

**DRAFT SCOPING REPORT**

**PROPOSED DE RUST NORTH WIND ENERGY FACILITY  
AND ASSOCIATED INFRASTRUCTURE ON PORTION 9 OF THE  
FARM NOUZEES 148, REMAINING EXTENT OF THE FARM  
HOUMOED 206 AND PORTION 1 OF THE FARM SAMOEP 147,  
NORTHERN CAPE**

**December 2022**

**NAME OF APPLICANT: FE De Rust (PTY) LTD**

**PREPARED BY: Enviro-Insight CC**

## PROJECT DETAILS

<b>REPORT TITLE:</b>	PROPOSED DE RUST NORTH WIND ENERGY FACILITY AND ASSOCIATED INFRASTRUCTURE ON PORTION 9 OF THE FARM NOUZEES 148, REMAINING EXTENT OF THE FARM HOUMOED 206 AND PORTION 1 OF THE FARM SAMOEP 147 NEAR POFADDER IN THE NORTHERN CAPE
<b>REPORT STATUS:</b>	DRAFT SCOPING REPORT
<b>DEA REFERENCE NO.:</b>	TBC
<b>APPLICANT:</b>	FE DE RUST PTY LTD ENVIRO-INSIGHT CC
<b>EAP:</b>	MARVIN GRIMMITT RONELL KUPPEN
<b>DATE</b>	NOVEMBER 2022

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## EXECUTIVE SUMMARY

### Details of the proposed De Rust North Wind Energy Facility

Component	Description / Dimensions
Project Name	De Rust North Wind Energy Facility
Province	Northern Cape
Farm portion	Portion 9 of the Farm Nouzees 148 Remaining Extent of the Farm Houmoed 206 Portion 1 of the Farm Samoep 147
Development Extent (ha)	approximately 4 936 hectares
21-digit Surveyor General code	C03600000000014800009, C03600000000020600000, C03600000000014700001
Number of turbines	Up to 39
Hub height	Up to 150M
Rotor diameter	Up to 175 m
Turbine capacity (MW)	Up to 7.5 MW
Contracted capacity of the facility (MW)	240 MW (Maximum)
Length of blade	Up to 87.5 m
Dimensions of the turbine foundations	20X20X8m
Cabling	Underground up to 1m deep
Capacity of onsite substation	33/132kV (100mX100M)
Grid connection	Proposed Korana Substation
Width of internal roads	Construction phase: up to 10m Operational phase: up to 8 m
Proximity to grid connection	+/-10km approximately
Laydown areas	Construction period laydown footprint (temporary): ± 6 ha Temporary hardstand area (boom erection, storage and assembly area): ± 12 ha O&M Area: 1.1ha

## PROJECT OVERVIEW

### Background

The proposed study area for the renewable energy developments is located approximately 13 km south of Pofadder within the Khâi-Ma Local Municipality, in the Northern Cape. The site can be reached via the R358 off the N14.

The developer is planning on developing two wind energy facilities (WEFs) and two solar energy facilities (SEFs) to be known as the FE De Rust WEFs & SEFs. The project areas for all four renewable energy developments are located on Portion 1 of the Farm Samoep 147 (a portion will be used for the proposed Solar Energy Facilities), Portion 9 of the Farm Nouzees 148 and the Remaining Extent of the Farm Houmoed 206, within the Khâi-Ma Local Municipality.

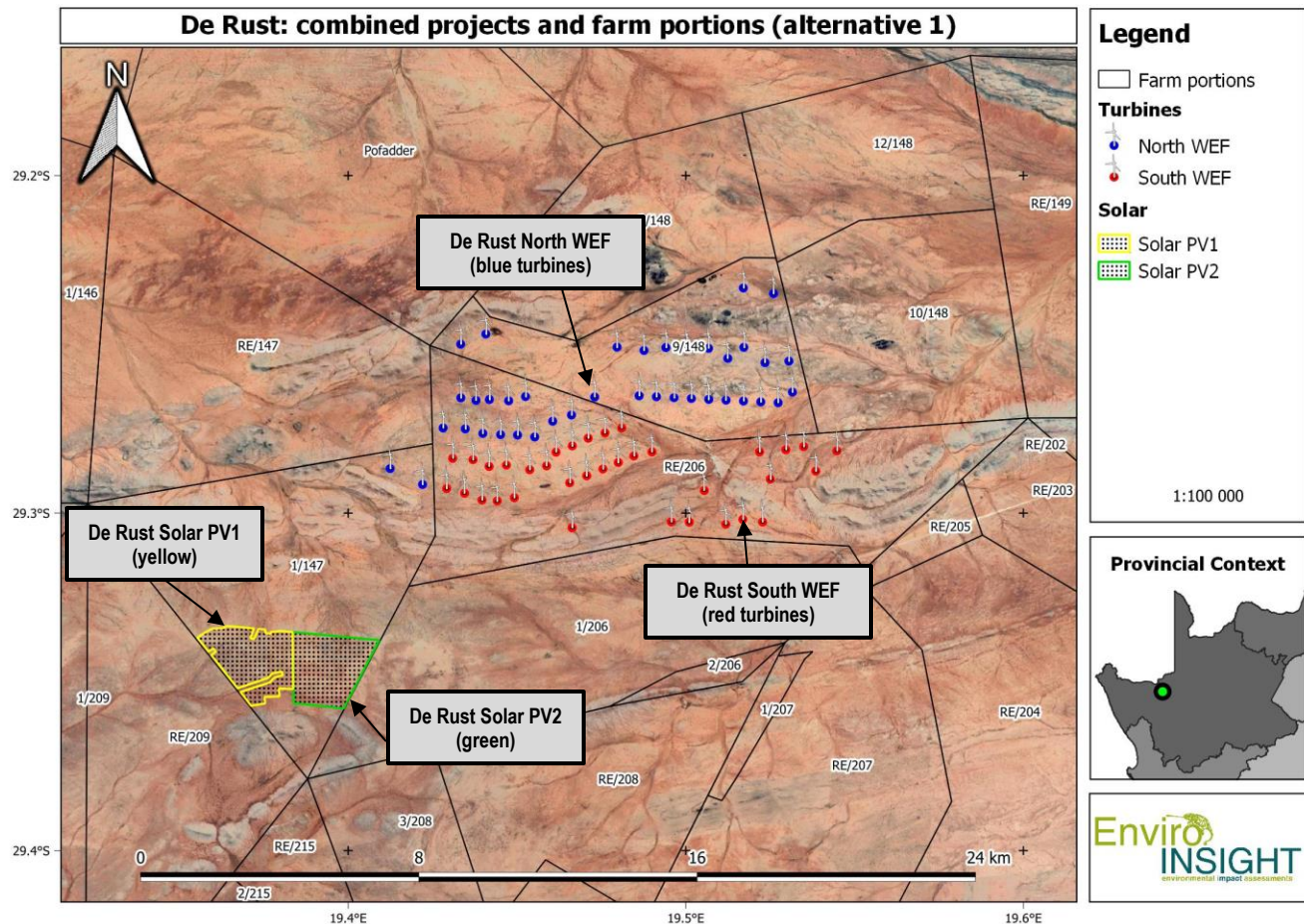
The proposed renewable energy facilities are separated as follows:

- **FE De Rust North WEF (this scoping report)**
- FE De Rust South WEF
- FE De Rust Solar PV1
- FE De Rust Solar PV2

Each turbine will have a generation capacity of up to 7.5 MW. Each turbine will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction, depending on the technology available at the time. Additional ancillary infrastructure would include underground and above-ground cabling between project components, onsite substation/s, Battery Energy Storage System (BESS), foundations to support turbine towers, internal/ access roads (up to 10 m in width during the construction phase) linking the wind turbines and other infrastructure on the site, and permanent workshop area and office for control, maintenance and storage. As far as possible, existing roads will be utilised and upgraded (where needed) with the relevant stormwater infrastructure and gates constructed as required. The perimeter of the proposed WEF may be enclosed with suitable fencing. A formal laydown area for the construction period, containing a temporary maintenance and storage building along with a guard cabin will also be established.

Additionally, the Applicant is proposing to construct a power line, with a capacity of 132kV-400kV that will facilitate the developments by feeding into the existing national electricity grid. This associated electrical infrastructure will require a separate Environmental Authorisation and will be conducted as a part of a separate Basic Assessment (BA) process.





*The four proposed renewable energy projects in relation to one another. This scoping report for environmental authorisation will only focus on the De Rust North WEF.*

## Project Introduction

FE De Rust (Pty) Ltd (hereafter the Applicant) is proposing the development of a wind energy facility (WEF) and associated infrastructure on a site located approximately 13 kilometers (km) south of Pofadder in the Northern Cape province of South Africa. The proposed development will have a generation capacity of up to 240MW which will feed into the National Grid. This report comprises the Draft Scoping Report (DSR) for the proposed development of the **De Rust North Wind Energy Facility (WEF)**.

The proposed study area for the WEF located approximately 13km south of the town of Pofadder within the Khâi-Ma Local Municipality, in the Northern Cape Province of South Africa. The site can be reached via the R358, which branches off the N14. The De Rust North WEF footprint is approximately 4 936 hectares (ha) and will be located on Portion 9 of the Farm Nouzees 148 Remaining Extent of the Farm Houmoed 206 and Portion 1 of the Farm Samoep 147.

The De Rust North WEF will consist of up to 39 wind turbines, with a generation capacity of between up to 7.5 MW per turbine, depending on the available technology at the time. Each turbine will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction, depending on the technology available at the time. Additional ancillary infrastructure to the WEF would include underground and above-ground cabling between project components, onsite substation/s, Battery Energy Storage Systems (BESS), foundations to support turbine towers, internal/ access roads linking the wind turbines and other infrastructure on the site, and permanent workshop area and office for control, maintenance and storage. As far as possible, existing roads will be utilised and upgraded (where needed) with the relevant stormwater infrastructure and gates constructed as required. The perimeter of the proposed WEF may be enclosed with suitable fencing. A formal laydown area for the construction period, containing a temporary maintenance and storage building along with a guard cabin will also be established.

Additionally, a power line with a capacity of up to 132kV-400kV is required. At this stage, options are still being considered for either the construction of a new line to feed into the Korana substation or connect with existing lines. This associated electrical infrastructure will require a separate Environmental Authorisation and is being conducted as a part of a separate Basic Assessment (BA) process. More details will be provided in the Final Environmental Impact Assessment Report (FEIAR).

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the Environmental Impact Assessment (EIA) Regulations (2014, as amended), promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017, a full Scoping and EIA Process is required for the construction of the proposed. Enviro-Insight CC (hereafter Enviro-Insight) has been appointed to undertake the Scoping & EIA (S&EIA) process for the WEF, on behalf of the Applicant. The S&EIA process will determine the biophysical, social and economic impacts associated with undertaking the proposed activities. Given that energy related projects have been elevated to national strategic importance in terms of the S&EIA process, the proposed WEF requires authorisation from the National Department of Forestry, Fisheries and the Environment (DFFE) as the Competent Authority (CA), acting in consultation with other spheres of government.

## **ENVIRONMENTAL LEGISLATIVE REQUIREMENTS**

As noted above, in terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the EIA Regulations (29014, as amended), promulgated in Government Gazette 40772 and Government Notice (GN) R326, R327, R325 and R324 on 7 April 2017, a full Scoping and EIA Process is required for the construction of the proposed De Rust North WEF. The need for the full Scoping and EIA is triggered by, amongst others, the inclusion of Activity 1 listed in GN R325 (Listing Notice 2):

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

Chapter 2 of this Draft Scoping Report contains the detailed list of activities contained in R327, R325, and R324 (EIA Regulations, 2014, as amended) which may be triggered by the various project components and thus form part of the S&EIA Process.

The purpose of the S&EIA is to identify, assess and report on any potential impacts the proposed project, if implemented, may have on the receiving environment. The impact assessment phase needs to show the CA (DFFE) and the project Applicant (FE De Rust) what the consequences of their choices will be in terms of impacts on the biophysical, social and economic environment and how such impacts can, as far as possible, be avoided or mitigated and managed.

## **SCOPING PHASE**

The purpose of the scoping report is to identify and evaluate the main issues and potential impacts of the proposed development at a detailed desktop level based on existing information.

The scoping phase is conducted as the precursor to the EIA phase during which:

- Project and baseline environmental information is collated. Baseline information for the scoping report is gathered through visual inspections during field visits of the proposed project area and surroundings, desktop studies which include GIS mapping, and review of existing reports, guidelines and legislation.
- Landowners, adjacent landowners, local authorities, environmental authorities, as well as other stakeholders which may be affected by the project, or that may have an interest in the environmental impacts of the project are identified.
- Interested and affected parties (I&APs) are informed about the proposed project.
- CA is consulted to confirm legal and administrative requirements.
- Environmental issues and impacts are identified and described.
- Development alternatives are identified and evaluated, and non-feasible development alternatives are eliminated.
- The nature and extent for further investigations and specialist input required in the EIA phase is identified.
- The draft and final scoping reports are submitted for review by authorities, relevant organs of state and I&APs.
- Key I&AP issues and concerns are collated into an issues and response report for consideration in the EIA phase.

Issues raised in response to this Draft Scoping Report (currently being released for a 30-day comment period) will be captured in a Comments and Response Report as an appendix to the Final Scoping Report (FSR), which will be submitted to the CA for decision-making (i.e. approval or rejection). If approved, it marks the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.

## PUBLIC PARTICIPATION PROCESS

The Public Participation Process (PPP) commenced on 2 November 2022 with the placement of site notices at prominent places on the boundary of the property in order to notify and inform the public of the proposed project and invite I&APs to register. All individuals who registered for this project has been added to the I&AP list, provided that they have given the correct and complete contact details in order to receive communications for this project. The notification procedure included (Appendix C):

- Newspaper advertisement: published in the Blesbok on 9 November 2022;
- Site Notices: erected at prominent points along the property boundaries and noticeable places on 2 November 2022; and
- Emails were composed and sent to the identified authorities, adjacent landowners, and I&APs that have registered thus far. I&APs were provided the opportunity to comment on the Background Information Document (BID).

The DSR will be released for comment for a 30-day period from the 14 December 2022 – 4 February 2023. Comments on the DSR will be included in the Final Scoping Report which will be submitted to DEA for decision-making.

## SCREENING TOOL REPORT

The Minister of Environment, Forestry and Fisheries, gave notice that the submission of a report generated from the national web-based environmental screening tool<sup>1</sup>, as contemplated in Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, will be compulsory from 4 October 2019 when submitting an application for environmental authorisation in terms of regulation 19 and regulation 21 of the Environmental Impact Assessment Regulations, 2014.

Based on the generated screening report, all environmental theme sensitivities are indicated below.

Theme	Very High sensitivity*	High sensitivity*	Medium sensitivity	Low sensitivity
Agriculture Theme				
Animal Species Theme				
Aquatic Biodiversity Theme				
Archaeological and Cultural Heritage Theme				
Avian (Wind) Theme				
Bats (Wind) Theme				

<sup>1</sup> <https://screening.environment.gov.za/screeningtool/#/pages/welcome>

Civil Aviation (Wind) Theme		
Defence (Wind) Theme		
Flicker Theme		
Landscape (Wind) Theme		
Paleontology Theme		
Noise Theme		
Plant Species Theme		
RFI (Wind) Theme		
Terrestrial Biodiversity Theme		

\* Require full assessments.

All the environmental themes followed the relevant protocols (20 March 2020; 30 October 2020) and accompanied guidelines (SANBI 2020) to assess and verify the sensitivities.

## SUMMARY OF RECEIVING ENVIRONMENT

Based on the scoping analysis, a few potentially sensitive sites have been identified within the study area. These will inform the layout alternatives and will be further assessed during the EIA phase. The table below summarises the specialist findings of the Scoping Report for the entire project.

<b>Terrestrial Biodiversity</b>	<p>The study area is situated within the Nama-Karoo Biome, a landlocked region in the central plateau of the western half of South Africa that represents the second largest biome, comprising approximately 248,284km<sup>2</sup>. It is essentially a grassy, dwarf shrubland, dotted with characteristic koppies, most of which lies between 1,000 and 1,400 meters above sea level. Eastwards, the ration of grasses to shrubs increases progressively, until the Nama Karoo eventually merges with the Grassland Biome. On the northern fringes the dwarf shrubland often has an overstory of shrubs and trees. It does not have a unique or species rich flora, with only 2.147 plants of which 386 (18%) are endemic and 67 are threatened.</p> <p>mainly located in an ESA with CBA2 surrounding it towards the west and south. All turbines are located within the ESA, which reduces the impacts of the proposed development footprint on the receiving environment. All associated infrastructure must be located outside the CBA2 as well.</p>
<b>Sensitive Plant Species Assessment</b>	<p>The plant species theme initially indicated Medium sensitive due to the presence of sensitive species 144, sensitive species 854, sensitive species 425 and Cephalophyllum fulleri. Sensitive species 144 was recorded during the site sensitivity verification. As per the screening report, four plant SCC are likely to occur on the study area.</p>
<b>Sensitive Animal Species Assessment</b>	<p>No sensitive fauna (mammals, herpetofauna or invertebrates) is expected to occur on the study area, as confirmed during the site verification. The avifauna component is addressed in a separate report.</p>



	<p>Accordingly, the impact of the De Rust North WEF on animals is considered to be medium to low should appropriate mitigation measures be followed.</p>
Avifauna	<p>The study area is located in a region dominated by natural and diverse koppies/ ridge, drainage line, karroid and sandy grassland and shrubland karoo vegetation types. Several drainage lines and small farm dams as well as small to large natural pans can be found scattered across the study area with most being mostly dry with some seasonal flow/ inundation. The powerline infrastructure that traverses the PAOI is a significant habitat for Martial Eagles.</p> <p>Fourteen priority species were recorded during the initial surveys, including Martial Eagle, Karoo Korhaan, Ludwig's Bustard, Lanner Falcon, Red Lark and Black-winged Kite. Of these, the Martial Eagle and Ludwig's Bustard was the most concerning large bird species. At the commencement of the survey, the PAOI was characterised by extremely atypical high rainfall in areas normally associated with arid conditions. The onset of a stochastic extreme rainfall event (wet season) may have atypically transformed the PAOI where it is possible that diluted densities (and perhaps diversity) of avifaunal assemblages may have been recorded due to an abundance of high forage value habitat that became temporarily available in the region. This increases the concern regarding large nomadic species such as bustards, large wide foraging raptors such as Martial Eagle and vultures seeking water sources within the PAOI when typical arid conditions return over the next 12 months</p>
Bats	<p>A total of six bat species were detected during the survey period, namely <i>L. capensis</i>, <i>M. natalensis</i>, <i>E. hottentotus</i>, <i>R. damarensis</i>, <i>T. aegyptiaca</i> and <i>S. petrophilus</i>, but <i>N. thebaica</i> is also expected to occur based on sightings nearby. The project area falls within the Nama Karoo biome, and, based on the SABPG (MacEwan et al., 2020b), a median bat passes per hour greater than 1.01 bp/hr at 'near ground' level is considered as a High Risk for bat fatalities, and above 0.18 as a Medium Risk. Different thresholds for fatality risk are applied to bat activity within the 'rotor sweep' height, with High Risk above 0.42 bp/hr and a Medium Risk above 0.03 bp/hr. This overall median for bat activity on the project area (at near-ground level only – 10 m) was 0.90 bp/hr, classifying this PA as Medium Risk. The detectors at 10 m recorded comparable measures of bat activity, with the exception of B7 which recorded considerably more activity. For bat detectors recording within the rotor sweep zone, the median bat activity was 0.73 bp/hr (65 m) and 0.46 bp/hr (110 m), classifying the PA as High Risk for bat fatality at these heights. Large spikes in activity were recorded during the peak activity period, and these appeared to be congruent between different bat detectors. Environmental variable correlates will be investigated for the final EIA report to attempt to find specific conditions to inform mitigation measures, as mitigation can be especially effective if these activity spikes can be predicted and anticipated. Mitigation will be an important aspect for the proposed WEF, especially as activity spikes and outlying values are "diluted" in median calculations, and the fatality risk according to median values is already classified as High for rotor-sweep heights (MacEwan et al., 2020b).</p> <p>Post-construction monitoring will play a vital role in determining when mitigation measures should be implemented and evaluation of the effectiveness of these measures, especially if preconstruction analysis</p>

	<p>cannot find good environmental predictors of bat activity. Mitigation measures to be implemented will include higher cut in speeds and curtailment (possibly including targeted turbine shutdowns) if required. However, if monitoring data indicate that fatalities thresholds are not being exceeded, curtailments may be relaxed or even removed. Sensitive bat features and their buffers have all been defined as No-Go areas and turbine blades must not encroach within these buffers, which should assist in reducing bat mortality by roosting and foraging bats.</p> <p>In summary, the current location of the project area falls in a High-Risk area for bat fatalities, and sporadic peaks of bat activity in late summer and early autumn will likely require specific and targeted mitigation. The preferred layout requires adjusting to avoid placing turbines within the sensitivity buffers. These findings are preliminary and may change as additional analyses are completed and thorough bat vocalisation identification are performed once all data are available for the preconstruction report.</p>
<b>Aquatic Biodiversity</b>	<p>Tate Environmental was appointed by Enviro-Insight Consulting as independent specialists to conduct the relevant wetland and riparian related studies in order to assist the facilitation of the required environmental authorisation and water use licence processes.</p> <p>The outcome of this assessment delineated 11 watercourse units within the site. These watercourses were considered to be minimally modified and in a largely natural PES. The watercourses were classified as having Very High and Moderate EIS ratings. A scientific buffer was calculated for the watercourses, however inline with the precautionary principle, and given the highly variable nature of the washes, it was proposed that a 100m buffer for depressions and a 40m wash buffer was utilised to protect these sensitive environments</p>
<b>Agriculture</b>	<p>The agricultural potential for the proposed project area is low as per the screening tool report. This is not only due to the predominantly rainfall constraints, but also due to the soil constraints. The terrain is unsuitable for cultivation and the opportunity for grazing is very limited for livestock. Currently, the land is not being utilised for livestock grazing. Due to the low potential an agricultural impact statement will be undertaken for the proposed WEF during the EIA phase.</p>
<b>Noise</b>	<p>It was determined that the potential noise impacts, without mitigation, would be:</p> <ul style="list-style-type: none"> <li>• of a low significance for the daytime construction activities (hard standing areas, excavation and concreting of foundations and the erection of the wind turbines and other infrastructure);</li> <li>• of a medium significance for the night-time construction activities (pouring of concrete, erection of turbine components). Mitigation is available to reduce the significance of the noise impact to low. It should be noted that the medium significance mainly relates the low ambient sound levels measured onsite as well as the precautionous approach in rating the potential noise impact;</li> <li>• of a low significance for daytime operational activities (noises from wind turbines) when considering the worst-case SPL; and</li> <li>• of a low significance for night-time operational activities (noises from wind turbines) when considering the worst-case SPL.</li> </ul>

	<p>There is no potential for a cumulative noise impact on any NSR.</p> <p>While the total projected noise levels will exceed the rural rating levels, the projected noise level will be less than 42 dBA and active noise monitoring is not recommended.</p> <p>Considering the Low significance during the operational phase (medium for night-time construction activities, which can be reduced to a low significance with the implementation of the recommended mitigation measures) it is recommended that the proposed De Rust North WEF (and associated infrastructure) be authorized. The proposed layout (i.e., turbine placement) is considered to be acceptable from a noise perspective. No further noise studies are required (if the layout does not change, or the applicant use a WTG with an SPL less than 109.2 dBA re 1 pW).</p>
<b>Visual and Flicker</b>	<p>The Flicker and Landscape Theme in terms of the screening report indicated that the flicker theme sensitivity is high. A full visual and flick theme analysis will be undertaken by EcoElementum. The full impact assessment will be included during the EIA phase</p>
<b>Heritage</b>	<p>The Screening Tool indicated that the Archaeological and Cultural Heritage Theme has a low sensitivity and the Palaeontology Theme as Medium Sensitivity, even though the sensitivity is low and medium it was concluded that a Heritage Impact Assessment be conducted by Jaco van der Walt from HCAC. A Heritage Impact Assessment is undertaken to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the additional structures. A Heritage and Palaeontology Assessment will be included in the EIA phase of the proposed development</p>
<b>Socio-economic</b>	<p>The findings of the Scoping level SIA indicate that the proposed De Rust North WEF will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development through socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation. The findings of the SIA also indicate that the potential negative impacts associated with both the construction and operational phase are likely to be Low Negative with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The site is also located within the Springbok REDZ. The area has therefore been identified for the development of renewable energy projects. The establishment of the proposed De Rust North WEF is therefore supported by the findings of the Scoping level SIA.</p>
<b>Traffic</b>	<p>It is anticipated that the required components will be imported will be shipped to Coega, Saldanha Bay Harbour or Cape Town harbour and then transported via road, N14 and R358, to the site from Coega, Saldanha Bay or Cape Town harbours, depending on the load restrictions. Specialized high lifting and heavy load capacity cranes will be utilised to erect the turbines. The wind farm will be built in one phase, with a total construction period of up to 24 months.</p>
<b>Wake Impact</b>	<p>A Wake Impact Assessment will be conducted during the EIA phase</p>



## PLAN OF STUDY

In line with the relevant legislative requirement, the Plan of Study (PoS) for the EIA phase of the assessment is indicated in this report. Consultation with DFFE will be ongoing throughout this S&EIA process. However, it is anticipated that DFFE will provide relevant comment with respect to the adequacy of this PoS for the EIA, as it informs the scope and scale of the EIR.

The Scoping Phase has identified potential environmental impacts, specialist studies required to assess these impacts and indicated the alternatives that require further discussion and assessment during the EIA phase. The relevant section outlines the proposed PoS which will be conducted for the various environmental aspects during the EIA Phase. It is also important to note that the PoS will also be guided by comments obtained from I&AP's and other stakeholders during the commenting period.

The objective of the EIA phase will be to:

- Identify and assess the environmental (biophysical and social) impacts of the construction, operation, and decommissioning impacts of the proposed development. The cumulative impacts of the proposed development will also be identified and evaluated;
- Alternative activities and locations will be determined and assessed in parallel with the proposed activity;
- Identify and evaluate potential management and mitigation measures that will reduce the negative impacts of the proposed development and enhance the positive impacts;
- Compile monitoring, management, mitigation and training needs in the EMP; and
- Provide the decision-making authorities with sufficient and accurate information in order to make a sound decision on the proposed development.

The Impact Assessment Phase has four key elements:

- Specialist Studies: Specialist studies identified during the Scoping Phase and DFFE Screening Report, and any additional studies that may be required by the competent authority, are undertaken as the initial phase of the EIA. The relevant specialists have already been appointed to undertake the various assessments prior to the commencement of the EIA phase in order to identify potential fatal flaws from an early stage in the process and inform the PoS. Specialists will gather baseline information relevant to the study being undertaken and assess impacts associated with the development. Specialists will also indicate areas to be avoided, make recommendations to mitigate negative impacts and optimise benefits. The resulting information is synthesised into the draft EIAR (with the complete assessment attached to the EIAR) that will be made available to I&APs for review and comment.
- Environmental Impact Assessment Report (EIAR): The main purpose of this Report is to gather environmental information and evaluate the overall impacts associated with the project, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIAR also identifies mitigation measure/management recommendations to minimise negative impacts and enhance benefits. The draft EIAR and associated reports will be made available for public and authority review and comment for a period of 30

days. The availability of the draft EIAR will be communicated to all registered I&APs and will be accessible through various platforms to be confirmed at the time. After comments have been received, the final EIAR will be compiled and submitted to the DFFE for review. This report will assist the DFFE in making an informed decision on whether to grant or reject the proposed development.

- Environmental Management Programme (EMPr): The EMPr provides guidelines to the Applicant and the technical team on how to best implement the mitigation measure/ management recommendations outlined in the EIAR during the construction, operational and decommissioning phase. The EMPr is a law binding document, and once approved it cannot be amended without permission from the DFFE.
- Public Participation Process (EIA Phase): The PPP initiated during the Scoping Phase, is continued. This includes continuous engagement with I&APs and stakeholders which includes consultation meetings, receiving comments, issues and concerns raised by I&APs and the authorities during the review period, and also provides relevant responses to these comments. Comments on the Draft EIAR received from I&APs are included and addressed in the final submitted EIAR in the form of a Comments & Response Report

## NEMA EIA REGULATIONS REQUIREMENTS FOR SCOPING REPORT

### Appendix 2: Content of the scoping report

2. (1) scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process, and must include—

Appendix 2 Regulation 2	Content as per Appendix 2 of NEMA EIA Regulations 2014 (as amended)	Section
a)	details of— (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae.	1.3
b)	the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	2.1
c)	a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is— (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	1, 2.1 & 5.1
d)	a description of the scope of the proposed activity, including— (i) all listed and specified activities triggered; and (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	2.1 3.4
e)	a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	3
f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	2.4

	a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including	
	(i) details of the alternatives considered;	7.1
	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	4.3
	(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;	4.3, to be updated in final scoping report
	(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	5
	(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts—	6.3
g)	(aa) can be reversed;	
	(bb) may cause irreplaceable loss of resources; and	
	(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 associated with the alternatives;	6.1
	(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;	6.3
	(viii) the possible mitigation measures that could be applied and level of residual risk;	6.4
	(ix) the outcome of the site selection matrix;	NA – will be completed in EIR
	(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	7.1
	(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	Further assessed in EIA
h)	a plan of study for undertaking the environmental impact assessment process to be undertaken, including—	7

	(i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;	7.1
	(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;	7.2
	(iii) aspects to be assessed by specialists;	7.3
	(iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;	6.1 7.4
	(v) a description of the proposed method of assessing duration and significance;	6.1 7.4
	(vi) an indication of the stages at which the competent authority will be consulted;	4.3 7.5
	(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process;	7.5
	(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	7.6
	(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Will be addressed in the EIA phase
i)	an undertaking under oath or affirmation by the EAP in relation to— (i) the correctness of the information provided in the report; (ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix G
j)	an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;	Will be included after the commenting period
k)	where applicable, any specific information required by the competent authority; and	Currently, not applicable
l)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	Currently, not applicable

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## ABBREVIATIONS

<b>BESS</b>	Battery Energy Storage Systems
<b>BID</b>	Background Information Document
<b>CARA</b>	Conservation of Agricultural Resources Act
<b>CBA</b>	Critical Biodiversity Area
<b>DFFE</b>	Department of Forestry, Fisheries and the Environment
<b>DM</b>	District Municipality
<b>DMRE</b>	Department of Mineral Resources and Energy
<b>DWS</b>	Department of Water and Sanitation
<b>EA</b>	Environmental Authorisation
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EIR</b>	Environmental Impact Report

<b>EMFs</b>	Environmental Management Framework
<b>EMPr</b>	Environmental Management Programme
<b>ESA</b>	Ecological Support Area
<b>EWT</b>	Endangered Wildlife Trust
<b>FEPA</b>	Freshwater Ecosystem Priority Areas
<b>GIS</b>	Geographical Information System
<b>GNR</b>	Government Notice Regulation
<b>ha</b>	Hectare
<b>HIA</b>	Heritage Impact Assessment
<b>I&amp;APs</b>	Interested and Affected Parties
<b>IBA</b>	Important Bird and Biodiversity Area
<b>IDP</b>	Integrated Development Plan
<b>IEP</b>	Integrated Energy Plan
<b>IPP</b>	Independent Power Producer
<b>IRP</b>	Integrated Resource Plan
<b>IUCN</b>	International Union for Conservation of Nature
<b>kV</b>	Kilovolt
<b>LM</b>	Local Municipality
<b>Ltd</b>	Limited
<b>m/s</b>	Meters per second
<b>MAP</b>	Mean Annual Precipitation
<b>MAT</b>	Mean Annual Temperature
<b>MPRDA</b>	Mineral and Petroleum Resources Development Act (Act No. 28 of 2002 as amended)
<b>MW</b>	Megawatts
<b>NCDEANC</b>	Northern Cape Department of Environmental Affairs and Nature Conservation
<b>NDP</b>	National Development Plan
<b>NEM: AQA</b>	National Environmental Management: Air Quality Act (Act No. 39 of 2004)
<b>NEM: BA</b>	National Environment Management: Biodiversity Act (Act 10 of 2004)
<b>NEM: PAA</b>	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
<b>NEM: WMA</b>	National Environmental Management: Waste Management Act (Act No. 59 of 2008)
<b>NEMA</b>	National Environmental Management Act (Act 107 of 1998) (as amended)
<b>NERSA</b>	National Energy Regulator of South Africa
<b>NFEPA</b>	National Freshwater Ecosystem Priority Areas

<b>NHRA</b>	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
<b>NPAES</b>	National Protected Areas Expansion Strategy
<b>NRTA</b>	National Road Traffic Act
<b>NWA</b>	National Water Act
<b>PES</b>	Present Ecological State
<b>PICC</b>	Presidential Infrastructure Coordinating Committee
<b>PNCO</b>	Provincial Nature Conservation Ordinance
<b>PoS</b>	Plan of Study
<b>PPP</b>	Public Participation Process
<b>REDZs</b>	Renewable Energy Development Zones
<b>REIPPPP</b>	Renewable Energy Independent Power Producer Procurement Programme
<b>REPA</b>	Renewable Energy Purchasing Agency
<b>S&amp;EIR</b>	Scoping and Environmental Impact Reporting process contemplated in regulation 21 to regulation 24 of the EIA Regulations (2014, as amended)
<b>SAAO</b>	South African Astronomical Observatory
<b>SABAA</b>	South African Bat Assessment Association
<b>SABAP</b>	The Southern African Bird Atlas Project
<b>SACCA</b>	South African Civil Aviation Authority
<b>SACNASP</b>	South African Council for Natural Scientific Professions
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SANBI</b>	South African National Biodiversity Institute
<b>SANRAL</b>	South African National Roads Agency
<b>SARCA</b>	Southern African Reptile Conservation Assessment
<b>SARI</b>	South African Renewables Initiative
<b>SAWS</b>	South African Weather Services
<b>SCC</b>	Species of Conservation Concern
<b>SDF</b>	Spatial Development Framework
<b>SDP</b>	Spatial Development Plan
<b>SIA</b>	Social Impact Assessment
<b>SIPs</b>	Strategic Integrated Projects
<b>SKA</b>	Square Kilometre Array
<b>SKEP</b>	Succulent Karoo Ecosystem Programme
<b>WEF</b>	Wind Energy Facility

**WESSA** Wildlife and Environmental Society of Southern Africa  
**WRC** Water Research Commission

## DEFINITIONS AND TERMINOLOGY

**Activity:** means an activity identified in any notice published by the Minister or MEC in terms of section 24D(1)(a) of the NEMA as a listed activity or specified activity

**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—

- (a) property on which or location where the activity is proposed to be undertaken;
- (b) type of activity to be undertaken;
- (c) design or layout of the activity;
- (d) technology to be used in the activity; or
- (e) operational aspects of the activity;

and includes the option of not implementing the activity;

**Application:** an application for an environmental authorisation in terms of Chapter 4 of the EIA Regulations (2014 as amended).

**Archaeology:** Remains resulting from human activities which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.

**Avifauna Priority Species:** Threatened or rare birds (in particular those unique to the region and especially those which are possibly susceptible to wind-energy impacts), which occur in the given development area at relatively high densities or have high levels of activity in the area. These species should be the primary (but not the sole) focus of all subsequent monitoring and assessment.

**Bat acoustic monitoring:** Bat sampling conducted through recording and analysing echolocation call.

**Bat Roost:** This term has a dual application and is used to describe the structure (house, shed, bridge, tree, cave, etc.) within or on which a number of bats take shelter. Secondly, the bats within or on such a structure are also referred to as a roost of bats. 'Roost' does not infer a genetic or social association between the bats within a structure.

**Biodiversity:** Variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems.

**Cumulative impact:** 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.

**Cut-in speed:** The minimum wind speed at which the wind turbine will generate usable power.

**Cut-out speed:** The wind speed at which shut down occurs.

**Development:** the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

**Development footprint:** any evidence of physical alteration as a result of the undertaking of any activity.

**Environmental authorisation:** The Competent Authority's grant or denial of permission to undertake the proposed activity. Previously referred to as the Record of Decision (RoD).

**EAP:** an environmental assessment practitioner as defined in section 1 of the NEMA.

**EMPr:** an environmental management programme contemplated in regulation 23 of the EIA Regulations (2014 as amended).

**Environmental Impact Assessment:** a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and S&EIR.

**Indigenous vegetation:** refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

**Mitigation:** to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

**Mitigation Hierarchy:** a tool that guides users towards limiting as far as possible the negative impacts on the receiving environment from development projects. It emphasises best-practice of avoiding and minimising any negative impacts, and then restoring sites no longer used by a project, before finally considering offsetting residual impacts.

**Nacelle:** The body of a propeller-type wind turbine, containing the gearbox, generator, blade hub and other parts.

**No-Go areas:** refers to the option of not implementing the activity.

**One environmental system:** Agreement between the ministers of DEFF, DWS and DMRE to regulate all environmental related aspects and give effect to fixed and synchronised timeframes for the consideration and issuing of the decisions.

**Palaeontology:** Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

**Plan of study:** a study contemplated in regulation 22 of the EIA Regulations (2014 as amended) which forms part of a scoping report and sets out how an environmental impact assessment will be conducted.

**Population:** the number of individuals of a given species occupying a certain area of land over a certain period of time.

**Pre-construction monitoring and impact assessment (avifauna and bat specific):** a full assessment of the significance of likely impacts and available mitigation options, based on the results of systematic and quantified monitoring.

**Registered interested and affected party:** in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42 of the EIA Regulations (2014 as amended).



**Renewable energy:** Energy that comes from sources that are continually replenished, such as sunlight, wind, rain, tides, waves, and geothermal heat.

**Rotor:** The portion of the wind turbine that collects energy from the wind is called the rotor. The rotor converts the energy in the wind into rotational energy to turn the generator. The rotor has three blades that rotate at a constant speed of about 15 to 28 revolutions per minute (rpm).

**Rotor-swept area:** The area of the circle or volume of the sphere swept by the turbine blades.

**Scoping Report:** a report contemplated in regulation 21 of the EIA Regulations (2014 as amended).

**Significant Impact:** an impact that may have a notable effect on one or more aspects of the environment or may result in noncompliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

**Specialist:** a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies. A specialist needs to be professionally registered (e.g. with the South African Council for Natural Scientific Professions).

**Tower:** The tower supports the rotor, and is constructed from tubular steel and/or concrete. The nacelle and the rotor are attached to the top of the tower. The tower raises the wind turbine so that its blades safely clear the ground in order to reach the stronger winds at higher elevations. The tower must be strong enough to support the wind turbine and to sustain vibration, wind loading and the overall weather elements for the lifetime of the wind turbine.

**Watercourse:** Definition adapted from the National Water Act, 1996 (No. 36 of 1998):

- A river or spring;
- A natural channel in which water flows regularly or intermittently;
- A wetland, lake or dam into which, or from which, water flows; and
- Any collection of water, such as natural pans and farm dams.

**Wind energy facility:** A group of wind turbines often owned and maintained by one company, also known as a wind power plant or wind farm.

**Wind rose:** The diagrammatic representation of joint wind speed and direction distribution at a particular location. The length of time that the wind comes from a particular sector is shown by the length of the spoke, and the speed is shown by the thickness of the spoke.

**Wind turbine:** A device that converts kinetic energy from the wind, also called wind energy, into electrical energy in a process known as wind power.

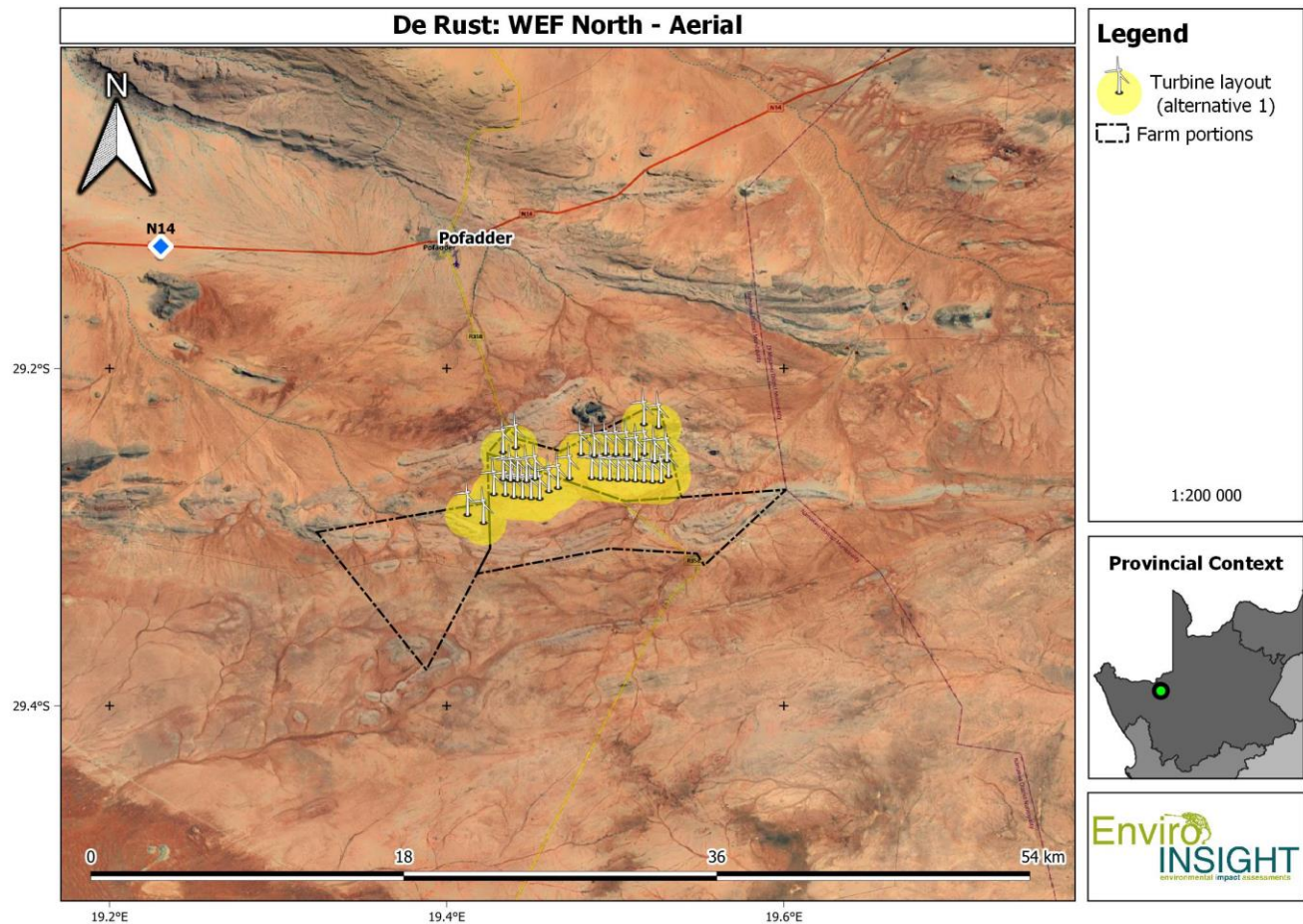
## 1 INTRODUCTION

FE De Rust (Pty) Ltd (hereafter the Applicant) is proposing the development of a wind energy facility (WEF) and associated infrastructure on a site located approximately 13 kilometers (km) south of Pofadder in the Northern Cape province of South Africa. The proposed development, to be known as De Rust North WEF, will have a generation capacity of up to 240MW which will feed into the National Grid. Enviro-Insight CC (hereafter Enviro-Insight) has been appointed to undertake the requisite environmental impact assessment (EIA) process for the WEF as required in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, on behalf of the Applicant.

The proposed study area for the WEF development is located approximately 13km south of Pofadder within the Khâi-Ma Local Municipality, in the Northern Cape. The site can be reached via the R358 which branches off the N14 (Figure 1-1). The De Rust North WEF footprint is approximately 4 936 hectares (ha) and will be located on Portion 9 of the Farm Nouzees 148 (21-digit Surveyor General code: C03600000000014800009), Remaining Extent of the Farm Houmoed 206 (21-digit Surveyor General code: C03600000000020600000) and Portion 1 of the Farm Samoep 147 (21-digit Surveyor General code: C03600000000014700001) (Figure 1-2).

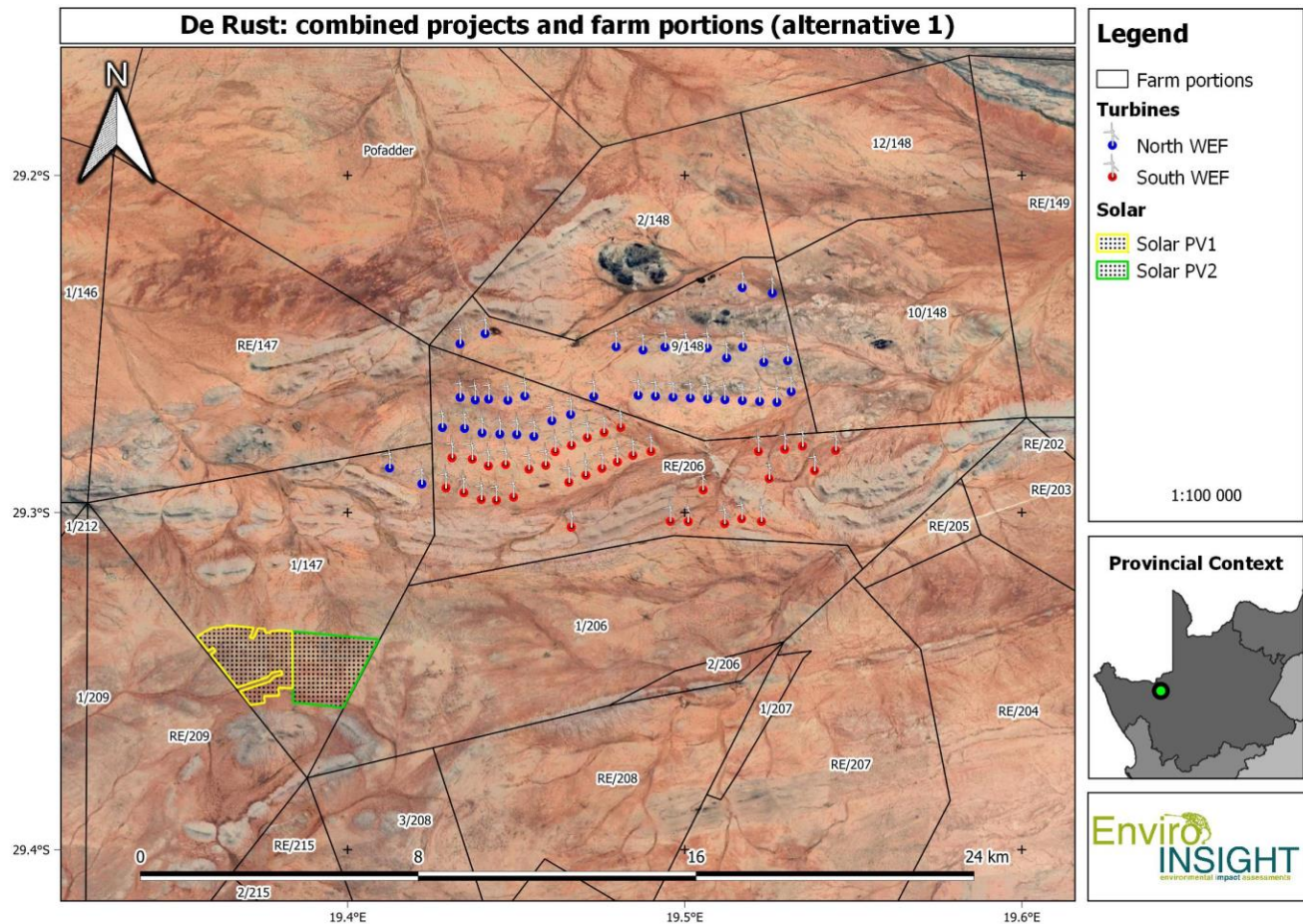
The De Rust North WEF will consist of up to 39 wind turbines, with a generation capacity of up to 7.5 MW per turbine, depending on the available technology at the time. Each turbine will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction, depending on the technology available at the time. Additional ancillary infrastructure to the WEF would include underground and above-ground cabling between project components, onsite substation/s, Battery Energy Storage Systems (BESS), foundations to support turbine towers, internal/ access roads (up to 10 m in width during the construction phase) linking the wind turbines and other infrastructure on the site, and permanent workshop area and office for control, maintenance and storage. As far as possible, existing roads will be utilised and upgraded (where needed) with the relevant stormwater infrastructure and gates constructed as required. The perimeter of the proposed WEF may be enclosed with suitable fencing. A formal laydown area for the construction period, containing a temporary maintenance and storage building along with a guard cabin will also be established.

