APPENDIX C10d

COMMENTS RECEIVED

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Private Bag X08
Wierda Park
0149
15 December 2021

Attention: Joanne Thomas and Nicolene Venter - Savannah Environmental
publicprocess@savannahsa.com; joanne@savannahsa.com; ldlova@dffe.gov.za

Dear Joanne Thomas and Nicolene Venter
Savannah Environmental
P.O.Box 148
Sunninghill
2157

DFFE reference number: 14/12/16/3/3/1/2314 and 14/12/16/3/3/1/2315

Response to the Proposed Wind Garden & Fronteer wind farms.

The Endangered Wildlife Trust (EWT) is a non-governmental, non-profit, conservation organisation, founded in 1973 and operating throughout southern Africa. The EWT conserves threatened species and ecosystems in southern Africa by implementing research and conservation action towards mitigating threats facing species diversity and supporting sustainable natural resource management. The EWT furthermore communicates the principles of sustainable living through awareness programmes to the broadest possible constituency for the benefit of the region. The EWT is driven by a team of passionate and dedicated conservationists working through 13 specialised programmes across southern and East Africa, each falling under one of our three key strategic pillars: **Saving species**, **conserving habitats**, and **benefitting people**.

While the EWT supports the just transition to renewable energy, these proposed developments are only considered feasible if they follow the mitigation hierarchy and the species environmental assessment guideline to avoid unnecessary and unsustainable environmental impacts.

The Endangered Wildlife Trust has closely examined the current proposed development envelopes for both the Wind Garden and Fronteer Wind Farms. Although they can be considered to be within lower sensitivity/collision risk areas (i.e. fall outside of the 18-50km high-risk zones around Cape Vulture colonies and roost sites, see appendix 1 below), GPS tracking data and observational data indicate that Cape Vultures do frequent the landscape in and around the proposed sites, particularly in the non-breeding season summer months. This, compounded by the fact that nearby operational wind farms (within 32km from the proposed sites) have indeed had several Cape Vulture collisions and fatalities over the last two years, indicates that the Wind Garden and Fronteer Wind Farms have a reasonable

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likelihood of killing additional vultures. It is the cumulative impact of wind farms that is of great concern, as additional threats added to the landscape have potential to drive declines in a slow breeding, long-lived and globally threatened species such as the Cape Vulture. We therefore recommend that all feasible measures to reduce the risk of collision are put in place. These include but are not limited to turbine curtailment when vultures or other large birds approach the wind farm, blade painting (if and when legislatively feasible) and other suggestions as detailed below.

The Endangered Wildlife Trust (EWT) would like to submit the following comments in respect of the abovementioned development:

1. The EWT supports the development of renewable energy supply as an alternative to generation of electricity through burning of fossil fuels.
2. Renewable energy developments however, like any other development, may have serious impacts on species, habitat and society and as such need to be properly avoided, minimized and mitigated in accordance with the mitigation hierarchy. With avoidance being the first and most important step in the process.
3. There is a strong need for developers in this sector to adhere to and initiate environmental best practices in the development and operation of large-scale renewable energy projects in South Africa's arid interior.
4. The EWT reserves the right to revise initial comments presented here if additional information becomes available.

In evaluating the above application, we wish to highlight the following impacts and resultant recommendations:

Cape Vulture Collision Risk:

- Cape Vultures are known to frequent the landscape within the proposed wind farm envelopes, thus it is recommended that a carcass management system is implemented on site to remove food sources that will certainly attract birds to the site, even from extensive distances away.
- We also highly recommend a shut down on demand system is implemented, either through on the ground observers, or automated systems, to shut down turbines when collision prone birds enter wind farms and are heading within rotor sweep zones. These species include, but are not limited to, Black Harriers, Cape Vultures, Martial Eagles, Verreaux's Eagles, Ludwig's Bustards, Secretary Birds. These species are known to occur within the region. This has been highly effective on Excelsior Wind Farm in the Western Cape.

Other Avifaunal Impacts

- For Verreaux's Eagles and Martial Eagles, space use is dependent on not only the distance from an individual eagles nest site, but also the local density or distribution of conspecific nest sites, the topographic slope and the elevation. The Verreaux's Eagle Risk Assessment (VERA) tool has been

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developed to reduce Verreaux's Eagle collisions on wind farms (https://www.birdlife.org.za/wp-content/uploads/2020/03/BLSA-Guidelines-Verreauxs-Eagle-and-Wind.pdf). VERA predicts collision risk for Verreaux's eagles on a 90x90m grid square resolution and it is the best tool available for understanding the likely impacts of wind energy development pre-construction. In comparison to circular buffers, it has been used to correctly predict 11 of the 14 collisions which have occurred. Thus we recommend that this tool is applied to the development site to determine turbine layout in a way which minimises risk to this species rather than any circular buffers. This demonstrates a 3 km circular nest buffer to be inadequate and that a dynamic 5.2 km buffer is more realistically required to reduce fatalities. We also know that raptor space use around a nest site is not even or circular.

