

**Bat Assessment Report for the proposed
Final Layout and updated EMPr approval
process for the Mulilo De Aar 2 South Wind
Energy Facility (WEF)**

**Update of the EMPr and Layout Plan
Finalisation Process**

For the Mulilo De Aar 2 South Wind Energy Facility (WEF)



Compiled by

Werner Marais

10 November 2022

PREPARED FOR:

Mulilo De Aar 2 South (Pty) Ltd

By



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Ref: R-2208-34

i) APPOINTMENT OF SPECIALIST

Specialist Company:	Animalia Consultants (Pty) Ltd
Fieldwork conducted by:	Werner Marais
Report done by:	Werner Marais
Appointed by:	Mulilo De Aar 2 South (Pty) Ltd
For:	Bat Assessment Report for the proposed Final Layout and EMPr approval process for the Mulilo De Aar 2 South Wind Energy Facility (WEF). Update of the EMPr and Layout Plan Finalisation process for the Mulilo De Aar 2 South Wind Energy Facility (WEF) Northern Cape, South Africa

Independence

Animalia Consultants (Pty) Ltd has no connection with the developer. Animalia Consultants (Pty) Ltd is not a subsidiary, legally or financially of the developer; remuneration for services by the developer in relation to this proposal is not linked to approval by decision-making authorities responsible for permitting this proposal and the consultancy has no interest in secondary or downstream developments as a result of the authorisation of this project.

Applicable Legislation or Guidelines

Legislation or guidelines dealing with biodiversity applies to bats and includes the following:

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004; Especially sections 2, 56 & 97). The Act calls for the management and conservation of all biological diversity within South Africa. Bats constitute an important component of South African biodiversity and therefore all species receive attention, in addition to those listed as Threatened or Protected.

THE SOUTH AFRICAN BEST PRACTICE GUIDELINES for preconstruction studies recommends sensitivity map buffer rules and mitigation by avoidance. MacEwan, K., Sowler, S., Aronson, J., and Lötter, C. 2020. *South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities - ed 5*. South African Bat Assessment Association.

THE BAT MORTALITY THRESHOLD GUIDELINES imposes sustainable bat mortality thresholds for operating wind farms, indicating when wind farms need to apply active mitigation measures. MacEwan, K., Aronson, J., Richardson, E., Taylor, P., Coverdale, B., Jacobs, D., Leeuwner, L., Marais, W., Richards, L. 2018. *South African Bat Fatality Threshold Guidelines – ed 2*. South African Bat Assessment Association.

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1 OBJECTIVES AND TERMS OF REFERENCE FOR THE STUDY

- A review of the original 12-months pre-construction bat monitoring EIA study (2014) that was done for the original authorisation and relevant amendments.
- An update of the bat impact assessment to ensure that any changes to the impacts as a result of the proposed final layout and amendments are captured, if applicable.
- An update of the original specialist input into the EMPr in relation to the proposed amendments, and applicable most recent South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities (MacEwan, et al., Edition 5, 2020), and South African Bat Fatality Threshold Guidelines (MacEwan, et al., Edition 2, October 2018).
- A comment on the acceptability of the final proposed layout and/or any recommendations for micro siting of the layout to ensure acceptability from a bat impact perspective.
- Concluding impact statement.

2 INTRODUCTION

Mulilo Renewable Energy (Pty) Ltd (later updated to Mulilo De Aar 2 South (Pty) Ltd, i.e. the current holder of the Environmental Authorisation) applied for Environmental Authorisation from the Department of Environmental Affairs (DEA) in 2011 to establish a Wind Energy Facility (WEF) and associated infrastructure on the eastern plateau of De Aar (approximately 20 km to the east of the town). The EIA process for the proposed project was undertaken by Aurecon South Africa (Pty) Ltd in 2012 and Environmental Authorisation for the proposed project was granted by DEA on 1 March 2013. Furthermore, on 24 July 2014, a further environmental authorisation for the project was granted in respect of Items 13 and 16 of GN 546 by the Northern Cape Department of Environment and Nature Conservation (DENC) for activities that had not been applied for in the original EIA for the project.

