baartman DM IDP, 2015/16 Review). Cattle and dairy farming are dominant in the areas around Makhanda, Cookhouse, Alexandria and Humansdorp. However, in other areas stock production has seen a decline in the past decade, primarily as a result of game farm establishment and the expansion of the Addo

National Elephant Park. Game reserves are now a major industry within the district, which contributes to the tourism sector.

Linked to agriculture is agro-processing and manufacturing, which is currently still a relatively small sector limited to food and dairy. Many of the agro-processing opportunities are also coupled with the expansion of agricultural production to supply raw materials to the identified potential/new agro-processing facilities. Furniture production is present in the larger towns of Makhanda and Humansdorp. Small businesses and craft co-operatives in district towns focus on specialty products ranging from hand knitted mohair items to essential oils. Other existing and new opportunities include the mohair industry, vegetable processing, essential oils and culinary production, apiculture (beekeeping), exotic fruits, pork industry, citrus, deciduous fruits, chicory and so forth (Sarah Baartman DM IDP, 2015/15 Review).

#### **D) SMME Development**

SMMEs are the engine for growth in Sarah Baartman DM. The majority of people in the District live in the rural areas and most depend on agriculture and other rural economic activities. Most communities produce on a subsistence level and have limited access to financial markets that cannot effectively supply the financial resources and other products needed by the emerging SMME sector.

In order to contribute to economic development in the District, SMMEs require support to create an enabling environment where engagement with financial institutions can take place. In spite of the significant contributions that they make towards GDP, employment and rural livelihoods, SMMEs continue to face a plethora of challenges that inhibit their growth and development beyond mere survivalist modes of activity. The importance of SMMEs cannot be overlooked and a multi-pronged approach is thus needed to deal with impediments such as lack of financial tools, weak entrepreneurial capacity and the absence of string linkages with existing large entrepreneurs (Sarah Baartman DM IDP, 2016/17 Review).

#### **E) LOCAL ECONOMIC DEVELOPMENT**

Sarah Baartman DM has entered into an agreement with the Development Bank of SA Development Fund to be a pilot on a Local Economic Development Initiative (LEDI). The LEDI funds large capital catalytic economic infrastructure projects, as well as developing and implementing regional economic turnaround strategies.

- LEDI projects include:
  - Fibre Innovation Hub Rapid Assessment & Strategic Plan
  - Natural Fibre Cluster Interim Support
  - Natural Fibre Cluster Championship
  - Development of an Agri-tourism Route in Sundays River Valley Municipality
  - Investigation into and identification of niche agro-processing opportunities
  - Camdeboo Satellite Aquaculture Project
  - Implementation Study on the Generation of Hydro-electricity on micro/mini sites located within
  - Blue Crane Route Municipality
  - Renewable Energy Rapid Assessment & Audit
  - Regional Renewable Energy Coordinating Forum
  - Land Use and Locational Policy for Renewable Energy
  - Revision of Economic Growth and Development Strategy
  - Preparation and Implementation of a Regional Economic Model
  - Strategic Infrastructure Investment Assessment for Kouga Municipality
- On a local level, the programs for the Makana LED strategy are:
  - Strategic Partnerships
  - Infrastructure Provision and Services
  - Investment Attraction
  - SMME Promotion
  - Tourism Development

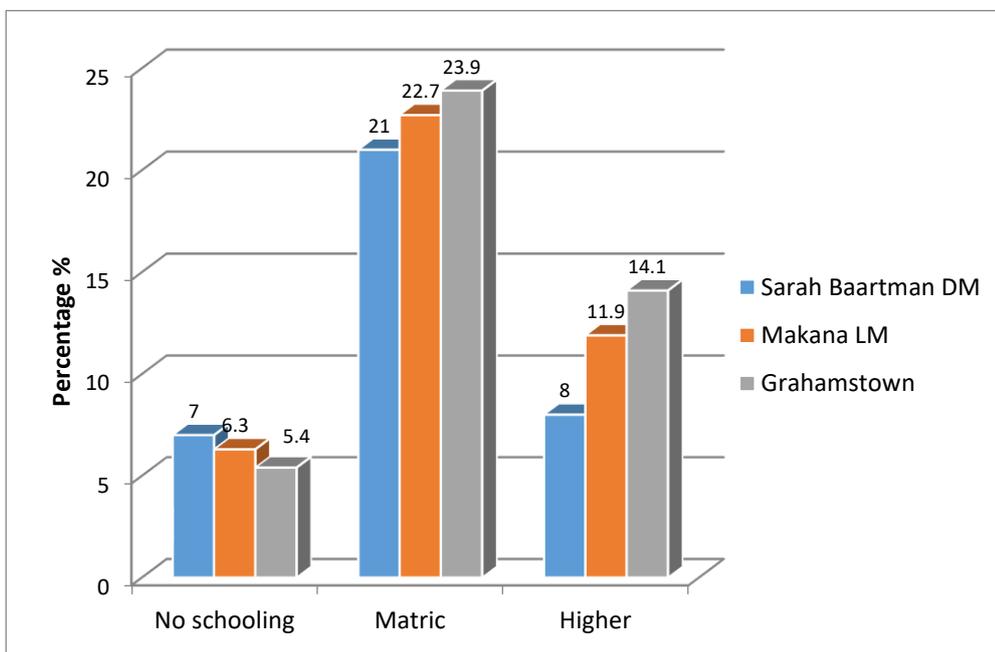
- Leveraging of educational capital
- Agricultural sectoral development

## 6.6 SOCIAL STATUS

### 6.6.1 EDUCATION

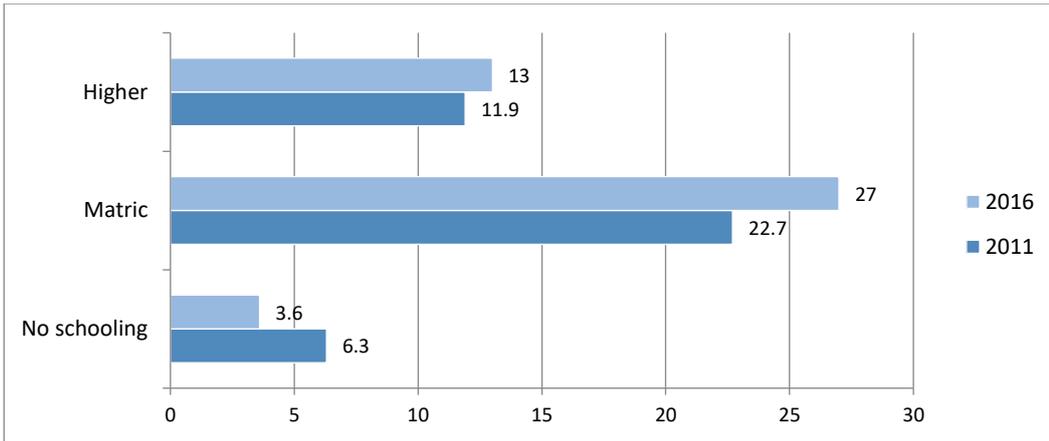
Persons with no schooling are defined as people who never received any form of formal education. This implies illiteracy in most cases and would limit the person to perform manual labour. The importance of education is emphasized, as the education levels of a population is directly linked with that population’s level of employability.

There have been positive improvements on district and local level, with the decrease in the percentage of the population that has not received schooling. A high level of dropouts, especially at primary education level, remains.



**Figure 6-9: Education Levels in the DM, LM and Makhanda.**

Census 2011 statistics show that 6.3% of the Makana population over 20 years of age had not received any schooling in 2011 ([www.localgovernment.co.za](http://www.localgovernment.co.za)). The figure is moderate and furthermore shows a decline of -3.3% p.a. since 2001 when 11.8% of the population over 20 years had not undergone any schooling. Recent statistics for 2016 ([www.localgovernment.co.za](http://www.localgovernment.co.za); StatsSA) indicate that the level of no schooling has declined even further to 3.6% (Figure 6-10).



**Figure 6-10: Education Levels in the DM, LM and Makhanda 2011 vs 2016.**

Furthermore, the number of people completing secondary school and receiving a tertiary education has increased. These trends from 2001 to 2016 support the notion that educational prospects have improved. Prestigious primary and secondary schools and the seat of the Rhodes University are situated in Makhanda, making this an academia hub (Makana LM IDP Revision 5). In 2011, 14.1% of the Makhanda population older than 20 years had some form of tertiary education and it is likely that this number has since increased.

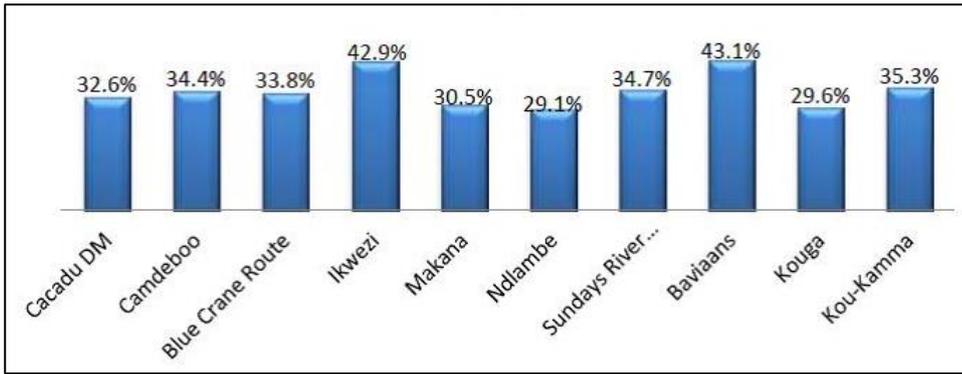
### **6.6.2 DEPENDENCY, INEQUALITY AND POVERTY LEVELS**

Poverty is defined not only by levels of unemployment, but also characterized by a lack of access to education, health care, and basic services including water and sanitation.

In the Sarah Baartman DM, Africans experience high poverty (although lower than the national average), a low HDI, high illiteracy compared to the country as a whole, and high inequality, although lower than the country as a whole. Coloureds experience lower poverty and illiteracy than Africans but are significantly worse off than the national average. They also experience a higher HDI and roughly the same level of inequality. Whites experience almost no poverty, a high HDI, less than 5% illiteracy and relatively low inequality in keeping with South African norms for this population group (Sarah Baartman DM IDP, 2015/16 Review).

Poverty levels in Makana LM are high (30.5% in 2012) with 45% of the population earning no income, and a further 10.5% earning less than R801 per month, therefore falling under the poverty line (Makana LM IDP Revision 5). This is exacerbated by the fact that almost 33% of the labour force (excluding discouraged work-seekers) are not working. Discouraged work-seekers make up 10% of the population older than 20 years.

The three (3) LM's that are the most densely populated, i.e. Kouga, Makana and Ndlambe, experience the lowest poverty levels when compared with other Municipalities in the District (Figure 6-11). As mentioned previously in the report, population concentrations in the District correlate with areas where employment opportunities and income generating opportunities are available, and as such lower poverty levels are evident.



**Figure 6-11: Poverty Levels of LM's within the Sarah Baartman DM.**

Very serious poverty (where people live on less than R14 – R18 per day) is rapidly declining, probably in response to the roll out of social grants in South Africa (Sarah Baartman DM IDP, 2015/16 Review).

Female headed households, which could be the result of male migration, death, unwed pregnancies and so forth, increased from 44.5% to 45.3% between 2011 and 2016 ([www.localgovernment.co.za](http://www.localgovernment.co.za); StatsSA) and the overall dependency ratio is 5 persons per ten population of working age (Makana LM IDP Revision 5). The majority of individuals who receive benefits from the various welfare programs are women. This cycle of dependency is a result of the funnel of failure that women have a tendency to fall victim to. Women are left uneducated and living in poverty. Despite their desire to improve their current situation they are unable to with the opportunities available. Furthermore, the broader population lacks buying power which makes it difficult to exploit local economic development opportunities.

Due to the above factors, a significant portion of the population is dependent on social grants. The predominant type of grant is for child support followed by old age and permanent disability. There has been a gradual increase in social grant expenditure in the Sarah Baartman DM increasing to R 59 736 423 in the 2009 financial year from R 59 068 286 in the 2007 financial year (Sarah Baartman DM IDP, 2015/16 Review). Assuming that no individual qualifies for more than one grant then 45.5% of the total Makana LM population is receiving a social grant (Makana LM IDP Revision 5).

### **6.6.3 HEALTH & HIV / AIDS**

The Provincial Strategic Plan (PSP) for HIV, TB & STIs 2012-2016 is a comprehensive strategy for the Eastern Cape Province in response to HIV, TB and STIs. The long-term vision is to have a Province that is free of new HIV & TB infections; zero deaths as a result of these epidemics and zero discrimination of people living with HIV & TB (Eastern Cape Aids Council, March 2016). To accomplish this, social, economic and structural drivers leading to HIV infections need to be addressed, and not only the treatment of the disease.

Nationally, HIV infection has reduced gradually among the sexual reproductive age group (15-49 years). According to mid-year estimates from Statistics South Africa, the incidence rate is 1.22% for the July 2014 - June 2015 period which is a slight reduction from 1.23% of the previous year (Eastern Cape Aids Council, March 2016). Despite not being able to meet the 50% reduction target for the Eastern Cape, HIV incidence among 15-49-year-old individuals has been declining from 1.5% (FY 2013/14) to 1.23% (FY 2014/15). However, the Province successfully surpassed the 2% target in the mother to child transmission by registering a 1.7% new infection rate at six weeks in 2014/15.

**Table 6-3: HIV Statistics.**

	HIV INCIDENCE (15-49 YRS)	HIV PREVALENCE (15-49 YRS)	HIV PREVALENCE AMONG YOUTH (15-24 YRS)	TB INCIDENCE	TB MORTALITY RATE	PATIENTS ALIVE AND ON TREATMENT
Eastern Cape	1.23%	19.9%	6.2%	792.3 cases per 100 000	9.3%	320 062

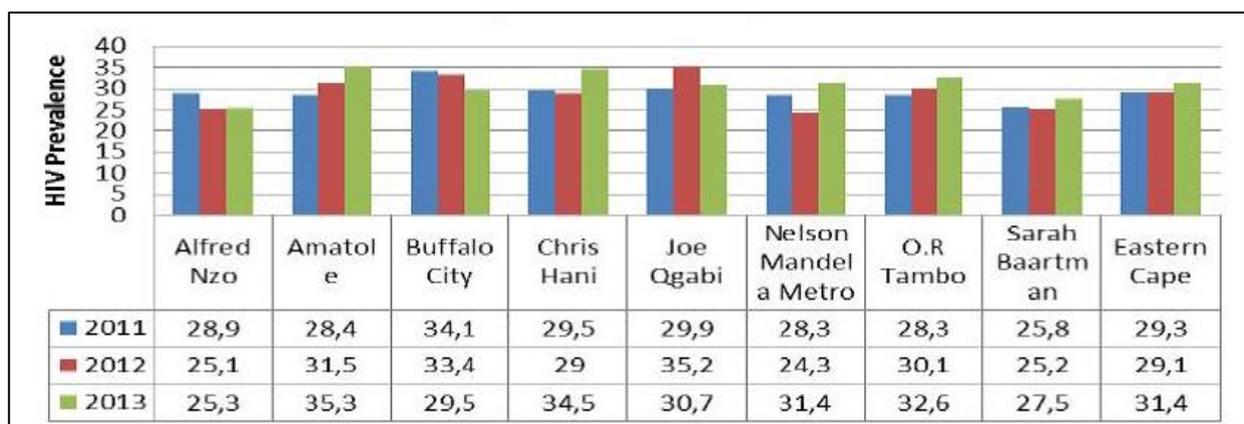
Recent statistics for the Sarah Baartman DM could not be obtained. However, the IDP indicates that the HIV & Aids prevalence in the District in 2010 was 20.7%. Of the people that were tested for HIV & Aids in Makana, 9.1% tested positive.

For the period 2014/15 there was a slight decline in the HIV incidence rate among females and a slight increase in males, of the sexually reproductive age group (15–49 yrs) in the Province. Incidence among females was 1.68% and 1.12% for males. The results indicate that females are still more susceptible to new HIV infections when compared to males. Of concern also was the increase in male HIV infection rates at a time when infection is expected to be reducing (Eastern Cape Aids Council, March 2016).

HIV prevalence estimates for the Eastern Cape Province increased which implies the success of the ART programme in prolonging lives. According to the Eastern Cape PSP Midterm Review, approximately 755 610 individuals were living with HIV in the Province (Eastern Cape Aids Council, March 2016).

Currently in Sarah Baartman DM, accredited ART sites are as follows (Sarah Baartman DM IDP, 2015/16 Review):

- ✦ 47 clinics,
- ✦ 9 hospitals
- ✦ TB hospitals and
- ✦ 1 Psychiatric Hospital
- ✦ 7 Mobile Clinics



**Figure 6-12: HIV Prevalence in the EC DM's.**

The figure above shows prevalence trends by district among women attending antenatal clinics aged 15-49 in the Province. Six districts, including Sarah Baartman DM, registered an increase in HIV prevalence between 2012 and 2013.

During the period 2014/15, the Province was not on track on achieving 50% reduction in STIs other than HIV. There was an increasing trend in the number of new STI cases reported in the Eastern Cape. According to the District Health Information System (DHIS), the incidence rate of new STI episodes was reported at 46.87 per

1 000 individuals in 2015, showing an increase from 45 cases per 1 000 individuals in 2014 (Eastern Cape Aids Council, March 2016).

TB remains a challenge in the Eastern Cape and nationally, with South Africa having the third highest number of new infections of all types of TB and being the second highest in Drug Resistant TB (DR-TB) in the world. The incidence rate in the Province declined to 792.3 cases per 100 000 individuals in 2014-15 from 862.7/100 000 and 823.1/100 000 in 2012-2013 and 2013-2014 respectively. A closer look at district segregation indicates that Eastern Cape districts are a hotspot for TB in the country. Sarah Baartman had the highest TB incidence of 1 127 cases per 100 000 in the country during the period under review (Eastern Cape Aids Council, March 2016).

#### **6.6.4 CRIME**

SAPS statistics indicate low levels of crimes in the District compared with the overall Eastern Cape Provincial crime statistics. The urban police districts of Makhanda, Graaff-Reinet and Humansdorp are however areas of concern and in 2013 crime were more prevalent in the Makana area, and particularly in the Makhanda district (Sarah Baartman DM IDP, 2015/16 Review). Contact or violent crimes, such as murder, attempted murder, sexual offences and robberies particularly posed a more serious threat.

Table 6-4 below reflects SAPS crime statistics and indicates that there has been a considerable decrease in criminal activities reported at the Makhanda police station. Apart from high jacking, all other crime categories reported declines in the period April 2013 to March 2016 ([www.saps.gov.za](http://www.saps.gov.za)).

Table 6-4: Makhanda SAPS crime statistics

CRIME CATEGORY	2013 to March 2014	2014 to March 2015	2015 to March 2016
<b>CONTACT CRIMES ( CRIMES AGAINST THE PERSON)</b>			
Murder	28	11	16
Sexual Offences	188	73	85
Attempted murder	30	12	16
Assault with the intent to inflict grievous bodily harm	653	299	248
Common assault	511	338	329
Common robbery	110	113	101
Robbery with aggravating circumstances	287	144	167
<b>Contact Crimes ( Crimes Against The Person)</b>	<b>1807</b>	<b>990</b>	<b>962</b>
<b>CONTACT-RELATED CRIMES</b>			
Arson	22	4	7
Malicious damage to property	327	220	188
<b>Contact-Related Crimes</b>	<b>349</b>	<b>224</b>	<b>195</b>
<b>PROPERTY-RELATED CRIMES</b>			
Burglary at non-residential premises	122	56	51
Burglary at residential premises	692	475	515
Theft of motor vehicle and motorcycle	59	51	37
Theft out of or from motor vehicle	376	346	272
Stock-theft	39	31	35
<b>Property-Related Crimes</b>	<b>1288</b>	<b>959</b>	<b>910</b>
<b>OTHER SERIOUS CRIMES</b>			
All theft not mentioned elsewhere	774	650	571
Commercial crime	137	110	128
Shoplifting	180	182	124
<b>Other Serious Crimes</b>	<b>1091</b>	<b>942</b>	<b>823</b>
<b>17 Community-Reported Serious Crimes</b>	<b>4,535</b>	<b>3,115</b>	<b>2,890</b>
<b>CRIME DETECTED AS A RESULT OF POLICE ACTION</b>			
Illegal possession of firearms and ammunition	15	3	8
Drug-related crime	112	65	70
Driving under the influence of alcohol or drugs	133	58	50
Sexual offences as result of police action	0	0	1
<b>Crime Detected As A Result Of Police Action</b>	<b>260</b>	<b>126</b>	<b>128</b>
<b>SUBCATEGORIES OF AGGRAVATED ROBBERY</b>			
Carjacking	5	1	3
Truck hijacking	1	0	3
Robbery of cash in transit	0	0	0
Bank robbery	0	0	0
Robbery at residential premises	33	22	32
Robbery at non-residential premises	32	14	25
<b>Subcategories Of Aggravated Robbery</b>	<b>71</b>	<b>37</b>	<b>63</b>

## 6.7 HOUSING, INFRASTRUCTURE AND SERVICES

### 6.7.1 HOUSING

The number of formal dwellings in Makana increased from 85.4% to 90.7% from 2011 to 2016. 56.1% housing is owned ([www.localgovernment.co.za](http://www.localgovernment.co.za); StatsSA). In contrast to many other municipalities in South Africa, there has also been a reduction in the number of informal dwellings from 2001 to 2011 (1568 to 1432 informal dwellings) as well as backyard shacks. Informal dwellings are concentrated in Makhanda and Alicedale (Makana LM IDP Revision 5). The demand for urban housing development remains.

The total estimated housing demand resulting from population growth (based on the current growth rate) is 4 430 additional households by 2030. This demand equates to a land requirement of approximately 220 ha across the entire Municipality. Most of this demand would be accommodated in Makhanda. Based on the Census 2011 figure the housing demand associated with the eradication of informal dwellings would be 723 households and backyard shacks 1 432 households. The associated land demand is 36 ha and 72 ha respectively (Makana LM IDP Revision 5). The settlement planning priority is therefore to provide adequate shelter to those households accommodated in informal settlements and in backyard shacks.

There is however not consensus among the various sources and it would seem that duplication occurred in the backlog figures. The September 2011 housing waiting list had an inflated figure of 16 852 (Makana LM IDP Revision 5).

Major issues pertaining to housing and settlement aspects within the District include (Sarah Baartman DM IDP, 2015/16 Review):

- ✦ The non-availability of the land to address current housing demand, available land is owned by private owners which are intensively used mainly for agriculture, SAN Parks and state land;
- ✦ The continued influx of migrants to the area in search of employment opportunities, some short-term in the fishing and tourism industry and by farm workers after the fruit harvesting season;
- ✦ The isolated settlements and nodes classified as Rural Nodes that are located away from existing community services, often contain low population thresholds that cannot support the essential Community Facilities and are difficult and expensive to provide with bulk and internal services to a level equivalent to settlements in the bigger Urban Areas; and
- ✦ There has been a rapid increase of informal settlements in and around small towns within the District due to the changing pattern of labour utilisation on farms.

### 6.7.2 SERVICES

#### A) Bulk services

Bulk services in the District are under pressure due to overloading and the lack of on-going maintenance (Sarah Baartman DM IDP, 2015/16 Review). The Makana Local Municipality is both the 'Water Service Authority' and 'Water Service Provider' and is also responsible to provide all the other local government services such as municipal roads, storm water management, electricity, waste collection and disposal.

For Makhanda, Makana LM's major water schemes, raw water is purchased from the Department of Water & Sanitation through the Glen Millville dam on the eastern scheme, and on the western scheme raw water is sourced from Settlers and Howieson's Poort Dams (Makana LM IDP Revision 5).

The Municipality is also the Service Provider for electricity and distributes in the old Grahamstown Municipal area. The newer urban settlements (i.e. Grahamstown East), Riebeeck East, Alicedale and the rural farm areas

are serviced by Eskom. Budgetary constraints hinder the effective operation and maintenance as the infrastructure is aging and needs upgrading (Makana LM IDP Revision 5).

## B) HOUSEHOLD SERVICES

Increase in service delivery and the development/upgrading of bulk infrastructure should have a positive impact on economic growth thereby increasing possibilities to attract new business opportunities. The dispersed nature of the settlements in the Sarah Baartman DM however is counterproductive for service delivery. These conditions are worse in the small towns of the interior where poverty can be severe, compounded by isolation from the mainstream economy (Sarah Baartman DM IDP, 2015/16 Review).

Coastal areas are characterized by higher population densities primarily due to the prevalence of intensive agricultural practices, which are encouraged by the higher coastal rainfall, fertile soils and the increased tourism potential of seaside-towns. These areas portray an urban bias which serve to attract residents from the lesser populated 'rural' areas in the search of economic opportunities and improved access to services.

In the Sarah Baartman DM area, Makhanda is an exception to this rule. This inland town is regarded as an economic hub due to the intensive stock farming enterprises in the area and the associated economic spin-offs in terms of employment. The town further supports a large student base and academic staff and all these factors create demand for more elaborate social and economic infrastructure (Sarah Baartman DM IDP, 2015/16 Review).

The Sarah Baartman DM IDP (2015/16) reports that Municipalities in its District have achieved significant improvements in both the standard and provision of water and sanitation. The number of households with water on site is almost double the Eastern Cape Provincial average. Only 22% houses in the District are informal and two-thirds of households have potable water and a flush toilet or pit latrine on site.

In Makana LM, the level of improvement of flush toilets showed a positive growth of 16.3% p.a. over a period of 10 years (2001 to 2011). The number of bucket toilets reflects a decline or negative growth of minus 8.6% p.a. over the same period, which in effect means that bucket toilets have been reduced from 30.4% in 2001 to 3.6% in 2011 (Makana LM IDP Revision 5). However, in 2011, 970 households in Makhanda (7%) still had no toilet or were still using the bucket system (Census 2011; StatsSA).

Provision of electricity has improved from 73% in 2001 to almost 90% in 2011 and 96.6% in 2016. The dependency on paraffin has been reduced from 24% in 2001 to 7.4% in 2011. The most recent Sarah Baartman IDP reports a 2 378 household backlog for electrification in Makana LM.

In 2016, 90% of households had access to a weekly refuse removal service as opposed to 89% in 2011 and 86.4% in 2001 (Makana Im IDP Revision 5). Improvement in services are summarised below.

**Table 6-5: Service Improvements between 2011 and 2016.**

SERVICE	YEAR	
	2011	2016
Household services	2011	2016
Flush toilet connected to sewerage	71.9	83.8
Weekly refuse removal	88.9	90.1
Piped water inside dwelling	49.8	45.1
Electricity for lighting	89.5	96.6

### 6.7.3 LANDFILL SITES

The Makana LM has three landfill sites namely the Makhanda, Alicedale and Riebeeck East landfill. All the sites are managed by the Municipality. The Makhanda landfill site is located 2km from town and was permitted by the Department of Water Affairs and Forestry on 10 September 1996 as a Class G:M:B+ waste disposal site in terms of Section 20 of the Environment Conservation Act (Act 73 of 1989).

The expected lifetime of the site is approximately 20 years. The municipality uses a cell method to dispose of the waste in an old quarry.

### 6.7.4 FIRE SERVICES AND DISASTER MANAGEMENT

The Sarah Baartman DM has a District Fire Co-ordinator in its employment which acts as Chief Fire Co-ordinator. The DM is providing continuous support and capacity to LMs to deal with the fighting of fires, including Hazardous Chemical spillages. In addition, training of Municipal fire officers, on both firefighting and the handling of Hazardous Material Spillage is a priority of the DM in this field. The DM has further ensured that all fire fighting vehicles in the district are being standardised throughout its area (Sarah Baartman DM IDP, 2015/16 Review).

The Makana Municipality has a 24-hour fulltime fire service with Chief Fire Officer appointed as manager fire services. In addition to the corporate agreement with Sarah Baartman DM to perform the function on agency based, the Municipality has cooperative agreements with all the other local municipalities in the district. Partnerships have been established with Provincial Government, District and Non-governmental organisations with a responsibility or capacity to render disaster management services. In terms of the Makana LM Disaster Management Plan the risk assessment revealed that the Municipality is prone to tornadoes, floods, fires (veld and forest fires), epidemics and accidents.

### 6.7.5 COMMUNITY SAFETY

In addition to Police Stations, five (5) Community Policing Forums (CPFs) have been established in Makana LM. Concern has been raised around the effectiveness of these forums and the lack of visibility of the SAPS (Makana LM IDP, Revision 5).

**Table 6-6: Police Stations per Ward.**

NAME OF POLICE STATION	WARD
Makhanda CBD area	8
Riebeeck East	1
Alicedale	14
Fort Brown	1
Extension 6 New Police Station	6
Seven Fountain	14
Committees Drift	1
Joza Police Station	6

## 6.7.6 HEALTH SERVICES

Health services are now provided by the Department of Health. There are twelve clinics and two ambulance services (i.e. EMS and Netcare) all stationed in Makhanda. For those patients referred to either Port Elizabeth or East London there is transportation organised by the hospital and the ambulance service (Makana LM IDP Revision 5).

**Table 6-7: Makhanda Health Care Services.**

INSTITUTION	CONTACT	ADDRESS	TELEPHONE
Town Clinic	Mrs. Haywood	Huntley Street	(046)6223430
Grahamstown Mobiles 1, 2 & 3	Mrs. De Beer /Mr. Isaacs	Huntley Street	(046)6224901
Joza Clinic	Mrs. September	Nompondo Street	(046)6036026/ 6152
Kwa-Nonzwakazi Clinic	Mr. Isaacs	Recreation Street	(042)2311019
Middle Terrace Clinic	Mr. Isaacs	Middle Terrace Street	(046)6036043/ 6102
NG Dlukulu Clinic (Ext 7)	Mrs. De Beer	Sani Street	(046)6036089
Raglan Road Clinic	Mrs. Bunu	Raglan Road	(046)6036084
Riebeeck East Clinic	Mr. Isaacs	Komadagga Road	(046)6224999
Settlers Day Hospital	Mrs. Menziwa	Cobden Street	(046)6223033
Tantyi Clinic	Mrs. Somngesi	"T" Street	(046)6036153
Settlers Hospital (Public)	Mrs. A Potts( Acting CEO)	Milner street	(046)602 5000
Settlers Hospital (Private)	Mr. Mutla (Hospital Manager)	Milner street	(046)602 5000
Fort England Hospital	Dr Walsh (CEO)	York Street	046 622 7003

## 6.7.7 EDUCATIONAL FACILITIES

There are 33 Primary Schools, eight High Schools, three Pre-schools and two Combined Schools in the Makana area. Makana LM also boasts a host of private schools, such as DSG, St Andrews and Kingswood College with Amasango & Kuyasa for kids with special needs (Makana LM IDP Revision 5). The town of Makhanda hosts some of the oldest schools. It is the seat of Rhodes University, as well as other prominent and internationally acclaimed primary and high schools. Rhodes University is a 104-year-old internationally recognised institution with a well-established reputation for academic excellence ([www.localgovernment.co.za](http://www.localgovernment.co.za)).

## 6.7.8 ROAD NETWORK

Approximately 82% of the 8 420 km road network in the DM are gravel roads, posing financial and human resources challenges, as gravel roads require a structured maintenance programme. A study compiled in 2007 by the Department of Transport indicated that more than 20% of the surfaced road network in the Province is in a poor or very poor condition (Sarah Baartman DM IDP, 2015/16 Review). This is a disconcerting fact. Of the 757.4 km municipal road infrastructure in Makana LM, 588 km is gravel and 169 km tarred.

Makhanda is situated on the N2, which links it to East London/ Bisho and Port Elizabeth. Other important road links are:

- ✦ The R400 links Makhanda to Riebeeck East and the N10.
- ✦ The MR476 links Makhanda and Alicedale.
- ✦ The R343 links Makhanda and Salem to Kenton-on-Sea and Alexandria.
- ✦ The R350 links Makhanda to Bedford.

- ✦ The R344 links Makhanda to Adelaide.
- ✦ The R67 links Makhanda to Port Alfred in the South and Fort Beaufort to the North.

No functional rail service exists and the feasibility of changing the train station to a bus station /depot is being investigated (Makana LM IDP Revision 5). There is a Municipal airstrip just outside of Makhanda, adjacent to the Army Base.

## 6.8 LAND REFORM PROGRAMMES

The Land Reform Programme was developed to promote land acquisition, restore land rights lost through dispossession and achieve tenure upgrade. The Department of Rural Development and Land Affairs (DRD & LR) has compiled an Area Based Plan for the Sarah Baartman DM area as a whole. Fundamentally the Plan seeks to integrate Land Reform into the municipal planning process wherein identified projects are supported during and post implementation phases to ensure sustainability. The Area Based Plan also aims to develop an implementation tool for pro-active land acquisition to facilitate acquisition of land to meet the 2014 target of transferring 30% of white owned land into the hands of the black farming class (Makana LM IDP Revision 5). To date the Sarah Baartman DM has achieved redistribution amounting to 6.31% of the 30% target. 18.62% of Makana LM’s 30% target has been achieved and 70 428 ha still needs to be redistributed in the next six years (Sarah Baartman DM IDP, 2015/16 Review).

In the region of the study area, Makhanda, Alexandria and Port Alfred are key focus areas, where farming holds economic advantages for dairy, cattle and pineapple production. As part of the SIA possible land claims that could affect the proposed WEF project would be determined and analysed.

## 6.9 COMPETING LAND USES IN THE AREA

The following table (Table 6-8) includes a list of competing land uses within the proposed Albany WEF area.

**Table 6-8: Competing Land Uses – Albany WEF Site**

COMPETING LAND USES WITHIN THE ALBANY WEF SITE PROXIMITY			
Negative -		Positive & Negative +/-	
The region, within which the Albany WEF is being proposed, area includes a number of properties which form part of the tourism industry. These properties include private game farms, public game reserves, protected areas and consumptive (hunting) properties. As a competing land use, the WEF would have possible visual impacts which could lead to socio-economic impacts.	<b>Visual Impact (-)</b> <b>Socio-Economic Impact (-)</b>	The current WEF land parcels include small scale livestock farming and citrus production. The WEF would provide a subsidy to these farmers who could then use the additional income to expand their agricultural ventures and make their farms more profitable. Farming and WEFs are not mutually exclusive. Surrounding livestock industry in the area should not be impacted on by the proposed WEF as farming and WEFs are not mutually exclusive.	<b>Agricultural Impact (+)</b>
A section of the proposed WEF is situated within the Makana Local Municipality commonage area which is currently used for livestock grazing. Should the neighbouring formal settlements need to expand then these pieces of land would form part of the likely settlement option.	<b>Socio-Economic Impact (-)</b>	Mining in the form of small-scale quarries (shale, sand, etc.) within the area may be impacted on by the proposed WEF. In order to secure land tenure, the proposed WEF would have to ensure that it does not impact upon the existing mining activities. Mining	<b>Ecological Impact (+)</b> <b>Socio-Economic Impact (-)</b>

<p>The development of the WEF on these land parcels would limit future rural settlement on these specific sections.</p>		<p>and WEFs are not mutually exclusive. Due to the number of mines in the area, specifically to the western section of the site (near the Eskom infrastructure) the sense of place has already been industrialised to a certain degree. Limiting the area's mining footprint on the specific land parcels which have been selected, based on wind potential, may have a positive ecological impact.</p>	
		<p>A section of the proposed WEF is situated within the Makana Local Municipality commonage area. The development of turbines within these areas would mean much needed income for the Makana Local Municipality and would mean that the area would be maintained as grazing for local livestock farmers. The potential of urban sprawl would be restricted by the turbines.</p>	<p><b>Agricultural Impact (+)</b></p> <p><b>Ecological Impact (+)</b></p> <p><b>Socio-Economic Impact (+)</b></p>
		<p>The proposed site is situated adjacent to existing Eskom infrastructure in the form of powerlines, substations and other industrial developments. This site is far more suitable than competing WEFs in the area due to its proximity to the grid. The proximity to the grid reduces the need for lengthy powerlines (connection points) and large-scale substations (the existing substation will be available to feed into). In terms of industrial developments within the WEF area, the eastern properties also include a telecoms tower.</p>	<p><b>Visual Impact (+)</b></p> <p><b>Ecological Impact (+)</b></p> <p><b>Avifaunal Impact (+)</b></p> <p><b>Socio-Economic Impact (+)</b></p>

## 7 ALTERNATIVES

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### 7.1 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.

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

#### 7.2.1 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.

#### 7.2.2 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.

#### 7.2.3 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.

## 7.2.4 TECHNOLOGY ALTERNATIVES

The choice of alternative technologies for the developer is constrained by the financial feasibility considerations. In South Africa, the licencing of all renewable energy developments is controlled by the IPPPP (Independent Power Producers Procurement Programme (Dept of Energy) who decide when and which types of renewable energy developments will be licenced through regulated competitive bidding processes. Since 2010 there have been seven competitive bidding processes for renewable energy developments, with 112 renewable energy producers being licenced to produce electricity. 43% of the renewable energy to be produced from these will be from wind energy projects. Solar energy accounts for 42% and the rest from hydro and various forms of bio sources. This competitive process ensures that only the most feasible and competitive developments are selected. This forces the developers to look for sites which will maximise the production of energy and be most cost effective. As a result of this, solar plants will only be competitive if they are located in the highest potential areas, and the same with wind, hydro and biomass energy developments. The relative potential for these four kinds of renewable energy production in South Africa has been assessed and mapped nationally. These potential energy production maps have been reproduced below (see Figure 7-1 to Figure 7-4) and indicate that the Makhanda area, were the developer was wanting to develop a project, was most suitable for wind energy production. While this area also has some potential for solar energy production, this would not be competitive with the solar plants located in the higher potential areas.

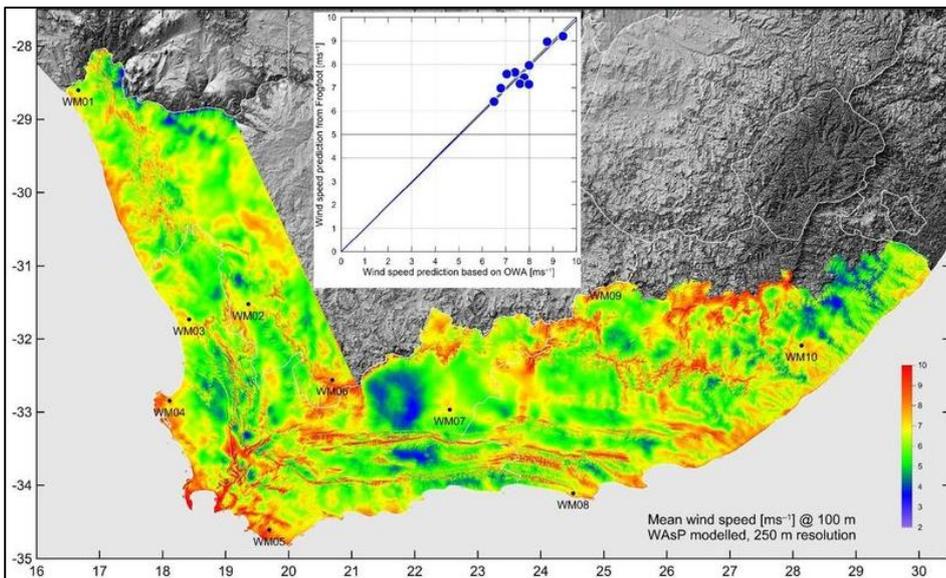


Figure 7-1: Mean Wind Speed ( $\text{ms}^{-1}$  at 100m) (WASA, 2014)

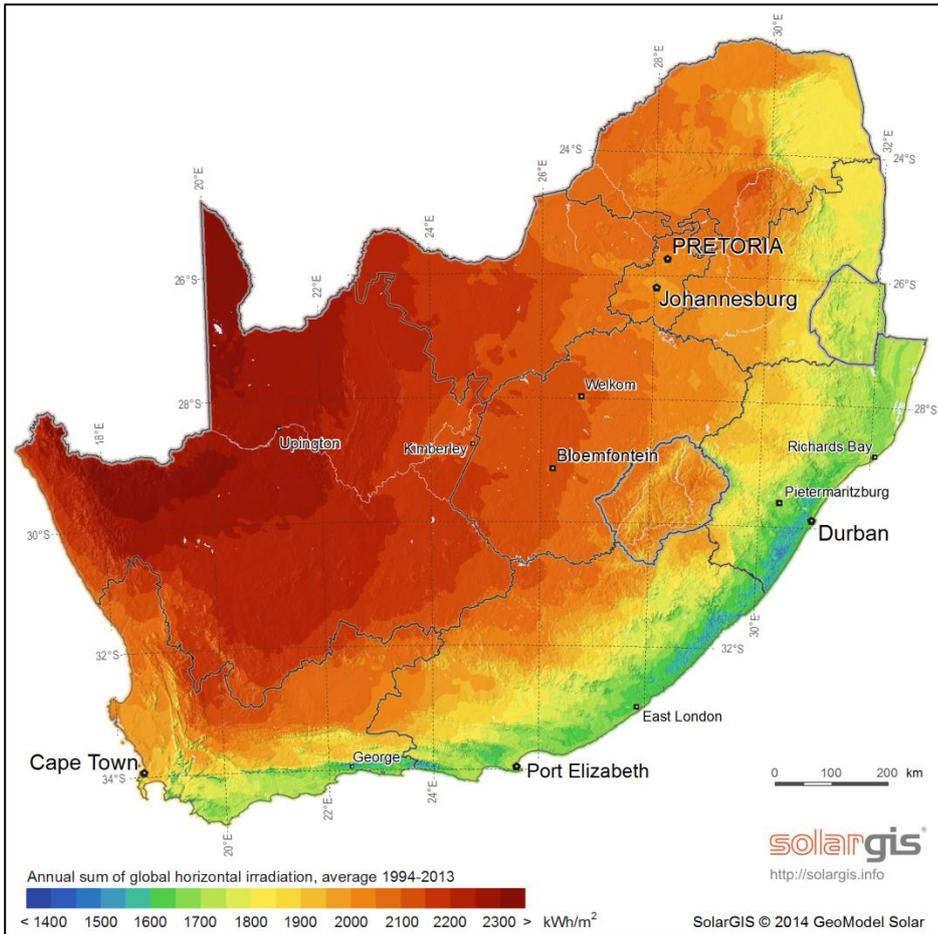


Figure 7-2: Solar Resource Availability (SolarGIS, 2013)

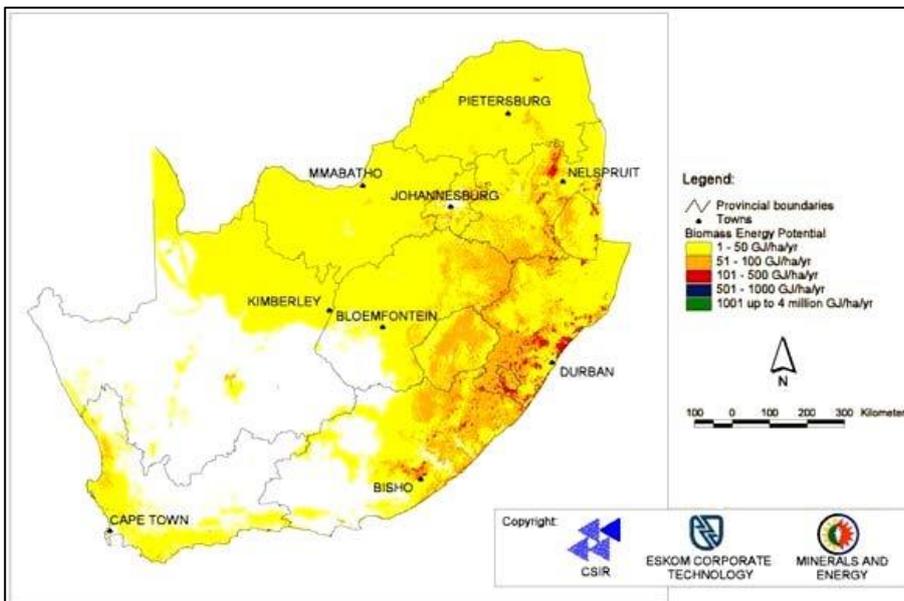


Figure 7-3: Biomass Potential (DME, Eskom, CSIR)

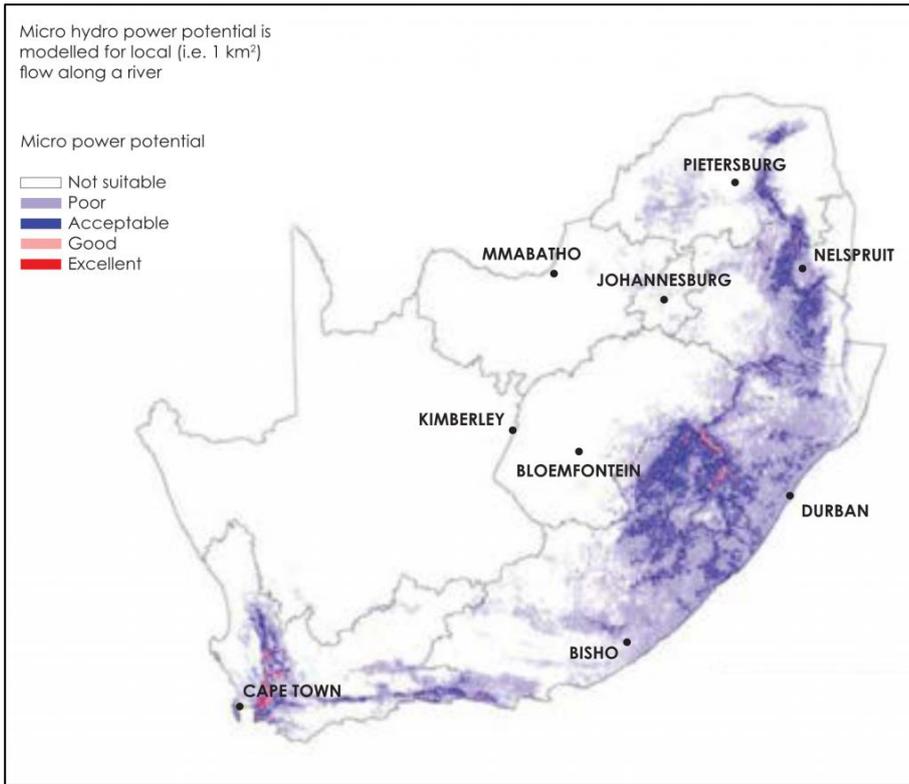


Figure 7-4: Micro Hydro Potential (DME, CSIR)

### 7.3 ANALYSIS OF ALTERNATIVES

Table 7-1 illustrates the methodology used to assess the identified alternatives. 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.