- We strongly recommend a 5km buffer for Martial eagles based on the core habitat used by the species derived our tracking data of 19 Martial Eagles across the central and eastern Karoo.
- The EWT will make the tool available to recalculate buffers and adjust design if required.
- It is critical that no human disturbance occurs within these buffers near active breeding eagle nests in the peak breeding period between May and September, i.e. construction vehicles, labourers on foot, etc.
- Although the power line design will minimise bird electrocution incidents due to satisfactory phase clearances, collisions with shield wires or conductors are still likely to occur. With regards to the transmission lines fitting Bird Flight Diverters (BFD's) may mitigate collisions involving large raptors but it will not mitigate (at all) collisions by Ludwig's Bustard. Due to the fact that lines are likely to be handed over to Eskom they need to be constructed to specification as determined by Eskom and fitted with approved BDF's at the Eskom recommended intervals.
- Lines need to be placed as far as possible in areas where linear infrastructure already exists.
- Should new more effective BDFs come available the developer needs to be ready to procure and fit these. The EWT are in the process of expanding our current long term line marking experiment near De Aar where a further 4 BFD designs will be tested, specifically to reduce Ludwig`s Bustard collisions. If this development proceeds, we urge the developer to contact the EWT Wildlife and Energy programme directly and participate in this research. If an effective BFD is identified in the near future, this should immediately be applied to the line
- Lines need to be seasonally monitored for fatalities and these should be reported to the Eskom/EWT Strategic partnership
- While the turbine design has not yet been finalised, we recommend that minimum blade tip height be set as high as is possible (even more than the 25m recommended).

<u>General recommendations</u>

- We further recommend a comprehensive, long term avifaunal and terrestrial monitoring programme be implemented by an independent qualified service provider. Little is known on terrestrial impacts of large wind developments and as such this project, if approve, will provide an ideal opportunity to measure baselines and changes over time for terrestrial species.

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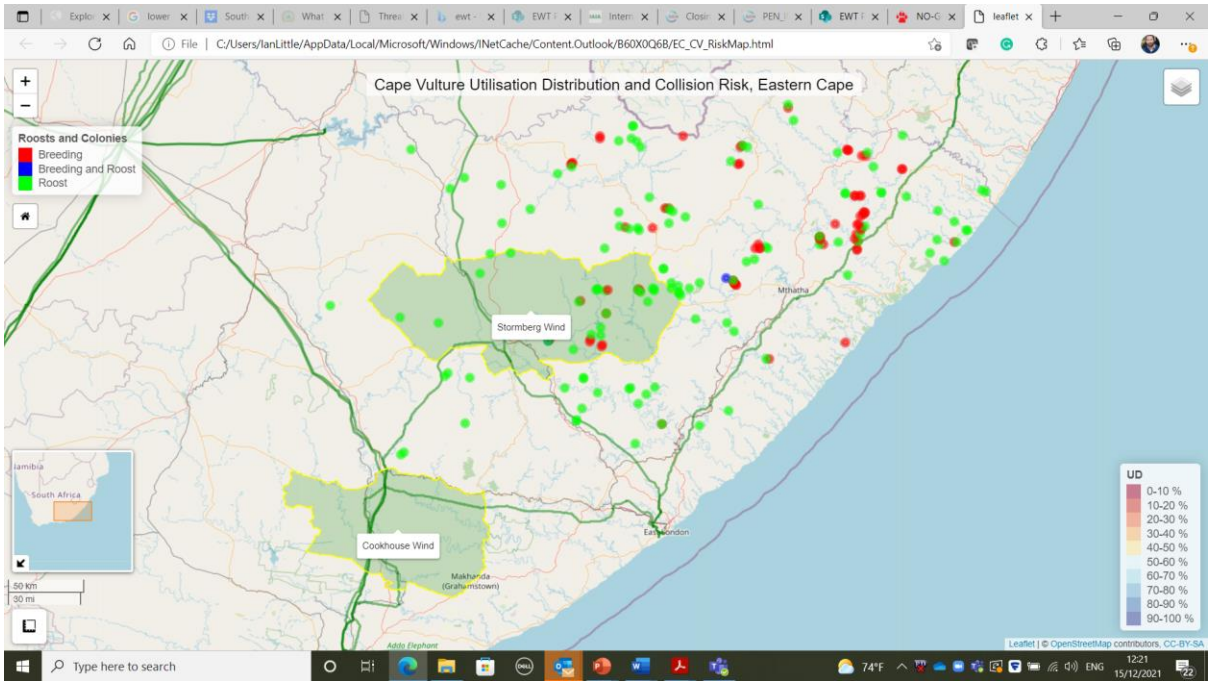
- Avifaunal impacts need to be closely monitored with seasonal line surveys and surveys in the vicinity of turbines.
- The developments will constitute an additional pressure on biodiversity in the area. This runs against the purpose of the conservancies in the area that have taken many years of conservation investment to get off the ground. Therefore, the EWT would like to see a commitment to conservation from the developer. A variety of options are available and the developer is welcome to contact the EWT in the future to discuss some of these.
- Significant adverse impacts can be expected during the construction phase including vehicular collisions with wildlife, collection and cutting of shrubs for firewood, potential snaring, pollution etc. and as such strict controls and protocols are required during this phase.
- We strongly advise the appointment of an independent consultant to monitor activities during the construction phase and to report issues and non-compliance to the authorities and developer.
- The type and placement of powerline infrastructure and potential impact of these are not sufficiently considered or mitigated for.
- There is no evidence of the sufficiently robust implementation of the mitigation hierarchy in the process of site selection. Avoidance, which is the first and most important step, has not been duly considered and therefore none of the other steps are relevant for consideration.