The original EA for the project authorised 103 wind turbines with a potential capacity of 155 – 258MW and associated infrastructure. Eight amendments to the DEA (now DFFE) EA have been applied for by the Applicant, and granted by DFFE, in 2013, 2014, 2016, 2018, 2019, 2020 and 2021 respectively, including a change in the name of the holder of the EA, extensions of the EA validity period, amendments to Conditions of the EA, amendments to

the project description and amendments to the turbine specifications. The currently authorised project description includes 25 – 61 turbines and associated infrastructure, each turbine with a hub height of 120m and rotor diameter of 165m.

Animalia Consultants (Pty) Ltd completed the 12 months pre-construction bat monitoring for the Mulilo De Aar 2 South Wind Energy Facility (WEF) in 2014, and was also involved in subsequent amendments. It included the assessments of impacts as required for the EIA phase.

The Applicant is currently applying for an amendment to the current EA (in a separate process to this EMPr update and Layout Plan finalisation process), to reduce the number of turbines to a maximum of 26 turbines, utilising 28 possible positions. The EA amendment process will also propose to include the words “up to” before the current 120m and 165 m hub heights and rotor diameters respectively, to allow for smaller turbines to be used if required. The most likely turbine dimensions that will be used are for turbine hub heights to be 100m and rotor diameter to be 165m (although this has to still be confirmed following final supplier selection and contracting). Associated infrastructure that are also proposed to be amended includes hardstands, internal roads, foundations, IPP substation, control and O&M buildings, temporary laydown areas and internal reticulation and removal of the MW designation per turbine. These amendments to the associated infrastructure do not have a significant bearing on the predicted impacts on bats.

3 METHODOLOGY

Animalia Consultants (Pty) Ltd completed the 12-months pre-construction bat monitoring for the Mulilo De Aar 2 South Wind Energy Facility (WEF) in 2014. A sensitivity map was then compiled in 2014. In light of new insights onto the impacts and bats and according to more recent sensitivity mapping rules in the South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities (MacEwan, et al., Edition 5, 2020), the sensitivity map has been updated in this report using desktop resources (**Figure 4.1**).

The current Best Practice Guidelines (MacEwan *et al.*, 2020) requires turbine blade length to be outside the 200m high sensitivity buffers, to allow for no turbine blade length overhang into these buffers.

4 RESULTS

According to the passive bat activity data collected on site during the preconstruction study, bat activity at 50m height was significantly less than activity at a lower height of 10m. If the maximum proposed rotor diameter is used with a 100m hub height (for example), it will place the lowest rotor swept height at 17.5m above ground. This may increase the probability of bats being impacted by turbine blades, further motivating the revised sensitivity map with increased buffer sizes and no turbine blade overhang allowed inside high sensitivity buffers. The lowest rotor swept height of 17.5m is the absolute minimum and the rotor swept height may not be lower, from a bat sensitivity perspective., and it is recommended if possible that turbines are selected that have a higher minimum tip height.

The current proposed final turbine layout has been adjusted to respect the bat sensitivity map, and no turbines are intruding into the revised bat sensitivity map buffers (**Figure 4.1**). . The significance of each sensitivity category in relation to different components of the wind farm is detailed in **Table 4.2**.

Table 4.1. Mulilo De Aar 2 South WEF turbines located within bat sensitive areas and buffers (considering max. 82.5m turbine blades).

Bat sensitive area	Turbines within sensitivity category with current layout (considering 82.5m blade length overhang)
High bat sensitivity area (no-go areas)	None
High bat sensitivity buffer (no-go areas)	None
Moderate bat sensitivity area	None
Moderate bat sensitivity buffer	Turbines 22, 23