Table 7-1: Albany WEF Alternatives.

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 (Preferred alternative).  This site has been selected based on good wind resource potential, land availability and the sites proximity to available electricity grid.</p>	<ul style="list-style-type: none"> <li>✦ Located close to existing necessary Eskom electrical infrastructure, grid access is located on site.</li> <li>✦ Suitable wind resource.</li> <li>✦ Land availability (Albany Wind Energy 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 to surrounding communities.</li> <li>✦ Potential impacts on avifauna and bats.</li> </ul>	<b>YES</b>	<p>The main determining factors for selecting the proposed location were:-</p> <ul style="list-style-type: none"> <li>✦ Proximity to a 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> <p>Please refer to Section 6.9 (Table 6-6) of this report for a list of competing land uses within the Albany WEF area. These land uses will be investigated in the EIR phase to further inform the suitability of the proposed site.</p>
	<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.  Alternative sites in the area that are close to Eskom electrical infrastructure, do not</p>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<p>Alternative locations for the current project are limited and where not deemed to be either reasonable or feasible due to the following:</p> <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> </ul>

Table 7-1: Albany WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	yield the same wind resource potential.				⤴ Therefore, alternative <u>locations</u> for the proposed Albany WEF, were not assessed.
<b>Type of technology</b> This refers to the fundamental technology options, such as energy generation from wind vs. coal fired power plant, etc. and the environmental risks and impacts associated with such options.	<b>Alternative energy technology 1</b> – Wind turbines (Preferred alternative)	<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</b> – Solar PV	<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</li> <li>⤴ Requires more water than wind does</li> <li>⤴ Generates less power per hectare 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 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, other areas in South Africa such as the Northern Cape Province and Aliwal North in the Eastern Cape are more suited to this renewable energy resource.
	<b>Alternative energy technology 3</b> – Concentrated Solar Power (CSP)	<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> </ul>	<b>NO</b>	There is not enough intense radiation in the area 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

Table 7-1: Albany WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			<ul style="list-style-type: none"> <li>Reflectivity of mirrors potentially a significant issue visually and in terms of avifauna.</li> </ul>		which is preferable when compared to areas that receive 6kWh/m <sup>2</sup>
	<b>Alternative energy technology 4</b> – Coal fired power plant	<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.
	<b>Alternative energy technology 5</b> – Biomass	<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 feedstock</li> </ul>	<b>NO</b>	Sufficient suitable biomass may not be available in proximity to the site. Biomass energy is mutually exclusive.
	<b>Alternative energy technology 6</b> – Nuclear Power	<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> </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.

Table 7-1: Albany WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			<ul style="list-style-type: none"> <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>		
<p><b>Design or layout</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</p>	<p><b>Alternative layout 1:</b> 43-turbine WEF layout, access route, electrical switching stations and short connecting powerline</p>	<ul style="list-style-type: none"> <li>⤴ The preliminary layout consisted of 90 turbines which underwent a desktop screening phase (by the proponent). The number of turbines was then reduced to 66. This was further reduced, following visual and technical feedback during the EIA phase. The second EIR now includes a reduced 43-turbine layout. This has been refined during the assessment as the preferred alternative.</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 assessments have been slightly reduced by the number of turbines, but the impact remains high.</li> </ul>	<p><b>YES</b></p>	<p>Considering the WEF layout: A maximum of 43 turbine structures have been assessed. The preferred layout (which has undergone pre-screening, scoping and EIR phases) has been informed by the feasibility and 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.</p>

Table 7-1: Albany WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
	<b>Alternative layout 2:</b> 66-turbine WEF layout, access route, electrical switching stations and short connecting powerline	<ul style="list-style-type: none"> <li>The preferred alternative has will undergo a rigorous environmental assessment to confirm its suitability for the area and will be refined based on the outcomes of the specialist assessments during the EIA phase.</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 impacts are high.</li> </ul>	<b>YES</b>	
<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	<b>Alternative operational activities</b>	<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>	N/A	<b>YES</b>	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 Albany WEF then they will form part of the Environmental Management Programme (EMPr) of the proposed WEF.
<b>No-go option</b> This refers to the current status quo and the risks and impacts associated to it.	Small stock grazing and small-scale game farming.	<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>	<b>YES</b>	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 considered the no-go alternative. Impacts are limited to the status quo. Positive and negative impacts are as follows.

Table 7-1: Albany WEF Alternatives.

ALTERNATIVE LEVEL	ALTERNATIVES	ADVANTAGES	DISADVANTAGES	REASONABLE & FEASIBLE	COMMENT
			<ul style="list-style-type: none"> <li>⤴ No financial benefit for the boulders wind farm landowners.</li> <li>⤴ Potential for the alien vegetation on site to continue detrimentally affecting the local flora.</li> </ul>		<p>Positive:</p> <ul style="list-style-type: none"> <li>⤴ Agricultural activities will remain undisturbed;</li> <li>⤴ Tourism activities will remain undisturbed;</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> <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>⤴ All positive impacts, specifically related to the development of the wind farm, discussed in this report will not materialise.</li> </ul>

## 8 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 Albany 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 D.

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

- ✦ Agricultural Potential Impact Assessment;
- ✦ Avifaunal Impact Assessment;
- ✦ Bat Impact Assessment;
- ✦ Ecological Impact Assessment;
- ✦ Heritage (Archaeological) Impact Assessment
- ✦ Noise Impact Assessment;
- ✦ Paleontological Impact Assessment;
- ✦ Socio-Economic Impact Assessment;
- ✦ Traffic Feasibility Study (EIR) and Management Plan (EMPr); and
- ✦ Visual Impact Assessment.

An additional study was undertaken:

- ✦ Hydrological Study – this specialist study was undertaken in order to investigate the potential impact on the Kap River Catchment. This investigation was in response to concerns raised by the Eastern Cape Parks and Tourism Agency.

### **Approach**

All specialists were provided with a Draft Layout to assess (as per layout alternative 1 in section 7 of this report, 90 turbines). 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 Albany WEF site and their opinion on the response of 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 11 of this report.

### 8.1 AGRICULTURE IMPACT ASSESSMENT

<b>STUDY</b>	<b>Agricultural Potential Impact Assessment</b>
<b>SPECIALIST</b>	<b>Dr Andries Gouws</b>
<b>COMPANY</b>	<b>INDEX</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### **8.1.1 CONCLUSION & SPECIALIST STATEMENT**

The direct impact of creating the 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 for the individual farms and can be mitigated through negotiated compensation. Security and stock theft has potentially a moderately high negative impact and may even increase due to access that is created by the newly constructed roads. The increase in stock theft and poaching is an existing regional issue which will be relatively difficult to mitigate during the operational phase. 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 no-go alternative will see continued stock theft and poaching remain at its present level.

It is noted that with the proposed reduction in the number of turbines from 66 to 43 and the relocation of 7 turbines, the agricultural impacts will remain the same as in the original report, but the area and potential loss of income will be slightly less.

### **8.1.2 IMPACTS**

The following impacts were raised in the Agricultural Impact Assessment Report. Please see Chapter 9 of this report (EIR) and Chapter 8 of the Agricultural Report as well as the supplementary Agricultural Report for more detail:

- ✦ Loss of grazing land during the construction phase.
- ✦ Loss of agricultural production during the construction phase.
- ✦ Loss of agricultural resources during the construction phase.
- ✦ Increase in stock theft and poaching during the construction phase.

### **8.1.3 MITIGATION MEASURES**

The implementation of the proposed mitigation measures is likely to reduce the significance of negative impacts on agricultural. The impact of both the WEF and Grid infrastructure is likely to pose a moderate negative indirect impact. However, if the mitigation measures listed below are successfully implemented, then the overall significance can be reduced to low. It is recommended that the following mitigation measures, be included in the EMPr and that they are implemented during the various phases of development.

Construction phase mitigation includes:

- ✦ A suitably qualified ECO must be appointed prior to the commencement of the construction phase to deal with agriculture and other environmental issues.
- ✦ Cement/concrete must only be mixed in the approved demarcated area.
- ✦ Drip trays or other impermeable material, such as plastic sheeting, must be placed under construction machinery to avoid soil contamination.
- ✦ Burning, burying or dumping of any waste materials must not occur on the site.
- ✦ Refuelling should only take place in demarcated areas.
- ✦ The appointed ECO should monitor the sanitation of the work sites and that of the Contractor's campsite.
- ✦ All solid waste must be disposed of offsite at an approved registered landfill site.
- ✦ Vegetation clearance should be restricted to the demarcated development footprints.
- ✦ Soil erosion near the demarcated development footprints must be monitored and managed during construction to prevent the loss of additional grazing land due to degradation.
- ✦ Disturbance of soils and clearing of vegetation should be kept to a minimum.

- ✦ Where possible, construction vehicles should only make use of the designated access routes and construction activities must be limited to the development footprint to avoid loss of grazing land.
- ✦ All temporary construction footprints must be rehabilitated and re-vegetated, as soon as they are no longer required.
- ✦ The appointed ECO must monitor erosion during the construction phase. Remedial action must be taken at the first signs of soil erosion during the construction phase.
- ✦ Compacted areas should be ripped to loosen the soil structure.
- ✦ Topsoil stockpiles must not be compacted.
- ✦ The stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff.
- ✦ All foreign materials, which could reduce the quality of the topsoil, such as construction rubble, litter and alien vegetation, must be stored separately.
- ✦ Topsoil and subsoil must be separated and replaced in the same sequence during rehabilitation.
- ✦ The ECO must approve the stockpiling location prior to the stockpiling of any topsoil.
- ✦ Any excess topsoil, which is not used for rehabilitation, must be removed from the site.
- ✦ Access to the site must be controlled and monitored during construction.
- ✦ No unauthorised individuals should be allowed to access the site without permission from the landowners and/or the developers.
- ✦ Construction workers must not handle or remove any livestock or wildlife from the site or the surrounding properties.
- ✦ Where reasonable and feasible, proposed developments should be placed on land with low agricultural potential.

Operational mitigation measures include:

- ✦ All maintenance equipment and vehicles should only make use of the designated access routes and internal roads.
- ✦ Soil compaction and erosion should be monitored during the operational phase and remedial action must be taken at the first signs of soil compaction and increased soil erosion.
- ✦ No unauthorised individuals should be allowed to access the site without permission from the landowners and/or the developers.
- ✦ Maintenance workers must not handle or remove any livestock or wildlife from the site or surrounding properties.

## 8.2 AVIFAUNAL IMPACT ASSESSMENT

<b>STUDY</b>	<b>Avifaunal Impact Assessment, based on 12-month Pre-Construction Monitoring Campaign</b>
<b>SPECIALIST</b>	<b>Mr Jon Smallie</b>
<b>COMPANY</b>	<b>WildSkies Ecological Services</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.2.1 CONCLUSION & SPECIALIST STATEMENT

The following key issues were raised in the Avifaunal Impact Assessment Report:

- ✦ A total of 211 bird species were recorded on site with a peak in species diversity in spring (150 species).
- ✦ Fifty-five species from the list of 210 species identified by Retief et al (2011, 2014) as high risk species for wind farms were recorded on the Albany site.
- ✦ Twenty-eight of these 54 bird species were identified as priority target bird species for this study. Twelve of these are Red Listed, comprising 4 'Endangered', 5 'Vulnerable' and 3 'Near-threatened' species.

- ✦ Walked transects on site recorded 62 small passerine species, with a peak of 43 species in summer. One of these species was Red Listed, the European Roller *Coracias garrulus* (Near threatened).
- ✦ Drive transects on site recorded 8 relevant species, none of which are Red Listed.
- ✦ Nineteen target bird species were recorded flying on site, with 95% of flight activity made up by raptors. This included 7 regionally Red Listed species: Martial Eagle *Polemaetus bellicosus*, Black Harrier *Circus maurus* and Yellow-billed Stork *Mycteria ibis* (Endangered); Denham's Bustard *Neotis denhami*, Lanner Falcon *Falco biarmicus* and Secretarybird *Sagittarius serpentarius* (Vulnerable); and Blue Crane *Anthropoides paradiseus* (Near-threatened).
- ✦ Based on abundance and flight data collected on site, WildSkies concluded that 6 of the 28 target species will be at medium or high risk if the proposed wind farm is constructed and operated. These species are: Martial Eagle; Jackal Buzzard; Rock Kestrel *Falco rupicolus*; Secretarybird; Denham's Bustard and Blue Crane.
- ✦ In order to mitigate for these risks, WildSkies have identified areas of the site that should be avoided with new infrastructure.

Based on the avifaunal community on site, WildSkies concluded the following with respect to the significance of impacts on avifauna:

- ✦ Construction of the facility will result in a certain amount of destruction and removal of natural vegetation which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The required mitigation is to adhere to the sensitivity map contained in this report. This will reduce the significance to LOW NEGATIVE.
- ✦ Disturbance of birds is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site. No specific mitigation is required.
- ✦ Once operational the facility could displace certain birds from the area, or cause them to fly further to get around the facility. Displacement of birds is judged to be of LOW NEGATIVE significance pre mitigation. No specific mitigation is required.
- ✦ Birds in flight on the site could collide with operational turbine blades, thereby being killed or seriously injured. Collision of birds with turbines is judged to be of MODERATE NEGATIVE significance pre mitigation. The significance of this impact can be reduced to LOW NEGATIVE significance by adhering to the sensitivity map in Section 7 of the Avifaunal Report, and by providing a contingency mitigation budget in the operational phase to allow adaptive management of impacts that arise. If such a situation arises possible necessary mitigation measures could include: further research into the problem (including possibly bird tracking studies); human based turbine shutdown on demand; habitat alteration; bird deterrence from site; and any others identified as feasible at the time.
- ✦ Birds could perch on the pylons/towers of the overhead power line and be at risk of electrocution if the design is not bird friendly. Birds in flight could collide with the overhead cables, particularly the earth wire. Collision and electrocution of birds on overhead power lines on site is anticipated to be of HIGH NEGATIVE significance. Both of these impacts can be mitigated successfully in our opinion to reduce the significance to LOW NEGATIVE. To mitigate for collision of the relevant species, it is recommended that the overhead cables on the spans identified as high risk be fitted with the best available (at the time of construction) Eskom approved anti bird collision line marking device. In the case of bird electrocution, the power line must be built on an Eskom approved bird-friendly pole structure which provides ample clearance between phases and phase-earth to allow large birds (such as eagles) to perch on them in safety. In addition, none of the on-site power line between turbines and between turbines and the site substation should be built above ground. The only above ground power line should be the grid connection power line (See Section 6 of the Avifaunal Report).

The new proposed layout (reduction in the number of turbines from 66 to 43 and the relocation of 7 turbines) avoids all avifaunal sensitive areas identified previously. Although the reduction in turbine numbers is substantial, there will not be a reduction in the significance ratings of the avifaunal impacts. These ratings are categorical and the change is not sufficient to warrant dropping the significance from Moderate to Low for example (See Supplementary Avifaunal Report).

## 8.2.2 IMPACTS

The following impacts were raised in the Avifaunal Report. For additional information please refer to Chapter 9 of this report and Chapter 5 of the Avifaunal Report.

- ✦ Destruction of bird habitat during construction of the facility.
- ✦ Disturbance of birds.
- ✦ Displacement of birds from the site and barrier effects.
- ✦ Collision of birds with turbine blades.
- ✦ Cumulative Impacts of wind energy facilities on birds in this area.

## 8.2.3 MITIGATION MEASURES

The following mitigation measures were recommended in the Avifaunal Report.

- ✦ Risk of wind turbines and associated infrastructure to birds is most typically mitigated for (pre-construction) by avoiding construction in high risk areas. WildSkies have described the risk to all key bird species in the Avifaunal Report and it has been consolidated in the sensitivity map. The following factors were considered in the creation of the sensitivity map of the site:
  - The location of the confirmed Jackal Buzzard breeding site. This has been allocated a 500m buffer no go area to mitigate for collision and disturbance impacts.
  - The 'Beggars Bush' valley. This area has been buffered by 500m to provide additional protection for this sensitive area.
  - The 'Green Hills' valley sensitive area. No buffer is recommended for this area based on current data, but it is recommended that as much separation as possible be maintained between turbines and the valley edge.
  - The drainage line and dams that run centrally through the site from east to west have been identified as a potential flight path and buffered by 250m.
  - Four areas have been identified as 'Collision risk areas' on site based on flight activity data collected.
- ✦ None of the proposed infrastructure conflicts with these above described constrained areas.

## 8.3 BAT IMPACT ASSESSMENT

<b>STUDY</b>	<b>Bat Impact Assessment, based on 12-month Pre-Construction Monitoring Campaign</b>
<b>SPECIALIST</b>	<b>Ms Kate MacEwan</b>
<b>COMPANY</b>	<b>Inkululeko Wildlife Services</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.3.1 CONCLUSION & SPECIALIST STATEMENT

EDF appointed IWS to conduct 12 months of bat monitoring at Albany according to the Pre-Construction Bat Surveying Guidelines – 4th Edition (Sowler et al., 2014). Following the change in the scope of the AWEF (reduction in the number of turbines from 66 to 43 and the relocation of 7 turbines), IWS submitted an updated report in October 2020. This report is the final pre-construction report based on the full 12 months' of data collected from static bat detector, manual point samples, roost surveys and ground-truthing between 7 April 2016 and 12 April 2017. Some of the key findings were as follows:

- ✦ Eleven bat species were confirmed for the proposed Albany WEF. None of these are threatened species according to Child et al (2016), but all are protected by the Ciskei Nature Conservation Act 10 of 1987 (the Act) and the Cape Nature: Nature Conservation Ordinance 19 of 1974 (the Ordinance).

- ✦ *T. aegyptiaca* was the most common species detected on site and particularly within rotor swept height. *N. capensis* was also abundant.
- ✦ Activity was highest in autumn and summer, followed by spring and lowest in winter.
- ✦ While activity was low in *Miniopterus natalensis*, there is some evidence to suggest possible migration of the species as activity was highest in autumn.
- ✦ Activity peaked just after season across all seasons, for a couple of hours, with smaller peaks throughout the night, particularly in summer and autumn.
- ✦ Approximately half the bat activity at 80m took place in wind speeds  $\leq 5\text{m/s}$  and 75% in  $\leq 7.5\text{ m/s}$ .
- ✦ Very little bat activity (10%) occurred below 12°C.
- ✦ A bat sensitivity map was produced and split into potentially low-medium, medium, medium- high and high sensitivity areas.
- ✦ In terms of the turbine fatality risk levels described in MacEwan et al. (2020), the Albany WEF falls within the Medium risk category for the Albany Thicket ecoregion and mitigation measures should be recommended based on the pre-construction monitoring results and implemented in the planning or at the start of operation.

In addition to the responsibility of the WEF developer and operator to ensure minimal bat fatalities, there is a responsibility on government to manage cumulative impacts. IWS recommends that the DFFE and the ECDEDEAT commission an individual or a company to collate data gathered from the various projects in the area to assess the actual cumulative impact and to make recommendations from a regional perspective.

South Africa doesn't want to find themselves in the situation where the USA and Canada are, with hundreds of thousands of bats dying annually and declining species numbers because strategic mitigation action was not taken sooner.

### 8.3.2 IMPACTS

The following impacts were raised in the Bat Report. For additional information please refer to Chapter 9 of this report and Chapter 9 of the Bat Report.

- ✦ Roost disturbance and/or destruction due to construction activities.
- ✦ Fragmentation to and displacement from foraging habitat due to wind turbine construction and operation.
- ✦ Bat fatalities due to collision or barotrauma while foraging.
- ✦ Bat fatalities due to collision or barotrauma during migration.
- ✦ Bat fatalities due to collision or barotrauma due to attraction of bats to towers for roosting.
- ✦ Disturbance or displacement of bats due to electromagnetic interference emitted from power lines – Operational Phase.
- ✦ Loss or population disturbances to Conservation Important bat species from the greater area due to construction and operation activities (cumulative impact).
- ✦ Reduction in the size, genetic diversity, resilience and persistence of bat populations (cumulative impact).

### 8.3.3 MITIGATION MEASURES

- ✦ Several measures have been recommended by IWS in the current report to minimise bat fatalities, the key measures are listed below:
  - No part of any turbine, including the entire rotor swept zone, should be constructed within areas of High bat sensitivity. The current layout fulfils this measure.
  - For turbines 15 within the Medium and the 20 turbines with the Medium-High bat sensitive zones, the following curtailment strategy is recommended from the commencement of operation in order to keep bat fatalities to a minimum:

BAT SENSITIVITY ZONE	TIME OF YEAR	TIME OF NIGHT	WHEN TEMP >	CUT-IN WIND SPEED
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<b>Medium</b>	December, January and February	From sunset for 6 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	March	Sunset to sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	April	From sunset for 2 hours and for 3 hours before sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	May	From sunset for 2 hours	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	June, July and August	From sunset for 1 hour	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	September	Sunset to sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium</b>	October and November	From sunset for 4 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium-High</b>	December, January and February	From sunset for 6 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
<b>Medium-High</b>	March	Sunset to sunrise	12°C	6 m.s <sup>-1</sup>
<b>Medium-High</b>	April	From sunset for 2 hours and for 3 hours before sunrise	12°C	6 m.s <sup>-1</sup>
<b>Medium-High</b>	May	From sunset for 2 hours	12°C	6 m.s <sup>-1</sup>
<b>Medium-High</b>	June, July and August	From sunset for 1 hour	12°C	6 m.s <sup>-1</sup>
<b>Medium-High</b>	September	Sunset to sunrise	12°C	6 m.s <sup>-1</sup>
<b>Medium-High</b>	October and November	From sunset for 4 hours and for 2 hours before sunrise	12°C	6 m.s <sup>-1</sup>

- ✦ 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 2020) or later editions of the guidelines, valid at the time of monitoring. IWS recommends the initial 2 years and then every third year for the remainder of the project.
- ✦ The above measures are highly likely (50-60% certainty) to minimise bat fatalities, as only 50% of bat activity occurs above wind speeds of 5 m/s and 40% of bat activity occurs above 6 m/s.
- ✦ However, should operational monitoring show that adjusted annual bat fatalities (adjusted for biases such as searcher efficiency and carcass persistence) ever equal or exceed the threshold level of fatalities guided by SABAAP, then further mitigation will be required.
- ✦ For the 6500ha Albany WEF site, 57 bats per annum is the maximum number of bats that can be killed based on the thresholds provided for the Albany Thicket ecoregion in MacEwan et al.(2020b) or later editions of the guidelines, valid at the time of monitoring.
- ✦ Such additional mitigation actions will only be required at specific turbines that have killed two or more bats during the reporting period – see Aronson et al. (2020) for guidance on fatality reporting periods.
- ✦ At the individual turbines that have killed two or more bats include, the cut-in wind speed should be increased to 7.5m/s (only exposing 25% of bat activity to spinning blades).
- ✦ When dealing with living animals that can respond in different and unpredictable ways to changing environmental, climatic and developmental parameters, it is very difficult to make guaranteed predictions. Lintott et al. (2016) state that the nightly and seasonal activity data collected during pre-construction surveys may provide an indication of the extent of curtailment that is required and therefore the economic viability of the project, however, they highlight the need for a feedback mechanism for practitioners to share the success or failure of mitigation strategies, i.e. adaptive mitigation. The bat specialist conducting the operational monitoring has the right to make further recommendations should they see fit.
- ✦ All power line routes to avoid High Bat Sensitive areas, where possible. Should evidence of bats being affected by power lines be reported at Albany WEF, adaptive mitigation measures must be implemented, in consultation with a bat specialist.

- ✦ Given the magnitude and extent of wind-turbine related bat fatalities worldwide, the conservation implications are critically important and bat fatalities should be avoided, minimised or mitigated proactively.

## 8.4 ECOLOGICAL IMPACT ASSESSMENT

<b>STUDY</b>	<b>Ecological Impact Assessment</b>
<b>SPECIALISTS</b>	<b>Dr Greer Hawley, Ms Ayanda Zide, Mr Craig Sholto-Douglas, Mr Luke Kemp</b>
<b>COMPANY</b>	<b>CES</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Mr Brett Dunstan, IMITHI Services, Appendix F</b>

### 8.4.1 CONCLUSION & SPECIALIST STATEMENT

No fatal flaws were identified during the ecological impact assessment; however, the following areas of high ecological sensitivity, in proximity to the proposed development, must be “no-go” areas for the proposed Albany WEF development:

- ✦ The patches of Southern Mistbelt Forest vegetation (Beggars Bush State Forest); and
- ✦ The Eccla Local Authority Nature Reserve.

It must be noted that, with the exception of a section of the overhead line corridor – within which the overhead line will be routed, the current grid infrastructure layout avoids all of these no-go areas. Based on the findings of this Ecological Impact Assessment, it is the opinion of the Ecological Specialist/(s) that the proposed Albany Grid Infrastructure development will have no high residual negative impacts associated with it, and the careful implementation of the recommended mitigation measures, which are stipulated in this report and in the EMP, are likely to reduce the significance of the identified impacts to that of low significance. No fatal flaws, relating to the ecological aspects of the proposed site, have been identified for the proposed Grid Infrastructure development. Where possible, the placement of the overhead line pylons should avoid sensitive surface water features and rocky outcrops due to the value that these areas have for reptiles, amphibians and mammals.

There is therefore no reason, in terms of the ecological sensitivity, that the proposed Albany WEF development should not be authorised.

### 8.4.2 IMPACTS

The following impacts were raised in the Ecological Impact Assessment Report. For more information please refer to Chapter 9 of this report (EIR) or Chapters 7 and 8 of the Ecological Impact Assessment Report.

- ✦ Faunal habitat loss and fragmentation due to construction activities.
- ✦ Loss of reptile diversity due to construction activities
- ✦ Loss of amphibian diversity due to construction activities.
- ✦ Loss of mammal diversity due to construction activities
- ✦ Impact of noise and dust on faunal species due to construction activities.
- ✦ Loss of vegetation communities due to construction activities.
- ✦ Removal of alien vegetation during construction activities.
- ✦ Pollution of surface water resources due to construction activities.
- ✦ Rehabilitation during the construction phase.
- ✦ Invasion of alien vegetation during the operational phase.

### 8.4.3 MITIGATION MEASURES

It is recommended that a suitably qualified ecological specialist is on site prior to vegetation clearance to determine whether any of the SCC or protected species are located within the final/authorised turbine foundation footprints, the road routes and/or the temporary laydown area. If species require removal and/or relocation, the appropriate permissions must be obtained prior to the commencement of vegetation clearance or earth-moving activities in the identified areas. The approvals/permits may be subject to certain conditions, for example allowing various nurseries to collect plants before vegetation clearance commences or the removal of specific species for rehabilitation purposes.

Micro-siting must be undertaken to determine the least sensitive locations for the placement of overhead line pylons. If species are encountered which require removal and/or relocation, the appropriate permissions must be obtained prior to the commencement of vegetation clearance in the identified areas. The approvals/permits may be subject to certain conditions, for example allowing various nurseries to collect plants before vegetation clearance commences or the removal of specific species for rehabilitation purposes.

Plants which will be used for rehabilitation purposes must be stored in nurseries until such a time that they are replanted. It should be noted that many critical SCC are plants which will not be able to be successfully uprooted and replanted (Phillipson, 2002), or at best may have a low survival rate. In all cases, the species will require very careful treatment to give them the best chances of survival, and specialist horticultural knowledge is required.

It is recommended that the mitigation measures which are listed in sections 10.3.1, 10.3.2 and 10.3.3 (Ecological Impact Assessment Report) are included in the Environmental Management Programme (EMPr) to reduce the potential ecological impacts associated with the proposed Albany WEF development.

## 8.5 HERITAGE IMPACT ASSESSMENT

<b>STUDY</b>	<b>Heritage Impact Assessment</b>
<b>SPECIALIST</b>	<b>Ms Celeste Booth</b>
<b>COMPANY</b>	<b>Booth Heritage Consulting</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.5.1 CONCLUSION & SPECIALIST STATEMENT

The phase 1 archaeological impact assessment survey done in 2018 was conducted to establish the range and importance of the exposed and in situ archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage. Following the change in the scope of the AWEF (reduction in the number of turbines from 66 to 43 and the relocation of 7 turbines, a revised report was compiled during May 2019 that reflected the revised layout.

Middle Stone Age (MSA) stone artefacts occurred in various locations over the proposed development area within the exposed and disturbed surface areas. This would generally be expected as the immediate and wider region is rich in the occurrence of Middle Stone Age as well as Early Stone Age archaeological material. It is possible that stone artefacts will occur between the surface and 50 cm – 80 cm below the ground.

Several stone packed features were also recorded within the proposed development area. These included stone packed / walled kraals, an historical stone packed / walled farm boundary as well as the remains of foundations.

The built environment component included historical ruins that included farmhouses, other buildings and a church. A graveyard is associated with the church.

An old historical wagon route was pointed out by the owner of the Farm Grobbeler's Kloof situated at the entrance to the farm south off the N2 national, running parallel to N2 national road.

The potential negative impact on the stone walling (BHSW2) was initially of concern. The revised layout followed the recommendation that an alternative access road be constructed south of the stone walling to access the four turbines (WTG 70, WTG 5, WTG 7, WTG 9) on the northern boundary of the Farm Glen Craig 241. The road has been realigned to the south running parallel to the stone walling in order to avoid this impact.

### **8.5.2 IMPACTS**

All sensitive artefacts have been avoided and no infrastructure is situated within any of the identified features. Potential negative impact on the stone walling is of concern. Access roads to the five turbines (WTG 70, WTG 3, WTG 5, WTG 7, WTG 9) located on the southern slopes of Botha's Hill on the northern boundary of the Farm Glen Craig 241, if constructed off the existing internal road that runs along the hilltop, would need to break down portions of the stone walling. It would be suggested that a road be constructed south of the stone walling to access the five turbines.

### **8.5.3 MITIGATION MEASURES**

The overall area is considered as having a low archaeological heritage significance and a medium-high heritage significance. The following recommendations must be considered before development continues:

- ✦ An archaeological walk-through assessment must be conducted when the final layout of the Albany wind energy facility is determined. The walk-through assessment will be conducted to assess changes in the positions of the turbines, access roads and cabling between the turbines as well as other associated infrastructure relative to the original footprint. Further mitigatory recommendations may be necessary if any of the changes may impact negatively upon heritage resources.
- ✦ The stone packed features and stone walling must be noted and a no-impact / no-development buffer of 20 m be established.
- ✦ If any of the buildings are planned to be demolished during the course of development, a built environment specialist, historical architect should be appointed to assess the buildings proposed for demolition.
- ✦ If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.
- ✦ A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO)

should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

- ✦ The developer / ECO / or construction manager must apply to the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for a destruction permit to disturb the stone artefact scatters prior to the commencement of the development.

## 8.6 NOISE IMPACT ASSESSMENT

<b>STUDY</b>	<b>Noise Impact Assessment</b>
<b>SPECIALIST</b>	<b>Mr Morné de Jager</b>
<b>COMPANY</b>	<b>Enviro Acoustic Research</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.6.1 CONCLUSION & SPECIALIST STATEMENT

This study used the noise emission characteristics of the Vestas V136 3.45MW wind turbine, resulting in a worst-case scenario being evaluated.

Various construction activities would be taking place during the development of the facility and may pose a noise risk to the closest receptors. The resulting future noise projections indicated that the construction activities of the Wind Turbines, as modelled for the worst-case scenario will comply with the National Noise Control Regulations for daytime activities, but may pose a noise risk of low significance on a number of receptors for night-time construction activities. With mitigation, this potential noise impact can be reduced to a low significance (precautionary principle).

The reduction in the number of turbines and amendment of the layout was also influenced by the identification of sensitive noise receptors (NSD17), which were initially identified as having a medium risk of noise impact during the operational phase. Mitigation was proposed that would reduce this potential impact. There is no potential for a cumulative noise impact from other wind farms in the area.

Following the change in the scope of the AWEF (reduction in the number of turbines from 66 to 43, the relocation of 7 turbines and the inclusion of the Grid Infrastructure), EARES submitted a supplementary report, which concluded the following:

The proposed layout:

- ✦ Locates the WTGs on average further from the identified NSD.
- ✦ No WTG is moved closer than 1,000m from any NSD.
- ✦ The total number of WTG within 1,000 m from NSD 17, are reduced from three (3) to two (2). This reduction will result in a slight reduction in noise levels due to the reduction in cumulative noises (from three to two WTGs) and likely reduce the significance of the operational noise impact from Medium to Low. WTGs further than 1,000m from any identified NSD, with the closest WTG approximately 1,580 m from NSD10.

Therefore, considering the proposed locations of the WTGs and the potential noise impact, that:

- ✦ The change will not increase the significance of the noise impact (the noise level will likely reduce at NSD 17 considering previous noise levels modelled).
- ✦ A full noise impact assessment with new modelling will not be required and the recommendations as contained in the previous document will still be valid.

- ✦ The cumulative noise impact will not change, as there are no new or proposed wind turbines (from a different WEF), located within 2,000m from identified NSDs that will cumulatively increase the noise levels.
- ✦ There are no new limitations or assumptions.
- ✦ The changes will not increase the significance of the noise impacts identified in the original report and as such an updated noise impact assessment would not be required.

## 8.6.2 IMPACTS

The following impacts were raised in the Noise Report. For additional information please refer to Chapter 9 of this report and Chapter 9 of the Noise Report.

- ✦ Noise from construction activities.
- ✦ Noise from operation of wind turbines.

## 8.6.3 MITIGATION MEASURES

Construction phase mitigation includes the following:

- ✦ Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). Information that should be provided to potentially sensitive receptor(s) includes:
  - Proposed working dates, the duration that work will take place in an area and working times.
  - The reason why the activity is taking place.
  - The construction methods that will be used.
  - Contact details of a responsible person where any complaints can be lodged should there be an issue of concern.
- ✦ Minimize simultaneous night-time construction activities close to receptors 17, 28, 18, 19, 21 and 10 where possible. When night-time activities are to take place close to these receptors they should be as per previous recommendation.
- ✦ The use the smaller/quieter equipment when operating near receptors.
- ✦ Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures if available. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised.
- ✦ Locate access routes as far as possible from identified receptors, especially if these roads will be used during night-time construction activities.

Operational phase mitigation includes the following:

- ✦ Should the houses at NSD17 be (continue to be) used for residential purposes during the operational phase:
  - the applicant should undertake ambient sound level measurements over a period of at least 5 nights to clearly define the night-time ambient sound levels at this point;
  - These measurements should be repeated during the operational phase of the WEF to ensure that the noise levels are less than 45 dBA.
- ✦ If the noise levels (due to the operational wind turbines) exceed 45 dBA, the applicant should develop a noise curtailment programme.

## 8.7 PALEONTOLOGICAL IMPACT ASSESSMENT

<b>SPECIALIST</b>	<b>Mr Rob Gess</b>
<b>COMPANY</b>	<b>Rob Gess Consulting</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### **8.7.1 CONCLUSION & SPECIALIST STATEMENT**

It is the nature of palaeontological resources that important sites may be spatially very limited, yet they may prove to be of international significance. Discovery of such resources during development may be of great permanent benefit to the scientific community. Their destruction represents a severe permanent loss which may be of international significance.

It was found during the survey that most proposed wind tower positions are situated on strata of the Witpoort Formation, with the exception of WTG positions 23, 24, 26, 27 and 68 which are situated on strata of the Lake Mentz subgroup, and Wind towers 19 and 21 which are proposed to be constructed where silcrete overlies degraded Witpoort Formation mudstone.

Due to the extreme weathering of strata at surface along the ridges, soil development and extensive vegetation cover, current outcrop was found to be extremely sparse and no palaeontological material was observed at the actual proposed wind tower positions.

Quarries and roadworks within the study area and within the district have however demonstrated that excavation into the Witpoort Formation not infrequently intercepts black shale layers and lenses that may be of great palaeontological value. Palaeontological investigations of these layers, in the Grahamstown district, has provided the world's only window into high latitude conditions at the end of the Devonian, a time of extreme importance in understanding the process of vertebrate terrestrialisation and the lead up to the second global Mass Extinction Event.

There is therefore a reasonable chance that excavation of holes for casting wind tower footings will intercept fossiliferous shales, which may contain important unique heritage material. Lag deposits, containing fossil plant stems and possibly vertebrate bones might also be found preserved within the quartzites. The extreme inaccessibility of many of the proposed positions furthermore requires that access roads will need to be excavated in order for construction equipment to reach the positions. These may also disturb palaeontological material.

Excavations into Lake Mentz Subgroup strata are somewhat less likely to disturb palaeontological material, but should they do so this would also be significant, potentially providing insights into the recovery fauna and flora after the end Devonian Extinction.

### **8.7.2 IMPACTS**

- ✦ Destruction of palaeontological resources during excavation of holes for the casting of turbine footings.

### **8.7.3 MITIGATION MEASURES**

- ✦ All excavated holes for wind tower footings (with the exception of WTG positions 19 and 21) should be examined by a palaeontologist after excavation and before casting of footings.
- ✦ All new access roads should simultaneously be inspected by a palaeontologist prior to any rehabilitation.
- ✦ During excavation of WTG positions 19 and 20 the ECO should check for any palaeontological material and immediately report any finds or suspected finds to the palaeontologist.

## 8.8 SOCIAL IMPACT ASSESSMENT

<b>STUDY</b>	<b>Social Impact Assessment</b>
<b>SPECIALIST</b>	<b>Ms Marchelle Terblanche</b>
<b>COMPANY</b>	<b>INDEX</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.8.1 CONCLUSION & SPECIALIST STATEMENT

Albany Wind Power (Pty) Ltd is proposing the establishment of the Albany WEF, located in the Makana Local Municipal (“LM”) area and is located 7 km to the east of Grahamstown/Makhanda and is potentially 67 hectares in extent. Based substantially on the comments received relating to the draft EIA report and VIA, the project proponent has reduced the number of turbines from 66 to 43.

A Socio-economic Impact Assessment (“SIA”) is one of the Specialist studies required for the Project’s EIA and aims to identify and focus on issues and impacts related to the socio-economic environment within the Project’s area of influence.

Under the DMRE’s Renewable Energy Independent Power Producer Procurement Programme (“REI4P”), private companies such as EDF Renewables are required to participate in a highly competitive bidding process, in order to be awarded a 20 year long Power Purchase Agreement to sell electricity to Eskom. In order to select winning bids, the DMRE uniformly ranks all projects submitted according to a scorecard which is currently structured as follows:

- ▲ 70% of the score is based on the proposed energy tariff of the respective projects; and
- ▲ 30% of the score is based on the Economic Development (“ED”) commitments made by the respective projects on the following seven elements of the ED scorecard: job creation; local content; preferential procurement, Black ownership, Black top management, ED and Socio-economic Development (“SED”).

Stakeholders within the Project’s area of influence were identified throughout public participation, EIA and SIA processes. The site specific study area consist of agricultural farms and communal land (municipal land), which is mainly used for grazing purposes by approximately 200 commonage farmers from previously disadvantaged communities. Land uses in the broader study area is mainly agriculture, but predominantly private game reserves and hunting farms that offer high-end luxury tourist accommodation and eco-tourism activities that rely on domestic and international tourists for their economic growth and survival. Residential land uses include Grahamstown/Makhanda and the villages of Bathurst and KwaNdwanyana and scattered homesteads on the surrounding farms. There are a few open cast mines and quarries and existing infrastructure that include Eskom substation and associated powerlines, the N2 and R67 roads and various smaller access roads.

There are a number of both public and private nature/game reserves within the study area that have formal conservation status either as proclaimed or declared a protected environment in terms of the Protected Areas Act and probably account for about 15 to 20% of the total study area with the biggest contributions being the Indalo Protected Environment (“Indalo”) and the Great Fish Nature Reserve. The Great Fish Nature Reserve managed by the Eastern Cape Parks and Tourism Agency (“ECPTA”), is located at a distance ranging from about 15 to 40 km from the nearest turbines. There are also a number of private game reserves that do not have formal protected status (i.e. zoned Agriculture) and these private nature reserves probably contribute in the order of a further 5% to the total study area (VIA, February 2021).

Tourism contributes R680 million to the GGP of the Sarah Baartman District Municipality (SBDM IDP, 2019/20 Review). The SBDM's Tourism Master Plan calculates that tourism supports 1 936 jobs in the tourism industry; a total of 4 413 jobs within the tourism economy; and the equivalent of 294 SMMEs in the tourism economy.

The construction phase of the Albany WEF is labour intensive and stretches over a period of approximately 24 months. It is anticipated that the Project will result in seven (7) positive impacts (LOW to MODERATE significance) for the local economy, employment and skills development.

Ten (10) negative impacts (LOW to MODERATE significance) could potentially manifest for individuals, households and communities, such as health and safety risks, security issues, damage to road infrastructure, intrusion impacts, possible influx of jobseekers, and the likes. Transport of turbine components could result in temporary road closures with HIGH overall significance and cumulative impacts for the wider region. Negative impacts are generally short-term in nature and can be mitigated effectively.

At this stage the Albany WEF is expected to be operational for a 20 to 25 year period. Although this phase is less labour intensive, various socio-economic benefits would manifest for the local and regional economies. The assessment determined that four (4) positive impacts of LOW significance and three (3) positive impacts of MODERATE significance would manifest. These impacts relate to direct and indirect employment, rental incomes, community projects, SED and ED contributions, skills development and capacity building and general/induced impacts on the local economy.

Five (5) negative impacts of LOW significance and five (5) impacts of MODERATE significance could occur. The majority of the issues raised by I&APs relate to impacts on private game reserves and protected areas and the resultant impacts on the tourism/game/hunting industries. Visual and aesthetic concerns raised by I&APs and the subsequent negative impacts the development poses for job losses, devaluation of land and impacts on businesses, livelihoods and investments were the most significant issues raised.

Desktop studies, research documents and publications, consultation and questionnaires formed the basis of the SIA research. The following general conclusions, which relate to impacts on tourism and livelihoods, are made:

- ▲ No local research and published surveys could be obtained with regards to impacts on tourism/livelihoods;
- ▲ Wind farms and tourist destinations abroad (on which published literature is based) differ from the study area in terms of the tourist product offered, landscapes, communities affected, localities of the wind farms as well as the sizes of the development;
- ▲ No consensus exists in the international literature consulted with regards to wind farms' actual impacts on tourism (volumes, experiences, and revenue), tourists' destination of choice and so forth;
- ▲ Some studies show that wind farms may have a negative effect on tourism demand and tourism expenditures in the affected area; whereas others were consistent in their conclusion that wind farms are innocuous in terms of local tourism demand, numbers, revenue and experiences;
- ▲ Most respondents in the Kwandwe survey indicated a negative response towards such a development and the impact it would have to their experience (Africa and bush experience) and destination of choice;
- ▲ Impacts that have manifested for game reserves affected by Cookhouse and Waainek WEF's were mostly as a result of visual aspects (especially night light flicker). Game reserves have had to implement measures to address visual intrusions, i.e. to change game drive routes, do refurbishments and install lighting that distracts from light disturbances;
- ▲ The tourism industry is highly competitive, sensitive and susceptible to subtle changes in market conditions and it is recognised that a marginal change in the numbers of tourists could have a significant knock-on economic effect;

- ▲ Proximity to turbines and their localities (visual impacts on lodges and strategic viewpoints on the game farms) together with impacts on the sense of place, which could be influenced by changes in landscape (scenic resources), could potentially influence the local tourism market and subsequently livelihoods.

The reduction of the number of turbines with 23, has addressed some of the visual impacts associated with this Project. It is however acknowledged that visual impacts alone is not the only determining factor and that impacts on the sense of place and changes to the fabric of the landscape (as a result of cumulative impacts) could also influence the community and tourists' perception of the study area and ultimately their choice of destination. A reduction in tourist volumes and rates charged may then result in financial losses, which may result in affected tourist establishments/game/hunting farms reducing their workforce. Negative impacts on downstream supporting businesses and existing community projects supported by game reserves could also occur.

Negative local economic impacts on tourism/game/hunting industries, livelihoods and on potential job losses in these industries are rated with an overall MODERATE significance. Confidence in the rating is however 'uncertain' as: (i) no consensus exists with regards to wind farms' actual impacts on tourism; (ii) no measurable economic impact on tourism locally or abroad could be obtained; (iii) each tourism market would be sensitive to its own set of circumstances and generalisations cannot be made; and (iv) only five (5) of the game farms/protected environments in the study area are regarded as significantly visually impacted (moderate to high).

Establishment of the Albany WEF will make a 'definite' contribution to employment and the local economy during construction, as well as the lifespan of the Project. Employment during the two-year construction phase is rated with an overall MODERATE significance, whilst operational phase employment would be limited (LOW). However, important contributions towards the local economy in terms of procurement, SED and ED contributions (2.1% of revenue) and shareholding in respect of local ownership (approximately 26%) will manifest (MODERATE significance).

## 8.8.2 IMPACTS

The following impacts have been identified and assessed in the SIA. Please refer to Chapter 9 of this report (EIR) and to Chapter 10 of the SIA for more information.