Additionally, a power line with a capacity of up to 132kV-400kV is required. At this stage, options are still being considered for the construction of a new line to feed into the Korana substation. This associated electrical infrastructure will require a separate Environmental Authorisation and is being conducted as a part of a separate Basic Assessment (BA) process. More details will be provided in the Environmental Impact Assessment Report (EIAR).



**Figure 1-1: Locality map of the proposed De Rust North WEF.**





*Figure 1-2: Farm portions of the study area and surrounding farms.*

## 1.1 STRUCTURE OF THE SCOPING REPORT

This Scoping Report consists of the following sections:

- Chapter 1: Introduces the De Rust North WEF project, the project team and a general description of the scoping phase.
- Chapter 2: Description of the proposed project, including the need and desirability.
- Chapter 3: Legal context relevant to the project.
- Chapter 4: Scoping and EIR Process approach and methodology which includes the public participation process
- Chapter 5: Description of the receiving environment
- Chapter 6: Impact Assessment
- Chapter 7: A plan of study for undertaking the environmental impact assessment process to be undertaken

## 1.2 APPLICANT DETAILS

<b>Applicant</b>	FE DE RUST PTY LTD
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## 1.3 THE ENVIRONMENTAL IMPACT ASSESSMENT PROJECT TEAM

### 1.3.1 Environmental Assessment Practitioner (EAP)

FE De Rust (Pty) Ltd has appointed Enviro-Insight CC as an independent Environmental Assessment Practitioner (EAP) to undertake a Scoping and Environmental Impact Assessment (S&EIA) process for the proposed De Rust North WEF. Enviro-Insight CC has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations (2014, as amended). For purposes of this S&EIA, the following person may be contacted at Enviro-Insight CC:

*Table 1-1: Enviro-Insight contact details*

<b>Company</b>	Enviro-Insight CC
<b>Contact Person</b>	Marvin Ryan Grimett / Ronell Kuppen
<b>Purpose</b>	Environmental Assessment Practitioner and Environmental Consultant
<b>Address:</b>	Unit 8 Oppidraai Office Park, 862 Wapadrand Road, Wapadrand Security Village, Pretoria, 0081
<b>Telephone:</b>	012 807 0637
<b>Email:</b>	<a href="mailto:info@enviro-insight.co.za">info@enviro-insight.co.za</a>

#### 1.3.1.1 Qualifications and Memberships

Mr. Grimett holds a Bachelor of Social Science (Honours)- Geography and Environmental Management and is registered as an EAP (2019/1713.) with EPASA. He has more than 7 years' experience as an environmental assessment practitioner.

Ms. Kuppen has an BSc (Honours) degree in Geography, with approximately 10 years' experience in the environmental consulting field, ranging from EIA's, WULAS and Public Participation.

#### 1.3.1.2 Summary of past experience

Mr. Grimett has over seven years' experience as an environmental consultant, compiling and managing several environmental authorisation reports, including Environmental Management Programmes (EMPr), rehabilitation plans and environmental auditing. This included fieldwork, data collection, preparation of permits and licensing studies, compliance monitoring and community engagement, and project managing interdisciplinary teams and contractors.

Ms. Kuppen has approximately 10 years' experience in the environmental consulting field, ranging from EIA's, WULAS and Public Participation and ECO's

### 1.3.2 Specialists

Specialist studies will be undertaken to address the key issues that require further investigation based on the screening report generated (Appendix D). The specialist studies involve the gathering of data relevant to identifying and assessing impacts that may occur as a result of the proposed project. The specialists will also recommend appropriate mitigation or optimisation measures to minimise potential negative impacts or enhance potential benefits, respectively.

Enviro-Insight has selected a team of highly experienced specialists in order to execute this S&EIA in a professional and impartial manner. The project team, specifically the sub-consultants, is indicated in Table 1-2

**Table 1-2: EIA sub-consultant Project Team.**

Specialist Assessment	Company	Professional Specialist
Terrestrial Biodiversity	Enviro-Insight CC	Corné Niemandt <i>Pr.Sci.Nat.</i> Samuel Laurence <i>Pr.Sci.Nat.</i> Alex Rebelo <i>Cand.Sci.Nat.</i>
Sensitive Plant Species	Enviro-Insight CC	Corné Niemandt <i>Pr.Sci.Nat.</i>
Avifauna	Enviro-Insight CC	Samuel Laurence <i>Pr.Sci.Nat.</i> AE Van Wyk <i>Cand.Sci.Nat.</i>
Bats	Enviro-Insight CC	Alex Rebelo <i>Cand.Sci.Nat.</i> Luke Verburgt <i>Pr.Sci.Nat.</i> AE Van Wyk <i>Cand.Sci.Nat.</i>
Aquatic Biodiversity	Tate Environmental	Russell Tate <i>Pr.Sci.Nat.</i>
Socio-economic	Independent social sciences consultant	Tony Barbour
Noise	Enviro Acoustic Resources (EAR)	Morné de Jager
Traffic	Innovative Transport Solutions Global	Pieter Arangie
Visual and Flicker	EcoElementum	Nakéla Naidoo Neel Breitenbach
Heritage and Paleontological	HCAC	Jaco van der Walt
Agriculture Compliance Statement	Independent Consultant	Johann Lanz

In addition to the S&EIR process, Enviro-Insight has provided a Terrestrial Biodiversity team that has conducted the avifauna, bats, sensitive plant species and terrestrial biodiversity assessments for this project. Accordingly, an independent specialist for each of these assessments will be appointed for the final review of the EIA reports in order to ensure that all reports are independent and unbiased.

Neither Enviro-Insight nor any of its sub-consultants are subsidiaries of *FE De Rust*, nor is *FE De Rust* a subsidiary to Enviro-Insight. Enviro-Insight, its sub-consulting specialists, and external reviewers, do not have any interests in secondary or downstream developments that may arise out of the authorisation of the proposed project.

## 1.4 ASSUMPTIONS AND LIMITATIONS

Certain assumptions, limitations, and uncertainties are associated with the Scoping Phase. This report is based on information that is currently available and, as a result, the following limitations and assumptions are applicable:

- This report is based on project information provided by the Applicant, the initial layout design and the updated screening report dated November 2022;
- This report is based on a project description taken from client meetings, preliminary drawings and design specifications for the proposed WEF that have not yet been finalised and which are likely to undergo a number of iterations and refinements before they can be regarded as definitive and proposed methodology for the operations. Detailed information will be provided in the EIA Phase;
- No specialist studies have been completed for the scoping phase. Descriptions of the environmental, economic and social environments are based on limited desktop assessments and available literature for the area. Where necessary, specialists have been consulted. More detailed information will be provided in the EIA phase based on the outcomes of the specialist studies. Limited scoping-phase specialist input was obtained for inclusion in this report;
- The description of the baseline environment and where possible the up-to-date information has been obtained from various sources. More detailed information will be provided in the EIA phase based on the outcomes of the specialist studies, and the finalisation of the design layout;
- A detailed impact assessment cannot be done at present as the levels of confidence are considered low until detailed specialist input and comments from the I&APs are obtained which will be presented and discussed in more detail during the EIA phase;
- Public Participation is a continuous process and will continue throughout the EIA process. I&APs can register at any time and contact the EAP regarding comments, issues or concerns throughout the process. I&APs should not wait until an opportunity arises such as when the draft reports are released for review and comment to raise their concerns or interact with the EAP.

## 2 DESCRIPTION OF THE PROPOSED PROJECT

### 2.1 NATURE AND EXTENT OF PROPOSED DE RUST NORTH WEF

The Applicant is responding to the growing electricity demand within South Africa, the current infrastructure failure which disrupts sufficient electricity supply, and the increasing pressure on countries to reduce their reliance on fossil fuels, by addressing the need for sustainable renewable energy in the country. Accordingly, the Applicant is proposing the development of a commercial WEF and associated infrastructure on the remainder of the farm Sous, located south of Pofadder, to add new capacity to the national electricity grid.

The proposed study area for the WEF development is located approximately 13km south of Pofadder. The site can be reached via the R358 which branches off the N14 (Figure 1-1). The De Rust North WEF footprint is approximately 4 936 hectares (ha) and will be located on Portion 9 of the Farm Nouzees 148, Remaining Extent of the Farm Houmoed 206 and Portion 1 of the Farm Samoep 147 (Figure 1-2).

**Table 2-1: Project summary**

De Rust WEF North		
Farm name(s)/ Erf No	Portion 9 of the Farm Nouzees 148 Remaining Extent of the Farm Houmoed 206 Portion 1 of the Farm Samoep 147	
21-digit Surveyor General code	C03600000000014800009, C03600000000020600000, C03600000000014700001	
Number of Turbines	Up to 39	
Ward	6	
Local Municipality	Khâi-Ma Local Municipality	
District Municipality	Namakwa District Municipality	
Co-ordinates of the proposed site/s (DDMMSS)	Latitude (S)	Longitude (E)
Point A	29°15'5.20"S	19°25'22.82"E
Point B	29°14'10.05"S	19°26'13.74"E
Point C	29°14'32.69"S	19°26'34.03"E
Point D	29°14'57.57"S	19°28'6.39"E
Point E	29°13'25.59"S	19°30'57.44"E
Point F	29°13'29.13"S	19°31'38.70"E
Point G	29°16'32.17"S	19°32'24.56"E



Point H	29°16'16.83"S	19°36'6.81"E
Point I	29°19'1.28"S	19°33'12.44"E
Point J	29°18'35.50"S	19°32'52.81"E
Point K	29°18'23.95"S	19°29'48.17"E
Point L	29°19'20.71"S	19°25'5.28"E
Point M	29°22'42.95"S	19°23'18.93"E
Point N	29°17'50.60"S	19°19'26.26"E
Point O	29°16'44.13"S	19°25'26.55"E
Mid-Point	29°15'45.57"S	19°29'18.81"E
State the extent of proposed development	approximately 4 936 hectares	
What is the current zoning and current land use of the site(s)?	Agricultural	

## 2.2 PROJECT DESCRIPTION

The proposed De Rust North WEF will consist of up to 39 wind turbines (24 turbines on Portion 9 of the Farm Nouzees 148, 13 turbines on Remaining Extent of the Farm Houmoed 206 and 2 turbines on Portion 1 of the Farm Samoep 147). The proposed WEF will have a generation capacity of up to 7.5 MW per turbine, depending on the available technology at the time. Each turbine will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction, depending on the technology available at the time. The optimal positioning (taking into account the energy generating potential) for each turbine will be determined once all the environmental sensitivities have been determined in the EIA phase. The final layout design and development footprint will be included in the EIA report.

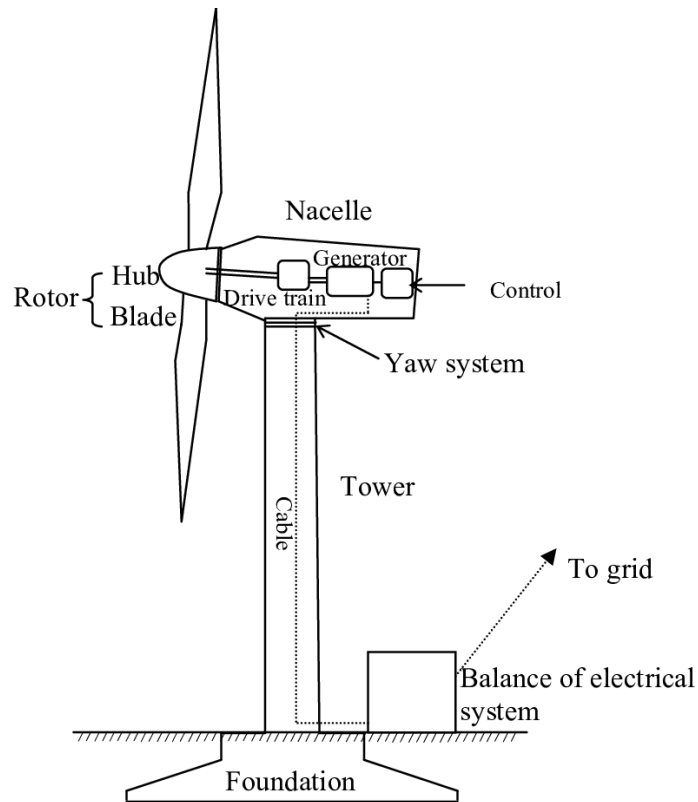
The components of the WEF and associated infrastructure are as follows:

- up to 39 wind turbines, with a generation capacity of up to 7.5 MW per turbine (depending on the available technology at the time),
- turbines will have a hub height of up to 150m and a rotor diameter of up to 175m. The final turbine model to be utilised will only be determined closer to the time of construction (depending on the technology available at the time),
- onsite substation/s of 100mX100m (33/132kV) to facilitate the connection between the WEF and Korana substation,
- a Battery Energy Storage System (BESS),
- concrete foundations to support turbine towers,
- cabling between turbines, to be laid underground where practical,
- internal/ access roads (up to 10 m in width during the construction phase) linking the wind turbines and other infrastructure on the site,
- permanent workshop area and office for control, maintenance and storage, and

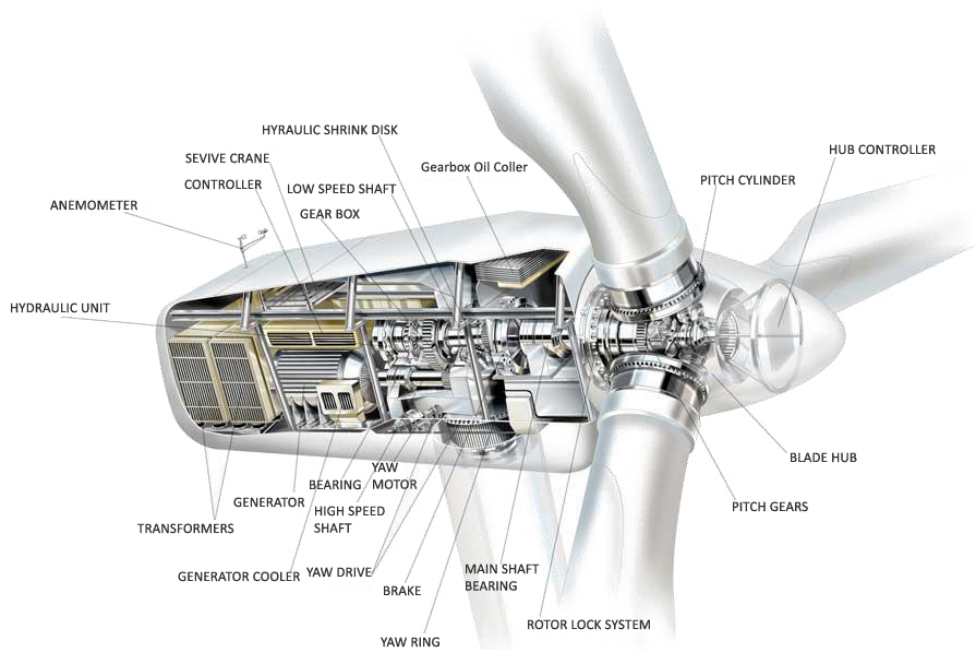
- temporary laydown areas during the construction phase (which will be rehabilitated).

The components of a typical wind turbine subsystem are depicted by Figure 2-1 and Figure 2-2, which entails:

- **Rotor (consisting of hub and 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 and change the angle of the blades to make the most use of the available wind. The proposed rotor diameter for the De Rust North WEF will be up to 175m.
- **Nacelle** – The nacelle contains a set of gears and a generator. The generator converts the turning motion of a wind turbines blade (mechanical energy) into 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, which prevents the turbine from being damaged
- **Tower** – The rotor and nacelle are mounted on top of a tower. The tower (either steel or concrete) is constructed to hold the rotor blades off the ground (structural support) and also raises the hub 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 De Rust North WEF turbines is proposed up to 150m.
- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.



**Figure 2-1: Simplified diagram of the main components of a horizontal axis wind turbine. Source: Albadi (2010).**



**Figure 2-2: Industrial Wind turbine components diagram. Source: The Renewable energy Hub<sup>2</sup>.**

<sup>2</sup> <https://www.renewableenergyhub.co.uk/main/wind-turbines/how-does-a-wind-turbine-work/>

## 2.3 PROJECT DEVELOPMENT PHASES

The following section describes the details the different phases of the proposed De Rust North WEF:

- Pre-construction;
- Construction;
- Operation; and
- Decommission.

### Pre-construction

Prior to the commencement of the main construction works, the Contractor will undertake vegetation clearance and site establishment works.

This phase ensures that all design layouts are finalised, that risks associated with the construction phase is discussed and mitigated prior to commencement, to do a final walkdown of the study area and to apply and secure the necessary permits. The 'search and rescue' procedure with regards to plants, animals and heritage features must be done, and all sensitive areas with their buffers must be demarcated prior to commencement with construction activities.

### Construction

Prior to the commencement of the main construction works, the Contractor will undertake vegetation clearance and site establishment works.

The construction phase is temporary in nature (usually up to 24 months) with a development footprint for the construction of:

- compounds and laydown areas;
- platforms, or "crane pads", required to construct the wind turbines;
- new or upgraded access and internal roads;
- storage areas and site office;
- substation and BESS;
- underground cables to connect the turbines to the on-site substation;

Even though not a physical construction activity, the construction phase includes the transport of components and equipment to and within the site.

After the construction phase is completed, rehabilitation of temporary construction areas will commence. Any area that does not form part of the operational phase of the project (this can include internal roads and access points) must be rehabilitated as per the rehabilitation plan (to be included in the EIA report).



*Figure 2-3: Photographs depicting the construction phase of a wind farm similar to De Rust North WEF.*

### **Operational phase**

The operational phase is about 20-25 years, and mainly consists of operation and maintenance. All the turbines will be operational except under circumstances of mechanical breakdown, inclement weather conditions or for maintenance purposes.

### **Decommissioning**

Wind farm components have an expected end of life, whereby the components need to be dismantled and transported off site, or by replacing the existing infrastructure with the latest technology based on the relevant legislation at the time. Decommissioning requires a temporary laydown area and associated access to accommodate the required equipment and lifting cranes. Prior to the transportation off site, the components need to be evaluated based on reuse, recycle or permanent disposal in accordance with regulatory requirements at that time. The area needs to be rehabilitated based on the rehabilitation



plan, by returning the soil, landscape features and vegetation back to its original state prior to the construction phase in order for the land to be used for agricultural purposes again, or as determined by the landowner and competent authorities.



**Figure 2-4: Example of an operational wind farm.**

## 2.4 NEED AND DESIRABILITY

As part of the EIA process, the need and desirability for the development of the proposed De Rust North WEF needs to be considered and discussed in order to provide context regarding the realistic economic and social benefits the development will add on all spheres of government (local, provincial and national).

Reference is made to the Department of Environmental Affairs (DEA) 2017 Guideline on Need and Desirability which states that while the “concept of need and desirability relates to the type of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which need refers to time and desirability to place – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to wise use of land – i.e., the question of what is the most sustainable use of land.”

**Table 2-2: Need and Desirability**

Question		Answer
<b>“securing ecological sustainable development and use of natural resources”</b>		
1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?		
1.1. How were the following ecological integrity	1.1.1. Threatened Ecosystems	No Threatened Ecosystems
	1.1.2. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands,	Various specialist studies were assessed for the proposed project. Refer to Section 5.4-Section 5.16 and Appendix D for the specialist studies undertaken. These specialists have taken inconsideration all

considerations taken into account?:	and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure	impacts relating to the proposed development and provided the appropriate mitigation measures, which the applicant is committed to following.
	1.1.3. Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”)	Refer to Section 5.6
	1.1.4. Conservation targets	Refer to Section 5.6
	1.1.5. Ecological drivers of the ecosystem	Refer to Section 5.6
	1.1.6. Environmental Management Framework	Refer to Section 5.6
	1.1.7. Spatial Development Framework	Refer to Section 5.6
	1.1.1. Threatened Ecosystems	Refer to Section 5.6
	1.1.8. Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.)	All global responsibilities to which South Africa is signatory or party to were considered, the proposed development complies with all international responsibilities.
1.2. How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	<p>The proposed WEF can disturb plant and species and vegetation from clearing of the development footprint, soil erosion and alien plant invasion. Increased levels of pollution, noise, disturbance and human presence can impact negatively on faunal communities.</p> <p>As part of the Scoping process preliminary specialist assessments were conducted to identify areas most environmentally suitable for development within the proposed development site boundary.</p> <p>As a result of these preliminary assessments a proposed development layout has been produced that avoids sensitive areas and identified constraints.</p> <p>Detailed specialist reports will be compiled and included in the Environmental Impact Assessment Report (EIAR) that will include proposed mitigation measures to further reduce risks or enhance</p>	



	<p>opportunities during construction, operation and decommissioning phases of the development. With implementation of these mitigation measures, all identified negative impacts are expected to be reduced to acceptable levels of medium or low negative significance. All mitigation measures proposed by the specialists are included in the EMPr for the project.</p>
<p>1.3. How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>On a national level the development will lessen the country's dependency on coal, and contribute to lowering water consumption, pollution and environmental degradation per kW of electricity produced.</p>
<p>1.4. What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?</p>	<p>The generation of waste will largely be restricted to the construction phase of the project and consist of normal construction phase solid waste streams.</p> <p>The EMPr which will be included in the EIAR will detail specific mitigation measures that must be implemented for the appropriate management and minimisation of waste, during all phases of the project.</p> <p>Registered service providers will be utilised to transport solid waste to registered landfills.</p>
<p>1.5. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>Visual assessments will be conducted during the EIA phase of the development and the relevant buffers will be applied to cultural landscapes / heritage sites. The proposed development layout is produced by avoiding turbine placement within sensitive areas based on the preliminary assessment.</p> <p>A Heritage Impact Assessment and a Visual Impact Assessment will be conducted during the EIA phase to assess the proposed layout.</p>
<p>1.6. How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could</p>	<p>Wind is a renewable resource and will be the 'fuel' for the WEF to generate electricity.</p> <p>Therefore, the development will have a minimal impact on non-renewable resources.</p>

<p>not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>							
<p>1.7. How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and</p>	<table> <tr> <td data-bbox="391 422 800 709"> <p>The WEF will use the renewable energy resource of wind to generate power.</p> <p>Construction of the WEF will require use of water, a renewable natural resource.</p> <p>Operation of the WEF will consume relatively small quantities of water when compared to alternative energy technologies such as coal.</p> <p>Impacts on the ecosystem caused by use of these renewable energy resources has been evaluated.</p> </td><td data-bbox="800 422 1492 709"></td></tr> <tr> <td data-bbox="391 716 800 1276"> <p>1.7.1. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. dematerialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)</p> </td><td data-bbox="800 716 1492 1276"> <p>The proposed WEF will reduce South Africa's dependency on non-renewable resources, particularly coal, as an energy source.</p> <p>Wind as an energy source is not dependent on water, as compared to the massive water requirements of conventional power stations, has a limited footprint and does not impact on large tracts of land, and poses limited pollution and health risks, specifically when compared to coal and nuclear energy plants.</p> </td></tr> <tr> <td data-bbox="391 1283 800 1839"> <p>1.7.2. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)</p> </td><td data-bbox="800 1283 1492 1839"> <p>The current land use is low-intensity grazing and the land is not suitable for other agricultural uses.</p> <p>The proposed development will increase yield as the landowners will be paid for the use of their land. This will improve cash flow and financial sustainability of farming enterprises on site.</p> <p>The proposed development itself will not cause a significant change in land use, as the development site is primarily low intensity agriculture (grazing), which can still proceed once the development is constructed.</p> <p>Wind is a renewable resource and a wind energy facility is the best use thereof.</p> </td></tr> </table>	<p>The WEF will use the renewable energy resource of wind to generate power.</p> <p>Construction of the WEF will require use of water, a renewable natural resource.</p> <p>Operation of the WEF will consume relatively small quantities of water when compared to alternative energy technologies such as coal.</p> <p>Impacts on the ecosystem caused by use of these renewable energy resources has been evaluated.</p>		<p>1.7.1. 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equitable use of the resources? What measures were explored to enhance positive impacts?		The WEF site would also be suitable for a solar facility, however the current land use would not be able to continue.
	1.7.3. Do the proposed location, type and scale of development promote a reduced dependency on resources?	<p>The proposed WEF is predicted to reduce dependency on coal as an energy source.</p> <p>Wind as an energy source is not dependent on water, as compared to the massive water requirements of conventional coal fired power stations, has a limited footprint and does not impact on large tracts of land, and poses limited pollution and health risks, specifically when compared to coal and nuclear energy plants.</p>
1.8. How were a risk-averse and cautious approach applied in terms of ecological impacts?	1.8.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	<p>This report is based on a project description and site plan, provided to by the applicant, which has not been approved by DFFE at this stage of the project. The project description and site plan may undergo 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.</p> <p>Descriptions of the natural and social environments are based on limited fieldwork and available literature.</p> <p>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.</p>
	1.8.2. What is the level of risk associated with the limits of current knowledge?	The risk associated with assumptions and limits of current knowledge is the potential for information being assessed to be incorrect. This would translate to erroneous impact identification and mitigation measures. However, due to the amount of site work conducted the risk associated with this is considered to be low.
	1.8.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	The project description and site plan will undergo 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.
1.9. How will the ecological impacts resulting from this	1.9.1. Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water	Preliminary assessments were conducted and identified and assessed by the specialists. Detailed impact assessments and specialist studies will be conducted during the EIA phase of the project

development impact on people's environmental right in terms following	quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	and will take into consideration all impact and mitigation measures proposed by the specialists.  Based on preliminary assessments undertaken the proposed development attempts to avoid sensitive areas and where there is an impact the mitigation measures provided by the specialists during the EIA phase will be implemented.
	1.9.2. Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Renewable energy has fewer negative health effects than other forms of non-renewable energy generation and will have overall positive health benefits.
1.10. Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?		The preliminary findings of this SIA conducted for the proposed WEF indicates that during the construction and the operational phase of the proposed development project, various employment opportunities, with different levels of skills will be created. In addition, this will also create local business opportunities benefitting the socioeconomic development of the local communities. The proposed WEF also represents an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated with a coal based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole.
1.11. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		The preliminary assessment of the potential impacts on ecology, avifauna, bat and aquatic have indicated that the proposed development does not have unacceptable negative impacts. These however will be updated and detailed during the EIA phase when detailed specialist studies will be included.
1.12. Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?		Specialist recommendations, buffers and no-go areas will influence mapping. These will identify the most suitable areas for development for which a development layout was then produced for assessment. The results of the specialist's studies further informed the development of the updated site layout.

1.13. Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?

The cumulative impacts will be assessed during the EIA phase.

**“promoting justifiable economic and social development”**

2.1. What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?

2.1.1. The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area

Namakwa District municipality Integrated Development Plan (IDP):  
The 2020/2021 IDP indicates that it aligns with the 17 United Nations development goals, ranging from alleviating poverty and reducing inequality through job creation and economic growth, as well as ensuring access to affordable, reliable, sustainable and modern energy for all. The IDP states that local economic development will include the construction of renewable energy projects in the area.

Khai Ma Local Municipality Integrated Development Plan (IDP) 2017-2022: The IDP indicates five Key Performance Areas (KPAs) of which Infrastructure Development and Basic Service Delivery (KPA1) and Economic Development (KPA 3) are relevant and applicable to the proposed WEF.

In summary the proposed De Rust North WEF is in congruence with national provincial and local policies and frameworks and is supported by policy.

2.1.2. Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),

Northern Cape Spatial Development Framework, 2018

The interior parts of the Province and the Namaqualand coast have been identified as having potential for renewable energy production and targets have been put in place for 25% of the provinces' energy generation capacity to be acquired from renewable energy projects such as wind, solar, thermal, biomass and hydroelectricity by the year 2020.

2.1.3. Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.)

The current zoning of the property is agricultural. An application will be submitted to the municipality for approval. The proposed WEF will fit into the current landscape as this is evolving to accommodate WEFs in the area.

	2.1.4. Municipal Economic Development Strategy ("LED Strategy")	<p>Khai Ma Local Municipality Integrated Development Plan (IDP) 2017-2022: The IDP indicates five Key Performance Areas (KPA) of which Infrastructure Development and Basic Service Delivery (KPA1) and Economic Development (KPA 3) are relevant and applicable to the proposed WEF. KPA3 will lead to Local Economic Development (LED), food security, social infrastructure, health, environment, education, and skills development.</p>
2.2. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	2.2.1. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	<p>The proposed development will contribute towards local economic development and skills development programs of the local and district municipalities through the support and co-operation between public and private sectors, creation of employment and business opportunities, and the opportunity for skills development and on-site training during both construction and operation phases.</p>
2.3. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities		<p>The proposed development will contribute towards the local economic development strategies of the municipalities through the creation of employment and business opportunities, and the opportunity for skills development and on-site training during both construction and operation phases.</p> <p>In addition, the proposed development will also create local business opportunities benefitting the socio-economic development of the local communities.</p>
2.4. Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?		<p>Wind energy facilities are socially and economically sustainable in the short and long term. Social economic development contributions are concentrated in the immediate vicinity of the WEF benefiting the local community.</p>
2.5. In terms of location, describe how the placement	2.5.1. result in the creation of residential and employment opportunities in close proximity to or integrated with each other	<p>During the construction phase of the proposed WEF employment opportunities will be created, for low-skilled workers, semi-skilled and for skilled personnel. Members from the local communities are likely</p>

of the proposed development will:		<p>to be in a position to qualify for the majority of the low skilled and a proportion of the semi-skilled positions.</p> <p>The typical lifespan of WEFs is 20 to 25 years. During the operational phase there will be a significant decrease in employment opportunities.</p> <p>It should be noted that the majority of the semi- and low skilled employment opportunities are likely to be available to the local communities, which will present a positive social benefit to these communities due to the low availability of employment opportunities in these areas. The recruitment process and the requirements for each skill level and each employment opportunity need to be clearly communicated to local communities to ensure that no unrealistic expectations are created.</p>
	2.5.2. reduce the need for transport of people and goods	<p>The need for transport of people and goods will be increased during the construction phase. Most staff employed will live within the local community or surrounding areas thereby lowering carbon footprints are predicted due to the commercial forms of transport that will be employed to move the workforce (e.g. public transport, contractor buses).</p>
	2.5.3. result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport)	N/A
	2.5.4. compliment other uses in the area	<p>Local communities and their service providers will benefit from the socio-economic development provided by the WEF and current land use will be able to continue.</p>
	2.5.5. be in line with the planning for the area	<p>The proposed WEF is in line with applicable international, national, provincial and local planning strategies.</p>
	2.5.6. for urban related development, make use of underutilised land available with the urban edge	<p>The proposed development occurs away from the urban edge and within rural portion of the geographical area.</p>



	2.5.7. optimise the use of existing resources and infrastructure	<p>Wind energy is a renewable, clean resource and reduces pollution and the reliance on non-renewable fossil fuels and water for electricity generation.</p> <p>Existing access roads will be utilised wherever possible.</p> <p>The existing Eskom substation has the capacity to support this development.</p> <p>It is expected that any construction water required will be delivered by tankers.</p> <p>Waste removal will be in accordance with best practice by qualified waste removal contractors to the nearest registered landfill.</p> <p>Portable sanitation facilities will be utilised during construction, so that no connection to the local sewerage system will be required.</p> <p>Any additional infrastructure required will be constructed by the developer.</p>
	2.5.8. opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement)	<p>Wind energy is a renewable, clean resource and reduces pollution and the reliance on non-renewable fossil fuels and water for electricity generation, this will contribute to the electrical bulk services for the region.</p>
	2.5.9. discourage "urban sprawl" and contribute to compaction/densification	<p>Not applicable as the proposed development site lies within rural areas.</p>
	2.5.10. contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs	<p>The existing Korana substation has capacity for additional energy generation. The proposed development will utilise this existing capacity.</p> <p>The project will contribute to economic and infrastructure development in the Northern Cape Province, in line with the Provincial Development and Resource Management Plan.</p>
	2.5.11. encourage environmentally sustainable land development practices and processes	<p>Construction of the renewable energy WEF project will assist South Africa in transitioning from a carbon-intensive resource use economy to a sustainable low carbon footprint economy.</p>

		Sustainable land development is an overarching aspect of the proposed project development.
	2.5.12. take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.)	<p>Feasibility of access for wind turbine delivery, the site is easily accessible from the main roads;</p> <p>Close proximity to the Eskom grid with available evacuation capacity;</p> <p>Viable wind resource, therefore suited to wind farm development;</p> <p>The proposed site is agricultural land with low agricultural potential and willingness of landowners to host a wind farm on their properties.</p>
	2.5.13. the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential)	The proposed development will create jobs and contribute towards socio-economic development in an area that does not have high economic potential. The WEF is likely to result in positive socio-economic opportunities. Refer to section 5.15
	2.5.14. impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area	Impacts to the cultural landscape are unavoidable but may be of a medium to low significance and no other aspects of heritage are expected to be impacted significantly, if identified. The area is currently being developed to accommodate various wind farms, therefore the sense of place is currently changing and the proposed WEF will fit into the change in sense of place.
	2.5.15. in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	The proposed development is predicted to support the creation of a more integrated settlement.
2.6. How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	2.6.1. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	<p>Please refer to section 1.3 for a detailed list of Assumptions and Limitations.</p> <p>This report is based on a project description and site plan, provided by the applicant, which has not been approved by DFFE at the current stage of the project. The project description and site plan will undergo 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.</p> <p>Descriptions of the natural and social environments are based on fieldwork, available literature and desktop analysis.</p>

		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.
	2.6.2. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	The risk due to limits of current knowledge is considered to be low due to the positive socioeconomic impact expected from the proposed WEF.
	2.6.3. Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	A risk-averse and cautious approach was utilised throughout the impact assessment process by all specialists.
2.7. How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:	2.7.1. Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Negative social impacts relating to the proposed WEF will be assessed in detail by the specialist. Appropriate mitigation measures will be provided during the EIA Phase. Please refer to Section 5.15.
	2.7.2. Positive impacts. What measures were taken to enhance positive impacts?	Positive impacts were identified by the Social Specialist, refer to Section 5.15
2.8. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?		There is a potential that the proposed WEF will place a strain on services and the ecological environment. The relevant specialist have accounted for these impacts during their preliminary assessments and will provide mitigation measures during the EIA Phase.
2.9. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?		The site sensitivity map identified the most suitable areas for development for which a development layout was then produced for assessment. The results of the preliminary specialist's studies.
2.10. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be		The proposed development aligns with a variety of planning policies that consider environmental and spatial justice.

distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? <sup>34</sup>		
Considering the need for social equity and justice, do the alternatives identified, allow the “best practicable environmental option” to be selected, or is there a need for other alternatives to be considered?		
2.11. What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?		The proposed development will contribute to equitable access by supplying electricity to the national grid, and by providing local and regional socioeconomic benefits in terms of the REIPPPP Economic Development requirements, which includes a BBBEE scorecard on which wind projects are evaluated.
2.12. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development’s life cycle?		Construction, operation and decommissioning of the proposed development will be done according to environmental health and safety legislative requirements and applicable guidelines.
2.13. What measures were taken to:	2.13.1. ensure the participation of all interested and affected parties	Public participation is being undertaken according to NEMA: EIA Regulations (2014) as amended and DEA (2017) Public Participation Guidelines.
	2.13.2. provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation	The PPP is being undertaken in terms of legislative requirements and best practise guidelines. All notifications are provided in English.
	2.13.3. ensure participation by vulnerable and disadvantaged persons,	The PPP is being undertaken according to best practise guidelines; Notification of initiation of the PPP was provided in all required channels, i.e. newspaper adverts, site notices, local posters and written notifications.
	2.13.4. promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of	The proposed development fits into the various planning policies

	knowledge and experience and other appropriate means,	
	2.13.5. ensure openness and transparency, and access to information in terms of the process	Legislative requirements and best practise guidelines are followed throughout the process.  The PPP is being undertaken in terms of legislative requirements and best practise guidelines.
	2.13.6. ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge	A PPP is being undertaken in terms of legislative requirements and best practise guidelines.  A Social Impact Assessment forms part of the process.
	2.13.7. ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted	The PPP that are conducted according to legislation and guidelines ensure that women and youth are recognised and involved in the process.
2.14. Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?		The proposed WEF has a good planning fit with all applicable policies and will result in substantial local socio-economic opportunities.  The key challenges facing the region are poverty and inequality and a shortage of skills.  As such the proposed development will be of benefit to the local area by creating job and business opportunities, particularly for unskilled and semi-skilled local workers.
2.15. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?		Future workers on the proposed development will be educated on their rights to refuse work.
2.16. Describe how the development will	2.16.1. the number of temporary versus permanent jobs that will be created,	Temporary employment opportunities will be created during the construction phase and permanent employment opportunities will be

impact on job creation in terms of, amongst other aspects:		created for the operational phase of the proposed development for skilled and unskilled workers
	2.16.2. whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	The majority of the semi- and low-skilled employment opportunities are likely to be available to the local communities, which will present a positive social benefit to these communities due to the low availability of employment opportunities in these areas.
	2.16.3. the distance from where labourers will have to travel,	It is expected that most workers will reside in the nearby towns.
	2.16.4. the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits),	<p>The majority of employment opportunities associated with the operational phase is likely to benefit the community. It will also be possible to increase the number of local employment opportunities through the implementation of a skills development and training programme linked to the operational phase.</p> <p>The local hospitality industry is likely to benefit from the operational phase. These benefits are associated with site visits by company staff members and other professionals (engineers, technicians etc.) who are involved in the company and the project but who are not linked to the day-to-day operations.</p> <p>Procurement during the operational phase will also create opportunities for the local economy and businesses.</p>
	2.16.5. the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The creation of jobs associated with the proposed WEF represents a high opportunity cost, as the employment by current agriculture operations is very low, and could continue.
2.17. What measures were taken to ensure:	2.17.1. that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment	<p>All applicable planning policies and legislation were considered. The proposed development fits with all planning policies.</p> <p>Organs of State were pre-identified and registered on the I&amp;AP database.</p>
	2.17.2. that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	As registered I&APs all public correspondence including notifications of reports availability are provided.



2.18. What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	<p>The proposed development aims to uphold the principles of sustainable development.</p> <p>The project team consists of suitably qualified individuals that comply with all legal requirements.</p>
2.19. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Detailed Specialist mitigation measures will be included during the EIA phase of the project.
2.20. What measures were taken to ensure that 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 will be paid for by those responsible for harming the environment?	An EMPr will submitted with EIAr. The EMPr is a legally binding document, which when enforced during construction, operational or decommissioning phases, hold the applicant or their representative liable for any remedial actions as a result of negligence.
2.21. Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The alternative selection process includes the assessment of the No Development alternative, site alternatives, design layout alternatives and technology alternatives.
2.22. Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Specialist will identify cumulative impacts during the EIA process and provided in the EIAr.

### 3 LEGAL CONTEXT

In terms of GNR 779 of 1 July 2016, the National Department of Environment, Forestry and Fisheries (DEFF) has been determined as the Competent Authority in terms of Section 24C(1), 24C(2)(a)(i) and 24D of the National Environmental Management Act, 1998, confirms that the Minister of Environmental Affairs is the Competent Authority for activities which are identified as activities in terms of section 24(2)(a), which may not commence without an environmental authorisation, and which relates to the Integrated Resources Plan (IRP) 2010 - 2030 and any updates. The legislative and policy context of this Report is described in detail below.

### 3.1 NATIONAL ENVIRONMENTAL SCREENING TOOL AND ENVIRONMENTAL THEME PROTOCOLS

#### 3.1.1 Screening Report

The Minister of Environment, Forestry and Fisheries, gave notice that the submission of a report generated from the national web-based environmental screening tool<sup>3</sup>, as contemplated in Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, will be compulsory from 4 October 2019 when submitting an application for environmental authorisation in terms of regulation 19 and regulation 21 of the Environmental Impact Assessment Regulations, 2014.

In addition, a set of protocols that an applicant needs to adhere to in the Environmental Authorisation (EA) process were developed and on 20 March 2020 the Minister of Forestry, Fisheries and the Environment gazetted the Protocols for national implementation purposes. The gazette 'Procedures to be followed for the Assessment and Minimum Criteria for Reporting of Identified Environmental Themes in terms of Section 24(5)(a) and (h) of the National Environmental Management Act (1998) when Applying for Environmental Authorisation', has protocols that have been developed for environmental themes which include agriculture, avifauna, biodiversity (Terrestrial and Aquatic Biodiversity), noise, defence and civil aviation.

The protocols set requirements for the assessment and reporting of environmental impacts of activities requiring EA. The higher the sensitivity rating of the features on the proposed site as identified by the screening tool report, the more rigorous the assessment and reporting requirements.

Based on the generated screening report, all environmental theme sensitivities are indicated in Table 3-1 below.

**Table 3-1: Environmental themes from Screening Tool which needs to adhere to in the Environmental Authorisation process.**

Theme	Very High sensitivity*	High sensitivity*	Medium sensitivity	Low sensitivity
Agriculture Theme				
Animal Species Theme				
Aquatic Biodiversity Theme				
Archaeological and Cultural Heritage Theme				
Avian (Wind) Theme				
Bats (Wind) Theme				
Civil Aviation (Wind) Theme				
Defence (Wind) Theme				
Flicker Theme				
Landscape (Wind) Theme				

<sup>3</sup> <https://screening.environment.gov.za/screeningtool/#/pages/welcome>

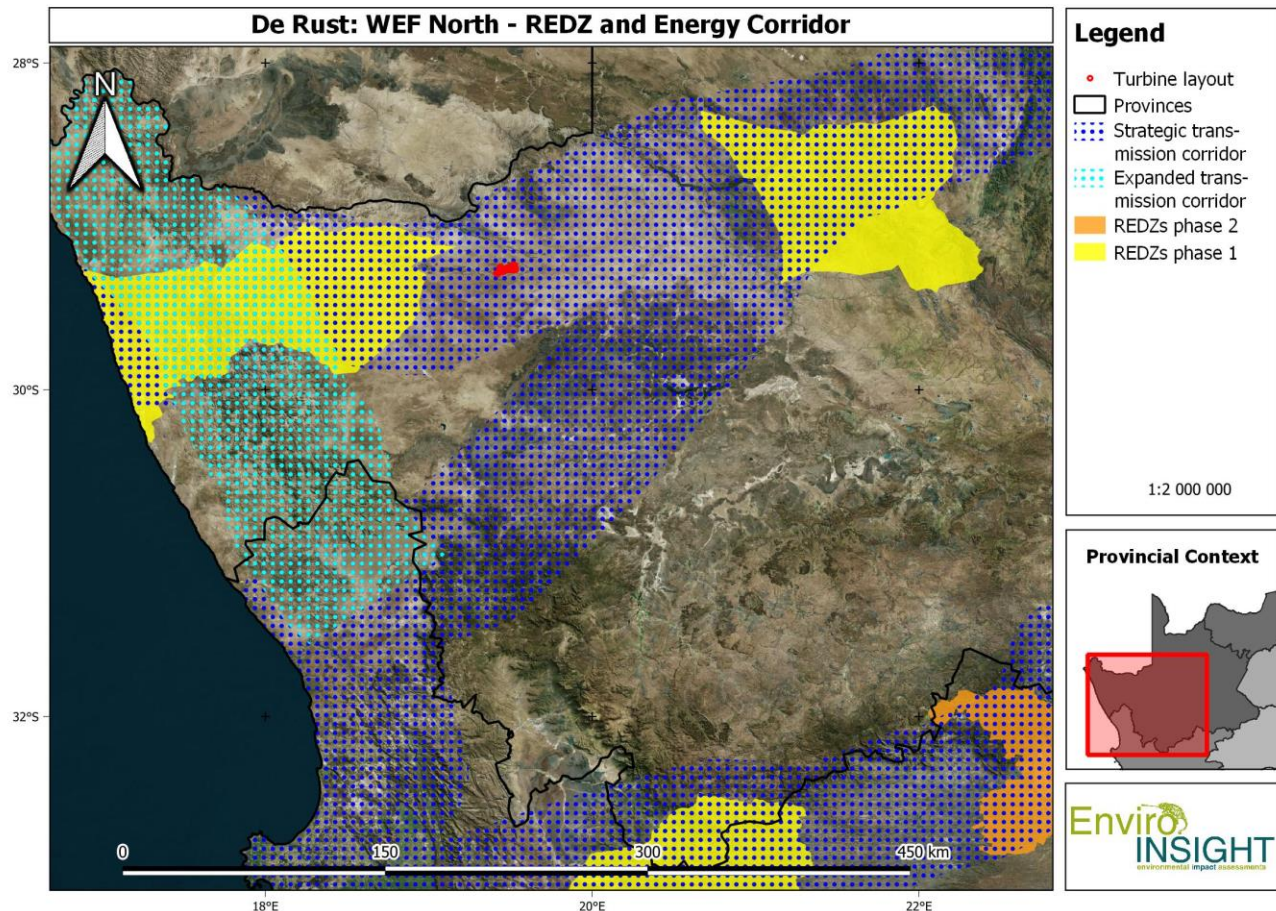
\* Require full assessments.