In summary, based on the information provided, we are, in principle, not opposed to the placement of the wind farm as proposed, contingent on the implementation of the mitigation recommendations detailed above.

The EWT appreciates the opportunity provided by the developer to comment and we look forward to participate in this process of informing the responsible placement of turbines or alternatively avoidance if no environmentally responsible options are available. We would value the opportunity to provide our detailed landscape planning data and to assist through negotiation to inform decision making. We further request that the relevant competent authority and Department of Forestry, Fisheries and the Environment (DFFE) need to take these concerns into consideration, including the associated powerlines and other infrastructures that will be required as a result of the proposed wind energy development.

Regards,

Dr Ian Little
Endangered Wildlife Trust
Email: ianL@ewt.org.za
Phone: +27 84 240 7341



Appendix 1: Green dots are known Cape Vulture Roosts, Red dots are known Breeding sites and Blue dots are roosts and breeding sites. While there are no known roosts or breeding sites in close proximity to the proposed development site, Cape Vultures are known to forage in this area and precautions and mitigation measures will be required to avoid collisions with turbines and associated powerline infrastructure. For further information or more detailed collision risk maps please contact Dr Gareth Tate gareth@ewt.org.za

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Savannah Public Process

From: Christopher Pike <chrispike.cs@gmail.com>
Sent: Thursday, 10 February 2022 15:19
To: Savannah Public Process
Subject: Comments on Responses by EAP to previous comments made on Wind Garden and Fronteer WEF's

Dear Savannah

Below find listed comments that were not adequately addressed by the EAP.

I request that these comments be responded to in a meaningful manner.

Comment ref: App C9: Email 21 July 21 23h39
Questions with regards how the EAP only spoke with occupiers on the day before the final BAR submission.
Response:
#The response given skirts the question at hand, and the fact that the EAP suggests that handing out a brochure of information including a picture of a wind turbine construction was enough to include an entire community adequately in the PP process is derogatory.
#The EAP's response that the landowners were to engage with the occupiers on their behalf is not understood, as this is the EAP's responsibility.
The EAP then contradicts this statement by saying that only one landowner gave them a number of an occupier and the rest needed to work through the landowners. Please also explain what you are insinuating this statement.
This response is also seems untrue in stating that the landowners were asked for occupiers details? Please could you forward me this email of request?
#The EAP states that they made the SIA available in Mid July to occupiers and that a social facilitator presented the findings to the occupiers. This statement is untrue. The meeting with the Occupiers on Lukhanyo took place for a total of less than 15min(Which included taking role call and questions) Please can the EAP explain how they deem this 15min adequate to explain the complete findings of the SIA?
#Also, I would like to know as to why to date their has been no answers to the questions raised by these occupiers. This taking into account that the social facilitator was not able to answer the simplest of questions on the day and stated that they were just hired to communicate the given information to the persons.

Comment ref: App C9: email 14 July 21: 4.3
Request was made as to why the Avifaunal Specialist was not using the most up to date modeling for Eagle buffers.
Response:
#The response given is nonsensical as it states that the updated modeling came out post date of their report so it was not used but then goes on to extract information out of this new information to answer my response.
#The response then mentions that they could not use the model as there was not enough information in the published report to replicate it and that if it was made available it could be used. Was any attempt made to contact the publisher for this?

Comment ref: App C9:email 14 July 21: 4.4
Lukhanyo as a neighbouring property was not approached for any Avifaunal studies. A main concern was the amount of large cliff areas and several valleys feeding down into the Windgarden WEF site.
Response:

#Response given that states that "a huge amount of effort" of 3000 hours were undertaken to put together this report is not addressing my concern in any way! The amount of hours is irrelevant if the observations did not cover the area correctly. This did not answer my concern as to the large gap in coverage on a direct neighbouring property.
#The response states that the specialist was highly confident that the field observation team did locate all relevant nests in areas that they had access to but then states that he is confident that they did the same where they did not have access to.
This answer once again is nonsensical and dodges the fact that the observation team did not attempt to access approx 1300ha directly adjacent to the WEF site.
#I would like to know why! Even after I offered access to Lukhanyo so they could ensure that the 2 cliff systems of 3.04km(South and North Facing cliffs) and 3.16km long respectively had no birds of interest?
There is no way observation from the R400 can cover these cliff areas that are 2.3km(The north facing slope is behind the hill) and 2.7km away.
#I would like to know how this obvious gap in data can just be brushed aside by the EAP on behalf of the specialist?