- ▲ Impact Category 1: Employment (Construction Phase)
  - Employment opportunities
  - Employment equity
  - Local employment
- ▲ Impact Category 2: Local Economic Impacts (Construction Phase)
  - Procurement
  - Impacts as a result of salaries and wages
  - Induced impacts
- ▲ Impact Category 3: Impacts on the Social and Demographic Structure of the Local Municipality (Construction Phase)
  - Influx of jobseekers and the impact of temporary construction workers
  - Impacts on the size and structure of the local Municipal population
- ▲ Impact Category 4: Skills Development, Capacity Building and Social Responsibility (Construction Phase)
  - Training / skills development of individuals / groups / SMMEs
  - Beneficiary identification
  - Community projects, ED and SED contributions
- ▲ Impact Category 5: Individual and Family Level Impacts (Construction Phase)
  - Disruptions in daily living and movement patterns
  - Intrusion impacts at the construction site

- Security impacts
- ✦ Impact Category 6: Impacts on Infrastructure and Services and General Impacts on The Makana LM (Construction Phase)
  - Disruptions of services
  - Damage to road infrastructure and surfaces
  - General impacts on the Makana LM
- ✦ Impact Category 8: Health and Safety Impacts
  - Health and safety risks for construction workers
  - Community health and safety risks
- ✦ Impact Category 1: Impacts on Employment (Operational Phase)
  - Direct employment
  - Indirect employment
  - Loss of existing jobs as a result of the Project
- ✦ Impact Category 2: Local Economic Impacts (Operational Phase)
  - Potential loss in incomes: Tourism/Gaming/Hunting industries
  - Potential impacts on incomes: Rental incomes
  - Potential impacts on land values: Farm portions included in the project
  - Potential impacts on land values/market values: Surrounding farms and Game Reserves
  - General impacts for the local economy
- ✦ Impact Category 3: Skills Development and Social Responsibility (Operational Phase)
  - Community projects, SED and ED contributions
  - Training, skills development and capacity building
- ✦ Impact Category 4: Individual and Family Level Impacts (Operational Phase)
  - Impacts on the 'sense of place'
  - Intrusion impacts
- ✦ Impact Category 5: Impacts on Infrastructure and Services (Operational Phase)
  - Impacts on services and community infrastructure
  - General impacts on Makana LM and the broader region
- ✦ Impact Category 6: Land Use Impacts (Operational Phase)
  - Impacts on agriculture
  - Land use management
  - Impacts on archaeological/historical sites and cultural practices
- ✦ Impact Category 9: Community / Institutional Arrangements (Operational Phase)
  - Community mobilization
- ✦ Impact Category 7: Health and Safety Impacts (Operational Phase)
  - Health and safety risks for workers
  - Community health and safety risks

### **8.8.3 MITIGATION MEASURES**

The objectives, activities, timeframes and persons responsible for implementing the management and monitoring measures to ensure effective execution and monitoring of the social processes have been detailed in the SMP (Section 13 of the SIA). These are summarised below:

- ✦ Employment and skills development / capacity building
  - Maximise local employment and the use of SMMEs / local small businesses that are empowered through skills development and training initiatives.
- ✦ Social responsibility (Trust, ED and SED contributions)
  - Formation of a legal entity/trust that would be representative of the communities/stakeholders that it represents.

- Administration and management of SED and ED contributions for feasible community projects that would result in community upliftment, and economic and social benefits for the broader local municipality.
- ✦ Awareness / Community Engagement Plan
  - Promotion of transparency and implementation of public participation for the duration of the Project.
  - Eliminate conflict and address potential issues in a pro-active manner.

## 8.9 TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN

<b>STUDY</b>	<b>Traffic Impact Assessment</b>
<b>SPECIALIST</b>	<b>Mr Deon McQuirk</b>
<b>COMPANY</b>	<b>Emonti Consulting Engineers</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.9.1 CONCLUSION & SPECIALIST STATEMENT

The current road network is sufficient to cater for this development, subject to certain improvements/amendments being implemented. Certain localised road improvements may be required in order to facilitate the temporary accesses to the site to accommodate the expected abnormal loads.

### 8.9.2 IMPACTS

- ✦ Traffic congestion and delays due to transportation of infrastructure.
- ✦ Traffic congestion and delays due to construction traffic.
- ✦ Traffic delays close to site access roads.

### 8.9.3 MITIGATION MEASURES

Please see Appendix A of the Traffic and Transport Management Plan for a full detailed plan regarding mitigation for these impacts. The Traffic and Transport Management Plan also forms part of the EMP in Appendix G of this set of documents.

## 8.10 VISUAL IMPACT ASSESSMENT

<b>STUDY</b>	<b>Visual Impact Assessment</b>
<b>SPECIALISTS</b>	<b>Mr Michael Johnson, Dr Alan Carter</b>
<b>COMPANY</b>	<b>CES</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Ms Tosca Grunewald, NuLeaf, Appendix F</b>

### 8.10.1 CONCLUSION & SPECIALIST STATEMENT

The proposed Albany WEF is located on a large, elevated area of land that will be visible from many locations within the 30 km radius viewshed, including towns such as Makhanda, surrounding public nature reserves such as the Great Fish River Nature Reserve, and private game reserves such as Kwandwe and Indalo Protected Environments, farms and homesteads, and roads. The majority of the land surrounding the WEF is agricultural land.

The current final VIA is based on a significantly reduced number of turbines compared with the draft VIA, where 23 turbines have been removed, including 12 turbines in the western cluster that are particularly visible to the Kwandwe and Indalo Protected Environments in the west and north west of the WEF. This includes five turbines that were originally located almost immediately adjacent to the south east boundary of the unprotected portion of Kwandwe. While the remaining turbines still remain visible, this reduction in turbine numbers will reduce the density of turbines and numbers of visible turbines.

A number of submissions were made by I&APs with respect to the draft VIA. The main issues raised included:

- ▲ Poor selection of vantage points for visual assessment.
- ▲ Omission of the Great Fish Nature Reserve.
- ▲ The visual impact on wildlife and nature tourism in the area would be of fatal proportions.
- ▲ The 20-25 year lifespan of the WEF as it affects the HIGH impact rating, is questioned.
- ▲ Questions draft VIA statement that the landscape of the study area is not pristine or of very high scenic value.
- ▲ Fails to adequately address the cumulative impacts of WEFs in the area.
- ▲ Questions the limited mitigation measures proposed, such as reduced hub height and reduced turbine numbers and the no-go alternative.
- ▲ The VIA did not adequately assess other alternatives.
- ▲ No attempt to implement the hierarchical approach to impact management through impact avoidance.
- ▲ The VIA fails to ensure that the assessment is undertaken by an independent visual specialist.
- ▲ Inaccurate baseline information.
- ▲ VIA ignores the REDZ visual mapping showing the classification of the relevant portion of REDZ 3 as very high visual sensitivity.
- ▲ The impact of night lighting has not been addressed at all.
- ▲ Limited evidence of project screening to avoid visually sensitive areas.

The current assessment of the visual impacts of the Albany WEF on sensitive receptors, is based on the following criteria:

- ▲ Visibility – extent of project visible to receptor (hubs with height at 130 metres)
- ▲ Visibility – extent of project visible to receptor (blades at height of 215 metres)
- ▲ Visual exposure – distance of receptor
- ▲ Landscape sensitivity – of receptor
- ▲ Visual intrusion – on receptor daytime
- ▲ Visual intrusion – on receptor night lighting
- ▲ Visual sensitivity – of receptor
- ▲ VAC – concealment potential

A combination of methods was used for assessing visual impacts including:

- ▲ Viewshed analyses for the project and study area as a whole, and for seven (7) public nature reserves and eight (8) private game reserves.
- ▲ 3D simulated views for selected viewer points during the daytime (9) and turbine night lighting (8).
- ▲ Field observations for assessing impacts on:
  - Surrounding towns and villages;

- Farms hosting and surrounding the wind turbines; and
- Various roads, passes and scenic routes in the study area.

The identification of potential sensitive visual receptors within a 30 km radius of the proposed 43 Albany WEF turbines was based on the sensitivity features used in the REDZ SEA Landscape Sensitivity Analysis Report (2015), including:

- ▲ Ridgelines, scarps, prominent elevations and geological features;
- ▲ Other officially protected landscapes (other than National Parks) included in the SA Protected Area Database (SAPAD), including nature reserves;
- ▲ Private reserves and game farms;
- ▲ Towns, villages and settlements;
- ▲ National roads;
- ▲ Scenic routes, passes and ports; and
- ▲ Provincial and arterial roads.

Generally, all public nature and private game reserves within a 30 km radius of the WEF were classified as sensitive, including the following 15 public nature and private game reserves:

#### **Public proclaimed reserves**

- ▲ Ecca Nature Reserve (Local Authority)
- ▲ Waters Meeting Nature Reserve (EC Parks)
- ▲ Roundhill Oribi Nature Reserve (Local Authority)
- ▲ Kap River Reserve (Local Authority)
- ▲ Great Fish Nature Reserve (EC Parks)
- ▲ Beggar's Bush State Forest

#### **Private Protected Environment**

- ▲ Kwandwe Private Game Reserve North - Indalo Protected Environment
- ▲ Kwandwe Private Game Reserve West - Indalo Protected Environment
- ▲ Buffalo Kloof Protected Environment

#### **Private un-protected reserves**

- ▲ Kwandwe Private Game Reserve North - none Indalo Protected Environment
- ▲ Kudu Ridge Private Game Reserve
- ▲ Bucklands Private Nature Reserve
- ▲ Salvatore Farms
- ▲ Coleridge Private Game Reserve
- ▲ Hunters Hoek Lodge

Due to the significant size and varying views of the proposed WEF, the viewshed assessment for Kwandwe Private Game Reserve has been assessed under three components, namely:

- ▲ Kwandwe Private Game Reserve North - Indalo Protected Environment
- ▲ Kwandwe Private Game Reserve West - Indalo Protected Environment
- ▲ Kwandwe Private Game Reserve North - none Indalo Protected Environment

#### **Overall visibility of the project**

The overall visibility of a development is an indication of where in the region the development will potentially be visible from. As expected, due to the turbine heights and their location on relatively elevated land, a high number of wind turbine hubs and blades will be visible from a significant proportion of the study area (30 km radius of the WEF). The viewshed area for the proposed Albany WEF will be about 1,300 km<sup>2</sup> and will have a **HIGH** overall visibility within the region.

### ***Overall visual sensitivity of the surrounding landscape***

Visual sensitivity is the inherent visibility of the landscape, usually determined by a combination of topography, landform, vegetation cover and settlement patterns.

The study area to the north and north west includes a number of public nature reserves (such as the Great Fish River Nature Reserve) and private game reserves (such as Kwandwe Private Game Reserve) which are sensitive receptors in the surrounding landscape. However, the majority of the land in the study area consists of agricultural land, particularly to the north east and east, and towns and villages, which are a less sensitive visual receptors.

The majority of the landscape in the study area has been transformed to some degree by historical agricultural activities. Man-made structures, activities and effects are present in most views of the landscape. The scenic value could be described as HIGH (but not pristine or unique) due to presence of good condition Fish Arid and Fish Valley thicket vegetation.

It is concluded that the surrounding landscape will have a **MODERATE** overall visual sensitivity for agricultural and residential areas to **HIGH** overall visual sensitivity for the nature and game reserves.

### ***Overall visual intrusion of the project on the surrounding landscape***

Visual intrusion is the level of compatibility or congruence of the project with the particular qualities of the landscape of the affected area, or its 'sense of place'. Based on the criteria for overall visual intrusion provided by Oberholzer (2005), it is concluded that the Albany WEF will have a **HIGH** overall visual intrusion since it will result in a noticeable change in the surroundings.

### ***Visual assessment of individual potentially sensitive receptors***

Section 12.4 of the specialist Visual Impact Assessment report provides a comprehensive visual impact assessment of the individual sensitive visual receptors based on the following seven sensitivity criteria proposed by Oberholzer (2005):

- ▲ Visibility – extent of project visible to receptor
- ▲ Visual intrusion – on receptor daytime
- ▲ Visual intrusion – on receptor night lighting
- ▲ Landscape sensitivity – of receptor
- ▲ Visual sensitivity – of receptor
- ▲ Visual exposure – distance of receptor
- ▲ VAC – concealment potential

It is projected that the proposed Albany WEF will have a HIGH severity visual impact on the following sensitive receptors.

Visual Receptors	Overall severity of impact
<b>Provincial and Municipal Nature Reserves</b>	
Ecca Nature Reserve	<b>HIGH</b>
<b>Private Protected Environment</b>	
Kwandwe Private Game Reserve North (Indalo)	<b>MODERATE to HIGH</b>
Kwandwe West Indalo Protected Environment	<b>HIGH</b> western cluster
Buffalo Kloof Protected Environment	<b>HIGH</b>
<b>Private reserves and game farms</b>	
Kwandwe Private Game Reserve (non Indalo)	<b>MODERATE to HIGH</b>

In assessing the direct impacts to visual resources, it has been recognised that, although the lifespan of the project is likely to extend for 20-25 years, all of the components of the superstructures can be removed on decommissioning, after which the landscape will be rehabilitated back to a near natural state. This means that although the proposed facility will undoubtedly have an impact on the visual resources of the area, it does not represent a completely irreversible loss of scenic resources.

According to Oberholzer (2005), the criteria that determine whether or not a visual impact constitutes a potential fatal flaw are categorised as follows:

- ▲ Non-compliance with Acts, Ordinances, By-laws and adopted policies relating to visual pollution, scenic routes, special areas or proclaimed heritage sites.
- ▲ Non-compliance with conditions of existing Records of Decision.
- ▲ Impacts that may be evaluated to be of high significance and that are considered by stakeholders and decision-makers to be unacceptable.

Overall, the visual impacts of the Albany WEF range from LOW for many receptors (either due to low sensitivity of receptors or distance from the WEF), to HIGH for other more sensitive receptors such as formally protected nature reserves and game farms.

Based on the analyses, visual impacts are considered to be MODERATE to HIGH for the following four sensitive visual receptors, particularly to the closer western turbine cluster:

- ▲ Kwandwe Private Game Reserve (Indalo);
- ▲ Kwandwe West Indalo Protected Environment;
- ▲ Buffalo Kloof Protected Environment;
- ▲ Kwandwe Private Game Reserve (none Indalo).

The MODERATE to HIGH rating is due to the diminishing impact with increasing distance from the WEF for the four receptors with the higher rating being for portions of the properties located closer to the WEF. Night lighting will in particular, contribute to the HIGH impact and every effort should be made to minimise turbine lighting requirements.

There are many other receptors including public natures reserves and private game farms, farms, towns and villages, roads, etc. where the impacts will be LOW to MODERATE mostly due to low receptor sensitivity, distance and potential screening mostly due to the varied topography, particularly in the region of the Ecca Pass/Ridge to the north of the WEF.

The Albany WEF will undoubtedly have a HIGH visual impact on the landscape. However, this impact should be considered within the context of the following:

- ▲ The wind farm will not be a permanent development (i.e. 20-25 years life span), after which the turbines and other superstructure will be removed on decommissioning, failing which a new Environmental Authorization will need to be secured;

- ⤴ The landscape can be restored through rehabilitation after decommissioning;
- ⤴ Although limited, certain recommended measures can be implemented to mitigate the impacts to some extent;
- ⤴ The landscape of the immediate study area (farms on which turbines will be located) is not pristine or of very high scenic value; and
- ⤴ The wind farm is partially situated within and adjacent to a Renewable Energy Development Zone (REDZ 3 - Cookhouse) and adjacent to the already approved Grahamstown Wind Farm.

Based on the results of the current VIA, it is the opinion of the specialist that even though the Albany WEF will have HIGH visual impacts on certain private game reserves and Protected Environments, the proposed Albany WEF should be approved provided that the proposed recommended mitigation measures are included as conditions in the Environmental Authorisation, particularly those relating to reducing night lighting impacts.

It is concluded that although the potential losses of scenic resources are high, this does not represent a fatal flaw.

### **8.10.2**      ***IMPACTS***

The following impacts were identified and assessed as part of the VIA. Please refer to Chapter 9 of this report (EIR) and Chapter 12 of the VIA for more information.

- ⤴ Visual impact of construction activity
- ⤴ Impact of wind turbines on visually sensitive receptors
  - Residents of surrounding towns and villages, including Makhanda, Bathurst and KwaNdwanyana.
  - Protected Areas and Game Reserves, including Kudu Ridge Private Game Reserve; Bucklands Private Game Reserve; Kwandwe Private Game Reserve; Buffalo Kloof Private Game Reserve; Coleridge Game Reserve; and Huntshoek Lodge.
  - Residents on farms hosting and surrounding the wind turbines.
  - Motorists using the main roads in the study area.
- ⤴ Impact of nightlights on existing landscape.
- ⤴ Shadow Flicker.
- ⤴ Visual impact of 132kV powerline and ancillary infrastructure.
- ⤴ Visual impact of decommissioning activity.

### **8.10.3**      ***MITIGATION MEASURES***

- ⤴ The construction contractor should clearly demarcate construction areas to minimise site disturbance.
- ⤴ Construction of new roads should be minimised, and existing roads should be used where possible.
- ⤴ Clearance of vegetation should be minimised, and restoration of cleared areas should start as soon as possible.
- ⤴ Erosion risks should be assessed and minimised as erosion scarring can create areas of strong visual contrast which can often be seen from long distances.
- ⤴ Laydown areas and stockyards should be located in low visibility areas (e.g. valleys between ridges) and existing vegetation should be used to screen them from views where possible.
- ⤴ Roads should be treated to reduce dust emissions.
- ⤴ The site should be kept neat and tidy. Littering should be fined, and the ECO should organise rubbish clean-ups on a regular basis.
- ⤴ Night lighting of the construction sites should be minimised within requirements of safety and efficiency. See section on lighting for more specific measures.
- ⤴ Ensure that there are no wind turbines closer than 500m to a residence.

- ✦ Turbines must be properly maintained. A spinning rotor is perceived as being useful. If a rotor is stationary when the wind is blowing it is seen as not fulfilling its purpose and a negative impression is created (Gipe 1995).
- ✦ Signs near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards should be avoided.
- ✦ According to the Aviation Act, 1962, Thirteenth Amendment of the Civil Aviation Regulations, 1997: “Wind turbines shall be painted bright white to provide 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.”
- ✦ Lighting must be designed to minimise light pollution without compromising safety. Investigate using motion sensitive lights for security lighting. Turbines are to be lit according to Civil Aviation regulations (see Operations Phase Impact 2)
- ✦ Aviation standards and CAA Regulations for turbine lighting must be followed.
- ✦ The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, must be investigated.
- ✦ Other available navigation lighting technologies must be investigated such as:
  - Detection-Based Activated Lights Systems (where specific receptors turn on lights only when an aircraft is detected).
  - Pilot Activated Lights (where the aircraft pilots activate the lights manually when they are in the vicinity – system is currently not preferred by CAA).
- ✦ Lighting of ancillary buildings and structures should be designed to minimise light pollution without compromising safety. Motion sensitive lighting can be used for security purposes.

## 8.11 HYDROLOGICAL STUDY, KAP RIVER CATCHMENT

<b>STUDY</b>	<b>Hydrological Study, Kap River Catchment</b>
<b>SPECIALIST</b>	<b>Ms Riona Kruger</b>
<b>COMPANY</b>	<b>SRK Consulting Engineers</b>
<b>QUALIFICATIONS</b>	<b>Specialist Declaration and CV, Appendix E</b>
<b>EXTERNAL REVIEW</b>	<b>Not Applicable, External Specialist</b>

### 8.11.1 CONCLUSION & SPECIALIST STATEMENT

The aim of this study was to determine whether the wind turbines on the south-eastern section of the Site will influence the Kap River catchment system. From a groundwater perspective, the focus was on the effect that the turbines may have on the infiltration of groundwater into the groundwater system, and potentially on the Kap River.

The following conclusions are made:

- ✦ The percentage of the Kap River catchment that will be covered by structures resulting from the WEF is 0.13 %. This implies that 0.13 % of precipitation falling on the Kap River catchment will have an altered flow path, but since rain water will fall on these structures, run off to infiltrate the ground adjacent to the structures via storm water structures, the rain water will still enter the groundwater system and the catchment area.
- ✦ Since only a small percentage of the Kap River catchment will be covered by structures from the planned WEF, it is our professional opinion that the infiltration of rainwater into the groundwater environment of the Kap River catchment will not be significantly affected by the planned structures of the WEF.

## 9 IMPACT ASSESSMENT

### 9.1 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 9-1, 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 9-1 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 9-1: Ranking of Evaluation Criteria.**

<b>Effect</b>	<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 Eastern 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 9-2: 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.

<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 9-3: 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.

### 9.1.1 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 Albany WEF to the cumulative impacts on the affected environment.

The properties affected by the Albany WEF are mostly zoned as agriculture. The current land-use includes agriculture in the form of livestock and game farming, vacant land and mining. Surrounding land-uses include

game farms (photographic and hunting safaris), other WEFs, roads, open space / natural areas, mining areas, agricultural land and game farming.

Other existing or proposed wind farms in the area include:

- ✦ An existing operational wind energy facility:
  - Waainek WEF, Waainek Wind Power (DFFE Ref: 12/12/20/1697)
- ✦ Proposed wind energy facilities:
  - Grahamstown WEF, Infinite Plan 8 (Pty) Ltd. (DFFE Ref: 12/12/20/2523)
  - Wind Garden Wind Farm (DFFE Ref: 14/12/16/3/3/1/2314)
  - Fronteer Wind Farm (DFFE Ref: 14/12/16/3/3/1/2315)

The cumulative impact of the proposed WEF, considering the operational and proposed WEFs in the area is HIGH. The Albany WEF is situated within and adjacent to REDZ 8. While not situated in the REDZ in its entirety, the land on which Albany WEF is proposed is not pristine. It can be argued that the site is less pristine than the three proposed adjacent WEFs, namely Wind Garden, Grahamstown and Fronteer WEFs. This is due to the severity of the alien vegetation present and due to the existing land uses (such as mining) on which the Albany WEF is proposed. The Albany WEF is also proposed adjacent to the existing Eskom Albany Substation, which means that it is adjacent to existing industrial infrastructure. It will also require shorter powerlines due to the proximity of the connection point.

Based on the information available on the three-neighbouring proposed WEFs, the Albany WEF is of equal and lower significance in terms of key impacts, such as visual, ecological and socio-economic impacts.

The Albany WEF is also not situated within the proposed Albany Biodiversity Corridor Network. This is in contrast to the proposed Wind Garden and Fronteer WEFs.

### **9.1.2 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 WEF site would include the following:

#### **IMMEDIATE AREA OF THE PROPOSED WEF:**

- Livestock grazing (proposed WEF would have a negligible impact);
- Dairy farming (proposed WEF would have a negligible impact);
- Alien vegetation (proposed WEF would have a positive impact);
- Mining (proposed WEF would not have an impact);
- Ecological processes (proposed WEF would have a negative impact)

#### **ADJACENT AREA OF THE PROPOSED WEF:**

- Tourism (proposed WEF would have a negative impact);
- Job creation (proposed WEF would have a positive and a negative impact);
- Electricity stabilization (proposed WEF would have a positive impact);

## 9.2 GENERAL IMPACTS

Table 9-4 contains the general impacts associated with the proposed Albany WEF. This table includes direct/indirect impacts, cumulative impacts and no-go alternatives for each impact identified. This table includes the issues, impacts, nature, pre-mitigation significance and post-mitigation significance. The full assessment of each impact as per Tables 9-4 and 9-5 above can be found in Appendix C of this Report. These tables contain full mitigation measures and include duration, extent, consequence, probability, reversibility of each impact. For the summary related to Specialist Impacts, please see Section 9.3.

### 9.2.1 DIRECT/INDIRECT GENERAL IMPACTS

Figure 9-1 (pre-mitigation) and Figure 9-2 (post mitigation) summarises the direct/indirect impacts. Of the 28 direct and indirect impacts identified and assessed as general impacts, most of the impacts are of a MODERATE negative significance pre-mitigation (61%) and LOW negative post-mitigation (86%). There are five (5) HIGH negative significance pre-mitigation and no high negative significance post-mitigation.

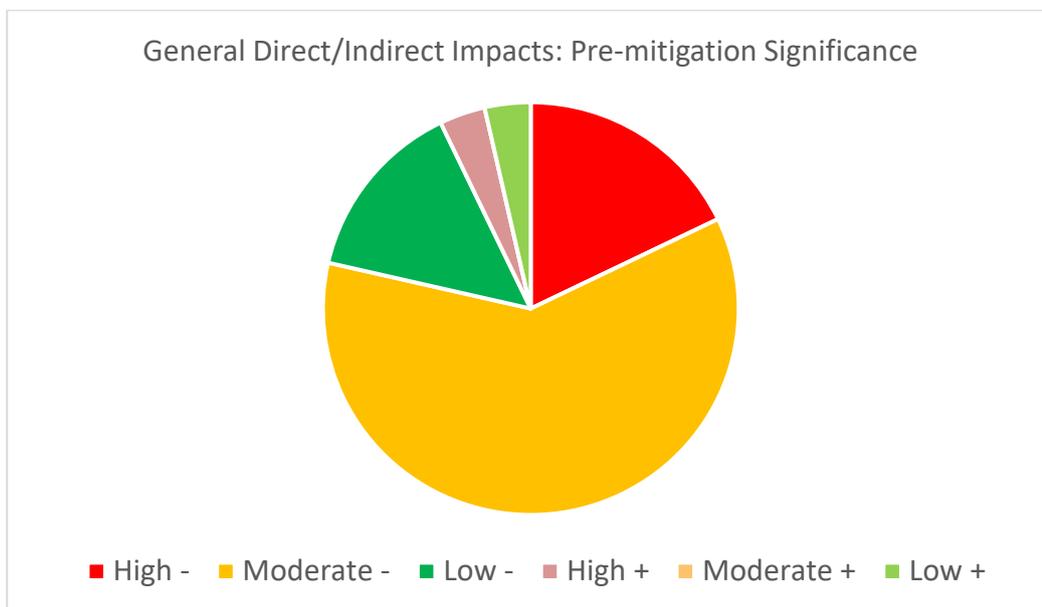


Figure 9-1: Chart Representation of General Direct and Indirect Impacts Significance, Pre-mitigation

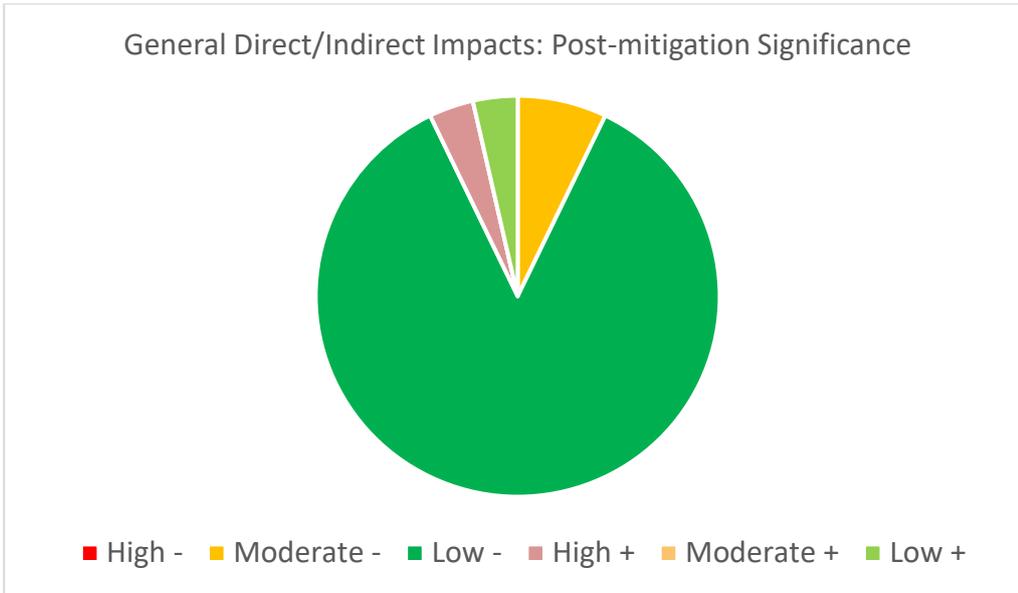


Figure 9-2: Chart Representation of General Direct and Indirect Impacts Significance, Post-mitigation

### 9.2.2 CUMULATIVE GENERAL IMPACTS

Figure 9-3 (pre-mitigation) and Figure 9-4 (post-mitigation) summarises the cumulative general impacts. Of the 25 cumulative impacts identified and assessed as general impacts, most of the impacts are of a MODERATE negative (55%) and HIGH (32%) significance pre-mitigation, with a post-mitigation significance of LOW negative (80%). There are eight (8) HIGH negative significance pre-mitigation and no high negative significance post-mitigation.

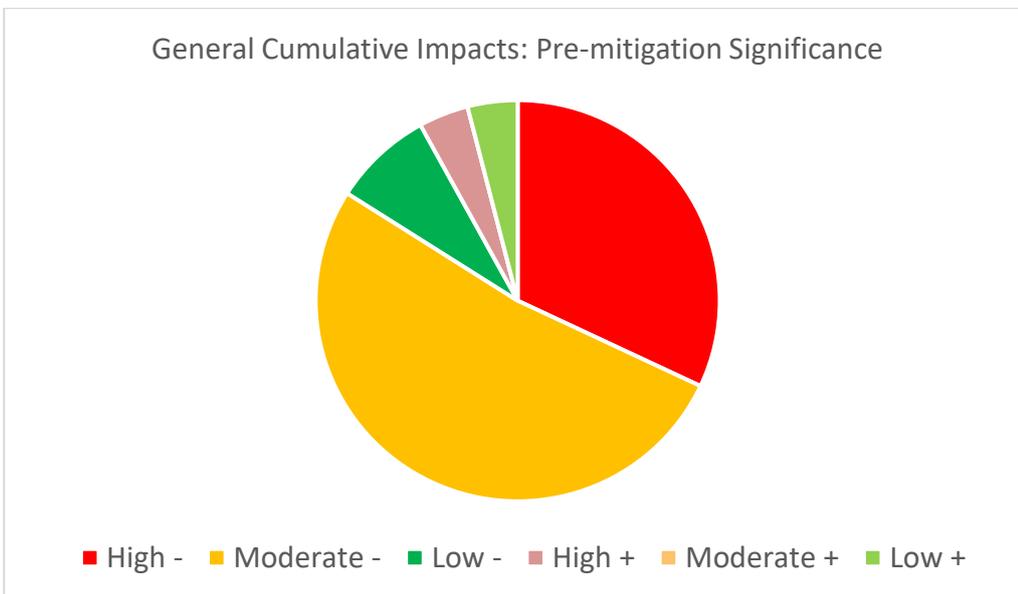
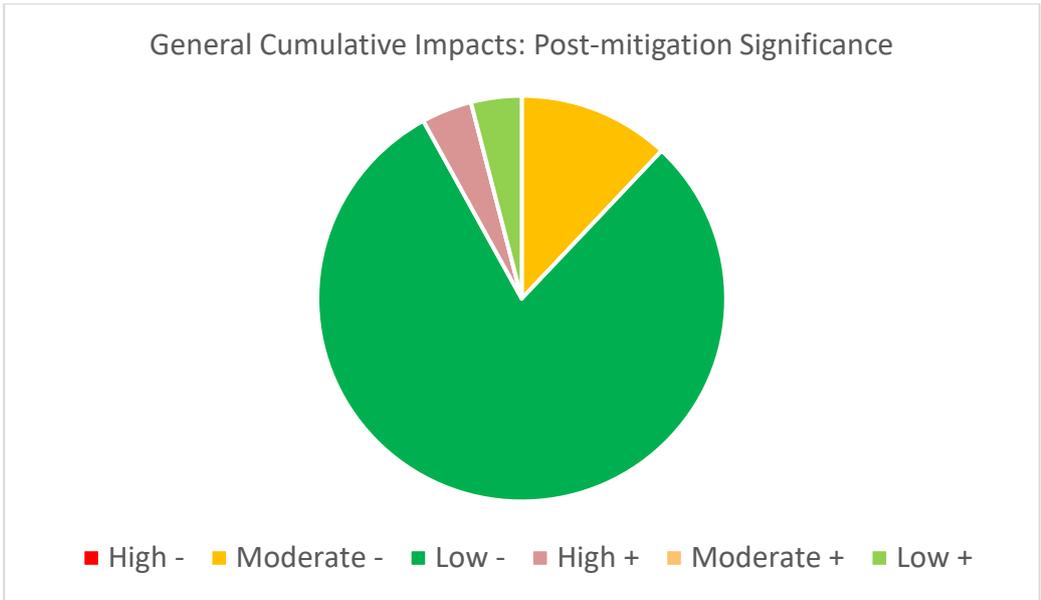


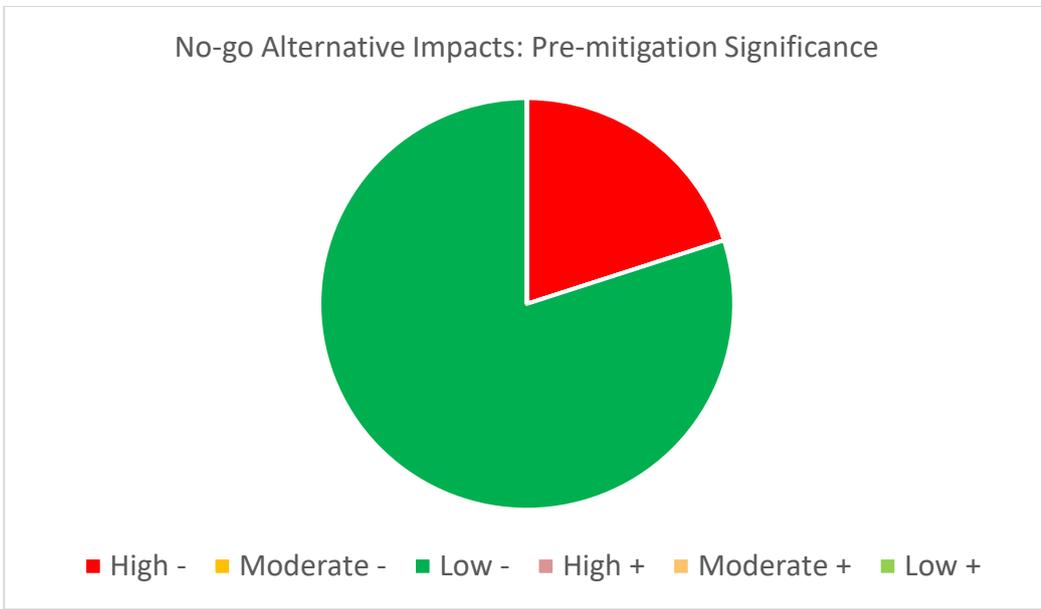
Figure 9-3: Chart Representation of General Cumulative Impacts Significance, Pre-mitigation



**Figure 9-4: Chart Representation of General Cumulative Impacts Significance, Post-mitigation**

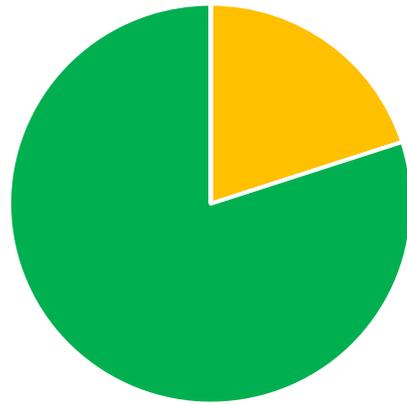
**9.2.3 NO-GO ALTERNATIVES GENERAL IMPACTS**

Figure 9-5 (pre-mitigation) and Figure 9-6 (post-mitigation) summarises the no-go general impacts. Of the 5 no-go impacts identified and assessed as general impacts, most of the impacts are of a LOW negative significance pre-mitigation, with a post-mitigation significance of LOW negative. No-go impacts relate to impacts already affecting the receiving environment.



**Figure 9-5: Chart Representation of General No-go Impacts Significance, Pre-mitigation**

No-go Alternative Impacts: Post-mitigation Significance



■ High - ■ Moderate - ■ Low - ■ High + ■ Moderate + ■ Low +

Figure 9-6: Chart Representation of General No-go Impacts Significance, Post-mitigation

Table 9-4: General Impacts Identified and Assessed. Full Impacts Tables can be found in Appendix C of this Report.

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>PLANNING &amp; DESIGN PHASE</b>				
<i>GENERAL IMPACTS</i>				
<b>TRAFFIC &amp; TRANSPORT</b>	<p>Inadequate planning for the transportation of turbine parts and specialist construction equipment to the site by long and/or slow-moving vehicles could cause traffic congestion, especially if temporary road closures are required. No passes are present between Port Elizabeth and Grahamstown, reducing the impact of the transport of parts when compared to Cookhouse, for example.</p> <p><i>Cumulative impact would be high should the moving of turbine parts for Albany WEF coincide with the moving of turbine parts for the neighbouring proposed WEF (Grahamstown, Plan 8)</i>  <i>No-go alternative would result in no impact related to transport of turbine parts.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	HIGH -	LOW -
		NO-GO	NO IMPACT	
	<p>The integrity of existing highway infrastructure such as bridges and barriers may be compromised by the heavy vehicle traffic delivering components to the site.</p> <p><i>Cumulative impact would be moderate should the neighbouring WEF use the same route and should the construction of the Grahamstown Plan 8 WEF coincide with the construction of the proposed Albany WEF.</i>  <i>No-go alternative would result in no impact related to transport of turbine parts.</i></p>	DIRECT	LOW -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>STORAGE OF HAZARDOUS SUBSTANCES</b>	<p>Inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc, tools and equipment used on site could lead to surface and ground water pollution e.g. due to oil leaks, spillage of diesel etc. In addition, these hazardous substances could be washed off into nearby drainage lines. The mixing of cement on site could result in ground water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas which in turn could increase rates of run-off and thereby increase the risk of localized flooding, soil erosion, silting, gully formation, etc.</p> <p><i>Cumulative impact would be null as no other new activities, which include the use of hazardous substances are planned for this site (localised impact).</i>  <i>No-go alternative would result in no impact related to hazardous waste as the site does not currently experience issues related to hazardous substances.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	NO IMPACT	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>ENVIRONMENTAL LEGAL AND POLICY COMPLIANCE</b>	Failure to adhere to existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, guidelines and legislation. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.	<b>DIRECT</b>	<b>HIGH -</b>	<b>LOW -</b>
	<i>Cumulative impact would be high as there are a range of activities in the region which are already not compliant in terms of environmental policy and law.</i>	<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>LOW -</b>
	<i>No-go alternative could result in landowners looking at other avenues of potential income which would need to comply with environmental law and policy.</i>	<b>NO-GO</b>	<b>LOW -</b>	<b>LOW -</b>
<b>STORMWATER MANAGEMENT AND EROSION</b>	The introduction of roads and impermeable areas could increase rates of run-off and therefore the risk of localised flooding.	<b>INDIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
	<i>Cumulative impact would be moderate as there are a range of activities, including roads, which contribute to erosion at localised levels. However, these activities are not prevalent in the area.</i>	<b>CUMULATIVE</b>	<b>MODERATE -</b>	<b>LOW -</b>
	<i>No-go alternative would still present a level of stormwater runoff and erosion due to current farming activities and existing impermeable surfaces.</i>	<b>NO-GO</b>	<b>LOW -</b>	<b>LOW -</b>
<b>MANAGEMENT OF GENERAL WASTE</b>	Inappropriate planning for management and disposal of waste e.g. storage disposal could result in surface and ground water contamination.	<b>DIRECT</b>	<b>HIGH -</b>	<b>LOW -</b>
	<i>Cumulative impact, on a localised scale, would be high as the area does contain illegal dump sites, at times. These sites are located to the west of the site and not on the site itself.</i>	<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>LOW -</b>
	<i>No-go alternative would result in no impact related to general waste as the site does not currently experience issues regarding waste.</i>	<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>SCHEDULING OF CONSTRUCTION</b>	Construction scheduling that does not take into account the seasonal requirements of the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts such as excessive sediment mobilization, etc.	<b>INDIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
	<i>Cumulative impact would be high should the neighbouring proposed WEF (Plan 8) start construction at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i>	<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>MODERATE -</b>
	<i>No-go alternative would result in no impact related to construction scheduling as no other construction, that we are aware of, is planned on site.</i>	<b>NO-GO</b>	<b>NO IMPACT</b>	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>CONSTRUCTION PHASE</b>				
<i>GENERAL IMPACTS</i>				
<b>NUISANCE DUST</b>	<p>Dust is likely to be a potential nuisance due to the construction activities.</p> <p><i>Cumulative impact would be moderate should the neighbouring proposed WEF (Plan 8) start construction at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i></p> <p><i>No-go alternative would result in no impact related to construction nuisance dust as no other construction, that we are aware of, is planned on site.</i></p>	DIRECT	LOW -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>FIRE</b>	<p>Risk of runaway fires from construction activities related to having people on site, such as cooking, smoking or burning of vegetation might lead to the burning of surrounding vegetation.</p> <p><i>Cumulative impact would be high should the neighbouring proposed WEF (Plan 8) start construction at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i></p> <p><i>No-go alternative would still retain a fire risk as fires are a natural occurrence.</i></p>	DIRECT	HIGH -	MODERATE -
		CUMULATIVE	HIGH -	MODERATE -
		NO-GO	HIGH -	MODERATE -
<b>STORMWATER MANAGEMENT</b>	<p>Sediment is likely to be created during construction. This could be washed off into the nearby drainage line e.g. during the excavation of foundations, the laying of access roads within the site, digging of cable runs and soil stripping and stockpiling to create foundations and temporary areas of hard-standing, such as the construction camp.</p> <p><i>Cumulative impact would be moderate as there are a range of activities, including roads, and a proposed neighbouring WEF which could contribute to erosion at localised levels. However, these activities are not prevalent in the area.</i></p> <p><i>No-go alternative would still present a level of stormwater runoff and erosion due to current farming activities and existing impermeable surfaces.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	LOW -	LOW -
<b>DEGRADATION OF DRAINAGE LINES FROM EARTHWORKS</b>	<p>Unplanned construction activities or earthworks that occur close to onsite drainage lines could cause adverse impacts such as soil erosion, siltation, and blockage of the drainage line.</p> <p><i>Cumulative impact would be high as there are a range of activities, including roads, and a proposed neighbouring WEF which could contribute to the degradation of drainage lines at localised levels if not properly managed during construction.</i></p> <p><i>No-go alternative would have no impact as there are currently no earthworks activities on site that we are aware of.</i></p>	DIRECT	HIGH -	LOW -
		CUMULATIVE	HIGH -	LOW -
		NO-GO	NO IMPACT	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>MANAGEMENT OF GENERAL WASTE</b>	Littering by construction workers could cause surface and ground water pollution.  <i>Cumulative impact, on a localised scale, would be high as the area does contain illegal dump sites, at time. These sites are located to the west of the site. No-go alternative would result in no impact related to general waste as the site does not currently experience issues regarding waste.</i>	INDIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>HAZARDOUS SUBSTANCES</b>	Onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities.  <i>Cumulative impact would be null as no other new activities, which include the use of hazardous substances are planned for this site (localised impact). No-go alternative would result in no impact related to hazardous waste as the site does not currently experience issues related to hazardous substances.</i>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	NO IMPACT	
<b>MANAGEMENT OF CONSTRUCTION WASTE</b>	Waste from construction activities e.g. excess concrete and cement mixture, empty paint containers, oil containers, etc., could cause pollution of ground and surface water when they come into contact with run-off water.  <i>Cumulative impact, on a localised scale, would be moderate should the neighbouring WEF start construction at the same time as the proposed Albany WEF. No-go alternative would result in no impact related to construction waste as the site does not currently have any construction activities taking place.</i>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>WATER QUALITY</b>	Wet concrete is highly alkaline. This could result in flash kills of macroinvertebrates and fish species in the vicinity. Soil erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water. Soil erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water.  <i>Cumulative impact, on a localised scale, would be high should the neighbouring WEF start construction at the same time as the proposed Albany WEF and should there be improper management of concrete bunding and mixing. No-go alternative would result in no impact related to concrete contamination of watercourses as the site does not currently have any construction activities taking place.</i>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	HIGH -	LOW -
		NO-GO	NO IMPACT	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>INFILLING/ EXCAVATION IN A WATERCOURSE</b>	<p>Excavated material stockpiles may increase sediment loads in watercourses during rainfall events. Materials used for the infilling of watercourses in order to construct watercrossings may not be compatible with the surrounding bed/banks, etc., which could change the characteristics of the watercourse.</p> <p><i>Cumulative impact, on a localised scale, would be low should the neighbouring WEF start construction at the same time as the proposed Albany WEF and should there be improper management infilling of materials into watercourses.</i></p> <p><i>No-go alternative would result in no impact related to excavated stockpiles as the site does not currently have any construction activities taking place.</i></p>	INDIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<b>DISPOSAL OF SPOIL MATERIAL</b>	<p>Incorrect disposal of subsoil/spoil material could result in significant loss of a useful resource.</p> <p><i>Cumulative impact, on a localised scale, would be low should the neighbouring WEF start construction at the same time as the proposed Albany WEF and should there be improper management infilling of materials into watercourses.</i></p> <p><i>No-go alternative would result in no impact related to disposal of spoil materials as the site does not currently have any construction activities taking place.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>OPERATIONAL PHASE</b>				
<i>GENERAL IMPACTS</i>				
<b>AIR QUALITY CLIMATE CHANGE</b>	<p>The electricity generated by the development will displace some of that produced by fossil fuel-based forms of electricity generation. The scheme, over its lifetime, will therefore avoid the production of a significant amount of CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub> that would otherwise be emitted to the atmosphere.</p> <p><i>Cumulative impact, on a localised scale, would be high when combined with the rest of the renewable energy infrastructure in the area (existing and proposed)</i></p> <p><i>No-go alternative would result in a low negative impact as local power would not be offset by additional renewable energy.</i></p>	DIRECT	HIGH +	HIGH +
		CUMULATIVE	HIGH +	HIGH +
		NO-GO	LOW -	LOW -
<b>ARCHITECTURE OF ANCILLARY INFRASTRUCTURE</b>	<p>Control buildings, toilet facilities and other ancillary infrastructure could cause negative visual intrusion if allowed to fall into disrepair and not maintained properly.</p> <p><i>Cumulative impact, on a localised scale, would be moderate when combined with the infrastructure associated with the local renewable energy projects (existing and proposed).</i></p> <p><i>No-go alternative would result in no impact related to architecture of ancillary infrastructure.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
HAZARDOUS CHEMICAL STORAGE	<p>Inappropriate storage of chemical, herbicides, diesel and other hazardous substances on site could result in soil and water contamination and pose a high accident danger risk.</p> <p><i>Cumulative impact would be null as no other new activities, which include the use of hazardous substances are planned for this site (localised impact).</i></p> <p><i>No-go alternative would result in no impact related to hazardous waste as the site does not currently experience issues related to hazardous substances.</i></p>	DIRECT	HIGH -	MODERATE -
		CUMULATIVE	HIGH -	MODERATE -
		NO-GO	NO IMPACT	
INCREASED STORMWATER RUN-OFF	<p>Failure to maintain the storm water system could increase the risk of surface water damage to the landscape and vegetation from increased rates of run-off and therefore the risk of localised flooding and increased sheet erosion downstream due to the presence of roads and impermeable areas of hard standing.</p> <p><i>Cumulative impact would be moderate as there are a range of activities, including roads, and a proposed neighbouring WEF which could contribute to erosion at localised levels. However, these activities are not prevalent in the area.</i></p> <p><i>No-go alternative would still present a level of stormwater runoff and erosion due to current farming activities and existing impermeable surfaces.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	LOW -	LOW -
WASTE MANAGEMENT	<p>There could be littering by maintenance workers and security personnel on site.</p> <p><i>Cumulative impact, on a localised scale, would be moderate as the area does contain illegal dump sites, at times. These sites are located to the west of the site and not on the site itself.</i></p> <p><i>No-go alternative would result in no impact related to general waste as the site does not currently experience issues regarding waste.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE	LOW -
		NO-GO	NO IMPACT	
<b>DECOMMISSIONING PHASE</b>				
<i>GENERAL IMPACTS</i>				
POLLUTION	<p>Littering by construction workers could cause surface and ground water pollution.</p> <p><i>Cumulative impact, on a localised scale, would be moderate as the area does contain illegal dump sites, at times. These sites are located to the west of the site and not on the site itself.</i></p> <p><i>No-go alternative would result in no impact related to general waste as the site does not currently experience issues regarding waste.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
	Onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p><i>Cumulative impact would be null as no other new activities, which include the use of hazardous substances are planned for this site (localised impact).</i></p> <p><i>No-go alternative would result in no impact related to hazardous waste as the site does not currently experience issues related to hazardous substances.</i></p>	NO-GO	NO IMPACT	
<b>DUST</b>	<p>Dust is likely to be a potential nuisance due to the decommissioning activities.</p> <p><i>Cumulative impact would be low should the neighbouring proposed WEF (Plan 8) start decommissioning at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i></p> <p><i>No-go alternative would result in no impact related to construction nuisance dust as no other decommissioning activities should be taking place on the site, that we are aware of.</i></p>	DIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<b>TRAFFIC &amp; TRANSPORT</b>	<p>A high number of heavy vehicle movements will occur during the decommissioning phase. This may have a detrimental effect on sensitive receptors.</p> <p><i>Cumulative impact would be moderate should the neighbouring proposed WEF (Plan 8) start decommissioning at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i></p> <p><i>No-go alternative would result in no impact related to traffic and transport as no other decommissioning activities should be taking place on the site, that we are aware of.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>SOIL EROSION</b>	<p>After the removal of all wind turbine related structures, the disturbed soils could become exposed, unstable and prone to erosion.</p> <p><i>Cumulative impact would be moderate should the neighbouring proposed WEF (Plan 8) start decommissioning at the same time as the proposed Albany WEF. Improper management of a neighbouring site would exacerbate the impact.</i></p> <p><i>No-go alternative would result in no impact related to soil erosion as a result of turbine removal as no other WEFs are planned on this site.</i></p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<b>LAND-USE</b>	<p>Land previously unavailable for certain types of land use will now be available for those uses.</p> <p><i>Cumulative impact would be moderate should the neighbouring proposed WEF (Plan 8) start decommissioning at the same time as the proposed Albany WEF. This will result in a higher portion of land returning to the status quo.</i></p> <p><i>No-go alternative would result in no impact as the site will return to what it was used for before, i.e. the current status quo.</i></p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	

## 9.3 SPECIALIST IMPACTS

Table 9-5 contains the specialist impacts associated with the proposed Albany WEF. This table includes direct/indirect impacts, cumulative impacts and no-go alternatives for each impact identified. This table includes the issues, impacts, nature, pre-mitigation significance and post-mitigation significance. The full assessment of each impact as per Table 9-4 above can be found in Appendix C of this Report and in each individual Specialist Report, Appendix D. These tables contain full mitigation measures and include duration, extent, consequence, probability, reversibility of each impact. For the summary related to General Impacts, please see Section 9.2.