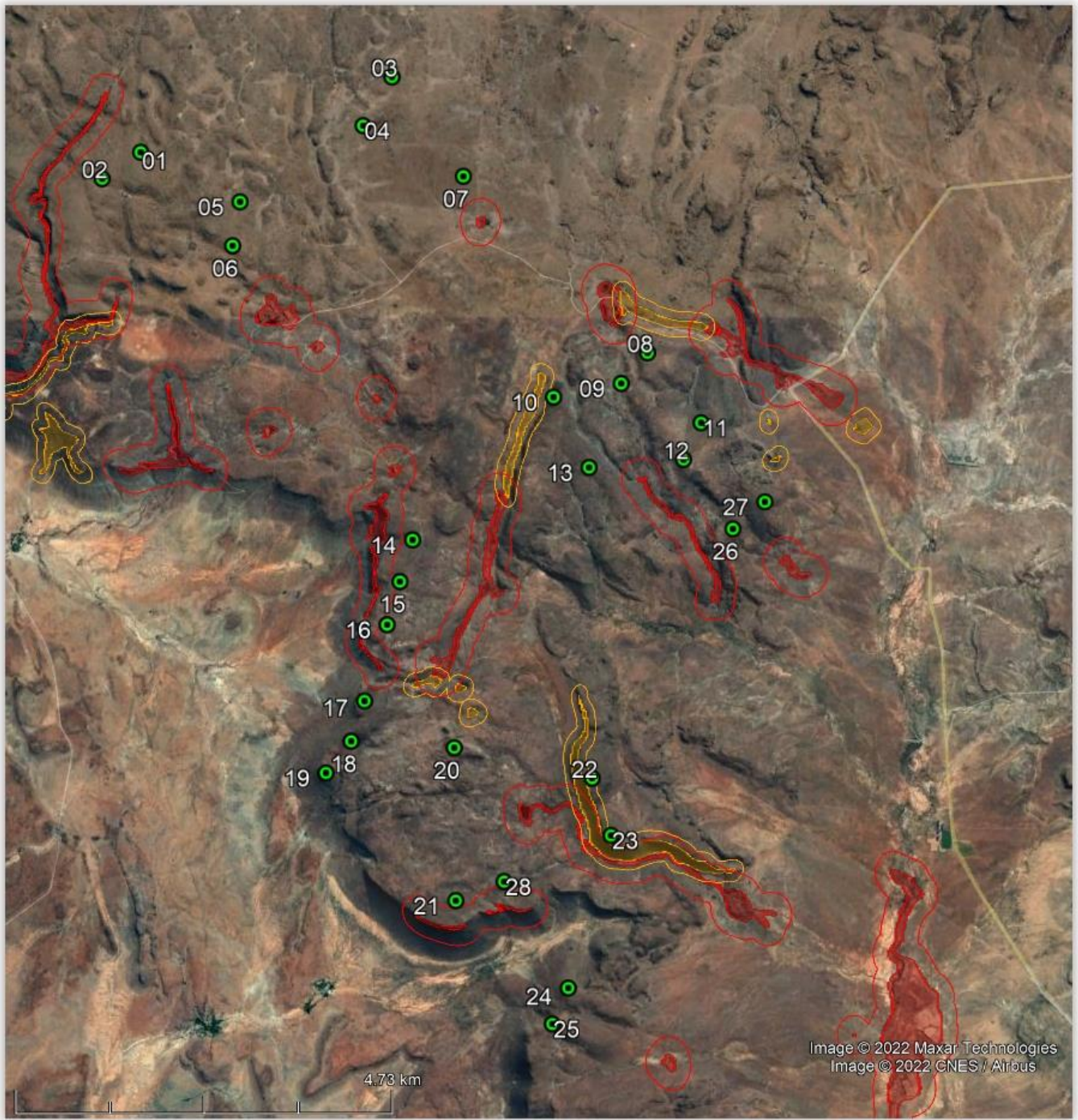


Figure 4.1: Bat revised sensitivity map in relation to the proposed turbine layout. Shaded red = High bat sensitivity; Red line = 200m High bat sensitivity buffer; Shaded orange = Moderate bat sensitivity; Orange line = 100m Moderate bat sensitivity buffer.

Table 4.2. The significance of sensitivity map categories for each infrastructure component.

Sensitivity	Turbines	Roads and cables	Internal overhead transmission lines	Buildings (including substation, battery storage facility and construction camp/yards)
High Sensitivity	These areas are 'no-go' zones and turbines may not be placed in these areas. Turbine blades (blade overhang) may not intrude into these areas.	Preferably keep to a minimum within these areas where practically feasible.	Allowed inside these areas.	Avoid these areas (no-go areas).
High Sensitivity buffer	These areas are 'no-go' zones and turbines may not be placed in these areas. Turbine blades (blade overhang) may not intrude into these areas.	Allowed inside these areas.	Allowed inside these areas.	Preferably keep to a minimum within these areas where practically feasible.
Moderate Sensitivity	Turbines within these areas may require priority (not excluding all other turbines) during post-construction studies, and in some instances, there is a higher likelihood that mitigation measures may need to be applied to them.	Allowed inside these areas.	Allowed inside these areas.	Allowed inside these areas.
Moderate Sensitivity buffer	Turbines within these areas may require priority (not excluding all other turbines) during post-construction studies, and in some instances, there is a higher likelihood that mitigation measures may need to be applied to them.	Allowed inside these areas.	Allowed inside these areas.	Allowed inside these areas.