- Avian (Wind) Theme – it is indicated as **Low** but should be **Very High** (refer to relevant avifauna section in Chapter 5).
- Flicker Theme – indicated as **Very High** but probably **Medium** (refer to relevant visual section in Chapter 5).
- Plant species Theme – indicated as **Medium** but is **High** (refer to relevant visual section in Chapter 5).

## 3.2 RENEWABLE ENERGY DEVELOPMENT ZONE

The procedure to be followed in applying for EA for a large-scale project in a REDZ or in a Power Corridor was formally gazetted on 16 February 2018 in GN113 and GN114. New wind or PV projects located within one of the eight REDZ areas, and new electricity grid expansion within the 5 Strategic Transmission Corridors are subject to a Basic Assessment and not a full EIA process, as well as a shortened timeframe of 147 days (90 day BA process and 57 decision-making process).

The proposed De Rust North WEF is not located in a REDZ, but is located in the Western Strategic Transmission Corridor. Accordingly, a S&EIR is required for the WEF and a BA process is required for the grid connection.



**Figure 3-1: Location of the proposed FE DE Rust North WEF within the Renewable Energy Development Zones (REDZs) overlaid onto the electricity grid infrastructure corridors**

### 3.3 RENEWABLE ENERGY AUTHORISATION REQUIREMENTS

The legislative and policy context of this Report is detailed below. The planning context is detailed in Section 3.3 hereafter as part of the 'need and desirability' evaluation.

#### Constitution of the Republic of South Africa, Act 108 of 1996

The Constitution of the Republic of South Africa is the supreme law of the country and underpins all environmental legislation. As such, any law or conduct that is inconsistent with the Constitution is invalid (Constitution, 1996). The Constitutional environmental right is included in section 24, which states:

*"Everyone has the right—*

*(a) to an environment that is not harmful to their health or well-being; and*

- (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; and*
  - (iii) *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.*

The constitution also gives provision in section 27(1)(b) which states that everyone has the right to have access to sufficient water and section 27(2) requires the state to take reasonable and other measures, within its available resources, to achieve the progressive realization of each of these rights.

The Constitution of the Republic of South Africa forms the foundation of all environmental principles and management in the country and it is enshrined in all legislation. Such legislation is discussed below with specific reference to the environment.

### **Aspect of Project**

An EIA process is being undertaken to determine the impacts associated with the project, including environmental, social and economic. As part of the EIA process, mitigation measures and monitoring plans are compiled to ensure that any potential impacts are managed to acceptable levels to support the rights as enshrined in the Constitution. The project must prove to be sustainable and balance the social, economic and environmental aspects of sustainable development.

### **National Environmental Management Act (Act 107 of 1998 as amended) and EIA Regulations (2014, as amended)**

The National Environmental Management Act (NEMA; No. 107 of 1998, as amended) gives effect to the Constitution of the Republic of South Africa by providing a framework for cooperative environmental governance and environmental principles that enable and facilitate decision-making on matters affecting the environment.

Chapter one of the NEMA outlines national environmental management principles that must be incorporated into all decisions regarding the environment, throughout the country by all organs of state. Central to these principles is the concept of sustainability, which entails meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

Chapters two to three of the NEMA outline government and non-government institutions and their responsibilities for ensuring co-operative governance and making decisions.

Chapter 5 of NEMA provides for integrated environmental management. The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities. Section 24 (1) specifically states:

*“In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential impact on—*

- (a) *the environment;*



*(b) socio-economic conditions: and*

*(c) the cultural heritage,*

*of activities that require authorisation or permission by law and which may significantly affect the environment, must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorizing, permitting, or otherwise allowing the implementation of an activity.”*

NEMA requires that an environmental authorisation be issued by a competent authority (CA) before the commencement of a listed activity in terms of the Environmental Impact Assessment Regulations Listing Notices for Basic Assessment or scoping & Environmental Impact Assessment (S&EIA).

In South Africa, EIA became a legal requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant environmental authorisation. On 21 April 2006 the Minister of Environmental Affairs and Tourism promulgated the first EIA regulations in terms of Section 24 of NEMA. These EIA regulations, under sections 24(5) and 44 of NEMA, were updated in June 2010 and again in December 2014. In April 2017, the 2014 EIA regulations were amended.

Environmental authorisation for an activity may only be issued by the competent authority (CA) after the developer has complied with the procedural requirements as set out in the 2014 EIA regulations of NEMA.

### **Aspect of Project**

The NEMA EIA regulations, 2014 (as amended) are applicable to this project. Several listed activities in terms of NEMA GNR No. R982, R983, R984 and R985 in the Government Gazette of 4 December 2014, as amended, have been triggered and need to be authorised for the proposed wind farm.

Based on the listed activities triggered, the application for environmental authorisation will follow the scoping and EIR process as set out in Regulations 21-24.

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

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004 as amended) (“NEMBA”) aims to provide for the management and conservation of South Africa’s biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources and the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources. The Act places severe restrictions on activities that could have adverse effects on threatened or protected species.

The purpose of the NEMBA includes:

- the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998;
- the protection of species and ecosystems that warrant national protection; and



- the sustainable use of indigenous biological resources and the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources.

Provision is made for protection of threatened or protected ecosystems and species as well as provisions guarding against the introduction of alien and invasive species. The Act identifies restricted activities involving listed threatened, protected or alien species. These activities include picking parts of, or cutting, chopping off, uprooting, damaging or destroying, any specimen of a listed threatened or protected species. As stipulated in Section 57 of the Act, a person may not carry out a restricted activity involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7. Lists of critically endangered, endangered, vulnerable and protected species in GNR 151 of 23 February 2007 and List of threatened ecosystem 2011 have been published under NEMBA. Regulations have also been promulgated on Threatened and Protected Species in GNR 324 (29 April 2014). These lists and associated restricted activities as well as the regulations need to be taken into account during the implementation of any renewable energy development activities as well as during assessments for authorisations associated with these activities in terms of other legislation.

Application may be made for a permit to engage in restricted activities, which application may be subject to various stringent requirements as set out in Section 88 of the NEMBA. The CA responsible for administering the NEMBA is dependent on the province in which the activity is taking place.

#### **Aspect of Project**

**Protected species:** Several threatened species occur or are likely to occur on the study area. As the Terrestrial Biodiversity Assessment is ongoing, detailed information will be presented in the EIR.

**Threatened Ecosystems:** No listed threatened ecosystems intersect the Project Areas.

**Alien and Invasive Species:** All alien species need to be controlled and management interventions indicated in the Environmental Management Programme. Species such as *Prosopis glandulosa* (Category 3 invader) has been recorded on site.

#### **Environmental Conservation Act, Act No. 73 of 1989 (ECA)**

In terms of section 25 of the ECA, the national Noise Control Regulations (GN R154 in Government Gazette No. 13717 dated 10 January 1992) (NCR) was promulgated. The NCRs were revised under Government Notice Number R55 of 14 January 1994 to make it obligatory for all authorities to apply the regulations. Currently, no provincial or local regulations exist in the Northern Cape and no approval is required.

WEFs and related infrastructure will increase noise levels during operation as well as possible construction noises. Noise emitted by WEFs include aerodynamic sources due to the passage of air over the wind turbine blades and mechanical sources which are associated with components of the power train within the turbine, such as the gearbox and generator and control equipment for yaw, blade pitch, etc.

#### **Aspect of Project**

A Noise Impact Assessment will be included in the EIR. **National Environmental Management: Air Quality Act (Act 39 of 2004 as amended)**

The National Environment Management: Air Quality Act (NEMAQA) serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution.

According to the Act, the DEA, the provincial environmental departments and local authorities are separately and jointly responsible for the implementation and enforcement of various aspects of the Air Quality Act.

### ***Aspect of Project***

Although no major air quality issues are expected, the Applicant needs to be mindful of the Act as it also relates to potential dust generation during construction. This will be addressed in the EIA phase of the project and the necessary management and monitoring requirements will be included in the EMPr.

### **National Environmental Management: Waste Act (Act 59 of 2008 as amended)**

The National Environmental Management: Waste Act (NEMWA) came into effect on 1 July 2009. Section 19 of the NEMWA provides for listed waste management activities and states in Section 19(1) that the Minister may publish a list of waste management activities that have, or are likely to have a detrimental effect on the environment. Such a list was published in GN 921 of 29 November 2013, identifying those waste management activities that require a Waste Management Licence in terms of the Act. Activities are defined within Category A (non-hazardous) and Category B (hazardous) Category C (lower threshold in terms of waste volumes) wastes. From a renewable energy perspective, only Category A is considered here. The activities listed under Category B are equivalent to those that require an EIA process stipulated in the EIA regulations made under section 24(5) of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

### ***Aspect of Project***

There are no listed activities which require authorisation. The Applicant must ensure that all activities associated with the project address waste related matters in compliance with the requirements of the Act and must consult with the local municipality to ensure that all waste is disposed of at a registered landfill site. This will be addressed in the EIA phase of the project and the necessary management and monitoring requirements will be included in the EMPr.

### **National Water Act (Act 36 of 1998 as amended)**

The National Water Act (NWA) includes provisions requiring that a water use license be issued by the Department of Water & Sanitation (DWS) before a project developer engages in any activity defined as a water use in terms of the NWA. Water use definitions considered probably or possibly relevant to Renewable Energy projects in terms of the NWA, section 21 includes:

- Taking of water from a water resource;
- Storing of water;
- Impeding or diverting the flow of water in a water course;
- Engaging in a stream flow reduction activity;
- Engaging in a controlled activity (this includes the use of water for power generation purposes);
- Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- Altering the bed, banks, course, or characteristics of a watercourse. This includes altering the course of a watercourse (previously referred to as a river diversion).

Construction of infrastructure within 500m of a watercourse will likely be required for the associated roads and cables.

**Aspect of Project**

An authorisation might be required in terms of Section 21 (c) and (i) in the form of either a General Authorisation (GA) or Water Use License Application (WULA). An application will be submitted if the project.

An Aquatic Biodiversity Assessment will be included in the EIR.

**National Environmental Management: Protected Areas Act (NEMPAA; Act 57 of 2003)**

The objectives of the National Environmental Management: Protected Areas Act 2003 (Act 57 of 2003) (NEMPAA) as amended by the National Environmental Management: Protected Areas Amendment Act 31 of 2004, are to:

- provide for the declaration and management of protected areas;
- provide for co-operative governance in the declaration and management of protected areas;
- effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- provide for a representative network of protected areas on state land, private land and communal land;
- promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- promote participation of local communities in the management of protected areas, where appropriate; and
- provide for the continued existence of South African National Parks.

The Act also provides for the maintenance and monitoring of declared protected areas. The CA responsible for administering the NEMPAA is dependent on the province in which the activity is taking place.

**Aspect of Project**

The study area is not located within or adjacent to a protected area in terms of this Act. No further action is required.

**National Heritage Resources Act (No. 25 of 1999)**

National Heritage Sites in South Africa are places that are of historic or cultural importance and which are for this reason declared in terms of Section 27 of the National Heritage Resources Act (NHRA). The designation was a new one that came into effect with the introduction of the Act on 1 April 2000 when all former National Monuments declared by the former National Monuments Council and its predecessors became provincial heritage sites as provided for in Section 58 of the Act.

Both national and provincial heritage sites are protected under the terms of Section 27 of the NHRA and a permit is required to work on them. National Heritage Sites are declared and administered by the national Heritage Resources Authority, SAHRA whilst provincial heritage sites fall within the domain of the various provincial heritage resources authorities, in this case the Northern Cape Provincial Heritage Resources Authority Ngwao Boswa Kapa Bokone (NBKB). Heritage resources are protected by the Act and may not be disturbed in any way without a permit issued by the South African Heritage Resources Agency or the relevant Provincial Heritage Resources Authority. Section 38(1) of the NHRA stipulates the triggers which would require a Heritage Impact Assessment (HIA) to become part of an EIA submitted for consideration by the relevant state department.

**Aspect of Project**

SAHRA must be informed of the project and a Heritage Impact Assessment (HIA) must be undertaken by a qualified specialist. A HIA will be included in the EIR.

#### **Northern Cape Nature Conservation Act (NCNCA; Act 9 of 2009)**

Numerous sections (specifically sections 50-51) under NCNCA deal with indigenous and protected plants. The protected status of various species that may be located on the site requires a permit under NCNCA in order for the plants to be removed or destroyed i.e. a permit is required before development may commence.

##### ***Aspect of Project***

A Terrestrial Biodiversity Assessment will be included in the EIR. Where required, permits will be applied for in terms of the NCNCA.

#### **Conservation of Agricultural Resources Act (CARA; Act 43 of 1983)**

The purpose of this Act is to ensure that natural agricultural resources of South Africa are conserved through maintaining the production potential of land, combating and preventing erosion, preventing the weakening or destruction of water sources, protecting vegetation, and combating weeds and invader plants.

##### ***Aspect of Project***

As per the Screening Tool generated, the Agricultural Potential is considered low. Where required, measures for addressing erosion, protection of vegetation and water sources and managing alien plants will be included in the EMP. A compliance statement will be included in the EIA.

#### **Electricity Regulation 2006 (Act 4 of 2006) as amended by the ERAA in 2007)**

The Electricity Regulation Act (No 47 of 1999, as amended in 2007; RGA) provides a national regulatory framework for the electricity supply industry and makes the National Energy Regulator of South Africa the overseer and enforcer of the framework. The act requires registration and licensing of anyone wanting to generate, transmit, reticulate (i.e. network), distribute, trade, or import and export electricity. In addition, the act regulates the reticulation of electricity by municipalities.

##### ***Aspect of Project***

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.

#### **Municipal Systems Act (Act 32 of 2000)**

The Municipal Systems Act (No. 32 of 2000, MSA) concerns itself with the internal systems and administration of municipalities. The Act requires that the Constitution and other national level acts (e.g. NEMA) be incorporated into strategic planning at a municipal level. The CA responsible for administering the MSA is dependent on the municipality in which the activity is taking place.

Development at a local level is the primary focus as the act separates the responsibility of a service authority with that of a service provider; sets out the roles of officials and councillors and provides for a range of requirements; including Integrated Development Plans (IDPs), performance management and tariff setting. The Act accordingly regulates municipal service delivery and provides a comprehensive range of service delivery mechanisms through which municipalities may provide municipal services. It explains the process to be applied and the criteria to be considered in reviewing and selecting municipal service delivery mechanisms.

Under the Act, every municipal council must adopt a single, inclusive and strategic plan (i.e. IDP) for the development of the municipality. At a municipal level, these plans may call for the implementation of renewable energy projects and should be referenced in applications to motivate for relevant environmental authorisations. IPPs will need to consult with the various relevant municipal authorities and development plans as applicable to each specific project design and location.

#### *Aspect of Project*

The proposed WEF development needs to be in line with the local and district municipalities IDPs. The Applicant needs to consult with the relevant municipalities throughout the process as a key stakeholder.

#### **Spatial Planning and Land Use Management Act (SPLUMA; Act 16 of 2013)**

SPLUMA aims to confirm and regulate the role of municipalities in land-use planning and land-use management. Two of the most relevant objectives of the SPLUMA are to ensure that the system of spatial planning and land use management promotes social and economic inclusion and to provide for the sustainable and efficient use of land.

The Act provides that spatial planning consists of:

- Spatial development frameworks adopted at each level of government;
- Development principles, norms and standards;
- The management and facilitation of land use through land-use schemes; and
- Procedures to deal with and decide on development applications provided for in national and provincial legislation.

The national, provincial and local governments are instructed to adopt spatial development frameworks (SDFs). SDFs must 'guide planning and development decisions across all sectors'. At different levels of government the SDFs intended to guide some of the following:

- National Spatial Development Framework (NSDF) - must indicate the desired patterns of land use in South Africa;
- Provincial Spatial Development Framework (PSDF) - must provide a spatial representation of the province's land development policies, strategies and objectives and must indicate desired and intended patterns of land use and, importantly, delineate areas in which development would not be appropriate;
- Regional Spatial Development Framework (RSDF) – will be imposed if when a municipality fails to adopt or amend an MSDF the Minister may step in, declare a region and adopt an RSDF for that region and when it is 'necessary to give effect to national land-use policies or priorities' the Minister may do the same; and

- Municipal Spatial Development Framework (MSDF) - identify current and future significant structuring and restructuring elements of the spatial form of the municipality, including development corridors, activity spines and economic nodes where public and private investment will be prioritised and facilitated.

#### ***Aspect of Project***

The proposed development needs to comply with the surrounding landscape, and must apply for a land use change with the relevant municipality since the land is classified as agricultural use.

#### **National Roads Act (Act. 93 of 1996)**

This Act provide for co-operative and co-ordinated strategic planning, regulation, facilitation and law enforcement in respect of road traffic matters by the national, provincial and local spheres of government.

The National Roads Act 93 OF 1996 makes provision for regulating the transportation of dangerous goods and substances by road. Section 275 states that, no person shall operate on a public road any vehicle in or on which dangerous goods is transported, unless such dangerous goods is transported in accordance with Chapter VIII of the Act. Chapter VIII also incorporates the SABS standard specifications relating the transportation of dangerous goods and substances. Section 279 indicates the availability of an authority for classification and certification of dangerous goods should there be any doubt as to the appropriate classification of dangerous goods.

Certain vehicles and loads cannot be moved on public roads without exceeding the limitations in terms of the dimensions and/or mass as prescribed in the Regulations.

#### ***Aspect of Project***

Due to the large size of many of the wind energy facility's components (e.g. tower and blades) they will need to be transported via "abnormal loads". A Traffic and Transport Impact Assessment will be included in the EIR. Comment from the Northern Cape Department of Transport is required.

#### **Astronomy Geographic Advantage Act (Act 21 of 2007)**

The Astronomy Geographic Advantage Act 21 of 2007 aims:

- to provide for the preservation and protection of areas within the Republic that are uniquely suited for optical and radio astronomy;
- to provide for intergovernmental co-operation and public consultation on matters concerning nationally significant astronomy advantage areas; and
- to provide for matters connected therewith.

In February 2010, the Minister of Science and Technology declared all land in the Northern Cape Province situated 250km from the centre of the South African Large Telescope (SALT) dome as an astronomy advantage area for optical astronomy purposes



and the whole of the territory of the Northern Cape Province, excluding Kimberly, as an astronomy advantage area for radio astronomy purposes.

Furthermore, those parts of the Northern Cape which are to contain the SALT dome, the MeerKAT radio telescope and the multi-billion rand Square Kilometre Array (SKA) have been declared as core astronomy advantage areas. While all land within a 3km radius of the centre of the SALT dome falls under the Sutherland Core Astronomy Advantage Area, sections of the Kareeberg and Karoo Hoogland municipal areas, consisting of three sections of farming land, constitute the Karoo Core Astronomy Advantage Area.

From a renewable energy perspective, one activity which may potentially be at odds with the objects of the Act is that of the use of wind turbines. There is a possibility that the power generation equipment used in harnessing wind energy may result in electromagnetic interference with radio astronomy observations. In addition, there is a possibility that the turbine blades will reflect distant radio signals from other transmitters onto the radio telescopes and act as secondary transmitters. This may result in detrimental effects to any radio astronomy facilities. The extensive power requirements of the SKA and the MeerKAT radio telescope are likely to play a prominent role in determining the extent to which the generation of electrical energy through the establishment of wind and solar power projects is to be permitted in the Northern Cape.

#### **Aspect of Project**

A radio frequency interference (RFI) and electromagnetic interference (EMI) assessment may be required. Comments from the MeerKAT and SKA are required.

#### **Civil Aviation Act (Act 13 of 2009)**

Civil aviation in South Africa is governed by the Civil Aviation Act, 2009 (Act 13 of 2009). This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by the South African Civil Aviation Authority (SA CAA) as an agency of the Department of Transport (DoT). The SA CAA achieves the objectives set out in the Act by complying with the Standards and Recommended Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local context when issuing the South African Civil Aviation Regulations (SA CARs). All proposed developments or activities in South Africa that potentially could affect civil aviation must thus be assessed by SACAA in terms of the SA CARs and South African Civil Aviation Technical Standards (SA CATS) in order to ensure aviation safety.

The Obstacle Evaluation Committee (OEC) which consists of members from both the SA CAA and South African Air Force (SAAF) fulfils the role of streamlining and coordinating the assessment and approvals of proposed developments or activities that have the potential to affect civil aviation, military aviation, or military areas of interest. With both being national and international priorities, the OEC is responsible for facilitating the coexistence of aviation and renewable energy development, without compromising aviation safety.

#### **Aspect of Project**

Comments from the OEC are required to ensure the safety of aircrafts.

### **Subdivision of Agricultural land (No. 70 of 2009)**

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.

#### ***Aspect of Project***

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

### **Mineral and Petroleum Resource Development Act (No. 28 of 2002 as amended)**

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.

As per Section 27 (1) of the Act, the Department of Mineral Resources and Energy (DMRE) 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.

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".

#### ***Aspect of Project***

Any activities associated with the WEF requiring extraction of sand or hard rock for construction purposes will require the submission of an application to DMRE for either a mining permit or mining licence. The De Rust North WEF must seek approval to use the land for the purposes of the WEF from the Minister.

### **The Occupational Health and Safety Act (Act 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.

#### **Aspect of Project**

The Applicant must be mindful of the principles and broad liability and implications contained in the OHSA and mitigate any potential impacts. The necessary management and monitoring requirements will be included in the EMP.

### **3.3.1 Planning Context**

South Africa’s National Development Plan (NDP) 2030 offers a long-term plan for the country. It defines a desired destination where inequality and unemployment are reduced and poverty is eliminated so that all South Africans can attain a decent standard of living. Electricity is one of the core elements of a decent standard of living.

The NDP envisages that, by 2030, South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates; that is socially equitable through expanded access to energy at affordable tariffs; and that is environmentally sustainable through reduced emissions and pollution. In formulating its vision for the energy sector, the NDP took as a point of departure the Integrated Resource Plan (IRP) 2010–2030 promulgated in March 2011.

The renewable energy industry has substantial support in the South African planning context, which is detailed in the following national and provincial plans:

- National Development Plan 2030;
- National Integrated Resource Plan for Electricity (2010-2030);
- Integrated Resource Plan (IRP 2019)
- National Infrastructure Plan 2012, as amended;
- Northern Cape Provincial Growth and Development Strategy (PGDS);
- Northern Cape Provincial Spatial Development Framework (PSDF); and
- Northern Cape Climate Change Response Strategy

More specifically, the proposed De Rust North WEF falls within the jurisdiction of the Khâi-Ma Local Municipality and the Namakwa District Municipality. An evaluation of the ‘need and desirability’ of the project (Section 2.3) considers the strategic context of the project with regard to the municipal Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) as follows:

- Namakwa District Municipality IDP 2021-2022;
- Namakwa District Municipality SDF 2012;

- Namakwa District Municipality Local Economic Development (LED) strategy; and
- Khâi-Ma Municipality IDP 2017-2022

### 3.3.2 Policy Context

In South Africa, the national utility company, Eskom, sources up to 77% of its electricity needs from coal. Against the backdrop of heightened climate change awareness and a growing concern around the reliance and environmental impacts of using fossil fuels, as well as an increasing projected electricity demand in the country, a number of policies were developed that aim to diversify the electricity generation mix for South Africa. These include the White Paper on the Energy Policy of the Republic of South Africa (1998), the White Paper on Renewable Energy (2003) and the National Climate Change Response Policy White Paper (2011).

However, despite the proactive policy stance from the early 2000s, by the end of the decade there was an electricity shortage that resulted in rolling black outs since 2008. In direct response to these electricity shortages, the IRP was issued as a medium-term strategy which set the target for renewable energy supply to 17.8 Gigawatts (GW) over a 20-year period from 2010 to 2030. This will contribute to 42% of all new electricity capacity and included specific allocations for the various types of renewable energy through subsequent ministerial determinations from the Department of mineral resources and energy (DMRE). These renewable energy targets are procured through a competitive tendering process called the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) run by the DMRE, which commenced in 2011. The REIPPPP is highlighted as a significant policy for enabling achievement of climate change mitigation goals under South Africa's INDC. The success of this programme has been internationally recognised, with the United Nations Environmental Programme (UNEP) 2014 Report placing South Africa among the top-10 countries in respect to renewable energy investment. The procurement of new, renewable energy, generation capacity from Independent Power Producers (IPPs) in order to meet the national commitment of transition to a low carbon economy and ensure security of energy supply. The target of 26 030 MW of installed capacity from PV and Wind resources, as indicated in the Integrated Resource Plan of 2019, will be met through a rolling procurement plan by 2030.

The proposed De Rust North WEF would therefore have both national and global significance as it aligns with national policy direction as well as contributing to South Africa being able to meet some of its international climate change obligations, by aligning domestic policy with internationally agreed strategies and standards as those set by the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, as well as the recent Convention of the Parties (COP) 21 in Paris 2015, to all of which South Africa is a signatory.

### 3.4 LEGAL REQUIREMENTS AS PER THE EIA REGULATIONS, 2014 (AS AMENDED)

NEMA, as amended, establishes the principles for decision-making on matters affecting the environment. Section 2 sets out the National Environmental Management Principles which apply to the actions of organs of state that may significantly affect the environment. Accordingly, NEMA identifies activities that require authorisation prior to commencement. Such activities listed in the 2014 EIA Regulations (GN R982) are detailed in Table 3-2.

**Table 3-2: Listed activities triggered by the proposed De Rust North Wind Energy Facility.**

Government Notice	Activity Number	Description	Aspect of the Project
Listing Notice 1: R.327 as amended on 7 April 2017	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;	Underground cables for the transmission of electricity generated by the turbines to the onsite switching station.
	12	The development of – (ii) infrastructure or structures with a physical footprint of 100 square meters or more; where such development occurs- (a) within a watercourse; or (c) within 32 meters of a watercourse, measured from the edge of a watercourse	The proposed turbines and associated infrastructure including access roads and laydown areas during the construction phase located within a watercourse or the 32m buffer area. The final placement of all infrastructures will be refined during the process, and avoid the watercourse and indicated buffer as far as possible.
	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 metres.	Storage of fuel, oil and other chemicals on site could trigger this activity. The volumes are not known but will have a combined capacity of between 80 and 500 m <sup>3</sup> .
	19	The infilling or depositing of any material of more than 10 m <sup>3</sup> into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit,	The infilling or depositing of any material of more than 10 m <sup>3</sup> into a watercourse may be

		pebbles or rock of more than 10 m <sup>3</sup> from a watercourse;	triggered with the construction of internal service roads or cables across drainage lines.
	24	The development of a road -  (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.	Roads are required throughout the construction and operational stages of the project. during the construction phase, roads will be approximately 10m wide for the delivery of turbine parts and other equipment, and approximately 8m wide during the operational phase for maintenance purposes.
	28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:  (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare.	The current land use of the proposed farm on which the project is proposed is agriculture. The development is outside an urban area and the development footprint is > 1 ha.
	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 reserve exists, where the existing road is wider than 8 metres	The widening of portions of existing roads or the lengthening of roads will be required to accommodate the logistical construction requirements to access the site and associated infrastructure.
Listing Notice 2: R.325 as amended on 7 April 2017	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 De Rust North WEF will consist of up to 39 turbines with a capacity of up to 7.5MW each, depending on the available technology at the time of construction. The overall capacity of the facility will be about 240MW.
	15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The total area to be cleared is expected to be greater than 20 ha, depending on the final



			layout. This includes turbine placement, roads, and other permanent infrastructure. During the construction phase, some areas will be cleared for the laydown, storage and assembly areas which will be rehabilitated post construction.
Listing Notice 3: R.324 as amended on 7 April 2017	10	<p>The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic meters.</p> <p>g. Northern Cape</p> <p>ii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;</p>	<p>Wetlands and watercourse are present throughout the study area.</p> <p>The exact location of the storage and handling of dangerous goods are not yet known, but the necessary precaution will be taken and where possible these areas will be avoided. It is possible that this activity may become redundant after the necessary steps have been taken.</p>
	18	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p>g. Northern Cape</p> <p>ii. Outside urban areas:</p> <p>(ii) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland</p>	<p>Upgrades of existing roads are to take place within a watercourse. The existing roads, including the access roads, need to be expanded by &gt;4m.</p>

#### 4 SCOPING AND EIR PROCESS

A S&EIR is conducted in two phases. The first phase is scoping and the second phase is the EIR. The scoping phase will commence once the environmental authorisation application has been submitted with the competent authority (in this case

Department of Forestry, Fisheries and the Environment - DFFE). The following tasks will be undertaken for the scoping phase: identify stakeholders and interested and affected parties (I&APs); identify relevant policies and legislation; consider the need and desirability of the project; consider alternative technologies and sites; identify the potential environmental issues; determine the level of assessment and public participation process required for the EIA phase; and identify preliminary measures to avoid, mitigate or manage potential impacts.

The requirements for the submission of the scoping report to competent authority is specifically contained in Chapter 4 Part 3 of the NEMA Reg No 326 (amended on 7 April 2017). The S&EIR process can take up to 300 days to complete (87 days for scoping phase, 106 days for EIA phase, and 107 days for competent authority to review). The applicant must, within 44 days of receipt of the application by the competent authority, submit to the competent authority a scoping report which has been subjected to a public participation process of at least 30 days and which reflects the incorporation of comments received, including any comments of the competent authority. The competent authority must, within 43 days of receipt of a scoping report, make a decision

The purpose of the scoping report is to identify and evaluate the main issues and potential impacts of the proposed development at a detailed desktop level based on existing information.

#### **4.1 APPROACH**

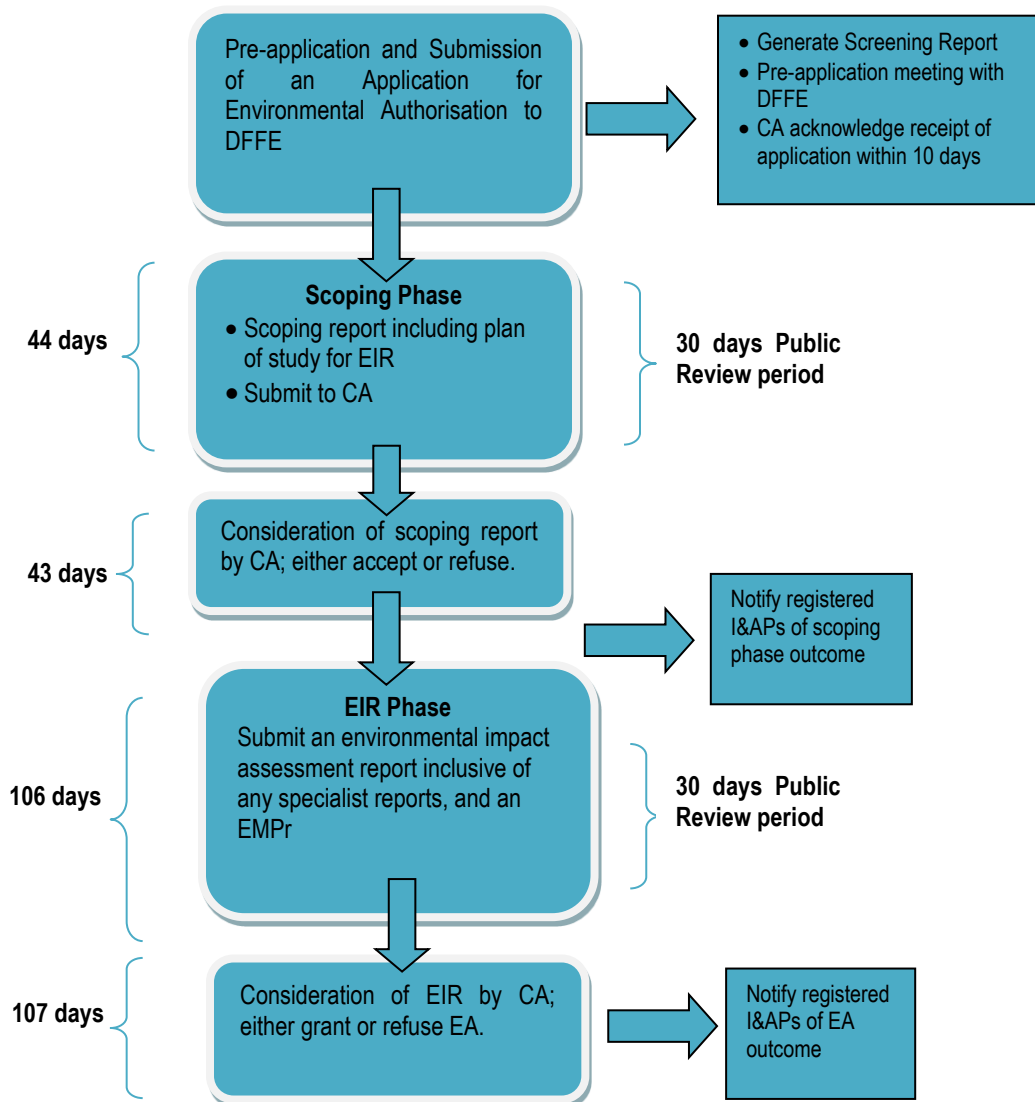
There are two distinct phases in the S&EIR process namely the Scoping Phase and the EIR Phase, as outlined in Figure 4-1. This report deals with the scoping phase. The requirements for the S&EIA process are specifically contained in Chapter 4 Part 3 of the EIA Regulations 2014 (as amended).

The scoping phase is conducted as the precursor to the Environmental Impact Assessment (EIA) process during which:

- Project and baseline environmental information is collated. Baseline information for the scoping report is gathered through visual inspections during field visits of the proposed project area and surroundings, desktop studies which include GIS mapping, and review of existing reports, guidelines and legislation.
- Landowners, adjacent landowners, local authorities, environmental authorities, as well as other stakeholders which may be affected by the project, or that may have an interest in the environmental impacts of the project are identified.
- Interested and affected parties (I&APs) are informed about the proposed project.
- Competent authority (CA) is consulted to confirm legal and administrative requirements.
- Environmental issues and impacts are identified and described.
- Development alternatives are identified and evaluated, and non-feasible development alternatives are eliminated.
- The nature and extent for further investigations and specialist input required in the EIA phase is identified.
- The draft and final scoping reports are submitted for review by authorities, relevant organs of state and I&APs.

- Key I&AP issues and concerns are collated into an issues and response report for consideration in the EIA phase.

Issues raised in response to this Draft Scoping Report (currently being released for a 30-day comment period) will be captured in a Comments and Response Report as an appendix to the Final Scoping Report (FSR), which will be submitted to the CA for decision-making (i.e. approval or rejection). If approved, it marks the end of the Scoping Phase after which the EIA Process moves into the impact assessment and reporting phase.



*Figure 4-1: The S&EIR process in terms of the EIA Regulations (2014, as amended).*

The content for the scoping report is included in Appendix 2 of the EIA Regulations 2014 (as amended). The scoping process can take up to 87 days, 44 days to submit the final scoping report to the CA and 43 days for the CA to review the scoping report.

## 4.2 SPECIALIST ASSESSMENTS

To provide a scientific assessment that is transparent and robust, a clear methodology is required as per the protocols for each environmental theme as highlighted by the screening report (Appendix E). It is necessary to take note that each specialist requires specific methodology to their investigation (scoping reports are included in Appendix D).

For more information on specialist assessments refer to Chapter 5.

## 4.3 PUBLIC PARTICIPATION

The Public Participation Process (PPP) was developed to ensure compliance with environmental regulatory requirements and to provide I&APs with an opportunity to evaluate the proposed project. During this process stakeholders can provide inputs and to receive feedback from the environmental specialists, other stakeholders and the competent authority.

### 4.3.1 Objectives of Public Participation

- Provide Stakeholders and Interested and Affected parties (I&APs) with an opportunity to voice their support or concerns and raise questions regarding the project, application or decision made by the CA;
- Provides an opportunity for I&APs, EAP and the CA to obtain clear, accurate and understandable information about the environmental, social and economic impacts of the proposed activity or implications of a decision;
- Provide Stakeholders, I&APs, and the CA with the opportunity of suggesting ways of reducing or mitigating negative impacts of an activity and for enhancing positive impacts;
- Enable the applicant / EAP to incorporate the needs, preferences and values of affected parties into the process and submitted reports for review.

### 4.3.2 Legislation

The PPP must comply with the several important sets of legislation that require public participation as part of an application for authorisation or approval, namely:

- The National Environmental Management Act (Act No. 107 of 1998 - NEMA);
- The EIA Regulations (2014, as amended);
- Guidelines for Public Participation (2017)

Adherence to the requirements of the above-mentioned Acts will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts. The details of the Integrated PPP are provided below.

Adherence to the requirements of the above-mentioned Acts and Regulations will allow for effective PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts.

#### **4.3.3 Identification of I&APs**

An I&AP database will be compiled of key stakeholders and I&AP's identified for notification of the Environmental Authorisation Application. The I&AP database includes, amongst others; landowners, affected communities, regulatory authorities and other specialist interest groups. A list of key stakeholders is as follows:

- Competent Authority: Department of Forestry, Fisheries and the Environment (DFFE)
- Northern Cape Department: Agriculture, Environmental Affairs, Rural Development and Land Reform
- Department of Water & Sanitation (DWS)
- Department of Mineral Resources and Energy (DMRE)
- Department of Agriculture, Rural Development and Land Reform
- Eskom
- South African Heritage Resource Authority (SAHRA)
- Namakwa District Municipality
- Khâi-Ma Local Municipality
- Khâi-Ma Local Municipality Councillor for Ward 6
- Civil Aviation Authority (CAA)
- BirdLife South Africa
- South African Bat Assessment Association (SABAA)
- Square Kilometre Array (SKA)
- Endangered Wildlife Trust (EWT)

#### **4.3.4 Notification and Register of I&APs**

The PPP commenced on 2 November 2022 with the placement of site notices at prominent places on the boundary of the property. All individuals who registered for this project have been added to the I&AP list, provided that they have given the correct and complete contact details in order to receive communications for this project. The notification procedure included (Appendix C):

- Newspaper advertisement: published in the Blesbok on 9 November 2022;
- Site Notices: erected at prominent points along the property boundaries and noticeable places on 2 November 2022; and
- Emails were composed and sent to the identified authorities, adjacent landowners, and I&APs that have registered thus far.
- The Background Information Document (BID) was released to I&APs on the 1 December 2022.

#### **4.3.5 Background Information Document**

Included in the I&AP notification letters and e-mails sent out was a Background Information Document (BID). The BID includes the following information:

- Locality map and description;
- Project description and background;
- Legal framework;
- Explanation of the Scoping and EIR Process to be followed; and
- Provide opportunity to get involved and comment on the proposed project.

#### **4.3.6 Consultation with I&APs**

Meetings or open days with I&APs will be held upon request, these meetings will be held virtually or in person to allow all relevant parties to have an opportunity to take part in the PPP. Refer to section 4.3.3 for more details on this.

#### **4.3.7 Notification of availability of scoping report**

All registered I&APs and stakeholders have been notified via email of the availability of the Draft Scoping Report for review for a period of 30 days from **14 December 2022 to 4 February 2023**. The report is available on Enviro-Insight's website at <http://www.enviro-insight.co.za/download-it/project-downloads/>. CD electronic copies are also available on request from Enviro-Insight.

### **5 DESCRIPTION OF THE RECEIVING ENVIRONMENT**

A general description of the study area is outlined in the section below. The receiving environment in relation to each specialist study is also provided. During the Scoping Phase, sensitive areas are mapped for each environmental aspect and provided to the Proponent and design team. Based on this, the environmental sensitivities will be then avoided as far as possible in the placement of the turbines and associated infrastructure during the EIR phase.

The following environmental aspects (as per the screening report) are further described in the following subsections:

- Terrestrial Biodiversity;
- Sensitive Animal Species;
- Sensitive Plant Species;
- Bats (wind);
- Avifauna (wind);
- Aquatic Biodiversity;
- Cultural Heritage and Archaeology;
- Agriculture;
- Socio-economic;



- Noise;
- Visual landscape including Flicker;
- Traffic and Transportation;
- Electromagnetic and radio frequency interference.

For a more detailed understanding of the PAOI, the geology, climate and land cover need to be discussed. This will be addressed first followed by the environmental aspects as per the screening report.

## 5.1 REGIONAL AREA

The proposed development will be located approximately 13km south of Pofadder, within the Khâi-Ma Local Municipality in the Northern Cape Province (Figure 5-1). The proposed wind farm can be accessed via the R358 regional road. The centre point and corner co-ordinates for the development site are included in Table 5-1. The Project has a total footprint of approximately 4 936 ha situated on Portion 9 of the Farm Nouzees 148, Remaining Extent of the Farm Houmoed 206 and Portion 1 of the Farm Samoep 147 (21-digit Surveyor General code: C03600000000014800009, C03600000000020600000, C03600000000014700001).

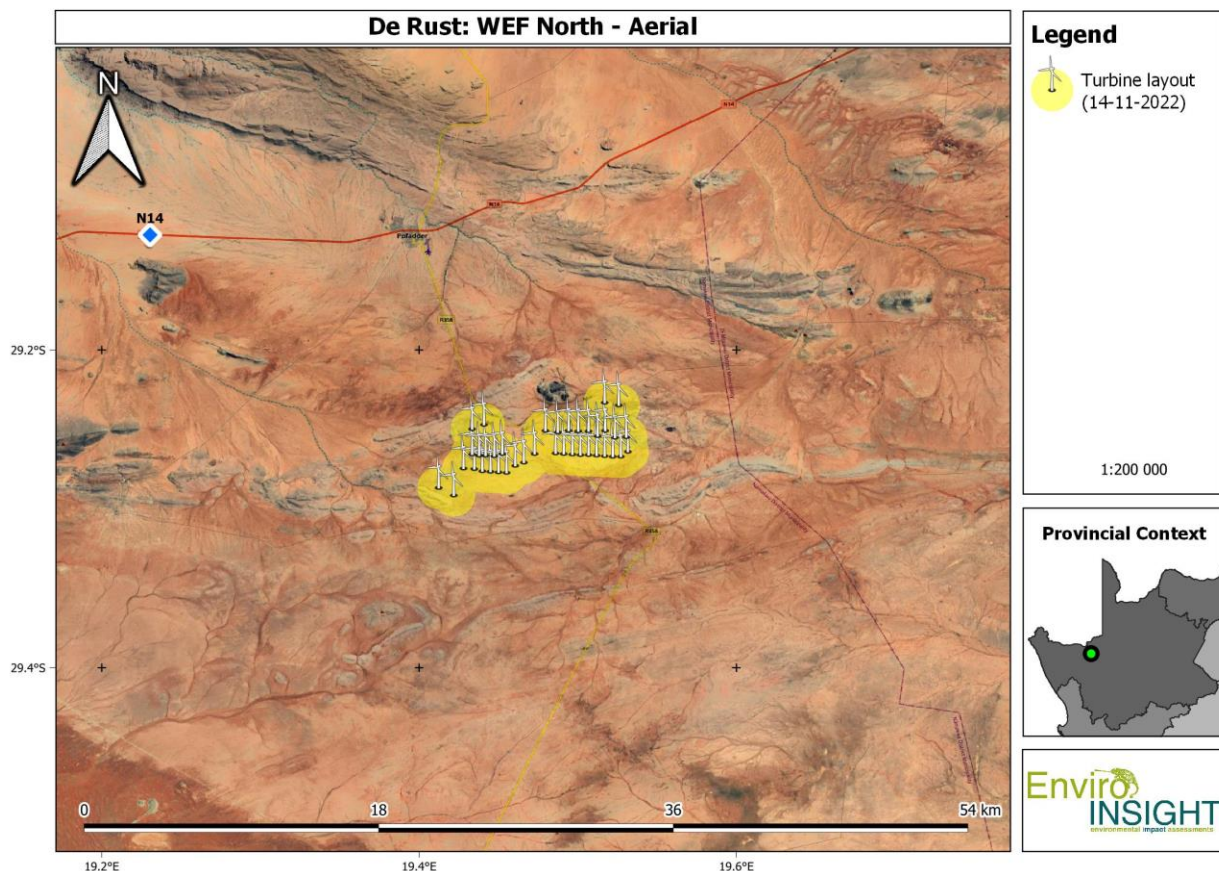
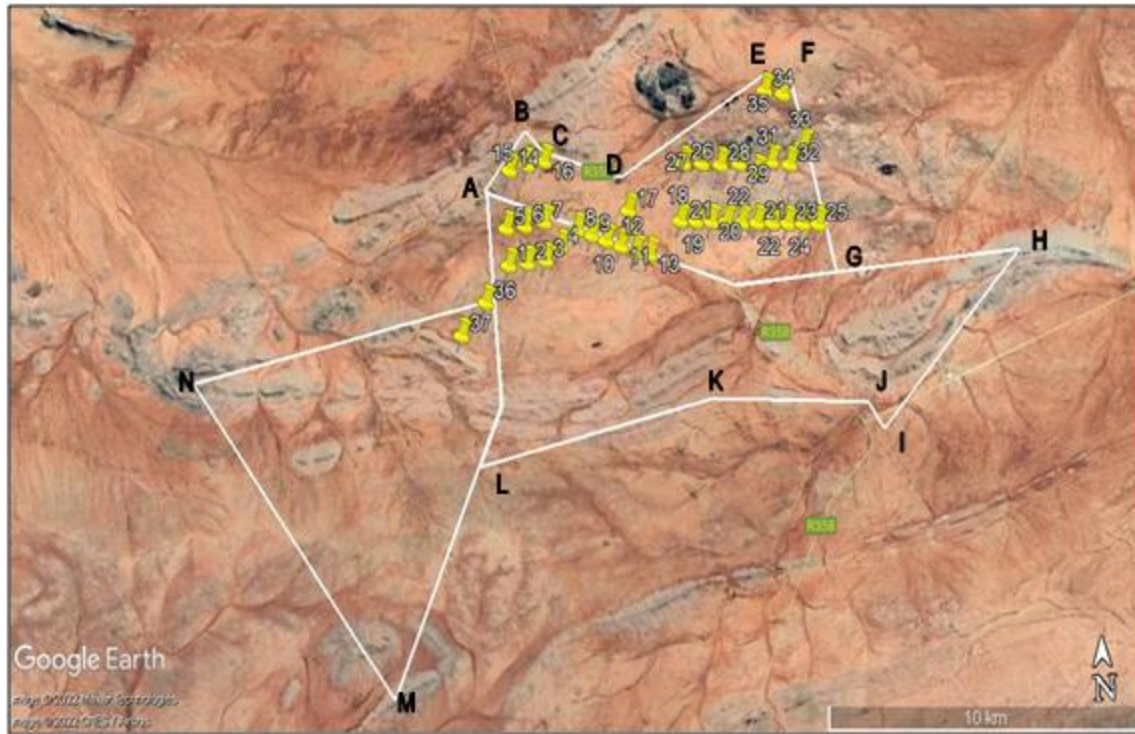


Figure 5-1: Regional Study Area.