Comment ref: App C9:email 14 July 21: 4.5.C
I pointed out that there was no response to my question on how Red billed Oxpeckers were influenced by windfarms.
Response:
#There was no response given?
#The only response given was to above points A and B that questioned observation numbers - however this response also does not answer the questions either. The response is an irrelevant statement that they were not seen on walking transects and a reference to a presumption of domestic vs wild game?
#Please can the EAP answer my actual questions

Comment ref: App C9: Email 21 July 21 13h09
Comments with regards questioning optimized turbine placements not being in accordance with your statement that they are being placed according to ecological and specialist studies.
Response:
#I perceive the response given as completely untrue! And has not answered my questions.
The response states that the CLA buffers have been added to the final optimised layout on figure 12.2.
However I only see farmstead buffers?? The CLA report shows on Figure 2 that the buffers indicate an allowance after mitigation of only 7 turbines!
The EAPs response is therefore fictitious.
#Please can you respond to my questions in the email of 21 July 2021.

Comment ref: App C9: Email 21 July 21 13h55
Question on why the incorrect impact numbers have been published in the final BAR.
Response:
#The Response by the EAP has misconstrued my actual concern and not in any way answered why they publish an impact significant rating that is fictitious as they are not going to be implementing the proposed mitigation.
#Response on the Avifaunal point on black blade is acceptable but on the CLA/Heritage is not.

Comment ref: App C9: Email 21 July 21 14h34
VIA - comments requesting why Lukhanyo(Neighbour) as one of the most visually impacted receptors were not consulted.
Response:
#The response that one montage done from Clifton Farm(where only the tops of the turbines are visible) does not answer my concerns of the visual impact on my property. The EAP has not answered in a manner which is meaningful.
#The concerns have indeed been raised in several PP meetings where the EAP was informed that there are vast gaps in the VIA. The EAP or their specialist has never made any attempt to rectify this.
#Please can you answer my concerns

#On point 3: By cutting and pasting a section of the VIA you have not answered my questions. The reason i asked a question is that I do not understand how the index can only show a difference of 4 points between visual impacts between 0 and 20KM away? As well as the stand alone vs cumulative impacts being the equal.
Please can you explain this to me

Comment ref: App C9: Email 21 July 21 15h37
Comments made on the CLA and Heritage report with regards the EAP making a decision not to agree with the findings of the Specialist, stating that the Socio-economic benefits outway the need to conserve the cultural resources at all costs.
Responses:
#The EAP denises that they have done this as a response
#The response to this is that the CLA and HIA have been looked at and considered with the Socio economic benefits? I still fail to understand why the socio-economic benefits have been directly used as a factor to seemingly dilute a specialist's finding? Please could you clarify why this has specifically used in the CLA
#In response to the EAP stating that there is no statement where negative impacts can be overlooked in view of positive economic aspects - this is a fictitious statement by the EAP as it is stated in both the BAR and EMPr.
#The response given to using the mitigation score of 55 which is based on the reduction to 7 turbines is a generic cut and paste and does not answer the question.
The response is that post-mitigation rating is obtained after taking into account all mitigation measures stated in the report being instigated! However you also state that you will not be adhering to the proposed recommendations of the CLA! Please can you explain as I requested why you are using misleading figures! and why the real impacts after not being published.

Comment ref: App C9: Email 21 July 21 23H24
Questions with regards to the EAP's analysis of the Visual impact ratings.
Response:
#The EAP, after receiving feedback from I&AP's on the negative socioeconomic effects that the WEF will have on their properties, turns the I&AP's input into a "Probability" that is not able to be proved and therefore disregards this.
#The EAP's response is utterly biased towards what seems to be a preconstructed medium rating in order to attain a predetermined outcome.
#The response is simply the same talking in circles as was done in the PP meetings when it was brought up.
#Please can you adequately answer the questions in this email to a point where it is understandable!

Comment ref: App C9: Email 21 July 21 23h39
Questions with regards how the EAP only spoke with occupiers on the day before the final BAR submission.
Response:
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Regards

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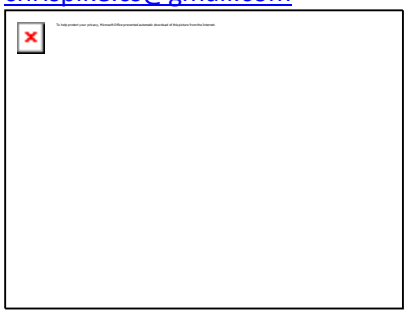
Chris Pike
Caracal Reserve Development Solutions
0823500900
chrispike.cs@gmail.com



Savannah Public Process

From: Christopher Pike <chrispike.cs@gmail.com>
Sent: Thursday, 10 February 2022 23:04
To: Savannah Public Process
Subject: Request for explanations as to the responses to Occupier/staff not being recieved to date - Re: Wind Garden WEF
Attachments: Staff and Occupiers letter (1).jpg

Dear Savannah

As per the below comments on previous email I would like you to please respond to the following questions as the occupier/staff have to date still not received any feedback from Savannah.