5 POTENTIAL MITIGATION OPTIONS PERTAINING TO THE EMPr

The potential available options to minimise bat mortalities are discussed in this section. Details on if, when or how each option must be implemented is explained in the step-by-step Mitigation Action Plan in Section 6.

5.1 Minimisation of light pollution and artificial habitat creation

A mitigation to consider in the design of the Mulilo De Aar 2 South WEF is to keep artificial lighting to a minimum on the infrastructure (O&M buildings and on wind turbines), while still adhering to safety and security requirements. For example, this can be achieved by having floodlights down-hooded, installing passive motion sensors onto lights around buildings and possibly utilising lights with lighting colours (also referred to as lighting temperatures) that attract fewer insects. Light pollution will impact bat feeding habits and species compositions negatively, by artificially discouraging photophobic (light averse) species and favouring species that readily forage around insect-attracting lights.

Stormwater management should also avoid creating artificial wetlands and open water sources in the turbine zones (less than 282.5m from any turbine base), as this will increase insect and bat activity around turbines.

The likelihood of bats being killed by moving turbine blades increases significantly when they are attracted to their proximity when it has become an improved foraging airspace due to the presence of artificial light or artificial water sources.

5.2 Curtailment to prevent freewheeling

Freewheeling occurs when the turbine blades are rotating in wind speeds below the generator cut-in speed (also called the **manufacturer's cut-in speed**), thus no electricity is being produced and only some blade momentum is maintained.

Since bat activity tends to be negatively correlated with wind speed, it means that high numbers of bats are likely to be flying and impacted on in low wind speeds where

freewheeling may occur. If turbine blades are feathered below the generator cut-in speed to prevent freewheeling, it can result in a very significant reduction of bat mortalities with minimal energy production loss.

5.3 Curtailment that increases the cut-in speed

The activity levels of South African bats generally decrease in weather conditions with increased wind speeds. However, in scenarios where above sustainable numbers of bats are being killed, and these bats fly in wind speeds above the turbine manufacturer's cut-in speed, the turbine's computer control system (referred to as the Supervisory Control and Data Acquisitions or SCADA system) can be programmed to a cut-in speed higher than the manufacturer's set speed. The new cut-in speed will then be referred to as the **mitigation cut-in speed** and can be determined from studying the relationship between long term (12-month) bat activity patterns on site and wind speed. This sustainable threshold of bat mortalities will be calculated according to the *South African Bat Fatality Threshold Guidelines* (MacEwan, *et al.*, Edition 2, October 2018).

Turbines may be curtailed in this manner by means of blade feathering, to render the blades motionless in wind speeds below the mitigation cut-in speed.

5.4 Acoustic bat deterrents

This technology is developed well enough to be tested on site and may be recommended during operational monitoring, if mortality data indicate bat mortalities above the sustainable threshold for the wind farm. This threshold will be calculated according to the *South African Bat Fatality Threshold Guidelines* (MacEwan, *et al.*, Edition 2, October 2018). Initial experiments with this technology on wind farms in South Africa are yielding positive results that may indicate the effectiveness of the devices in the correct scenarios.

Current data on the South African trials is still limited to a small sample set, and the technology will not necessarily be effective in all mitigation scenarios and for all bat species.

Therefore, it should be considered and tested on a case-by-case basis if possible, and it is highly recommended that adequate monitoring continues concurrently, to assess the effectiveness of the devices in reducing bat mortalities.

6 MITIGATION ACTION PLAN FOR INCLUSION INTO THE EMPr

This Mitigation Action Plan replaces all previously recommended mitigation measures on the project.

6.1 Step 1: Minimisation of light pollution and artificial habitat creation (refer to Section 5.1)

During the planning phase for the Mulilo De Aar 2 South WEF it must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools, where practically possible without compromising security requirements. This applies to the turbine bases (if applicable) and other infrastructure/buildings. Aviation lights should remain as required by aviation regulations. Floodlights should be down-hooded and where possible, lights with a colour (lighting temperature) that attract less insects should be used. This mitigation step is a simple and cost-effective strategy to effectively decrease the chances of bat mortality on site.

Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility by operational staff of the facility, to assess the lighting setup and whether the passive motion sensors are functioning correctly. The bat specialist conducting the operational bat mortality monitoring must conduct at least one visit to site during nighttime to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, this Mitigation Action Plan must be consulted.

The storm water drainage plan must avoid creations of artificial ponds/open water sources or wetlands in turbine zones (less than 282.5m from any turbine base), as these will increase

insect activity and therefore bat activity in the area. This can result in turbines that were previously assessed as having a low risk to be financially and biologically costly high-risk turbines.

6.2 Step 2: Appointment of bat specialist to conduct operational bat mortality monitoring

As soon as the De Aar 2 South WEF facility becomes operational, a bat specialist must be appointed to conduct a minimum of 2 years of operational bat mortality monitoring. The methodology of this monitoring must comply with the *South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy Facilities - 2nd Edition June 2020* (Aronson *et al.* 2020), or any newer version of the applicable guidelines that may be in force at the start of operation of the facility.

The results of the bat mortality study may be used to develop mitigation measures focused on specific problematic turbines. The results of the operational monitoring must be made available, on request, to other bat specialists conducting operational and preconstruction monitoring on WEF's in South Africa.

6.3 Step 3: Curtailment to prevent freewheeling (refer to Section 5.2)

Based on high bat activity detected during the 12-month preconstruction study, from 1 September to 31 March every night for the lifetime of the facility, curtailment must be applied to all turbines by ninety-degree feathering of blades below the **manufacturer's cut-in speed**, so it is exactly parallel to the wind direction and minimises freewheeling blade rotation as much as possible without locking the blades. This can significantly lower probability of bat mortalities. Influence on productivity is minimal since no power is generated below the manufacture's cut-in speed.

6.4 Step 4: Additional mitigation by curtailment or acoustic deterrents (refer to Sections 5.3 and 5.4)

If mitigation steps 1 – 3 are followed, and the bat mortality monitoring study detects bat mortalities that are above the sustainable threshold for the Mulilo De Aar 2 South WEF, then additional mitigation will need to be implemented to bring bat mortalities to or below the sustainable threshold. According to the *South African Bat Fatality Threshold Guidelines* (MacEwan, *et al.*, Edition 2, October 2018), this threshold is calculated by considering the hectare size of the WEF area of turbine influence and the value of 2% of bats/10ha/year for the ecoregions that the WEF is located in, to give an annual number of sustainable bat mortalities that is acceptable for the WEF. The area of turbine influence of a wind farm is dictated by the turbine layout and is a tight fitting polygon around the turbine layout (**Figure 6.1**). In this version of the guidelines the acceptable sustainable threshold is calculated as 0.2 bats/10ha/annum for the Nama Karoo ecoregion which occupies the turbine area of influence. The calculated annual acceptable sustainable threshold of bat mortalities for the

total De Aar 2 South WEF is indicated in



Figure 6.1: The turbine area of influence used to calculate the area applicable to the acceptable bat mortality thresholds.

Table 6.2 below. The threshold is based on values adjusted for biases such as searcher efficiency and carcass persistence. Note that a newer version of the Threshold Guidelines or another similar applicable document may be adopted during the operation of the WEF.