### 9.3.1 DIRECT/INDIRECT SPECIALIST IMPACTS

#### Specialist Direct/Indirect Impacts: Pre-mitigation Significance

■ HIGH - ■ LOW - ■ LOW + ■ MODERATE -

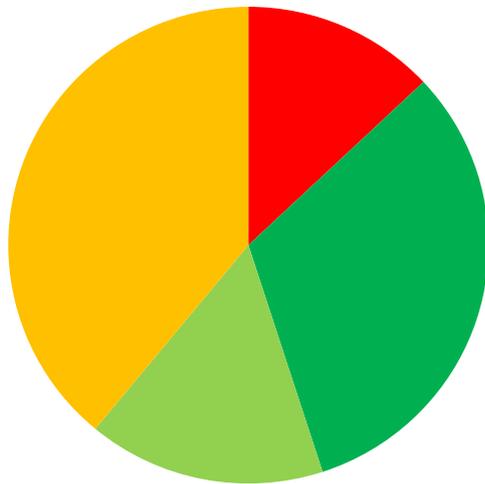


Figure 9-7 (pre-mitigation) and Figure 9-8 (post mitigation) summarises the direct/indirect specialist impacts. Figure 9-9 (pre-mitigation) and Figure 9-10 (post-mitigation) summarises the cumulative specialist impacts. Of the 84 direct and indirect negative impacts, the majority are of a MODERATE (46%) negative impact. The remainder is made up of a split between LOW (38%) and HIGH (16%) negative impacts. Of the 84 negative impacts 15 are mitigated to positive impacts, while 67% of the impacts are mitigated to LOW negative significance and 22% to MODERATE negative significance. 6% of the HIGH negative impacts are not mitigated sufficiently to affect their rating and they remain HIGH negative significance. These negative impacts relate mainly to negative visual impacts on sensitive receptors. Of the 17 positive pre-mitigation impacts, the majority are of a LOW positive nature (94%). Post-mitigation, two negative impacts join the positive impacts to form a total of 19 positive impacts. Most of these post-mitigation impacts are of a LOW positive significance (89%), with the remainder being MODERATE positive significance (11%).

**Specialist Direct/Indirect Impacts: Pre-mitigation Significance**

■ HIGH - ■ LOW - ■ LOW + ■ MODERATE -

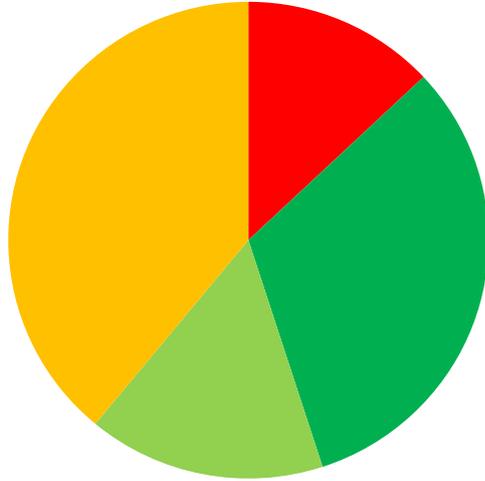


Figure 9-7: Chart Representation of Specialist Direct and Indirect Impacts Significance, Pre-mitigation

**Specialist Direct/Indirect Impacts: Post-mitigation Significance**

■ HIGH - ■ LOW - ■ LOW + ■ MODERATE - ■ MODERATE +

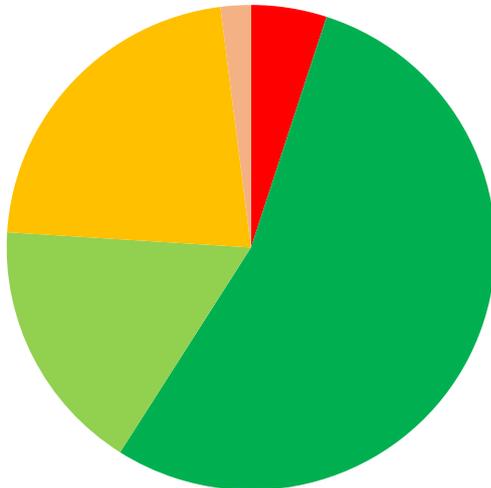


Figure 9-8: Chart Representation of Specialist Direct and Indirect Impacts Significance, Post-mitigation

**9.3.2 CUMULATIVE SPECIALIST IMPACTS**

A total of 64 specialist cumulative impacts were identified. Of the 50 negative cumulative impacts, the majority are of a MODERATE negative (42%) and HIGH negative (18%) pre-mitigation significance within the significance of 24 % of the negative impacts being rated as DON'T KNOW. Cumulative impacts are particularly difficult to mitigate owing to the reliance on numerous developers having the same standard of

environmental due diligence, such as monitoring standards, rehabilitation processes, social outreach, amongst others. Post-mitigation the majority of the negative impacts are MODERATE negative (40%) and LOW negative (28%). 14 positive cumulative impacts were identified, most of which are of LOW positive (93%) pre- and post-mitigation.

**Specialist Cumulative Impacts: Pre-mitigation Significance**

■ DON'T KNOW ■ HIGH - ■ MODERATE - ■ LOW - ■ MODERATE + ■ LOW +

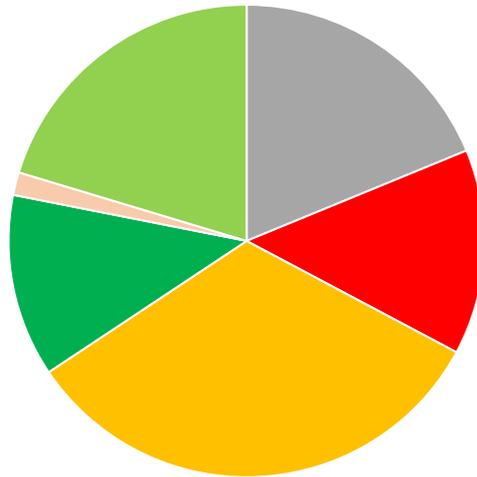


Figure 9-9: Chart Representation of Specialist Cumulative Impacts Significance, Pre-mitigation

**Specialist Cumulative Impacts: Post-mitigation Significance**

■ DON'T KNOW ■ HIGH - ■ MODERATE - ■ LOW - ■ MODERATE + ■ LOW +

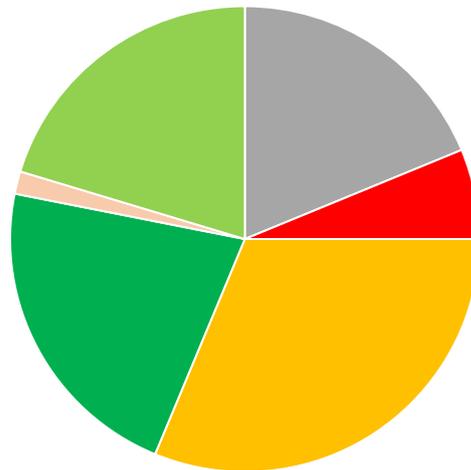


Figure 9-10: Chart Representation of Specialist Cumulative Impacts Significance, Post-mitigation

**9.3.3 NO-GO ALTERNATIVES SPECIALIST IMPACTS**

Figure 9-11 summarises the no-go specialist impacts, which are the same both pre and post-mitigation. Of the 14 no-go impacts identified and assessed as specialist impacts, most of the impacts are of a LOW negative significance pre-mitigation, with a post-mitigation significance of LOW negative. No-go impacts relate to impacts already affecting the receiving environment.

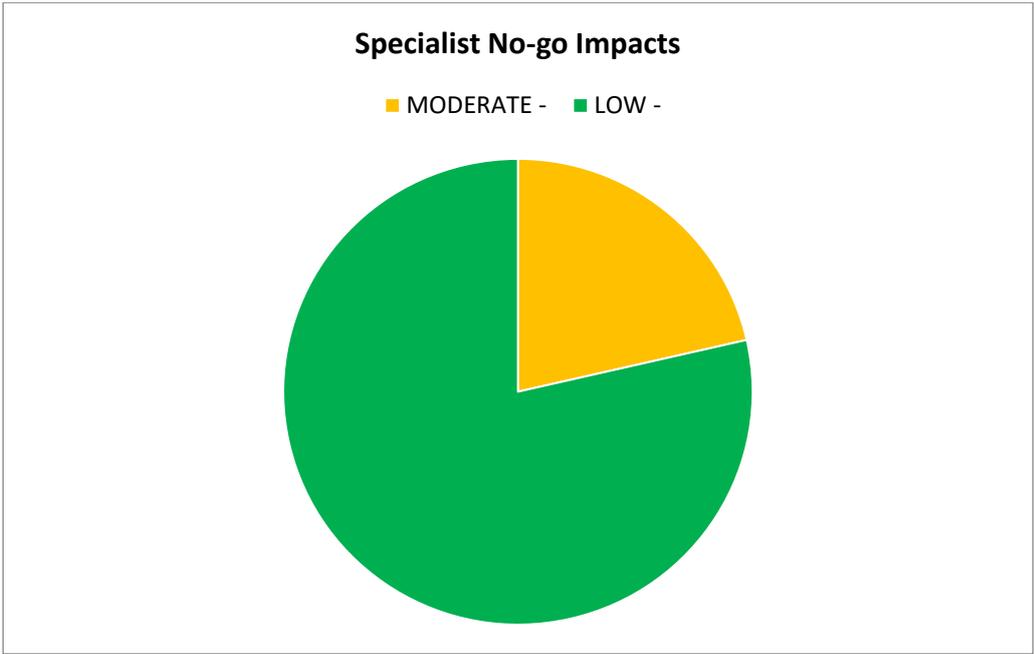


Figure 9-11: Chart Representation of Specialist No-go Impacts Significance, Pre-mitigation

Table 9-5: Specialist Impacts Identified and Assessed. Full Impacts Tables can be found in Appendix C of this Report. Specialist Reports can be found in Appendix D of this Report

<b>SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS</b>				
<b>ISSUE</b>	<b>DESCRIPTION OF IMPACT</b>	<b>NATURE OF IMPACT</b>	<b>SIGNIFICANCE PRE-MITIGATION</b>	<b>SIGNIFICANCE POST-MITIGATION</b>
<b>PLANNING &amp; DESIGN PHASE</b>				
<i>It is important to note that specialist planning and design phase impacts were not expected since the developer designed the layout presented in both the Scoping and EIR based on sensitivity data and constraints provided by the various specialists. The planning and design impacts were therefore mitigated at Scoping Phase.</i>				
<i>AGRICULTURE IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>AVIFAUNAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>BAT IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>ECOLOGICAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>HERITAGE IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>NOISE IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>PALAENTOLOGICAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>SOCIAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>TRAFFIC IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>VISUAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<b>CONSTRUCTION PHASE</b>				
<i>AGRICULTURE IMPACT ASSESSMENT</i>				
<b>LOSS OF GRAZING LAND</b>	Sustainable land use and protection of agricultural resources is a core function of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following:	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<ul style="list-style-type: none"> <li>✦ Conservation of Agricultural Resources Act No 43 of 1983;</li> <li>✦ Preservation and Development of Agricultural Land Framework Bill, 2014;</li> <li>✦ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006;</li> <li>✦ Land use Management Bill, 2008;</li> </ul> This impact is assessed with this in mind. <ul style="list-style-type: none"> <li>✦ The loss of grazing land is temporary and will be for one or two rainy season. The land will remain as grazing after construction. The construction footprint is the only area is permanently lost.</li> </ul>	CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<b>LOSS OF AGRICULTURAL PRODUCTION (YIELD AND INCOME)</b>	Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following: <ul style="list-style-type: none"> <li>✦ Conservation of Agricultural Resources Act No 43 of 1983;</li> <li>✦ Preservation and Development of Agricultural Land Framework Bill, 2014;</li> <li>✦ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006;</li> <li>✦ Land use Management Bill, 2008;</li> </ul> This impact is assessed with this in mind. <ul style="list-style-type: none"> <li>✦ The loss of grazing is the only impact that translates to income loss.</li> </ul>	DIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<b>LOSS OF AGRICULTURAL RESOURCES</b>	Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following: <ul style="list-style-type: none"> <li>✦ Conservation of Agricultural Resources Act No 43 of 1983;</li> <li>✦ Preservation and Development of Agricultural Land Framework Bill, 2014;</li> <li>✦ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006;</li> <li>✦ Land use Management Bill, 2008;</li> </ul> This impact is assessed with this in mind. <ul style="list-style-type: none"> <li>✦ The loss of resources relates to soil due to erosion and water that can be used for farming purposes.</li> </ul>	DIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<b>INCREASE IN STOCK THEFT &amp; POACHING</b>	The increase in individuals accessing the affected properties for the Albany WEF development during the operational phase could lead to the increase in stock theft and poaching, which is already an issue in the area.	INDIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<i>AVIFAUNAL IMPACT ASSESSMENT</i>				
<b>DESTRUCTION OF</b>	Construction of the facility will result in a certain amount of destruction and removal of natural vegetation	DIRECT	MODERATE -	LOW -

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>BIRD HABITAT</b>	which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The area is also significantly disturbed by various human activities including: the N2 highway; pipelines; roads; power lines; and general farming practices.	<b>CUMULATIVE</b>	MODERATE -	MODERATE -
		<b>NO-GO</b>	LOW -	LOW -
<b>DISTURBANCE OF BIRDS</b>	This is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site.	<b>DIRECT</b>	LOW -	LOW -
		<b>CUMULATIVE</b>	MODERATE -	MODERATE -
		<b>NO-GO</b>	LOW -	LOW -
<i>BAT IMPACT ASSESSMENT</i>				
<b>DESTRUCTION / DISTURBANCE OF BAT ROOSTS</b>	If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of a few small farm buildings on site, this would affect only a small number of house-dwelling bats. However, construction would have a significant impact on local bats if it affected larger roosts. While IWS only found small roosts, there is a moderate to high potential of roosts in the steeper, rocky sections in the south and south-east of the Albany WEF site. The deep rocky gorges are likely to provide suitable roosting habitat to several species and the diversity of species recorded at AL2 is testament to this. These areas were not accessible to fully assess. This potential impact, therefore, has a Medium Significance rating, which can be reduced to Low by the following recommended mitigation measures.	<b>DIRECT</b>	MODERATE -	LOW -
		<b>CUMULATIVE</b>	MODERATE -	MODERATE -
		<b>NO-GO</b>	NO IMPACT	
<b>FRAGMENTATION OF BAT HABITAT</b>	If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of locally limited water resources and woody vegetation, this would have a Significant impact on bats, especially the clutter-edge and clutter foraging bat species. Construction will involve vegetation clearance at the footprint of each turbine, along the road network and other office and substation buildings. General dust and noise will increase in the area which may cause more sensitive species to disperse either temporarily or permanently. The physical infrastructure, movement, noise and lights of the operational turbines could act as barriers and disturbance to bats during foraging and movement. Lights could also act as an attractant to certain species. At some operational WEFs in the Eastern Cape where IWS is monitoring, artificial light around the substation and O&M buildings seem to be attract insects and therefore foraging bats, resulting in high activity recorded at the nearby bat monitoring stations. This potential impact, therefore, has a Medium significance rating, which can be reduced to Low by the following recommended mitigation measures.	<b>DIRECT</b>	MODERATE -	LOW -
		<b>CUMULATIVE</b>	MODERATE -	MODERATE -
		<b>NO-GO</b>	NO IMPACT	
<b>LOSS OR POPULATION DISTURBANCES TO</b>	None of the eleven bat species confirmed for the Albany WEF study area are listed as Red Data species (Childs et al., 2016), however, they are all listed as protected in terms of the Ciskei Nature Conservation Act 10 of 1987 (the Act) and the [Western] Cape: Nature Conservation Ordinance 19 of 1974 (the Ordinance). This	<b>CUMULATIVE</b>	MODERATE -	LOW -

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>CONSERVATION IMPORTANT BAT SPECIES</b>	impact was, therefore, given a Medium significance rating, which would be reduced to Low maintained by the mitigation measures provided.	NO-GO	NO IMPACT	
<b>REDUCTION IN SIZE, GENETIC DIVERSITY, RESILIENCE AND PERSISTENCE OF BAT POPULATIONS</b>	Bat populations are likely to be reduced in size by the fatality of bats at WEFs, especially where multiple facilities occur. Because bats have low reproductive rates, they have slow generation turn-over and low population resilience against mass die-offs. Smaller populations also contain less genetic diversity, and are more susceptible to genetic drift and inbreeding. WEFs may, therefore, reduce the long-term persistence of local and even regional bat populations. This potential impact, therefore, has a Medium-High significance rating, which can be reduced to Low by the mitigation measures provided.	CUMULATIVE	MODERATE -	LOW -
		NO-GO	NO IMPACT	
<i>ECOLOGICAL IMPACT ASSESSMENT</i>				
<b>FAUNAL HABITAT LOSS AND FRAGMENTATION</b>	The habitats within the proposed site and those of the surrounding areas form part of a functional ecosystem. An ecosystem provides more than simply a 'home' for a set of organisms, it is a functional system where biological and biophysical processes such as nutrient cycling, soil formation, reproduction, migration, competition, predation, succession, evolution and migration take place. Destruction or modification of habitats causes disruption of ecosystem function and threatens the interplay of processes which ensure environmental health and the survival of individual species.  Faunal habitats will be impacted on and could be lost during the clearing of vegetation for the construction of internal roads and the construction of turbine hardstands. This is usually accompanied by the loss of food sources and/or shelter but may also include the loss of temporary wetlands, caves or rocky outcrops. Construction of turbine hardstands and road infrastructure through these habitats could have a significant impact on an already fragmented population of species due to the existing infrastructure, such as the N2 and R67 roads.	DIRECT	HIGH -	MODERATE -
		CUMULATIVE	HIGH -	MODERATE -
		NO-GO	MODERATE -	MODERATE -
<b>LOSS OF REPTILE DIVERSITY</b>	It is likely that some of the reptile species, which occur within the proposed site, will be disturbed or killed due to construction activities. This could be due to habitat loss or mortality associated with road mortality or poaching.  Due to the existing primary and secondary roads in proximity to the proposed site, it is likely that reptile habitats have already been disturbed in some areas within the proposed site. It is also likely that reptiles have been and will continue to be killed along these roads in the absence of the proposed development.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	LOW -	LOW -

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>LOSS OF AMPHIBIAN DIVERSITY</b>	<p>It is likely that some of the amphibian species, which occur within the proposed site near surface water habitats, will be disturbed or killed due to construction activities. However, as amphibians are primarily associated with surface water, the likelihood of directly encountering amphibians during construction and operation is lower than that of reptiles. Although, the increase in traffic in the area could result in road fatalities, especially the fatalities of amphibians moving between the wetlands, rivers and streams within the site. In addition, an increase in noise could impact the breeding behaviour of some amphibian species.</p> <p>Due to the existing primary and secondary roads in some areas the proposed site, it is likely that amphibian habitats have already been disturbed to some degree. It is also likely that amphibians have been, and will continue to be, killed along these roads in the absence of the proposed development.</p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	LOW -
		NO-GO	LOW -	LOW -
<b>LOSS OF MAMMAL DIVERSITY</b>	<p>It is likely that some mammal species will be impacted during the construction phase as a result of habitat loss and road mortality within the proposed site. During the operation phase, noise may affect communication and breeding potential. The proposed site traverses extensive areas of land which contain numerous large and small mammal species. Most of these large and small mammals, including mammal SCC, will move out of the disturbed areas during the construction phase, but may return once habituated for foraging opportunities. It is possible that some of the smaller, and more secretive mammal species, may still be encountered within the site throughout these phases.</p> <p>In the absence of the proposed development, it is likely that most of the large and small mammal species will probably still move around within and outside of the site due to movement towards foraging opportunities and/or moving away from anthropogenic activities and associated noises within the site.</p>	DIRECT INDIRECT	LOW -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	LOW -	LOW -
<b>IMPACT OF NOISE AND DUST ON FAUNAL SPECIES</b>	<p>The construction of the proposed WEF and associated infrastructure will result in an increase in noise and dust within the proposed site and surrounds. Roads are known to alter the physical characteristics of the environment and it is possible that numerous species within the proposed site will be affected by the increase in noise and dust to some extent. The faunal group which is most likely to be impacted by the increase in noise and dust levels is amphibians. Increased dust levels alter wetlands and riparian areas which could affect the feeding and breeding of amphibians within these areas.</p> <p>Fauna vary in the degree to which they can tolerate such disturbances and the increase in noise and dust could potentially have adverse impacts on various faunal groups. Increased noise and motor vibrations in wetland areas could also impact amphibian breeding choruses, but these impacts will be localised and many amphibian species are surprisingly tolerant of vehicle noise. Noise pollution will occur during all phases of development (construction, operational, and de-commissioning/ closure).</p>	DIRECT INDIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	LOW -	LOW -

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>LOSS OF VEGETATION COMMUNITIES</b>	<p>Plant communities are dynamic ecosystems which provide habitats that support all forms of life. Different types of plant communities (and habitats) exist within the proposed site. The vegetation types which will be affected by the proposed development footprints include Grahamstown Grassland Thicket, Albany Bontveld, Albany Valley Thicket, Bhisho Thornveld, Suurberg Shale Fynbos and Suurberg Quartzite Fynbos from the Albany Thicket, Savanna and Fynbos Biomes. The current condition of these vegetation communities varies from good to poor condition, depending on the level of transformation caused by anthropogenic activities. In accordance with Mucina et al., (2018), the conservation statuses of all these vegetation types are least threatened, except for Albany Valley Thicket which is classified as vulnerable. Sections of these vegetation types will be lost due to vegetation clearance during the construction phase of the Albany WEF.</p> <p>Currently, vegetation communities have been and will continue to be lost and/or fragmented in the area, in absence of the Albany WEF development, due to transformation for agricultural activities and other development.</p>	DIRECT	HIGH -	MODERATE -
		CUMULATIVE	HIGH -	MODERATE -
		NO-GO	LOW -	LOW -
<b>REMOVAL OF ALIEN VEGETATION</b>	<p>The clearance of vegetation associated with the development of the Albany WEF and associated infrastructure will include the clearance of alien vegetation which is already present on portions of the proposed site. This will be a positive impact as alien invasive species will be removed, which will improve the condition of the existing indigenous vegetation as there will be less competition from alien invasive species.</p>	DIRECT	LOW +	MODERATE +
		CUMULATIVE	NO IMPACT	
		NO-GO	MODERATE -	MODERATE -
<b>POLLUTION OF SURFACE WATER RESOURCES</b>	<p>The proposed site contains numerous wetlands and watercourses. None of the proposed turbines, according to the current layout, are situated within wetlands or watercourses but numerous turbines are located within the 500 m regulatory buffer of wetlands. Sections of associated infrastructure, such as roads, are also routed within 500 m of numerous wetlands and within the 100 m regulatory buffer of a watercourses. Water use authorisation is required from the Department of Water and Sanitation (DWS) prior to the commencement of any construction activities within the regulatory buffers of these wetlands and watercourses.</p> <p>Activities associated with the proposed development could result in the pollution of surface water resources both directly and indirectly through activities such as the inappropriate storage of hazardous materials which could result in spillages and the resultant contamination of surface water resources.</p>	DIRECT INDIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	NO IMPACT	
<b>REHABILITATION</b>	<p>Inadequate rehabilitation could result in limited revegetation and/or an invasion of alien vegetation which will result in long term ecological degradation and damage.</p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	NO IMPACT	
		NO-GO	NO IMPACT	

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<i>HERITAGE IMPACT ASSESSMENT</i>				
<b>DESTRUCTION OF HERITAGE ARTIFACTS</b>	<p>Middle Stone Age (MSA) stone artefacts occurred in various locations over the proposed development area within the exposed and disturbed surface areas. This would generally be expected as the immediate and wider region is rich in the occurrence of Middle Stone Age as well as Early Stone Age archaeological material. It is possible that stone artefacts will occur between the surface and 50 cm – 80 cm below the ground.</p>	<b>DIRECT</b>	<b>HIGH -</b>	<b>LOW -</b>
	<p>Several stone packed features were also recorded within the proposed development area. These included stone packed / walled kraals, an historical stone packed / walled farm boundary as well as the remains of foundations.</p>	<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>LOW -</b>
	<p>The built environment component included historical ruins that included farmhouses, other buildings and a church. A graveyard is associated with the church.</p> <p>An old historical wagon route was pointed out by the owner of the Farm Grobbeler’s Kloof situated at the entrance to the farm south off the N2 national, running parallel to N2 national road.</p> <p>The potential negative impact on the stone walling (BHSW2) was initially of concern. The revised layout followed the recommendation that an alternative access road be constructed south of the stone walling to access the four turbines (WTG 70, WTG 5, WTG 7, WTG 9) on the northern boundary of the Farm Glen Craig 241. The road has been realigned to the south running parallel to the stone walling in order to avoid this impact.</p> <p>At a cumulative level, the archaeological and historical heritage resources must be appropriately mitigated at a project / site specific level so that there is less of a risk of losing the information after the construction of these alternative energy facilities. The loss of information at regional scale is at risk as these facilities cause an immense amount of surface disturbance and destruction where archaeological and historical heritage resources are at risk of being destroyed without justification.</p>	<b>NO-GO</b>	<b>NO IMPACT</b>	

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<i>NOISE IMPACT ASSESSMENT</i>				
<b>CONSTRUCTION NOISE</b>	<p>Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities (see Table 9-1). Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low. Construction noises will cumulatively add to any other noises in the area, but it will be insignificant.</p>	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<i>PALAEONTOLOGICAL IMPACT ASSESSMENT</i>				
<b>DESTRUCTION OF PALAEONTOLOGY RESOURCES</b>	<p>Due to the extreme weathering of strata at surface along the ridges, soil development and extensive vegetation cover, current outcrop was found to be extremely sparse and no palaeontological material was observed at the actual proposed wind tower positions.</p> <p>Quarries and roadworks within the study area and within the district have however demonstrated that excavation into the Witpoort Formation not infrequently intercepts black shale layers and lenses that may be of great palaeontological value. Palaeontological investigations of these layers, in the Grahamstown district, has provided the world’s only window into high latitude conditions at the end of the Devonian, a time of extreme importance in understanding the process of vertebrate terrestrialisation and the lead up to the second global Mass Extinction Event.</p> <p>There is therefore a reasonable chance that excavation of holes for casting wind tower footings will intercept fossiliferous shales, which may contain important unique heritage material. Lag deposits, containing fossil plant stems and possibly vertebrate bones might also be found preserved within the quartzites. The extreme inaccessibility of many of the proposed positions furthermore requires that access roads will need to be excavated in order for construction equipment to reach the positions. These may also disturb palaeontological material.</p> <p>Excavations into Lake Mentz Subgroup strata are somewhat less likely to disturb palaeontological material, but should they do so this would also be significant, potentially providing insights into the recovery fauna and flora after the end Devonian Extinction.</p>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>NO IMPACT</b>	
		<b>NO-GO</b>	<b>NO IMPACT</b>	

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<i>SOCIAL IMPACT ASSESSMENT</i>				
<b>EMPLOYMENT</b>	<p><b>EMPLOYMENT OPPORTUNITIES</b></p> <p>During the 24-month labour intensive construction period, skilled employment amounts to 613 person-month and unskilled to 900 person-month. Unskilled workers are required to do basic labour such as site clearing, digging of trenches, erection of fences and the laying of foundations. Skilled professionals would include, but not be limited to Land Surveyors, Project Managers, Assistant Project Managers, Engineers and an Environmental Control Officer, machine operators and so forth.</p> <p>Although the construction periods do not overlap, construction of the two wind farms in Makana LM contribute positively towards employment and skills transfer for locals, including semi- and higher skilled individuals. Social and economic advantages for individuals and families.</p> <p>No-go: No employment and associated benefits will accrue to local communities or the broader Makana LM as a result of this project.</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
	<p><b>EMPLOYMENT EQUITY</b></p> <p>Many local businesses, especially those headed by youth, women and persons with disabilities, are feeling left out in the economic agenda of the province. To address this concern the Makana LM is implementing the Local Economic Development Procurement Framework (“LEDPF”) and the revised Preferential Procurement Policy Framework Act has been in effect since April 2017, which makes it compulsory for all contracts above R30 million to sub-contract 30% of work to small or black owned enterprises where feasible. Equally important is the development of skills and sustainable youth enterprises as part of the radical economic transformation agenda and Makana LM has allocated a budget to cater for this demand. SMMEs are registered on the ‘Central Supplier Database’ to enable them to do business with government (Makana IDP).</p> <p>For this project, the inclusion of Blacks in employment and the entire supply chain forms part of the scorecard according to which the DMRE will rank the projects submitted for bidding. At this stage, DMRE requires a minimum of 30% skilled Black people to be involved in the construction phase, which could be raised during the course of the process. The DMRE encourages the Project to procure with suppliers that have a BBBEE Generic scorecard or who are Qualifying Small Enterprises, Exempt Micro Enterprises and Women Owned Vendors. However, no constructive guidelines/thresholds exist to address employment equity for women, youth and the disabled.</p> <p>It is unknown what the cumulative contribution towards employment of minority groups have been and the</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	DON'T KNOW	DON'T KNOW
		NO-GO	NO IMPACT	
		NO-GO	NO IMPACT	

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>impact on employment equity can thus not be determined.</p> <p>No-go: Minority groups will not have an opportunity to take part in the Makana local economy through this construction project.</p>			
	<p><b>LOCAL EMPLOYMENT</b></p> <p>The term “local” means a community or communities residing within the area of jurisdiction of the district municipality in which the project site is located (i.e. SBDM); or residing in one or more residential areas or villages within 50km from the Project Site (refer Figure 3. 50km radius). At this stage DMRE prescribes that between 12 and 20% of people employed on a project have to be residents of local communities (as defined above). This threshold is not set and could change.</p> <p>From a socio-economic perspective, the benefits and overall significance of this impact would increase if the number of locals working on the project is maximised.</p> <p>It is anticipated that the majority of the unskilled and semi-skilled positions could be filled by locals. The number of foreigners/expatriates employed on renewable energy projects has decreased over time, as skills have gradually been transferred to South Africans. Skilled professional would be available locally due to experience gained during construction of the Waainek Windfarm and similar projects in the Eastern Cape.</p> <p>Although probable, the percentage of local employment at Waainek Wind Farm is unknown and the cumulative impact cannot be rated. In the Eastern Cape (in BW1-4) 4 737 construction jobs (job years) have been created for all renewable energy projects combined; and 53% local people (2 509) were employed in construction. This is more than the Northern and Western Cape provinces, where 51 and 45% locals retained construction jobs (McDaid, 2016).</p> <p>No-go: No economic benefits, skills development or economic spin-offs will manifest for locals during construction.</p>	<b>DIRECT</b>	<b>LOW +</b>	<b>LOW +</b>
		<b>CUMULATIVE</b>	<b>DON'T KNOW</b>	<b>DON'T KNOW</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>LOCAL ECONOMIC IMPACTS</b>	<p><b>PROCUREMENT</b></p> <p>In order to promote preferential procurement and local content, a percentage of the scorecard ranked by DMRE to select winning bids will be based on:</p> <ul style="list-style-type: none"> <li>⤴ How much of the facility is manufactured in South Africa; and</li> <li>⤴ The amount of goods and services procured through South African companies that have a BBBEE Generic</li> </ul>	<b>DIRECT</b>	<b>LOW +</b>	<b>LOW +</b>

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>scorecard or who are Qualifying Small Enterprises, Exempt Micro Enterprises and Woman Owned Venders.</p> <p>It is anticipated that many of the high-technology components required would be imported and local procurement would thus be more focused on general construction material and goods and infrastructure elements. Building material could be sourced from local towns and aggregate material from licenced borrow pits as close to the site as possible.</p> <p>The specific procurement strategy will be formulated closer to the time. Some of the strategies are confidential and can thus not be revealed at this stage.</p> <p>Local procurement at the various wind energy projects in the Eastern Cape would result in technology development and positive cumulative economic impacts for the local and regional economies.</p> <p>No-go: No positive local economic impacts as a result of procurement. None of the local suppliers and manufacturers would benefit.</p>	CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
	<p><b>IMPACTS AS A RESULT OF SALARIES AND WAGES</b></p> <p>The unemployment rate in Makana LM is 32.5%, and averages 29.8% in the three affected wards (refer Section 7.1: Unemployment rate and employment status). This is higher than National and Provincial averages. Between 12 and 20% of people employed on the project have to be residents of local communities and the assumption can be drawn that the majority of the unskilled workforce will be unemployed prior to the construction phase commencing. Incomes in the form of salaries and wages would thus hold economic benefits for these individuals, households and communities for the duration of the construction period.</p> <p>Cumulative local economic impacts as a result of an increase in spending power would benefit the Eastern Cape region.</p> <p>No-go: No economic benefits for individuals and households or induced impacts for the municipality/region as a result of salaries and wages.</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
	<p><b>INDUCED IMPACTS</b></p> <p>When households spend earnings from project development, salaries and wages as well as procurement, these earnings circulate in the regional economy and manifest as induced impacts. These effects associated with the construction phase could include:</p>	DIRECT	LOW +	LOW +

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ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<ul style="list-style-type: none"> <li>✦ Contracts with SMME's and local service providers (catering, transport, etc.) that are not directly related to construction;</li> <li>✦ Manufacturing jobs related to turbine and supply chain impacts;</li> <li>✦ Retail sales, childcare, leisure and hospitality; and</li> <li>✦ Real estate sectors and accommodation of foreigners in local establishments and related spin-offs, such as tourism.</li> </ul> <p>Cumulative enhanced local economic opportunities, industrialisation, job creation and other economic spin-offs for the region.</p> <p>No-go: No economic spin-offs will manifest for the Makana LM or region.</p>	CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
<b>IMPACTS ON THE SOCIAL AND DEMOGRAPHIC STRUCTURE OF THE LOCAL MUNICIPALITY</b>	<p><b>INFLUX OF JOBSEEKERS AND THE IMPACT OF TEMPORARY CONSTRUCTION WORKERS</b></p> <p>Should the project be a successful bidder and the construction period becomes public knowledge, jobseekers and temporary construction workers from the Eastern Cape Province, or wider country, could pose various challenges and negative impacts:</p> <ul style="list-style-type: none"> <li>✦ Conflict between locals and 'outsiders' if an outside labour force receives preference;</li> <li>✦ Conflict due to cultural differences and impacts on social networks;</li> <li>✦ An increase in the size and number of informal settlements in and around the study area;</li> <li>✦ Provision of accommodation for temporary workers could become an economic and social burden for the Project and the local and district Municipalities (erection of a construction camp to house workers is however not foreseen);</li> <li>✦ Workers that remain in the area after the construction period ended could place additional pressure on local government for housing and associated infrastructure and services;</li> <li>✦ 'Outsiders' that have short-term relationships with local women resulting in unwanted pregnancies and an increase in HIV/AIDS and other STD's, thereby placing more pressure on healthcare facilities;</li> <li>✦ An increase of single-headed households without a main income provider and pressure on healthcare, social grants and infrastructure; and</li> <li>✦ Safety and security issues for the surrounding landowners due to an influx of 'jobless' people.</li> </ul> <p>It is unknown whether Waainek Wind Farm (or other renewable energy projects in the region) resulted in an influx of jobseekers and the severity of the cumulative impact can thus not be rated. The likelihood of the impact manifesting is possible but is rated with an overall LOW significance as locals should have been primarily employed in accordance with DMRE requirements. Confidence in the rating is low.</p>	INDIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p><b>IMPACTS ON THE SIZE AND STRUCTURE OF THE LOCAL MUNICIPAL POPULATION</b> Changes in the size, gender, race and age composition of the local population would be affected by the scale of ‘outsiders’ moving into the area and the length of the period that they remain. Adequate management of the employment processes and strict measures in terms of local employment would mitigate this impact effectively.</p> <p>Although possible, the severity of this impact manifesting for the Municipality as a result of cumulative factors is unknown and a LOW overall negative significance is awarded. Confidence in the rating is low.</p>	DIRECT	LOW -	LOW -
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
<p style="text-align: center;"><b>SKILLS DEVELOPMENT, CAPACITY BUILDING AND SOCIAL RESPONSIBILITY</b></p>	<p><b>TRAINING / SKILLS DEVELOPMENT OF INDIVIDUALS / GROUPS / SMMEs</b> During the construction phase the Project’s subcontractors will provide locally recruited staff with suitable training to safely undertake the roles they will perform on site. If required as part of the subcontractors’ own strategy to maintain their BBBEE Level, subcontractors may provide additional capacity building to specific individuals, groups of individuals or SMMEs employed on the Project. The type of training and/or capacity building would generally be specific to the needs of the individuals/groups/SMMEs being supported. For example, this may include training in health and safety legislation, first aid, fire-fighting, construction skills, basic electrical training, quality management, legal compliance or business skills. Any such capacity building or training is at the discretion of the individual subcontractor.</p> <p>An important outcome of skills development and training is that it increases the employability of a region’s workforce, resulting in enhanced economic opportunities and thus addressing poverty alleviation over the medium to long term.</p> <p>Cumulative impacts include: Capacity building for unskilled and semi-skilled individuals and SMMEs in the broader Makana LM, thereby increasing its employability; Individuals would be able to use their skills gained to secure employment at similar renewable energy projects in future.</p> <p>No-go: No positive impacts for the employability of the local and regional labour force over the medium or long term.</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
		NO-GO	NO IMPACT	
	<p><b>BENEFICIARY IDENTIFICATION</b> Communities within a 50km radius of the project are eligible to become beneficiaries of the program. The identification of beneficiary communities could however be problematic as the social and political dynamics can be negatively impacted by selectively identifying some people as beneficiaries over others. Also, the 50km radius often competes with other administrative boundaries. Such a radius can stretch over one or</p>	DIRECT	LOW -	LOW -

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>more municipal areas and can even cross provincial and national boundaries, which makes the alignment of SED and ED plans with Government policies difficult.</p> <p>For the Albany WEF the 50km radius would include Grahamstown and a number of smaller inland and coastal towns (refer Figure 3: 50km radius). It is thus necessary to shrink the 'project impact area' that would benefit directly through equity, SED and ED significantly and the Albany WEF will aim to prioritize projects implemented in close proximity to the project site. Coordination and cooperation in terms of beneficiary identification between the Waainek and Albany WEF's would avoid fragmented spending, ensuring that economic advantages of the Project are fairly and equally distributed.</p> <p>Cumulative impacts associated with beneficiary identification (such as conflict) is possible, but it is not known whether the beneficiation process resulted in negative impacts at other WEF projects.</p>	CUMULATIVE	DON'T KNOW	DON'T KNOW
		NO-GO	NO IMPACT	
	<p><b>COMMUNITY PROJECTS, ED AND SED CONTRIBUTIONS</b></p> <p>Due to the ED and SED commitments being linked to revenue received during the operational phase of the project, Albany Wind Power will not be implementing any ED and SED projects during its construction phase. However, the developer will assess the potential of utilising ED and SED funds from its neighbouring project (Waainek Wind Farm) for the benefit of the commonage farmers occupying land on the Albany Site.</p> <p>Waainek Wind Power has committed to allocating a total of 2.1% of its revenues on ED (0.6%) and SED (1.5%) projects within a 50km radius from the project. Although few ED and SED benefits are anticipated during the Albany WEF's construction phase, the cumulative impact would hold some benefits for the local Municipality over the medium term. Plan 8 WEF SED and ED contributions are unknown.</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
<b>INDIVIDUAL AND FAMILY LEVEL IMPACTS</b>	<p><b>DISRUPTIONS IN DAILY LIVING AND MOVEMENT PATTERNS</b></p> <p>Short-term disruptions in daily living and movement patterns for surrounding community members and road users could manifest as a result of the transport of components and construction activities on site. The majority of these impacts would take place during the laying of foundations and the erection phases. Disruptions could include:</p> <ul style="list-style-type: none"> <li>⤴ The construction phase of potential road improvements to accommodate the development (widening of accesses and so forth);</li> <li>⤴ Road closures to cater for abnormal loads (transport of turbine components);</li> </ul>	DIRECT	HIGH -	MODERATE -