**Figure 5-2: Zoomed in image of the study area for De Rust North WEF.**

**Table 5-1: Application Farm Boundaries of the Proposed De Rust North WEF Location.**

De Rust North WEF		
Co-ordinates of the proposed site/s (DDMMSS)	Latitude (S)	Longitude (E)
Point A	29°15'5.20"S	19°25'22.82"E
Point B	29°14'10.05"S	19°26'13.74"E
Point C	29°14'32.69"S	19°26'34.03"E
Point D	29°14'57.57"S	19°28'6.39"E
Point E	29°13'25.59"S	19°30'57.44"E
Point F	29°13'29.13"S	19°31'38.70"E
Point G	29°16'32.17"S	19°32'24.56"E
Point H	29°16'16.83"S	19°36'6.81"E
Point I	29°19'1.28"S	19°33'12.44"E
Point J	29°18'35.50"S	19°32'52.81"E
Point K	29°18'23.95"S	19°29'48.17"E
Point L	29°19'20.71"S	19°25'5.28"E



Point M	29°22'42.95"S	19°23'18.93"E
Point N	29°17'50.60"S	19°19'26.26"E
Point O	29°16'44.13"S	19°25'26.55"E
Mid-Point	29°15'45.57"S	19°29'18.81"E

## 5.2 CLIMATE

The nearby town of Pofadder, the site is approximately 13km south of the town, receives most of its rainfall between February and April (data from 1985; <https://www.meteoblue.com/>), and recent data (2009-2021) indicates that most rainfall occurs from October to March, with a mean annual rainfall of 135 mm (<https://wapor.apps.fao.org/>). The warmest months are October through to April with a mean daily maximum of 33 °C and minimum of 17°C (February) and winter maximum temperatures of 18 °C and minimum 2 °C (July; <https://www.meteoblue.com/>).

## 5.3 TOPOGRAPHY

The site has varied terrain, consisting of a relatively flat plain with small quartzite ridges and koppies that form linear hilly regions across the properties, with especially large hills in the southeast, and dolerite outcrops forming small to large conical koppies in the northeast. There are some rocky areas on the flats that are not associated with higher terrain, located in the northern central portion of the PA. (Figure 5-3).

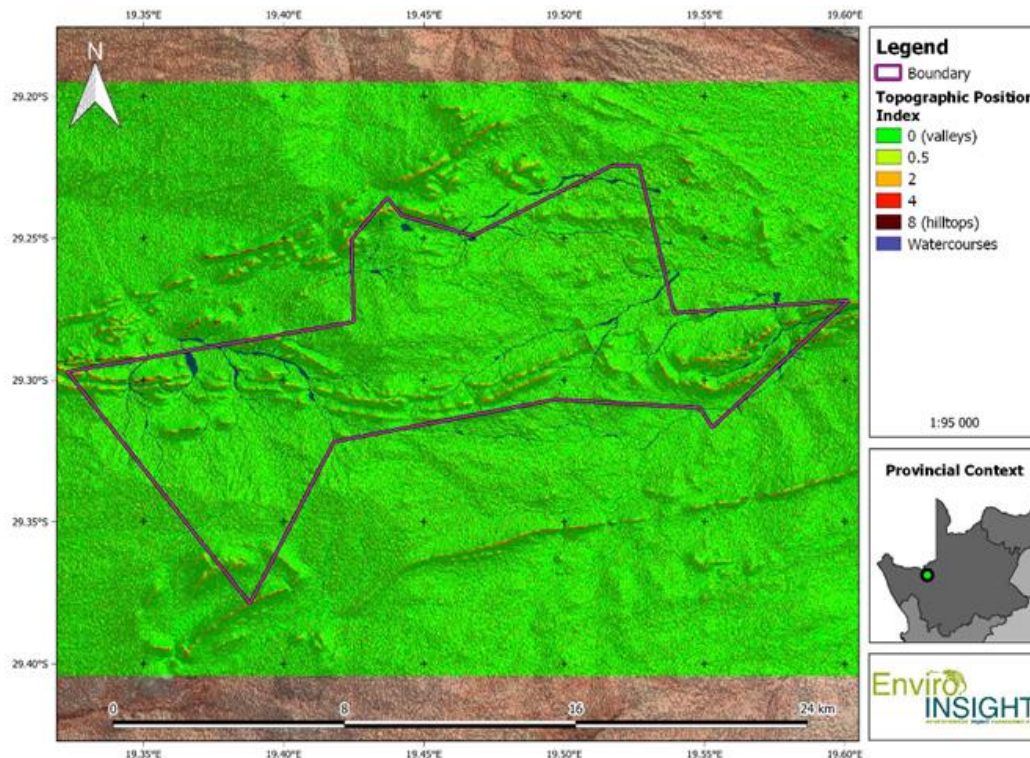


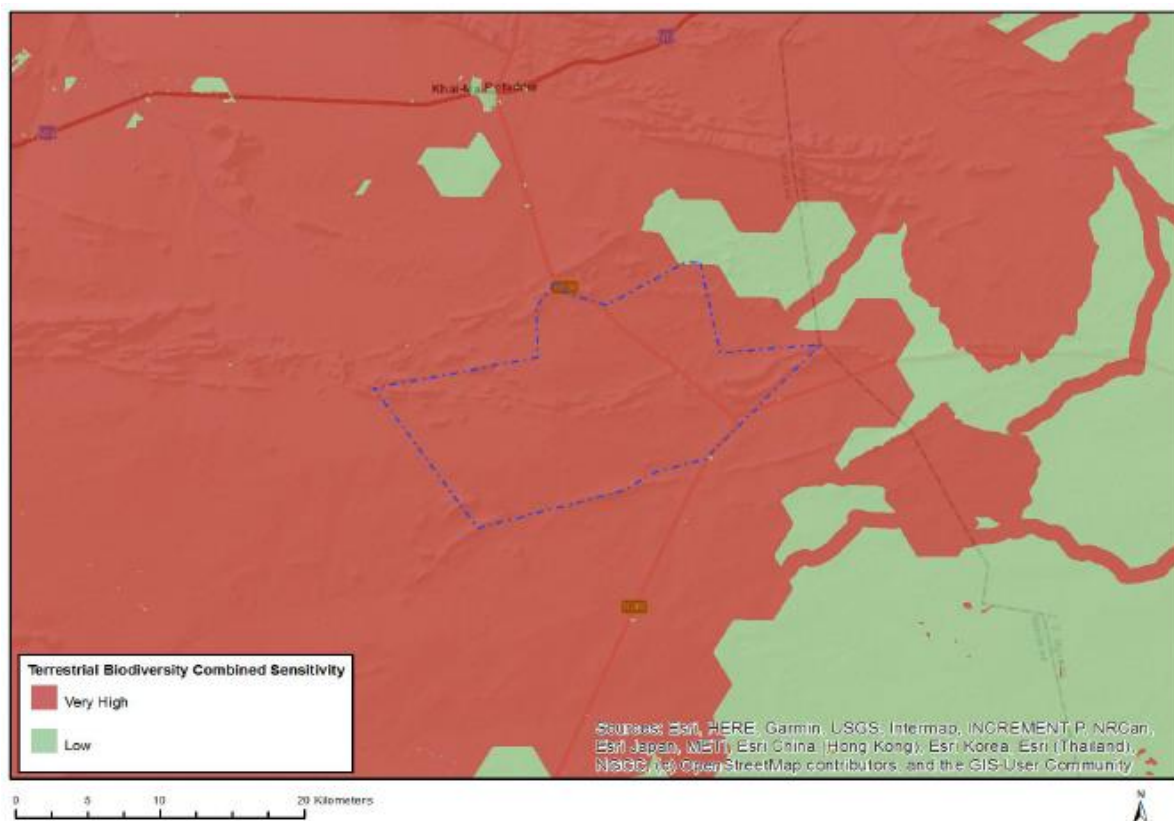
Figure 5-3: Topography in relation to De Rust Northwest WEF (SANBI, 2018)..

## 5.4 TERRESTRIAL BIODIVERSITY

The assessment and minimum reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool). The requirements for terrestrial biodiversity are for landscapes or sites which support various levels of biodiversity. The screening report generated 05/02/2021 indicated that the Terrestrial Biodiversity Combined Sensitivity Theme is indicated as **Very High** sensitivity (Figure 5-4). The sensitive features which trigger the Very High sensitivity include:

- Freshwater ecosystem priority area quinary catchments;
- Critical Biodiversity Area 1
- Critical Biodiversity Area 2;
- Freshwater ecosystem priority area quinary catchments;
- Focus Areas for land-based protected areas expansion; and
- Ecological Support Area.

Accordingly, a Terrestrial Biodiversity Specialist Assessment must be conducted based on the Protocols (published on 20 March 2020).



**Figure 5-4: Screening Tool map of relative terrestrial biodiversity theme sensitivity.**

### 5.4.1 Biome and Regional Vegetation

The study area is situated within the Nama-Karoo Biome, a landlocked region in the central plateau of the western half of South Africa that represents the second largest biome, comprising approximately 248,284km<sup>2</sup>. It is essentially a grassy, dwarf shrubland, dotted with characteristic koppies, most of which lies between 1,000 and 1,400 meters above sea level. Eastwards, the ration of grasses to shrubs increases progressively, until the Nama Karoo eventually merges with the Grassland Biome. On the northern fringes the dwarf shrubland often has an overstory of shrubs and trees. It does not have a unique or species rich flora, with only 2.147 plants of which 386 (18%) are endemic and 67 are threatened. Despite the relatively low diversity, the Nama-Karoo vegetation has a high diversity of plant life forms. These include coexisting ephemerals, annuals, geophytes, c3 and C4 grasses, succulents, deciduous and evergreen chamaephytes and trees.

Natural disturbance factors that drive many vegetation dynamics include many that are linked to human actions and many disturbances interact to modify effects. Factors include grazing by livestock and wild herbivores, fire, rainfall and runoff and other episodic events such as hailstorms. Very little of the Nama-Karoo has been transformed from natural vegetation to crops, dams, industry or other forms of land use that threaten natural diversity. The dominant land use is the ranching of small stock, cattle and game farming with indigenous antelope.

Natural vegetation distribution patterns are linked to variations in geology and associated soils, and a distinction exists between plant communities requiring moister soils, and those requiring higher nutrient status soils. Vegetation is also adapted to saline or calcareous soil conditions, where the incidence of non-succulent dwarf shrubs is higher, and is virtually absent on saline soils, where succulent-leaved dwarf shrubs and succulent predominate. Some plants survive because they are able to store water in their thick leaves or root systems, and other may become deciduous in response to the high frequency of drought-like conditions.

The following VEGMAP (Mucina & Rutherford, 2006) vegetation types will be affected by the proposed development ():

- Aggeneys Gravel Vygieveld;
- Bushmanland Arid Grassland;
- Bushmanland Basin Shrubland;
- Bushmanland Inselberg Shrubland; and
- Namaqualand Klipkoppe Shrubland.

The study area is not located in a national threatened ecosystem, as confirmed in the screening report.

#### **Aggeneys Gravel Vygieveld**

This vegetation type is situated on flat or slightly sloping plains (appearing as distinctly white surface quartz layers against the background of red sand or reddish soil), supporting sparse, low growing vegetation dominated by small to dwarf lead-succulents of the families Aizoaceae, Crassulaceae, Euphorbiaceae, Portulacaceae and Zygophyllaceae, with some perennial components. *Eragrostis nindensis* is the dominant perennial graminoid. It is strongly associated with Gneisses and Quartzites, which are the primary determinants of the location of the different types of gravel patches usually found at foothills or on peneplains associated with the base of inselbergs or low ridges amongst the gently undulating plains.

The conservation status is set as Least Threatened and none is conserved in statutory conservation areas. Due to low vegetation cover, the gravel patches are not targeted for grazing and no serious alien plant incursions are observed. These gravel patches are not well defined in the landscape and there are probably more gravel patches of considerable extent ion the region of

Pofadder and Aggeneys that are currently featured. The low precipitation explains why the biomass of plants occurring on the gravel patches is low, but can be considered a true Succulent Karoo vegetation type and forms the easternmost extent of the Succulent Karoo Biome in Bushmanland.

**Common species** occurring in the region include *Boscia albitrunca*, *Ruschia divaricata*, *Euphorbia gariepina*, *E. gregaria*, *E. mauritanica*, *Hypertelis salsoloides*, *Kleinia longiflora*, *Lycium cinereum*, *Psilocaulon subnodosum*, *Sarcocaulon crassicaule*, *Senecio sarcoides*, *Titanopsis hugo-schlechteri*, *Pegolettia retrofracta*, *Aptosimum spinescens*, *Eriocephalus ambiguus*, *Euphorbia spinea*, *Fagonia capensis*, *Galenia fruticosa*, *Helichrysum pumilio* subsp. *pumilio*, *Hermannia spinosa*, *Microlooma incanum*, *Monechma spartioides*, *Crassula corallina* subsp. *macrorrhiza*, *C. deltoidea* and *Stipagrostis ciliata*.

**Biogeographically important species** occurring in this vegetation type include the following: *Antimima vanzylii*, *Ceraria fruticulosa*, *C. namaquensis*, *Stomatium alboroseum*, *Berkheya canescens*, *Anacampseros filamentosa* subsp. *namaquensis*, *Avonia papyracea* subsp. *namaensis*, *A. papyracea* subsp. *papyracea*, *Crassula sericea* var. *sericea*, *Mesembryanthemum inachabense*, *Phyllobolus latipetalus* and *Adenoglossa decurens*.

**Endemic taxa** occurring in this vegetation *Adromischus nanus*, *Dintherus puberulus*, *D. vanzylii*, *Lapidaria margaretae*, *Anacampseros bayeriana*, *Conophytum achabense*, *C. angelicae* subsp. *angelicae*, *C. burgeri*, *C. maughamii*, *C. praesectum*, *C. ratum*, *Lithops dorotheae* and *L. julii* subsp. *fulleri*.

### **Bushmanland Arid Grassland**

The southern border of the unit is formed by edges of the Bushmanland Basin while in the northwest this vegetation unit borders on desert vegetation (northwest of Aggeneys and Pofadder). The northern border (in the vicinity of Upington) and the eastern border (between Upington and Prieska) are formed with often intermingling units of Lower Gariep Broken Veld, Kalahari Karroid Shrubland and Gordonia Duneveld. This vegetation type comprises extensive to irregular plains on a slightly slope plateau. Sparse grassland vegetation is dominated by white grasses (*Stipagrostis* species) giving this vegetation type the character of semidesert „steppe“. In places low shrubs of *Salsola* change the vegetation structure. In abundant rainfall years rich displays of annual herbs can be expected. A Least Threatened status is ascribed to this vegetation type and only small patches is statutorily conserved in the Augrabies Falls National Parks and Goegap Nature Reserve, very little of the area has been transformed and erosion is very low.

Biogeographically important taxa include *Tridentea dwequensis* and the Endemic species *Dintherus poleevansii*, *Larryleachia dinteri*, *L. marlothii*, *Ruschia kenhardtensis*, *Lotononis oligocephala* and *Nemesia maxii*. Important Taxa (Western and Eastern regions only) include the following:

**Graminoids:** *Aristida adscensionis*, *A. congesta*, *Enneapogon desvauxii*, *Eragrostis nindensis*, *Schmidtia kalahariensis*, *Stipagrostis ciliata*, *S. obtusa*, *Cenchrus ciliaris*, *Enneapogon scaber*, *Eragrostis annulata*, *E. porosa*, *E. procumbens*, *Panicum lanipes*, *Setaria verticillata*, *Sporobolus nervosus*, *Stipagrostis brevifolia*, *S. uniplumis*, *Tragus berteronianus* and *T. racemosus*.

**Small Trees:** *Acacia mellifera* subsp. *detinens* and *Boscia foetida* subsp. *foetida*.

**Tall Shrubs:** *Lycium cinereum*, *Rhigozum trichotomum*, *Cadaba aphylla* and *Parkinsonia africana*.

**Low Shrubs:** *Aptosimum spinescens*, *Hermannia spinosa*, *Pentzia spinescens*, *Aizoon asbestinum*, *A. schellenbergii*, *Aptosimum elongatum*, *A. lineare*, *A. marlothii*, *Barleria rigida*, *Berkheya annectens*, *Blepharis mitrata*, *Eriocephalus ambiguus*,



*E. spinescens*, *Limeum aethiopicum*, *Lophiocarpus polystachyus*, *Monechma incanum*, *M. spartioides*, *Pentzia pinnatisecta*, *Phaeoptilum spinosum*, *Polygala seminuda*, *Pteronia leucoclada*, *P mucronata*, *P sordida*, *Rosenia humilis*, *Senecio niveus*, *Sericocoma avolans*, *Solanum capense*, *Talinum arnotii*, *Tetragonia arbuscula* and *Zygophyllum microphyllum*.

**Succulent Shrubs:** *Kleinia longiflora*, *Lycium bosciifolium*, *Salsola tuberculata* and *S. glabrescens*.

**Herbs:** *Acanthopsis hoffmannseggiana*, *Aizoon canariense*, *Amaranthus praetermissus*, *Barleria lichtensteiniana*, *Chamaesyce inaequilatera*, *Dicoma capensis*, *Indigastrium argyraeum*, *Lotononis platycarpa*, *Sesamum capense*, *Tribulus pterophorus*, *T terrestris*, *Vahlia capensis*, *Gisekia pharnacioides*, *Psilocaulon coriarium* and *Trianthema parvifolia*.

**Geophytic Herb:** *Moraea venenata*

### **Bushmanland Basin Shrubland**

Bushmanland Basin Shrubland occurs on the extensive basin centered on Brandvlei and Van Wyksvlei, spanning Granaatboskolk in the west to Copperton in the east, and Kenhardt in the north to around Williston in the south. The area is characterised by slightly irregular plains dominated by a dwarf shrubland, with succulent shrubs or perennial grasses in places. The geology consists largely of mudstones and shales of the Ecca group and Dwyka tillites with occasional dolerite intrusions. Soils are largely shallow to non-existent, with calcrete present in most areas. Rainfall ranges from 100-200 mm and falls mostly during the summer months as thunder storms. As a result of the arid nature of the area, very little of this vegetation type has been affected by intensive agriculture and it is classified as Least Threatened. None of the unit is conserved in statutory conservation areas. According to Mucina and Rutherford no signs of serious transformation are present for the vegetation type, but scattered individuals of *Prosopis* sp. occur in some areas (e.g. in the vicinity of the Sak River drainage system), and some localised dense infestations form closed 'woodlands' along the eastern border of the unit with Northern Upper Karoo (east of Van Wyksvlei) (Mucina & Rutherford, 2006 as amended).

There are few endemic and biogeographically important species present at the site and only *Tridentea dwequensis* is listed by Mucina and Rutherford as biogeographically important while *Cromidon minimum*, *Ornithogalum bicornutum* and *O.ovatum* subsp *oliverorum* are listed as being endemic to the vegetation type (Mucina & Rutherford, 2006 as amended).

### **Bushmanland Inselberg Shrubland**

**Regional Distribution:** Northern Cape Province: system of prominent "inselbergs" (solitary mountains) and smaller koppies exposed over surrounding flat plains between 850 and 1150 m alt. centred on the town of Aggeneys. Most important inselbergs include (from east to west) Namies, Achab, Gamsberg, Aggeneysseberg, Witberg, Haramoep, and Naip. Total area covered by the vegetation type is approximately 78 000ha of which 2545ha occurs in the study area or 3.2% of the regional extent.

**Study Area Distribution:** This vegetation unit occurs on the slopes of the inselbergs and koppies within the study area. The vegetation of the Gamsberg plateau is considered as Aggeneys Gravel Vygieveld. The upper south-facing slope of the Gamsberg on quartzite scree (above approximately 900m) is considered here as Namaqualand Klipkoppe Shrubland. This unit is mapped in the Anderson (2000) but not the Desmet et al. (2005) map.

**Habitats:** Two main habitats can be distinguished: Mountains slopes and Rocky Plains.

**Vegetation characteristics:** Sparse to dense vegetation of variable composition; mixture of lowgrowing grasses (*Eragrostis*, *Aristida*, *Digitaria*, *Enneapogon* and *Panicum*); leaf-succulent karoo shrubs (*Ruschia*, *Antimima*, *Drosanthemum*, *Psilocaulon*), microphyllous and spinescent karoo shrubs (*Acanthaceae*, *Asteraceae*), succulent trees (*Aloe*, *Ceraria*, *Euphorbia*).

**Common Taxa:** *Eragrostis nindensis*, *Enneapogon desvauxii*, *Aristida congesta* subsp. *congesta*, *Oropetium capense*, *Digitaria eriantha*, *Aristida adscensionis*, *Chascanum garipense*, *Hermannia stricta*, *Aptosimum spinescens*, *Pappea capensis*, *Ceraria namaquensis*, *Ceraria fruticulosa*, *Dyerophytum africanum*, *Rogeria longiflora*, *Ficus ilicina*, *Ruschia robusta*, *Hereroa puttkameriana*, *Drosanthemum godmaniae*, *Nymania capensis*, *Hibiscus elliotiae*, *Pelargonium xerophyton*, *Pelargonium spinosum*, *Euphorbia spinea*, *Euphorbia gregaria*, *Euphorbia gariepina*, *Euphorbia avasmontana*, *Cucumis rigidus*, *Tylecodon rubrovenosus*, *Crassula sericea* var. *sericea*, *Crassula namaquensis* var. *namaquensis*, *Crassula garibina*, *Cotyledon orbiculata* var. *orbiculata*, *Adromischus trigynus*, *Salsola aphylla*, *Boscia foetida* subsp. *foetida*, *Boscia albitrunca* var. *albitrunca*, *Commiphora gracilifrons*, *Ehretia rigida*, *Rhigozum trichotomum*, *Helichrysum tomentosum* subsp. *aromaticum*, *Osteospermum armatum*, *Lopholaena cneorifolia*, *Kleinia longiflora*, *Hirpicium alienatum*, *Helichrysum herniarioides*, *Geigeria vigintiquamea*, *Eriocephalus scariosus*, *Eriocephalus pauperrimus*, *Eriocephalus microphyllus* var. *pubescens*, *Eriocephalus ambiguus*, *Dicoma capensis*, *Aloe gariepensis*, *Aloe dichotoma*, *Hoodia gordonii*, *Rhus undulata*, *Ozoroa dispar*, *Hermbstaedtia glauca*, *Tetragonia reduplicata*, *Galenia fruticosa*, *Galenia* cf. *meziana*, *Aizoon asbestinum*, *Monechma spartioides*, *Blepharis pruinosa*, *Blepharis mitrata*, *Blepharis micra*, *Acanthopsis hoffmannseggiana*.

**Important Taxa:** *Brunsvigia comptonii*, *Pachypodium namaquanum* (not present in the study area), *Euphorbia virosa* (not present in the study area).

**Endemic Taxa:** *Avonia recurvata* subsp. *minuta*, *Conophytum friedrichiae* (not present in the study area), *Conophytum fulleri*, *Conophytum marginatum* var. *karamoepense*, *Conophytum praeseatum*, *Dinteranthus vanzylii* var. *vanzylii* (not present in study area), *Schwantesia pillansii*.

**Notes:** This unit shows intermediate floristic similarities between the Succulent and Nama Karoo biomes and the Gariep Stony Desert. With the removal of the upper south-facing slopes and plateau communities from this vegetation unit many important and endemic taxa have been removed from this vegetation unit. Generally, all the species of conservation concern that occur on the Gamsberg are associated with the Aggeneys Gravel Vygieveld, Namaqualand Klipkoppe Shrubland and Azonal (Kloof) vegetation units.

### **Namaqualand Klipkoppe Shrubland (SKn1)**

This vegetation type occurs in the Western and Northern Cape in the central and north-central regions of Namaqualand. It is typified by dramatic landscapes of large granite and gneiss domes and disintegrating boulder koppies that support open shrubland dominated by dwarf shrubs with ericoid or succulent leaves, many of which are deciduous. It is classified as Least Threatened on a national basis (DEA 2011), with a conservation target of 28%. Approximately 6% has been statutorily conserved and about 5% has been transformed (Rouget et al 2004). This vegetation type occupies only about 1% of the prospecting area, and is not present in the proposed mining area.

The soils associated with Namaqualand Klipkoppe Shrubland can be described as: Mokolian granites and gneisses which forms gentle to moderate rocky slopes with rock sizes varying from medium to large with flat to gentle rock sheets as well as rock domes. The soils are described as yellow-brown to brown loamy sand, 0.15 – 0.6 m deep (Mucina & Rutherford, 2006).

According to Mucina & Rutherford (2006), the Namaqualand Klipkoppe Shrubland has 15 endemic plant species namely:

**Succulent Shrubs:** *Ottosonderia monticola*, *Tylecodon nigricaulis*.

**Low Shrubs:** *Lotononis benthamiana*, *L. longiflora*, *L. quinata*, *Wiborgia incurvata*.

**Herbs:** *Tripteris spathulata*, *Zaluzianskya collina*.

**Geophytic Herbs:** *Ornithogalum leeupoortense*, *O. louisae*, *Xysmalobium pearsonii*.

**Succulent Herbs:** *Quagua bayeriana*, *Q pallens*, *Stapeliopsis khamiesbergensis*.

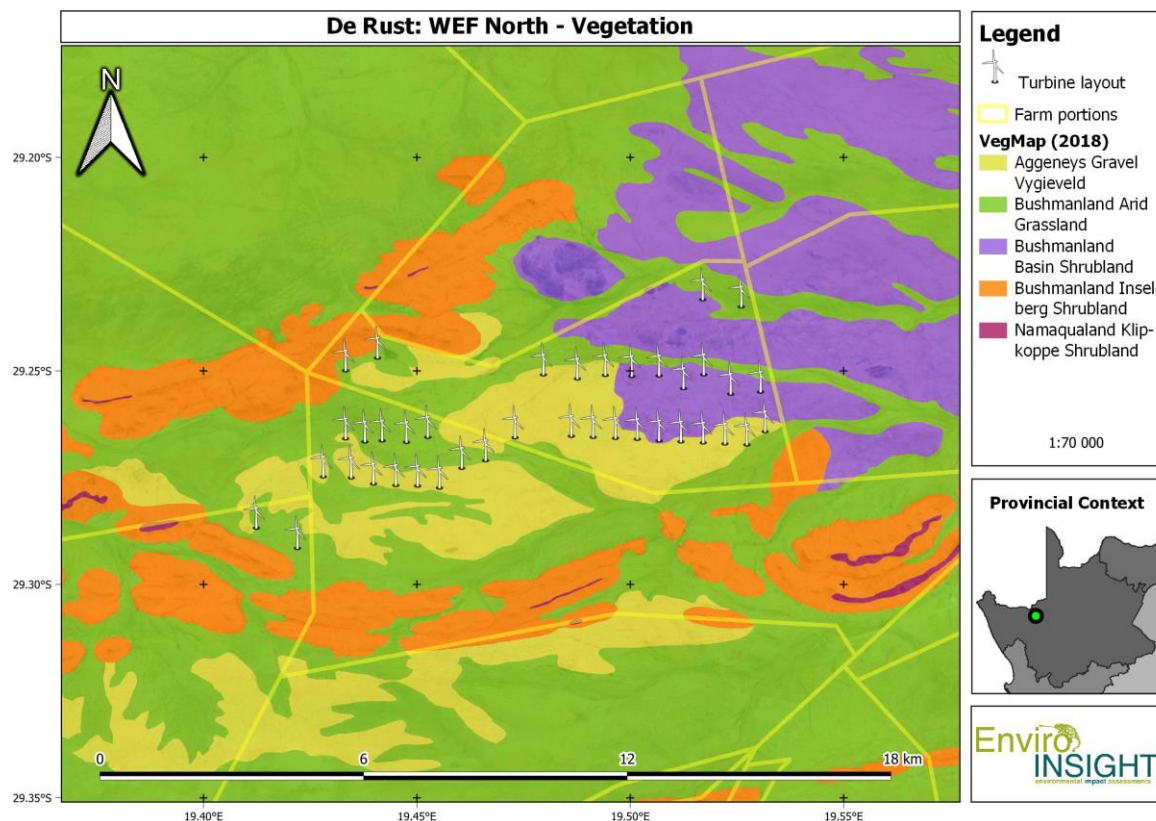


Figure 5-5: Regional vegetation types in relation to the study area (SANBI, 2018).

#### 5.4.2 Northern Cape Critical Biodiversity Areas

The Northern Cape CBA Map (2016) identifies biodiversity priority areas, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample

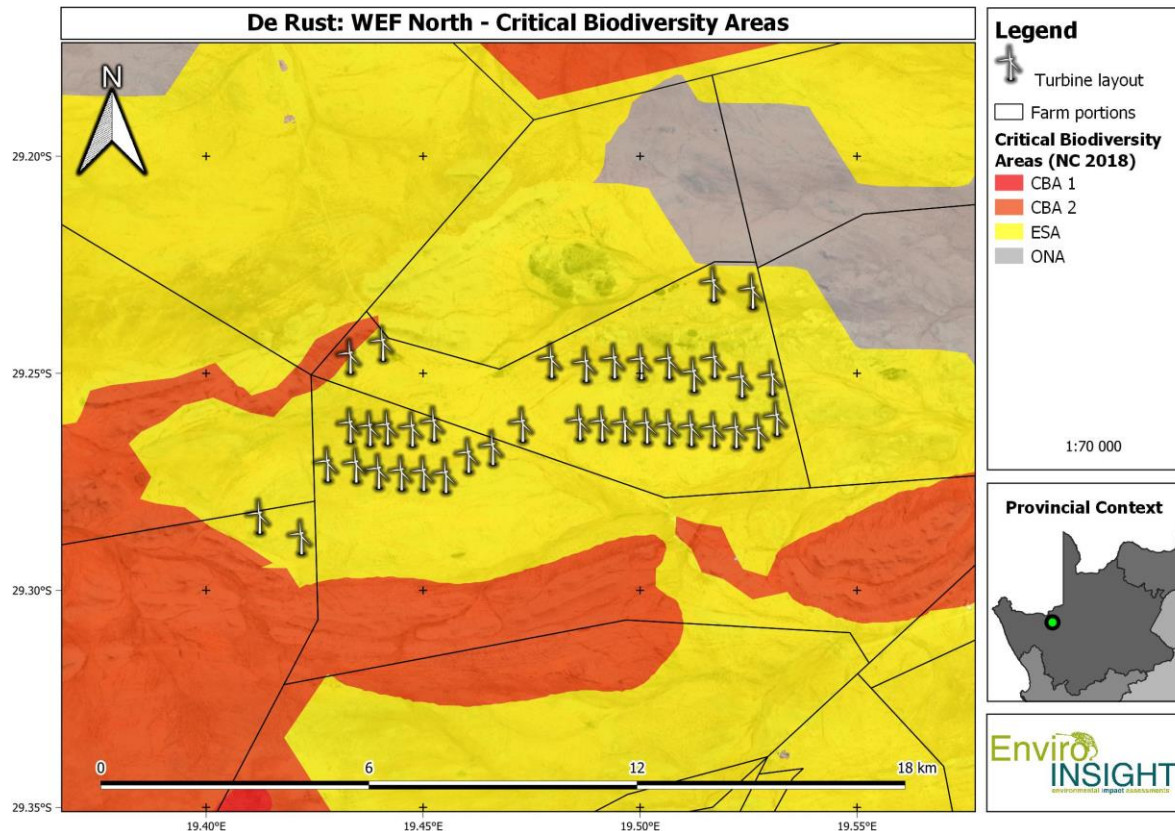
of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole (Holness & Oosthuysen, 2016). Priorities from existing plans such as the Namakwa District Biodiversity Plan, the Succulent Karoo Ecosystem Plan, National Estuary Priorities, and the National Freshwater Ecosystem Priority Areas were incorporated. Targets for terrestrial ecosystems were based on established national targets, while targets used for other features were aligned with those used in other provincial planning processes.

Critical biodiversity areas (CBA's) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services. The primary purpose of CBA's is to inform land-use planning in order to promote sustainable development and protection of important natural habitat and landscapes. Biodiversity priority areas are described as follows:

- *Critical biodiversity areas (CBA's)* are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity conservation targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity-compatible land uses and resource uses. For CBA's the impact on biodiversity of a change in land-use that results in a change from the desired ecological state is most significant locally at the point of impact through the direct loss of a biodiversity feature (e.g. loss of a populations or habitat). All FEPA prioritised wetlands and rivers have a minimum category of CBA1, while all FEPA prioritised wetland clusters have a minimum category of CBA2.
- *Ecological support areas (ESA's)* are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree of restriction on land use and resource use in these areas may be lower than that recommended for critical biodiversity areas. For ESA's a change from the desired ecological state is most significant elsewhere in the landscape through the indirect loss of biodiversity due to a breakdown, interruption or loss of an ecological process pathway (e.g. removing a corridor results in a population going extinct elsewhere or a new plantation locally results in a reduction in stream flow at the exit to the catchment which affects downstream biodiversity). All natural non-FEPA wetlands and larger rivers have a minimum category of ESA.

According to the CBA Map (Figure 5-6), the study area is mainly located in an ESA with CBA2 surrounding it towards the west and south. All turbines are located within the ESA, which reduces the impacts of the proposed development footprint on the receiving environment. All associated infrastructure must be located outside the CBA2 as well.



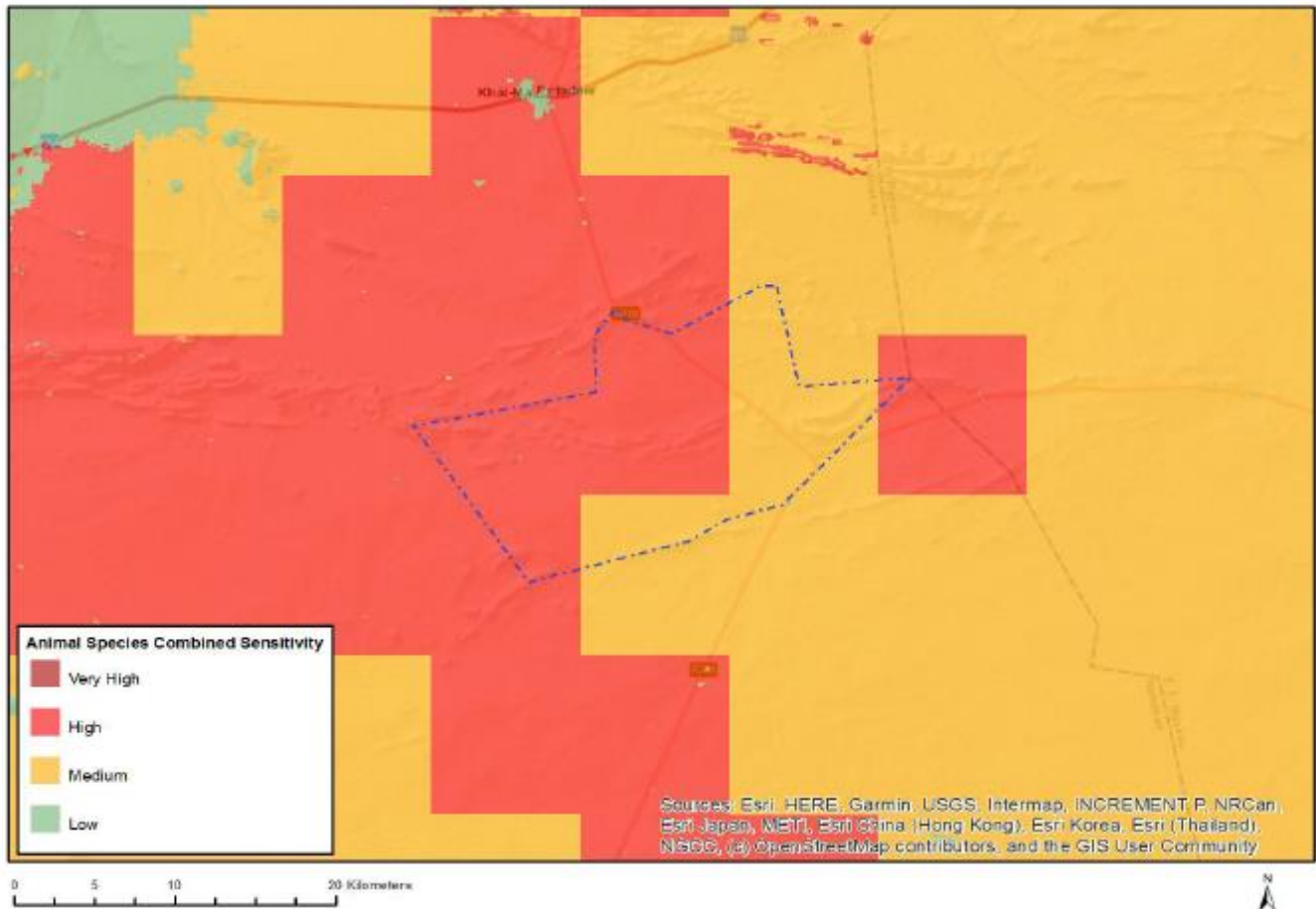


**Figure 5-6: The study area in relation to the Northern Cape Critical Biodiversity Areas (2016).**

## 5.5 PLANT AND ANIMAL SENSITIVE SPECIES

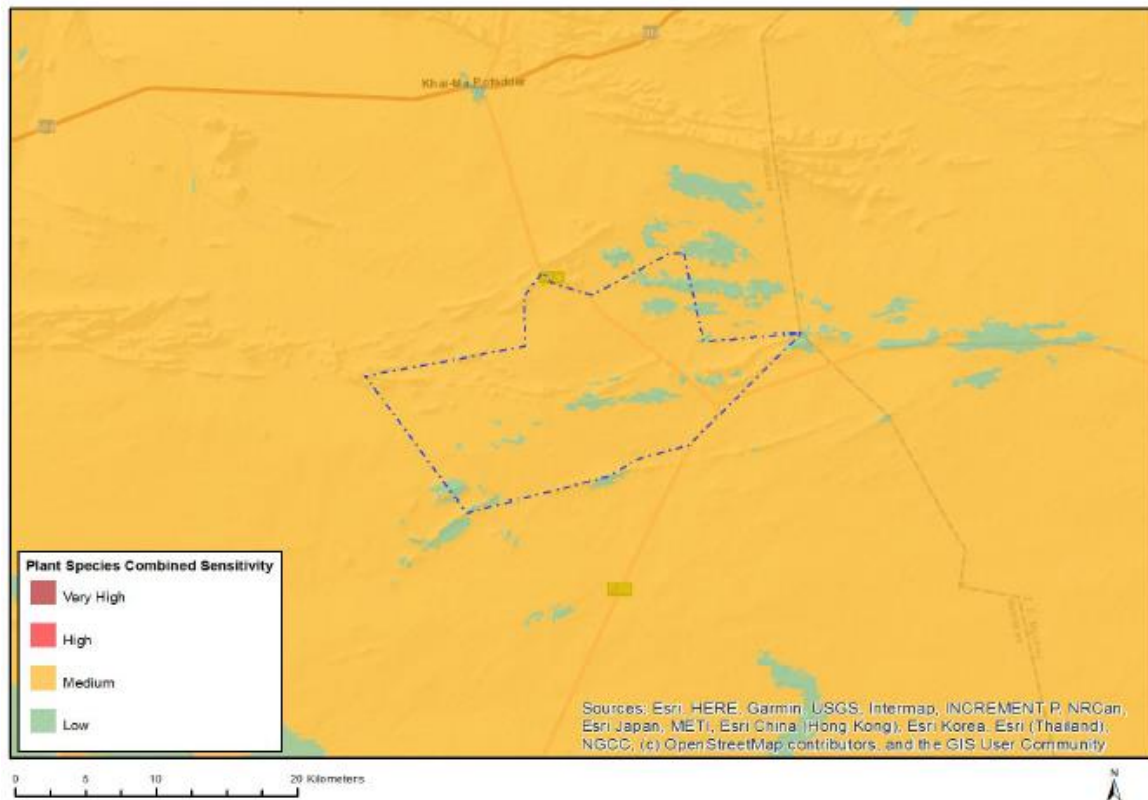
The Animal species theme is indicated as High sensitive due to the presence of sensitive avifauna species, while the remaining taxa groups are considered to be low (Figure 5-7). The avifauna component is addressed in a separate report (see section below) based on the specific protocol and guidelines. Accordingly, only a compliance statement is required.

The plant species theme initially indicated Medium sensitive due to the presence of sensitive species 144, sensitive species 854, sensitive species 425 and *Cephalophyllum fullerii* (Figure 5-8). Sensitive species 144 was recorded during the site sensitivity verification. Accordingly, a full assessment was incorporated for this theme to account for all possible sensitive species likely to occur on site.



*Figure 5-7: Screening Tool map of relative animal species theme sensitivity.*





**Figure 5-8: Screening Tool map of relative plant species theme sensitivity.**

### 5.5.1 Sensitive Plant Species

As per the screening report, four plant SCC are likely to occur in the study area.

## 5.6 AVIFAUNA (WIND)

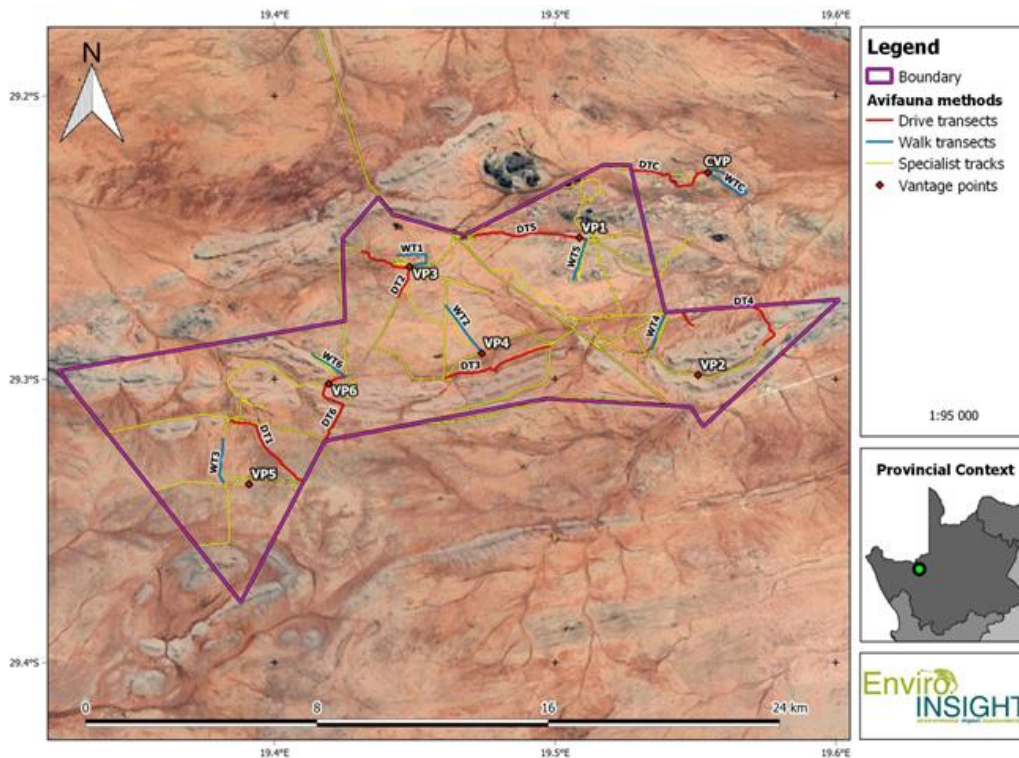
### 5.6.1 Preconstruction Bird Monitoring Survey Design

The field surveys were arranged so that the study area and control sites were surveyed for a total of 12 months and completed in September 2022. This complies with the requirements of the Best Practice Guidelines available at the time (Jenkins et al. 2015). The preconstruction monitoring programme has included a total of four visits to the site, covering the study area through a twelve-month period that included the spring, summer, autumn and winter seasons of the (non-calendar) year. The first survey conducted in All survey dates are summarised as Table 5-4 below

**Table 5-2: Avifauna monitoring sampling period for De Rust WEF and Control Site.**

Date	Season	Methodology applied
October 2021	Spring	VP, DT, WT, WB, NE

January 2022	Summer	VP, DT, WT, WB, NE
May 2022	Autumn	VP, DT, WT, WB, NE
August 2022	Winter	VP, DT, WT, WB, NE



**Figure 5-9: Avifauna survey sites and specialist coverage (GPS tracks) for the proposed De Rust WEF.**

**Vantage Points:** Six vantage points (VPs) within the project study area were identified based on the preliminary desktop and scoping survey in the De Rust WEF, and one identified at the control area, to record the flight altitude and patterns of priority species (totaling seven VPs). VP surveys were conducted accordingly to the most recent recommendation from the best practice guidelines at the time (Jenkins et al. 2015). Each location was surveyed for a minimum of 12 hours of observation per season divided through the early morning, midday and late afternoon times of day (Jenkins et al. 2015).

**Walked Transects:** Seven linear transects ranging from 2 km to 4.1 km in length (140.1 km total), six located in the proposed Project footprint and one within the control area, were walked in order to characterize the passerine and small bird communities. Birds were only recorded (seen or heard) within a fixed maximum width of between 150 to 200 m on either side of the transect line. The same transects were repeated in every season. Surveys started after sunrise and were performed throughout the day to account for temporal variation in bird activity. As a general rule, transects were not walked in adverse conditions, such as heavy rain, strong winds or thick mist. During the surveys, no adverse conditions were recorded that precluded successful analysis.

**Driven Transects:** Populations of large terrestrial birds should be estimated on each visit to the project area by means of road counts (vehicle-based sampling; best applied for relatively large proposed WEFs, especially those with good networks of roads and tracks). Road counts of large terrestrial birds and raptors require that one or a number of driven transects be executed (depending on site size, terrain and infrastructure), comprising one or a number of set routes, limited by the existing roadways but as far as possible directed to include a representative cross section of habitats within the project area of influence (PAOI). Nine drive transects were identified in the project footprint and one drive transect in the control area with a combined total length of 26.935 km. One observer travelling slowly in a vehicle recorded all species on both sides of the drive transect. The observer stopped at regular intervals (every 100 to 300 m) to scan the environment with binoculars.

**Wetlands:** Main water bodies (including wetlands) present within the study area were identified on a Geographical Information System (GIS). These identified and mapped water bodies were surveyed to determine their level of utilisation by water birds. Due to seasonality, the birds were only surveyed during periods with some prevailing inundation or rainfall. Some drainage lines within the greater PAOI were inundated during the 2021 spring surveys and were observed accordingly.

**Specialist Nest Survey:** Any habitats within the PAOI of the proposed WEF, or equivalent habitats around the study area, deemed likely to support nest sites of key raptor and other species of conservation concern, including power lines, stands of large trees, marshes and drainage lines, were surveyed. All potential breeding sites, once identified fully, were mapped, and checked during each survey to confirm occupancy, and all evidence of breeding and the outcomes of such activity, where possible, recorded.

**Species Collision Risk and Bird Passage Rate:** Collision Risks are usually calculated using the following equation:

*Duration of medium and high-altitude flights x collision susceptibility calculated as the sum of morphology and behaviour ratings x number of planned turbines ÷ 100.* However, for the survey area, this was not possible due to the extreme variations in undulations at the vantage points, not allowing for standardised measurements of duration. Therefore, and for the final EIA, collision risk is to be calculated based on a measurement of the three assumed variations of crude passage rates as described by Smallie and Strugnell (2020), primarily focusing on passage rate, flight height and total surface area of turbines. The final calculations will be used to inform the final EIA document.