1.) Why have the occupier/staff not received feedback?

2.) Does the EAP consider this 16min session, of which only 5 Min was used to present the WEF document, with the occupiers and staff sufficient Public Participation?

3.) Do you consider the one page flyer(Attached) adequate in informing the occupier/staff of the SIA and WEF. And do you consider this to be an adequate public participation?

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Questions with regards how the EAP only spoke with occupiers on the day before the final BAR submission.
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Also, I would like to know as to why to date their has been no answers to the questions raised by these occupiers. This taking into account that the social facilitator was not able to answer the simplest of questions on the day and stated that they were just hired to communicate the given information to the persons.

I find the way Savannah has treated the land occupiers and staff on Lukhanyo to be extremely derogatory and unacceptable.

We as I&APs requested from the first PP meeting that the entire community must be involved in this process! It is the EAP's responsibility to ensure that this happened.

Your response in Appendix 9 in stating that a summary of the BID document was sent out in isiXhosa in April 2021 is not understood. Could you please explain/answer the following:

1.) Was this the same 1 page BID summary document given to the staff and occupier on Lukhanyo?

2.) Can you confirm that it is adequate and ethically right to give the under-priviledged (From a not having access to the online documents perspective) a 1 page document to cover the 4000+ pages in the online system?

3.) Does Savannah deem this one page BID summary as including the isiXhosa members of the community adequately in the PP process.

Regards

Chris Pike
Lukhanyo Game Reserve

RICHARD SUMMERS INC.
ATTORNEYS

COMMENTS ON WIND GARDEN AND FRONTEER WIND FARM PROJECTS, NEAR MAKHANDA IN THE EASTERN CAPE PROVINCE

Public participation process

1. At face value (measured superficially in terms of the volume of reports produced in connection with the proposed Wind Garden and Fronteer Wind Energy Facilities ("WEFs")), the basic assessment process might appear to be comprehensive. In terms of the sheer volume of reports, the EAP has created the illusion of having undertaken a comprehensive assessment and responded to I&AP comments. We dispute this. Key impacts have not been assessed.

2. Despite the tabling of I&APs comments and responses by the EAP, there is an undeniable superficiality to the process. I&APs are sceptical of the process and the overwhelming perception is that the public participation was neither adequate nor meaningful for the following reasons:

2.1. I&APS were provided with two separate windows to comment on the basic assessment reports ("BARs") for the proposed Wind Garden and Fronteer WEFs. However, the sheer volume of information and total documentation for each project (see below) shows that it was grossly unreasonable and inadequate to provide the bare minimum of 30 days to comment on the revised BARs.

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Director: Richard W. Summers Reg No: 2017/536164/21

2.2. The volume of information for each project increased by approx. 807 and 796 pages respectively between the initial draft and revised BARs equating to an additional 1600 pages across both projects for I&APs to review. Yet the bare minimum of 30 days was provided for I&APs to comment in connection with the revised BARs. The volume of documentation is set out below:

2.2.1. Fronteer WEF draft BAR + SPECIALIST REPORTS + EMPR = 1845 pages

2.2.2. Fronteer revised WEF BAR + SPECIALIST REPORTS + EMPR = **2652 pages**

2.2.3. Wind Garden WEF draft BAR + SPECIALIST REPORTS + EMPR = 1890 pages

2.2.4. Wind Garden WEF revised BAR + SPECIALIST REPORTS + EMPR = **2686 pages**

2.3. The duplication of information in the public domain, the number and volume of specialist studies and the effort required by stakeholders to review the applications has completely overwhelmed I&APs. The dual application process has caused public participation fatigue and undermined I&APs rights.

2.4. Despite repeated requests by I&APs to be provided with separate and adequate (i.e. not combined) commenting periods for each project to enable meaningful engagement in respect of the information for each project, the EAP continued with the assertion that a combined process was the one agreed to. This resulted in I&APs being required to digest and comment on a combined volume of approx. 4000 pages within a minimum statutory commenting period of 30 days.

2.5. Even those I&APs with specialist assistance and access to resources could not deal meaningfully with the volume of information and EAP's responses to issues raised in that limited timeframe.

3. Running the two projects as separate applications directly increased the burden on I&APs. It is for this exact reason that I&APs approached both the EAP and the DFFE to request an extension to the public commenting period in accordance with Regulation 3(7) of the EIA Regulations. A chronology of the repeated attempts by I&APs to obtain an extension in order to facilitate meaning engagement by I&APs with the information which formed the basis of the basic assessment process for the proposed Wind Garden and Fronteer WEFs particularly in light of the prejudice faced by I&APs if the extension was not granted are set out below:

3.1. On 8 July 2021, Richard Summers Inc. addressed a letter to the EAP in terms of which we sought clarity on issues relating to the public participation process and wherein we motivated on behalf of I&APs that an extension to the public participation process was both reasonable and justifiable in the circumstances.