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<ul style="list-style-type: none"> <li>✦ Damage to road infrastructure due to the frequency of heavy vehicles;</li> <li>✦ Potential unroadworthy construction vehicles and negligent drivers that disobey traffic rules; and</li> <li>✦ Potential noise, dust, visual and air pollution for land owners in close proximity to the site and along gravel access roads (addressed in Section 11.5.2: Intrusion impacts).</li> </ul> <p>Infrastructure components will in all likelihood be transported from the Coega Harbour (Port Elizabeth) by road (N2 freeway) to the project site. A Traffic Impact Assessment (“TIA”) and traffic management plan will be prepared to select the most appropriate route, and all relevant approvals and permits sought from the relevant authorities such as SANRAL and Eastern Cape Department of Transport.</p>	CUMULATIVE	DON'T KNOW	DON'T KNOW
	<p>The proposed accesses to the site are via existing accesses. No new accesses/intersections are proposed. There are three proposed accesses along the R67 and a further four accesses along the N2. The existing accesses to be used are general “farm” type accesses and will need to be temporary improved in order to facilitate the expected abnormal loads during the construction stage (Traffic feasibility study, January 2020).</p>	NO-GO	NO IMPACT	
	<p>It is possible that the construction of other wind farms in the Eastern Cape Province take place simultaneous with Albany WEF and cumulative impacts as a result of the transport of large turbine components and road closures on the N2 is thus possible. However, these factors are unknown at this stage and the overall significance cannot be determined.</p>			
	<p><b>INTRUSION IMPACTS AT THE CONSTRUCTION SITE</b> Intrusion impacts refer to noise, visual and light pollution and possible dust/air pollution during the construction phase, as a result of emissions, movement of construction vehicles on site, earthworks and general construction activities. Where relevant these impacts were investigated and rated individually in a scientific manner by the respective Specialists. Although short-term in nature, the severity of the impact would increase if sensitive receptors are located close to the construction areas.</p>	DIRECT	MODERATE -	MODERATE -
		CUMULATIVE	DON'T KNOW	DON'T KNOW
	<p>There is no potential for a cumulative noise and dust/air impacts from other wind farms in the area. Cumulative visual impacts may occur if the construction phases of the Albany and Plan 8 WEF's overlap.</p>	NO-GO	NO IMPACT	
	<p><b>SECURITY IMPACTS</b> Crime and security issues during the construction phase are often associated with the influx of outsiders and an increase in jobless people. The increase in human activities and materials and equipment brought to site could attract criminals, which would be exacerbated by the mismanagement of the recruitment process.</p>	DIRECT	MODERATE -	LOW -
		CUMULATIVE	DON'T KNOW	DON'T KNOW

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	Although possible, this cumulative impact cannot be rated, as the security risks and issues experienced at the other wind farms are unknown.	NO-GO	NO IMPACT	
<b>IMPACTS ON INFRASTRUCTURE AND SERVICES AND GENERAL IMPACTS ON THE MAKANA LM</b>	<b>DISRUPTIONS OF SERVICES</b> Temporary road closures when turbine components are transported to the construction site are eminent and have been assessed in the previous impact: Disruptions in daily living and movement patterns.	DIRECT	LOW -	LOW -
		CUMULATIVE	NO IMPACT	
	Electricity might be disrupted temporarily when the wind farm switching station is connected into the grid, but this will be done within acceptable parameters prescribed by Eskom.	NO-GO	NO IMPACT	
	<b>DAMAGE TO ROAD INFRASTRUCTURE AND SURFACES</b> Damage to road infrastructure as a result of an increase in traffic and large/abnormal vehicles could impact financially on government and landowners (repairs to road surfaces) as well as on the safety of road users. The N2 freeway and access roads that lead to the construction sites will mainly be affected.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	DON'T KNOW	DON'T KNOW
	Cumulative impacts relating to damage to road infrastructure in the region and province is possible but cannot be rated.	NO-GO	NO IMPACT	
	No-go: Road infrastructure will not be impacted on; Upgrading of local access roads would not take place.			
	<b>GENERAL IMPACTS ON THE MAKANA LM</b> The proposed construction project would hold economic advantages for the Makana LM in terms of employment, skills development, SMME development and so forth. However, local government is also faced with various responsibilities and challenges during the feasibility and construction phases, which could place pressure on municipal resources, such as:	DIRECT	LOW -	LOW -
	<ul style="list-style-type: none"> <li>✦ Collaboration with the Project for permits for the submission of a compliant bid;</li> <li>✦ Management of stakeholder and community relations;</li> <li>✦ Involvement in the employment process by assisting the Community Employer Relations Officer with the job seeker registration database;</li> <li>✦ Participation in SMME training and SMME support programmes;</li> <li>✦ Monitoring of the construction site and processes to ensure compliance with municipal bylaws; and so forth.</li> </ul>	CUMULATIVE	MODERATE -	MODERATE -
	It is possible that there are shortfalls in capacity and management experience within the municipality and bureaucratic procedures and financial constraints could also hamper progress.	NO-GO	NO IMPACT	

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	As a result of Waainek, Plan 8 and Albany Wind Farms pressure on roles, responsibilities and resources of Makana LM would increase.			
<b>HEALTH AND SAFETY IMPACTS</b>	<b>HEALTH AND SAFETY RISKS FOR CONSTRUCTION WORKERS</b> Inadequate management of the construction process and general construction related activities could result in health and safety risks for workers, manifesting in the following ways: <ul style="list-style-type: none"> <li>✦ Construction related accidents due to structural safety of project infrastructure;</li> <li>✦ Dust generation and air pollution resulting in respiratory diseases;</li> <li>✦ High ambient noise levels caused by machinery and construction equipment resulting in loss in hearing or similar health issues;</li> <li>✦ Dehydration, sunburn and related issues due to unsafe and insufficient drinking water and high temperatures during summer months; and</li> <li>✦ An increase in HIV/AIDS and other STDs due to prostitution activities and temporary sexual relationships with local women, unwanted pregnancies that place further pressure on Basic Health Care Services.</li> </ul> <p>It is unknown whether construction related accidents and/or health issues as a result of the construction process manifested at Waainek Wind Farm and the severity of the cumulative impact is unknown.</p>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>DON'T KNOW</b>	<b>DON'T KNOW</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
	<b>COMMUNITY HEALTH AND SAFETY RISKS</b> Community health and safety impacts as a result of poor management of the construction site and construction activities could include: <ul style="list-style-type: none"> <li>✦ Road accidents, subsequently placing pressure on local emergency, disaster management and health services (fire, ambulance, police services, etc.);</li> <li>✦ Unauthorized access / trespassing at the construction site, resulting in theft, public safety issues and accidents;</li> <li>✦ Fire hazards at the construction site and the possibility of fires spreading and damaging surrounding farmland and infrastructure;</li> <li>✦ Pollution problems, flies, rodents and pests and possible contamination of ground and surface water sources due to poor management of the construction activities (e.g. insufficient sanitation facilities, littering and refuse);</li> <li>✦ High ambient noise levels that damage hearing (unlikely); and</li> <li>✦ Dust generation and air pollution caused by gravel roads, construction activities and machinery resulting in respiratory diseases.</li> </ul>	<b>INDIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>DON'T KNOW</b>	<b>DON'T KNOW</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>The risk/likelihood of the impact manifesting as well as its severity will, to a large extent, depend on the proximity of sensitive receptors (residences, farming activities, livestock, etc.) to the construction sites. It is required of the Project to comply with all the provisions of the Occupational Health and Safety Act 85 of 1993 in order to mitigate potential health and safety issues.</p> <p>It is not known whether community health and safety risks manifested during the construction of Waainek Wind Farm and the severity of the cumulative impact cannot be determined.</p>			
<i>TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN</i>				
<b>TRANSPORTATION OF INFRASTRUCTURE</b>	Vehicles required for the transport of infrastructure (e.g. turbines and cables) and materials would result in a direct negative impact on the used roads and road users.	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>NO IMPACT</b>	
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>CONSTRUCTION TRAFFIC</b>	Increased traffic from workers travelling to and from the site will result in a negative direct impact on people who use the site, the N2, the R67 and the access roads within the site.	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>NO IMPACT</b>	
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>DELAYS CLOSE TO SITE ACCESS ROADS</b>	Increased delays on vehicles at road construction sites, particularly at the accesses onto the two national roads (i.e. the N2 and the R67).	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>NO IMPACT</b>	
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<i>VISUAL IMPACT ASSESSMENT</i>				
<b>VISUAL IMPACT OF CONSTRUCTION ACTIVITY</b>	<p>There are various activities which will take place during the construction phase which may have impacts on sensitive visual receptors:</p> <ul style="list-style-type: none"> <li>✦ Large areas of vegetation will need to be cleared to make way for digging of the turbine foundations, hardstand areas, substation footprints, access roads, laydown areas, workshops and storage yards.</li> <li>✦ Construction of wind turbines will potentially draw attention if they are exposed above the skyline.</li> <li>✦ There will be an increase in the movement of vehicles in the area: large trucks delivering supplies and construction material; graders, excavators and bulldozers; light vehicle movement around site; large trucks hauling rubble and construction waste, etc.</li> <li>✦ Soil stockpiles and heaps of vegetation debris.</li> <li>✦ Dust emissions from construction activity.</li> <li>✦ Activity at night is also probable since transport of large turbine components may occur after work hours to minimise disruption of traffic on main roads.</li> </ul>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
		<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>HIGH -</b>

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>The most significant cumulative visual impacts will come from the Operational Waainek WEF and the Proposed Plan 8 WEF. Both these facilities are located within 20km of the Albany site. The Waainek Wind Farm consists of eight turbines, each with a hub height of 84m and a rotor diameter of 112m, and the Plan 8 facility facility will host up to 22 turbines, each with a hub height of up to 91.5m and a rotor diameter of up to 117m.</p> <p>The cumulative visual impacts of these three facilities will be high, with the proposed Albany WEF making the largest contribution to the impact.</p>	NO-GO	NO IMPACT	
<b>OPERATIONAL PHASE</b>				
<i>AGRICULTURE IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>AVIFAUNAL IMPACT ASSESSMENT</i>				
<b>DISPLACEMENT OF BIRDS</b>	Once operational the facility could displace certain birds from the area or cause them to fly further to get around the facility. Displacement of birds is judged to be of LOW NEGATIVE significance pre mitigation.	DIRECT	LOW -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	NO IMPACT	
<b>COLLISION OF BIRDS WITH TURBINE BLADES</b>	Birds in flight on the site could collide with operational turbine blades, thereby being killed or seriously injured. Collision of birds with turbines is judged to be of MODERATE NEGATIVE significance pre mitigation.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	NO IMPACT	
<i>BAT IMPACT ASSESSMENT</i>				
<b>BAROTRAUMA</b>	<p><b>FORAGING BAROTRAUMA</b></p> <p>Bat deaths by collision with or due to barotrauma caused by wind turbines have been reported worldwide (Kunz et al., 2007; Arnett et al., 2008; Baerwald et al., 2008; Rydell et al., 2010; Baerwald and Barclay, 2011; ; Hull and Cawthen, 2013; Voigt et al., 2012; Lehnert et al., 2014), including for South Africa (SA) (Doty and Martin, 2012; MacEwan, 2016). There is not a single WEF in SA, where operational monitoring is being conducted, that has not had any bat fatalities (Perrold and MacEwan, 2017).</p> <p>There are various hypotheses as to why certain species of bats are killed by wind turbines, but one common hypothesis that is emerging worldwide, is that bats that move and feed in less cluttered and more open air space environments, are more vulnerable to collisions with wind turbines than those moving and feeding in more cluttered environments (Arnett, 2017).</p> <p>Based on the activity levels measured during pre-construction monitoring, the Albany WEF is classified as having a High turbine fatality risk for its Ecoregion, according to the estimated bat fatality risk levels in Sowler</p>	DIRECT	HIGH -	LOW -
		CUMULATIVE	HIGH -	MODERATE -
		NO-GO	NO IMPACT	

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	et al (2017). Therefore, the significance of bat fatality impacts during foraging is considered High, especially considering the fact that numerous bat fatalities of the of <i>T. aegyptiaca</i> and <i>N. capensis</i> , the two most common bat species recorded at the Albany WEF, are being found at operational WEFs in the Eastern and Western Cape. This impact can be reduced to Low by the following mitigation measures.			
	<b>MIGRATION BAROTRAUMA</b> Internationally, migrating bats have been shown to be at risk of fatality due to wind turbines. Whilst the migrating bats in South Africa are different species and are not tree-roosting species, the long distances that they travel and the height at which they fly also puts them at risk of fatality. In South Africa, migrating bat species, such as <i>M. natalensis</i> and the Egyptian Rosetta <i>Rousettus aegyptiacus</i> have been fatality victims at wind turbines in the Eastern Cape (MacEwan, 2016), however, only a handful of each to date. At the Albany WEF, there is evidence of increased <i>M. natalensis</i> activity in autumn, although the numbers are moderate. The significance of this impact is considered to be Medium. Mitigation measures recommended above in will assist to reduce the risk of fatalities of migrating bats and reduce the significance of the impact to Low.	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
	<b>ROOSTING BAROTRAUMA</b> Bats have been shown, through thermal imagery studies, to be attracted to wind turbines, either looking for potential roost sites, or out of curiosity and are often struck by the moving blades (Horn et al., 2008). This has been further confirmed by Rollins et al. (2012). Unfortunately, no mitigation measure has been found to effectively prevent this. Whilst ultrasonic sound emitters are currently being investigated as a deterrent for bats from wind turbines internationally and in South Africa, the research is still in its infancy. Hence, we cannot yet recommend this, but as more information comes available, deterrents could be a valuable mitigation measure. The most well-documented measure is curtailment.	<b>DIRECT</b>	<b>HIGH -</b>	<b>HIGH -</b>
		<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>HIGH -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>ELECTROMAGNETIC INTERFERENCE</b>	Bat collision with power lines is considered as a negligible impact on bats at the Albany WEF, owing to no evidence of this occurring in South Africa to date and no evidence of fruit bats occurring on site. Furthermore, whilst some laboratory studies have shown that electromagnetic radiation can have behavioural effects on bats and rats, it is uncertain that this would be the case outside of the lab in natural circumstances.	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>ECOLOGICAL IMPACT ASSESSMENT</b>				
<b>INVASION OF ALIEN VEGETATION</b>	The clearance of vegetation associated with the development of the Albany WEF and associated infrastructure will create open/bare habitats which are likely to be colonised by pioneer plant species. While this is partly a natural revegetation/regeneration process, which would ultimately lead to the re-establishment of secondary vegetation cover, it also favours the establishment of alien vegetation.	<b>DIRECT</b>	<b>HIGH -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>LOW -</b>
		<b>NO-GO</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
<b>HERITAGE IMPACT ASSESSMENT</b>				
<b>None identified by specialist</b>				

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<i>NOISE IMPACT ASSESSMENT</i>				
<b>OPERATIONAL NOISE OF WIND TURBINES</b>	<p>Considering long term ambient sound levels of the Albany WEF site, projected noise levels are less than the noise limits as proposed by MoE (see Figure 2-1 of Noise Impact Report) at all wind speeds for all receptors. The duration will be the full project life. The wind turbines may be audible up to 1,500 m during special conditions.</p>	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>
	<p>The proposed renewable power generation activities (worst-case evaluated) could raise the ambient sound levels at potential noise-sensitive developments (mainly NSD17 during the operational phase at night). It is expected that the noise from the wind turbines may be audible at most of the identified receptors during very quiet periods and audible at NSD17. The sound levels will not be disturbing (will not change the existing ambient sound levels with more than 7 dB).</p>	<b>CUMULATIVE</b>	<b>NO IMPACT</b>	
	<p>The reduction in the number of turbines and amendment of the layout was also influenced by the identification of sensitive noise receptors (NSD17), which were initially identified as having a medium risk of noise impact during the operational phase. Mitigation was proposed that would reduce this potential impact. There is no potential for a cumulative noise impact from other wind farms in the area. Following the change in the scope of the AWEF (reduction in the number of turbines from 66 to 43, the relocation of 7 turbines and the inclusion of the Grid Infrastructure), EARES submitted a supplementary report, which concluded the following: The proposed layout:</p> <ul style="list-style-type: none"> <li>✦ Locates the WTGs on average further from the identified NSD.</li> <li>✦ No WTG is moved closer than 1,000m from any NSD.</li> <li>✦ The total number of WTG within 1,000 m from NSD 17, are reduced from three (3) to two (2). This reduction will result in a slight reduction in noise levels due to the reduction in cumulative noises (from three to two WTGs) and likely reduce the significance of the operational noise impact from Medium to Low. WTGs further than 1,000m from any identified NSD, with the closest WTG approximately 1,580 m from NSD10.</li> </ul> <p>Therefore, considering the proposed locations of the WTGs and the potential noise impact, that:</p> <ul style="list-style-type: none"> <li>✦ The change will not increase the significance of the noise impact (the noise level will likely reduce at NSD 17 considering previous noise levels modelled).</li> </ul>	<b>NO-GO</b>	<b>LOW -</b>	<b>LOW -</b>

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<ul style="list-style-type: none"> <li>✦ A full noise impact assessment with new modelling will not be required and the recommendations as contained in the previous document will still be valid.</li> <li>✦ The cumulative noise impact will not change, as there are no new or proposed wind turbines (from a different WEF), located within 2,000m from identified NSDs that will cumulatively increase the noise levels.</li> <li>✦ There are no new limitations or assumptions.</li> <li>✦ The changes will not increase the significance of the noise impacts identified in the original report and as such an updated noise impact assessment would not be required.</li> </ul> <p>Noise levels will be of medium-high magnitude at a number of other receptors. The wind turbines will be clearly audible, but considering the likely ambient sound levels the significance of the noise impact is considered to be low. Mitigation is not required but general recommendations are proposed for the developer to consider.</p> <p>There is no potential for a cumulative noise impact.</p>			
<i>PALAEONTOLOGICAL IMPACT ASSESSMENT</i>				
<i>None identified by specialist</i>				
<i>SOCIAL IMPACT ASSESSMENT</i>				
<b>IMPACTS ON EMPLOYMENT</b>	<p><b>DIRECT EMPLOYMENT</b></p> <p>The Albany WEF shall have permanent Service Technicians on site during the operational phase and assistants (if any). At this point the following person-months are estimated:</p> <ul style="list-style-type: none"> <li>✦ Skilled: 1690 person-months; and</li> <li>✦ Unskilled: 240 person-months.</li> </ul> <p>Skilled positions usually relate to technicians, electricians, IT specialists, engineers and mechanics and unskilled workers entail cleaners and site maintenance. Furthermore, ahead of the operational phase, an Implementing and Monitoring Agent (“IMA”) is appointed to administer and manage ED and SED contributions.</p> <p>Temporary staff will be employed periodically through service providers for civil works and site maintenance</p>	<b>DIRECT</b>	<b>LOW +</b>	<b>LOW +</b>
		<b>CUMULATIVE</b>	<b>LOW +</b>	<b>LOW +</b>

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	<p>(roads, crane pads, etc.), site clearance to minimize potential veld fires, painting of buildings and small maintenance jobs such as plumbing. These numbers cannot accurately be determined at this stage.</p> <p>The cumulative impact of permanent and temporary employment of the three wind energy facilities in Makana LM would hold benefits of LOW overall significance, as the wind farms are not labour intensive. Employment, training and capacity building at the three wind farms would enhance skills of the workers, especially if the local workforce is maximised.</p> <p>No-go: The Municipality will not benefit in terms of employment or any other economic spin-offs.</p>	NO-GO	NO IMPACT	
	<p><b>INDIRECT EMPLOYMENT</b> Job creation as a result of the funding spent on SED projects, such as construction/infrastructure projects, literacy/educational programmes, sport development and so forth, is probable. At this premature stage it is not possible to determine or estimate the number of indirect job opportunities that will manifest.</p>	INDIRECT	LOW +	LOW +
	<p>Indirect job creation, training and capacity building at the three wind farms in Makana LM could contribute to individual/household incomes, address poverty levels and enhance skills of the local municipal workforce.</p>	CUMULATIVE	LOW +	LOW +
	<p>No-go: Local communities will not benefit in terms of indirect job creation, skills development or any other economic spin-offs.</p>	NO-GO	NO IMPACT	
	<p><b>LOSS OF EXISTING JOBS AS A RESULT OF THE PROJECT</b> Turbines will not impact agricultural land uses and no negative impact on existing jobs in this sector is foreseen.</p>	DIRECT INDIRECT	MODERATE -	MODERATE -
	<p>The existing tourism industry contribute meaningfully towards local and regional employment on direct and indirect levels and the possibility that the Project could result in job losses therefore has to be analysed and considered. This impact is directly linked to the potential impact of the Project on tourism, which is assessed in greater detail in Section 11.2.1 of the SIA (Potential loss in incomes: Tourism/Gaming/Hunting industries).</p>	CUMULATIVE	MODERATE -	MODERATE -
	<p>Section 5.3 of the SIA (Land uses in and around the study area) makes reference to the Game Reserves within the Project's area of influence. Permanent employment of the Game Reserves that submitted questionnaires amount to 347.</p>	NO-GO	NO IMPACT	

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	No-go: Status quo in terms of direct and indirect employment by the agriculture, tourism, gaming and hunting sectors would prevail. No additional employment as a direct result of the Project or indirectly through SED and ED contributions and community projects.			
<b>LOCAL ECONOMIC IMPACTS</b>	<p><b>POTENTIAL LOSS IN INCOMES: TOURISM/GAMING/HUNTING INDUSTRIES</b></p> <p>The assessment of negative local economic impacts, and specifically impacts on incomes/livelihoods, as a result of the Albany WEF cannot be done with certainty due to confining factors and information. Although other wind farms in South Africa, such as Cookhouse, Dassiesridge and Waainek also affect game/hunting farms, the Albany WEF's potential negative impact on the study area could be higher due to various facts:</p> <ul style="list-style-type: none"> <li>✦ Game Reserves within the study area are mostly high-end luxury tourist attractions and many are frequented by overseas visitors;</li> <li>✦ The number of turbines planned are relatively high (43); and</li> <li>✦ The visual impact on some of the game reserves and protected areas in the study area are anticipated to be moderate to high (VIA, February 2021).</li> </ul> <p>Visual and aesthetic concerns raised by I&amp;APs and the subsequent negative impacts the development poses to their businesses, livelihoods and investments are thus understandable.</p> <p>Since no local data on the subject currently exists, reference has to be made to international research results. These findings need to be used with caution since the receiving environment (communities, tourist activities, landscape), location, technologies, size of the wind farm developments and so forth differ between the various sources and from this Project.</p> <p>The following is a summary of various international articles and publications that aimed to investigate the impact of wind farms on tourists and tourist destinations. Results often contradict each other, which illustrate the contentious nature of the topic:</p> <ul style="list-style-type: none"> <li>✦ Many visitors/tourists would criticize the proximity to wind turbines; many would also accept their presence.</li> <li>✦ Many of the respondents in the various studies/surveys stated that wind farms had no impact on their destination of choice; many respondents revealed they would not frequent areas with visible turbines.</li> <li>✦ Many of the studies concluded that the presence of a wind farm in an area does not influence destination of choice; whilst other publications list the attractiveness of local nature and scenery as one of the most important aspect in tourists' choice of destination.</li> <li>✦ The reported avoidance effect diminishes with greater distance from the tourist area.</li> </ul>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
	<b>CUMULATIVE</b>	<b>MODERATE -</b>	<b>MODERATE -</b>	
	<b>NO-GO</b>	<b>NO IMPACT</b>		

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	<ul style="list-style-type: none"> <li>✦ Aesthetic perceptions (both positive and negative) is one of the strongest single influence on individuals' attitudes towards wind power projects.</li> <li>✦ There tend to be greater opposition towards wind farms that are greater in size.</li> <li>✦ In some instances factors such as quality of service, hospitality and (for foreign tourists) the currency exchange rate, rather than only the wind farm presence in a landscape, often affect local tourism development more.</li> <li>✦ Some studies show that wind farms may have a negative effect on tourism demand and tourism expenditures in the affected area; whereas others were consistent in their conclusion that wind farms are innocuous in terms of local tourism demand, numbers, revenue and experiences.</li> <li>✦ No measurable economic impact of wind farms on tourism abroad could be obtained.</li> </ul> <p>It is clear from the above that no consensus exists with regards to wind farms' actual impacts on tourism and that impacts would rather be subject to local conditions and markets. For this Project, landscape (scenic resources) and the tourism market (eco-tourism and high-end luxury accommodation) would be considered some of the determining factors. The tourism market is a highly competitive industry and could be susceptible to subtle changes in market conditions and it is recognised that a marginal change in the numbers of tourists could have a significant knock-on economic effect.</p> <p>Silva and Delicado (2017) state that: "Wind farms' tourism conflict is particularly pronounced in areas where the productive functions of the countryside come into conflict with the consumptive function." Landscapes have now become part of "countryside capital", a wide range of rural resources or products that are bought and sold through tourism (Silva and Delicado, 2017).</p> <p>On a local level, game farm owners in close proximity to the Cookhouse (66 turbines) and Waainek (8 turbines) wind farms were consulted to obtain their experiences with the developments. During the EIA draft report review period, Lalibela and Pumba Game Reserves submitted additional comments that have been included below:</p> <ul style="list-style-type: none"> <li>✦ Some of the game farms are affected visually from various viewpoints on the farms;</li> <li>✦ Natural features (such as mountainous areas) assist to mitigate visual impacts to a certain extent;</li> <li>✦ Views from Kichaka Lodge (Lalibela) look straight over a water hole and upslope into three (3) turbines in the distance. The rich landscape scenery has partially ameliorated the visual impact during the day, but the turbine lights are a significant intrusion during the night and have drawn comment from visitors to the extent that the game farm will be implementing special lighting around the lodge and water hole</li> </ul>			

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	<p>to distract from the turbine light intrusion;</p> <ul style="list-style-type: none"> <li>✦ Lalibela Game Farm reported that they have had to change game drive routes to avoid turbine visual impact. Certain routes can now only be driven in direction away from Waainek and certain areas can only be traversed in daytime as night drives are spoiled by turbine light flicker;</li> <li>✦ Gameston Wildlife Retreat (Pumba) faces the Waainek turbines across the valley. As a result of complaints from visitors, a decision was made to remove the Gameston lodge from the Pumba Reserve offering and to remarket the facility to a different market;</li> <li>✦ It was stated that guests do not complain about the turbines, as many are European visitors who have most likely become used to the sight of wind farms;</li> <li>✦ The game farm representatives that were telephonically interviewed were asked whether the wind farms affected their tourism and businesses, and none reported any significant impact ; and</li> <li>✦ The eZulu Game Reserve informed that the Reserve was being sold to overseas buyers “who made an offer that could not be refused”</li> </ul> <p>As a result of the appeal lodged by Indalo, Amakhala and Pumba Game Reserves in opposition to the issuance of the Environmental Authorisation (“EA”) for Waainek WEF, the number of turbines were reduced from 27 to eight (8). The reduction in the number of turbines have undoubtedly also ameliorated impacts on these tourist establishments.</p> <p>Kwandwe Game Reserve did a client survey to determine perceptions with regards to wind farms and its potential impact on tourists’ perceptions (refer to Addendum, Section 14.1.6). Three (3) questions were asked and the results are summarised below:</p> <ul style="list-style-type: none"> <li>✦ Several clients simply answered “yes” to all three questions, i.e. (1) That the nature and type of infrastructure that is visible from Kwandwe will be relevant to their visual / aesthetic experience; (2) That being able to see a wind farm during both the day and the night (aviation warning lights) will impact on their choice of destination for a wildlife tourist experience in South Africa; and (3) That the visibility of wind farms from within Kwandwe Game Reserve would impact on their decision to visit Kwandwe.</li> <li>✦ The bulk of the responses were individuals that responded in more detail and reasons provided for visiting the reserve mostly related to “the unique wilderness experience” and that they “frequent Kwandwe to escape from the city to nature”.</li> <li>✦ Although the majority of respondents stated that a wind farm would influence their destination of choice and would impact their decision to return to Kwandwe negatively, a number responded that it would either not influence their decision, or that their decision would depend on the scale of the wind farm</li> </ul>			

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	<p>development and its visibility.</p> <p>The following general conclusions, which relate to impacts on tourism and livelihoods, are made:</p> <ul style="list-style-type: none"> <li>✦ No local research and published surveys could be obtained with regards to impacts on tourism/livelihoods;</li> <li>✦ Wind farms and tourist destinations abroad (on which the published literature is based) differ from the study area in terms of the tourist product offered, landscapes, communities affected, localities of the wind farms as well as the sizes of the development;</li> <li>✦ From international literature consulted, no consensus exists with regards to wind farms' actual impacts on tourism (volumes, experiences, and revenue), tourists' destination of choice and so forth;</li> <li>✦ Some studies show that wind farms may have a negative effect on tourism demand and tourism expenditures in the affected area; whereas others were consistent in their conclusion that wind farms are innocuous in terms of local tourism demand, numbers, revenue and experiences;</li> <li>✦ Most respondents in the Kwandwe survey indicated a negative response towards such a development and the impact it would have to their experience (Africa and bush experience) and destination of choice;</li> <li>✦ Impacts that have manifested for game reserves affected by Cookhouse and Waainek WEF's were mostly as a result of visual aspects (especially night light flicker). Game reserves have had to implement measures to address visual intrusions, i.e. to change game drive routes, do refurbishments and install lighting that distracts from light disturbances;</li> <li>✦ The tourism industry is highly competitive, sensitive and susceptible to subtle changes in market conditions and it is recognised that a marginal change in the numbers of tourists could have a significant knock-on economic effect;</li> <li>✦ Proximity to turbines and their localities (visual impacts on lodges and strategic viewpoints on the game farms) together with impacts on the sense of place, which could be influenced by changes in landscape (scenic resources), could potentially influence the local tourism market and subsequently livelihoods.</li> </ul> <p>Based on comments received relating to the draft EIA and VIA reports, the project proponent has reduced the number of turbines with 23, which has addressed some of the visual impacts associated with this Project. It is however acknowledged that visual impacts alone is not the only determining factor and that impacts on the sense of place and changes to the fabric of the landscape (as a result of cumulative impacts) could also influence tourists' perception of the study area and ultimately their choice of destination.</p>			
	<p><b>POTENTIAL IMPACTS ON INCOMES: RENTAL INCOMES</b></p> <p>For the duration of the operational phase 15 landowners/legal entities directly involved in the Project, would</p>	<b>DIRECT</b>	<b>LOW +</b>	<b>LOW +</b>

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	benefit financially. Long-term lease agreements are put in place and a positive economic impact is experienced in this regard.	CUMULATIVE	LOW +	LOW +
	Cumulatively, landowners at the three wind farms benefit financially through rental incomes.	NO-GO	NO IMPACT	
	<b>POTENTIAL IMPACTS ON LAND VALUES: FARM PORTIONS INCLUDED IN THE PROJECT</b>	DIRECT	LOW +	LOW +
	The Albany Wind Farm and related infrastructure would in all likelihood add value to land that is included in the Project, as rental incomes would be secured for the duration of the project. For the duration of the operational phase a possible positive economic impact in terms of land values is anticipated for those landowners.	CUMULATIVE	LOW +	LOW +
	On a cumulative level, economic benefits for the landowners affected by the three WEFs are expected.	NO-GO	NO IMPACT	
	<b>POTENTIAL IMPACTS ON LAND VALUES/MARKET VALUES: SURROUNDING FARMS AND GAME RESERVES</b>	DIRECT	NO IMPACT	
	Concerns have been raised that visual impacts of wind farms could potentially impact negatively on land values/market values of surrounding agricultural land and/or Game Reserves.			
	From a socio-economic perspective, experience indicates that infrastructure such as Eskom power lines and turbines would not have a negative impact on agricultural property values, although the potential impact on commercial land values would be more complex to determine. In addition to this, research done on the impact of wind turbines on tourism landscapes recognises that wind turbines are perceived more positively compared to other types of industrial facilities.			
	The SIA Specialist conducted an interview with a land Valuer in 2014 who at the time indicated that Farm No. 68, Bedford district in extent of 919,920 hectares and located in very close proximity to the Cookhouse WEF, sold for R11,5 million (R150 000/ha for irrigated land and R7 800/ha for veld), which was far above market value. The wind turbines have a significant visual impact on Farm No. 68 as well as surrounding farms. Thirty hectares of Farm No. 68 were under irrigation then and 889 hectares veld (grazing). Construction of the Cookhouse WEF therefore had no negative impact on the market value of the farm.	CUMULATIVE	NO IMPACT	

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	<p>In a more recent interview, a former estate agent in the Somerset-East area indicated that the resale value of an agricultural farm in close proximity (approximately 8km) to the Cookhouse WEF has also increased significantly over the last number of years when it was sold recently.</p> <p>In terms of commercial land, the former owner of eZulu Game Reserve, located close to Cookhouse WEF and visually impacted by turbines, informed that the Reserve was sold to overseas buyers at the beginning of 2020 “who made an offer that could not be refused”.</p> <p>Negative cumulative impacts are unlikely. However, the detailed assessment of possible cumulative impacts on land/market values of farms fall outside the scope of this SIA study and should be investigated and rated by a Land Valuer/Economist if required.</p>	NO-GO	NO IMPACT	
	<p><b>GENERAL IMPACTS FOR THE LOCAL ECONOMY</b></p> <p>During the operational phase, the local economy could benefit in the following ways:</p> <ul style="list-style-type: none"> <li>✦ A possible increase in municipal rates and taxes, as the lease areas would be zoned “Special Use for Renewable Energy Infrastructure”, resulting in higher levels of rateable income.</li> <li>✦ Induced impacts on retail sales, childcare, leisure and hospitality, real estate, etc. as more money circulates in the local economy due to: <ul style="list-style-type: none"> <li>✦ Salaries and wages;</li> <li>✦ SED and ED contributions (currently the target set by DMRE is 2.1% of revenue); and</li> <li>✦ Shareholding in respect of local ownership (currently expected to be around 26%) , which leads to the increase in financial resources for the local community (local ownership dividends start accruing in most projects from year five to fifteen onwards, depending on the project finance structure); and</li> <li>✦ The establishment of local downstream industries and services that would support the Wind Farm’s operations (to a lesser extent).</li> </ul> </li> </ul> <p>Cumulative: Positive impacts that are beneficial for the local economy have already been generated and would further be enhanced with the implementation of the Albany and Plan 8 WEF’s. Locally, the Makana Winds of Change Community Trust, which emanates from the neighbouring Waainek Wind Farm, is a 26% shareholder in Waainek Wind Power (RF) (Pty) Ltd, which is operational since 2016. Dividends received are contributed on community development projects/initiatives within a 50 km radius of the wind farm (Refer</p>	DIRECT	LOW +	LOW +
		CUMULATIVE	LOW +	LOW +

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	<p>Addendum, Section 17.2 for the SED and ED projects implemented). The cumulative impact of renewable energy projects for the country as a whole is significant. Based on the submitted numbers in the bid documents there is a 90% probability that the total resources committed to SED and ED around the 64 approved projects in round one to three of the procurement programme will accumulate to R570 780 737 million over the next 20 years. Local ownership is also expected to result in a significant financial value associated with dividends. Summarising the financial commitments of projects in the first three rounds for SED, ED and local ownership, a total of R1.17 billion has been allocated towards local economic development investments in communities around projects. This is generated and will be available over the next 20 years (Wlokas, 2015). In the Eastern Cape Province the IPP projects procured will make a combined SED commitment of R4.5 billion over the 20-year project life and R1.2 billion has been committed to ED alone (IPP Office, 2018).</p>	<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>SKILLS DEVELOPMENT AND SOCIAL RESPONSIBILITY</b>	<p><b>COMMUNITY PROJECTS, SED AND ED CONTRIBUTIONS</b></p> <p>To identify suitable projects for the SED and ED component, an Implementation and Monitoring Agent (“IMA”) is appointed ahead of the operational phase to do a needs assessment and, following a stringent application process, source projects that are in line with the ED/SED program targets, aims and objectives. Pursuant to thorough evaluation by both the IMA and the Project, a decision is made by the Project Company to enter into a contract with the beneficiary for a specified duration. Such contract makes provision for a subsequent monitoring period of 6 months after the funding commitment has been fulfilled. Such monitoring is to ensure the project delivers as per its proposal and provide the necessary reports.</p>	<b>DIRECT</b>	<b>LOW +</b>	<b>MODERATE +</b>
	<p>The Project is required to report quarterly to the DMRE’s Independent Power Producer Office (“IPPO”), which allows the IPPO to monitor use of SED and ED funds as committed by the Project (approximately 2.1% of revenue), as well as monitor the impact such contributions have on the community through funding of existing projects and enterprises. Albany WEF is committed to further design its own KPIs to assist monitor the direct impact each beneficiary has on the community, i.e. social inclusion, job creation and skills transfer.</p>	<b>CUMULATIVE</b>	<b>MODERATE +</b>	<b>MODERATE +</b>
	<p>Cumulative: The collaboration of the three wind energy projects would increase the economic power within the “renewable energy development nodes” and ED and SED projects would be able to compete in the broader economy of the region and country. Enhance local food security, employment creation and skills development, thereby increasing the local workforce. In the Eastern Cape up to date, R4.5 billion has been committed to SED in local communities (IPP Office 2018).</p> <p>No-go: None of the benefits associated with community shareholding, ED and SED would manifest for locals.</p>	<b>NO-GO</b>	<b>NO IMPACT</b>	

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	Skills development and capacity building through training and enterprise development would not occur.			
	<p><b>TRAINING, SKILLS DEVELOPMENT AND CAPACITY BUILDING</b></p> <p>Training, skills development and capacity building during the operational phase will take place as follow:</p> <ul style="list-style-type: none"> <li>✦ Training for employees during operations. This shall be determined by the needs identified during the operational phase of the project and cannot be quantified at this stage;</li> <li>✦ Offering internships and possibly bursaries; and</li> <li>✦ Support of educational projects through ED contributions (approximately 0.6% of revenue). In addition to the contractual obligation with the DMRE in terms of targets and obligations, Albany WEF would set their own set of KPIs to assist to monitor the impact of skills transfer.</li> </ul> <p>Positive cumulative impacts of capacity building and training due to the three WEFs in Makana LM would hold some benefits and enhance skills of the local and regional workforce. As a result of the Waainek Wind Power's GYD Programme since inception in 2016, 619 people have benefited from skills transfer. This impact has been achieved with a 24MW wind farm, and the cumulative impact with Albany (140MW) is thus expected to be greater. In the Eastern Cape up to date, 37.9% of SED contributions have been used for education and skills development (IPP Office 2018).</p> <p>No-go: No skills transfer and capacity building in terms of renewable energy technology. No skills development and training in terms of community upliftment and income-generating projects. No long-term advantages associated with training (entrepreneurial development, small business development, poverty alleviation, etc.) would manifest.</p>	<b>DIRECT</b>	<b>LOW +</b>	<b>LOW +</b>
		<b>CUMULATIVE</b>	<b>LOW +</b>	<b>LOW +</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>INDIVIDUAL AND FAMILY LEVEL IMPACTS</b>	<p><b>IMPACTS ON THE 'SENSE OF PLACE'</b></p> <p>'Sense of place' has at least two meanings. Firstly, even though someone has not even visited a place they could have a sense of what it is like. That image could be realistic or unrealistic, or may be dramatically</p>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>MODERATE -</b>

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	<p>simplified, but is usually based on the physical characteristics of that place. The second meaning is the particular sense that individuals have of places they know by experience (<a href="http://www.encyclopedia.com">www.encyclopedia.com</a>).</p> <p>In the project area biodiversity conservation is particularly important, which is exemplified by the Indalo Protected Environment and the supporting land uses of the majority of farms in and around the project area (eco-tourism, game viewing and so forth). Potential impacts of turbines on wildlife and aesthetics, and even an increase in crime, could alter this sense of place. However, wind farms are usually perceived less negative than other industrial infrastructure and sensitivity/opposition towards wind turbines usually reduce once operational.</p>	CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	NO IMPACT	
IMPACTS ON INFRASTRUCTURE AND SERVICES	<p><b>IMPACTS ON SERVICES AND COMMUNITY INFRASTRUCTURE</b></p> <p>The Project will contribute to constant supply of energy to the region, which would be conducive for future developments and industry. On-site roads and fencing are likely to be upgraded and should be maintained as part of the landowners' lease agreement.</p> <p>Positive cumulative impacts of energy supply to the region, with advantages for households, business and industry.</p>	DIRECT	LOW -	LOW +
		CUMULATIVE	LOW +	LOW +
		NO-GO	NO IMPACT	
	<p><b>GENERAL IMPACTS ON MAKANA LM AND THE BROADER REGION</b></p> <p>Even though the cost-competitiveness of renewable energy sources still holds many challenges, the proposed Albany Wind Farm would also introduce positive impacts on a local and regional level. The proposed Wind Farm reinforces the strategy of the Eastern Cape to gear the Eastern Cape as the capitol for energy generation in South Africa, it is sustainable and cannot be depleted, requires less maintenance and lower operational costs than in the case of fossil fuels, produces little or no waste products such as carbon dioxide and other chemical pollutants and would contribute to a constant supply of energy to the region.</p> <p>Implementation and operation of renewable energy projects, however, require local government involvement to assist with managing stakeholder and community relations. This poses various challenges, as there might be shortfalls in terms of capacity and management experience within the Municipality. Engagement between the IPP and local Municipality is also required during the operational phase to align SED and ED projects with LED priorities.</p> <p>Cumulative impacts could manifest for the Makana LM, which will depend on the level of their involvement in the three WEF Projects' socio-economic and enterprise development projects and Trust/legal entity operations. Confidence in the rating is low.</p>	DIRECT	LOW -	LOW +
		CUMULATIVE	LOW -	LOW -
		NO-GO	NO IMPACT	
		NO-GO	NO IMPACT	

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<b>LAND USE IMPACTS</b>	<p><b>LAND USE MANAGEMENT</b></p> <p>An agreement between Albany Wind Power and the landowners would be required to manage and maintain collective infrastructure such as fences and roads and to ensure that adequate resources are allocated to address potential issues of trespassing, an increase in security risks (livestock, copper and cable theft, etc.), veld fires as a result of illegal activities and so forth.</p> <p>Land use management practices and impacts at Waainek and Plan 8 WEFs are unknown and cannot be rated.</p>	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW +</b>
		<b>CUMULATIVE</b>	<b>DON'T KNOW</b>	<b>DON'T KNOW</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
	<p><b>IMPACTS ON ARCHAEOLOGICAL/HISTORICAL SITES AND CULTURAL PRACTICES</b></p> <p>An Archaeological Impact Assessment (“AIA”) was done for the proposed Albany WEF to establish the range and importance of the exposed and in situ archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage (Booth Heritage Consulting; May 2018, Revised May 2019). It was found that:</p> <ul style="list-style-type: none"> <li>✦ Middle Stone Age (MSA) stone artefacts occurred in various locations over the proposed development area within the exposed and disturbed surface areas.</li> <li>✦ Several stone packed features were also recorded within the proposed development area. These included stone packed / walled kraals, an historical stone packed / walled farm boundary as well as the remains of foundations.</li> <li>✦ The built environment component included historical ruins that included farmhouses, other buildings and a church. A graveyard is associated with the church.</li> <li>✦ An old historical wagon route was pointed out by the owner of the Farm Grobbeler’s Kloof situated at the entrance to the farm south off the N2 national, running parallel to N2 national road.</li> </ul> <p>Two wind energy facilities (Waainek WEF and Infinite Plan 8 WEF) that are situated within a 200 km radius of the proposed Albany WEF as well as the adjacent regions may spark a concern with regards to cumulative impacts that these projects may have on the heritage resources and the cultural landscape (Archaeological Impact Assessment, May 2019).</p>	<b>DIRECT</b>	<b>MODERATE -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	
<b>COMMUNITY / INSTITUTIONAL ARRANGEMENTS</b>	<p><b>COMMUNITY MOBILIZATION</b></p> <p>Negative attitude formation and community mobilization against the Project could result should adverse social and economic impacts manifest for landowners, communities, Private Game Reserves and other tourism related businesses as a result of visual/aesthetic impacts or the general wind farm operations. Another concern raised by I&amp;APs was the potential of social conflict amongst communities due to unequal spread of financial benefits.</p>	<b>DIRECT</b>	<b>LOW -</b>	<b>LOW -</b>
		<b>CUMULATIVE</b>	<b>DON'T KNOW</b>	<b>DON'T KNOW</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>HEALTH AND SAFETY IMPACTS</b>	<b>HEALTH AND SAFETY RISKS FOR WORKERS</b> Operation and maintenance of the wind farm/turbines are not labour-intensive and would be intermittent, which decreases the likelihood of construction related accidents occurring. Temporary workers doing site clearance and maintenance would be on site occasionally over short periods in time, and possible health issues due to dust (respiratory issues), noise and dehydration would be limited, although still possible.  Health and safety issues at other wind farms are unknown and the cumulative impact cannot be determined.	DIRECT	LOW -	LOW -
		CUMULATIVE	DON'T KNOW	DON'T KNOW
		NO-GO	NO IMPACT	
	<b>COMMUNITY HEALTH AND SAFETY RISKS</b> Community health and safety risks could include: <ul style="list-style-type: none"> <li>⬆ Uncontrolled veld fires that destroy or damage surrounding farmland and infrastructure;</li> <li>⬆ Road accidents if employees of the wind farm do not adhere to speed limits and implement general road safety practices; and</li> <li>⬆ Unauthorized access / trespassing at the wind farm infrastructure resulting in public safety issues.</li> </ul> Cumulative impacts on community health and safety may manifest once Plan 8 WEF is operational. Confidence in the rating is low.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	NO IMPACT	
	<i>TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN</i>			
<i>None identified by specialist</i>				
<i>VISUAL IMPACT ASSESSMENT</i>				
<b>IMPACT OF WIND TURBINES ON VISUALLY SENSITIVE RECEPTORS</b>	The draft Albany WEF VIA was conducted for 66 wind turbines. This has been reduced by 23 turbines to 43 turbines mostly due to concerns raised by I&APs relating to the visual intrusion of turbines. This includes the removal of 12 turbines in the western turbine cluster which are particularly visible to Kwandwe and Indalo Protected Environments in the west and north west, of which five turbines were located almost immediately adjacent to the south east boundary of Kwandwe (unprotected portion). While the remaining turbines still remain visible, this reduction in turbine numbers will reduce the density of turbines and numbers of visible turbines.  The blade tip height of the remaining 43 proposed turbines is 215m (worst case scenario) above the ground. The viewshed of the 43 wind turbines was calculated using this value.  As seen in the cumulative viewshed for the 43 Albany WEF turbines (Please see Figures 9.1 and 9.2 in the VIA), turbine hubs and blades will be visible from a wide area surrounding the WEF. Notable features within	(DIRECT) ECCA NATURE RESERVE	HIGH -	MODERATE -
		(DIRECT) WATERS MEETING NATURE RESERVE	MODERATE -	MODERATE -
		(DIRECT) ROUNDHILL ORIBI LOCAL AUTHORITY NATURE RESERVE	MODERATE -	MODERATE -
		(DIRECT) KAP RIVER NATURE RESERVE	MODERATE -	MODERATE -