## 5.6.2 Description of Major Bird Habitats

**Pans and Drainage Lines:** The seasonal drainage lines and accompanying riparian shrubs act as linear dispersal corridors for terrestrial bird species. Much higher species diversity (as well as a unique composition) was observed in this habitat and therefore, these systems are classified to be of high avifaunal importance. The drainage lines, especially in association with ridges act as important flight corridors for bustards, passerines and raptors between foraging and roosting sites.

**Sandy Grassland:** The sandy grassland habitats show a reduced structural complexity and vegetation which provides for a more generic species diversity albeit often higher densities of avifauna. The habitat contains features that provide suitable foraging habitat for Red Lark, Ludwig's Bustard (*Neotis ludwigii*), Kori Bustard (*Ardeotis kori*) and Secretary bird (*Sagittarius*

serpentarius). However, the habitat is characterised by a much-reduced rocky substrate and a higher prevalence of grassed red sand infusions which provides infused and highly localized portions of optimal habitat for Red Larks.

**Shrubland:** The localised high population densities of small mammals such as rodents, springhares and hares within the site as well as the regional linkage to the drainage line habitats, elevates the importance of this habitat for avifauna. The rocky habitats do not provide structural complexity which provides for an increase in species diversity and often showed lower densities of avifauna due to the lack of prey species that are found in this habitat. However, the habitat vegetation provides suitable foraging habitat for the Ludwig's Bustard (*Neotis ludwigii*), Kori Bustard (*Ardeotis kori*) and Secretary bird (*Sagittarius serpentarius*).

**Koppies and Ridges:** The localised high population densities of small mammals such as rodents, springhares and hares within the site as well as the regional linkage to the drainage line habitats, elevates the importance of this habitat for avifauna. The rocky habitats provide structural complexity which provides for an increase in species diversity and often showed higher diversity and densities of avifauna due to the abundance of prey species that are found in this habitat. The habitat vegetation provides suitable foraging, roosting and breeding habitat for the Ludwig's Bustard (*Neotis ludwigii*), Karoo Korhaan, Kori and Secretary bird (*Sagittarius serpentarius*).

**Powerline Infrastructure:** The Powerlines have proved to be highly sensitive in regard to large raptors, especially Martial Eagle which nest frequently on the powerline infrastructure and who utilise the powerlines to launch hunts.

### 5.6.3 Observed and Expected Avifauna

#### 5.6.3.1 Total species composition and abundance

The study area supports a relatively high diversity and abundance of avifauna, which is to be expected in an arid area with a high habitat diversity like the Pofadder region. A total of 83 species have been observed. This medium to high diversity is predominantly due to a number of factors including:

- High regional aridity which shows a high temporal variability in species diversity;
- Diverse habitat types (with some highly sensitive habitat such as drainage lines and temporary pans within the PAOI).
- Climate change which is characterised by lower rainfall and increased temperatures but with stochastic high rainfall events as with 2022.
- Powerline infrastructure bisecting the PA (raptor nesting habitat).

It must be noted that stochastic high rainfall events (especially after the prolonged drought periods) and other atypical prevailing influences (persistent mild weather) may have influenced the local avifaunal assemblage densities which were often recorded as being very high.

#### 5.6.3.2 Priority species list

A list of expected and observed priority species (Retief et al. 2012) in the project area is provided in Table 5-5. A total of 19 priority species are expected to occur on and surrounding the study area, of which 14 have been recorded.

It is clear from Table 5-5 that numerous priority avifauna species occur within the PAOI and can be expected to interact with the proposed development. With all proposed and approved WEF developments, it is vital to consider the context within which these species are observed in the current study, as congregatory behaviour, nesting behaviour and foraging behaviour may differ from that at the adjacent existing WEF facility. Indeed, Van Rooyen (2020) suggests that displacement effects of the WEF are more significant than direct mortality which can greatly affect habitat specific species such as Red Lark and Ludwig's Bustard. Consequently, all applicable data of priority species observed within the monitoring seasons of field surveys allowed for careful evaluation of potential impacts and application of suitable mitigation measures to reduce these impacts where possible. According to the literature, 14 Red-Listed species are known to occur in the region with nine species highly likely and six species confirmed during the completed surveys, representing a very high success rate given a single year study period. Of the expected species and according to Taylor *et al.* (2015), two of the species are Endangered, four of the species are Vulnerable and three are Near-Threatened. For the current study, it was deemed unnecessary that all SCC should be discussed in intensive detail unless deemed highly relevant to the proposed development. However, all relevant SCC are described in brief (**Error! Reference source not found.** 5-6). Three selected relevant species that are possibly susceptible to the proposed development were discussed below in greater detail, which include specific (Guideline-based) recommendations for monitoring and mitigation. Photographic evidence of SCC and Priority Species observed during the current study is provided in Figure 5-18

**Table 5-3: Priority avifauna species list (both expected and recorded as defined by Retief et al. 2012) for the study area.**

Common name	Scientific name	Priority species rank	Global Status	Regional Status	South African Endemic	Current pre-construction monitoring
Bustard, Ludwig's	<i>Neotis ludwigii</i>	14	EN	EN		X
Buzzard, Jackal	<i>Buteo rufofuscus</i>	43	LC	LC	X	X
Courser, Burchell's	<i>Cursorius rufus</i>	69	LC	VU	X	X
Courser, Double-banded	<i>Rhinoptilus africanus</i>	72	LC	NT		X
Eagle, Booted	<i>Aquila pennatus</i>	59	LC	LC		X
Eagle, Martial	<i>Polemaetus bellicosus</i>	4	EN	EN		X
Eagle, Verreaux's	<i>Aquila verreauxii</i>	2	LC	VU		
Eagle-owl, Spotted	<i>Bubo africanus</i>	98	LC	LC		X
Falcon, Lanner	<i>Falco biarmicus</i>	24	LC	VU		X
Goshawk, Southern Pale Chanting	<i>Melierax canorus</i>	75	LC	LC	X	X
Kestrel, Greater	<i>Falco rupicoloides</i>	95	LC	LC		X
Kite, Black-winged	<i>Elanus caeruleus</i>	94	LC	LC		X
Korhaan, Karoo	<i>Eupodotis vigorsii</i>	51	LC	NT	X	X
Korhaan, Southern Black	<i>Afrotis afa</i>	37	VU	VU		X



Common name	Scientific name	Priority species rank	Global Status	Regional Status	South African Endemic	Current pre-construction monitoring
Korhaan, Northern Black	<i>Afrotis afraoides</i>	90	LC	LC		X
Lark, Red	<i>Calendulauda burra</i>	40	VU	VU		X
Lark, Sclater's	<i>Spizocorys sclateri</i>	50	NT	NT		
Secretarybird	<i>Sagittarius serpentarius</i>	13	EN	VU		
Snake- Eagle, Black-chested	<i>Circaetus pectoralis</i>	60	LC	LC		X
Vulture, White-backed	<i>Gyps africanus</i>	23	CR	CR		





**Figure 5-10: Avifauna SCC observed within the proposed De Rust North WEF PAOI (A- Martial Eagle observed within the proposed De Rust WEF; B- Double-banded Courser observed within the proposed De Rust WEF; C- Karoo Korhaan observed within the proposed De Rust WEF; D- Jackal Buzzard observed within the proposed De Rust WEF PA; E- Booted Eagle observed within the proposed De Rust WEF)**

**Table 5-4: Summary of avifauna species of conservation concern of known distribution, previously recorded in or adjacent to the study area pentads.**

Species	Global Conservation Status <sup>4</sup>	National Conservation Status <sup>5</sup>	Preferred Habitat	Potential likelihood of occurrence on study area and potential risk posed from the WEF
<i>Spizocorys sclateri</i> (Sclater's lark)	Near Threatened	Near Threatened	Dry shrubland, karroid drainage lines and karoo shrubveld	<b>Highly Likely:</b> High densities throughout the region but uncommon in the study area. The species is likely to be a breeding resident within or adjacent to the study area. A localised low flying passerine, it is not highly susceptible to WEF development activities but is threatened by habitat loss.
<i>Calendulauda burra</i> (Red lark)	Vulnerable	Vulnerable	Red dune open shrubland/ grassy duneveld	<b>Confirmed:</b> Low densities throughout the region but locally common in the study area. The species is likely to be a breeding resident within or adjacent to the study area. A localised low flying passerine, it is susceptible to WEF development activities (high display flights) but is more threatened by habitat loss.
<i>Aquila verreauxii</i> (Verreaux's Eagle)	-	Vulnerable	Mountainous areas or areas with prominent outcrops with a high prey base (e.g. hyrax)	<b>Regionally confirmed, absent from study area:</b> Frequent foraging resident throughout the PAOI but far less frequent within the study areas due to the large distances to the mountainous preferred habitats and a general lack of localised abundant prey. Localised areas exhibiting high abundance of hyraxes and rock rabbits should be considered highly sensitive to the species. The species is susceptible to poisoning events and WEF facilities with a low risk from proposed activities.
<i>Polemaetus bellicosus</i> (Martial Eagle)	Endangered	Endangered	Open bushveld, desert savanna and karoo with adequate roosting and foraging potential.	<b>Confirmed:</b> A breeding resident adjacent to the PA and regular foraging visitor dependent on adequate food supply and roosts. No breeding pair nesting within the proposed WEF boundary were recorded but frequent sightings in terms of foraging activity on the development footprint area. Typically, the species would exhibit a Moderate risk.

<sup>4</sup> IUCN 2021

<sup>5</sup> Taylor et al. 2015

Species	Global Conservation Status <sup>4</sup>	National Conservation Status <sup>5</sup>	Preferred Habitat	Potential likelihood of occurrence on study area and potential risk posed from the WEF
<i>Falco biarmicus</i> (Lanner Falcon)	-	Vulnerable	Varied, but prefers to breed in mountainous areas.	<b>Confirmed:</b> A fairly common foraging migrant recorded in the current study and expected periodically to occur. Not highly vulnerable to the proposed activities.
<i>Neotis ludwigii</i> (Ludwig's Bustard)	Endangered	Endangered	Primary upland grassland, desert savanna and karoo with foraging and roosting particularly on rocky/ hilly terrain.	<b>Confirmed:</b> High densities throughout the study areas. The species is likely to be a breeding resident within or adjacent to the study area. A large bodied species, it is highly susceptible to WEF development activities as shown by direct interactions with the existing powerlines in the region.
<i>Sagittarius serpentarius</i> (Secretarybird)	Endangered	Vulnerable	Prefers open grassland or lightly wooded habitat although forages extensively in open karroid savannah.	<b>Moderate to Highly Likely:</b> Irregular low-density resident which is most likely of lower risk to the proposed development activities given ground foraging habitats. In addition, persistent long term regional drought may have significantly decimated local prey sources (especially snakes) thus further reducing the likelihood of persisting local populations of significant densities.
<i>Eupodotis vigorsii</i> (Karoo Korhaan)	Near threatened	Near threatened	Karroid habitats, large saline pans and shallow impoundments.	<b>Confirmed:</b> Common resident occurring near areas with drainage lines (including ephemeral) and open areas. Individually susceptible to WEF development activities but as a species is considered low risk.
<i>Falco naumanni</i> (Lesser Kestrel)	Near Threatened	Least Concern	Widespread species prefers open grassland or lightly wooded habitat although forages extensively in open karroid savannah. Roosts collectively in locations with tall trees.	<b>Confirmed:</b> Regular migrant of fluctuating seasonal density which is most likely of lower risk to the proposed development activities due to most pressures occurring with breeding grounds and migration routes.

#### 5.6.4 Preconstruction Monitoring Main Results

Due to the ongoing preconstruction monitoring, the final data will be presented in the final EIA report.

**Walked Transects counts:** During the walked transects, the total number of individual birds (per species) were recorded regardless of if they are listed as priority or not. Notable Priority Species recorded during walked transects included Ludwig's Bustards that were often flushed from foraging positions as well as Double-banded Coursers, Lesser Kestrel, Northern Black Korhaans and Karoo Korhaans. The main focus of drive transects were the recording of large birds and raptors. Ludwig's Bustards, raptors and korhaans and Red Lark were the most frequently recorded priority species. For the final EIA, the data will be used to calculate the combined Index of Kilometric Abundance (IKA = birds/km) for each priority species.

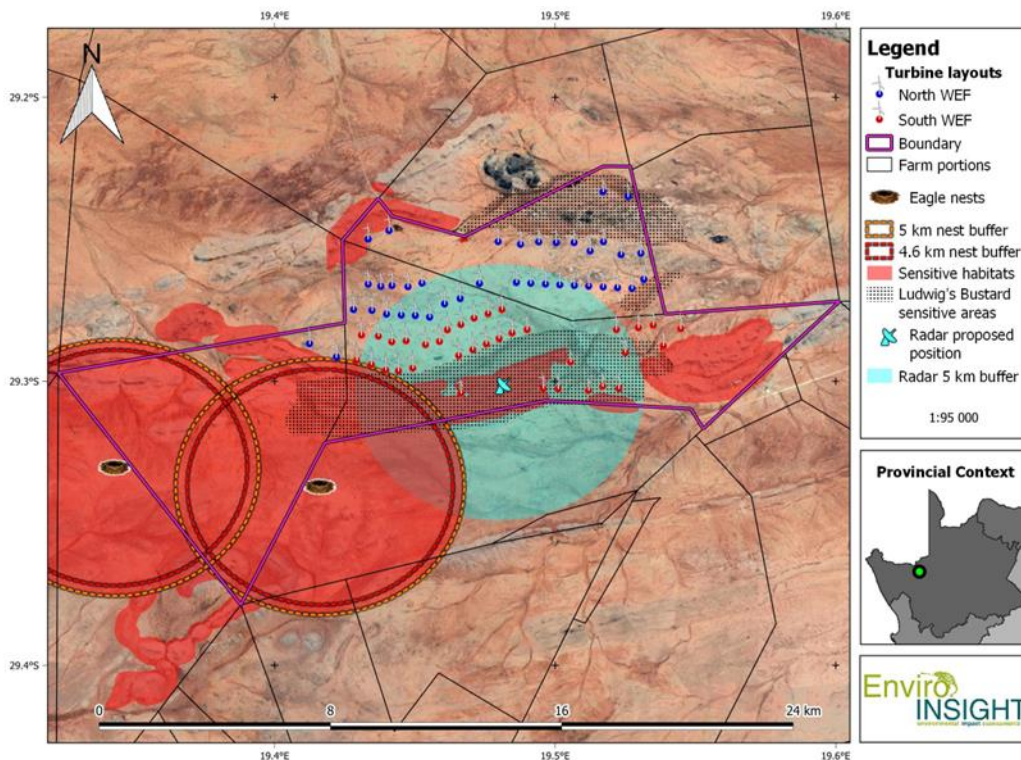
**Vantage Points:** The Vantage Point data collection appeared to provide the richest avifaunal observations with priority species recorded during VP surveys were divided into three flight height categories (Low 0 to 50 m, Medium 50 to 150 m and High with all observations of birds flying more than 150 m). The collated data capture is indicated in order to gain some understandings of which species are likely to be most at risk of collision, especially in conjunction with the final turbine layout.

**Nest Survey:** Nest sites were searched for during the surveys which included windmills, trees, pylons, bridges and masts, representing most potential roost and nesting sites for raptors. Water bodies were potential roost and nesting sites for multiple species, but the high degree of seasonality and above average rainfall conditions was optimal to being representative of optimal breeding habitat for water associates. Highly significant breeding habitat was recorded during the survey and Ludwig's Bustard is considered a resident and to be breeding on site. Pylons were examined for raptor nesting sites to be discussed below.

#### 5.6.5 Preliminary WEF Site Sensitivity

Each demarcated sensitive feature was evaluated for the degree of sensitivity based on the complete 12-month data set (minus passage rates). There is an important presence of a number of SCC in the study area, recorded regularly and widespread through the proposed WEF area. In addition, there are several raptors utilising the site, some of them priority species and/or of conservation concern, such as the Martial Eagle, Lanner Falcon, Pale-chanting Goshawk and Jackal Buzzard. Areas of drainage lines and natural vegetation which are vital to maintaining populations of habitat obligate sensitive species (such as Red Lark) are deemed to have some probability of collision consistently throughout the year. Furthermore, natural drainage line vegetation represents an important habitat to maintain natural geohydrological processes of the site. A 50 m buffer around these areas must be considered NO-GO where no turbines and associated infrastructure may be located. A 200 m buffer is also applied around seasonally inundated watercourses in the PAOI, as these features attract birds under certain conditions and could be the only locations where certain sensitive species such as the ducks, herons, storks and water birds are likely to occur. Martial Eagle nests (occupied or abandoned) were buffered according to either best practice (5 km) or the application of mitigation measures such as shutdown on demand (4.6 km). These areas must be avoided by the developer where no turbines and associated infrastructure may be located. Due to an interactive process within the client and the specialist team, very few of the proposed turbine positions and associated infrastructure coincide with areas currently demarcated as High sensitivity features as the layout was carefully re-evaluated in order to mitigate against negative interaction with priority species such as Martial Eagle, Red Lark and Ludwig's Bustard.





**Figure 5-11: Preliminary avifaunal sensitive features.**

### 5.6.6 Impacts

- Habitat loss (including foraging and breeding) and fragmentation due to displacement (avoidance of disturbance);
- Collision mortality with turbines;
- Collision and electrocution with above-ground power transmission lines.
- Disturbance of flight/migratory pathways; and
- Disturbance due to lights, noise, machinery movements and maintenance operations.

#### Cumulative Impacts

- **Habitat loss:** The destruction of highly sensitive habitat (for example sandy substrates for Red Lark) will potentially increase. The Red Lark exists within a narrow ecological and distributional belt and loss of its ecologically specific habitat may be highly significant.
- **Road-kills:** Many birds are commonly killed on roads, especially nocturnal species such as Spotted Eagle-Owl.
- **Regional saturation of turbines:** This has implications for several priority species, both in terms of collision mortality for some species, especially Bustards and Raptors, and displacement due to transformation of habitats
- **Powerlines:** Numerous existing and new power lines are significant threats to large terrestrial priority species in the region as powerlines may kill significant numbers of all large terrestrial bird species.

### 5.6.7 Mitigation

Habitat destruction: Apply necessary buffers for roost and foraging sites and other sensitive bird habitat features, avoiding the construction of turbines and access roads in these areas. Roads must utilise or upgrade existing farm roads as far as possible.

Bird mortality: Avoid placement of turbines near sensitive bird breeding and roosting habitats. The application of adaptive mitigation measures (e.g., shutdown on demand retrofitting), according to post-construction monitoring results (counted strikes of threatened species) must be informed by environmental correlates of avifaunal activity and/or strikes.

Bird collisions with turbines: Increase turbine cut in speed as this has been shown to reduce collisions. The risk is not considered to be high, and the annual collision risk is estimated at less than 5 birds per year. The fatality rates post-construction will provide additional data and the risk model can be adjusted accordingly. Advanced Radar-based shutdown on demand must be applied where turbines transcend recommended buffers in permanent populations of Martial Eagles and Vultures in the PAOI.

Avoidance: It is recommended that limited development (including the full rotor swept zone of wind turbines) takes place in High sensitivity areas. Minimise impacts to natural and artificial wetlands and water bodies by implementing the appropriate buffer areas where no development may take place. This includes a 200 m no-go buffer proposed around water points (500 metres from the largest seasonal impoundment within the Project Footprint) as they serve as focal points for bird activity.

#### General Mitigation Measures for Wind Energy

- Formal post construction monitoring must be resumed once the turbines have been activated, as per the most recent edition of the best practice guidelines (Jenkins et al. 2015). The exact scope and nature of the post-construction monitoring will be informed on an ongoing basis by the result of the monitoring through a process of an establishment of available new technology and adaptive management. The purpose of this would be to establish if and to what extent displacement of priority species has occurred through the altering of flight patterns post-construction, and to search for and identify carcasses at turbines (mortality).
- High value target species such as Martial Eagle can be tracked using the Shutdown on Demand Radar Technology and/ or telemetry systems in order to more accurately monitor movement patterns, especially in conjunction with turbines. These programs should be implemented during and post construction.
- Post-construction monitoring should be undertaken as per the EMP. The exact scope, nature and frequency of the post-construction monitoring will be informed on an ongoing basis by the results of the monitoring through a process of adaptive management.
- If turbines are to be lit at night, lighting should be kept to a minimum and should preferably not be white light. Flashing strobe lights should be used where possible (provided this complies with Civil Aviation Authority regulations).
- Lighting of the wind farm (for example security lights) should be kept to a minimum. Lights should be directed downwards (provided this complies with Civil Aviation Authority regulations).

#### Shutdown on Demand

The specialist conducted extensive research into radar and camera technology currently being applied in Europe. After careful evaluation of the technological capabilities of the automated monitoring systems and given the specific species of high risk, the



prevailing topographical conditions and interactions with the client, it has been determined that the implementation of automated radar monitoring be implemented during the operation phase of the project. The following justification is deemed determinate.

- Avoidance measures in adherence to the 5 km recommended buffers is the most preferred option of mitigation.
- If the recommended radar technology is trained to monitor species of 2.8 kg or more (and given the topography), individual birds traveling towards a monitored turbine will be detected at 4000 metres. Topography (increasing effective range and accuracy) will be the most important factor determining radar placement and is illustrated in Figure 5.2.
- Once locked on to a target, Artificial Intelligence (AI) can track the direction, altitude and speed of the individual bird and utilising thresholds, can implement directed shutdown on demand actions.
- For example, if an individual bird is flying toward a turbine at a high speed without deviation, the AI based radar technology will implement a designated action at a greater distance than individuals approaching at a lower speed and/ or at a variable bearing (representative of migration vs foraging behaviour).
- The radar technology by design can detect bird weight (based upon water density) to a 95% accuracy. Therefore, the system must be calibrated to any species above 2.8 kg which will incorporate not only Martial and Verreaux's Eagles (3 to 6.5 kg), but all other SCC including Ludwig's/ Kori Bustard (3 to 18 kg), Secretary Bird (3.4 to 4.3 kg) and Lappet-faced/ Cape Vultures 6.5 to 12 kg). Thus, the application of radar technology will not only protect the nesting Martial Eagle population but other migratory, resident, vagrant and foraging species of concern.
- The threshold of 2.8 kg will prevent unnecessary shutdowns based upon incursions by species that may be classified as Priority but are not listed as a SCC of a status IUCN Vulnerable or above (Endangered, Critically Endangered).
- Careful consideration must be provided regarding the placement of the radar system in conjunction with the nesting Martial Eagles with the subsequent radar buffer options (in relation to radar placement).
- Finally, all of the above information is subject to the final data analysis and submission of the EIA. However it is suggested that shutdown on demand protocols not only be submitted as part of the EMP but updated every 3 years in regards to advancements in the hybridised approach to the technology. For example, diversionary trigger systems (such as sirens which trigger when larger target species breach 1000 metres) may be implemented not only to avoid unnecessary shutdowns but also to maximise the chances of a zero-collision record for the project operation. AI-based technology such as cameras may be implemented on higher risk turbines (determined through the monitoring programs and telemetry-based tracking of local eagles) as the preferred hybridised solution.

### 5.6.8 Species Specific Risk Analysis and Recommended Mitigations

#### Ludwig's Bustard (*Neotis ludwigii*)

Ludwig's Bustards are globally and regionally listed as Endangered (BirdLife International 2012b and Taylor, et. al. 2015) which is cause for a significant evaluation of the species in relation to the proposed development. Actual counts were carried out during the pre-construction monitoring process although and monitoring data suggest that a permanent (albeit seasonal) population including breeding pairs persist for prolonged periods within the study area. Multiple and frequent sightings were recorded. The species is highly migratory and localised development may not represent a fatal flaw. However, the fact that sub-adults and

juveniles are encountered in the study area provides strong anecdotal evidence of residential breeding behaviour which may have significance ramifications for the Cumulative Impact Assessment.

It must be stated that some local landowners stated that Ludwig's bustards have increased in density over the last ten years within the region (sometimes numbering up to 130 congregated individuals) and within the Project footprint. By all accounts, 2022 showed a particularly high density. There are a number of possible explanations for the observed increase in density in 2022:

- This species, as a nomad, may show localised and temporal increases as part of natural population dynamics due to climatic fluctuations. 2022 experienced a highly unusual amount of rainfall in 2022 over an extended period of time. This caused an activation of the seed bank within the PAOI and subsequently, a large amount of fodder was available for avifaunal species including Ludwig's Bustard.
- The lack of smaller (and less visible) powerlines within much of the study area allowing for localised lower mortality rates; and
- This species is almost certainly resident and at risk to the creation of large, turbines in combination with non-marked powerlines may cause collision of birds which could significantly reduce local and regional populations. In addition, large-scale increases in fencing combined with a high volume of large maintenance trucks may cause drastic declines in bustard numbers due to flushing displacements, collisions and entanglements. The presence of this species must form a significant focal point of the mitigation measures.

On a final note, concerning monitoring of the species (and possible mitigations), it is vital to highlight that fact that as an Endangered species, Ludwig's bustard demands higher degrees of auditing and monitoring attention than other Red-Listed birds (a fact supported by multiple publications including Visser et. al. 2018 and Scott et. al. 2012). It is also vital to highlight that presence or absence over time for a nomadic species is difficult to predict and spatial/ temporal population reductions may or may not be development-induced. For example, another prolonged drought may all but exclude local colonisation which will be immediately reversed with the onset of more unusual heavy rains. Although it is highly feasible that the development may be directly responsible for local population reductions, comprehensive and continuous data collection is required to monitor the situation on site and apply appropriate mitigation measures and far more significant weighting and value should be applied to the Cumulative Impact Assessment

### **Martial Eagles and Nest Site**

Utilising the interpretations stipulated above and in the absence of any mitigation measures, a preliminary buffer of 5 km is recommended as an exclusion area around the one active and one (recently dormant) Martial Eagle nests adjacent to the footprint, which were confirmed after the completion of the 12-month pre-construction monitoring. There is currently no species-specific guideline for the Martial Eagle, and buffer areas around nest sites (especially nests that have been unused for long periods of time) remains a scientifically contentious topic of discussion in the industry without rigorous scientific studies providing necessary guidance (for example, Murgatroyd, Bouten & Amar 2021). The only published recommended buffer to implement around raptor nests in South Africa is for the Verreaux's Eagle (Ralston-Paton, 2017), which dictates that a precautionary buffer of 3 km is recommended and may be reduced or increased based on the results of rigorous avifaunal surveys, but nest buffers should never be less than 1.5 km. This buffer is deemed inadequate for Martial Eagles.

A recent paper from Murgatroyd, Bouten & Amar (2021) indicated that by using predictive models to account for habitat use instead of simple buffers around a nest, a greater area of land can be made available for wind energy development without increased mortality risk to raptors. Accordingly, this tool can be used to provide robust guidance on wind turbine placement in a way which minimises the conflict between raptor species and the development of wind energy facilities in South Africa as well as provide the basis for rigorous monitoring programs to be applied. It must be noted that the study species for this research was Verreaux's Eagle which was tracked at only four locations (not including the current habitat or region), and accordingly the interpretation of the results needs to be considered as species- and site-specific, even though the same principle can be extrapolated to other raptor species in various regions. The study recommended that nest buffers should never be <3.7 km radius, but also indicated that additional site-specific specialist input or mitigation methods might allow a limited amount of development for high-risk developments. Based on the preliminary data collected during the pre-construction monitoring, at least one breeding pair of martial eagles appear to be foraging regularly over the proposed De Rust WEF development area.

As a result, it is strongly recommended that mitigation measures (buffering) be coupled with a robust radar/ AI and/ or telemetry-based monitoring program directed by a recognised Martial Eagle specialist (we propose Dr. Gareth Tate of the EWT) be applied in order to investigate the movement patterns of the resident eagles. It is also suggested that the Shutdown on Demand radar system combined with the AI be used in order to more accurately monitor not only Martial Eagle movements, but all species over 3 to 3.5 kg (including Ludwig's Bustard).

### **Red Lark (*Calendulauda burra*)**

This species is highly range range-restricted and is listed as IUCN Vulnerable (Taylor et al., 2015). The species was observed frequently during the assessment period albeit within a highly restricted habitat preference. Significant populations (breeding and foraging) within the PAOI have been confirmed. Even though the species exhibits a specific breeding behaviour (display flights of up to 20 metres as described in Hockey et. al. 2005), it has been deemed to have a relatively low risk of collision and thus is not considered a fatal flaw to the project. However, care must be taken as some individuals were observed displaying up to 60 metres (wind assisted). The species prefers the open sandy habitats, in particular open sandy karroid dunes and grassland, particularly on dune crests and dune side slopes. The species is considered as a regular, albeit low density breeding resident in the region. Avoidance based mitigation is the primary mitigation measure and must be based upon the aforementioned delineated sensitivity. However, as some turbines fall within the delineated high sensitivity area for Red Lark and large-scale avoidance may not be possible, additional small-scale micro sighting may be required. Turbine infrastructure should be placed away from dune crests and side slopes. In addition, and affected turbines, dune habitat should be removed, fenced or artificially vegetated to a prescribed radius of 100 metres in order to ensure no breeding behaviour (and therefore, mating displays leading to potential collision) will not take place within range of the rotor sweep zone.

### **Raptors and Vultures**

For the purposes of the report and given some ecological similarities within the affected groups and specifically for the De Rust WEF project, all raptors and vultures of special conservation concern will be addressed together.

### **Affected Species, Threatened Status and Habitat Requirements**

White-backed Vulture (*Gyps africanus*) and Lappet-faced Vulture (*Torgos tracheliotos*). Due to large-scale drastic declines in recent years, the Vulture species are listed as Globally Critically Endangered and Endangered (IUCN 2021) meaning that the species are in imminent danger of extinction. Within the study area, Lappet-faced Vultures have been classified as locally

vagrant but were observed on a single occasion in significant numbers within a seasonal pan by the IUCN (2021). Due to climate change and other factors, it appears that vulture ranges are expanding west and the frequency of occurrence of multiple vulture species may increase over time.

Although there exists excellent habitat for these species within the PAOI, insufficient prey exists within the region to support permanent populations of both species.

### **Methods Applied for Future Species Assessment**

**Habitat Mapping Verification.** Given the predicted low population densities of these species, it is anticipated that individuals may not be observed during a future study period. Therefore, and regardless of observational success, predicted habitats for the species must be mapped using a structural habitat map and this must be carried out prior to the commencement of fieldwork to increase the chances of successful observation through the identification of target areas. In addition, on-site habitat verification must take place to enable supervised classification of potential vulture and raptor habitat (using GIS algorithms) which allows for delineations of areas qualifying as IFC Critical Habitat under Criteria 1.

**Random (ad hoc) and periodic visual surveys.** Walking and driving transects, periodic horizon and “sky scans” should be undertaken to search for soaring raptor species. In addition, particular attention must be devoted to suitable roosting, foraging and nesting habitat of the target species.

### **5.6.9 Conclusions**

The study area is located in a region dominated by natural and diverse koppies/ ridge, drainage line, karroid and sandy grassland and shrubland karoo vegetation types. Several drainage lines and small farm dams as well as small to large natural pans can be found scattered across the study area with most being mostly dry with some seasonal flow/ inundation. The powerline infrastructure that traverses the PAOI is a significant habitat for Martial Eagles.

Fourteen priority species were recorded during the initial surveys, including Martial Eagle, Karoo Korhaan, Ludwig's Bustard, Lanner Falcon, Red Lark and Black-winged Kite. Of these, the Martial Eagle and Ludwig's Bustard was the most concerning large bird species. At the commencement of the survey, the PAOI was characterised by extremely atypical high rainfall in areas normally associated with arid conditions. The onset of a stochastic extreme rainfall event (wet season) may have atypically transformed the PAOI where it is possible that diluted densities (and perhaps diversity) of avifaunal assemblages may have been recorded due to an abundance of high forage value habitat that became temporarily available in the region. This increases the concern regarding large nomadic species such as bustards, large wide foraging raptors such as Martial Eagle and vultures seeking water sources within the PAOI when typical arid conditions return over the next 12 months.

### **5.6.10 Professional Opinion**

A final Professional Opinion will be submitted at the conclusion of the EIA submission. However, a preliminary opinion is provided below.

- The addition of the proposed De Rust WEF does indicate potentially significant impacts to the receiving environment via the risk to Priority Species (such as Martial Eagle, Red Lark and Ludwig's Bustard) as well as the Cumulative Impacts need to be considered and provision made within the EMPr for this development.
- Although previous impact assessments and monitoring programs for existing local WEFs indicated that not all impacts can be mitigated to acceptable levels, medium significance post-mitigation should be interpreted that more can be done to avoid critically important species-specific (especially Red Lark impacts as is the case for the impacts discussed within this statement). This is mainly because impact assessments regarding wind developments have been poorly understood since their inception and the impacts (especially cumulative impacts) of wind developments may have highly significant consequences if mitigation and monitoring is not implemented correctly.
- Overall, it is still the opinion of the consultants that the impacts associated with WEF projects are far preferable (from an environmental impact perspective) to extractive and/ or non-renewable alternatives. It must be related that this report must be considered in context with the greater EIA process.
- In addition, while striving to maintain the highest standards of mitigation and monitoring as well as the commissioning of a highly detailed preconstruction micro sighting assessment, developments such as the De Rust WEF be encouraged within designated areas.
- The presence of nesting and breeding Ludwig's Bustard, Martial Eagles and Red Lark within the PAOI are of particular concern. Avoidance mitigation must be implemented in conjunction with the aforementioned micro sighting as well as technological applications such as Shutdown on Demand. Thus, the author will look to support Environmental Authorisation (EA) based upon the following conditions;
  - Shutdown on Demand will be required to mitigate against Ludwig's Bustard and Martial Eagle.
  - All recommended buffering be strictly adhered to.
  - Micro sighting of turbine placement must occur pre construction supervised by a specialist zoologist in order to mitigate habitat loss for Red Lark.
  - All recommended mitigation measures be applied preconstruction, post construction and operations.
  - The EMPr be updated every three years in order to reevaluate the potential distributional population changes of species such as Martial Eagles and Vultures. Thus, retrofitted mitigations such as AI, radar and camera technology may have to be applied.

## 5.7 BATS (WIND)

### 5.7.1 Affected Environment

The proposed De Rust North WEF site comprises of various vegetation types, with Bushmanland Arid Grassland and Aggeneys Gravel Vygieveld, covering the most area in the low-lying parts of the site, Bushmanland Inselberg Shrubland and Namaqualand Klipkloppe Shrubland on the quartzite ridges/hills, and Bushmanland Basin Shrubland to the north west near the dolerite outcrops. However, structural differences in vegetation between the vegetation types was not obvious during site visits, except for the vegetation associated with the quartzite ridges/hills. Watercourses are typically poorly defined but usually have denser and larger bushes than the surrounding landscapes. There are no large/perennial streams or rivers close to the PA, but there are numerous small ephemeral watercourses, some with extensive alluvial plains, that drain towards the west, north and east.

These systems do not form deep valleys or in-cut banks. The study area has varied terrain, consisting of a relatively flat plain with small quartzite ridges and koppies that form linear hilly regions across the study area, with especially large hills in the south east, and dolerite outcrops forming small to large conical koppies in the north east. There are some rocky areas on the flats that are not associated with higher terrain, located in the northern central portion of the study area.

The study area is situated in an arid region between the summer and winter rainfall zone, with rainfall being highly variable in the region. The nearby town of Pofadder receives most of its rainfall between February and April (data from 1985; <https://www.meteoblue.com/>), and recent data (2009-2021) indicates that most rainfall occurs from October to March, with a mean annual rainfall of 135 mm (<https://wapor.apps.fao.org/>). The warmest months are October through to April with a mean daily maximum of 33 °C and minimum of 17 °C (February) and winter maximum temperatures of 18 °C and minimum 2 °C (July; <https://www.meteoblue.com/>).

## 5.7.2 Field surveys

### 5.7.2.1 Site visits

All methods used for field surveys were performed in accordance with SABAA's document on best practice guidelines for pre-construction monitoring of bats at wind energy facilities in South Africa (MacEwan et al., 2020b). Several site visits have been completed to date (Table 5-5) spanning spring to late summer. The data from the autumn and winter surveys will be included in the EIA report after the full 12 month pre-construction monitoring has taken place.

**Table 5-5: Summary of site visits and work conducted.**

Season and Dates	Methods	Weather and veld conditions
Autumn: 9-12 <sup>th</sup> March 2021	Walkdown; rapid roost inspection	Dry, warm conditions, veld parched and appearing lifeless.
Spring: 11-14 <sup>th</sup> October 2021	Deployment of bat detectors, transect drives, farmstead roost inspections.	Moderate temperatures with some cloudy days and first rains in a long time, veld still parched and appearing lifeless.
Summer: 13-19 <sup>th</sup> January 2022	Passive detector data retrieval, transect drives, farmstead roost inspections.	Warm temperatures with sporadic cloudy days and rainfall events throughout visit (on/off from October through to February). Veld with some green growth beginning on shrubs, but limited grass.
Autumn: 25-31 <sup>st</sup> May 2022	Passive detector data retrieval, transect drives, farmstead roost inspections.	Cool temperatures, veld green and abundant new grass cover.
Winter: 5-7 <sup>th</sup> August 2022	Transect drives, targeted roost inspections.	Clear skies and warm temperatures. Shrubs still green and grasses present.



### 5.7.2.2 Walkover survey

A survey was performed by walking and driving across the project area as a ground truthing exercise to identify suitable areas for placement of bat detectors, identify potential roosting sites and sensitive areas and evaluate the level of monitoring that is required. This was performed prior to the deployment of the bat detectors.

### 5.7.2.3 Passive Bat Detectors

Five bat detectors were deployed with microphones positioned at 10 m above ground level (two of these at meteorological masts- only two meteorological masts were constructed for the site), each meteorological mast with a 10 m, 65 m and 110 m microphone. All devices were scheduled to record from 30 min before sunset to 30 min after sunrise at the location of the bat detector. During this time, the device is 'armed' and will begin a recording if a 'trigger' is detected. The bat detectors were serviced on a quarterly (seasonal) basis where all data were copied from the SD cards and backed up before formatting and replacing the SD cards. The equipment was also checked for faults and repaired if necessary. A total of nine bat detectors were deployed across the PA, triplets at two meteorological masts and three singletons on individual 10 m masts.

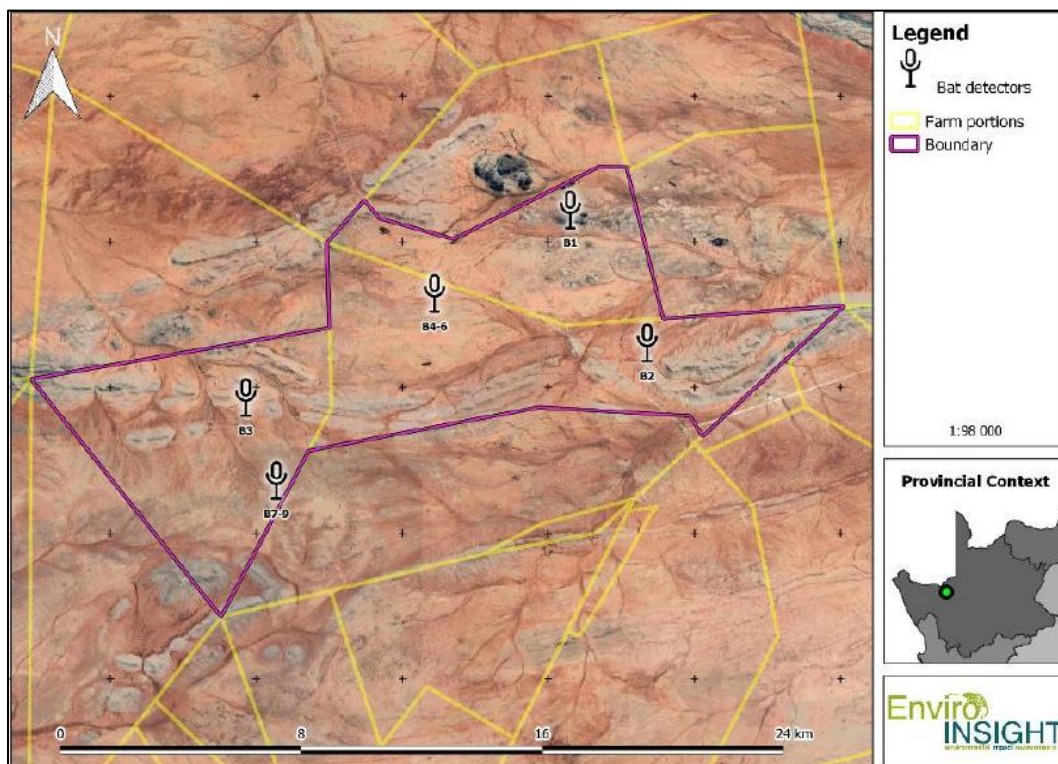


Figure 5-12: Passive bat song meter locations showing the setup and immediate surrounding habitat.

**Table 5-6: The details of the deployed bat detectors.**

Name	ID	Meteorological Mast	Microphone Height above ground (m)	Latitude (°)	Longitude (°)	Date deployed
B1	S4U10652	No	10	-29.245444°	19.507455°	23/10/2021
B2	S4U10667	No	10	-29.291209°	19.533712°	23/10/2021
B3	S4U10678	No	10	-29.309858°	19.396272°	08/10/2021
B4	S4U11304	MM1	10	-29.274161°	19.460981°	09/10/2021
B5	S4U11290	MM1	65	-29.274161°	19.460981°	09/10/2021
B6	S4U11361	MM1	110	-29.274161°	19.460981°	09/10/2021
B7	S4U11265	MM2	10	-29.338486°	19.406775°	09/10/2021
B8	S4U11356	MM2	65	-29.338486°	19.406775°	09/10/2021
B9	S4U11341	MM2	110	-29.338486°	19.406775°	15/10/2021

#### 5.7.2.4 Active transects

Transects were driven for a minimum of two nights per season across the PA, no additional walk transects were conducted as the road network was extensive and intersected with all major habitats within the PA. The transect durations were a minimum duration of 2.5 per night and a total transect duration of at least 5 h per season over 2 nights. Transects were only conducted under fair weather conditions where possible. Three different transect routes were driven each night per season due to the large size of the study area. Bats were recorded using a bat detector with the microphone attached to a pole held outside the vehicle approximately 3 m above the ground. All transects were tracked using a handheld GPS.

#### 5.7.2.5 Bat roosts

Potential bat roosts, including rocky outcrops, buildings, trees and other infrastructure, were visited and visually inspected during the day for signs of bats, which included searching for faecal material and conducting acoustic monitoring with a handheld bat detector (if considered necessary). No caves were found on or near the site. There are also small mountains present ~18 km to the north, which may also have potential for caves and small bat colonies, but no caves have been reported nearby from other studies.

Three sites were selected for short-term passive acoustic activity monitoring to ascertain if bats were using these habitats for roosting sites. This was necessary as the habitats could not be adequately surveyed using visual inspections due to deep cracks or inaccessible spaced between rocks and boulders. Bat detectors and microphones were deployed at ground level (~ 1 m high) for at least 2 nights close to the potential roost habitat. Recordings were identified and plotted against time to determine if activity

patterns indicated resident bats using the features as roosts, such as a spike in activity at dusk and dawn when bats emerge or retreat to their roosts.

### 5.7.3 Results

#### 5.7.3.1 Basic Habitat Description

**Quartz hills and ridges:** These are the most prominent habitat features within the PA, comprising hills and ridges of varied sizes and often an exposed solid quartz outcrop at the crest. The slopes are typically gentle and are strewn with medium to small quartz rocks and pebbles, often with an expansive flat base made up of small quartz pebbles and few plants. Bat activity does not indicate that these general habitat features require buffering in terms of habitat sensitivity.

**Brown bedrock:** Exposed bedrock is present within parts of the PA, with a brown colouration and igneous properties, often showing advanced stages of weathering. These rocks are not associated with hills in the PA, but may form some small koppies where boulders are stacked. Extensive surveys of the rocks were undertaken to identify areas that possess potential cracks and crevices suitable for bat roosting sites and these delineations were used to define this habitat. The habitat was buffered by 200 m for the purposes of assessing bat activity associated with this habitat. However, because bats were shown to roost in this habitat a buffer 500 m should be applied.

**Dolerite koppies:** These rocky features are immediately recognisable by the black colouration of the dolerite boulders. They consist of large piles, outcrops or even large conical hills consisting of large stacked boulders. Some areas have boulders with a browner colouration, but the boulders are similar, which are large and rounded, and often with expansive cavities between the boulders that extend into the centre of the feature. These outcrops (with cavities) were buffered by 200 m for the purposes of assessing bat activity associated with this habitat. Because bats (*Rhinolophus damarensis*) were shown to have roost in this habitat they should be buffered by 500 m.

**Vegetated watercourses:** Watercourses often form an important habitat feature for bats, which use them for movement corridors as well as foraging areas as the lush vegetation and water often associated with these areas increases the insect abundance and therefore the foraging potential for bats. Watercourses, as delineated by the aquatic ecologist, were utilised to delineate potential foraging habitat for bats by clipping all dense vegetation (calculated above) within a 500 m buffer of the watercourses. This dense riparian vegetation was then buffered by 200 m.

#### 5.7.3.2 Literature review

All nearby existing and proposed WEFs were searched for online to find additional data regarding important bat findings that might be of importance to the proposed De Rust WEF. Some EIA reports and bat specialist reports were available online, but despite requesting additional reports from SABAA, bat appendices and some additional reports were not available. Specialist reports from the Kangnas WEF, Korana WEF, Khai-Ma WEF, Poortjies WEF, Sol Invictus Overhead Powerline and the Paulputs WEF were reviewed for the literature review.

Based on the Monadjem et al. (2020), the ACR (2021) and previous surveys conducted for WEFs in the region, 13 bat species could potentially occur on the PA. However, only 10 species are considered to have a medium to high probability of occurrence given their roost requirements and known distribution, all of which are classified as Least Concern by the IUCN and not of conservation importance, with the exception of *C. seabrae* which is poorly known (few locations) and was previously considered to be Vulnerable (but is now Least Concern). The likely risk of fatality from turbines is high for the open-air foragers (*Sauromys petrophilus* & *T. aegyptiaca*), medium / high for clutter-edge foragers (*E. hottentotus*, *L. capensis* & *M. natalensis*) and low for the clutter foragers and species with restricted ranges (remaining spp.). Roosting requirements for species requiring caves, rocky outcrops and large trees are absent from the PA and only species known to utilise man-made infrastructure, such as buildings and walls are likely to roost in the area, including: *Cistugo seabrae*, *L. capensis*, *Nycteris thebaica*, *Rhinolophus clivosus* and *T. aegyptiaca*.