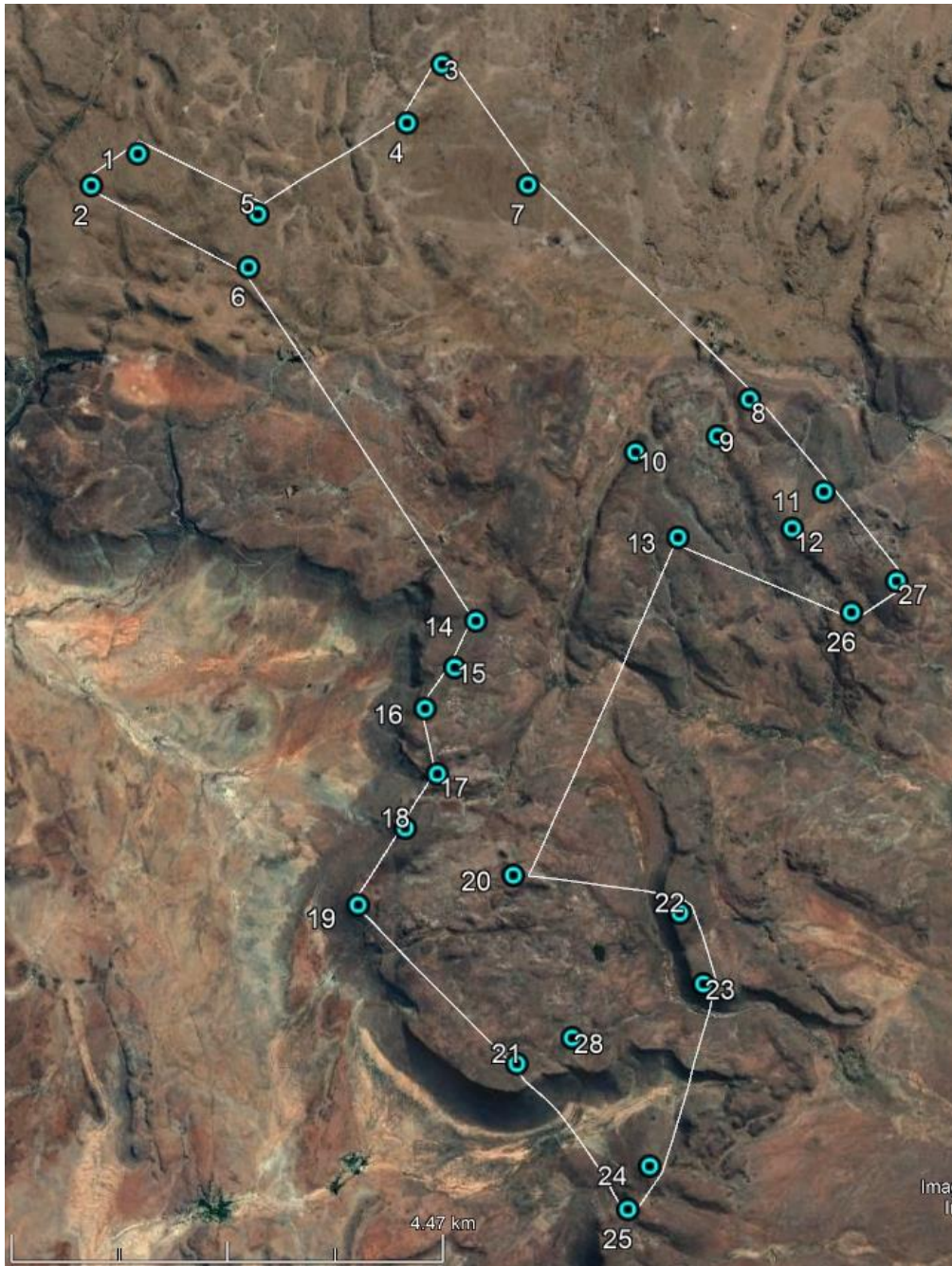


Figure 6.1: The turbine area of influence used to calculate the area applicable to the acceptable bat mortality thresholds.

Table 6.2: The sustainable acceptable mortality thresholds of the authorised De Aar 2 South WEF.

	Area of influence of wind turbines (hectares)	Acceptable annual mortality of bats
De Aar 2 South WEF (Nama Karoo)	3097	$0.2 \times (3097/10)$ $= 0.2 \times 309.7$ $= \underline{\underline{62 \text{ bats}}}$

Such additional mitigation measures may be to curtail problematic turbines according to the **mitigation cut-in speed** (Section 5.3), and/or to utilise acoustic deterrents on problematic turbines (Section 6.4). If the turbine layout is amended, the calculation in **Table 6.1** needs to be revised.

Preliminarily, it is advised that any additional mitigation measures that may be required be applied during the months of September to March, and must be applied to any turbines or group of turbines identified as causing the wind farm's mortalities to be above the sustainable threshold levels. This time period is based on high bat activity months as detected during the 12-month preconstruction study.

The bat specialist conducting the operational bat monitoring may recommend other time periods for additional mitigation, based on robust mortality data. If required, the bat specialist may make use of climatic data to allow for an active and adaptable mitigation schedule.

6.5 Step 5: Auditing of bat mortalities for the lifetime of the facility

During the implementation of mitigation Steps 1 – 4, it is crucial for the facility to determine and monitor bat mortalities in order to implement, maintain and adapt mitigations as efficiently as possible. For the duration of the lifetime of the facility, the impacts on bats must be audited/monitored by reliable methods of carcass searching and/or electronic devices capable of automatically counting bat mortalities. Such auditing should occur every 5 years (after the end of the initial 2-year operational study) for all turbines on site, and continuously for turbines where mitigations discussed in Step 4 (Sections 5.3 and 5.4) are implemented.