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
	<p>the viewshed include: the towns of 1) Makhanda, 2) Bathurst and 3) KwaNdwanyana, public nature reserves such as the 4) Great Fish River Nature Reserve, private game reserves such as 5) Kudu Ridge, 6) Bucklands, 7) Kwandwe, 8) Buffalo Kloof and 9) Coleridge, 10) multiple homesteads, 11) the N2 and R67 roads.</p> <p>The most significant cumulative visual impacts will come from the operational Waainek WEF located between over 10-15 km to the south west and the Proposed Plan 8 WEF located between about 5-10km to the north east of the Albany WEF site. The Waainek Wind Farm consists of eight (8) turbines, each with a hub height of 84m and a rotor diameter of 112m, and the Plan 8 facility will host up to 22 turbines, each with a hub height of up to 91.5m and a rotor diameter of up to 117m.</p> <p>Since turbine visibility diminishes with distance, as already described in this VIA, it is suggested that, due to the distances between the three respective wind farms, that the overall cumulative visual impacts will be MODERATE during the daytime. However, the impacts of night lighting could be HIGH, with the proposed Albany WEF making the largest contribution to the impact.</p>	(DIRECT) GREAT FISH NATURE RESERVE 13-20 KM	MODERATE -	MODERATE -
		(DIRECT) GREAT FISH NATURE RESERVE 20-50 KM	MODERATE -	MODERATE -
		(DIRECT) BEGGARS BUSH STATE FOREST	MODERATE -	MODERATE -
		(DIRECT) KWANDWE PRIVATE GAME RESERVE (INDALO) NORTH	HIGH -	HIGH -
		(DIRECT) KWANDWE WEST INDALO PROTECTED ENVIRONMENT	HIGH -	HIGH -
		(DIRECT) BUFFALO KLOOF PROTECTED ENVIRONMENT	HIGH -	MODERATE -
		(DIRECT) KWANDWE PRIVATE GAME RESERVE NORTH (NONE INDALO)	HIGH -	HIGH -
		(DIRECT)	MODERATE -	MODERATE -

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
		KUDU RIDGE PRIVATE GAME RESERVE		
		(DIRECT) BUCKLANDS PRIVATE NATURE RESERVE	MODERATE -	MODERATE -
		(DIRECT) SALVATORE FARMS	MODERATE -	MODERATE -
		(DIRECT) COLERIDGE PRIVATE GAME RESERVE	MODERATE -	MODERATE -
		(DIRECT) HUNTERSHOEK LODGE	MODERATE -	MODERATE -
		(DIRECT) MAKHANDA	MODERATE -	LOW -
		(DIRECT) BATHURST	LOW -	LOW -
		(DIRECT) KWANDWANYANA	LOW -	LOW -
		(DIRECT) RESIDENTS ON LOCAL FARMS	LOW -	LOW -
		(DIRECT) N2 TO PEDDIE AND MAKHANDA	LOW -	LOW -

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
		(DIRECT) ECCA PASS	LOW -	LOW -
		(DIRECT) N2	LOW -	LOW -
		(DIRECT) BLAAUWKRANTZ PASS	LOW -	LOW -
		(DIRECT) R67 TO FORT BEAUFORT	LOW -	LOW -
		(DIRECT) R67 TO PORT ALFRED	LOW -	LOW -
		(DIRECT) COMMITTEES DRIFT ROAD	LOW -	LOW -
		CUMULATIVE	HIGH -	HIGH -
		NO-GO	NO IMPACT	
<b>IMPACT OF NIGHTLIGHTS ON EXISTING LANDSCAPE</b>	Wind farms are required by law to be lit at night as they represent hazards to aircraft due to the height of the turbines. Marking of turbines depends on wind farm layout and not all turbines need to be lit. Marking consists of a red flashing light of medium intensity (2000 candela). Based on the visual intrusion ratings for sensitive receptors, it is suggested that overall, night lighting will have a MODERATE to a HIGH visual impact on many sensitive visual receptors depending on distance from the WEF and direction of view of the WEF. The impact will be particularly <b>HIGH</b> from the 20 turbines in the western turbine cluster on the Kwandwe Reserve and Indalo Protected Environment to the west and north.	DIRECT	HIGH -	HIGH -
		CUMULATIVE	HIGH -	HIGH -
		NO-GO	NO IMPACT	

### DECOMMISSIONING PHASE

AGRICULTURE IMPACT ASSESSMENT

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<b>None identified by specialist</b>				
<i>AVIFAUNAL IMPACT ASSESSMENT</i>				
<b>DESTRUCTION OF BIRD HABITAT</b>	Construction of the facility will result in a certain amount of destruction and removal of natural vegetation which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The area is also significantly disturbed by various human activities including: the N2 highway; pipelines; roads; power lines; and general farming practices.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	LOW -	LOW -
<b>DISTURBANCE OF BIRDS</b>	This is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site.	DIRECT	LOW -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	LOW -	LOW -
<i>BAT IMPACT ASSESSMENT</i>				
<b>DESTRUCTION / DISTURBANCE OF BAT ROOSTS</b>	If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of a few small farm buildings on site, this would affect only a small number of house-dwelling bats. However, construction would have a significant impact on local bats if it affected larger roosts. While IWS only found small roosts, there is a moderate to high potential of roosts in the steeper, rocky sections in the south and south-east of the Albany WEF site. The deep rocky gorges are likely to provide suitable roosting habitat to several species and the diversity of species recorded at AL2 is testament to this. These areas were not accessible to fully assess. This potential impact, therefore, has a Medium Significance rating, which can be reduced to Low by the following recommended mitigation measures.	DIRECT	MODERATE -	LOW -
		CUMULATIVE	MODERATE -	MODERATE -
		NO-GO	NO IMPACT	
<i>ECOLOGICAL IMPACT ASSESSMENT</i>				
<b>The ecological impacts associated with the decommissioning phase will be similar to those listed in the construction phase and the associated mitigations measures must be updated and implemented to reduce potential adverse impacts.</b>				
<i>HERITAGE IMPACT ASSESSMENT</i>				
<b>None identified by specialist</b>				
<i>NOISE IMPACT ASSESSMENT</i>				
<b>None identified by specialist</b>				
<i>PALAEONTOLOGICAL IMPACT ASSESSMENT</i>				
<b>None identified by specialist</b>				
<i>SOCIAL IMPACT ASSESSMENT</i>				
<b>The social impacts associated with the decommissioning phase will be similar to those listed in the construction phase and the associated mitigations measures must be updated and implemented to reduce potential adverse impacts.</b>				
<i>TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN</i>				

## SYNTHESIS OF SPECIALIST IMPACTS AS EXTRACTED FROM THE SPECIALIST REPORTS

ISSUE	DESCRIPTION OF IMPACT	NATURE OF IMPACT	SIGNIFICANCE PRE-MITIGATION	SIGNIFICANCE POST-MITIGATION
<i>None identified by specialist</i>				
<i>VISUAL IMPACT ASSESSMENT</i>				
<b>REMOVAL OF TURBINE STRUCTURES</b>	Wind farms are typically designed for a 25-year life. After 25 years, the proposed Albany Wind Farm may either be refurbished (re-powered) or decommissioned. If it is decommissioned, the impacts during the decommissioning phase will be very similar to those identified in the construction phase.	<b>DIRECT</b>	<b>MODERATE -</b>	<b>MODERATE -</b>
		<b>CUMULATIVE</b>	<b>HIGH -</b>	<b>HIGH -</b>
		<b>NO-GO</b>	<b>NO IMPACT</b>	

## 9.4 SUMMARY OF FINDINGS AND COMPARATIVE ASSESSMENT OF IMPACTS

This section includes summaries of each field, including the direct/indirect and cumulative impacts. No-go impacts have not been totalled in this section as they relate to the status quo and have been summarised in 9.2.3 and 9.3.3.

### 9.4.1 GENERAL IMPACTS

All the general negative impacts could be mitigated to either LOW negative or MODERATE negative. Of the 53 impacts, 28 are direct and indirect impacts, while 25 are cumulative impacts. No-go impacts are not represented in this summary and can be found in Section 9.2 and Appendix C.

**Table 9-6: General Impact Summary.**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	1	0	6	0	6	0	0	0	12	0	1	0	0	0	0	0
Construction	3	0	11	0	5	0	0	0	17	0	2	0	0	0	0	0
Operations	0	0	6	0	2	2	0	0	6	0	2	0	0	2	0	0
Decommissioning	2	2	7	0	0	0	0	0	9	2	0	0	0	0	0	0
<b>TOTAL</b>	<b>6</b>	<b>2</b>	<b>30</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>44</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>

### 9.4.2 AGRICULTURAL IMPACT

The agricultural impacts are all (8 impacts) of LOW negative significance both pre- and post-mitigation (Table 9-7).

**Table 9-7: Agricultural Potential Impact Summary.**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	8	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 9.4.3 AVIFAUNAL IMPACT

The Avifaunal Impact Assessment rated most of its impacts as MODERATE negative pre-mitigation (9 impacts). Of these, three (3) can be mitigated to LOW negative post-mitigation significance, while the remaining three (3) specifically related to cumulative impacts remain of a MODERATE negative significance (Table 9-8).

**Table 9-8: Avifaunal Impact Summary.**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0
Operations	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0
Decommissioning	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0

TOTAL	3	0	9	0	0	0	0	0	0	6	0	6	0	0	0	0	0
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### 9.4.4 BAT IMPACT

The Bat Impact Assessment identified four (4) operational impacts rated as HIGH negative pre-mitigation, this includes both direct and cumulative impacts related to barotrauma. The remaining pre-mitigation impacts are all of MODERATE negative significance. Of these 14 impacts, two cannot be mitigated (cumulative impacts related to barotrauma) from HIGH negative significance while the remainder can be mitigated to either LOW or MODERATE negative significance. This reduction due to mitigation is, in part, due to the stipulated curtailment measures which must be implemented at the proposed Albany WEF (Table 9-9).

Table 9-9: Bat Impact Summary.

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	6	0	0	0	0	0	4	0	2	0	0	0	0	0
Operations	2	0	2	0	4	0	0	0	4	0	2	0	2	0	0	0
Decommissioning	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0
<b>TOTAL</b>	<b>2</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 9.4.5 ECOLOGICAL IMPACT

Of the 15 ecological impacts identified most of the impacts are of a MODERATE (47%) and HIGH (40%) negative pre-mitigation significance. These impacts can be mitigated to mainly LOW (67%) negative significance. No high negative impacts remain post-mitigation.

Table 9-10: Ecological Impact Summary.

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	1	7	0	4	0	0	0	8	0	4	1	0	0	0	0
Operations	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 9.4.6 HERITAGE IMPACT

The pre-mitigation heritage impacts are both rated as HIGH negative significance. These relate to the occurrence of Middle Stone Age as well as Early Stone Age archaeological material and more recent historical remains such as stone walling and building ruins on the site as well as the greater surrounds of the area. The impacts can be mitigated to LOW negative significance post-mitigation.

Table 9-11: Heritage Impact Summary.

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.7 NOISE IMPACT

The noise impacts based on the current layout are all LOW negative significance both pre- and post-mitigation (Table 9-12).

**Table 9-12: Noise Impact Summary.**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Operations	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.8 PALAEOLOGY IMPACT

The palaeontology on the site was surveyed and it was recommended that a palaeontologist be present for the digging of turbine foundations in order to ensure that any potential sensitive features are not damaged. The pre-mitigation impact is HIGH negative, with the presence of a suitably qualified palaeontologist on site the impact can be mitigated to MODERATE negative significance (Table 9-13).

**Table 9-13: Palaeontology Impact Summary.**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.9 SOCIAL IMPACT

The social study identified 59 impacts, comprising 30 negative impacts and 29 positive impacts related to the proposed development. The negative impacts are mostly of a MODERATE negative significance (53%) and a LOW negative significance (43%), with one (1) impact being of a HIGH negative pre-mitigation significance. There are no high negative post-mitigation impacts and 4 (four) of the negative impacts will result in positive impacts when mitigation is applied. The majority of the remaining negative impacts are of a LOW negative significance (58%) post-mitigation. Of the 29 positive impacts identified the majority are of a LOW positive significance (97%) pre-mitigation. Post-mitigation, 4 (four) of the negative impacts become positive resulting in a total of 31 LOW positive significance and 2 (two) MODERATE positive significance post-mitigation impacts (Table 9-14).

**Table 9-14: Social Impact Summary**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	7	14	6	0	1	0	0	0	11	14	3	0	0	0	0	0
Operations	6	14	10	1	0	0	0	0	4	17	8	2	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>13</b>	<b>28</b>	<b>16</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>31</b>	<b>11</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.10 TRAFFIC IMPACT

All impacts identified in the Traffic Feasibility Assessment and Management Plan were rated as LOW negative post-mitigation (Table 9-15).

Table 9-15: Traffic Impact Summary

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.11 VISUAL IMPACT

The Visual Assessment identified a total of 34 impacts. The majority of these impacts related to the visual impact of the proposed WEF on sensitive receptors during the operation of the WEF. There are eight (8) HIGH negative significance impacts that cannot be mitigated due to the fact that they are perception-based (Table 9-16).

Table 9-16: Visual Impact Summary

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0
Operations	10	0	12	0	8	0	0	0	11	0	13	0	6	0	0	0
Decommissioning	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0
<b>TOTAL</b>	<b>10</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 9.4.12 CUMULATIVE IMPACT

Overall, the cumulative impact of the proposed Albany WEF, when neighbouring existing and authorised WEFs are considered is MODERATE negative. Cumulative impacts, as previous stated, are notoriously difficult to mitigate since environmental legislation, related to monitoring, construction and operation, changes over time. Developers are therefore not always prescribed the same standards of environmental care. In addition to this, cumulative impacts can only be assessed using available data and in some cases older EIAs did not assess impacts to the same level of detail, e.g. specialist studies can vary drastically, which means that data is often limited.

In terms of HIGH negative cumulative impacts, the key impacts relate to the visual sensitivity of key receptors. These receptors were identified during the Scoping Phase and data was gathered during the specialist phase. The HIGH cumulative visual impact should be seen within the context of the following:

- ✦ New radar/pilot activated lighting has become available since the two previous EIAs were undertaken, which include:
  - *Detection-Based Activated Lights Systems (where specific receptors turn on lights only when an aircraft is detected).*
  - *Pilot Activated Lights (where the aircraft pilots activate the lights manually when they are in the vicinity – system is currently not preferred by CAA).*
- ✦ The WEFs are not permanent, and the turbines and other superstructure will be removed upon the decommissioning of the WEF;
- ✦ The landscape can be restored through rehabilitation prior to decommissioning; and

✦ Although there are local losses in terms of visual impacts, there will also be local gains.

It is concluded that majority of the cumulative impacts are MODERATE in nature and although the most of the cumulative visual impacts of the proposed Albany WEF and existing WEF (e.g. Waainek WEF) and proposed WEFs (Grahamstown, Fronteer and Wind Garden WEFs) in the area will be HIGH, potential losses of scenic resources are not sufficiently significant to represent a fatal flaw, specific to the proposed project, given the LOW/MODERATE significance of the remainder of the impacts and given the environmental and social benefits that such renewable energy projects promote. From a cumulative perspective the Fronteer and Wind Garden WEFs present a higher impact to existing public and private nature reserves due to the fact that they are located within the proposed Albany Biodiversity Corridor Network. The Grahamstown WEF is situated on land which is currently not transformed to the same degree at the proposed Albany WEF site. The other three proposed WEFs (Grahamstown, Fronteer and Wind Garden) are all further away from the Eskom Grid Network which means that additional connection infrastructure will be required. Albany WEF, on the other hand, is proposed on transformed land, outside of the proposed Albany Biodiversity Corridor Network and adjacent to the existing Eskom Albany infrastructure.

### **9.4.13**      ***NO-GO ALTERNATIVE***

There are a number of current environmental impacts which are taking place on the proposed site. These impacts relate to alien vegetation, poaching, waste and erosion. The no-go alternatives of the remainder of the impacts mean that the site and its surrounding remain as is (status quo). This means that the negative impacts described in this report would not transpire and nor would the positive impacts.

## 10 SENSITIVITY ANALYSIS

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A site development sensitivity maps (Figure 10-1 and 10-2) were developed based on specialist and general site information gathered, and the site was classified into areas of low and conditional sensitivity and **NO-GO** (no development).

- ✦ **NO-GO** areas included areas of high sensitivity indicated by the bird and bat specialists (specific to turbines, rather than roads), identified heritage sites and buffers around existing infrastructure (including a 500m buffer around all noise sensitive areas).
- ✦ **Conditional Sensitivity** areas are areas where construction is conditional on the fulfilment of one or another aspect-specific requirement. For example, all construction in the Heritage conditional sensitivity areas will require sign-off by a palaeontologist to ensure that no fossils (if found) are damaged or destroyed. Other conditional sensitivity areas include areas of moderate sensitivity identified by the bird and bat specialist and ecologically sensitive areas such as watercourses, wetlands, and thicket vegetation.
- ✦ **Low Sensitivity** areas are areas where construction may take place without hindrance.

The main objective of the sensitivity analysis is to guide development away from sensitive areas and have development footprints located in areas of lower sensitivity. We have previously used the terms go area; do-but area; and no-go area.

The limitation of the above is that a no-go area is just that – one cannot ever do anything in this area, because its **no-go**. But in certain cases, development is required. A road crossing over a stream, or some other linear infrastructure, which can be developed, provided there is sound mitigation and other constraints are applied. So, it is not no-go but developmentally constrained.

It is therefore preferable to use and map the following categories:

**LOW CONSTRAINT/NONE IDENTIFIED** - These areas can be easily developed, as there are only minor constraints, and little mitigation and management is required (aside from normal building design and construction restrictions outlined in the EMPr).

**LOW-MODERATE CONSTRAINT** – These areas can be developed but require mitigation and management as per the general management conditions of the EMPr.

**MODERATE CONSTRAINT** - These areas can accommodate development, but there are constraints. Mitigation and management will be required to reduce significant environmental impacts to acceptable levels, and appropriate technology (sewage, waste etc.) and design will be required to reduce impacts and ensure sustainability. Sound arguments as to why the development cannot be located in less sensitive areas will be required to justify locating development in moderately constrained areas.

**MODERATE-HIGH CONSTRAINT** – These areas can accommodate development, but there are 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 moderately-high constrained areas.

**HIGH CONSTRAINT** - If development takes place in these areas, considerable effort (and most likely expense) will be required to design out, mitigate or manage negative environmental impacts. In many cases this will not be possible and in general no development should take place in these areas. Only facilities that are location dependent should be permitted in these areas. For example, a road crossing a sensitive riparian area, or a mine pit that must be located where the resources are.

**NO-GO CONSTRAINT** – areas included areas of high sensitivity indicated by the bird and bat specialists (specific to turbines, rather than roads), identified heritage sites and buffers around existing infrastructure (including a 500m buffer around all noise sensitive areas).

The proposed Albany WEF has avoided all **NO-GO** areas identified by the various specialists. Figure 10-1 and 10-2 overlays all sensitive areas identified by these specialists. The following sensitivities are relevant to the proposed WEF site:

- ▲ All specialist constraints (including **NO-GO**, **HIGH**, **MODERATE-HIGH**, **LOW-MODERATE** and **LOW/NONE**)
- ▲ Updated ECBCP (2019) Terrestrial:
  - CBA 1 **HIGH**
  - CBA 2 **MODERATE-HIGH**
  - ESAs **LOW-MODERATE**
- ▲ Updated ECBCP (2019) Aquatic:
  - CBA 1 **HIGH**
  - CBA 2 **MODERATE-HIGH**
  - ESAs **LOW-MODERATE**);
- ▲ Updated SAPAD (Q1, 2021)
  - Protected Areas **NO-GO**
- ▲ NBA (2018) Threatened Ecosystems:
  - Critical **NO-GO**
  - Endangered **HIGH**
  - Vulnerable **MODERATE-HIGH**
- ▲ NPAES (2011)
  - Focus Areas **MODERATE-HIGH**
- ▲ NBA (2018) and NFEPA (2011/14) Wetlands **HIGH**
  - Wetlands 500m buffer **MODERATE**
- ▲ Rivers and drainage lines **HIGH**
  - River 100m Buffer **MODERATE**

Two scales of the sensitivity maps have been provided to illustrate the locations of the surrounding protected areas (NO-GO areas outside of the site boundary). It is important to note that the detail of the site constraints is of a much finer scale because specialists have specifically assessed the site. NO-GO areas for birds and bats, for example, as limited to the assessed area rather than the surrounding land.

The following two tables illustrate the movement (relocation and removal) of turbine from the 66-turbine layout to the 43-turbine layout. Table 10-1 indicates the turbine coordinates and Table 10-2 indicates the sensitivity of the turbines (66 turbine layout vs 43 turbine layout). The resulting change has been a reduction of turbines in **HIGH** sensitive areas from 24 to 15; a reduction in turbine in **MODERATE-HIGH** from 37 to 23; and no change in turbines situated in the remaining three categories.

**Table 10-1: Movement of Turbines Summary**

TURBINE COORDINATES		
WTG 01	33°14'09.82" S	26°34'06.03" E
WTG 02	33°14'13.02" S	26°34'25.00" E
<del>WTG 03</del>	<del>33°14'23.84" S</del>	<del>26°34'13.93" E</del>
WTG 04	33°14'15.29" S	26°34'51.10" E
WTG 05	33°14'27.71" S	26°34'35.82" E
WTG 06	33°14'24.29" S	26°35'17.78" E
WTG 07	33°14'43.27" S	26°35'17.05" E
<del>WTG 08</del>	<del>33°15'40.86" S</del>	<del>26°35'24.13" E</del>
WTG 09	33°15'00.37" S	26°35'32.41" E
WTG 10	33°15'06.39" S	26°36'18.77" E
WTG 11	33°14'28.98" S	26°35'35.76" E
<del>WTG 12</del>	<del>33°15'39.71" S</del>	<del>26°36'58.43" E</del>
WTG 13	33°15'00.08" S	26°36'52.25" E

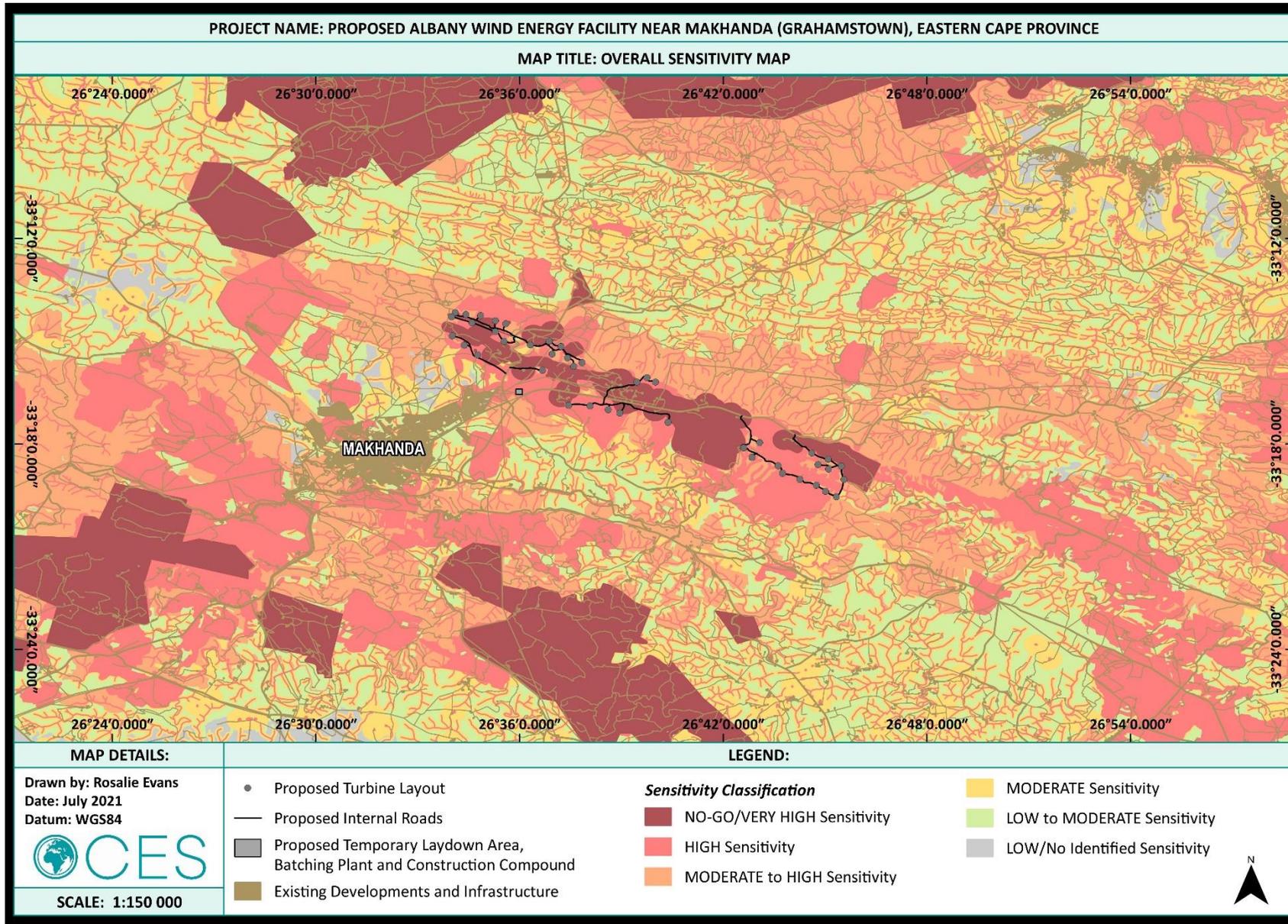
<b>WTG 14</b>	<b>33°15'15.22" S</b>	<b>26°37'01.49" E</b>
WTG 15	33°15'28.32" S	26°36'59.13" E
<b>WTG 15</b>	<b>33°15'22.35" S</b>	<b>26°36'57.79" E</b>
WTG 16	33°15'48.73" S	26°37'30.37" E
WTG 17	33°15'29.29" S	26°37'24.39" E
<b>WTG 18</b>	<b>33°15'30.01" S</b>	<b>26°37'39.95" E</b>
WTG 19	33°15'43.94" S	26°37'35.45" E
WTG 20	33°15'37.74" S	26°37'50.44" E
<b>WTG 21</b>	<b>33°15'51.99" S</b>	<b>26°36'49.38" E</b>
<b>WTG 21</b>	<b>33°15'50.69" S</b>	<b>26°36'40.41" E</b>
<b>WTG 22</b>	<b>33°15'56.66" S</b>	<b>26°36'34.03" E</b>
WTG 23	33°16'53.30" S	26°38'04.42" E
WTG 24	33°16'52.17" S	26°37'26.69" E
<b>WTG 25</b>	<b>33°16'50.37" S</b>	<b>26°37'46.12" E</b>
WTG 26	33°17'00.14" S	26°38'34.84" E
WTG 27	33°17'05.76" S	26°38'56.88" E
<b>WTG 28</b>	<b>33°17'23.88" S</b>	<b>26°38'54.93" E</b>
WTG 29	33°16'12.86" S	26°39'26.89" E
<b>WTG 30</b>	<b>33°16'04.12" S</b>	<b>26°39'26.58" E</b>
<b>WTG 31</b>	<b>33°16'01.52" S</b>	<b>26°39'40.29" E</b>
<b>WTG 31</b>	<b>33°16'03.70" S</b>	<b>26°39'45.12" E</b>
WTG 32	33°16'11.49" S	26°40'00.25" E
WTG 37	33°17'21.99" S	26°40'22.31" E
<b>WTG 40</b>	<b>33°17'44.29" S</b>	<b>26°42'43.89" E</b>
WTG 41	33°18'06.70" S	26°42'35.98" E
<b>WTG 42</b>	<b>33°18'12.69" S</b>	<b>26°42'49.25" E</b>
<b>WTG 43</b>	<b>33°17'57.67" S</b>	<b>26°42'46.54" E</b>
<b>WTG 44</b>	<b>33°17'49.50" S</b>	<b>26°42'58.81" E</b>
<b>WTG 44</b>	<b>33°17'57.82" S</b>	<b>26°43'04.30" E</b>
<b>WTG 46</b>	<b>33°18'20.62" S</b>	<b>26°43'05.67" E</b>
<b>WTG 46</b>	<b>33°18'23.62" S</b>	<b>26°42'50.71" E</b>
<b>WTG 47</b>	<b>33°18'30.41" S</b>	<b>26°43'16.42" E</b>
WTG 50	33°18'38.06" S	26°43'36.88" E
WTG 51	33°18'51.26" S	26°43'44.74" E
WTG 52	33°19'01.82" S	26°44'15.48" E
<b>WTG 53</b>	<b>33°18'35.06" S</b>	<b>26°44'17.37" E</b>
WTG 55	33°18'15.61" S	26°44'36.26" E
<b>WTG 56</b>	<b>33°18'30.47" S</b>	<b>26°44'33.91" E</b>
<b>WTG 57</b>	<b>33°19'07.17" S</b>	<b>26°44'26.88" E</b>
WTG 58	33°18'36.32" S	26°44'47.82" E
WTG 59	33°18'26.21" S	26°45'05.18" E
WTG 60	33°18'43.89" S	26°45'06.04" E
WTG 61	33°19'12.12" S	26°44'44.32" E
WTG 62	33°19'22.91" S	26°45'00.65" E
WTG 63	33°18'39.09" S	26°45'29.19" E
<b>WTG 64</b>	<b>33°17'33.20" S</b>	<b>26°42'26.21" E</b>
WTG 65	33°19'01.52" S	26°45'32.96" E
WTG 66	33°17'15.25" S	26°41'49.15" E
WTG 67	33°14'50.57" S	26°34'00.93" E
<b>WTG 68</b>	<b>33°14'55.08" S</b>	<b>26°34'17.15" E</b>
<b>WTG 68</b>	<b>33°15'06.91" S</b>	<b>26°34'22.18" E</b>
<b>WTG 69</b>	<b>33°15'05.72" S</b>	<b>26°34'31.56" E</b>
WTG 70	33°14'17.45" S	26°33'59.87" E
<b>WTG 71</b>	<b>33°15'27.76" S</b>	<b>26°34'52.62" E</b>

WTG 71	33°15'24.00" S	26°34'46.04" E
WTG 72	33°13'40.74" S	26°34'40.51" E
WTG 73	33°13'54.73" S	26°35'33.40" E
WTG 74	33°13'59.12" S	26°35'49.14" E
WTG 75	33°14'04.96" S	26°36'31.10" E
WTG 76	33°14'07.95" S	26°36'46.69" E
SUMMARY		
TURBINES REMAINING IN ORIGINAL POSITION	1, 2, 4, 5, 6, 7, 9, 10, 11, 13, 16, 17, 19, 20, 23, 24, 26, 27, 29, 32, 35, 41, 50, 51, 52, 55, 58, 59, 60, 61, 62, 63, 65, 66, 67, 70	= 36 TURBINES
TURBINES RELOCATED	15, 21, 31, 44, 46, 68, 71	= 7 TURBINES
TURBINES REMOVED	3, 8, 12, 14, 18, 22, 25, 28, 30, 40, 42, 43, 47, 53, 56, 57, 64, 69, 72, 73, 74, 75, 76	= 23 TURBINES

Table 10-2: Turbine Sensitivities: 66-Turbine Layout vs 43-Turbine Layout

TURBINE NUMBER	66 TURBINE LAYOUT	43 TURBINE LAYOUT
WTG 01	HIGH/MODERATE	HIGH/MODERATE
WTG 02	HIGH/MODERATE	HIGH/MODERATE
WTG 03	HIGH/MODERATE	REMOVED
WTG 04	HIGH	HIGH
WTG 05	HIGH	HIGH
WTG 06	HIGH	HIGH
WTG 07	HIGH	HIGH
WTG 08	HIGH	REMOVED
WTG 09	HIGH/MODERATE	HIGH/MODERATE
WTG 10	MODERATE/LOW	MODERATE/LOW
WTG 11	HIGH	HIGH
WTG 12	HIGH/MODERATE	REMOVED
WTG 13	HIGH	HIGH
WTG 14	HIGH/MODERATE	REMOVED
WTG 15	HIGH/MODERATE	HIGH/MODERATE
WTG 16	HIGH	HIGH
WTG 17	HIGH/MODERATE	HIGH/MODERATE
WTG 18	HIGH/MODERATE	REMOVED
WTG 19	HIGH/MODERATE	HIGH/MODERATE
WTG 20	HIGH/MODERATE	HIGH/MODERATE
WTG 21	HIGH/MODERATE	HIGH/MODERATE
WTG 22	HIGH/MODERATE	REMOVED
WTG 23	HIGH	HIGH
WTG 24	HIGH	HIGH
WTG 25	HIGH	REMOVED
WTG 26	HIGH	HIGH
WTG 27	HIGH	HIGH
WTG 28	HIGH	REMOVED
WTG 29	MODERATE/LOW	MODERATE/LOW
WTG 30	HIGH/MODERATE	REMOVED
WTG 31	HIGH/MODERATE	HIGH/MODERATE
WTG 32	HIGH/MODERATE	HIGH/MODERATE
WTG 37	HIGH	HIGH
WTG 40	HIGH/MODERATE	REMOVED
WTG 41	HIGH/MODERATE	HIGH/MODERATE
WTG 42	HIGH/MODERATE	REMOVED
WTG 43	HIGH/MODERATE	REMOVED

WTG 44	HIGH/MODERATE	HIGH/MODERATE
WTG 46	HIGH/MODERATE	HIGH/MODERATE
WTG 47	HIGH/MODERATE	REMOVED
WTG 50	HIGH/MODERATE	HIGH/MODERATE
WTG 51	HIGH	HIGH
WTG 52	HIGH/MODERATE	HIGH/MODERATE
WTG 53	HIGH/MODERATE	REMOVED
WTG 55	HIGH/MODERATE	HIGH/MODERATE
WTG 56	HIGH/MODERATE	REMOVED
WTG 57	HIGH	REMOVED
WTG 58	HIGH/MODERATE	HIGH/MODERATE
WTG 59	HIGH/MODERATE	HIGH/MODERATE
WTG 60	HIGH/MODERATE	HIGH/MODERATE
WTG 61	MODERATE/LOW	MODERATE/LOW
WTG 62	MODERATE	MODERATE
WTG 63	HIGH/MODERATE	HIGH/MODERATE
WTG 64	HIGH/MODERATE	REMOVED
WTG 65	HIGH/MODERATE	HIGH/MODERATE
WTG 66	HIGH/MODERATE	HIGH/MODERATE
WTG 67	MODERATE	MODERATE
WTG 68	HIGH	HIGH
WTG 69	HIGH	REMOVED
WTG 70	HIGH/MODERATE	HIGH/MODERATE
WTG 71	HIGH	HIGH
WTG 72	HIGH/MODERATE	REMOVED
WTG 73	HIGH	REMOVED
WTG 74	HIGH	REMOVED
WTG 75	HIGH	REMOVED
WTG 76	HIGH	REMOVED
<b>SUMMARY</b>	<b>66 TURBINE LAYOUT</b>	<b>43 TURBINE LAYOUT</b>
<b>NO-GO</b>	<b>0</b>	<b>0</b>
<b>HIGH SENSITIVITY</b>	<b>24</b>	<b>15</b>
<b>HIGH/MODERATE SENSITIVITY</b>	<b>37</b>	<b>23</b>
<b>MODERATE SENSITIVITY</b>	<b>2</b>	<b>2</b>
<b>LOW/MODERATE SENSITIVITY</b>	<b>3</b>	<b>3</b>
<b>LOW/NO IDENTIFIED SENSITIVITY</b>	<b>0</b>	<b>0</b>



**Figure 10-1: Albany WEF Site Sensitivity (Zoomed-Out): 43-Turbine Layout**

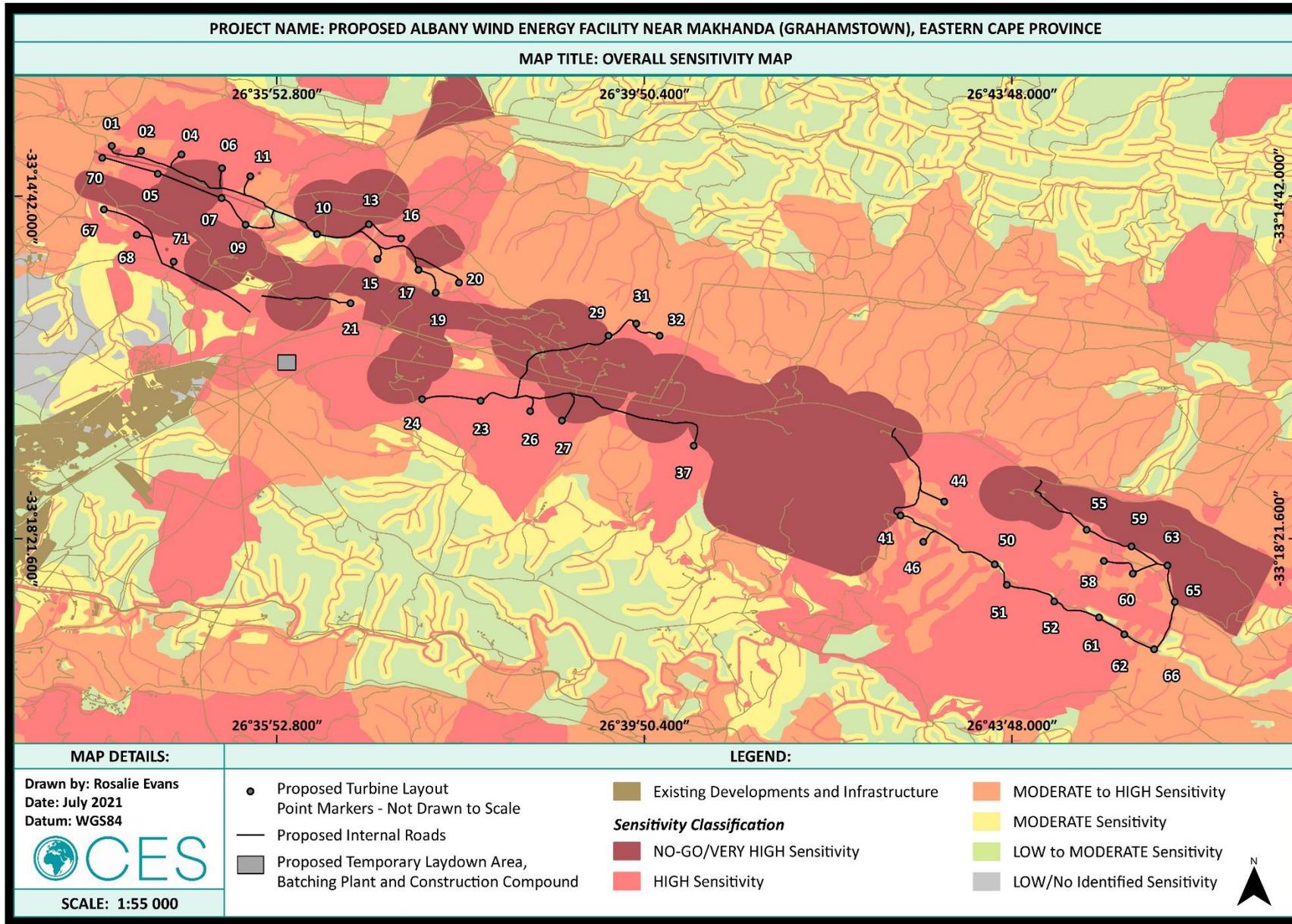


Figure 10-2: Albany WEF Site Sensitivity (Zoomed-In): 43-Turbine Layout

# 11 PUBLIC PARTICIPATION

## 11.1 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 (Proof: e-mail, fax, registered letters to DFFE);
- ✦ Background Information Document (BID) distribution;
- ✦ Public meeting (Attendance register and meeting minutes); and
- ✦ Authority and Stakeholder engagement (DFFE, DWS, SAHRA, DEDEAT, etc.).

Please note that all proof of Public notification has been attached as [APPENDIX A](#).

### 11.1.1 NEWSPAPER ADVERTISEMENT

- ✦ Grocott's Mail (June 2018): See [APPENDIX A](#).
- ✦ The Herald (August 2021): See [APPENDIX A](#).

### 11.1.2 ONSITE NOTICES

- ✦ Three (3) onsite notice boards have been erected: See [APPENDIX A](#).

### 11.1.3 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 11-1, relevant organisations were contacted either via e-mail or directly for comment and were sent a Letter of Notification and a Background Information Document (BID). In addition, surrounding landowners and additional I&APs were identified and notified, the details of which can be found in [APPENDIX A](#).

Table 11-1: Stakeholder and Organisational Database

STAKEHOLDERS
Department of Forestry, Fisheries and the Environment: Competent Authority
Department of Forestry, Fisheries and the Environment: Biodiversity and Conservation
Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)
Department of Water & Sanitation (DWS) (Eastern Cape)
Department of Mineral Resources and Energy (DMRE) (Eastern Cape)

Eskom
Eskom: Renewable Energy
Eskom: Land & Rights Section
Eastern Cape Parks and Tourism Agency (ECPTA): Thomas Baines Nature Reserve
SALGA Eastern Cape
Eastern Cape Provincial Heritage Resources Authority (ECPHRA)
South African Heritage Resource Authority (SAHRA)
Makana Local Municipality (LM)
Sarah Baartman District Municipality (DM)
Makana LM Ward 9
Makana LM Ward 11
Makana LM Ward 13
Grahamstown Business Forum
Telkom
Sentech
Vodacom
MTN
Cell C
Civil Aviation Authority (CAA)
Air Traffic and Navigation Services (ATNS)
Roads (SANRAL/Public Works)
BirdLife South Africa
BirdLife South Africa: Birds and Renewable Energy Manager
BirdLife South Africa: Policy & Advocacy Manager
Endangered Wildlife Trust: CEO
Endangered Wildlife Trust: Head of Conservation Science
Endangered Wildlife Trust: Wildlife & Energy Programme
WESSA EC Regional Representative
Wildlife Ranching RSA
East Cape Game Management Association
INDALO
SANParks

#### **11.1.4 SURROUNDING AND AFFECTED LANDOWNERS**

The residents of the surrounding areas were provided with an initial letter of introduction to the project and a BID during the site meetings. These documents included the contact details of the EAP in order for the landowners to register themselves and/or submit their comments on the proposed development.

#### **11.1.5 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 (Appendix A).

### **11.1.6 THE PUBLIC PARTICIPATION PROCESS FOLLOWED AND TO BE FOLLOWED INCLUDES:**

Release of the Draft Scoping Report for Authority, Stakeholder and Public review.

The Draft Scoping Report was available for public review from the 14<sup>th</sup> of June 2018 to 19<sup>th</sup> of July 2018 (30 days).

- (a) Hard copies of the Draft Scoping Report were made available at: Grahamstown Public Library
- (b) Electronic copies are 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 First Draft EIR was available for public review from 14<sup>th</sup> of May to 14<sup>th</sup> of June 2020 (31 days, plus an additional three days which constitute public holidays during that period)

- (a) Hard copies of the Draft Environmental Impact Assessment Report were made available at: Makhanda Public Library.
- (b) Electronic copies were made available on the CES website ([www.cesnet.co.za](http://www.cesnet.co.za)).

The Second Draft EIR was made available for public review from 28<sup>th</sup> of July to 30<sup>th</sup> of August 2021 (30 days, plus an additional one (1) day which constitutes a public holiday during that period)

- (a) Hard copies of the Draft Environmental Impact Assessment Report were made available at: Makhanda Public Library.

Electronic copies were made available on the CES website ([www.cesnet.co.za](http://www.cesnet.co.za)).

## **11.2 ISSUES & RESPONSE TRAIL**

The Issues & Response Trail (IRT) can be found in Appendix H of this document as a separate standalone chapter. The IRT includes all issues raised includes the EAP responses to these issues. These tables have been updated throughout the process from inception until submission of the Final EIR to the Competent Authority (DFFE).

## 12 CONCLUSION AND RECOMMENDATIONS

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### 12.1 DESCRIPTION OF THE PROPOSED ACTIVITY

Albany Wind Power (Pty) Ltd, plans to develop, construct and operate a Wind Energy Facility (WEF) approximately seven kilometres east of Makhanda in the Eastern Cape Province. The project site is situated in Makana LM which forms part of the Sarah Baartman DM. According to the data recorded by Albany Wind Power in the area, this project site appears to have favourable wind conditions to operate a wind farm.

The proposed Albany WEF will consist of up to 43 turbines each capable of generating up to six (6) Mega Watts (MW) of power. The WEF will also include a short powerline and switching station in order to connect the WEF to the existing Eskom Substation (this powerline will be applied for in a separate environmental application process which will run parallel to WEF application). The current layout allows for a maximum generating output of up to 297 MW, but the final design may be reduced dependant on the outcome of the specialist studies undertaken during this Environmental Impact Assessment Process. The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover a maximum total combined footprint area of approximately 55 ha (post rehabilitation) depending on the final layout design should the project proceed to the construction phase.