### 5.7.3.3 Acoustic Monitoring

Activity increased steadily after sunset and was highest between 21:00 and 3:00. Bat activity tends to be high in the period directly following sunset due to bats leaving their roosts, and the pattern observed here could suggest that bats do not roost on the project AOI but take some time to reach the area from roosts that are located further away. This is, however, currently only speculation based on overall activity observed and should not be considered conclusive. Bat activity was in general higher during November. This could indicate that bats move through the area during that time, using the eastern section on the proposed area as a fly through. Mortality of bats at WEF have also been correlated with insects migrating through an area at height (Rydell *et al.* 2010), and this could be a possibility for the peak in activity observed during November. Seasonal activity was higher during spring than summer suggesting that bats move out of the area, or forage elsewhere, during the dry summer months, and that there are no breeding colonies present on the project area, but additional data from the autumn and winter months will help test this hypothesis. Based on the SABPG (MacEwan *et al.*, 2020) for the Nama Karoo Shrublands ecoregion, analogous to the Gariep Karoo ecoregion as defined by Dinerstein *et al.* (2017), a median of between 0.18 and 1.01 bat passes per hour classifies as a Medium Risk for fatalities and above 1.01 as a High Risk.

Only four bat species were recorded by the bat detectors during the Sep 2020 – Jan 2021 survey period, all of which are listed as Least Concern on the IUCN Red Data List, are not regarded as ToPS species, are not CITES listed and are not endemic to South Africa (IUCN, 2020). *Tadarida aegyptiaca* was the most common bat species recorded, followed by *S. petrophilus*. Both are open-air foragers, and this habitat structure thus provides excellent foraging opportunities for these species. *Eptesicus hottentotus* and *L. namibensis* are clutter-edge foragers, and the lack of a more complex vegetation structure does not suite their foraging requirements. As such it is expected that their presence in the project area will be limited. All four of these species will roost in rock crevices and as such it is expected that they face similar restrictions in terms of roosting habitat available.

Monthly activity patterns show activity levels of *T. aegyptiaca* increasing from September with a peak during November. Activity for *S. petrophilus* is relatively constant across all months. Before definite conclusions can be drawn from these data, a full years'



worth of data will need to be acquired to further investigate variation in activity which could be indicative of migratory patterns, but the current data would suggest that *T. aegyptiaca* move through the area during November as part of a migratory route, perhaps using it as a resting stop. Seasonal activity of both *T. aegyptiaca* and *S. petrophilus* is higher during spring than summer.

#### 5.7.3.4 Roosting sites

Twenty-nine potential roosting sites/habitats were investigated for the presence of bats during the survey period. No cave systems were identified within or close to the PA during the desktop or site visits, but rocky outcrops were present in some parts of the PA and these are addressed below. These rocky outcrops are natural roosting sites, but man-made infrastructure is likely to offer the best roosting opportunities for bats in the PA. Storerooms and abandoned farm houses are ideal as they have many access points and refugia within. Inhabited farmhouses also have opportunities in the rooves and walls. Bats were confirmed to be roosting at the inhabited farmhouse and short-term acoustic monitoring suggests that bats are using rocky habitats as roosts, but no signs of bats were detected at any site during day inspections. The recording of only a single *Rhinolophus damarensis* (which is known to roost in rocky outcrops, not just caves)

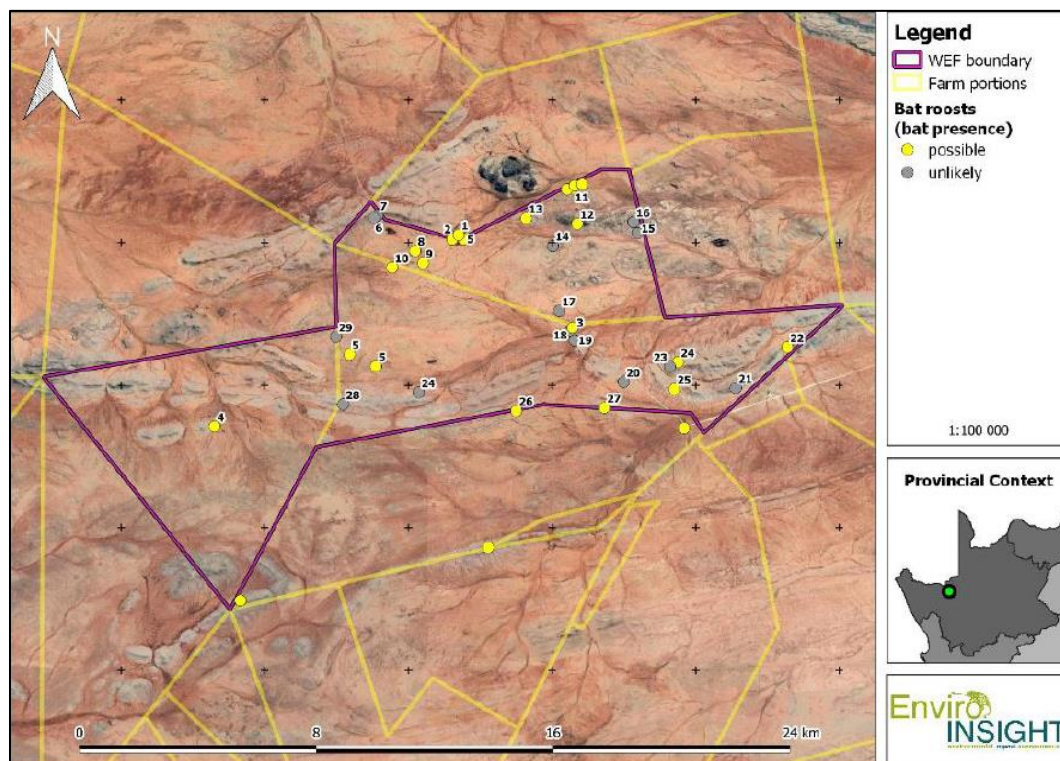


Figure 5-13: Location of bat roosts surveys and likelihood of roosting bats, showing roost id as labels.

*Table 5-7: The details of the deployed bat detectors.*

Site Name, location, dates inspected, bat evidence, habitat and likelihood of roosting bats.	Site Photos and any evidence of bats
<p><b>R1</b></p> <p>Latitude: -29.247262°                      Longitude: 19.467489°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>14/10/2021 – rec., no bat evidence</p> <p><b>Habitat Description:</b></p> <p>Oom Gert's resident house. Garage has tin roof with no ceiling, buildings are cleanly plastered with limited cracks and crevices in building material. Other structures around the house have openings and cracks.</p> <p><b>Bat likelihood:</b></p> <p>No evidence of bats was found during inspections and there are limited roost opportunities, but it is possible that a few bat individuals are roosting in some of the infrastructure.</p>	
<p><b>R2</b></p> <p>Latitude: -29.248835°                      Longitude: 19.465222°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>11/10/2021 – rec., no bat evidence                      19/01/2022 – rec., no bat evidence</p>	



31/05/2022 – rec., bat dropping seen in garage

**Habitat Description:**

Main house (Thys). Storerooms have tin rooves with iron girders or wooden poles and no ceiling. Most walls are cleanly plastered but some walls are old bricks with spaces between. Storerooms are full of items that don't get moved often, with lots of refugia available. There are multiple other structures around the house and debris lying around.

**Bat likelihood:**

There are ample roosting opportunities for bats. Bat droppings were observed below the cracks of the iron girders in May 2022.



**R3**

Latitude: -29.279796°

Longitude: 19.507154°

**Dates inspected, recordings & signs of bats:**

11/10/2021 – rec., no bat evidence

19/01/2022 – rec., no bat evidence

31/05/2022 – rec., no bat evidence

**Habitat Description:**

Witkoppies farmhouse. The buildings have tin rooves, and the main house has a ceiling with degrading awnings while other structures do not. The walls are cleanly plastered. There are various other small structures with openings and stored items, and debris lying on the ground.

**Bat likelihood:**

No evidence of bats was found during the inspection. However, there are ample roosting opportunities for bats, especially within the closed ceilings and



awnings and bats are expected to roost at this site.

#### R4

Latitude: -29.314524°

Longitude: 19.382506°

#### Dates inspected, recordings & signs of bats:

11/10/2021 – rec., no bat evidence

18/01/2022 – rec., no bat evidence

31/05/2022 – rec., no bat evidence

#### Habitat Description:

Western Farmhouse (Gert Kruger). Most buildings have tin rooves and wooden beams with no awnings or ceilings, but one structure does have a degraded awning. The walls are cleanly plastered or bricks without gaps, but some walls have cracks. There are various small structures with openings or cracks and stored equipment and debris lying on the ground.



#### Bat likelihood:

No evidence of bats was found during the inspection. However, there are some roosting opportunities for bats, such as in cracks in the walls and between walls and wooden beams. The farmer reported and photographed bats (*N. thebaica*) roosting inside the store.



#### R5

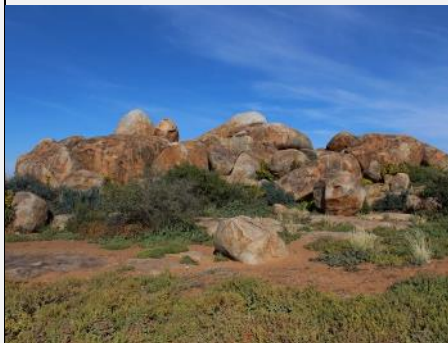
Latitudes:

-29.289215°; -29.293389°

Longitudes:

19.429482°; 19.438685°

#### Dates inspected, recordings & signs of bats:





05/08/2022 – no signs of bats, no vocalisations detected.

**Habitat Description:**

Two similar isolated koppies of large igneous boulders. The boulders are rounded and stacked, sometimes with large cracks and fissures. Cavities are formed between stacked boulders and appear to be relatively deep in places.

**Bat likelihood:**

Although no signs of bats were found, many spaces and cracks were inaccessible during inspection – being too confined and also one containing a beehive. It is likely that a few bats use these koppies as roosts for at least some time during the year, especially in deep crevices hidden in cavities between boulders.



**R6**

Latitude: -29.241246°

Longitude: 19.437968°

**Dates inspected, recordings & signs of bats:**

09/03/2021 – photographed from distance

**Habitat Description:**



Large quartzite outcrop on top of hill, large angular boulders with various cracks and crevices.

**Bat likelihood:**

The site was not searched, only photographed from a distance. The rock is very broken and unlikely to be suitable for bat roosts.





<p><b>R7</b>                  Latitude: -29.240434°                  Longitude: 19.439175°  <b>Dates inspected, recordings &amp; signs of bats:</b>                  09/03/2021 – no bat evidence  <b>Habitat Description:</b>                  Quartzite outcrop on top of hill, small rocks and boulders lying on or embedded in a stony soil matrix with few or only shallow cracks and crevices.  <b>Bat likelihood:</b>                  No bats or evidence of bats were observed in or around any rock cracks and the habitat was not considered to be suitable for bat roosts, the few rock cracks present being too shallow and exposed.</p>	
<p><b>R8 – ‘Brown Bedrock’</b>                  Latitude: -29.252859°                  Longitude: 19.452296°  <b>Dates inspected, recordings &amp; signs of bats:</b>                  12/03/2021 – no bat evidence                  16&amp;17/08/2022 – roost recordings taken  <b>Habitat Description:</b>                  Large expanse of exposed bedrock (brown and grainy texture). The larger exposed outcrops have small-medium sized cracks and crevices between rocks.  <b>Bat likelihood:</b> see R10.</p>	



<p><b>R9 – ‘Brown Bedrock’</b>                      Latitude: -29.257206°                      Longitude: 19.455121°  <b>Dates inspected, recordings &amp; signs of bats:</b>                      11/03/2021 – no bat evidence                      16&amp;17/08/2022 – roost recordings taken</p> <p><b>Habitat Description:</b>                      Large expanse of exposed bedrock (brown and grainy texture). The larger exposed outcrops have small-medium sized cracks and crevices between rocks.</p> <p><b>Bat likelihood:</b> see R10.</p>	
<p><b>R10 – ‘Brown Bedrock’</b>                      Latitude: -29.258717°                      Longitude: 19.444309°  <b>Dates inspected, recordings &amp; signs of bats:</b>                      12/03/2021 – no bat evidence                      16&amp;17/08/2022 – roost recordings taken</p> <p><b>Habitat Description:</b>                      Large expanse of exposed bedrock (brown and grainy texture). The larger exposed outcrops have small-medium sized cracks and crevices between rocks. Difficult to inspect visually.</p> <p><b>Bat likelihood:</b>                      The entire bedrock area was surveyed in August 2022 to identify outcrops with suitable crevices for roosts. Short-time acoustic monitoring was conducted and the results indicate that some bats are using these features for roosting: Error! R eference source not found..</p>	



**R11 – ‘Dolerite Outcrops’**

Latitude: -29.230838°

Longitude: 19.507059°

**Dates inspected, recordings & signs of bats:**

08/08/2022 – bat droppings found and roost recordings taken.

**Habitat Description:**

Group of large conical hills of exposed outcrops of black rounded dolerite boulders and rocks, embedded in sand on the edges but stacked boulders with many spaces and gaps in-between which appear to form deeper cavities in the centre of the outcrops go deep into the centre.

**Bat likelihood:**

Due to the small size of the gaps and cavities between the rounded boulders it is not possible to adequately visually assess whether any bats are roosting within these outcrops. However, these cavities appear to be some of the most suitable natural roosting habitats in landscape with limited alternative roosting habitats and it is likely that bats and possibly even small colonies are roosting in these outcrops. Bat droppings were found deep in some of the gaps between boulders.

See additional surveys confirming roosting bats: Error! Reference source not found.





**R12 – ‘Dolerite Outcrops’**

Latitude: -29.243394°

Longitude: 19.508776°

**Dates inspected, recordings & signs of bats:**

09/03/2021 – no bat evidence

**Habitat Description:**

Medium-sized exposed outcrops of black rounded dolerite boulders and rocks, embedded in sand on the edges but stacked boulders with many spaces and gaps in-between which appear to form deeper cavities in the center of the outcrops go deep into the centre.

**Bat likelihood:**

Due to the small size of the gaps and cavities between the rounded boulders it is not possible to adequately visually assess whether any bats are roosting within these outcrops. However, these cavities appear to be some of the most suitable natural roosting habitats in landscape with limited alternative roosting habitats and it is likely that bats and possibly even small colonies are roosting in these outcrops.

**R13 – Dolerite Koppies**

Latitude: -29.241489°

Longitude: 19.490975°

**Dates inspected, recordings & signs of bats:**

07/08/2022 – no bat evidence

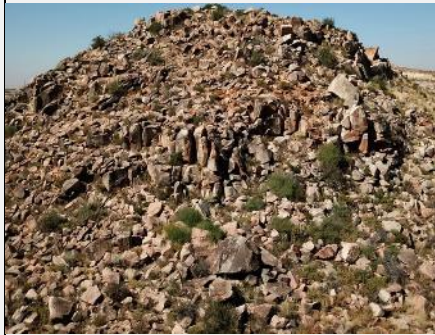


**Habitat Description:**

Group of medium conical hills of exposed outcrops of light brown dolerite boulders and rocks, embedded in sand on the edges but stacked in places and exposed bedrock near the crest with many deep cracks and crevices.

**Bat likelihood:**

Due to the extensive rocky habitat and difficulty in searching deep or internal cracks in the rock, the lack of bat evidence during visual surveys is not sufficient to rule out bat roosts. The habitat appears suitable for bat roosts and there is likely to be a few roosting bats in this habitat.

**R14**

Latitude: -29.251118°

Longitude: 19.500211°

**Dates inspected, recordings & signs of bats:**

12/03/2021 – no bat evidence

**Habitat Description:**

A small white quartz outcrop which is surrounded by small rocks and pebbles of quartz lying on a sandy matrix. The exposed outcrop is blocky and solid with few cracks or crevices. The few cracks present are often very shallow and narrow.

**Bat likelihood:**

No bats or evidence of bats were observed in or around the small outcrop and the habitat is unsuitable for bat roosts.








<p><b>R15</b></p> <p>Latitude: -29.246680°                      Longitude: 19.529712°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>12/03/2021 – no bat evidence</p> <p><b>Habitat Description:</b></p> <p>Small hill with ridge of quartz outcrops, the scree slope and surroundings are covered in small rocks and pebbles of quartz lying on a sandy matrix. The exposed outcrops are blocky and solid with few cracks. Crevices between blocks in the outcrops are usually quite exposed and do not form consistent narrow widths.</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed in or around the small outcrop and the habitat is mostly unsuitable for bat roosts.</p>	
<p><b>R16</b></p> <p>Latitude: -29.242799°                      Longitude: 19.528292°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>12/03/2021 – no bat evidence</p> <p><b>Habitat Description:</b></p> <p>Slight hill with heavily eroded ridge of quartz outcrops, the surroundings are covered in small rocks and pebbles of quartz lying on a sandy matrix. The small, exposed outcrops are blocky and solid with few cracks and no notable crevices.</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed in or around the small outcrops and the habitat is unsuitable for bat</p>	



roosts.	
<p><b>R17</b></p> <p>Latitude: -29.273977°</p> <p>Longitude: 19.502466°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>10/03/2021 – no bat evidence</p> <p><b>Habitat Description:</b></p> <p>Small, eroded quartz ridge with bedrock quartz exposed above red sands and smaller quartz rocks and pebbles lying on the surface. The exposed boulders are blocky and have no small cracks or fissures and the gaps between them are exposed and not of consistent widths.</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed around the small outcrops and the habitat is unsuitable for bat roosts.</p>	
<p><b>R18</b></p> <p>Latitude: -29.280777°</p> <p>Longitude: 19.506519°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>10/03/2021 – no bat evidence</p> <p><b>Habitat Description:</b></p> <p>Small hill with a prominent quartz outcrop ridge with very large blocky boulders, the steep scree slope has large quartz boulders and rocks embedded in a very sandy matrix. The quartz outcrops have no cracks or fissures in the boulders, but some large crevices are formed where the boulders contact one another, but these crevices do not have consistent and narrow widths and are usually quite exposed. Most crevices at ground level have been</p>	



<p>filled by sand or other debris.</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed in or around the outcrop. The habitat is unsuitable for bat roosts.</p>	
<p><b>R19</b></p> <p>Latitude: -29.284252°</p> <p>Longitude: 19.507798°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>07/08/2022 – no bat evidence</p>	
<p><b>Habitat Description:</b></p> <p>Small hill with a prominent quartz outcrop ridge with very large blocky boulders, the steep scree slope has large quartz boulders and rocks embedded in a very sandy matrix. The quartz outcrops have few cracks or fissures in the boulders, but these are limited, usually very shallow, and quite exposed.</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed in or around the outcrop. The habitat is not considered to be suitable for bat roosts.</p>	
<p><b>R20</b></p> <p>Latitude: -29.298907°</p> <p>Longitude: 19.524865°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>11/03/2021 – no bat evidence</p>	



**Habitat Description:**

Series of small ridges with highly eroded quartz outcrops on the crest with slopes covered in small quartz rocks and pebbles on a sandy medium. The quartz crests have medium to small angular quartz rocks and some exposed bedrock. There are no cracks or fissures in the rocks and any crevices between rocks are very exposed and shallow.

**Bat likelihood:**

No bats or evidence of bats were observed around the ridges checked and the habitat is unsuitable for bat roosts.

**R21**

Latitude: -29.300985°

Longitude: 19.563907°

**Dates inspected, recordings & signs of bats:**

12/03/2021 – no bat evidence

**Habitat Description:**

A large quartzite hill/ridge with steep slopes and various strata of exposed quartz sills at different positions along the slope. The slope is covered in medium to small quartz rocks and pebbles with a small amount of sand in-between. The exposed quartz intrusions have intact bedrock and medium to large boulders with some cracks and crevices, but these are limited and often filled in with debris and quite shallow. In general the quartz are blocky and solid.

**Bat likelihood:**

No bats or evidence of bats were observed around the quartz outcrops and boulders checked and the habitat is unsuitable for bat roosts.

**R22**

Latitude: -29.286565°

Longitude: 19.582869°

**Dates inspected, recordings & signs of bats:**

06/08/2022 – only photographed.

**Habitat Description:**

A large quartzite hill/ridge with steep slopes and a particularly large outcrop exposed quartzite on the east side. The outcrop has partially consolidated bedrock. The slope is covered in medium to small quartz rocks and pebbles. The exposed quartz outcrops have large vertical cracks and crevices. These crevices have not been observed up close but they appear to be quite deep, the quartz rocks themselves are blocky and solid.

**Bat likelihood:**

The outcrop has not been searched for evidence of bats, but the photographs suggest that habitat is ideal for bats to utilise as roost sites. Therefore, the Precautionary Principal is followed and it is assumed that some bat individuals are roosting in this habitat.

**R23**

Latitude: -29.293515°

Longitude: 19.541002°

**Dates inspected, recordings & signs of bats:**

10/03/2021 – no bat evidence





**Habitat Description:**

A large quartzite hill/ridge with steep slopes and a crest of eroded quartz intrusion. The slope is covered in medium to small quartz rocks and pebbles with a small amount of sand in-between. The exposed quartz intrusions consist of broken rocks and boulders of small to medium size. While cracks and crevices are quite abundant, especially under rocks, they are quite small or shallow and relatively exposed. In general the quartz rocks are blocky and solid.

**Bat likelihood:**

No bats or evidence of bats were observed around the quartz outcrops checked and the habitat is unsuitable for bat roosts.

**R24**

Latitude: -29.29194°

Longitude: 19.54378°

**Dates inspected, recordings & signs of bats:**

10/03/2021 – no bat evidence

**Habitat Description:**

A large quartzite outcrop with intact bedrock and large rocks and boulders situated along the top of a quartzite hill/ridge. There are numerous crevices between boulders and formed by the way the exposed bedrock has weathered. The outcrops are solid rock and the crevices are not filled by sand and other debris

**Bat likelihood:**

No bats or evidence of bats were observed around the outcrop, but the deeper crevices cannot be easily checked and it is possible that a few bats utilised the outcrop for roosting.





**R25**

Latitude: -29.306712°

Longitude: 19.427250°

**Dates inspected, recordings & signs of bats:**

not inspected

**Habitat Description:**

A quartz outcrop at the top of a large hill/ridge. The exposed outcrop has large, stacked quartz boulders and some of the rocks appear to have deep crevices and probably cavities been the boulders.

**Bat likelihood:**

The habitat was not surveyed on the ground but appears to have suitable roosting habitat from drone photographs and the precautionary approach is taken assuming that bats do roost here.

**R26**

Latitude: -29.308984°

Longitude: 19.487507°

**Dates inspected, recordings & signs of bats:**




06/08/2022 – no bat evidence

**Habitat Description:**

Large expanse of exposed igneous rock exposed on the side of a small hill, with a small quartz ridge above. The rock forms large boulders with varying degrees of weathering. Some parts have small hollow caverns, while some large boulders are solid with deep crevices and other boulder outcrops are extensively fissured with internal cracks.





<p><b>Bat likelihood:</b></p> <p>Due to the difficulty in searching deep or internal cracks in the rock, the lack of bat evidence during visual surveys is not sufficient to rule out bat roosts. The habitat appears suitable for bat roosts and there is likely to be a few roosting bats in this habitat.</p>	
<p><b>R27</b></p> <p>Latitude: -29.307938°</p> <p>Longitude: 19.518168°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>07/08/2022 – no bat evidence</p>	
<p><b>Habitat Description:</b></p> <p>Large expanse of exposed igneous rock exposed on the side of a small hill. The rock forms large boulders with varying degrees of weathering. Large boulders are solid with deep crevices and other boulder outcrops are extensively fissured with internal cracks</p> <p><b>Bat likelihood:</b></p> <p>No bats or evidence of bats were observed around the outcrop, but the deeper crevices and cavities cannot be easily checked and it is possible that a few bats utilised the outcrop for roosting.</p>	
<p><b>R28</b></p> <p>Latitude: -29.306712°</p> <p>Longitude: 19.427250°</p> <p><b>Dates inspected, recordings &amp; signs of bats:</b></p> <p>09/03/2021 – no bat evidence</p>	



**Habitat Description:**

A small quartzite hill/ridge with gentle slopes covered in medium to small quartz rocks and pebbles. The exposed quartz intrusions at the crest of the hill are small and have some cracks and crevices between rocks, but these are few and seem to be quite shallow.

**Bat likelihood:**

The cracks were not checked for evidence of bats as they were not considered to be suitable for bat roosts at the time they were photographed.

**R29**

Latitude: -29.283057°

Longitude: 19.424734°

**Dates inspected, recordings & signs of bats:**

12/03/2021 – no bat evidence

**Habitat Description:**

Isolated patch of exposed doleritic bedrock with some larger boulders spaced widely apart from one another. The boulders have weathered in a round fashion, but a few have cracked forming deep crevices.

**Bat likelihood:**

No bats or evidence of bats were observed in cracks of the boulders and since all cracks could easily be checked it was confirmed that no bats appear to be using them as roost sites.



#### 5.7.4 Short-term Passive Acoustic Monitoring

The exposed brown bedrock and dolerite outcrops were searched visually and no evidence of roosting bats were found. However, concealed cavities and crevices in the rocks could not be effectively searched using this method and bat detectors were deployed to provide a more robust assessment for roosting bats. At the time sunset was 18:11 PM and sunrise and 07:26 AM.

**Brown bedrock** (STAM1&2): Only a few bats were detected over the 2 nights recorded and thus this habitat probably only supports a small number of bat roosts, and areas supporting suitable roosting sites within this habitat should be buffered by 500 m.

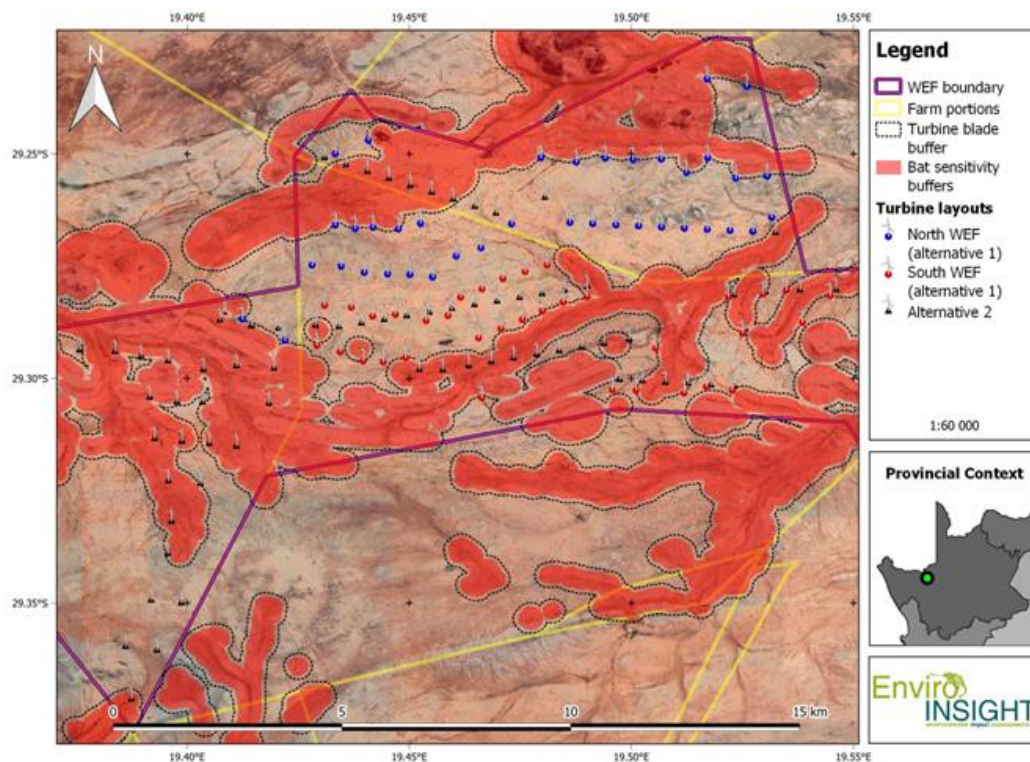
**Dolerite outcrop** (STAM3): The dolerite outcrops are deemed as important roosting site for *R. damarensis* as well as a major attractant for nightly bat activity and should be buffered accordingly.

#### 5.7.5 Bat sensitive features

The PA is very arid with ephemeral watercourses and one non-perennial dam, with a generally flat terrain with exposed dolerite koppies, bedrock and long chains of quartzite ridges, sometimes crested with quartz outcrops. Anthropogenic activities include sheep and some cattle ranching. Vegetation is limited, and when present is usually sparse and low to the ground, including grass clumps and low scrub bushes. Trees are very sparsely distributed, but occasionally Vachellia trees are present along dry watercourses, pans or dams and near to farmsteads and kraals, and larger bushes are often associated with the ephemeral watercourses. Bedrock pans are limited to the surface bedrock plains, but these are usually very small. The large dolerite outcrops that form conical stacks of large black rounded boulders are associated with species-specific bat roosts as well as general bat activity. Wetlands in arid areas are important foraging areas and drinking sites for bats and have higher activity levels than surrounding habitats (Loumassine et al., 2020). This is also likely to be true for the pans present in the PA. Man-made infrastructure is sparse and scattered throughout the site, all of the farmsteads were occupied, and are likely to support small numbers of roosting bats.

Watercourses are ephemeral and generally have denser vegetation owing to the greater/prolonged availability of moisture in the soil. Bats are known to forage along watercourses, as a greater abundance of insect activity is generally associated with plant growth and open water, and watercourses are natural corridors of vegetation where bats can maximise their foraging success. While transect data indicated that bat activity was only slightly higher in vegetated watercourses (outside of autumn), the La Niña event and associated rainfall leading to the uncharacteristic presence of a widespread abundance of plants may have reduced bat reliance on these vegetated watercourses. Consequently, it is strongly recommended that the applied buffers are maintained as these habitats are expected to be used more frequently under normal (non-La Niña) conditions. Post-construction acoustic and carcass monitoring will need to further investigate bat activity according to these habitat types to better inform adaptive mitigation. Buffered sensitive bat features, grouped by the type of feature.

Features identified as attractants for foraging bats have been buffered by 200 m, and features with confirmed or high likelihood of supporting bat roosts have been buffered by 500 m, as per the minimum requirements of the SABPG (MacEwan et al., 2020b). These buffers should be considered as No-Go areas, where no part of the turbines should enter (including blade tips). Turbines intersecting with these buffers should be relocated outside of the buffer zones. Of the current layouts (A and B), B is the preferred layout with only 25 turbines within the sensitive buffers (including turbine blades), as A has 44 turbines within the sensitive buffers. Therefore, B is the preferred turbine layout but still requires adjustments to the turbine positions.



**Figure 5-14: Sensitive bat features within the study area showing the appropriate buffers in relation to the turbine layouts. These are considered to be No-Go areas.**

### 5.7.6 Discussion and Conclusion

This scoping report shows the preliminary findings (scoping) conducted for the pre-construction bat monitoring which will span the period from October 2021 to October 2022 wherein data were collected from three 10 m masts with single bat detectors and two meteorological masts each with 3 bat detectors.

A total of six bat species were detected during the survey period, namely *L. capensis*, *M. natalensis*, *E. hottentotus*, *R. damarensis*, *T. aegyptiaca* and *S. petrophilus*, but *N. thebaica* is also expected to occur based on sightings nearby. The project

area falls within the Nama Karoo biome, and, based on the SABPG (MacEwan et al., 2020b), a median bat passes per hour greater than 1.01 bp/hr at 'near ground' level is considered as a High Risk for bat fatalities, and above 0.18 as a Medium Risk. Different thresholds for fatality risk are applied to bat activity within the 'rotor sweep' height, with High Risk above 0.42 bp/hr and a Medium Risk above 0.03 bp/hr. This overall median for bat activity on the project area (at near-ground level only – 10 m) was 0.90 bp/hr, classifying this PA as Medium Risk. The detectors at 10 m recorded comparable measures of bat activity, with the exception of B7 which recorded considerably more activity. For bat detectors recording within the rotor sweep zone, the median bat activity was 0.73 bp/hr (65 m) and 0.46 bp/hr (110 m), classifying the PA as High Risk for bat fatality at these heights. Large spikes in activity were recorded during the peak activity period, and these appeared to be congruent between different bat detectors. Environmental variable correlates will be investigated for the final EIA report to attempt to find specific conditions to inform mitigation measures, as mitigation can be especially effective if these activity spikes can be predicted and anticipated. Mitigation will be an important aspect for the proposed WEF, especially as activity spikes and outlying values are "diluted" in median calculations, and the fatality risk according to median values is already classified as High for rotor-sweep heights (MacEwan et al., 2020b).

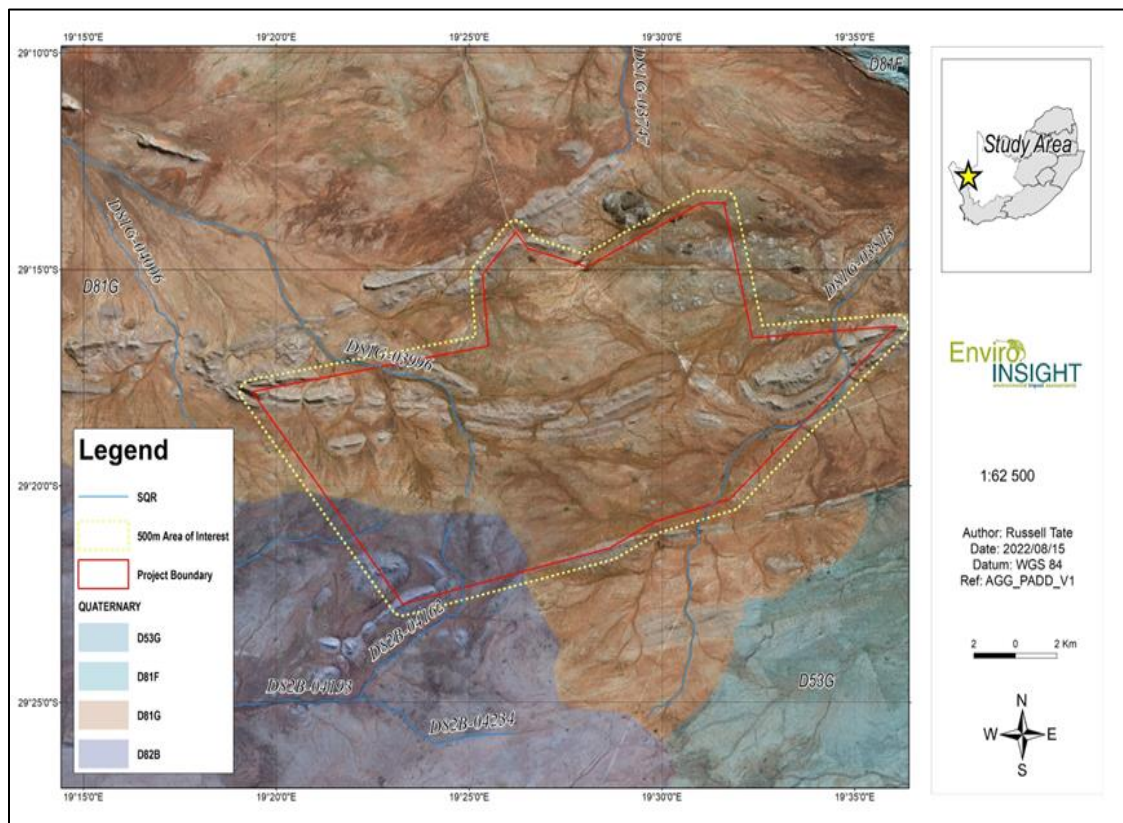
Post-construction monitoring will play a vital role in determining when mitigation measures should be implemented and evaluation of the effectiveness of these measures, especially if preconstruction analysis cannot find good environmental predictors of bat activity. Mitigation measures to be implemented will include higher cut in speeds and curtailment (possibly including targeted turbine shutdowns) if required. However, if monitoring data indicate that fatalities thresholds are not being exceeded, curtailments may be relaxed or even removed. Sensitive bat features and their buffers have all been defined as No-Go areas and turbine blades must not encroach within these buffers, which should assist in reducing bat mortality by roosting and foraging bats.

In summary, the current location of the project area falls in a High Risk area for bat fatalities, and sporadic peaks of bat activity in late summer and early autumn will likely require specific and targeted mitigation. The preferred layout requires adjusting to avoid placing turbines within the sensitivity buffers. These findings are preliminary and may change as additional analyses are completed and thorough bat vocalisation identification are performed once all data are available for the preconstruction report.

## 5.8 AQUATIC BIODIVERSITY

The hydrological setting of the project is within the D81G and D82B quaternary catchments of the Orange River water management area. The specific Area of Interest (AoI) for this project was drainage within the D81G-03996, D81G-03813 and D82B-04162 Sub Quaternary Reaches (SQR). The watercourses do not reach the Orange River and typically terminate before reaching the river. Only under significant rainfall is the D81G-03996 SQR expected to reach the Orange River via the Goob se Laagte non-perennial watercourse.





**Figure 5-15: Hydrological setting of the Study Area**

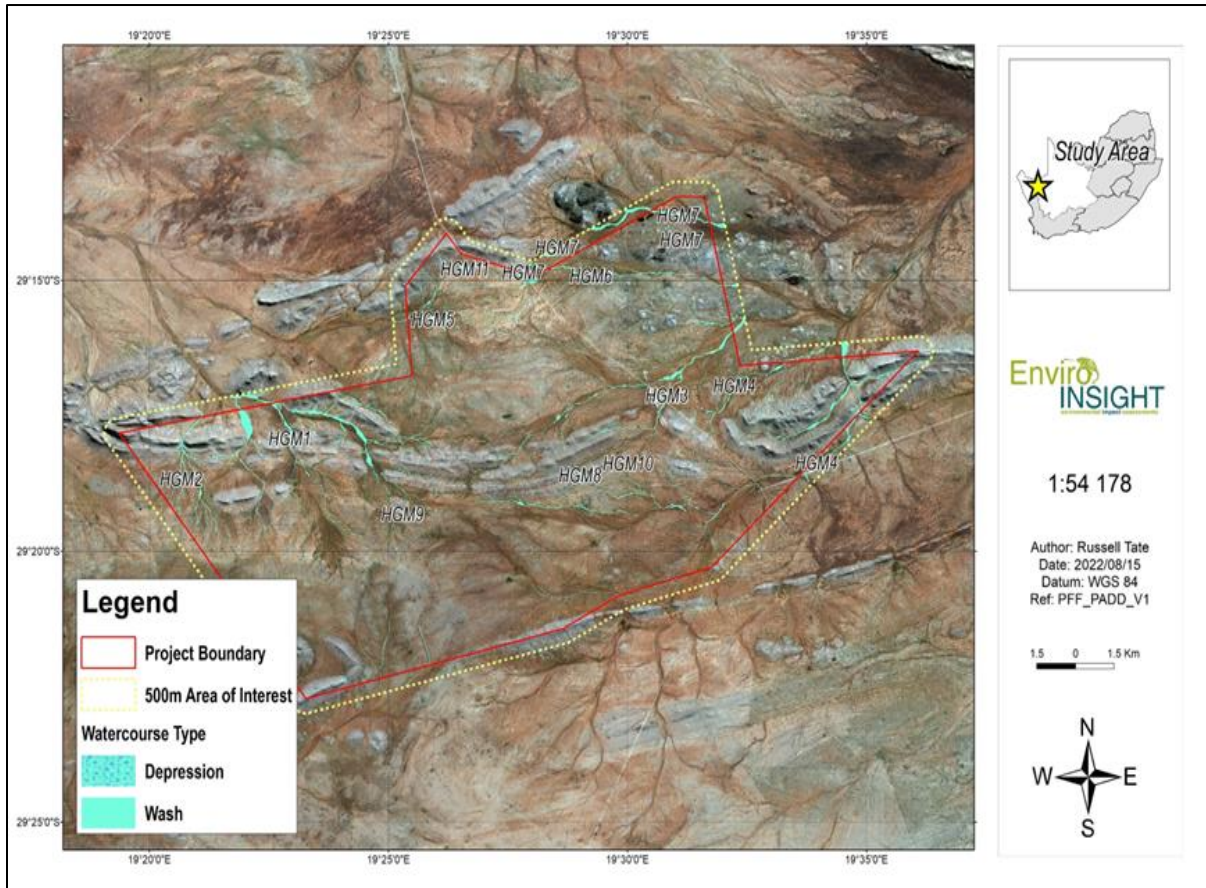
It is important to state that the watercourses classified in this study do not conform to standard wetland definitions and classifications provided in Ollis et al. (2013) where typical indicators such as redoximorphic and hydrophytic vegetation indicators were largely absent. Despite this, active inundation, landform indicators and at times hydrophytic vegetation indicators provided sufficient evidence to support the classification and delineation of the watercourses.

A total of 11 hydrogeomorphic (HGM) units were delineated in this study consisting of two watercourse types including depressions and non-perennial wash systems.

**Table 5-8: Wetland classification within 500m screening zone.**

Wetland System Unit	Hectares	Level 1	Level 2		Level 3	Level 4		
		System	DWS Ecoregion/s	NFEPA Wet Veg Group/s	Landscape Unit	4A (HGM)	4B	4C
HGM1	205	Inland	Nama Karoo	Gariiep Desert Bioregion	Plain	Wash	Not applicable	Not applicable
HGM2	45	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable

Wetland System Unit	Hectares	Level 1	Level 2		Level 3	Level 4		
		System	DWS Ecoregion/s	NFEPA Wet Veg Group/s	Landscape Unit	4A (HGM)	4B	4C
HGM3	110	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable
HGM4	209	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable
HGM5	33	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable
HGM6	52	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable
HGM7	78	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Wash	Not applicable	Not applicable
HGM8	0.4	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Depression	Endorheic	Without channel inflow
HGM9	0.2	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Depression	Endorheic	Without channel inflow
HGM10	0.1	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Depression	Endorheic	Without channel inflow
HGM11	8.7	Inland	Nama Karoo	Richtersveld Bioregion	Plain	Depression	Endorheic	Without channel inflow



**Figure 5-16: HGM Layout of the watercourses**

### 5.8.1 Geomorphology

The Aol was located on the watershed between three separate catchments feeding each respective SQR to the north, east and south. There is an extensive flat plain in the south-west of the project area which is dissimilar to the rest of the study site which consisted of undulating plains with tall rocky outcrops. Valley bottom landforms were present and were typically located between steep rocky outcrops. The landforms associated with the project were such that alluvial processes have deposited substrates in valley bottom plains where anastomosed and multiple thread features are located. These features are dynamic and change according to rainfall patterns and the presence of obstructions. Many of the channels terminate in alluvial plains where infiltration rates reduce surface runoff. Alluvial plains are not considered to be watercourses or floodplains as active channels, vegetation and soil indicators were absent

### 5.8.2 Soils

Two land types were associated with the project area and included the Ag25 and Ib131 land types. The Ag25 land type was the dominant form where watercourses are expected to be present in the valleys (terrain unit 5). The watercourse soil forms which would be represented are the Dundee soil forms. It is noted that out of the expected soils, only the expected Dundee soil form was likely harbour wetland/riparian characteristics. Based on the classifications the indicate SCS classes of A/B for the Ag25

and class B for the Ib131 land types respectively. These SCS classifications indicate that the soil types have low runoff potential and high infiltration rates even when thoroughly wetted.

There were indications of the Dundee soil forms which were present in the lower reaches of the larger watercourses in the Aol. In terms of soil indicators, alluvial plains were lacking typical features and in the case of this project it is presented that the use of the valley bottom and watercourse centreline would suffice as the watercourse primary defining feature.

Within the depression systems, surface deposits of silts were noted to occur, however the soil forms present were not indicated to be Rensburg or Arcadia soils but rather Clovelly and Mispah soil forms. Despite this, the presence of the silts in the depressions indicates that the systems are temporarily inundated and would serve an important ecological function. This further supported the classification of the depression systems

### **5.8.3 Vegetation**

The vegetation types present in the study area showed a diverse vegetation types. It is noted that the watercourses were largely associated with the Bushmanland Arid Grassland vegetation type. Common species in the vegetation types include grass typical of *Stripagrostis* and *Schmidtia* species (Mucina and Rutherford, 2006). Soil and vegetation indicators were effective to inform watercourse extent. However, owing to a high degree of variability a greater confidence was placed on landform indicators such as direct inundation observations, silt deposits, and topography.

### **5.8.4 Watercourse Condition**

The ecological conditions of the watercourses were not impacted to a significant degree. Where modifications were observed they were related to impoundments or crossings via linear infrastructure. It is noted that watercourse and roadway crossings across the alluvial plains have a significant impact on channel morphology which follows that of the road path.

### **5.8.5 Ecosystem Services**

The depression and wash HGM units provided primarily biodiversity and grazing related eco-services. The results indicated a moderately high importance for biodiversity maintenance for both depression and wash systems. The results also indicted a moderate importance rating for provisioning services, particularly relating to the use of the systems for grazing.