7 CONCLUSION

Animalia Consultants (Pty) Ltd) completed the 12 months pre-construction bat monitoring for the Mulilo De Aar 2 South Wind Energy Facility (WEF) in 2014, and was also involved in subsequent amendments. It included the assessments of impacts as required for the EIA phase.

A sensitivity map was then compiled in 2014. In light of new insights onto the impacts and bats and according to more recent sensitivity mapping rules in the South African Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities (MacEwan, et al., Edition 5, 2020), the sensitivity map has been updated in this report using desktop resources (**Figure 4.1**). The current Best Practice Guidelines (MacEwan *et al.*, 2020) requires turbine blade length to be outside the 200m high sensitivity buffers, to allow for no turbine blade length overhang into these buffers.

According to the passive bat activity data collected on site during the preconstruction study, bat activity at 50m height was significantly less than activity at a lower height of 10m. If the maximum proposed rotor diameter is used with a 100m hub height, it will place the lowest rotor swept height at 17.5m above ground. This may increase the probability of bats being impacted by turbine blades, further motivating the revised sensitivity map with increased buffer sizes and no turbine blade overhang allowed inside high sensitivity buffers. The lowest rotor swept height of 17.5m is the absolute minimum and the rotor swept height may not be lower, from a bat sensitivity perspective. Therefore, it is acceptable to amend the EA to include “up to 120m” for the hub height, but if the maximum RD is used, the HH cannot be less than 100m.

The current proposed turbine layout has been adjusted to respect the bat sensitivity map, and no turbines are intruding into the revised bat sensitivity map buffers (**Figure 4.1**). It is further noted that the final layout, of only 28 positions (of which 26 are to be constructed), is a good improvement (in terms of reducing bat impacts) over the currently authorised maximum of 61 turbine positions. And the reduction in turbines can lower the overall risk of impact on bats for the project.

In summary, the proposed amendments and reduction of turbines is acceptable from a bat sensitivity perspective if all conditions of the EA are adhered to, an operational bat impact monitoring study is conducted for a minimum of 2 years and the Mitigation Action Plan is adhered to (Section 6).

Werner Marais

Zoologist and Ecologist

MSc Biodiversity & Conservation

Pr.Sci.Nat. – SACNASP registration no. 400169/10

(Zoological Science)



Handwritten signature of Werner Marais, consisting of the name 'Werner' in a cursive script above a stylized number '7'.

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

ESTABLISHMENT OF A WIND ENERGY FACILITY SITUATED ON THE EASTERN PLATEAU (SOUTH) NEAR DE AAR, NORTHERN CAPE PROVINCE (DFFE REFERENCE NUMBER: 12/12/20/2463/1): APPLICATION FOR AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION, AND FINALISATION OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) AND SITE LAYOUT PLAN PROCESS

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

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Physical address:
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Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

Certified a true copy of the original
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Karla Bindeman
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1. SPECIALIST INFORMATION

Specialist Company Name:	Animalia Consultants (Pty) Ltd		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	Level 4	Percentage Procurement recognition
			100%
Specialist name:	Werner Marais		
Specialist Qualifications:	MSc Biodiversity and Conservation		
Professional affiliation/registration:	SACNASP Pr.Sci.Nat. (Zoological Science)		
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2. DECLARATION BY THE SPECIALIST

I, Werner Marais, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



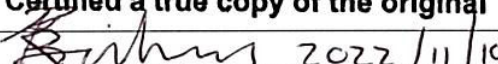
 Signature of the Specialist

Animalia Consultants (Pty) Ltd

 Name of Company:

10 November 2022

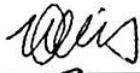
 Date

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Karla Bindeman
 Chartered Accountant (RSA)
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3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Werner Marais, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



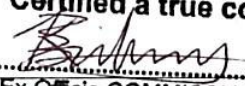
Signature of the Specialist

Animalia Consultants (Pty) Ltd

Name of Company

10 November 2022

Date

Certified a true copy of the original
 2022/11/10
Ex Officio COMMISSIONER OF OATHS (RSA)
Karla Bindeman
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Signature of the Commissioner of Oaths

Date