3.2. On 12 July 2021, the EAP (Savannah) submitted a "motivation" for extension of the public participation process in terms of Regulation 3(7) of the EIA Regulations.

3.3. On 13 July 2021, Richard Summers Inc. wrote an email to Mr. Lunga Dlova of the DFFE indicating that the EAP failed to disclose to the DFFE the substance of the motivation underlying the request by I&APs for an extension to the public participation process for the proposed Wind Garden and Fronteer WEFs. Attached to the email was a letter explaining the need for an extension.

3.4. On 21 July 2021, the EAP informed I&APs that the DFFE had denied the request for an extension of the review and comment periods for the revised BARs. This decision by the DFFE was taken on 19 July 2021. We draw issue with the fact that the substantive input tabled by I&APs regarding the need for the extension had not been canvassed in the EAP's motivation to the DFFE. Based on the information provided to us in terms of the DFFE's decision, it was clear that the DFFE was not satisfied with the motivation for the extension which was provided to the DFFE by the EAP. Owing to I&APs concerns not being adequately communicated to the DFFE, a decision was made to dismiss the request made in terms of Regulation 3(7) of the EIA Regulations. The request to DFFE made by the EAP failed to identify the concerns raised by I&APs regarding the approach by the project team to provide I&APs with the bare minimum 30-day commenting period. The Regulation 3(7) request was therefore crippled by the EAP as DFFE had no regard to the motivation from the most directly impacted stakeholders (I&APs) as to why the process was unfair and more time was required.

3.5. On 21 July 2021, Richard Summers Inc. submitted preliminary comments on the revised BARs undercover of an email wherein we expressed that the timeframes for public comment were unreasonable and truncated. In terms of that email, we advised the EAP that *"additional*

specialist information commissioned in support of our comments will be sent directly to the DFFE" and that any further comments (if any) will be tabled before the DFFE directly. At that time, we had anticipated submitting avifaunal input from Dr. Andrew Jenkins of Avisense Consulting who had not been available during the 30-day public commenting timeframe.

3.6. On 24 July 2021, Richard Summers Inc. wrote a letter to the DFFE requesting reasons why the DFFE decided that the concerns raised by I&APs were insufficient to warrant the requested extension to the public participation process until 21 August 2021. In terms of this letter, we summarised the need for the extension and explained the prejudice faced to I&APs.

3.7. On 4 August 2021, the EAP notified I&APs that the final BARs for the proposed Wind Garden and Fronteer WEFs had been submitted to the DFFE – as competent authority— for decision-making despite the fact that we had informed the EAP that additional specialist inputs had been commissioned by I&APs but could not be completed within the commenting period without the requisite extension being granted.

4. It was not acceptable that the EAP submitted the final BARs for decision-making on 4 August 2021. The EAP could not have properly dealt with all I&AP comments within the space of 14 days (i.e. between the date of receiving our comments on 21 July 2021 and the date of submitting the final BARs to the DFFE for decision-making on 4 August 2021). This action on the part of the EAP led to the complaint raised by Indalo Private Game Reserve Association, which effectively suspended the decision-making process. The EIA process itself has been a whitewash and the issues raised by I&APs during the public participation process remain unresolved.

5. Now that the final BARs have been released for comment for a 30-day period, we are formally tabling our concerns relating to avifaunal impacts to the EAP. As previously mentioned, Dr. Jenkins was unavailable during the previous public participation process and only had capacity to investigate the concerns after the final BARs were already submitted for decision-making on 4 August 2021. We did not submit input commissioned by Dr. Jenkins while the public participation process was closed as there was a real concern that the avifaunal impact assessment specialist would not be privy to the complaints raised and that our concerns would not be appropriately resolved. Our comments tabled herewith demonstrate significant problems with the avifaunal

impact assessment undertaken during the EIA process and we require our concerns to be addressed before any decision is taken by the competent authority. This unfortunate situation of I&APs supplying detailed specialist input at this late stage is directly attributable to how the EAP has dealt with the process. Until such time that our concerns are adequately addressed, it will result in protracted objections and appeals from I&APs to the DFFE requesting that our concerns be addressed properly.

6. We further note that the substance of the final BARs and specialists' reports are wholly inadequate. The content contained therein hardly differs from the information contained in the revised BARs. The only notable difference between the final BARs and the revised BARs is that new I&AP comments are purportedly addressed in Appendix C9. Owing to the nature of the concerns raised by I&APs as of 21 July 2021, the EAP would have required more than 14 days (i.e. the period between receiving comments and submitting the final BARs to the DFFE for decision-making) to adequately address the issues raised. The responses in Appendix C9 are superficial and do not meaningfully consider the impacts on I&APs. This is evidenced from the fact that the specialist reports submitted with the final BARs are the same reports which supported the revised BARs. It is nonsensical to suggest that I&AP comments have been adequately addressed if there are no substantive changes in the final BARs or the specialist impact assessment reports which underpin the final BARs.