### **5.8.6 Ecological Importance and Sensitivity**

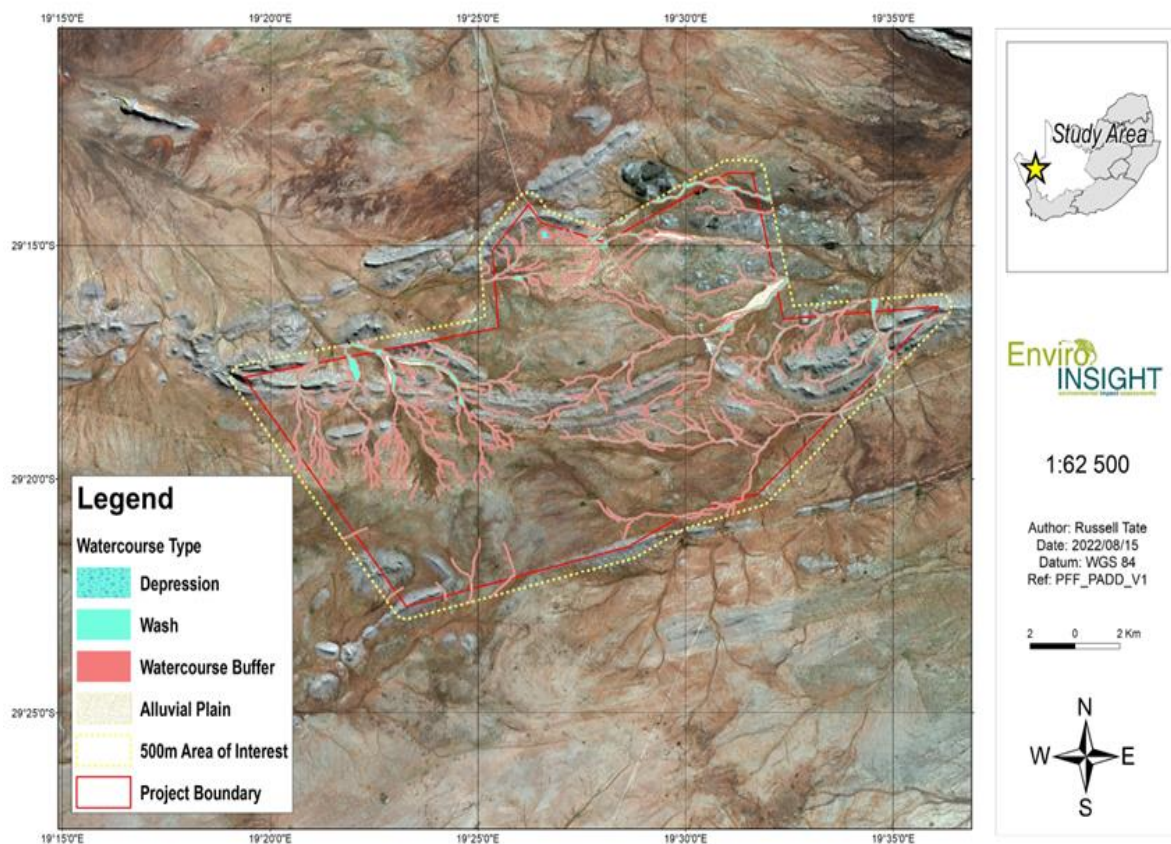
The Northern Cape conservation plan indicates that the wash and depression habitats are located in Critical Biodiversity Areas one and two. Ecological Support Areas were also noted to be present. The depression pan systems were derived to have very high EIS, whilst the non-perennial washes were derived to be of moderate EIS. Due to the endorheic nature of the pans, they are more vulnerable to development. The presence of the invertebrates within the depression pan systems further supports their



classification as important and sensitive landscape features which corroborates their assessment and classification as watercourses. No listed aquatic macroinvertebrates are associated with the proposed project

### 5.8.7 Buffers and Regulated Areas

The buffer zones were defined based on the river and wetland ecosystems buffer tool as presented in Macfarlane et al. 2017 and Macfarlane et al. (2009). The buffer zone indicated a need of 15m from the washes, whilst a buffer zone of 20m was provided for depressions. It is however important to consider the dynamic nature of the washes as well as the ecological importance of the depression systems. For this reason it is proposed that buffer zones are increased from 15m to 40m for the wash systems. Whilst depression systems were provided with a buffer zone of 100m to protect the expected catchment of the systems. The provision of the wider buffers aligns with the precautionary approach particularly where indicators for the delineations were limited.



*Figure 5-17: 40m and 100m buffer zone for the watercourse*

### 5.8.8 Preliminary impacts

- Operation of equipment and machinery
- Clearing vegetation

- Stockpiling of and placement construction materials
- Final landscaping, backfilling and postconstruction rehabilitation
- Alteration of drainage
- Alteration of surface water flow dynamics
- Establishment of alien plants on disturbed areas

### 5.8.9 Mitigation Measures

- All contractors and staff are to be familiarised with the method statement and have undergone an induction / training on the location of sensitive No-Go areas and basic environmental awareness using the mitigation provided in this report.
- Access routes into or adjacent to the wash must make use of existing road ways and crossings where possible.
- Areas where construction is to take place must be clearly demarcated. Any areas not demarcated must be avoided;
- Storm-water generated from roadways must be captured and buffered, where flow velocities are to be significantly reduced before discharge into the environment.
- Storm-water verges as well as other denuded areas must be grassed (re-vegetated) with local indigenous grasses to protect against erosion;
- Any materials excavated must not be deposited in the river channel or valley slopes where it is prone to being washed downstream or impeding natural flow;
- The installation of sedimentation/erosion protection measures must be implemented before the start of construction, e.g., several rows of silt traps and fences (this is particularly important in the access roads leading or adjacent to the watercourse);
- Stockpiling or storage of materials and/or waste must be placed beyond the defined buffers in this report for each respective activity;
- No vehicles shall enter watercourse buffer zones outside of construction footprints;
- No vehicles shall be serviced on site; a suitable workshop with appropriate pollution control facilities should be utilised offsite;
- Hydrocarbons for refuelling purposes must be stored in a suitable storage device on an impermeable surface outside of the delineated wetland buffer zone;
- Disturbed areas must be re-vegetated after completion of the phase;
  - A one-month timeframe for the initiation of this action;
  - Ripping of the soils should occur in two directions; and
  - Removed vegetation and topsoil can be harvested and applied here.
- Drainage channels constructed for the access roads must be constructed so as not to result in erosion;
- An inspection of the drainage channels must be completed within 1week following the end of activities and within a week after the first rainfall event. Should excessive sediment be transported down the channels it is recommended that sediment screens are implemented;

- An alien vegetation removal and management plan must be implemented along the verges of the roads and crossing points;
- General storm-water management practices should be included in the design phase and implemented during the construction phase of this project; and
- Following the completion of the phase, all construction materials and debris should be removed and disposed of in a suitable off-site area. An inspection should be completed within a week after the phase is completed.
- The implementation of a suitable storm-water management plan for the disturbance footprint must be in place and implemented by this phase;
- The access road and silt traps (if installed) must be inspected monthly for signs of erosion. When erosion is observed, the area should be rehabilitated within 7 days. In addition, inspections following a >80mm/24 hr rainfall event must occur within 7 days of the event;
- An annual audit of the roads for signs of environmental disturbance outside of the footprint area must be conducted; and
- Alien invasive management programmes should continue throughout the duration of the activity.
- Watercourse monitoring should take place annually as part of the environmental management plan.
- The implementation of the buffer zone stipulated in this report;
- Clean and dirty surface water separation and a storm-water management plan must be put into place via standard best practice methods;
- A clear storm-water management plan for hardened surfaces must be implemented;
- The revegetation of disturbed non-active cleared areas must take place within 1 month of completing the construction phase;
- The above must be audited within 3 months of completing the phase;
- No discharge of domestic water must occur if possible. Domestic water must be reused for dust suppression or evaporated.
- All stockpiles and hazardous waste storage areas must be bunded by either a cut-off trench or berm directed to a Pollution Control Dam inline with best practice surface water management guidelines.
- The implementation of the buffer zones provided in this report;
- Clean and dirty surface water separation and storm-water management plan must be put into place via standard best practice methods;
- An effective storm-water management plan for each turbine must be implemented;
- The revegetation of disturbed non active cleared areas must take place within 1 month of completing the construction phase;
- The above must be audited within 3 months of completing the phase;
- No discharge of domestic water must occur if possible. Domestic water must be reused for dust suppression. Should domestic water be required to be discharge, the management of nitrogen concentrations is imperative.
- All stockpiles and hazardous waste storage areas must be bunded by either a cut-off trench directed to a Pollution Control Dam or via a berm.

### 5.8.10 Conclusion

The outcome of this assessment delineated 11 watercourse units within the AoI. These watercourses were considered to be minimally modified and in a largely natural PES. The watercourses were classified as having Very High and Moderate EIS ratings. A scientific buffer was calculated for the watercourses, however inline with the precautionary principle, and given the highly variable nature of the washes, it was proposed that a 100m buffer for depressions and a 40m wash buffer was utilised to protect these sensitive environments.

The outcomes of the risk assessment indicate minor impacts from the proposed activities. The minor impacts can be attributed to low runoff potential, gentle topography and arid conditions. Should avoidance and basic mitigation actions be implemented, limited impacts to aquatic biodiversity can be expected.

In the view of the proposed new activities, should the proposed mitigation actions be implemented, no fatal flaw was identified. In line with the recommendations, avoidance must be implemented.

## 5.9 AGRICULTURAL POTENTIAL

### 5.9.1 Agricultural Potential

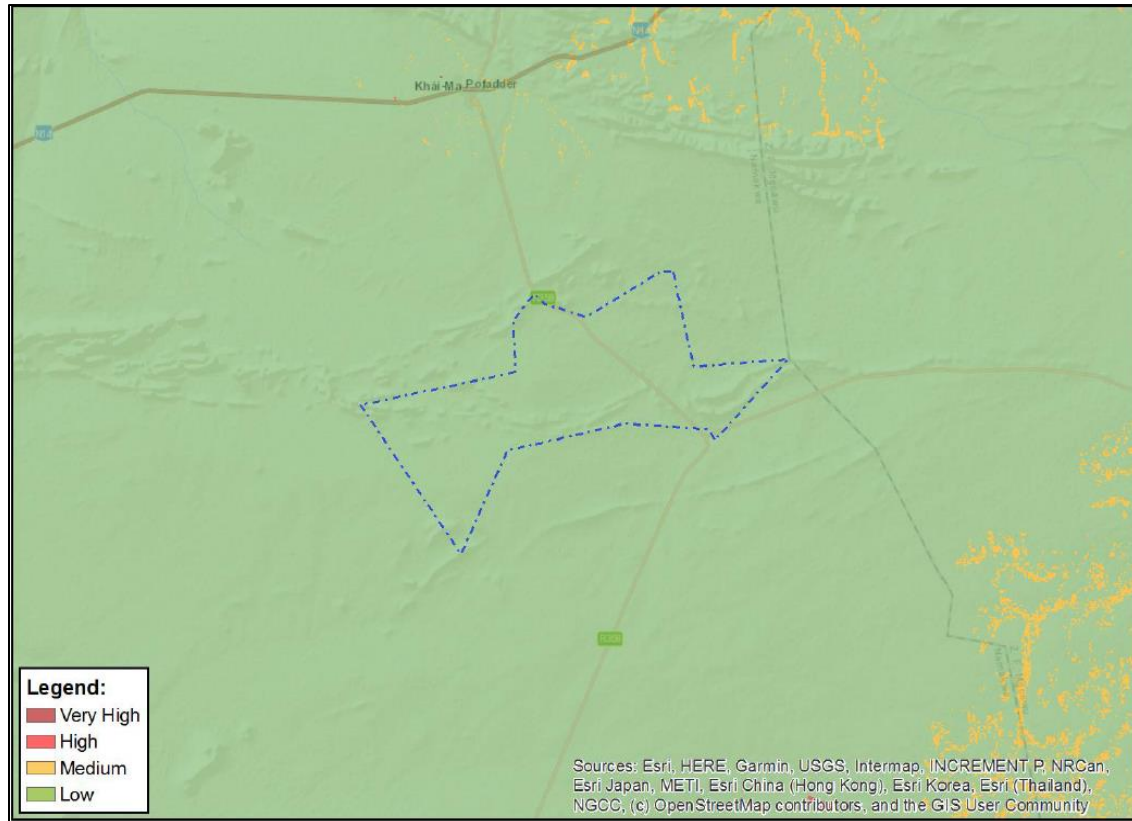
The agricultural potential for the proposed project area is **low** as per the screening tool report. This is not only due to the predominantly rainfall constraints, but also due to the soil constraints. The terrain is unsuitable for cultivation and the opportunity for grazing is very limited for livestock. Currently, the land is not being utilised for livestock grazing.

### 5.9.2 Agricultural Sensitivity

In terms of sensitivity, the land is regarded as **low**. Figure 5-18 indicates the proposed development sight overlaid by the agricultural potential as per the Screening Tool, green = Low and yellow = Medium.

Due to the low potential an agricultural impact statement will be undertaken for the proposed WEF during the EIA phase.





**Figure 5-18: Agricultural Potential sensitivity (green = Low and yellow = Medium) as per the Screening Tool.**

## 5.10 NOISE

The areas within the vicinity of the Project Focus Area are sparsely populated, with only two noise-sensitive developments. Most of the area (including the area outside the PFA) can be considered wilderness, with animal husbandry (sheep) and ecotourism (game farms). None of these activities will influence the ambient sound levels in the PFA.

Ambient (background) sound levels were measured over a period of two nights from 6 – 9 June 2022 at three locations. The results of the ambient sound levels and the developmental character of the area, ambient sound levels were typical of a quiet rural environment. The acceptable zone sound level (noise rating level) during low and no-wind conditions would be typical of a rural noise district, e.g.:

- 45 dBA for the daytime period; and,
- 35 dBA for the night-time period.

Considering measurements collected over the past decade at numerous locations during different seasons, ambient sound levels will likely increase as wind speeds increase, as motivated in this report.

The National Noise Control Regulations (NCR) and SANS 10103 does not cater for instances when background noise levels change due to the impact of external forces (such as noises induced by higher wind speeds), this assessment used international guidelines and local regulations to recommend more appropriate noise limits for this project. This is important, as the wind turbines will only operate during periods of higher wind speeds, a period that may coincide with higher ambient sound levels.

#### **5.10.1 Impacts:**

Construction:

- low significance for the daytime construction activities (hard standing areas, excavation and concreting of foundations and the erection of the wind turbines and other infrastructure)
- medium significance for the night-time construction activities. Mitigation is available to reduce the significance of the noise impact to low. It should be noted that the medium significance mainly relates the low ambient sound levels measured onsite as well as the precautionous approach in rating the potential noise impact

Operation:

- low significance for daytime operational activities (noises from wind turbines) when considering the worst-case SPL
- low significance for night-time operational activities (noises from wind turbines) when considering the worst-case SPL.

#### **5.10.2 Management and Mitigation**

Construction (Night time Activities)

- Minimise active activities and equipment at night
- Notify the NSR about the potential night-time activities
- Plan the completion of noisiest activities (such as pile driving, rock breaking and excavation) during the daytime period.

The significance of the noise impact during the operation phase could be low for day- and night-time operational activities. Additional mitigation measures are not required or recommended for the operational phase.

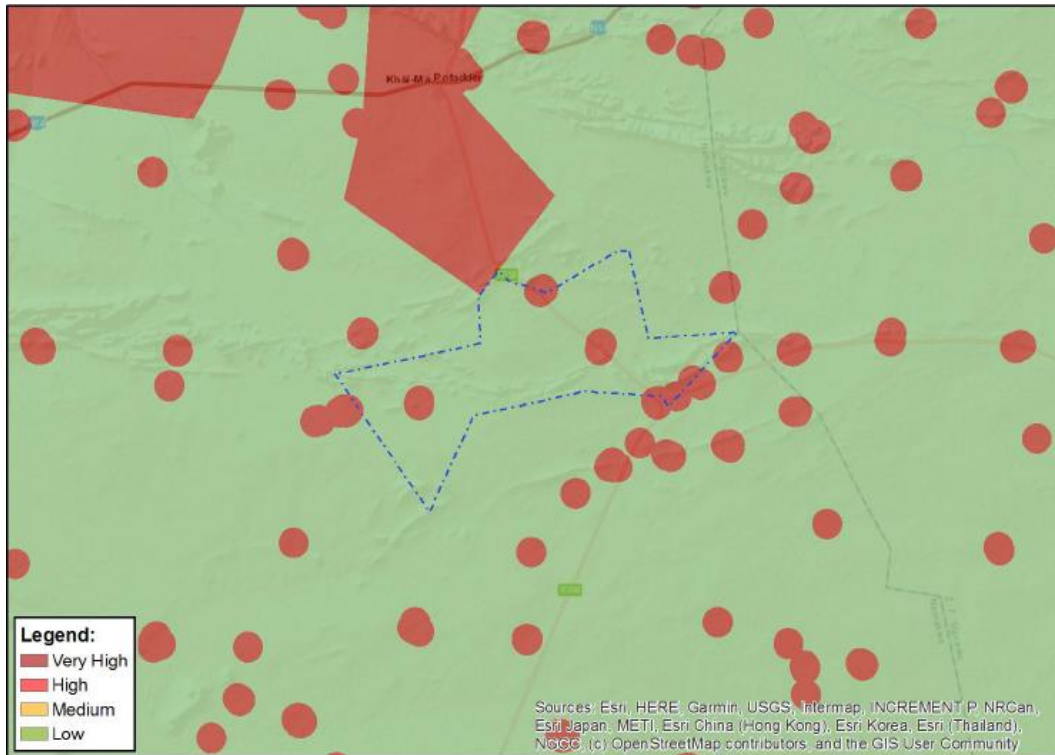
#### **5.10.3 Recommendations**

- The total projected noise levels will exceed the rural rating levels, the projected noise level will be less than 42 dBA and active noise monitoring is **not** recommended
- The applicant get written agreement from current landowners/community leaders no new residential dwellings will be developed within areas enveloped by the 42 dBA noise level contour,
- The applicant get written agreement from current landowners/community leaders structures located within the 45 dBA noise level contour should not be used for residential use.
- re-evaluate the noise impact:

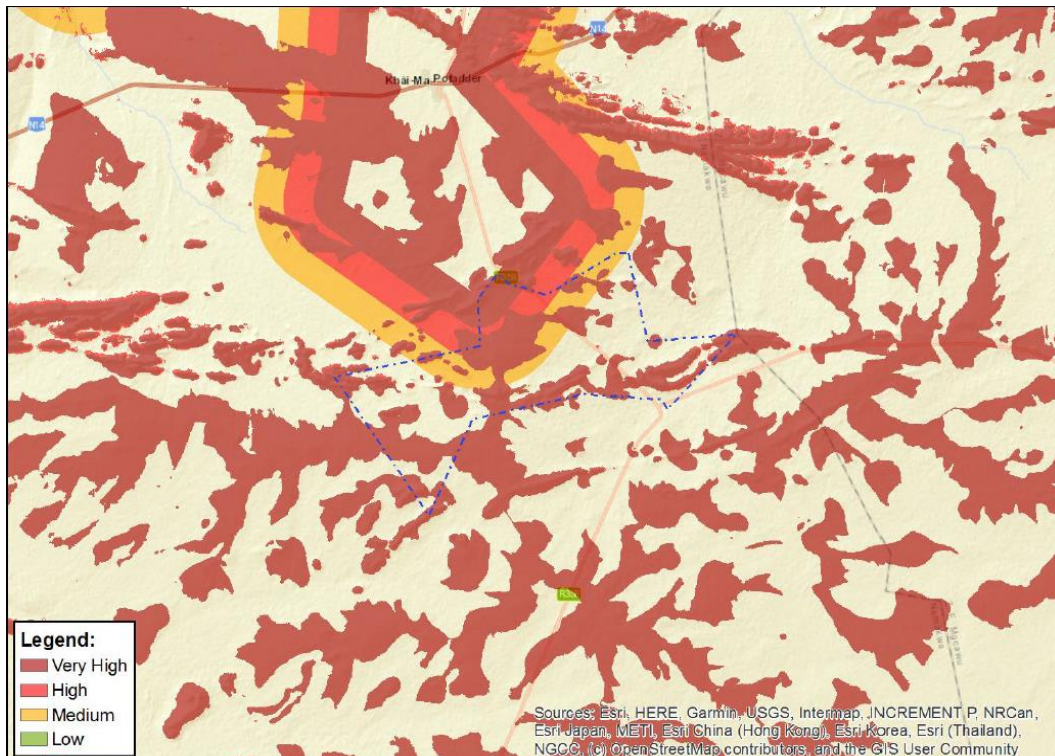
- should the layout be revised where:
  - a. any WTG, located within 1,500 m from an identified and verified NSR, are moved closer to the NSR;
  - b. any new WTG are introduced within 1,500 m from an identified and verified NSR;
  - c. the number of WTG within 2,000 m from any identified and verified NSR are increased; and
- should the applicant make use of a wind turbine with a maximum SPL exceeding 109.2 dBA re 1 pW.
- re-evaluate the noise impact should the applicant make use of a wind turbine with a maximum SPL exceeding 109.2 dBA re 1 pW;
- ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. 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
- include a component covering environmental noise in the Health and Safety Induction to sensitize all employees and contractors about the potential impact from noise, especially those employees and contractors that have to travel past receptors at night, or might be required to do work close (within 1,000m) to NSR at night. This should include issues such as minimising the use of vehicle horns
- investigates any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction activities are taking place, or where night-time construction activities are required, or where an operational WTG are located. A complaint register, keeping a full record of the complaint, must be kept by the applicant

### 5.11 VISUAL, LANDSCAPE AND FLICKER

The Flicker and Landscape Theme in terms of the screening report indicated that the flicker theme sensitivity theme is high. A full visual and flick theme analysis will be undertaken by Lourens du Plessis from LOGIS. The full impact assessment will be included during the EIA phase.



**Figure 5-19: Flicker theme sensitivity (green = Low and red = Very High) as per the Screening Tool.**

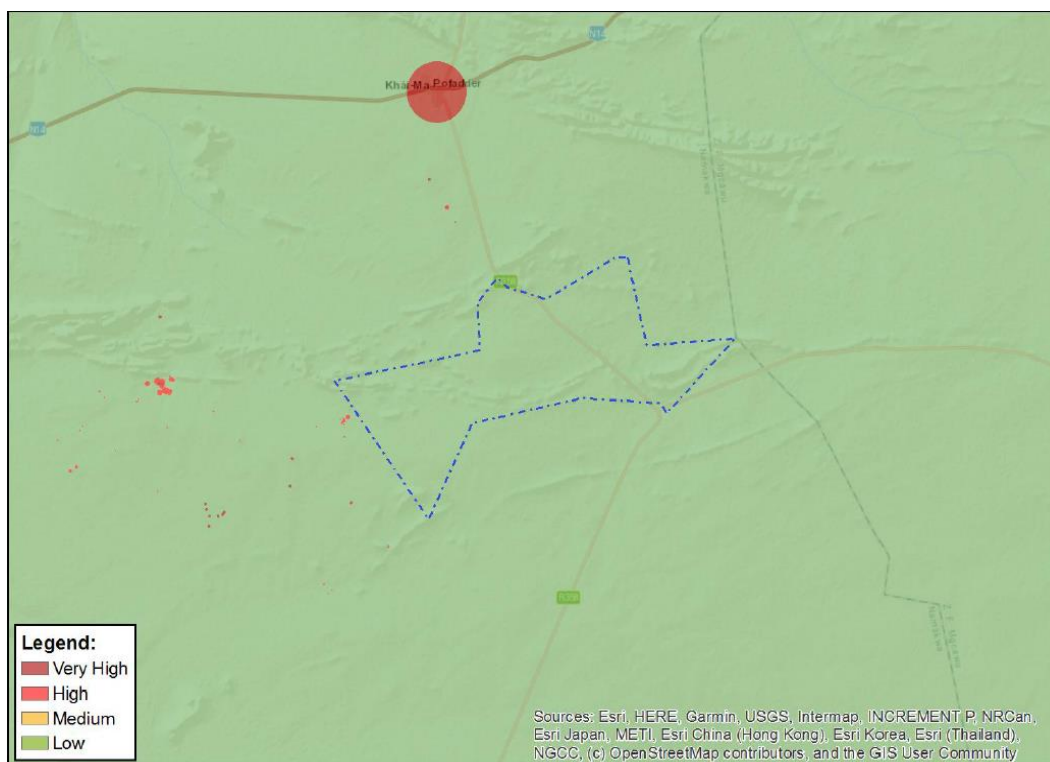


**Figure 5-20: Landscape theme sensitivity range from medium to very high as per the Screening Tool.**



## 5.12 HERITAGE AND PALAEOLOGY

The Screening Tool indicated that the Archaeological and Cultural Heritage Theme has a low sensitivity and the Palaeontology Theme as Medium Sensitivity, even though the sensitivity is low and medium it was concluded that a Heritage Impact Assessment be conducted by Jaco van der Walt from HCAC. A Heritage Impact Assessment is undertaken to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the additional structures. A Heritage and Palaeontology Assessment will be included in the EIA phase of the proposed development.



**Figure 5-21: Archaeological and cultural heritage theme is as per the Screening Tool.**

## 5.13 SOCIO-ECONOMIC

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure.

Impacts

Construction:

## Positive

- Creation of employment and business opportunities, and the opportunity for skills development and on-site training: The construction phase will extend over a period of approximately 18-24 months and create employment opportunities. A percentage of the low and semi-skilled employment opportunities will benefit residents from local towns in the area, including Poffadder, Aggeneys, Springbok and Keimoes. Most the beneficiaries are likely to be historically disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses. The capital expenditure will create opportunities for the local and regional and local economy. The sector of the local economy most likely to benefit from the proposed development is the local service industry. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers on the site. However, given the relatively small scale of the development and short construction period the benefits will be limited.

## Negative

- Impacts associated with the presence of construction workers on local communities.
- Increased risks safety, livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site.
- Increased risk of grass fires associated with construction related activities.
- Nuisance impacts, such as noise, dust, and safety, associated with construction related activities and vehicles.

Scoping level SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be Low Negative. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

## Operational

### Positive Impacts

- The establishment of infrastructure to improve energy security and support renewable sector.
- Creation of employment opportunities.
- Benefits for local landowners.
- Benefits associated with socio-economic contributions to community development.

The proposed project will supplement South Africa's energy and assist to improve energy security. In addition, it will also reduce the country's reliance on coal as an energy source. This represents a positive social benefit.

### Negative Impacts

- Noise impacts associated with the operation of the plant.
- Visual impacts and associated impacts on sense of place.
- Potential impact on property values.
- Potential impact on tourism.

Scoping level SIA indicate that the significance of all the potential negative impacts with mitigation are likely to be Low Negative. The potential negative impacts can therefore be effectively mitigated.

### **5.13.1 Conclusion**

The findings of the Scoping level SIA indicate that the proposed De Rust North WEF will result in several social and socio-economic benefits, including creation of employment and business opportunities during both the construction and operational phase. The project will also contribute to local economic development through socio-economic development (SED) contributions. In addition, the development will improve energy security and reduce the carbon footprint associated with energy generation. The findings of the SIA also indicate that the potential negative impacts associated with both the construction and operational phase are likely to be Low Negative with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The site is also located within the Springbok REDZ. The area has therefore been identified for the development of renewable energy projects. The establishment of the proposed De Rust North WEF is therefore supported by the findings of the Scoping level SIA.

## **5.14 TRAFFIC AND TRANSPORTATION**

A Traffic and Transportation Impact Assessment report is required to evaluate the expected traffic impact of the proposed development during the construction and operation phase. The report will identify the preferred access route to the site, comment on the condition of the existing roads in the site vicinity, identify possible access points to the site and recommend road improvements to the surrounding road network to accommodate the proposed development.

It is anticipated that the required components will be imported and shipped to Coega, Saldanha Bay Harbour or Cape Town harbour and then transported via road, N14 and R358, to the site from Coega, Saldanha Bay or Cape Town harbours, depending on the load restrictions. Specialized high lifting and heavy load capacity cranes will be utilised to erect the turbines. The wind farm will be built in one phase, with a total construction period of up to 24 months.

### **5.14.1 Impacts:**

- Degradation of road surfaces
- Increased road capacity
- Abnormal Loads for delivery of heavy equipment

### **5.14.2 Recommendations**

- Construction and operational traffic impacts to be evaluated during the evaluation phase.
- The abnormal route needs to be planned and evaluated from the appropriate harbour(s) to the site prior to any final transportation.

- The vertical and horizontal alignments of the access routes must be designed to limit the gradients and radii to ensure acceptable access for the abnormal loads.
- The roads should be monitored during the construction phase for possible damage to the road surface and/or layer works to prevent permanent damage to the road.

A Traffic and Transportation Impact Assessment will be provided in the EIA phase.

## 5.15 ELECTROMAGNETIC AND RADIO FREQUENCY INTERFERENCE

The South African Radio Astronomy Observatory (SARAO) is a National Facility managed by the National Research Foundation and incorporates all national radio astronomy telescopes and programmes.

The Square Kilometre Array (SKA) project is an international effort (co-hosted between South Africa and Australia) to build the world's largest radio telescope, with a square kilometre (one million square metres) of collecting area. It will have an unprecedented scope in observations, exceeding the image resolution quality of the Hubble Space Telescope by a factor of 50 times, whilst also having the ability to image huge areas of sky in parallel.<sup>9</sup> The South African MeerKAT radio telescope, situated 90 km outside the small Northern Cape town of Carnarvon, is a precursor to the SKA telescope and will be integrated into the mid-frequency component of SKA Phase 1. The SKA is located in the Nama Karoo of South Africa, providing the perfect radio quiet backdrop for the high and medium frequency arrays that will form a critical part of the SKA's ground-breaking continent wide telescope. In an effort to protect this unique landscape in the country, the Minister of Science and Technology declared three Astronomy Advantage Areas in the Karoo in terms of the Astronomy Geographic Advantage Act (Act 21 of 2007).

The Applicant is committed to take all precautionary measures to limit the electromagnetic emissions (EMI) in all your electrical cable installations and equipment. The sensitivity with regards to telecommunications is considered low as there aren't any towers telecommunications towners within the vicinity of the site.

## 5.16 WAKE IMPACT ASSESSMENT

Wake effect and turbine turbulence occur when wind energy facilities are located in close proximity to one another. Both wake effect and turbine turbulence can occur when a new wind energy facility is established upwind of an existing wind energy facility. Wake effect is the phenomenon that can occur when a new upwind wind energy facility is first in line in receiving and capturing the available wind resource, thereby possibly reducing the quantity of wind available to the downwind facility and, concomitantly, the energy production capabilities of such a facility.

A new upwind facility may also have an impact on the quality of the remaining wind available to the downwind facility to the extent that, as the wind passes through the turbine rotors of the upwind facility, the flow of the remaining wind becomes more turbulent. The more turbulent wind may result in mechanical wear and tear and, therefore, increased maintenance on the turbines of the downwind facility. The result may be possible additional downtime and may even result in a decrease in the expected longevity of the turbines.



While the impacts of wake effects and turbine turbulence have not yet been the subject matter of judicial consideration in the country, and despite the relatively limited number of wind energy facilities in the country, they are now being raised by the owners of downwind energy facilities in their legal opposition to the granting of environmental authorisations for the development of proposed new nearby and upwind facilities.

With the DMRE committed to meeting the wind energy targets provided for in the IRP, the declaration by the DFFE of the REDZs in 2018, and the recent identification of new REDZs, it is likely that appeals relating to wake effect and turbine turbulence impacts will become increasingly common. Up to date, the DFFE has not defined or adopted development setbacks to prescribe an acceptable minimum distance needed to be maintained between existing wind energy facilities and proposed new facilities for the wind energy sector. Furthermore, the EIA Guideline for Renewable Energy Projects (dated 16 October 2015) does not include wake effect and turbine turbulence as identified potential environmental impacts of wind energy projects and should be updated to include this based on updated policies. The Applicant is aware of this requirement, and more information will be provided in the EIA phase.

## 6 IMPACT ASSESSMENT

### 6.1 METHODOLOGY

Direct, indirect and cumulative impacts of the issues that will be identified during the specialist investigations will be assessed in terms of these standard rating scales to determine their significance. The rating system used for assessing impacts (or when specific impacts cannot be identified, the broader term issue should apply) is based on six criteria, namely:

- **Status** of impacts – determines whether the potential impact is positive (positive gain to the environment), negative (negative impact on the environment), or neutral (i.e. no perceived cost or benefit to the environment). Take note that a positive impact will have a low score value as the impact is considered favourable to the environment;
- **Spatial extent** of impacts – determines the spatial scale of the impact on a scale of localised to global effect. Many impacts are significant only within the immediate vicinity of the site or within the surrounding community, whilst others may be significant at a local or regional level. Potential impact is expressed numerically on a scale of 1 (site-specific) to 5 (global);
- **Duration** of impacts – refers to the length of time that the aspect may cause a change either positively or negatively on the environment. Potential impact is expressed numerically on a scale of 1 (project duration) to 5 (permanent);
- **Frequency of the activity**– The frequency of the activity refers to how regularly the activity takes place. The more frequent an activity, the more potential there is for a related impact to occur.
- **Severity** of impacts – quantifies the impact in terms of the magnitude of the effect on the baseline environment, and includes consideration of the following factors:
  - The reversibility of the impact;
  - The sensitivity of the receptor to the stressor;
  - The impact duration, its permanency and whether it increases or decreases with time;

- Whether the aspect is controversial or would set a precedent;
- The threat to environmental and health standards and objectives;
- **Probability** of impacts –quantifies the impact in terms of the likelihood of the impact occurring on a percentage scale of <5% (improbable) to >95% (definite).

### Determination of Impact Significance

The information presented above in terms of identifying and describing the aspects and impacts is summarised in below in and significance is assigned with supporting rational.

**Table 6-1: Consolidated Table of Aspects and Impacts Scoring**

Spatial Scale	Rating	Duration	Rating	Severity	Rating
Activity specific	1	One day to one month	1	Insignificant/non-harmful	1
Area specific	2	One month to one year	2	Small/potentially harmful	2
Whole site/plant/mine	3	One year to ten years	3	Significant/slightly harmful	3
Regional/neighbouring areas	4	Life of operation	4	Great/harmful	4
National	5	Post closure	5	Disastrous/extremely harmful	5
Frequency of Activity		Rating	Probability of Impact		Rating
Annually / Once-off		1	Almost never/almost impossible		1
6 monthly		2	Very seldom/highly unlikely		2
Monthly		3	Infrequent/unlikely/seldom		3
Weekly		4	Often/regularly/likely/possible		4
Daily / Regularly		5	Daily/highly likely/definitely		5
Significance Rating of Impacts			Timing		
Very Low (1-25)			Pre-construction Construction Operation Decommissioning		
Low (26-50)					
Low – Medium (51-75)					
Medium – High (76-100)					
High (101-125)					
Very High (126-150)					
Adjusted Significance Rating					

**Confidence** – The degree of confidence in predictions based on available information and specialist knowledge:

- Low;
- Medium; or
- High.

In addition, each impact needs to be assessed in terms of reversibility and irreplaceability as indicated below:

- **Reversibility** of the Impacts - the extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):
  - High reversibility of impacts (impact is highly reversible at end of project life i.e. this is the most favourable assessment for the environment);
  - Moderate reversibility of impacts;
  - Low reversibility of impacts; or
  - Impacts are non-reversible (impact is permanent, i.e. this is the least favourable assessment for the environment).

The environmental significance rating is an attempt to evaluate the importance of a particular impact, the consequence and likelihood of which is assessed by the relevant specialist. The description and assessment of the aspects and impacts is presented in a consolidated table with the significance of the impact assigned using the process and matrix detailed below.

The sum of the first three criteria (spatial scope, duration and severity) provides a collective score for the consequence of each impact. The sum of the last two criteria (frequency of activity and frequency of impact) determines the likelihood of the impact occurring. The product of consequence and likelihood leads to the assessment of the significance of the impact (Significance = Consequence X Likelihood), shown in the significance matrix below in Table 6-2

**Table 6-2: Significance Assessment Matrix**

Consequence (Severity + Spatial Scope + Duration)															
Likelihood (Frequency of Activity + Probability of Impact)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	08	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

**Table 6-3: Positive and Negative Impact Mitigation Ratings.**

Colour Code	Significance Rating	Value	Negative Impact Management Recommendation	Positive Impact Management Recommendation
	Very High	126-150	Avoidance – consider alternatives	Optimal contribution from Project
	High	101-125	Avoidance as far as possible; implement strict mitigation measures to account for residual impacts	Positive contribution from Project with scope to improve
	High-Medium	76-100	Where avoidance is not possible, consider strict mitigation measures	Moderate contribution from Project with scope to improve
	Low-Medium	51-75	Mitigation measures to lower impacts and manage the project impacts appropriately	Improve on mitigation measures
	Low	26-50	Appropriate mitigation measures to manage the project impacts	Improve on mitigation measures; consider alternatives to improve on
	Very Low	1-25	Ensure impacts remain very low	Consider alternatives to improve on

## 6.2 IDENTIFICATION OF IMPACTS

Potential impacts resulting from the proposed De Rust North WEF were identified during this scoping phase using input from the following sectors:

- Existing information based on literature reviews and desktop assessments (EAP and specialist inputs);
- Site visit with the project team;
- Guidelines;
- Legislation; and
- Views of interested and affected parties (thus far).

The following potential impacts were identified:

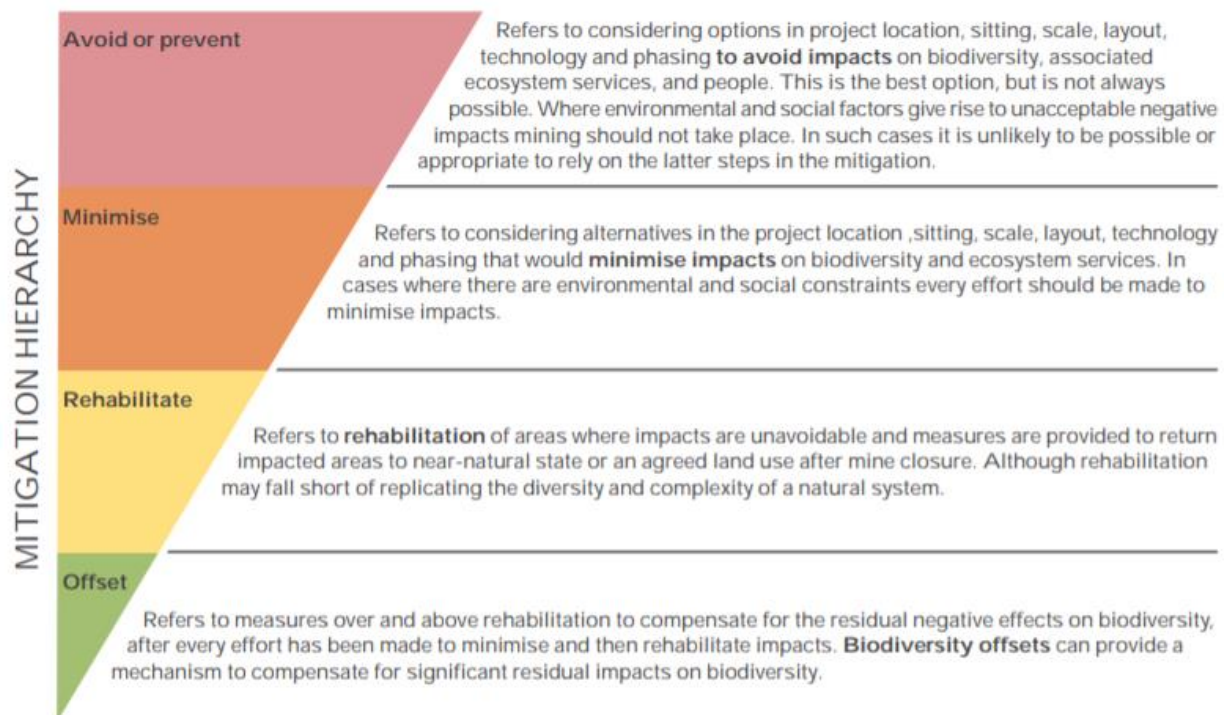
- Surface water;
- Disturbance of geology and soils;
- Land uses and capability;
- Socio-economic impacts;
- Sensitive Flora and Fauna;
- Terrestrial Biodiversity / Ecosystem services;



- Traffic and Transportation;
- Dust;
- Noise;
- Visual;
- Heritage and cultural resource impacts; and
- Paleontological Impacts.

### 6.3 MITIGATION MEASURES

The Impact Mitigation Hierarchy (DEA 2013) will be followed to achieve no overall or limited negative impact on the receiving environment. The Impact Mitigation Hierarchy is a tool which is used reiteratively throughout the project lifecycle to limit negative impacts on the environment. There are four steps/tiers within the hierarchy, and include: Avoid/Prevent, Minimise, Rehabilitate and Offset (Figure 6-1).



**Figure 6-1: The Impact Mitigation Hierarchy (DEA et al., 2013).**

Very High impacts should be avoided through alternative layout designs, technology alternatives etc. Where avoidance is not possible, the impacts that are generated by the development should be minimised if measures are implemented in order to reduce the impacts. The proposed mitigation measures should ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development. Where avoidance and/or minimisation is

not possible, rehabilitation and possible offset will be considered. These last two options are rarely considered and should only be done if the first two options could not be met. This will be assessed and discussed in more detail during the EIA phase.

## 6.4 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

Currently, a comprehensive impact assessment cannot be conducted for the anticipated impacts; however, the anticipated impacts can be discussed and an indication provided whether it will be positive or negative.

All impacts identified in the following tables will require further investigation either by the EAP or by the identified specialist. It is likely that additional impacts will be added based on the results of the site assessments of the EAP and of each specialist.

**Table 6-4: Potential Impacts prior to mitigation measures.**

Impact	Status of Impacts Prior to Mitigation	Proposed Mitigation/ Improvement Measures
<b>Terrestrial Biodiversity</b>		
The clearance for the construction of the proposed structures and infrastructure will result in vegetation loss	Negative	<ul style="list-style-type: none"> <li>• Keep the footprint of the disturbed area to the minimum and designated areas only.</li> <li>• Unnecessary vegetation clearing should be avoided.</li> <li>• Ensure rehabilitation plan is initiated during and after construction.</li> <li>• Vegetation clearing on slopes should be minimised and where necessary, appropriate stormwater management should be put in place to limit erosion potential of exposed soil.</li> <li>• No harvesting of indigenous species for firewood should be permitted.</li> </ul>
Accidental introduction of alien species and invaders	Negative	<ul style="list-style-type: none"> <li>• Eradication and/ or control of alien invasive plants and weeds as per the alien and invasive species monitoring programme.</li> <li>• Disturbance of natural areas should be avoided as far as possible and the spread of alien flora into natural areas should be controlled.</li> <li>• Continuous monitoring of the growth and spread of alien and invasive flora coupled with an adaptive management approach to identify suitable control mechanisms (e.g. mechanical, chemical or biological control). Mechanical control is usually preferred.</li> <li>• Cleaning of vehicles and equipment before entering natural areas to remove large deposits of foreign soils and plant material sourced from elsewhere.</li> </ul>

Destruction or displacement of flora and fauna species of conservation concern (SCC)	Negative	<ul style="list-style-type: none"> <li>• SCC should either be relocated (by means of the necessary permits) or protected <i>in situ</i>, depending on the species under question and the decision of the competent authority.</li> <li>• Protect suitable habitat for the continued existence of SCC.</li> <li>• The layout design for the proposed WEF should be adjusted to exclude sensitive areas.</li> <li>• Keep the footprint of the disturbed area to the minimum and designated areas only.</li> <li>• An environmental induction for all staff members must be mandatory to discuss these impacts such as the presence of SCC which may not be damaged, caught or removed without a permit.</li> </ul>
Faunal mortalities	Negative	<ul style="list-style-type: none"> <li>• An environmental induction for all staff members must be mandatory in which specific issues related to the killing and/or disturbance of faunal species should be avoided. Several staff members should complete a snake handling course in order to safely remove snakes from designated areas.</li> <li>• Road mortalities should be monitored by both vehicle operators (for personal incidents only) and the ECO (all roadkill on a periodic monitoring basis as well as specific incidents) with trends being monitored and subject to review as part of the monthly reporting. Monitoring should occur via a logbook system where staff takes note of the date, time and location of the sighting/incident. This will allow determination of the locations where the greatest likelihood exists of causing road mortality and allow mitigation against it (e.g. fauna underpasses, and seasonal speed reductions). Finally, mitigation should be adaptable to the onsite situation which may vary over time.</li> </ul>
Faunal mortalities	Negative	<ul style="list-style-type: none"> <li>• All staff operating motor vehicles must undergo an environmental induction training course that includes instruction on the need to comply with speed limits, to respect all forms of wildlife and, wherever possible, prevent accidental road kills of fauna. Drivers not complying with speed limits should be subject to penalties.</li> <li>• The proposed activities may result in the deaths of numerous fauna species. It is suggested that construction activities occur from a predetermined area and move along a gradient to allow fauna species to relocate.</li> </ul>

		<ul style="list-style-type: none"> <li>• The ECO should monitor live animal observations in order to monitor trends in animal populations and thus implement proactive adaptable mitigation of vehicle movements.</li> <li>• Should holes or burrows be located on site where construction may occur, contact a zoological specialist to investigate and possibly remove any species located within them.</li> <li>• Where possible, barriers around excavation sites should be erected to prevent fauna from falling into the excavations.</li> <li>• The proposed substation needs to be demarcated and fenced off to restrict animals from moving into this area, which will reduce fauna mortalities.</li> </ul>
<b>Avifauna</b>		
Habitat loss	Negative	<ul style="list-style-type: none"> <li>• Apply necessary buffers for roost and foraging sites and other sensitive bird habitat features, avoiding the construction of turbines and access roads in these areas. Roads must utilise or upgrade existing farm roads as far as possible</li> </ul>
Collision mortality with turbines	Negative	<ul style="list-style-type: none"> <li>• Avoid placement of turbines near sensitive bird breeding and roosting habitats. The application of adaptive mitigation measures (e.g., shutdown on demand retrofitting), according to post-construction monitoring results (counted strikes of threatened species) must be informed by environmental correlates of avifaunal activity and/or strikes.</li> </ul>
Collision and electrocution with above-ground power transmission lines	Negative	<ul style="list-style-type: none"> <li>• Increase turbine cut in speed as this has been shown to reduce collisions. The risk is not considered to be high, and the annual collision risk is estimated at less than 5 birds per year. The fatality rates post-construction will provide additional data and the risk model can be adjusted accordingly. Advanced Radar-based shutdown on demand must be applied where turbines transcend recommended buffers in permanent populations of Martial Eagles and Vultures in the PAOI.</li> </ul>
Disturbance of flight/migratory pathways	Negative	<ul style="list-style-type: none"> <li>• It is recommended that limited development (including the full rotor swept zone of wind turbines) takes place in High sensitivity areas. Minimise impacts to natural and artificial wetlands and water bodies by implementing the appropriate buffer areas where no development may take place. This includes a 200 m no-go buffer proposed around water points (500 metres from the largest seasonal impoundment within the Project Footprint) as they serve as focal points for bird activity.</li> </ul>



Disturbance due to lights, noise, machinery movements and maintenance operations	Negative	<ul style="list-style-type: none"> <li>• If turbines are to be lit at night, lighting should be kept to a minimum and should preferably not be white light. Flashing strobe lights should be used where possible (provided this complies with Civil Aviation Authority regulations).</li> <li>• Lighting of the wind farm (for example security lights) should be kept to a minimum. Lights should be directed downwards (provided this complies with Civil Aviation Authority regulations).</li> </ul>
<b>Aquatic Biodiversity</b>		
Operation of equipment and machinery	Negative	<ul style="list-style-type: none"> <li>• Construction of infrastructure should not be located within watercourses and associated buffers.</li> <li>• A water use licence application is required for activities within 500m of a wetland.</li> </ul>
Clearing vegetation	Negative	<ul style="list-style-type: none"> <li>• It is essential that the road and other linear networks (cables) follow contour and lowest gradients as far as possible. Appropriate stormwater design for the road network is essential to prevent roads from serving as concentrated conduits for water run-off, significantly increasing erosion potential and sediment transport capacity. Water diversions along the road should be placed at regular intervals in order to divert water back into the natural veld on the downstream side of the road. This diverted water should be released in a diffuse manner on contour, e.g. appropriately designed swale.</li> <li>• Access roads should preferably be dirt roads on contour. It is essential to choose appropriate water crossing for the road network in order to reduce potential negative impacts. Crossing points should preferably utilise watercourse sections which already contain exposed bedrock and has a low gradient in that particular section of the watercourse. These are ideal natural crossing points which need little intervention so as to ensure that historic stormwater run-off regimes are not altered. Where necessitated crossings should be simple low water bridges that do not interrupt surface or subsurface flows. Concentration of water flow must be avoided. Where water is concentrated it needs to be diffusely released through appropriate diffuse release infrastructure placed on contour and or cutting bedrock to contour, especially on the downstream side.</li> <li>• Watercourse crossings should be aligned perpendicular to the natural flow regime and on contour in order to prevent flow concentration and associated negative impacts.</li> </ul>