### 12.2 NEED AND DESIRABILITY

The need to reduce greenhouse gas emissions and the importance of a secure and diversified energy supply has resulted in a national shift towards the use of renewable energy technologies. In support of this, the national and provincial government has encouraged the utilisation of renewable energy through policy and strategic planning. The proposed Albany WEF can contribute towards these national and provincial goals by adding approximately 297MW to the policy targets. The Eastern Cape has traditionally been isolated in its energy supply, relying on Eskom's distribution network to carry energy from the northern coal-fired power plants to the region. The proposed Albany WEF would stabilise the local (Makana LM) and provincial (Eastern Cape) grid network, leading to a more stable and long-term solution to the energy requirements of the region.

### 12.3 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.

## 12.4 ENVIRONMENTAL COST-BENEFIT ANALYSIS

183 impacts were identified during the EIA process. Of the identified impacts 149 are NEGATIVE pre-mitigation and 34 are POSITIVE pre-mitigation. Four (4) impacts are mitigated from negative to positive. 68% of the negative impacts are LOW post-mitigation, 25% are MODERATE post-mitigation and 8% are HIGH post-mitigation significance. Most of the positive impacts are of a LOW and MODERATE significance.

**Table 12-1: Cost-benefit Analysis**

DESIGN PHASE	PRE-MITIGATION								POST-MITIGATION							
	LOW		MODERATE		HIGH		VERY HIGH		LOW		MODERATE		HIGH		VERY HIGH	
Positive/Negative	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+
<b>GENERAL IMPACTS</b>																
Planning & Design	1	0	6	0	6	0	0	0	12	0	1	0	0	0	0	0
Construction	3	0	11	0	5	0	0	0	17	0	2	0	0	0	0	0
Operations	0	0	6	0	2	2	0	0	6	0	2	0	0	2	0	0
Decommissioning	2	2	7	0	0	0	0	0	9	2	0	0	0	0	0	0
<b>AGRICULTURAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	8	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>AVIFAUNAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0
Operations	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0
Decommissioning	1	0	3	0	0	0	0	0	2	0	2	0	0	0	0	0
<b>BAT IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	6	0	0	0	0	0	4	0	2	0	0	0	0	0
Operations	2	0	2	0	4	0	0	0	4	0	2	0	2	0	0	0
Decommissioning	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0
<b>ECOLOGICAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	1	7	0	4	0	0	0	8	0	4	1	0	0	0	0
Operations	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>HERITAGE IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>NOISE IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Operations	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>PALAEONTOLOGICAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SOCIAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	7	14	6	0	1	0	0	0	11	14	3	0	0	0	0	0
Operations	6	14	10	1	0	0	0	0	4	17	8	2	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TRAFFIC IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	1	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decommissioning	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>VISUAL IMPACTS</b>																
Planning & Design	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0

Operations	10	0	12	0	8	0	0	0	11	0	13	0	6	0	0	0
Decommissioning	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0
<b>TOTAL</b>	<b>47</b>	<b>31</b>	<b>88</b>	<b>1</b>	<b>37</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>111</b>	<b>33</b>	<b>47</b>	<b>3</b>	<b>10</b>	<b>2</b>	<b>0</b>	<b>0</b>

## 12.5 FATAL FLAWS

It is the opinion of the EAP that based on the information gathered during the course of the EIA process, including specialist studies and PPP, the impacts described do not represent any fatal flaws regarding the proposed Albany WEF.

## 12.6 OPINION OF THE EAP

Based on the contents of this report, and all associated documentation, it is the opinion of the EAP that the proposed Albany WEF be authorised on condition that all conditions stipulated in Section 12.7 of this report be contained within the EA. The ecological, economic and social trade-offs must be factored in by the department during the decision-making process. It is the opinion of the EAP that site is sensitive from a visual perspective (social), suitable from an ecological perspective (high sensitive areas have been avoided and can be suitably mitigated) and both sensitive and suitable from an economic perspective (wind resource +, tourism -)

## 12.7 RECOMMENDATIONS OF THE EAP

### 12.7.1 PLANNING AND DESIGN RECOMMENDATIONS

The following 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.

## **12.7.2 CONSTRUCTION RECOMMENDATIONS**

The following 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.
- ✦ The following construction recommendations from the Agricultural Assessment must be implemented:
  - Farmers must be compensated for what is lost during the construction phase.
  - The construction phase must be kept as short as possible.
  - Topsoil must be replaced during rehabilitation and the contractor must ensure that the soil is well fertilised and rolled.
  - When rehabilitated the site seeds of indigenous, area-relevant seeds must be used.
  - The soil must be irrigated to ensure germination and establishment of the seed occurs.

- No unauthorised individuals must be allowed to access the site without permission from the landowners and/or the developers. Theft and vandalism must be reduced by providing additional security to farmers where necessary.
- ⤴ The following construction recommendations from the Bat Assessment must be implemented:
- Disturbance and destruction of farm buildings must be avoided.
  - No part of any turbine, including the entire rotor swept zone must be constructed within areas of high bat sensitivity. IWS discourages the development in areas of medium and medium-high bat sensitivity, however, operational mitigation measures are recommended in the operational section to minimise bat fatalities in these zones.
  - Clearing of natural vegetation areas must be kept to a minimum.
  - Construction near cliff-faces and mountainous areas in south and south-east of site must be avoided.
  - Whilst it is unlikely that any new large roosts (consisting of more than 50 bats) will be discovered on site or immediately adjacent, such roosts must be reported if found during the operational phase.
  - Turbines, including the blade length, must be spaced  $\geq 300$  m from each other.
  - All turbines (including their full rotor swept zone) must be kept out of all High bat sensitivity areas.
  - There must be at least a 500m no turbine development zone around any sub-stations or office/operations and maintenance buildings.
- ⤴ The following construction recommendations from the Ecological Assessment must be implemented:
- Where possible, internal roads and turbine hardstands must be planned and constructed to avoid highly sensitive areas.
  - Where access roads and/or turbine hardstands do need to be located within highly sensitive areas then there must be further ground-truthing to determine the exact road routes and turbine hardstand locations so to, where possible, avoid site specific sensitive areas.
  - Wherever possible, existing service/access roads must be used.
  - Clearing of vegetation must be kept to a minimum and all rocky outcrops and wetlands must be avoided.
  - Construction areas must be demarcated with hazard tape and no clearing must occur outside of these areas. Laydown areas and construction camps must be located in areas of low sensitivity. Where this is not feasible, then in areas of moderate sensitivity.
  - An Environmental Control Officer (ECO) must be employed to monitor the clearing of vegetation for the construction of roads and hardstands.
  - The construction of turbine hardstands on rocky outcrops must be avoided.
  - Speed restrictions (40 km per hour is recommended) must be in place to reduce the likelihood of animals being killed along the roads.
  - Driving within the site must be restricted to day-light hours as far as practically possible. Driving before sunrise and after sunset must be restricted as far as practically possible.
  - Wherever possible, existing service/access roads must be used.
  - Access to all internal roads must be restricted through locked gates and/or guarded booms.
  - It is recommended that construction staff are educated regarding poaching and any such activities must be strictly prohibited.
  - All the lizards and tortoises, which are likely to occur within the proposed site are listed as Schedule II species on the PNCO List, and it is therefore illegal for any construction staff to remove them from the site. It is recommended that construction staff are educated with regards to reptile conservation and that all staff employed by the developer ensure that any reptiles encountered are not killed. Any reptiles encountered must be allowed to move away from the area but those which require relocation must be relocated in accordance with local legislation. A rescue plan must be developed to protect reptiles which could fall into construction pits.
  - All frogs and toads are listed as Schedule II species on the PNCO List and it is therefore illegal to remove them from the site without a permit. Where possible, the placement of turbine hardstands must avoid all aquatic habitats as they are valuable habitats for protected amphibian species.

- If amphibians are encountered during construction works, all construction staff must be educated with regards to amphibian conservation to ensure that they are not harmed or killed. Any amphibians encountered must be allowed to move away from the area or carefully relocated to an area within the same catchment. The construction of turbine hardstands must avoid the wetland areas.
  - In the event of the unearthing of any mole species during construction, all construction staff must be educated with regards to mammal conservation to ensure that they are not killed, and any mammals encountered must be allowed to move away from the area or carefully moved to an area outside of the project activities.
  - A mole specialist must be appointed to undertake a detailed survey to confirm the presence/absence of Golden moles and assist with micro-siting of the WEF and associated infrastructure and developing a plan to mitigate impacts if detected or favourable habitat is identified (such as relocation).
  - Soil stockpiles must be limited to 1.5 m in height.
  - Construction activities such as the digging of trenches, which could result in excessive dust pollution, must preferably cease during period of high winds, where practically feasible.
  - Newly cleared and exposed areas must be managed for dust and landscaped with indigenous vegetation to avoid soil erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes.
  - Where possible, fine materials must be covered or kept in containers during transportation to avoid contamination of the surrounding areas.
  - The turbine and road layouts need to under-go micro-siting prior to finalisation of the turbine layout.
  - A comprehensive Plant Search and Rescue must be undertaken by a suitably qualified specialist prior to vegetation clearance.
  - All relevant plant permits must be in place prior to the removal or removal and relocation of protected species.
  - Plant SCC found within the proposed site must either be housed in an onsite nursery for use during rehabilitation or be relocated to suitable areas where vegetation clearance will not occur.
  - Areas of the proposed site which contain large populations of SCC must be avoided where possible.
  - The clearance of vegetation, at any given time, must be kept to a minimum to reduce the possibility of soil erosion.
  - The clearing of vegetation and damage to plants must not be permitted in any areas which have demarcated as no-go areas, these include the Southern Mistbelt Forest patches (Beggars Bush State Forest) as well as the Ecca Local Authority Nature Reserve.
  - Where possible, all temporary infrastructure must be placed in areas which have already been transformed.
  - A site-specific Alien Vegetation Management Plan must be implemented during the construction phase, and continued monitoring and eradication needs to take place throughout the life of the project.
  - Alien vegetation, within the development footprints, must be removed from the site and disposed of at a registered waste disposal site.
  - The development footprints and immediate surroundings must be monitored for the growth/regrowth of alien vegetation throughout the construction (and operation) phase.
  - A Rehabilitation Management Plan must be developed and implemented during the construction phase as construction is complete at each site.
- ✧ The following construction recommendations from the Heritage Assessment must be implemented:
- The stone packed features and stone walling must be noted and a no-impact / no-development buffer of 20 m be established.
  - Any heritage features found on site during construction must be reported to the Albany Museum. A permit must be obtained prior to the removal of any heritage features.
- ✧ The following construction recommendations from the Noise Assessment must be implemented
- Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels must be established to ensure prior notice to the

sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). Information that must be provided to potentially sensitive receptor(s) includes:

- Proposed working dates, the duration that work will take place in an area and working times;
  - The reason why the activity is taking place;
  - The construction methods that will be used; and
  - Contact details of a responsible person where any complaints can be lodged should there be an issue of concern.
- Minimize simultaneous night-time construction activities close to receptors 17, 28, 18, 19, 21 and 10 where possible. When night-time activities are to take place close to these receptors they must be as per previous recommendation.
  - Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures, if available. Engine bay covers over heavy equipment must be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay must be considered, ensuring that the seam gap between the hood and vehicle body is minimised.
- ✦ The following construction recommendations from the Paleontological Assessment must be implemented:
- All excavated holes for wind tower footings (with the exception of WTG positions 19 and 21) should be examined by a palaeontologist after excavation and before casting of footings.
  - All new access roads should simultaneously be inspected by a palaeontologist prior to any rehabilitation.
  - During excavation of WTG positions 19 and 20 the ECO should check for any palaeontological material and immediately report any finds or suspected finds to the palaeontologist.
- ✦ The following construction recommendations from the Social Assessment must be implemented:
- Local employment (unskilled, semi- and skilled workers) as well as the number of local SMMEs and vendors must be maximised. Set standards for local employment in the Contractor Services Management Plans.
  - Implement a fair and transparent employment process through the EPC contract and employ a Community Employer Relations Officer for the duration of the construction period.
  - Implement a SMME skills development programme (training on how to tender, understanding contracts, etc.) at least 4 months prior to inviting SMMEs to tender. The programme must not only assist local small businesses but also aim to do skills development for the local Municipality.
  - Communication with the affected communities must be done constructively through one channel, such as the Community Employer Relations Officer through the assistance of the local councillors. This will assist to manage expectations and avoid potential conflict.
  - A policy regarding employment equity of minority groups must be formulated and implemented wherever possible.
  - As part of the tender documents, the Contractor/s must provide subcontracting values per package and the plan on how they will meet procurement of minority groups (women, youth, disabled) and SMMEs targets assigned.
  - Relevant measures must be implemented should the Contractor/s not comply with the social management plan that they submitted (impose penalties, termination where necessary, review of future prospective work, etc.).
  - A local procurement strategy, specifically aimed at increasing the local content of the Project to its maximum, must be implemented.
  - The contractor must involve the Makana LED Department from early on.
  - A value-chain analysis of services required (directly and indirectly related to construction such as transport, laundry, catering, uniform supplies, etc.) must be undertaken. This must be communicated to the Makana LM at least four months prior to the tender process commencing.

- Ensure that the Community Employer Relations Officer has knowledge of the local communities, is educated with good public relation skills, committed to the cause and is accessible for community members.
- Care must be taken to communicate the project requirements and time frames to the local communities to avoid raising unrealistic expectations. Work through limited communication channel such as the Community Employer Relations Officer and ward Councillor.
- Contractually obligate contractors and subcontractors must employ temporary workers through the labour desk/job seeker registration database and make this fact known to the communities.
- The study area and the beneficiary communities who would benefit through employment, equity, SED and ED spend must be clearly defined.
- The applicant must collaborate with Waainek Wind Farm to determine the beneficiaries on its Community trust, and how their SED and ED expenditures is allocated. This will ensure that overlapping does not take place. Training programmes must be coordinated wherever possible.
- Larger contractors must be required to work with small SMMEs to train and transfer skills. This must be included in the CSMP.
- The applicant must partner with consulting firms and initiatives that support the Eastern Cape Department of Economic Development Environment and Tourism’s SMME support programme. Conduct workshops for the eligible SMMEs that were selected for tailored support measures, issue SMME Resource Packs, provide one-on-one enterprise development support, provide office space (where feasible), finance and support liaising with relevant government and state-owned agencies.
- The applicant must create a point of contact for the public such as a community liaison office, a visitor centre, a website with contact details or even a Facebook group.
- The following awareness and communication mitigation measures must be implemented:
  - Keep open communication channels with the landowners and address any potential issues as a matter of priority.
  - Make contact details of the Contractor and procedures to lodge complaints available to the local communities through the local Councillor, a visitor centre, a website with contact details or even a Facebook group.
  - Make a complaint register / log book available at the entrance to the construction site and act immediately should issues arise. Circulate summaries of monitoring results to the local communities / landowners when necessary.
  - Announce road disruptions such as road closures by using the local media, road sign boards and other Municipal structures.
  - 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 construction activities.
  - Provide a schedule of the construction activities to landowners and relevant I&APs.
  - Keep the local SAPS, other emergency services and Ward Councillors informed about the construction progress and timelines.
  - Consider circulating summaries of monitoring results (dust, ambient noise levels, etc.) to the local Councillor and landowners.
  - Agree on a procedure to notify the Municipality and emergency services, so that immediate and appropriate measures can be put in place to rectify any problems.
  - Comply with all regulations of the Occupational Health and Safety Act.
  - Should electricity or any other service disruptions occur, inform the local landowners/communities thereof in advance and restore the service as quickly as possible.
  - Establish a Project Steering Committee (“PSC”) or similar structure for the duration of the construction period. Members of the PSC (developer, Contractor, Municipality, landowner representatives, etc.) would meet on a quarterly basis to discuss issues that may arise during the course of the construction period.

- Include the affected local Councillors in the employment process to cooperate with the Community Employer Relations Officer in compiling and managing the job seeker registration database.
- Apply timeously for the relevant zonings and permits with Council.
- Establish a protocol for landowners and other affected parties to raise complaints: make a complaints' register available at the entrance to the construction site; make the contact details of the main contractor, CLO, PSC and Ward Councillor available; address complaints speedily.
- The following health and safety measures, to protect workers and the broader community, must be implemented:
  - Construction workers must wear protective clothing (e.g. masks that minimize dust inhalation and 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.
  - Ensure that emergency vehicles / ambulance is on stand-by for the duration of the construction period.
  - Erect a safety fence around the entire construction site to prevent illegal trespassing of humans and livestock.
  - 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.
  - Ensure good visibility at the accesses to the site.
  - Adhere to the Emergency and Safety plan procedures for the duration of the construction phase.
- ✧ The following construction recommendations from the Visual Assessment must be implemented:
  - Night lighting of the construction sites must be minimised within requirements of safety and efficiency.

### **12.7.3 OPERATIONAL RECOMMENDATIONS**

The following 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.
- ✧ See Section 12.7.5, Monitoring Recommendations for operational recommendations from the Avifaunal Assessment.
- ✧ The following operational recommendations from the Bat Assessment must be implemented:
  - During operational monitoring, quarterly progress reports and annual monitoring reports to be submitted to SABAAP, EWT, the DFFE, the Eastern Cape Department of Economic Development (EC: DEDEAT), Environmental Affairs and Tourism and to the SANBI Bird and Bat Database.
  - With the exception of compulsory civil aviation lighting, minimise artificial lighting at night, especially high-intensity lighting, steady-burning, or bright lights such as sodium vapour, quartz, halogen, or other bright spotlights at sub-station, offices and turbines.
  - All non-aviation lights must be hooded downward and directed to minimise horizontal and skyward illumination.
  - All non-aviation internal turbine nacelle and tower lighting must be extinguished when unoccupied.

- For turbines 15 within the Medium and the 20 turbines with the Medium-High bat sensitive zones, the following curtailment strategy is recommended from the commencement of operation in order to keep bat fatalities to a minimum:

BAT SENSITIVITY ZONE	TIME OF YEAR	TIME OF NIGHT	WHEN TEMP >	CUT-IN WIND SPEED
Medium	December, January and February	From sunset for 6 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
Medium	March	Sunset to sunrise	12°C	5 m.s <sup>-1</sup>
Medium	April	From sunset for 2 hours and for 3 hours before sunrise	12°C	5 m.s <sup>-1</sup>
Medium	May	From sunset for 2 hours	12°C	5 m.s <sup>-1</sup>
Medium	June, July and August	From sunset for 1 hour	12°C	5 m.s <sup>-1</sup>
Medium	September	Sunset to sunrise	12°C	5 m.s <sup>-1</sup>
Medium	October and November	From sunset for 4 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
Medium-High	December, January and February	From sunset for 6 hours and for 2 hours before sunrise	12°C	5 m.s <sup>-1</sup>
Medium-High	March	Sunset to sunrise	12°C	6 m.s <sup>-1</sup>
Medium-High	April	From sunset for 2 hours and for 3 hours before sunrise	12°C	6 m.s <sup>-1</sup>
Medium-High	May	From sunset for 2 hours	12°C	6 m.s <sup>-1</sup>
Medium-High	June, July and August	From sunset for 1 hour	12°C	6 m.s <sup>-1</sup>
Medium-High	September	Sunset to sunrise	12°C	6 m.s <sup>-1</sup>
Medium-High	October and November	From sunset for 4 hours and for 2 hours before sunrise	12°C	6 m.s <sup>-1</sup>

- See 12.7.5, Monitoring Recommendations for operational recommendations from the Bat Assessment.
- The following operational recommendations from the Noise Assessment must be implemented:
  - Should the houses at NSD17 be (continue to be) used for residential purposes during the operational phase:
    - the applicant should undertake ambient sound level measurements over a period of at least 5 nights to clearly define the night-time ambient sound levels at this point;
    - These measurements should be repeated during the operational phase of the WEF to ensure that the noise levels are less than 45 dBA.
  - If the noise levels (due to the operational wind turbines) exceed 45 dBA, the applicant should develop a noise curtailment programme.
- The following operational recommendations from the Social Assessment must be implemented:
  - Wherever possible, turbines must not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.
  - Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease.
  - 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. Make ED funding available to assist the local SMME's with skills training and capacity building, etc.

- Identification of projects and respective training programmes must be done once a community needs analysis has been executed. Empower communities through training and leadership – not only to maintain a welfare relationship.
  - Make gender and youth issues a specific outcome of the analysis to ensure that these groups are targeted.
  - Provide feedback to the local communities and then draw up a community-accepted plan.
  - All SED and ED plans must be transparently available to the local government and the community. If possible, local government must play a role in monitoring progress of SED and ED projects.
  - Effective information sharing could be done through the industry associated websites, emailed newsletters, municipal noticeboards, information events and meetings and existing local community channels used by the various wards.
  - Link with existing NGOs and pre-established projects but make it a pre-requisite (and set targets) that new community-driven development processes be established and that the NGOs assist in skills transfer to these new groups and processes.
  - There is a need for Wind Power companies to communicate with each other. Waainek, Albany and the Plan 8 WEFs need to at least be aware of each other's approaches in order to effectively communicate with local stakeholders and plan coherently.
  - Implementation of appropriate structures and partnerships with the Municipality LED Unit to manage projects, distribute funds and monitor progress. Ensure that the community priorities and projects are co-ordinated with the IDP priorities.
  - Engage with the LED Unit and inform them of local investments and plans. This unit is crucial for the needs analysis and for the planning and implementation of local community investments. Ensure that results of the needs assessment and SED and ED expenditure are aligned and included with the IDP priorities.
  - Build capacity within the Municipality and include the relevant officials in training programmes that is provided for the consultants and company top- and middle management in terms of conflict resolution, community engagement, gender and race awareness, development economics, social justice and constitutionalism.
  - For the duration of the lease period retain on-going involvement with the current land management structures (landowners etc.) to ensure that responsibilities with regards to land management are adequately financed - collectively and individually where required. Responsibilities and financial provisions must form part of the lease agreements and it could be a mandatory requisite of the agreements that landowners use a portion of their incomes towards land management (security, fencing and so forth).
  - Should any land claims arise (that have been verified by the Regional Land Claims Commissioner), conduct negotiations with legitimate claimants and affected landowners to determine how economic benefits must be distributed.
  - Keep open communication channels with the landowners and Private Game Reserves and address any potential issues as a matter of priority.
- ✦ The following operational recommendations related to the Visual Assessment must be implemented:
- Turbines must be properly maintained. A spinning rotor is perceived as being useful. If a rotor is stationary when the wind is blowing it is seen as not fulfilling its purpose and a negative impression is created (Gipe 1995).
  - Signs near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards should be avoided.
  - According to the Aviation Act, 1962, Thirteenth Amendment of the Civil Aviation Regulations, 1997: "Wind turbines shall be painted bright white to provide 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."

- Lighting must be designed to minimise light pollution without compromising safety. Investigate using motion sensitive lights for security lighting. Turbines are to be lit according to Civil Aviation regulations (see Operations Phase Impact 2)
- Aviation standards and CAA Regulations for turbine lighting must be followed.
- The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, must be investigated.
- Other available navigation lighting technologies must be investigated such as:
  - Detection-Based Activated Lights Systems (where specific receptors turn on lights only when an aircraft is detected).
  - Pilot Activated Lights (where the aircraft pilots activate the lights manually when they are in the vicinity – system is currently not preferred by CAA).
- Lighting of ancillary buildings and structures should be designed to minimise light pollution without compromising safety. Motion sensitive lighting can be used for security purposes.

#### **12.7.4 DECOMMISSIONING RECOMMENDATIONS**

The following mitigation measures must be implemented during the operational 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.

#### **12.7.5 MONITORING RECOMMENDATIONS**

- ✦ Avifaunal Monitoring:
  - The duration and scope of post-construction monitoring must be informed by the outcomes of the previous year's monitoring and must be reviewed annually. Post-construction monitoring of bird abundance and movements should span a minimum of one year and monitoring for fatalities should take place over a minimum of two to three years and repeated at year five and every five years thereafter. The duration of monitoring must be increased should significant impacts be observed.

- A contingency mitigation budget must be planned for in the operational phase to allow adaptive management of impacts that arise. If such a situation arises possible necessary mitigation measures could include: further research into the problem (including possibly bird tracking studies); human based turbine shutdown on demand; habitat alteration; bird deterrence from site; and any others identified as feasible at the time.
- ✦ Bat Monitoring
  - 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.
  - Should operational monitoring show that adjusted annual bat fatalities (adjusted for biases such as searcher efficiency and carcass persistence) ever equal or exceed the threshold level of fatalities guided by SABAAP:
    - 60 bats per annum based on the thresholds provided for Drakensberg Montane Grasslands, Woodlands and Forest ecoregion in MacEwan et al. (2017).
    - 39 bats per annum based on site specific thresholds calculated according to the methods provided in MacEwan et al. (2017).
    - Both methods use the entire 6500ha project boundary area and both threshold levels apply to fatalities of single species, i.e. if two species were among the fatalities estimated for a site, the threshold would apply to each, not to the grouped number of all species combined.
  - Then mitigation actions will only be required at specific turbines that have killed 2 or more bats of the particular bat species that has exceeded the fatality threshold for the previous year of monitoring.
  - Such actions at the individual turbines include increasing the cut-in wind speed to 6m/s (only exposing 40% of bat activity to spinning blades).
  - When dealing with living animals that can respond in different and unpredictable ways to changing environmental, climatic and developmental parameters, it is very difficult to make guaranteed predictions. Lintott et al. (2016) state that the nightly and seasonal activity data collected during pre-construction surveys may provide an indication of the extent of curtailment that is required and therefore the economic viability of the project, however, they highlight the need for a feedback mechanism for practitioners to share the success or failure of mitigation strategies, i.e. adaptive mitigation. The bat specialist conducting the operational monitoring has the right to make further recommendations should they see fit.
  - Given the magnitude and extent of wind-turbine related bat fatalities worldwide, the conservation implications are critically important and bat fatalities must be avoided, minimised or mitigated proactively.

# 13 EAP AFFIRMATION

**Report Title:** Albany Wind Energy Facility: Environmental Impact Assessment Report

**Report Version:** Final

**Department of Forestry, Fisheries and Environment (DFFE) Reference Number:** 14/12/16/3/3/2/2088

**Coastal & Environmental Services Project Code:** P40700009

## Environmental Assessment Practitioner (EAP) Details

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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	EAP, Project Leader & Author	May 2021
Caroline Evans	Project Manager & Author	May 2021
Rosalie Evans	Co-Author & GIS Mapping	May 2021

**PLEASE FIND HERE WITHIN A SIGNED COPY OF THE DEPARTMENTAL EAP DECLARATION**

# 14 APPENDIX A: PPP DOCUMENTATION

## 14.1 BACKGROUND INFORMATION DOCUMENT

### 14.1.1 BID V1

**PROPOSED INNOWIND ALBANY WIND ENERGY FACILITY,  
GRAHAMSTOWN, EASTERN CAPE**

**BACKGROUND INFORMATION DOCUMENT (BID)  
& INVITATION TO COMMENT**

*Return address for comments:*  
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**EOH**  
Coastal & Environmental Services

**InnoWind**

## AIM OF THIS DOCUMENT

The purpose of this document is to ensure that people that are interested in or affected by the proposed project are provided with information about the proposal, the process being followed and provided with an opportunity to be involved in the Full Scoping & Environmental Impact Assessment (EIA) process for the Proposed Innowind Albany Wind Energy Facility situated east of Grahamstown in the Eastern Cape province.

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 of the reports and submit their comments on those reports. All of the comments that are received will be included in the reports that are submitted to the relevant Competent Authority.

## THE PROPONENT

Albany Wind Power (Pty) Ltd. is a special purpose vehicle (SPV) created by InnoWind (Pty) Ltd, a South African based renewable energy generator that develops, finances, builds, operates and maintains commercial wind powered generation facilities. InnoWind's development and operating expertise has been acquired through its French parent company, EDF Energies Nouvelles, which is the renewable energy arm of the French power utility EDF. EDF EN currently owns and operates over four thousand megawatts (4000MW) of wind energy power plants worldwide.

Albany Wind Power (Pty) Ltd, plans to develop, construct and operate a Wind Energy Facility (WEF) approximately ten kilometres (10km) east of Grahamstown in the Eastern Cape Province.

## THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

### Ms. Caroline Evans

Caroline is a Senior Environmental Consultant based in the Grahamstown branch. 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, the general Environmental Impact Assessment Process, Visual Impact Assessments and Wetland Impact Assessments. Examples of fields in which Caroline was the project manager and lead report writer include Wind Energy Facilities and the associated infrastructure (including powerlines), Solar PV, Waste Water Treatment Works, Housing Developments and Agricultural Developments. Her experience with wind energy facilities and associated infrastructure includes the project management and report writing for the Umsobomvu WEF, Dassiesridge WEF, Scarlet Ibis WEF, Albany WEF, Waaihoek WEF and the Great Kai 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.

### EOH Coastal & Environmental Services (EOH CES) Company Profile

Coastal and Environmental Services (Pty) Ltd is a South African based company, with its head office in Grahamstown, and offices in Cape Town, Port Elizabeth, East London and Johannesburg, South Africa, as well as a wholly owned subsidiary in Maputo, Mozambique (EOH CES is registered as an Environmental Practitioner with the Mozambican authorities). EOH CES was established in 1990, to service a then fledgling market in the field of Environmental Management and Impact Assessment. The Company has grown apace with the increased market demand for environmental and social advisory services, both in South Africa as well as many African countries. Our principal area of expertise is in assessing the impacts of development on the natural, social and economic environments through, among other instruments, the environmental impact assessment process, and in so doing contribute towards sustainable development.

In 2013 EOH Mthombo (Pty) Ltd acquired all the shares in CES (Pty) Ltd, and CES now operates as EOH Coastal & Environmental Services. We are proud to be associated with EOH ([www.eoh.co.za](http://www.eoh.co.za)) which is one of the largest providers of enterprise applications, technology, outsourcing, cloud and managed services, as well as consulting services in a range of disciplines. The group is active in South Africa and Africa and has a strong Black Economic Empowerment profile. This acquisition has enabled EOH CES to combine EOH's great reach and reputation with CES's recognized excellence in environmental and social advisory services. It has allowed us to maximize our strengths and our comprehensive offerings in the environmental and social fields, with the EOH Group providing additional administrative and fiduciary support. Our staff is currently comprised of 35 professional staff and 12 support staff. All professional staff members are well qualified, and as many as 90% have advanced postgraduate qualifications, including PhD, MSc and MA degrees in the biological, social and environmental sciences. In addition, EOH CES has well-developed working relationships with a number of other individual specialist and specialist consulting companies who provide us with expertise in disciplines such as air quality impact assessments, noise impacts, heritage assessments, radiation hazard assessments, groundwater studies and health impact assessments. We have a demonstrated ability to manage EIAs for large and complex projects. This experience was initially gained during the undertaking of integrated environmental management studies, as well as the management of large and complex environmental and social impact assessments. EOH CES has managed numerous large EIAs from pre-feasibility through to operation for international clients in six southern 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, the Dutch Development Bank (FMO).

### THE FULL SCOPING AND EIA PROCESS

According to the Environmental Impact Assessment (EIA) Regulations (2017) promulgated under the National Environmental Management Act (NEMA, Act No.107 of 1998 and subsequent amendments) the potential impacts on the environment will have to be assessed in terms of the listed activities. The Proposed Innowind Albany Wind Energy Facility triggers listed activities (Table 1) in terms of the NEMA EIA Regulations (2014 and amended in April 2017) as per Government Gazette R. 983 (Listing Notice 1), R. 984 (Listing Notice 2) and R. 985 (Listing Notice 3), and as such requires the completion of a Full Scoping and Environmental Impact Assessment (EIA) process. The competent authority for this application is the National Department of Environmental Affairs (DEA).

## PROJECT DESCRIPTION

The proposed Albany WEF will consist of up to 66 turbines each capable of generating approximately 4.5 Mega Watts (MW) of power. The current layout allows for a maximum generating output of up to 297 MW, but the final design will be reduced based on the outcome of the specialist studies undertaken during the Environmental Impact Assessment Process. The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover an area of approximately 55.39 ha depending on final layout design should the project proceed to the construction phase.

The proposed 267MW Albany WEF will consist of the following infrastructural components:

- ▲ Up to 66 Turbines with a generation capacity of up to 4.5 MW resulting in a nominal power output of up to 297 MW.
- ▲ Turbines with a rotor diameter of up to 150 m, a hub height of up to 150 m and blade length of up to 75 m
- ▲ Internal access roads of between 8 m (during operation) and 14 m (during construction, to be part rehabilitated) wide to each turbine Existing roads will be used as far as possible. However, where required, internal access roads will be constructed between the turbines;
- ▲ 3 Connecting Substations (switching stations)
  - Two Switching stations to connect the WEF to the powerline (powerline to be assessed in separate application)
  - WEF IPP 132/33 kV Substation
- ▲ Foundations of up to 550 m<sup>2</sup> per turbine;
- ▲ A primary laydown area of approximately 3900 m<sup>2</sup> adjacent to each turbine;
- ▲ Temporary infrastructure including a site camp and a laydown area of approximately 30 m<sup>2</sup> per turbine (all to be rehabilitated post construction)
- ▲ 25 m<sup>2</sup> area for switchgear and/or transformer at each turbine;
- ▲ Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;
- ▲ Substation, Battery Storage and Site Office area of approximately 10.0 ha; and
- ▲ Batching plant, temporary laydown area and construction compound area of approximately 9.0 ha

**Turbine Design Specifications**

Number of turbines	66
Power output per turbine	4.5 MW
Facility output	297 MW
Turbine hub height	150 m
Turbine rotor diameter	150 m
Turbine blade length	75 m
Turbine tip height	225 m
Turbine platform area	3900 m <sup>2</sup>
Turbine road width	14 m to be rehabilitated to 8 m

Table 1: Listed Activities which require Environmental Authorisation.

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION
GN R. 983 (BASIC ASSESSMENT)	11 (i)	The construction 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.
	11 (xii)	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; (b) In front of a development setback; or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.
	14	The development of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.
	19 (i)	The infilling or depositing of any material of more than 5 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) A watercourse
	24 (ii)	The development of- (ii) A road with a reserve wider the 13.5 metres, or where no reserve exists where the road is wider than 8 metres.
	28 (i)	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 hectares.
	30	Any process or activity identified in term of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
	47	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.
	56 (ii)	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre- (ii) Where no road reserve exists, where the existing road is wider than 8 metres
		1

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION
GN R. 984 (FULL SCOPING & EIR)		is 20 megawatts or more, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area.
	9	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.
	15	The clearance of an area of 20 hectares or more of indigenous vegetation.
	21	Any activity including the operation of that activity associated with the primary processing of a mineral resource including winning, reduction, extraction, classifying, concentrating, crushing, screening and washing but excluding smelting, beneficiation, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.
GN R. 985 (BASIC ASSESSMENT)	4 (b) ii. (ee) (gg)	The development of a road wider than 4 metres with a reserves less than 13,5 metres.  (b) In Eastern Cape: ii. Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area
	10 (b) ii. (ee) (gg)	The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.  (b) In Eastern Cape: ii. Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area
	12 (a) ii.	The clearance of an area of 300 square metres or more of

GOVERNMENT NOTICE	ACTIVITY NUMBER	ACTIVITY DESCRIPTION
		<p>indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>(a) In Eastern Cape:  ii. Within critical biodiversity areas identified in bioregional plans</p>
	14 (a, c) (xii) (c) ii. (f) (hh)	The development of– (xii) infrastructure or structures with a physical footprint of 10 square metres or more Where such development occurs– (a) Within a watercourse; (b) In front of a development setback; or (c) If no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse. (c) In Eastern Cape: ii. Outside urban areas, in: (f) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area
	18 (b) ii. (ee) (gg)	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. (b) In Eastern Cape: ii. Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed area

## POTENTIAL IMPACTS AND BENEFITS

EOH CES will assess the impacts of the Proposed Albany Wind Energy Facility on the environment. Impacts will be assessed for the various alternatives; including the preferred alternative and the "No-Go" alternative. Impacts will be assessed for the planning and design phase, construction phase, operational phase and the decommissioning phase. The direct, indirect and cumulative impacts will be thoroughly assessed for each of the aforementioned phases of development. This section will be updated throughout the process.

## HOW CAN YOU BE INVOLVED?

A Public Participation Process (PPP) is being conducted as part of the full Scoping and EIA process for the Proposed Albany Wind Energy Facility. 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:

- An Advertisement(s);
- Onsite Signage;
- Circulation of the BID (this document) to all Registered I&APs;
- Comments periods;
- A Public Meeting; 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 in order to ensure that you are continually informed of the project developments and will 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 meetings, report reviews and project developments throughout the full Scoping and EIA process.

**STEP 2:** Register by returning the slip at the back of this document to EOH CES.

**STEP 3:** Attend any meetings that may be held during the full Scoping and EIA process.

EOH CES is required to engage with all private and public parties that may be interested and/or affected by the Proposed Albany Wind Energy Facility in order to distribute information for review and comment in a transparent manner.

In the same light, it is important for I&APs to note the following:

1. In order for EOH CES to continue engaging with you, please ENSURE that you register on our database by contacting the person below.
2. As the full Scoping and EIA process is regulated by specific review and comment timeframes, it is your responsibility to submit your comments within these timeframes.

Please send your Completed I&AP Registration Forms, Enquiries and/or Comments to:

Caroline Evans

EOH Coastal & Environmental Services

67 African Street, Grahamstown, 6139, Eastern Cape Province

Tel: (046) 622 2364

Email: [c.evans@cesnet.co.za](mailto:c.evans@cesnet.co.za)

BID



Coastal & Environmental Services

**MAP DETAILS**

Drawn by: Rosalie Evans  
Date: February 2018  
EOH Project Code: P40700009

**SCALE**

1:200 000

**TITLE**

LOCALITY MAP

**PROJECT**

**INNOWIND ALBANY  
WIND ENERGY FACILITY**

- Proposed WEF Site
- National Roads
- Roads
- Urban Areas

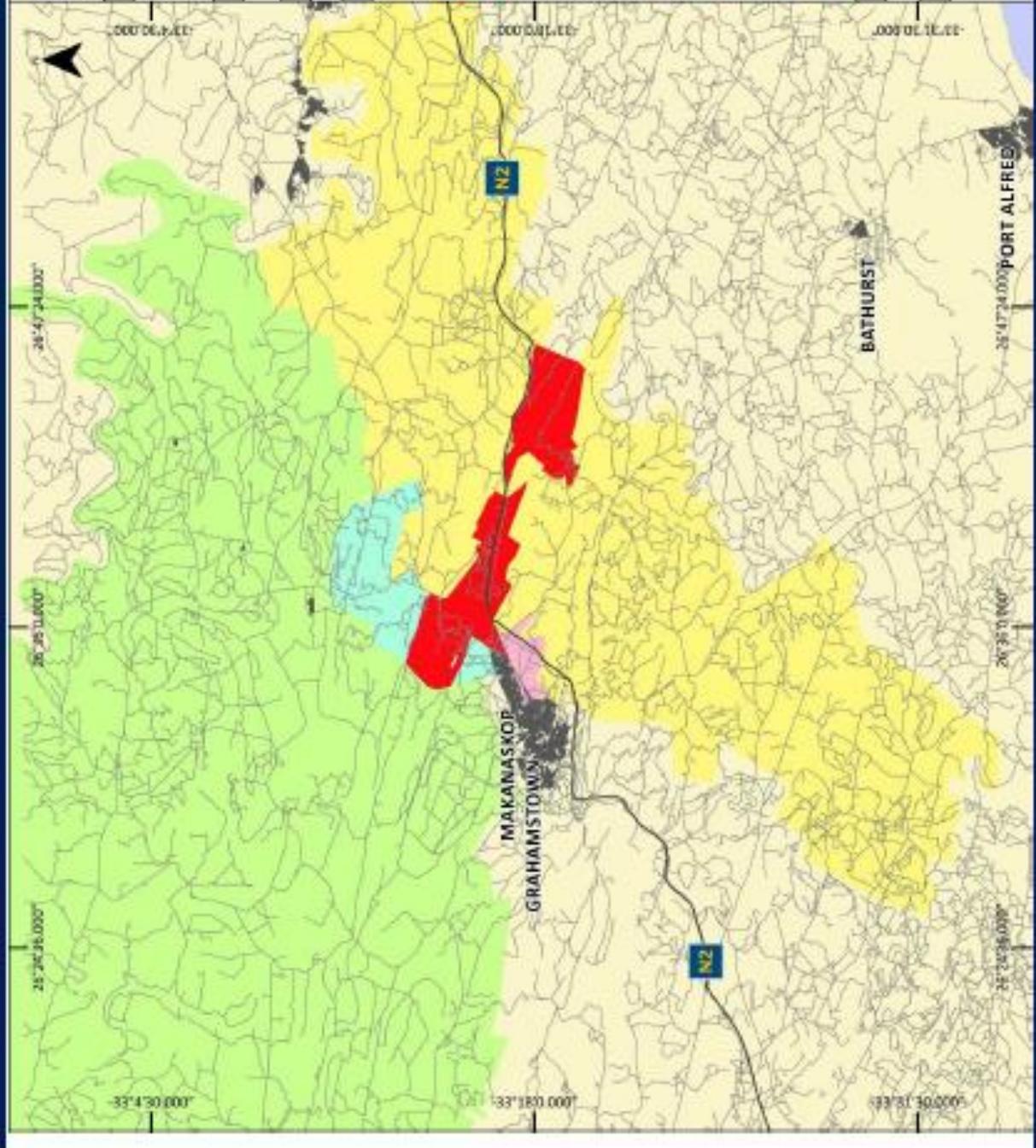
**Affected Wards**

- Albany Ward 1
- Albany Ward 6
- Albany Ward 9
- Albany Ward 11
- Albany Ward 13

**DATUM**

WGS84

**PREPARED FOR:**



I hereby wish to register as an Interested and Affected Party (I&AP) for the Proposed InnoWind Albany Wind Energy Facility, Grahamstown, Eastern Cape

Name & Surname: \_\_\_\_\_

Reason for Registration: \_\_\_\_\_

Postal Address: \_\_\_\_\_

Email Address: \_\_\_\_\_

Telephone/Mobile Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

My initial comments, issues or concerns are: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Other individuals, stakeholders, organisations or entities that should be registered are:

Name & Surname: (1) \_\_\_\_\_

(2) \_\_\_\_\_

Reason for Registration: (1) \_\_\_\_\_

(2) \_\_\_\_\_

Email Address: (1) \_\_\_\_\_

(2) \_\_\_\_\_

Telephone/Mobile Number: (1) \_\_\_\_\_

(2) \_\_\_\_\_

Please return details to: **Caroline Evans** | EDH Coastal & Environmental Services | 67 African Street, Grahamstown,

6139, Eastern Cape Province | Tel: (046) 622 2364 | Email: [c.evans@cesnet.co.za](mailto:c.evans@cesnet.co.za)

## 14.1.2 BID V2

### PROPOSED ALBANY WIND ENERGY FACILITY NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE.

#### BACKGROUND INFORMATION DOCUMENT (BID) & INVITATION TO COMMENT

#### AIM OF THIS DOCUMENT

The purpose of this document is to ensure that people that are interested in or affected by the proposed Albany Wind Energy Facility (WEF) are provided with information about the project, the process being followed and provided with an opportunity to be involved in the Scoping and Environmental Impact Assessment (EIA) Process for the Albany WEF near Makhanda, in the Eastern Cape Province.

Registering as an Interested and/or Affected Party (I&AP) provides individuals or groups with 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 which are received during this process will be included in the final reports, which will then be submitted to the relevant Competent Authority

#### THE ENVIRONMENTAL CONSULTANTS



*Please find Ms Caroline Evans' (contact person) contact details on the last page of this document.*

#### THE APPLICANT

ALBANY WIND POWER (PTY) LTD.

#### ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

According to the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments), the potential impacts on the environment will have to be assessed in terms of the listed activities. These environmental listed activities, initially published on 21<sup>st</sup> of April 2006, were amended in 2010, 2014 and again on the 7<sup>th</sup> of April 2017, as Government Notice (GN) Numbers R. 983 (GN R. 327), R. 984 (GN R. 325), and R. 985 (GN R. 324) which define the activities which require, respectively, a Basic Assessment (GN R. 983 and GN R. 985 listed activities which apply to activities with limited environmental impacts), or a Scoping and Environmental Impact Assessment (GN R. 984 listed activities which apply to activities which are significant in extent and duration). The proposed Albany WEF requires a Scoping and EIA Process due to the Listing Notice 2 (GN R. 984) activities. The application for Environmental Authorisation (EA) and associated reports will be submitted to the Competent Authority, the National Department of Environmental Affairs (DEA).

## PROJECT DESCRIPTION

Albany Wind Power (Pty) Ltd. plans to develop, construct and operate a Wind Energy Facility (WEF) approximately seven kilometres east of Makhanda in the Eastern Cape Province. The project site is situated in Makana Local Municipality (LM) which forms part of the Sarah Baartman District Municipality (DM). According to the data recorded by Albany Wind Power in the area, this project site appears to have favourable wind conditions to operate a wind farm.

The proposed Albany WEF will consist of up to 66 turbines each capable of generating approximately 4.3 Mega Watts (MW) of power. The WEF will also include a short powerline and switching station in order to connect the WEF to the existing Eskom substation (this powerline will be applied for in a separate environmental application process which will run parallel to WEF application). The current layout allows for a maximum generating output of up to 297 MW, but the final design may be reduced dependant on the outcome of the specialist studies undertaken during this Environmental Impact Assessment Process. The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover a maximum area of approximately 46.19 ha (post rehabilitation) depending on the final layout design should the project proceed to the construction phase.

CES has been appointed by Albany Wind Power as the Environmental Assessment Practitioner (EAP) to conduct the necessary EIA Process and secure the required Environmental Authorisation (EA) for the project in terms of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) EIA Regulations (2014 and subsequent 2017 amendments).