7. Owing to the obvious omission in the final BARs and avifaunal impact assessments, we trust that Dr. Jenkin's input will be taken into account and implemented accordingly. As explained above, I&APs did not previously have a reasonable opportunity to collate inputs from specialists and complete their reviews of the revised BARs given that the bare minimum comment period of 30 days was provided for in connection with the revised BARs, and that the Regulation 3(7) extension request was refused. With the formal EIA comment periods having closed and the EAP having submitted the reports to the DFFE, there was no earlier opportunity for additional input and/or information to be tabled, or for comments to be resolved by the EAP. There was no guarantee that if specialist information had been tabled outside the scope of the EIA process that such information would have been considered by either the EAP or the DFFE.

Occupiers

8. There is limited evidence of occupiers / employees on neighbouring properties and/or affected community members (including the beneficiaries of the Ubunye Foundation) having been consulted proactively by the EAP or specialists. The obligation to engage with directly affected communities does not rest on I&APs. This critically important component of impact assessment falls on the EAP to undertake, and to undertake correctly in accordance with the requirements of the EIA Regulations and the overarching guidance of the Constitution and the rights enshrined therein. This has not happened in these projects.

9. The EAP's repeated assertion is that it has done all that it can and that landowners must share the responsibility to run the public participation and consultative process with occupiers on the EAP's behalf. The suggestion by the EAP in the reports, and repeated during the public participation meetings, that landowners are effectively responsible for sharing and dissemination project information with occupiers and ensuring that occupiers are familiar with the contents of the information in the BARs is an abrogation of the EAP's statutory responsibilities.

10. The EAP, by failing to do all that is required to ensure the needs, rights and interests of all stakeholders are accounted for properly during the assessment process has sought to reverse the onus of who is responsible for public participation. The EAP's approach - which seeks to lay the blame for inadequate consultation on the landowners – is rejected as this flies in the face of the minimum requirements of public participation.

11. Regulation 41(2)(b)(i) places the onus squarely on the EAP to give notice in section 47D of NEMA to occupiers of the site and to enable active participation. Consultation with staff and occupiers on neighbouring properties / game reserves was left to the very end of the EIA process and in certain instances was limited to one 15-minute meeting (best case) only, or none at all (worst case). One-page flyers were used for this purpose which cannot possibly convey the key issues, impacts and information gathered in the EIA. Staff and occupiers had an opportunity to ask questions during these limited sessions, but this was not meaningful. There was no active participation, and the process was circumscribed – as an afterthought. These consultations were undertaken by persons contracted by the EAP and who had limited direct knowledge of the proposed Wind Garden and

Fronteer WEFs. As a result, they were thus not able to answer many of the questions or concerns raised by farm occupiers or employees on the game reserves in question. Questions posed were met with a standard response that "*we have noted that and will give this information to the developer to reply*". No reply was ever provided directly to such stakeholders. The process is grossly inadequate.

Black rhino

12. With the intensity of the global poaching pandemic, significant rhino losses have been experienced in many state-owned or controlled protected areas in South Africa. The current situation is unsustainable and has direct implications for global and long-term conservation efforts aimed at the preservation of critically endangered species. For various reasons, national parks and other state-owned and managed protected areas are vulnerable to poaching. The result of this is that conservation efforts on private land and private sector initiatives now play an increasingly important, if not centrally critical, role in stemming the tide of poaching and securing the sustainability of rhino conservation initiatives in southern Africa. This role and the potential impact of incompatible (and competing) land uses in the area such as wind farm development in unreasonable proximity to game reserves poses a serious and material conservation threat. This threat is not evaluated by the EAP.

13. Collective initiatives by among others the Indalo PE Association and Kwandwe private game reserve have been instrumental in this conservation success story. Well-resourced private reserves are able to minimise this serious threat and to effectively keep poaching levels low. The potential impact of the proposed Wind Garden and Fronteer WEFs on this delicate situation have not been assessed. This is serious gap. The concern was alluded to in previous I&AP comments, but it has not been integrated in the EIA process. The danger associated with the proliferation of wind farms in the area is that the security and integrity of anti-poaching initiatives will be compromised in a manner that poses a serious and unsustainable conservation threat. This threat is not addressed in the final BARs or specialist studies.

14. Helicopter patrols are an essential part of effective anti-poaching patrols and ongoing monitoring. The proliferation of wind turbines in the area immediately adjacent to and surrounding Kwandwe

private game reserve poses a direct, tangible and real impact on the efficacy of continued anti-poaching operations. The resultant obstacle posed by turbines poses a health and safety risk to pilots and an aviation risk in general.