		<ul style="list-style-type: none"> <li>It is recommended that the road lay-out and all final positions of watercourse crossings be appropriately “fine tuned” through field verification in the impact assessment phase in order to minimise potential impacts and reduce road construction cost.</li> </ul>
Stockpiling of and placement construction materials	Negative	<ul style="list-style-type: none"> <li>Prevention of contaminated surface runoff which might impact to the water resource used by downstream users.</li> <li>All hazardous chemical must be stored in a bunded facility. Handling of such chemicals must be undertaken on a non-permeable surface.</li> <li>All hydrocarbons, lubricants and explosives should be adequately stored and bunded off to prevent any contamination to the groundwater during an accidental spill.</li> <li>All water that may collect in an area used for the storage of hydrocarbons must pass through an oil water separator before been discharged as dirty water.</li> <li>Spillages on open soil must be contained and removed and treated as hazardous waste.</li> <li>Emergency response plan to be put in place if spillages occur.</li> <li>Regular inspection should be conducted of storage facilities.</li> </ul>
Excavating/shaping landscape		<ul style="list-style-type: none"> <li>All contractors and staff are to be familiarised with the method statement and have undergone an induction / training on the location of sensitive No-Go areas and basic environmental awareness using the mitigation provided in this report.</li> <li>Access routes into or adjacent to the wash must make use of existing road ways and crossings where possible.</li> <li>Areas where construction is to take place must be clearly demarcated. Any areas not demarcated must be avoided;</li> <li>Storm-water generated from roadways must be captured and buffered, where flow velocities are to be significantly reduced before discharge into the environment.</li> <li>Storm-water verges as well as other denuded areas must be grassed (re-vegetated) with local indigenous grasses to protect against erosion;</li> <li>Any materials excavated must not be deposited in the river channel or valley slopes where it is prone to being washed downstream or impeding natural flow;</li> <li>The installation of sedimentation/erosion protection measures must be implemented before the start of construction, e.g., several rows of silt traps and fences (this is particularly important in the access roads leading or adjacent to the watercourse);</li> </ul>

		<ul style="list-style-type: none"> <li>• Stockpiling or storage of materials and/or waste must be placed beyond the defined buffers in this report for each respective activity;</li> <li>• No vehicles shall enter watercourse buffer zones outside of construction footprints;</li> <li>• No vehicles shall be serviced on site; a suitable workshop with appropriate pollution control facilities should be utilised offsite;</li> <li>• Hydrocarbons for refuelling purposes must be stored in a suitable storage device on an impermeable surface outside of the delineated wetland buffer zone;</li> <li>• Disturbed areas must be re-vegetated after completion of the phase;</li> <li>• A one-month timeframe for the initiation of this action;</li> <li>• Ripping of the soils should occur in two directions; and</li> <li>• Removed vegetation and topsoil can be harvested and applied here.</li> <li>• Drainage channels constructed for the access roads must be constructed so as not to result in erosion;</li> <li>• An inspection of the drainage channels must be completed within 1 week following the end of activities and within a week after the first rainfall event. Should excessive sediment be transported down the channels it is recommended that sediment screens are implemented;</li> <li>• An alien vegetation removal and management plan must be implemented along the verges of the roads and crossing points;</li> <li>• General storm-water management practices should be included in the design phase and implemented during the construction phase of this project; and</li> <li>• Following the completion of the phase, all construction materials and debris should be removed and disposed of in a suitable off-site area. An inspection should be completed within a week after the phase is completed.</li> </ul>
Final landscaping, backfilling and postconstruction rehabilitation		<ul style="list-style-type: none"> <li>• The implementation of a suitable storm-water management plan for the disturbance footprint must be in place and implemented by this phase;</li> <li>• The access road and silt traps (if installed) must be inspected monthly for signs of erosion. When erosion is observed, the area should be rehabilitated within 7 days. In addition, inspections following a &gt;80mm/24 hr rainfall event must occur within 7 days of the event;</li> <li>• An annual audit of the roads for signs of environmental disturbance outside of the footprint area must be conducted; and</li> </ul>

		<ul style="list-style-type: none"> <li>• Alien invasive management programmes should continue throughout the duration of the activity.</li> <li>• Watercourse monitoring should take place annually as part of the environmental management plan.</li> </ul>
Alteration of drainage		<ul style="list-style-type: none"> <li>• The implementation of a suitable storm-water management plan for the disturbance footprint must be in place and implemented by this phase;</li> <li>• Watercourse monitoring should take place annually as part of the environmental management plan.</li> </ul>
Alteration of surface water flow dynamics		<ul style="list-style-type: none"> <li>• The implementation of a suitable storm-water management plan for the disturbance footprint must be in place and implemented by this phase;</li> <li>• Watercourse monitoring should take place annually as part of the environmental management plan.</li> </ul>
Establishment of alien plants on disturbed areas		<ul style="list-style-type: none"> <li>• An alien vegetation removal and management plan must be implemented along the verges of the roads and crossing points;</li> <li>• Disturbed areas must be re-vegetated after completion of the phase; <ul style="list-style-type: none"> <li>• A one-month timeframe for the initiation of this action;</li> <li>• Ripping of the soils should occur in two directions; and</li> <li>• Removed vegetation and topsoil can be harvested and applied here.</li> </ul> </li> </ul>
<b>Geology and Soils</b>		
Land use change which will affect the soil and land use capability both during construction phase.	Negative	<ul style="list-style-type: none"> <li>• The agricultural potential is considered medium to low.</li> <li>• Change in land use is required. Application to be submitted to the municipality.</li> <li>• Compensate landowners where necessary.</li> <li>• Apply for SALA with the Department of Agriculture.</li> <li>• Rehabilitation of soil and vegetation after construction and at decommissioning phases to return the land back to for grazing capacity.</li> </ul>
Site clearance and levelling during the construction phase will cause some additional exposed	Negative	<ul style="list-style-type: none"> <li>• Prevent soil loss through erosion.</li> <li>• Develop appropriate storm water management system to control surface run off over exposed areas.</li> <li>• Preserve topsoil for later use after construction activities.</li> </ul>



areas and could trigger erosion and siltation, especially during rainy periods.		<ul style="list-style-type: none"> <li>• Ensure all vehicles stay within the designated areas (for example, away from watercourses).</li> <li>• Plan to construct the majority of development outside peak rain period.</li> <li>• Have in place temporary erosion and sedimentation trapping control measures during the construction phase, where necessary.</li> </ul>
Storage of topsoil	Negative	<ul style="list-style-type: none"> <li>• Remove and stockpile topsoil from roads, building platforms etc. prior to construction.</li> <li>• Preserve topsoil and store in an appropriate manner to maintain viability and seed bank for future rehabilitation after construction.</li> <li>• Store away from watercourses to prevent sedimentation and erosion.</li> <li>• Protect from alien plant establishment.</li> </ul>
<b>Social and Economic</b>		
Creation of employment and business opportunities	Positive	No Mitigation required
Presence of construction workers and potential impacts on family structures and social networks	Negative	<ul style="list-style-type: none"> <li>• Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.</li> <li>• The proponent and the contractor(s) should develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation.</li> <li>• The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.</li> <li>• The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.</li> </ul>

		<ul style="list-style-type: none"> <li>• The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.</li> <li>• No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.</li> </ul>
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Positive	<ul style="list-style-type: none"> <li>• The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.</li> <li>• All farm gates must be closed after passing through.</li> <li>• Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.</li> <li>• The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.</li> <li>• The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below).</li> <li>• The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.</li> <li>• Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.</li> <li>• Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are</li> </ul>

		<p>dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.</p> <ul style="list-style-type: none"> <li>It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.</li> </ul>
Increased risk of grass fires	Positive	<ul style="list-style-type: none"> <li>The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.</li> <li>Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.</li> <li>Smoking on site should be confined to designated areas.</li> <li>Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.</li> <li>Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.</li> <li>Contractor should provide fire-fighting training to selected construction staff.</li> <li>No construction staff, with the exception of security staff, to be accommodated on site overnight.</li> <li>As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.</li> </ul>
Impact of heavy vehicles and construction activities		<ul style="list-style-type: none"> <li>The movement of construction vehicles on the site should be confined to agreed access road/s.</li> <li>Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.</li> </ul>

		<ul style="list-style-type: none"> <li>The movement of heavy vehicles associated with the construction phase should be timed to avoid times days of the week, such as weekends, when the volume of traffic travelling along the access roads may be higher.</li> <li>Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.</li> <li>Dust suppression measures should be implemented, such as wetting on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.</li> <li>All vehicles must be road worthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.</li> </ul>
<b>Noise</b>		
Noise emanating from heavy machinery and transport vehicles	Negative	<ul style="list-style-type: none"> <li>Noise sensitive receptors will be identified that needs to be avoided.</li> <li>Noisy machinery to be used predominately during daylight hours.</li> <li>Grievance mechanism to record complaints should be kept on site and investigated.</li> <li>Regular monitoring of noise to take place.</li> </ul>
<b>Traffic &amp; Transport</b>		
Increased traffic volumes on the existing road networks	Negative	<ul style="list-style-type: none"> <li>Speed limits must be implemented on site as well as safety controls.</li> <li>Construction of access roads within safety limits from other crossings.</li> <li>Possible road upgrades where required.</li> <li>Create safe environment for pedestrians, animals and motorists, where necessary.</li> <li>Create fauna underpasses where necessary (example bridge crossings).</li> </ul>
Inadequate planning for the transportation of turbine parts and specialist construction equipment to the site.	Negative	<ul style="list-style-type: none"> <li>Further assessment will be undertaken during the EIA Phase and mitigation will be provided in the EIR and the EMP to reduce this impact.</li> <li>A Traffic Management Plan must be compiled by a suitably qualified specialist during the Planning and Design Phase/prior to the commencement of the Construction Phase.</li> <li>Project planning must include a plan for traffic control that will be implemented, especially during the construction phase of the development.</li> </ul>

		<ul style="list-style-type: none"> <li>Consultation with the local Road Traffic Unit in this regard should be done early in the planning phase. The necessary road traffic permits should be obtained for transporting parts, containers, materials and construction equipment to the site.</li> </ul>
<b>Health &amp; Safety</b>		
Roads and vehicles	Negative	<ul style="list-style-type: none"> <li>Speed limits must be in place on site and before access roads on a provincial or national road.</li> <li>Ensure drivers are trained in road safety.</li> </ul>
Health of work force during the construction phase	Negative	<ul style="list-style-type: none"> <li>Construction workers to wear protective clothing (e.g. masks that minimize dust inhalation, clothing that protects against sunburn and dangerous animals such as snakes (wearing of snake garters))</li> <li>Lock away dangerous plant, equipment and material when not supervised or in use.</li> <li>Dispose of the various types of waste generated in the appropriate manner at the licensed waste fill sites at regular intervals.</li> <li>Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated.</li> <li>Provide sufficient chemical /portable toilets at strategic locations that are cleaned regularly.</li> <li>Keep local emergency contact details on hand at the site office.</li> <li>Inform the local SAPS and Ward Councillors about the construction progress and time-lines to ensure that they are able to adequately deal with any type of disruptive behaviour which could occur due to the project.</li> </ul>
Surrounding neighbours		<ul style="list-style-type: none"> <li>Personnel are not permitted on other properties without permission.</li> <li>Avoid conflict with surrounding landowners.</li> </ul>
<b>Air Quality</b>		
Dust pollution	Negative	<ul style="list-style-type: none"> <li>The removal of vegetation will be minimised during stripping to reduce the effects of dust pollution as a result of exposed soil.</li> <li>Water or dust control agents should be used in working areas, and roads will be sprayed for dust suppression on a regular basis in designated susceptible areas during heavy usage.</li> <li>Dust monitoring must be undertaken in accordance to the monitoring programme.</li> </ul>



		<ul style="list-style-type: none"> <li>It is recommended that topsoil stockpiles should be vegetated to sustain biological components as well as prevent dust emissions.</li> <li>Reduction of dust fallout levels and particulate matter.</li> </ul>
<b>Electromagnetic Interference (EMI)</b>		
Possible WEF interference to television, radio and microwave signal	Negative	<ul style="list-style-type: none"> <li>Accurate placement of wind turbines in the planning and design phase can reduce this effect. This includes approval from the relevant companies.</li> <li>If complaints are received from surrounding landowners regarding this issue, the developer must investigate and mitigate these issues to the best of their abilities. It must be noted that the site is located in a remote part of the country.</li> </ul>

## 6.5 VISUAL REPRESENTATION OF ALTERNATIVE AND SITE SENSITIVITY

The combined sensitivity map was based on the findings from all specialist assessments and inputs from all stakeholders. The following relevant features were included, which are considered “no-go” areas (i.e. no development make occur in these areas). This report is based on a project description and site plan, provided to by the applicant, which has not been approved by DFFE at this stage of the project. The project description and site plan may undergo refinements before being regarded as final. Since only a few stakeholders participated in the process, the buffers could not be finalised.

The Alternative 1 was considered as the Preferred Alternative as it was considered as the most suitable since it has the least impact on the sensitive features on the site, however layouts will be finalised during the EIR phase..

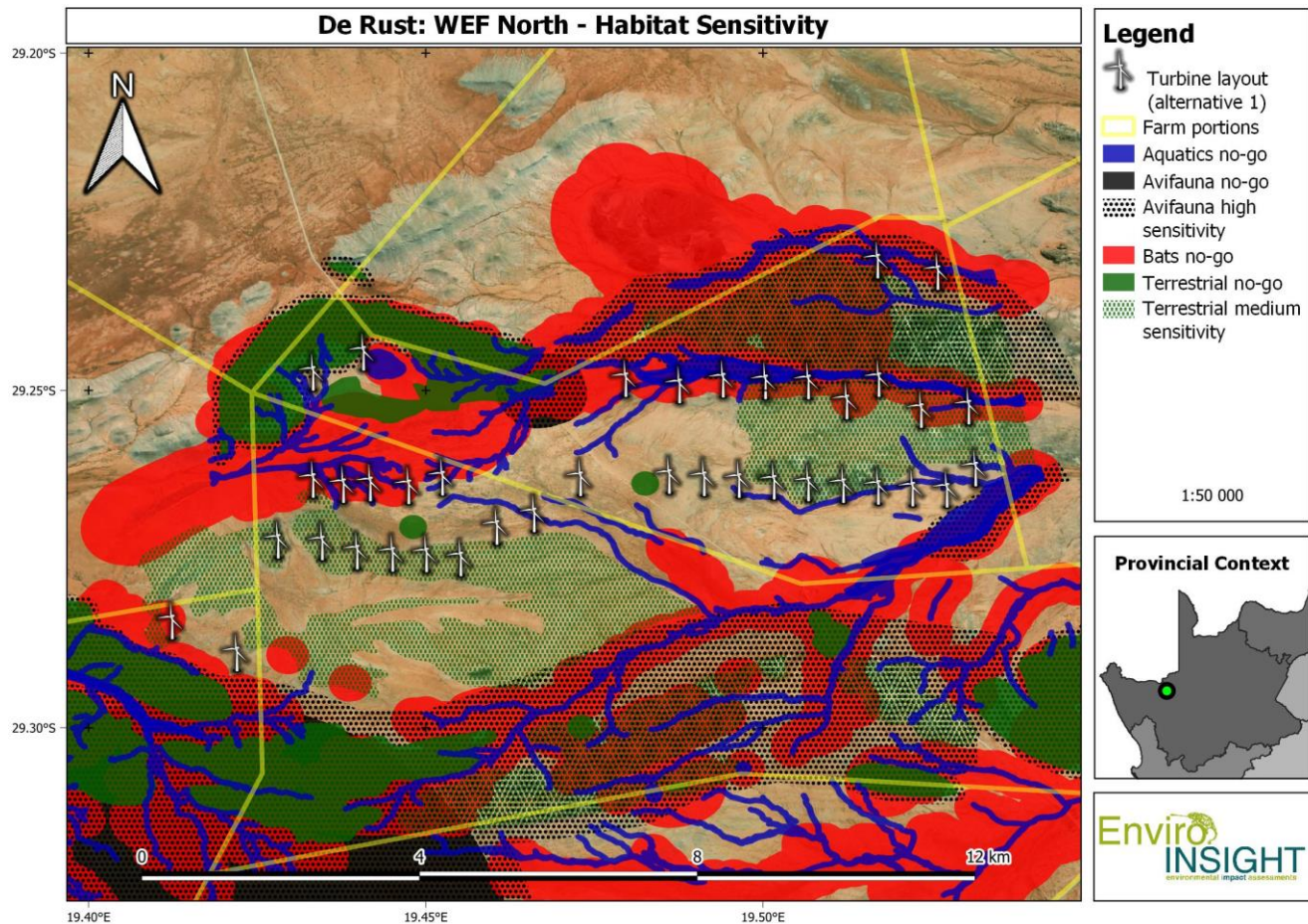
The following relevant features were included, which are considered “no-go” areas (i.e. no development make occur in these areas):

Avifauna: 50 m buffer around natural drainage line vegetation & a 200 m buffer around seasonally inundated watercourses, 5km buffer around martial eagle nests

Watercourses: 100m buffer for depressions and a 40m wash buffer

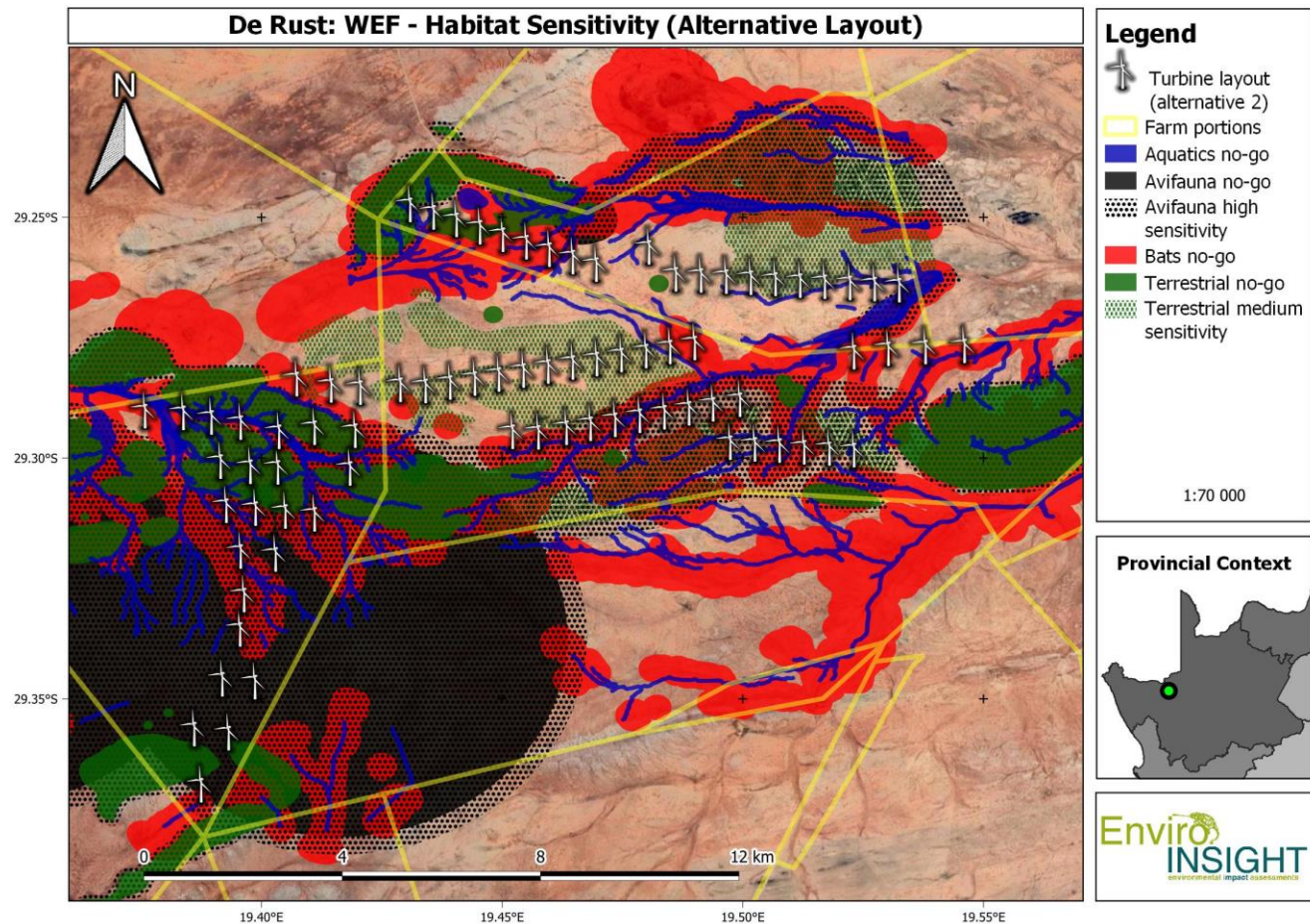
Bats: 500m around roosts, 200 m buffer around dense riparian vegetation

Plants: Sensitive habitat including Koppies, Sensitive species 144 with 100m buffer.



**Figure 6-2: Sensitivity analysis indicating no-go areas for alternative 1 (preferred alternative)**





**Figure 6-3: Sensitivity analysis indicating no-go areas for alternative 2**

## 7 PLAN OF STUDY FOR UNDERTAKING THE EIR

In line with the relevant legislative requirement, this Chapter sets out the Plan of Study (PoS) for the EIA phase of the assessment. Consultation with DFFE will be on going throughout this S&EIA process. However, it is anticipated that DFFE will provide relevant comment with respect to the adequacy of this PoS for the EIA, as it informs the scope and scale of the EIR. The Scoping Phase has identified potential environmental impacts, specialist studies required to assess these impacts and indicated the alternatives that require further discussion and assessment during the EIA phase. The section below outlines the proposed PoS which will be conducted for the various environmental aspects during the EIA Phase. It is also important to note that the PoS will also be guided by comments obtained from I&AP's and other stakeholders during the commenting period.

## 7.1 ALTERNATIVES CONSIDERED

The NEMA requires that alternatives are considered during the EIA process. Potential alternative options are identified during the scoping phase, and will be assessed further in the EIA phase.

The 2014 EIA Regulations (as amended) provide the following definition:

**“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—

- (a) property on which or location where the activity is proposed to be undertaken;
- (b) type of activity to be undertaken;
- (c) design or layout of the activity;
- (d) technology to be used in the activity; or
- (e) operational aspects of the activity;

and includes the option of not implementing the activity;

The following types of alternatives are most pertinent to the proposed project and are detailed further below:

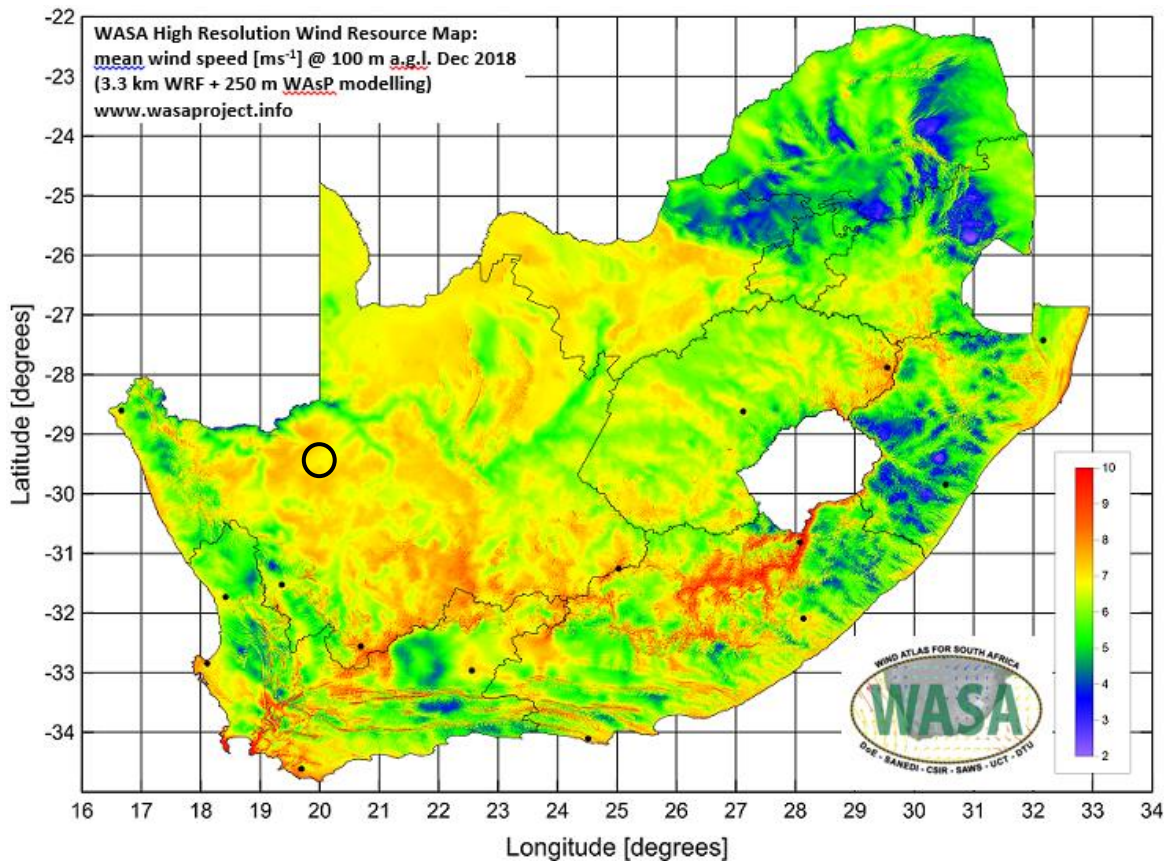
- Location alternatives;
- Layout alternatives;
- Technology alternatives; and
- The “no-go” alternative.

### 7.1.1 Location alternative

The proposed De Rust North WEF was selected based on the following parameters:

- Good wind resource. The average wind speed measured at a height of 100m is estimated to be between 6-8 m/s (Figure 7-1).
- Close proximity to an Eskom substation (Korana substation) which has the potential to support the proposed WEF project generation capacity.
- Relatively flat site, which makes construction easier and less expensive than on an undulating site.
- Landowner support. The landowner has already signed an agreement and is familiar with the process
- There are proposed WEFs in the area. Accordingly, the De Rust North WEF will not change the landscape significantly and can make use of existing infrastructure such as haulage routes, and align powerlines and substations where possible. This can significantly reduce the disturbance of transmission lines.
- The low density of homesteads in the area which will have low visual, noise and flicker impacts.
- The land has a low agricultural potential and can only be used for low intensity livestock grazing which can continue after construction of the WEF.

Based on the above, the De Rust North WEF site was selected as the preferred alternative due to the favourable factors listed above.



**Figure 7-1: Wind resource map: average wind speed as measured at a height of 100m. The general area of the project is indicated by the black circle.**

### 7.1.2 Layout alternative

An initial site layout has been compiled based on *inter alia* the following criteria:

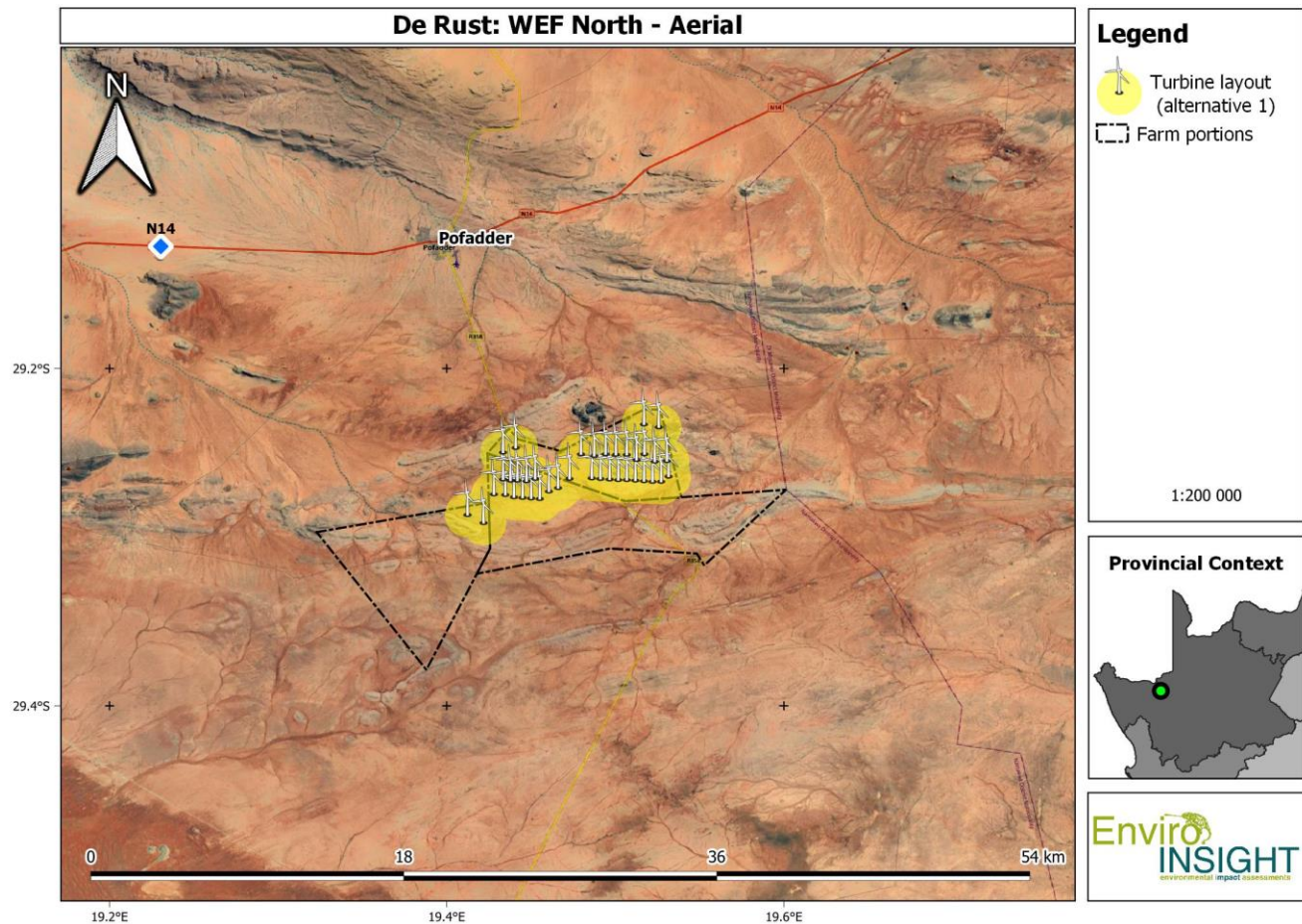
- Spatial orientation requirements of turbines and associated infrastructure (e.g. roads);
- Layout relative to other existing infrastructure, such as powerlines and the Korana substation;
- Wind resource profile (this could have significant technical constraints);
- Topographical constraints, including surface water and steep slopes of hills; and
- Required setbacks from property boundaries for noise, visual and flicker impacts.

Based on the findings of the Scoping Report, the layout will be updated to include biophysical constraints of sensitive flora, avifauna, and bats, surface water features, sensitive heritage areas, and associated buffer areas. Input from all specialists, stakeholders, and competent authority will be considered in the final layout design and selection of the preferred alternative.



Two (2) layout alternatives are being considered for the project.

- Alternative 1 (Preferred Alternative) – 39 Turbines. The specific GPS coordinates for each turbine is shown in Table 7-1 below.



**Figure 7-2: Alternative 1**

**Table 7-1: Coordinates of turbines**

Wind Turbine layout number	Latitude (S)	Longitude (E)
WT01	29°16'29.15"S	19°25'41.13"E
WT02	29°16'30.16"S	19°26'4.72"E
WT03	29°16'34.98"S	19°26'23.49"E

WT04	29°16'36.26"S	19°26'42.37"E
WT05	29°16'36.73"S	19°27'0.45"E
WT06	29°16'38.71"S	19°27'18.78"E
WT07	29°16'21.96"S	19°27'37.93"E
WT08	29°16'15.34"S	19°27'58.00"E
WT09	29°15'56.11"S	19°28'22.70"E
WT10	29°15'57.04"S	19°25'59.96"E
WT11	29°15'59.75"S	19°26'16.18"E
WT12	29°15'58.85"S	19°26'30.44"E
WT13	29°16'0.20"S	19°26'51.02"E
WT14	29°15'55.69"S	19°27'8.95"E
WT15	29°14'59.82"S	19°25'59.87"E
WT16	29°14'49.04"S	19°26'26.68"E
WT17	29°15'54.87"S	19°29'10.10"E
WT18	29°15'55.86"S	19°29'28.57"E
WT19	29°15'56.85"S	19°29'47.38"E
WT20	29°15'57.72"S	19°30'5.79"E
WT21	29°15'58.67"S	19°30'24.38"E
WT22	29°15'59.57"S	19°30'42.81"E
WT23	29°16'0.45"S	19°31'1.42"E
WT24	29°16'1.38"S	19°31'19.88"E
WT25	29°16'2.21"S	19°31'38.33"E
WT26	29°15'50.91"S	19°31'53.60"E
WT27	29°15'3.01"S	19°28'46.62"E
WT28	29°15'6.54"S	19°29'15.34"E

WT29	29°15'3.43"S	19°29'38.72"E
WT30	29°15'4.45"S	19°30'1.21"E
WT31	29°15'4.22"S	19°30'24.15"E
WT32	29°15'14.94"S	19°30'44.66"E
WT33	29°15'3.18"S	19°31'1.81"E
WT34	29°15'19.52"S	19°31'24.38"E
WT35	29°15'17.89"S	19°31'49.88"E
WT36	29°13'59.89"S	19°31'1.24"E
WT37	29°14'5.81"S	19°31'33.46"E
WT38	29°17'12.48"S	19°24'44.63"E
WT39	29°17'29.40"S	19°25'19.17"E

Alternative 2: This alternative was considered for the maximum number of turbines for the properties but was disregarded due to sensitivities and setbacks identified early in the process. Refer to Figure... for sensitivities. In addition, the developer decided to split the site into two WEFs.

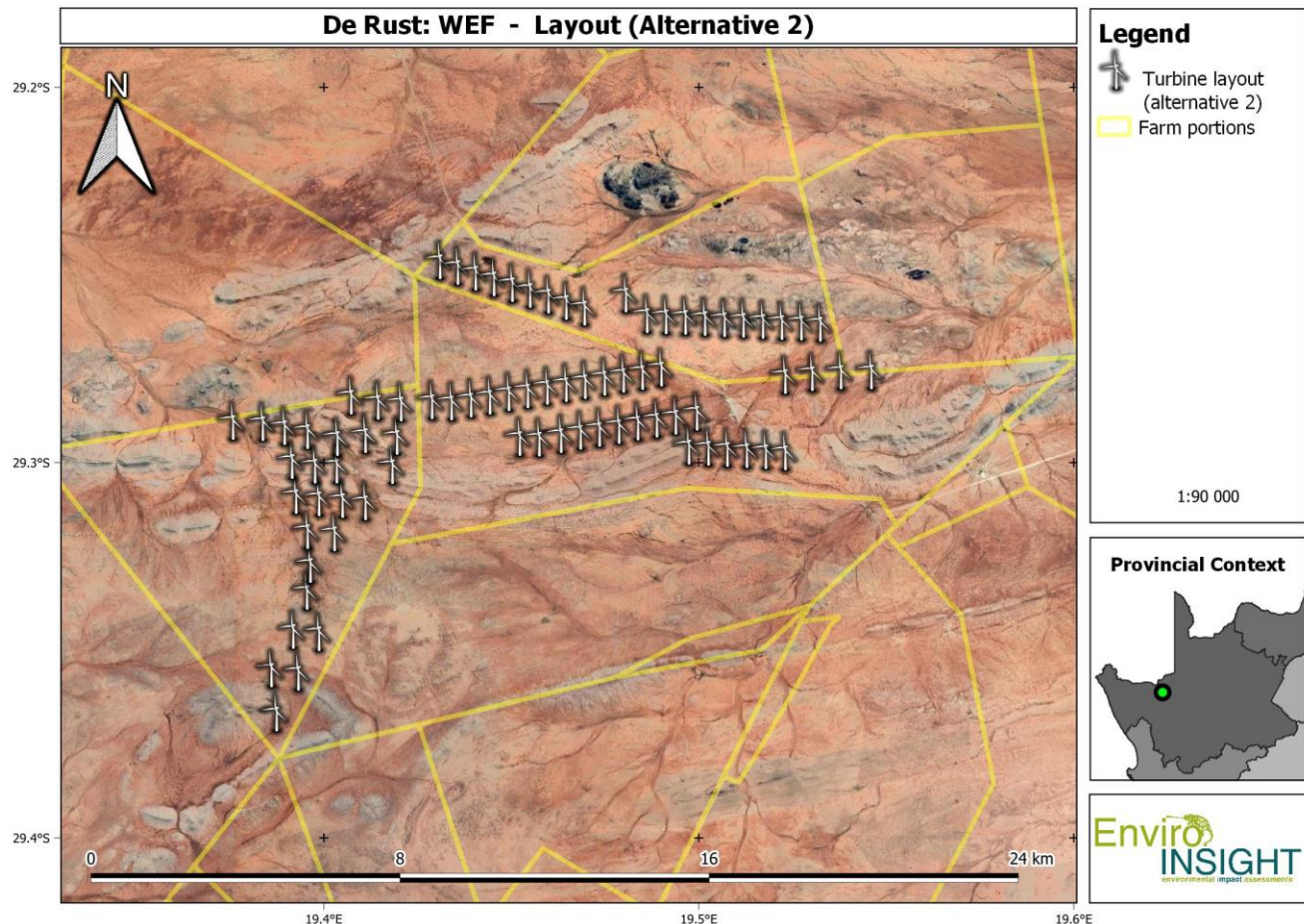


Figure 7-3: Alternative 2

### 7.1.3 Technology alternative

The most important factors that are considered when selecting a turbine for any site, are the annual average wind speed, reference wind speed, wind shear and turbulence, the return period for extreme wind conditions and wind direction (i.e. wind resource profile). The ongoing monitoring of the wind resource on site will be used to inform the turbine layout.

Other determining factors when selecting the preferred turbine are efficiency, full load hours and the capacity factor. The pricing of relevant technology at the time of construction is also a key factor, as well as the exchange rate for imported components.

#### 7.1.4 “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.

The no-go alternative would result in the continuation of the current land use at the site which is currently not used for anything, and is therefore considered natural. Historically, it was grazed by livestock. When properly managed, this land can be used to protect the environment, but this is not a necessary or desired outcome and accordingly the land can mainly be used for livestock



grazing, should the landowner decide to reintroduce animals (sheep) on the property. The impact of not continuing with the proposed wind farm development would be advantageous to both terrestrial and aquatic biodiversity (if it is maintained and managed properly), but the positive economic and social aspects will not be realised which means that the local economy will not benefit from this land not being utilised for the intended purpose as the land is currently constraining economic activity

## **7.2 A DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

The objective of the EIA phase will be to:

- Identify and assess the environmental (biophysical and social) impacts of the construction, operation, and decommissioning impacts of the proposed development. The cumulative impacts of the proposed development will also be identified and evaluated;
- Alternative activities and locations will be determined and assessed in parallel with the proposed activity;
- Identify and evaluate potential management and mitigation measures that will reduce the negative impacts of the proposed development and enhance the positive impacts;
- Compile monitoring, management, mitigation and training needs in the EMP; and
- Provide the decision-making authorities with sufficient and accurate information in order to make a sound decision on the proposed development.

The Impact Assessment Phase has four key elements:

- Specialist Studies: Specialist studies identified during the Scoping Phase and DFFE Screening Report, and any additional studies that may be required by the competent authority, are undertaken as the initial phase of the EIA. The relevant specialists have already been appointed to undertake the various assessments prior to the commencement of the EIA phase in order to identify potential fatal flaws from an early stage in the process and inform the PoS. Specialists will gather baseline information relevant to the study being undertaken and assess impacts associated with the development. Specialists will also indicate areas to be avoided, make recommendations to mitigate negative impacts and optimise benefits. The resulting information is synthesised into the draft EIAR (with the complete assessment attached to the EIAR) that will be made available to I&APs for review and comment.
- Environmental Impact Assessment Report (EIAR): The main purpose of this Report is to gather environmental information and evaluate the overall impacts associated with the project, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIAR also identifies mitigation measure/management recommendations to minimise negative impacts and enhance benefits. The draft EIAR and associated reports will be made available for public and authority review and comment for a period of 30 days. The availability of the draft EIAR will be communicated to all registered I&APs and will be accessible through various platforms to be confirmed at the time. After comments have been received, the final EIAR will be compiled and

submitted to the DFFE for review. This report will assist the DFFE in making an informed decision on whether to grant or reject the proposed development.

- Environmental Management Programme (EMPr): The EMPr provides guidelines to the Applicant and the technical team on how to best implement the mitigation measure/ management recommendations outlined in the EIAR during the construction, operational and decommissioning phase. The EMPr is a law binding document, and once approved it cannot be amended without permission from the DFFE.
- Public Participation Process (EIA Phase): The PPP initiated during the Scoping Phase, is continued. This includes continuous engagement with I&APs and stakeholders which includes consultation meetings, receiving comments, issues and concerns raised by I&APs and the authorities during the review period, and also provides relevant responses to these comments. Comments on the Draft EIAR received from I&APs are included and addressed in the final submitted EIAR in the form of a Comments & Response Report.

### 7.3 ASPECTS TO BE ASSESSED BY SPECIALISTS

The specific challenges and impacts relevant to the proposed De Rust North WEF are the following:

- Impacts on terrestrial ecosystems;
- Impacts on avifauna;
- Impacts on bats;
- Impacts on sensitive flora;
- Impacts on aquatic ecosystems;
- Impacts on the transportation of components during the construction phase;
- Visual Impacts; and
- Impacts on the socio-economic environment of the region.
- 

### 7.4 A DESCRIPTION OF THE PROPOSED METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS

Refer to section 6.1 for more details.

### 7.5 PARTICULARS OF THE PUBLIC PARTICIPATION PROCESS THAT WILL BE CONDUCTED DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Competent authorities, stakeholders and I&APs will be consulted during the initial notification period, the scoping phase, and during the EIA phase.

#### ➤ Consultation with the competent authority

A pre-application meeting was held in June 2022, after which communication was maintained via email. Comments on the draft scoping report will be obtained and incorporated into the report prior to submitting the final report for approval.

If the scoping report is accepted, the email communication will continue and the competent authorities comments on the draft EIA report will also be sourced. As and when necessary, the competent authority will be consulted throughout the process.

➤ **Steps to be taken to notify interested and affected parties**

A detailed description of the PPP conducted for the scoping phase is described in Section 4.3 above and Appendix C.

I&APs were notified of the proposed application via newspaper advertisements, emails, site and public notices. In addition, consultation meetings with affected landowners and stakeholders will be undertaken during the scoping phase. The PPP will be undertaken in accordance with the NEMA process and the EIA Regulations (2014, as amended). An opportunity was provided to the public to register as I&AP's and to provide initial comments, and a 30 day period will be provided to comment on this draft Scoping Report. The information submitted by I&AP's will be utilised during the Impact Assessment and compilation of the EIAR where considered necessary. Should the Final Scoping Report be accepted by the DFFE, the EIA phase of the process will commence.

During the EIA phase I&APs, stakeholders and the competent authorities will be notified of the process to be undertaken (similar way as described in Section 4.3 above and as outlined in the EIA Regulations (2014, as amended), will be provided an opportunity to comment on the draft EIAR which will include specialist studies and attend consultation meetings, where relevant.

➤ **Details of the engagement process to be followed**

The process of identifying and contacting landowners, stakeholders and I&APs commenced when I&APs were notified as part of site and public notices, newspaper adverts, emails, and distribution of the Background Information Document (BID). Landowners and their contact details were identified through existing EIA reports, contact details received from registered I&APs and/or Title Deed search for the properties falling within the proposed study area. Proof of notifications and documentation pertaining to the PPP will form part of the public participation records as part of the Scoping and Environmental Impact Assessment phase.

As mentioned above, during the EIA phase, I&APs will be afforded the following opportunities to participate in the project:

- I&APs will be requested via notifications to provide their comments on the project, notified when the draft EIAR will be available for review;
- The EIAR and EMPr will be available for comment for a period of 30 days which will be accessible from Enviro-Insight's website: <http://www.enviro-insight.co.za/download-it/project-downloads/>. CD copies will be made available on request to Enviro-Insight.

All comments and issues raised during the public participation period will be incorporated into the Final EIAR and EMPr to be submitted to the DFFE for review and the final decision-making.

I&APs will be notified about the decision of the competent authority within 14 days of receiving written letters, and will specify any further process that is to be undertaken such as the appeal process.

➤ **Description of the information to be provided to Interested and Affected Parties**

The following information, but not limited to this, will be made available to I&APs:

- Background Information Document (Appendix C): The aim of the BID is to inform all Interested and Affected Parties about the proposed project and process to be followed during the scoping and EIA phase which includes the undertaking of PPP and environmental impact assessment process for the compilation of the Environmental Impact Assessment and Environmental Management Programme for the proposed development;
- The site plan, scale and extent of activities to be authorised (Appendix B);
- Draft Scoping Report which includes:
  - the plan of study;
  - list of activities to be authorised according to NEMA EIA Regulations;
  - indication and discussion of the impacts of activities to be authorised;
  - the proposed specialist studies that will be undertaken as part of the project;
  - discussion of alternatives including location, process and methodology as well as the No-Go alternative; and
  - Details of the relevant legislation that must be adhered to.
- Draft EIAR and EMP which will include the results from the specialist assessments will also be made available for public review and comment for a period of 30 days; and
- Information will also be made available as requested by the Interested and Affected Parties throughout the process.

## **7.6 A DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEN AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

As discussed in detail in the above sections and summarised below, the following tasks will be undertaken as part of the EIA phase of the project:

- Finalisation of the legislative context within which the activities are located and document how the proposed activity complies with and responds to this;
- Finalisation of the activities triggered under NEMA based on the specialist assessments and the final design layout and specifications;
- Identification of the location of the development footprint within the preferred site based on 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;
- Identification of the most ideal location for the activities within the preferred site based on the lowest level of environmental sensitivity identified during the assessment, especially with the proposed sitting of the turbines and associated infrastructure;
- Determination of the nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and degree to which these impacts can be reversed, may cause irreplaceable loss of resources, can be avoided, managed or mitigated



- Identification of suitable measures to avoid, manage or mitigate identified impacts;
- Detailed specialist studies;
- Continued Public Participation Process;
- Compilation of the draft EIAR and EMP, and once the consultation, review and commenting period has finished the finalisation of the EIAR and EMP which will be submitted to the competent authority for review and final decision making.

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## APPENDICES