In summary the Albany WEF includes:

- Up to sixty-six (66) turbines with a generation capacity of up to 4.3 MW each resulting in a nominal power output of up to 297 MW;
- The proposed WEF will include turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 83 m;
- Internal access roads of between 8 m (during operation) and 14 m (during construction, to be partly rehabilitated) wide to each turbine;
- Existing roads will be used as far as possible. However, where required, internal access roads will be constructed between the turbines;
- Three (3) connecting substations (switching stations):
  - Two (2) Switching stations to connect the WEF to the powerline (powerline to be assessed in separate application); and
  - WEF IPP 132/33 kV Substation.
- Foundations with an area of up to 330 m<sup>2</sup> for each turbine;
- A primary laydown area of approximately 3 900 m<sup>2</sup> adjacent to each turbine;
- Temporary infrastructure including a site camp and a laydown area of approximately 30 m<sup>2</sup> per turbine (all to be rehabilitated post construction);
- A 23 m<sup>2</sup> area for switchgear and/or transformer at each turbine;
- Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;
- An up to 100 000 m<sup>2</sup> for the substation, battery storage and site office area; and
- Batching plant, temporary laydown area and construction compound area of approximately 90 000 m<sup>2</sup>.



Figure 1: Locality Map of the Proposed Albany WEF.

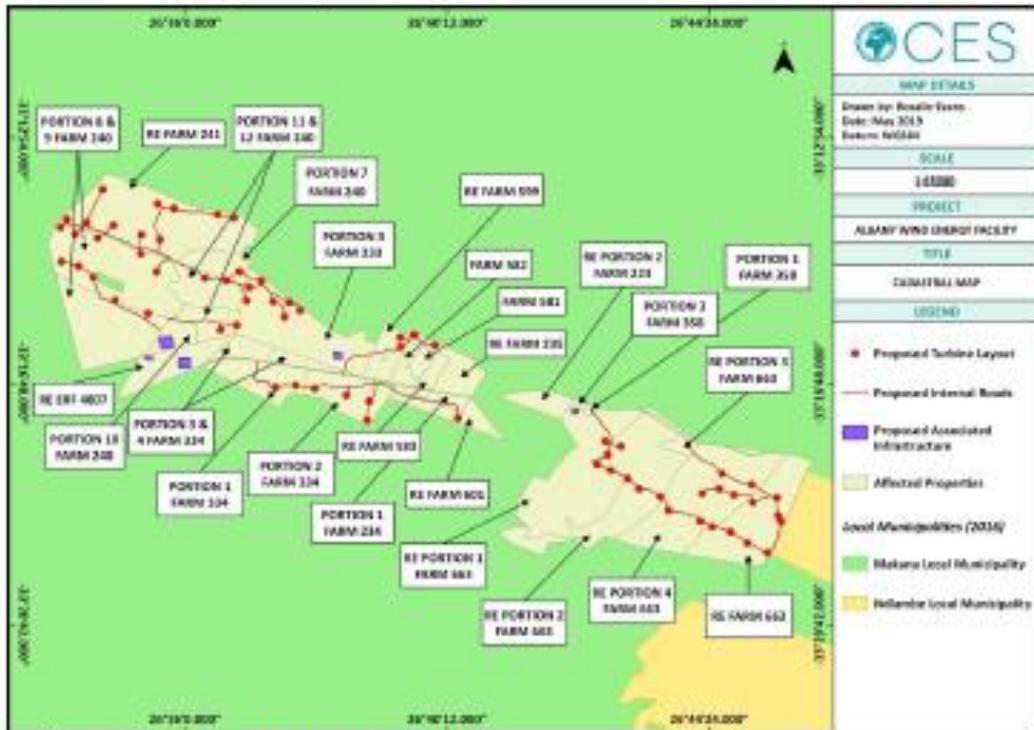


Figure 2: Cadastral Map of the Proposed Albany WEF.

Table 1: Listed Activities which are likely to be triggered by the proposed Albany WEF.

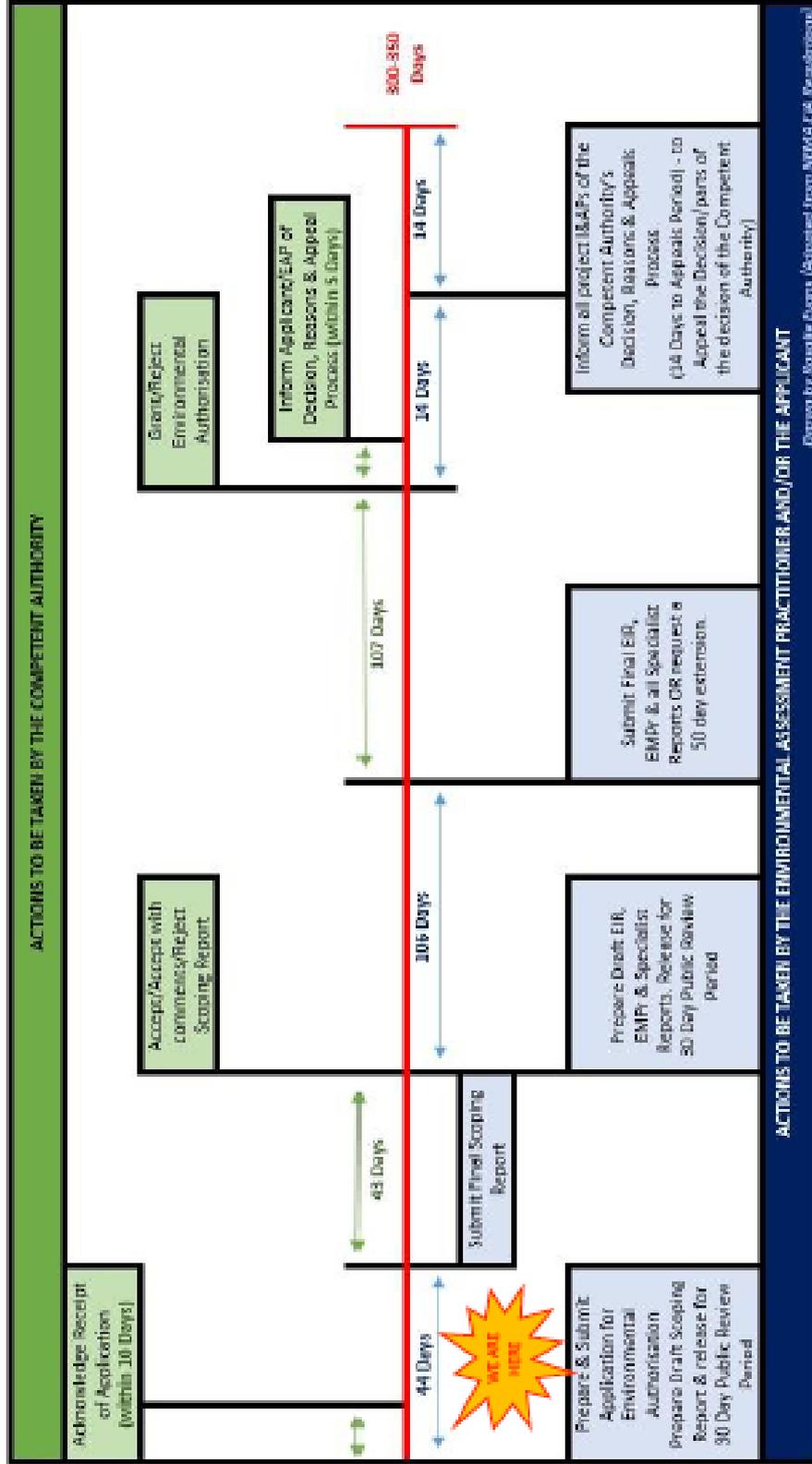
ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
<i>GM R. 983 (Listing Notice 1 - BASIC ASSESSMENT)</i>		
11	The development of facilities or infrastructure for the transmission and distribution of electricity— (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	33kV underground electrical cables will be laid to transmit electricity generated by the wind turbines to the onsite switching stations.
12	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; (b) In front of a development setback; or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.	This relates to the proposed switching station, laydown areas and construction compound area which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process, during which this listed activity may become redundant.
14	The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic meters.	This relates specifically to aspects such as storage of transformer oil at the switching station sites and at the maintenance storage facility during operations. Also small volumes of other chemicals may be stored during construction (including diesel and petrol) which may trigger this activity.  The final layout will determine the volumes needed on site, but at this stage a rough estimate can be calculated as follows: the construction period is expected to last for approximately 24 months, during this time approximately 175m <sup>3</sup> of chemicals which can be classified as dangerous goods will be used. The operational phase is expected to require approximately 200m <sup>3</sup> of chemicals which can be classified as dangerous goods. This equates to a total of approximately 375m <sup>3</sup> of dangerous goods for the lifespan of the proposed WEF.
19	The infilling or depositing of any material of more than 10 cubic meters 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.	This relates specifically to low level crossings that may be required during road construction or upgrading throughout the WEF road network.
24	The development of a road— (i) A road with a reserve wider the 13.5 metres, or where no reserve exists where the road is wider than 8 metres.	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
		footprint of 8m.
28	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: (i) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectares.	The proposed development will entail the rezoning of land from agriculture to special industrial. The total footprint of the proposed WEF (at this stage) will be approximately 46ha in extent (post-mitigation).
47	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.	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.
56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) Where no road reserve exists, where the existing road is wider than 8 metres	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.
<b>GN R. 984 (Listing Notice 2 – FULL SCOPING AND EIR)</b>		
1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more.	The proposed Albany WEF will include the construction of approximately 66 turbines with an output capacity of up to 4.5MW each, resulting in a total output capacity of up to 297MW. This wind energy facility is classified as a renewable energy facility.
9	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	Connecting powerlines (connecting the turbines to switching stations) may need to be stepped up to more than 275kV in places. This listed activity may become redundant once the final layout has been informed by specialist input.
15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed development will include the clearing of indigenous vegetation. The total footprint of the proposed WEF (at this stage) will be approximately 55ha in extent (pre-mitigation) and 46ha in extent (post-mitigation).
<b>GN R. 983 (Listing Notice 3 – BASIC ASSESSMENT)</b>		
4 a. i. (ee) (56)	The development of a road wider than 4 metres with a reserves less than 13.5 metres. (a) <u>In Eastern Cape:</u> i. Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans	The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
	<p>adopted by the competent authority or in bioregional plans</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.</p>	<p>footprint of 8m.</p> <p>The proposed site is situated in CBA areas. *** (please see note at the end of this table) The proposed WEF is located adjacent to Thomas Baines Nature Reserve: Beggars Bush Section.</p>
10 a. i. (cc) (gg)	<p>The development of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.</p> <p>(a) <u>In Eastern Cape:</u></p> <p>i. Outside urban areas, in:</p> <p>(cc) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans***</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.</p>	<p>This relates specifically to aspects such as storage of transformer oil at the switching station sites and at the maintenance storage facility during operations. Also small volumes of other chemicals may be stored during construction (including diesel and petrol) which may trigger this activity.</p> <p>The final layout will determine the volumes needed on site, but at this stage a rough estimate can be calculated as follows: the construction period is expected to last for approximately 24 months, during this time approximately 173m<sup>3</sup> of chemicals which can be classified as dangerous goods will be used. The operational phase is expected to require approximately 200m<sup>3</sup> of chemicals which can be classified as dangerous goods. This equates to a total of approximately 373m<sup>3</sup> of dangerous goods for the lifespan of the proposed WEF. This will be refined as the layout is refined during the EIA process.</p> <p>The proposed site is situated in CBA areas. *** The proposed WEF is located adjacent to Thomas Baines Nature Reserve: Beggars Bush Section.</p>
12 a. ii.	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>(a) <u>In Eastern Cape:</u></p> <p>ii. Within critical biodiversity areas identified in bioregional plans.</p>	<p>The proposed development will include the clearing of indigenous vegetation. The total footprint of the proposed WEF (at this stage) will be approximately 43ha in extent.</p> <p>The proposed site is situated in CBA areas. ***</p>
14 ii. a. i. (ff) (hh)	<p>The development of-</p> <p>ii. Infrastructure or structures with a physical footprint of 10 square metres or more</p> <p>Where such development occurs-</p> <p>(a) Within a watercourse;</p> <p>(b) In front of a development setback; or</p> <p>(c) If no development setback has been</p>	<p>This relates to the proposed switching station, laydown areas and construction compound area which may be constructed within 32m of watercourse. The final siting of this infrastructure will be refined throughout the process, during which this listed activity may become redundant.</p> <p>The proposed site is situated in CBA areas. *** The</p>

ACTIVITY NUMBER	ACTIVITY DESCRIPTION	DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
	<p>adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.</p> <p>(a) <u>In Eastern Cape:</u></p> <p>i. Outside urban areas, in:</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.</p>	<p><i>proposed WEF is located adjacent to Thomas Baines Nature Reserve: Beggars Bush Section.</i></p>
<p>18 a. i. (ee) (gg)</p>	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p>(a) <u>In Eastern Cape:</u></p> <p>i. Outside urban areas, in:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans</p> <p>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas.</p>	<p><i>The road network will need to be developed and upgraded (using all technically feasible existing farm roads where possible) in order to ensure that the delivery of turbine parts is possible and to ensure that maintenance teams are able to access each individual turbine throughout the lifespan of the project. Roads will be 14m wide during the construction phase and will be rehabilitated to have a final operational footprint of 8m.</i></p> <p><i>The proposed site is situated in CBA areas. *** The proposed WEF is located adjacent to Thomas Baines Nature Reserve: Beggars Bush Section.</i></p>
<p><b>***NOTE:</b> Please note that the newly revised and updated ECBP has not been formally gazetted at this stage, but it is likely to be formalised within the next few months. Due to the fact that this will now be a formal Biodiversity Plan for the Eastern Cape we have included it as part of the listed activities</p>		

## THE SCOPING AND EIA PROCESS



## POTENTIAL IMPACTS AND BENEFITS

The potential impacts and benefits will be identified during the Scoping Phase and assessed in detail in the Environmental Impact Report (EIR) and associated specialist reports. The initial issues include, but are not limited to:

- ✔ Visual and noise impacts;
- ✔ Ecological impacts (including flora, fauna and surface water);
- ✔ Avifaunal (bird) impacts;
- ✔ Chiroptera (bat) impacts;
- ✔ Archaeological impacts;
- ✔ Palaeontological impacts;
- ✔ Agricultural impacts; and
- ✔ Socio-economic impacts.

## HOW CAN YOU BE INVOLVED?

A Public Participation Process (PPP) is being conducted as part of the EIA Process for the Proposed Albany WEF. 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, the placement of advertisements, onsite signage, and circulation of the BID (this document) to all registered I&APs, comments periods, a public meeting (if required) and the review of the Draft Scoping Report as well as the Draft EIR, associated specialist reports and the Environmental Management Programme (EMPr) by 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. To do so, please follow the steps below:

1. **STEP 1:** Please register by responding to our notification and invitation, with your name and contact details (details provided below). As a registered I&AP, you will be informed of all report review periods and project developments throughout the EIA Process of the Proposed Albany WEF.
2. **STEP 2:** Register by contacting Ms Caroline Evans with your name and contact details via post, e-mail, phone or fax.

CES is required to engage with all private and public parties that could be interested and/or affected by the Albany WEF in order to distribute information for review and comment in a transparent manner.

In the same light, it is important for I&APs to note the following:

1. For CES to continue engaging with you, please ENSURE that you register on our database by contacting Ms Caroline Evans.
2. As the EIA Process is regulated by specific review and comment timeframes, it is your responsibility to submit your comments within these timeframes.

Please contact Ms Caroline Evans to register as an I&AP for the Albany WEF, for enquiries and/or for the submission of your written comments:

CONTACT PERSON:	Ms Caroline Evans
COMPANY:	CES
ADDRESS:	67 African Street, Grahamstown, 6140
TELEPHONE NUMBER:	+27 (0)46 622 2364
FAX NUMBER:	+27 (0)46 622 6564
E-MAIL ADDRESS:	<a href="mailto:c.evans@cesnet.co.za">c.evans@cesnet.co.za</a>
WEBSITE:	<a href="http://www.cesnet.co.za">www.cesnet.co.za</a>

## 14.2 ADVERTISEMENT

**EOH**

Coastal &amp; Environmental Services

**NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT:  
ALBANY WIND ENERGY FACILITY, GRAHAMSTOWN,  
EASTERN CAPE**

Notice is hereby given in terms of Regulation 41 (2) published in Government Notice No. 982 under Chapter 6 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment (EIA) Regulations (2014, and subsequent 2017 amendments) of the submission of an application to the national Department of Environmental Affairs (DEA) for Environmental Authorisation (EA).

Albany Wind Power (Pty) Ltd. is a Special Purpose Vehicle (SPV) created by InnoWind (Pty) Ltd. InnoWind's development and operating expertise has been acquired through its French parent company, EDF Energies Nouvelles, which is the renewable energy arm of the French power utility EDF.

Albany Wind Power (Pty) Ltd, plans to develop, construct and operate a Wind Energy Facility (WEF) approximately seven kilometres (7 km) east of Grahamstown in the Eastern Cape Province. The proposed Albany WEF will consist of up to sixty-six (66) wind turbines with an output capacity of between 2 MW and 4.5 MW per turbine. The total output of the proposed Albany WEF will be up to 297 MW. This will be achieved by having up to 66 turbines with a maximum output capacity of 4.5 MW per turbine. In addition to the turbines, the facility will include roads, underground and/or overhead electrical cabling linking turbines, three on-site switching stations with potential battery storage capacity and small control room, and an overhead grid connection powerline (33 kV) to the existing Eskom electrical grid.

We hereby encourage all Interested and/or Affected Parties (I&APs) to register on our I&AP database, by contacting the person below, so that EOH Coastal & Environmental Services can engage with you throughout the EIA process.

Please note that the Draft Scoping Report, for the proposed Albany WEF, will be available for a thirty (30) public review period from the 14<sup>th</sup> of June until the 16<sup>th</sup> of July 2018. During this period, a hard copy of the report will be available for review at the Grahamstown Public Library.

For more information, registration as an I&AP or submission of written comments contact via post, fax, phone or e-mail: **Ms Caroline Evans**: 67 African Street, Grahamstown, 6139 |  
Fax: +27 (0)46 622 6564 | Tel: +27 (0)46 622 2364 | E-mail: [c.evans@cesnet.co.za](mailto:c.evans@cesnet.co.za)



REALTIES	FUNERAL NOTICES	EMPLOYMENT OFFERS	EMPLOYMENT OFFERS	FOUNTAINTELING	FOUNTAINTELING	LEGAL NOTICES	LEGAL NOTICES	LEGAL NOTICES	LEGAL NOTICES	LEGAL NOTICES	LEGAL NOTICES
<p><b>VAN DER MERWE DAVID EMIL</b></p> <p>Passed away peacefully on Tuesday, 3 August 2021. Laid to rest in the cemetery named by Francis &amp; Jose Moravos, Mark &amp; Kathy Vd Merwe, Rosalind Wasek, Kathleen &amp; Aubrey Marak, Christopher Vd Merwe &amp; Joanne Turnbull, Lucy Woodward Hunt, Erin Vd Merwe, Sarah Vd Merwe, Lucas Vd Merwe, Hannah Wasek and Ruth Marak.</p> <p>Live stream Link: <a href="https://vimeo.com/567206584">https://vimeo.com/567206584</a></p> <p><b>FIRST AVENUE FUNERAL HOME</b> 61 RH 959</p>	<p><b>LINKS SUSAN</b></p> <p>The funeral service for the late Susan will take place on Saturday, 7 August 2021 at 11h00 from Andrew Remack Congregational Church, West End. Deeds mourned by her family and friends.</p> <p><b>ARRANGEMENTS AUSTON FERRIFERA</b></p> <p><b>WANNILING FUNERALS</b> (041) 453-0989</p>	<p><b>EXPERIENCED ELECTRICAL RESIDENT ENGINEER</b></p> <p>The requisite candidate will be an Electrical Engineer/Technologist with a minimum of 5 years work experience required for full-time construction monitoring of electrical works (12 to 18 months) in Nelson Mandela Bay, Gqeberha.</p> <p>The applicant must have extensive site experience in Projects involving:</p> <ul style="list-style-type: none"> <li>- Construction supervision of electrical works, testing &amp; commissioning</li> <li>- Laying of electrical cables - MV &amp; LV as well as fibre optics</li> <li>- Construction of Substations and mini substations</li> <li>- Main DBs and MCCs</li> <li>- Laying of pipelines</li> <li>- Traffic diversion, road crossings and excavations in surfaced areas including surface reinstatement of finishes such as asphalt, concrete, concrete paving etc.</li> </ul> <p>The candidate must have the following capabilities:</p> <ul style="list-style-type: none"> <li>- computer literacy MS Office, read and interpret CAD and Surveyor's drawings</li> <li>- ability to read and understand contractor's programmes</li> <li>- knowledge of SANS 10142-1&amp;2</li> </ul> <p>In addition, the candidate should:</p> <ul style="list-style-type: none"> <li>- have own transport</li> <li>- have own computer and mobile phone</li> <li>- preferably be a resident of NMBM</li> </ul>	<p><b>GOOD NEWS</b></p> <p>My name is Marsha, after going through several healers, looking almost every cent, I had lost hope, until I met about Papa Paul in the newspaper, I paid him R250, you can't believe, how things changed in just 3 days, my financial problems are in past, my house bond arrears where cleared, we were having lots of small fights me and my husband, due to stress, all that is in the past, Papa Paul, all I wish you is more life, so that u can put more smiles in this world. For unfinished jobs, money problems, love or troubled marriages call or what's up, Papa Paul.</p> <p><b>071 979 3558</b></p>	<p><b>APPLICATION IN TERMS OF SECTION 33 OF THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT 2013 (ACT 16 OF 2013 SPLUMA)</b></p> <p>Notice is hereby given that applications have been made to the Nelson Mandela Bay Metropolitan Municipality for:</p> <p><b>ERF 2756 Central</b> Address: 43 Pearson Street, Central</p> <p><b>ERF Remainder of Erf 5313 Central</b> Address: 7 Prospect Hill, Central</p> <p>Applicant: Malvern K Creative Studio on behalf of Mr M Patsanza</p> <p>1. An application for Council's Special Consent in terms of Port Elizabeth Zoning scheme to permit student accommodation on the properties.</p> <p>2. An application in terms of Port Elizabeth Zoning scheme for departure from on-site parking provisions.</p> <p>The detailed proposals may be requested from the applicant or viewed at 2nd Floor, Lillian Dieckmann Building, No191 Gowan Mookie Ave, Gqeberha.</p> <p>Members of the public are invited to submit comments, objections or intervenor status in writing with clear reasons in regard to the proposal to the following:</p> <p>1. The Applicant 32 Barbary Road, Westdene, Jhb 2192</p>	<p><b>OCES</b></p> <p><b>NOTICE OF DRAFT EIR FOR REVIEW IN TERMS OF SECTION 21(2) OF THE EIA REGULATIONS, 2014 AS AMENDED: ALBANY WIND ENERGY FACILITY, MAKHANDA, EASTERN CAPE</b></p> <p>Notice is hereby given in terms of Regulation 41 (2) published in Government Notice No. 982 under Chapter 6 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment (EIA) Regulations (2014, and subsequent 2017 amendments) of the submission of an application for Environmental Authorisation (EA) to the national Department of Forestry, Fisheries and the Environment (DFFE) in terms of Section 21(2) of the EIA Regulations, 2014 as amended.</p> <p>DFFE Reference Number: 14/12/16/3/2/1131 and 14/12/16/3/3/2088</p> <p>Albany Wind Power (Pty) Ltd, plans to construct a wind energy facility near Makhandha in the Eastern Cape province. Key developments include:</p> <ul style="list-style-type: none"> <li>• Up to forty-three (43) turbines with a maximum nominal power output of up to 297 MW;</li> <li>• The proposed WEF will include turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m;</li> <li>• A permanent laydown area next to the locations of the proposed wind turbines (3,900 m<sup>2</sup> for crane hardstand per turbine);</li> <li>• Temporary additional laydown area next to the locations of the proposed wind turbines (3,100 m<sup>2</sup> for crane hardstand and blade laydown per turbine);</li> <li>• Foundations (up to 900 m<sup>2</sup>) for each wind turbine;</li> <li>• Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;</li> </ul> <p>OCES has been appointed to undertake the EA Application process on behalf of the proponent. The proposed development triggered a full Scoping &amp; EIA process. The second draft EIR is available for review in terms of Section 21(2) of the Regulations from 28/07/2021 until 28/08/2021 on the OCES website and at the Grahamstown Public Library.</p> <p>For more information, registration as an I&amp;AP or submission of written comments contact by phone, fax or e-mail: Ms Caroline Evans   67 African Street, Grahamstown, 6139   Tel: +27 (0)46 622 2364   E-mail: <a href="mailto:c.evans@cesnet.co.za">c.evans@cesnet.co.za</a></p>	<p>IN THE HIGH COURT OF SOUTH AFRICA (EASTERN CAPE LOCAL DIVISION, GQEBERHA) in the matter of Application of SIMPHEWE COLLINS YAMBE, First Applicant and VUYELWA YAMBE BANI MAMABE, Second Applicant.</p> <p><b>NOTICE OF MOTION</b></p> <p>BE PLEASED TO TAKE NOTICE THAT the application will be made to the above Honourable Court on THURSDAY, the 26th of AUGUST 2021 at 09h00 or as soon thereafter as Court may be heard for an Order in the following terms:</p> <p>1. That leave be and is hereby granted to Applicants in terms of Section 21(1) of Act 98 of 1984 to enter into a National Contract in terms similar to the draft attached to Applicants' founding affidavit which is marked "A" in the papers before this Court.</p> <p>2. That the marriage of First and Second Applicants shall, from the date of registration of the said National Contract, be governed by the terms of the National Contract.</p>					

**LEGAL NOTICES**      **LEGAL NOTICES**      **LEGAL NOTICES**

**OCES**  
ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

**NOTICE OF DRAFT EIR FOR REVIEW IN TERMS OF SECTION 21(2) OF THE EIA REGULATIONS, 2014 AS AMENDED: ALBANY WIND ENERGY FACILITY, MAKHANDA, EASTERN CAPE**

Notice is hereby given in terms of Regulation 41 (2) published in Government Notice No. 982 under Chapter 6 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment (EIA) Regulations (2014, and subsequent 2017 amendments) of the submission of an application for Environmental Authorisation (EA) to the national Department of Forestry, Fisheries and the Environment (DFFE) in terms of Section 21(2) of the EIA Regulations, 2014 as amended.

DFFE Reference Number: 14/12/16/3/2/1131 and 14/12/16/3/3/2088

Albany Wind Power (Pty) Ltd, plans to construct a wind energy facility near Makhandha in the Eastern Cape province. Key developments include:

- Up to forty-three (43) turbines with a maximum nominal power output of up to 297 MW;
- The proposed WEF will include turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m;
- A permanent laydown area next to the locations of the proposed wind turbines (3,900 m<sup>2</sup> for crane hardstand per turbine);
- Temporary additional laydown area next to the locations of the proposed wind turbines (3,100 m<sup>2</sup> for crane hardstand and blade laydown per turbine);
- Foundations (up to 900 m<sup>2</sup>) for each wind turbine;
- Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;

OCES has been appointed to undertake the EA Application process on behalf of the proponent. The proposed development triggered a full Scoping & EIA process. The second draft EIR is available for review in terms of Section 21(2) of the Regulations from 28/07/2021 until 28/08/2021 on the OCES website and at the Grahamstown Public Library.

For more information, registration as an I&AP or submission of written comments contact by phone, fax or e-mail: Ms Caroline Evans | 67 African Street, Grahamstown, 6139 | Tel: +27 (0)46 622 2364 | E-mail: [c.evans@cesnet.co.za](mailto:c.evans@cesnet.co.za)

# 14.3 SIGNAGE

## SIGN 1 (R67 town and provincial intersection)



## SIGN 2 (R67 and N2 intersection)



**SIGN 3 (N2)**



## 14.4 INITIAL NOTIFICATION

Initial Notification was circulated as part of an informal PPP process. All stakeholders were sent a BID (V1) and I&APs were invited to register to be part of the I&AP Database. This, combined with a newspaper adverts and three site notifications served as a gathering of I&APs for the project.

All documentation from the formal PPP process, which starts with the submission of the Application for Environmental Authorisation, will be included in Appendix A as part of the process.

To  Rosalie Evans

Bcc  Charmaine.Mostert@dedea.gov.za;  Andries.struwig@deaet.ecape.gov.za;  Dayalan.Govender@dedea.gov.za;  Gerry.Pienaar@dedea.gov.za;  BloemM@dws.gov.za;  NokoyoT@dwa.gov.za;  Brenda.Ngebulana@dmr.gov.za;  Zimkita.Tyala@dmr.gov.za;  thokob@daff.gov.za;  MashuduMa@daff.gov.za;  mokgadi.mathekgana@energy.gov.za;  eddie.leach@eskom.co.za;  GeerinJH@eskom.co.za;  NicolM@eskom.co.za;  Wayne.Erlank@ecpta.co.za;  leandri.gerber@ecpta.co.za;  brian.reeves@ecpta.co.za;  mtoto.zake@ecpta.co.za;  asanda.sontele@ecpta.co.za;

 Message  Albany Wind Energy Facility\_Initial LoN.pdf (583 KB)  Background Information Document\_V1.pdf (2 MB)

Dear Stakeholder, Landowner, Surrounding Landowner or Interested & Affected Party

The attached letter serves as a notification of the start of the Environmental Impact Assessment Process for the proposed Albany Wind Energy Facility situated near Grahamstown in the Eastern Cape. The Background Information Document (BID) has also been attached for your perusal.

The Draft Scoping Report will be available for public review from the 20<sup>th</sup> June until the 20<sup>th</sup> July 2018, you will receive another letter stating that this process has started and to inform you of where to access the documentation. Please could you be so kind as to respond to this email and register as part of the process should you wish to receive further correspondence.

Please do not hesitate to contact me should you have any queries.

Kind regards  
Caroline

 **EOH**

Caroline Evans  
Senior Environmental Consultant  
EOH Coastal & Environmental Services  
Leaders in Environmental and Social Advisory Services  
67 African Street  
Grahamstown | Eastern Cape | South Africa  
tel: +27 (46) 622 2364 | fax: +27 (46) 622 6564  
[c.evans@cesnet.co.za](mailto:c.evans@cesnet.co.za) | [www.eoh.co.za](http://www.eoh.co.za) | [www.cesnet.co.za](http://www.cesnet.co.za)  
Consulting | Technology | Outsourcing

## **14.5 DRAFT SCOPING NOTIFICATION**

Please find all proofs of the distribution of the Draft Scoping Report and all Comments received during the Draft Scoping Report review period here within.

## **14.6 FINAL SCOPING NOTIFICATION**

Please find all proofs of the notification of the submission of the Final Scoping Report here within.

## **14.7 SCOPING DECISION NOTIFICATION**

Please find all proofs of the notification of the decision of the Scoping Phase here within.

## **14.8 DRAFT EIR NOTIFICATION (1<sup>ST</sup> EIR)**

Please find all proofs of the notification of the submission of the 1<sup>st</sup> Draft EIR here within.

## **14.9 DRAFT EIR NOTIFICATION (2<sup>ND</sup> EIR)**

Please find all proofs of the notification of the submission of the 2<sup>nd</sup> Draft EIR here within.

## **14.10 FINAL EIR NOTIFICATION (2<sup>ND</sup> EIR)**

The Final EIR will be placed on the CES website and all Stakeholders and I&APs will be made aware of the documentation for their reading.

## 14.11 PPP DATABASE

### 14.11.1 STAKEHOLDER DATABASE

STAKEHOLDER DATABASE	
Stakeholder	Contact Person
Department of Forestry, Fisheries and the Environment	<i>Ms Zamalanga Langa</i>
Department of Forestry, Fisheries and the Environment: Biodiversity & Conservation	<i>Mr Shonisani Munzhedzi</i> <i>Mr Simon Maletse</i>
Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)	<i>Mrs Charmaine Struwig</i> <i>Mr Andries Struwig</i> <i>Mr Dayalan Govender</i> <i>Mr Gerry Pienaar</i>
Department of Water & Sanitation (DWS) (Eastern Cape)	<i>Ms Marisa Bloem</i> <i>Mr Thabo Nokoyo</i>
Department of Mineral Resources and Energy (DMRE) (Eastern Cape)	<i>Ms Brenda Ngebulana</i> <i>Ms Zimkita Tyala</i>
Department of Agriculture Forestry & Fisheries (DAFF)	<i>Ms Thoko Buthelezi</i> <i>Ms Mashudu Marubini</i>
Department of Energy	<i>Ms Mokgadi Mathekgana</i>
Eskom	<i>Mr Eddie Leach</i>
Eskom: Renewable Energy	<i>Mr John Geeringh</i> <i>Mr Wayne Erlank</i> <i>Ms Leandri Gerber</i> <i>Mr Brian Reeves</i> <i>Mr Patrick Zake</i> <i>Ms Shanè October</i> <i>Ms Asanda Sontsele</i>
Eastern Cape Parks and Tourism Agency (ECPTA)	<i>Mr Rory Haschick</i>
Eastern Cape Development Corporation (ECDC)	<i>Mr Ted Pillay</i>
Sarah Baartman District Municipality: Municipal Manager	<i>Mr Ted Pillay</i>
Makana Local Municipality: Acting Municipal Manager	<i>Ms Riana Meiring</i>
Makana Local Municipality: Mayor	<i>Mr Myalato</i>
Makana Local Municipality: Technical & Infrastructural Services	<i>Mr Reneir van der Merwe</i>
Makana Local Municipality: Land-use	<i>Mr Johanne Esterhuizen</i>
Makana Local Municipality: Environmental	<i>ClIr Bruitjies</i>
Makana LM Ward 1 Councillor	<i>ClIr Clark</i>
Makana LM Ward 2 Councillor	<i>ClIr Fargher</i>
Makana LM Ward 3 Councillor	<i>ClIr Fatyi</i>
Makana LM Ward 4 Councillor	<i>ClIr Gaga</i>
Makana LM Ward 5 Councillor	<i>ClIr Gaushe</i>
Makana LM Ward 6 Councillor	<i>ClIr Gojela</i>
Makana LM Ward 7 Councillor	

Makana LM Ward 8 Councillor	<i>Clr Holm</i>
Makana LM Ward 9 Councillor	<i>Clr Jackson</i>
Makana LM Ward 10 Councillor	<i>Clr Khubalo</i>
Makana LM Ward 11 Councillor	<i>Clr Louw</i>
Makana LM Ward 12 Councillor	<i>Clr Madyo</i>
Makana LM Ward 13 Councillor	<i>Clr Masoma</i>
Makana LM Ward 14 Councillor	<i>Clr Matyumza</i>
Makana LM Ward 15 Councillor	<i>Clr Matyumza</i>
Makana LM Ward 16 Councillor	<i>Clr Meyer</i>
Makana LM Ward 17 Councillor	<i>Clr Moya</i>
Makana LM Ward 18 Councillor	<i>Clr Mtwa</i>
Makana LM Ward 19 Councillor	<i>Clr Nase</i>
Makana LM Ward 20 Councillor	<i>Clr Nhanha</i>
Makana LM Ward 21 Councillor	<i>Clr Pieters</i>
Makana LM Ward 22 Councillor	<i>Clr Qotoyi</i>
Makana LM Ward 23 Councillor	<i>Clr Sakata</i>
Makana LM Ward 24 Councillor	<i>Clr Seyisa</i>
Makana LM Ward 25 Councillor	<i>Clr Sodladla</i>
Makana LM Ward 26 Councillor	<i>Clr Vara</i>
Makana LM Ward 27 Councillor	<i>Clr Xonxa</i>
SALGA Eastern Cape	<i>Ms Aseza Dlanjwa</i>
	<i>Mr Zamikhaya Mpulampula</i>
	<i>Ms Zona Cokie</i>
Eastern Cape Provincial Heritage Resources Authority (ECPHRA)	<i>Mr Lennox Zote</i>
	<i>Mr Sello Mokhanya</i>
South African Heritage Resources Agency (SAHRA)	<i>Admin</i>
Telkom	<i>Mr Raymond Couch</i>
Sentech	<i>Ms Alishea Viljoen</i>
Vodacom	<i>Mr Andre Barnard</i>
MTN	<i>Mr Krishna Chetty</i>
	<i>Mr Hugo Dippenaar</i>
	<i>Mr Rudi Liebenberg</i>
	<i>Mr Wiaan Vermaak</i>
	<i>Mr Dirk Van Der Walt</i>
Cell C	<i>Mr Joshua Engelbrecht</i>
	<i>Ms Lizelle Stroh</i>
	<i>Mr Dylan Fryer</i>
Civil Aviation Authority (CAA)	<i>Ms Lizelle Stroh</i>
Air Traffic and Navigation Services (ATNS)	<i>Mr Dylan Fryer</i>
Roads (SANRAL/Public Works)	<i>Ms Nanna Gouws</i>
BirdLife South Africa	<i>Mr Daniel Marnewick</i>
	<i>Dr Hanneline Smit-Robinson</i>
BirdLife South Africa: Birds and Renewable Energy Manager	<i>Ms Samantha Ralson</i>
BirdLife South Africa: Policy & Advocacy Manager	<i>Mr Simon Gear</i>
Endangered Wildlife Trust: CEO	<i>Ms Yolán Friedman</i>
Endangered Wildlife Trust: Head of Conservation Science	<i>Dr Harriet Davies-Mostert</i>

Endangered Wildlife Trust: African Crane Conservation Programme Manager	<i>Ms Kerryn Morrison</i>
Endangered Wildlife Trust: African Crane Conservation Programme Field Officer	<i>Ms Glenn Ramke</i>
Endangered Wildlife Trust: Wildlife & Energy Programme	<i>Mr Lourens Leeuwner</i>
WESSA EC Regional Representatives	<i>Ms Jenny Gon</i> <i>Ms Eileen Shepherd</i>
Wildlife Ranching RSA	<i>Ms Ankie Stroebel</i>
East Cape Game Management Association	<i>Admin</i>
INDALO	<i>Ms Vanessa Collett</i>

### 14.11.2 LANDOWNER DATABASE

LANDOWNER DATABASE	
Landowner	Contact Person
Valery Audrey Roberts / Leonard Roberts	<i>Leonard Roberts</i>
Adrian Michael Moss	<i>Adrian Moss</i>
Fanisile Vuso	<i>Fanisile Vuso</i>
Rowland Geoffrey Tarr	<i>Rowland Tarr</i>
Makana Municipality	<i>Riana Meiring</i>
Peter George Wylie	<i>Peter Wylie</i>
Antonie Johannes Diedericks	<i>Antonie Diedericks</i>
Barry Albert Sweetman	<i>Barry Sweetman</i>
Lorenzo & Hayle Doyle	<i>Lorenzo Doyle</i>
Gaynor Isabel Ferreira	<i>Anton Ferreira</i>
Willie Erasmus	<i>Willie Erasmus</i>
Emlanjeni CPA	<i>Xoliswa Matole</i>
Kamvulethu CPA	<i>Vuyani Hanisi</i>
Masibambane CPA	<i>Bhulukazi Peter</i>
Masizakhe CPA	<i>Zola Sintwa</i>

### 14.11.3 SURROUNDING LANDOWNER DATABASE

SURROUNDING LANDOWNER DATABASE	
Landowner	Contact Person
Amaraka INV NO 6 PTY LTD	<i>Mr Jo van Zyl &amp; Mr Sean van Zyl</i>
Sarah Baartman District Municipality	<i>Mr Ted Pillay</i>
Leon van Rensburg	<i>Mr Leon van Rensburg</i>
RSA Government (EC Department Rural Development & Land Reform)	<i>Mr Patrick Maqabangqa (Cacadu District)</i>
Makana Local Municipality	<i>Ms Rianna Meiring</i>
CSA Properties (Pty) Ltd.	<i>Mr Dino David Couest</i>

Grahamstown Brick (Pty) Ltd.	Mr Allan Mark Cawood
Kwapatu Farmers CC	Mr Zolile Million Bester
Tracey Anne Georgiou	Ms Tracey Anne Georgiou
Hooleton Park CC	Ms Anastasia Naidoo
Le Cateau Farming (Pty) Ltd.	Mr Christopher Bush
Graham Partington	Mr Graham Partington

#### 14.11.4 REGISTERED I&AP DATABASE

REGISTERED INTERESTED & AFFECTED PARTIES (I&APs)	
I&AP	Affiliation
Mr Tim Bull	Grahamstown Residents' Association
Mr Philip Machanick	
Ms Sally Price-Smith	Private
Glenn	Wessons
Ms Laura Bannatyne	Private
Mr Peter Ellis	MBB Consulting Engineers
Mr Pravesh Nosib	MBB Consulting Engineers
Mr Angus Sholto-Douglas	Kwande Private Game Reserve
Mr Graeme Mann	Kwande Private Game Reserve
Proff Geoff Antrobus	Private
Mr Steven Lang	Private
Mr Harry Owen	Private
Mr Mark Palmer	Amakhala Game Reserve
Mr Leslie Ter Morshuizen	AquaCulture Innovations
Mr Tim Kinnell	Amatola Industries CC
Mr Roy Hagemann	Amatola Industries CC
Ms Leticia Greyling	Private
Ms Roxanne Mustard	Leads 2 Business
Ms Patsy Scherman	Scherman Colloty & Associates
Mr Ruwayne John	Strutfast
Mr Jonathan Visser	Integrated Wind Power (Pty) Ltd.
Mr Peter Sulter	MEH Sulter & Son Inc.
Ms Veronique Fyfe	G7 Renewable Energies (Pty) Ltd
Ms Karen de Bruyn	G7 Renewable Energies (Pty) Ltd
Mr Nikhil K V N	Global Data
Mr Byron Sparg	
Ms Arlene Sparg	
Ms Danica Stockigt	Glenmelville Safaris
Ms Dawn Sparg	
Mr Nolan Sparg	
Ms Ina Fölscher	Private

Mr Colin Coetzee	Game 4 Africa
Mr Llewellyn Poultney	Lanka Safaris
Mr Ryan David-Andersen	Arcus Consulting
Mr Hylton Newcombe	Private
Mr Terry Stewart	Bucklands Private Game Reserve Emerald Sky Safaris
Mr Aiden Sparrow	Trumpeters Drift
Mr Basil Peinke	Ecca Pass Safaris
Ms Bevan Peinke	
Mr Sean van Zyl	Fort Governors Estate
Mr Hennie Brink	No details supplied
Mr Charles Timm	Huntshoek
Mr Kevin Bates	Elshaddai Game Lodge
Mr Lionel Wicks	Lysso Safaris
Longwood Trust	No details supplied
Mr Greg Dixon	Majeje Safaris
Mr Murray Crous	Settlers Safaris
Mr Nico Fick	Lakeside
Mr Peter Wood	The Hills Game Estate
Mr Rudi Venter	
Mr Xolani Ngcikhwe	Makana Business Chamber
Ms Weliswa Jantjies	
Mr Zuben Jessa	Infinite Plan 8
Ms Cheryth Robertson	Guinea-Fowl B&B / Erma Court Self-Catering Apartment
Ms Sandy Tarr	Private
Mr Neale Howarth	Pumba Private Game Reserve
Ms Terry Winstanley	Winstanley Inc
Ms Wendy Rippon	Buffalo Kloof Private Game Reserve
Ms Lorna Cole	Coleridge Farm
Mr Nick Orphanides	Private
Mr Joe Harding	RINA Consulting - Renewable Energy
Ms Maretha Alant	SANParks
Mr Nick De Goede	SANParks
Ms Catherine Dreyer	SANParks
Ms Kristal Maze	SANParks
Zandri Hill	ABO Wind
Carin Swart	Private
David Peddie	Private
Jessica Shuttleworth	Buffalo Kloof Private Game Reserve
Ralph Damonse	Genesis Eco-Energy
Bruce Cleary	Genesis Eco-Energy
Siphosethu Gwabeni	Makana Local Municipality   Town Planner

<b>Michelle van Jaarsveld</b>	<i>Lauriston Farm</i>
<b>Michelle van Jaarsveld</b>	<i>Lakeside Private Reserve</i>
<b>Estelle Pillay</b>	<i>Leads 2 Business</i>
<b>Michelle van Jaarsveld</b>	<i>Glen Boyd Reserve</i>

## 14.12 ISSUES & RESPONSE TRAIL

The Issues & Response Trail (IRT) can be found in Appendix H of this document as a separate standalone chapter. The IRT includes all issues raised includes the EAP responses to these issues. These tables have be updated throughout the process from inception until submission of the Final EIR to the Competent Authority (DFFE).

## 14.13 PPP PROOFS

The following documents include all PPP proofs as per this section. Full reports and comments from I&APs are available in Appendix I of this report.

## 15 APPENDIX B: CURRICULUM VITAE

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- ✦ Dr Alan Carter
- ✦ Ms Caroline Evans
- ✦ Ms Rosalie Evans

## 16 APPENDIX C: FULL IMPACTS TABLES

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# 17 APPENDIX D: SPECIALIST REPORTS

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## 18 APPENDIX E: SPECIALIST DECLARATIONS

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## 19 APPENDIX F: EXTERNAL REVIEW LETTERS

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Please note that the External Review process will be repeated for the Final Specialist Reports.

## 20 APPENDIX G: ENVIRONMENTAL MANAGEMENT PROGRAMMES (EMPRs): GENERIC AND APPENDIX 4

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## 21 APPENDIX H: ISSUES & RESPONSE REPORT

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*\* Please note that this table has be updated throughout the Scoping and EIA Processes. Comments are captured in chronological order, with the oldest comment at the bottom of the table and the newest comment at the top of the table*

# 22 APPENDIX I: COMMENTS AND REPORTS RECEIVED

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