15. Even in circumstances where wind turbines do not pose a particular aviation threat by penetrating an obstacle surface or introduce turbulence, the mere presence of turbines within this landscape and context presents a special hazard for helicopters and general aviation due to the position and number of turbines in proximity to the point of turn in an approach flight path or a flight path in general. Turbines impede or block critical visibility for the pilot during a manoeuvre close to the ground which are necessary in this context of anti-poaching patrols and game management. All of this is critical in the current context and the nature of land uses in the surrounding environment. The health, safety and environmental aspects of this threat to aviation and the function that aviation plays in the successful and sustainable wildlife management operations have been ignored by the EAP.

16. Whilst the EAP refers to the 1km buffer in the DEA SEA for REDZ as a weak justification, this in no way removes the need to evaluate this critical impact. The entire essence of project level assessment is to allow a context specific and case-by-case impact assessment with directly affected stakeholders. This was not done. Deflecting this key issue with reference to a general rule of thumb in the DEA SEA for REDZ has had the effect of leaving this core concern unresolved and unaddressed.

17. As a general rule, it is imperative that the low-level airspace around the heliports and associated facilities required by anti-poaching operations (i.e. the space that is needed for aircraft and helicopters to climb or descend) must be protected and generally be free from obstacles, especially in case of engine failure and the need for low-level flying manoeuvres associated with game census operations and anti-poaching initiatives. Wind turbines are obstacles. Turbines as a rule, should not be permitted to penetrate the obstacle surface or be situated in a place where they contribute to a direct and real safety risk. In this instance, there is a consequential serious conservation initiative impact which has not been evaluated objectively and, in the manner, required by the EIA Regulations.

18. Referring to the buffer between a windfarm and a small landing strip as being 1km as per the DEA

SEA for REDZ (page 120 of the comments and responses report) is about as far as the EAP delves into this key consideration. This glib response is unacceptable as it places lives at risk and threatens national and globally conservation imperatives to protect and conserve critically endangered species. The aviation-related impacts are ignored. This is not something that can just be deflected onto the Civil Aviation Authority. The EAP is required to address this key-project impact during the assessment process. The failure to do so compromises the efficacy of the EIA and the relevance of information tabled.

19. Insofar as the competent authority purports to approve these projects on the back of the paucity of information and inadequate assessments undertaken, it will place South Africa on a direct path of conflict in terms of being unable to meet its international conservation targets and initiatives regarding the protection of critically endangered species. This aspect is a critical prerequisite to any balanced consideration of all relevant impacts and integration of all social, economic and environmental considerations into the decision-making framework within the broad umbrella of sustainable development. The current state of project impact evaluation and absence of critical information renders an informed and sustainable decision by the DFFE impossible. The assessment in this regard is inadequate and I&AP concerns have simply not been addressed.

20. We point out that Kwandwe has in its possession material information relating to project-related impacts, including impacts on Critically Endangered Species (Black Rhino). The information is both sensitive and confidential and cannot be released in the public domain. A mechanism for the introduction of this information into the NEMA EIA process needs to be identified and implemented.

Anthropogenic noise

21. Based on I&AP concerns and issues raised during the assessment process regarding the impact of anthropogenic noise on wildlife, what was in fact required is a credible specialist study to assess the impact of anthropogenic noise on wildlife and megafauna give the proximity of the developments to Kwandwe private game reserve and other game reserves. This assessment has not been done.

22. We reject the noise impact assessment as a technical desktop study. A desktop study is not a suitable substitute for an expert assessment of anthropogenic noise impacts on wildlife and megafauna. A recognised global expert, Dr. Angela Stoeger informed the EAP that the conclusions underpinning findings in the assessment are fatally flawed. Notwithstanding expert inputs regarding the flawed findings in the noise impact assessment, this issue remains unaddressed and unresolved.

23. In circumstances where a known expert has identified weaknesses that questions the integrity of the impact assessment process, it is submitted that the precautionary principle must be applied. This principle mandates action to protect the environment when there is a scientifically plausible but unproven risk, and the principle provides a rationale for immediate intervention to protect wildlife from anthropogenic noise impacts while definitive studies are undertaken.

24. Dr. Angela Stoeger from the Department of Behavioural & Cognitive Biology at the University of Vienna is a recognised global expert on the issue and has in fact confirmed that the noise impact assessment undertaken in respect of the proposed Wind Garden and Fronteer WEFs and conclusions reached by the EAP are not scientifically valid or defensible.

25. A definitive study and expert assessment of anthropogenic noise impacts on wildlife and megafauna must be undertaken before a decision is taken on the applications for both the proposed Wind Garden and Fronteer WEFs.

Ineffective mitigation

26. The impact mitigation hierarchy as purportedly applied in respect of the proposed Wind Garden and Fronteer WEFs are flawed in several material respects. This is evident from the following key observations:

Ornithological mitigation

26.1. Landowners of neighbouring properties were not approached to provide any information on possible nests on any target species or for the use of their properties for observation. The EAP

indicates that significant vantage point surveying informed the avifaunal assessment undertaken but that, as with any assessment, there will be uncertainty. As such, the assessment has been *"conducted on a precautionary basis"* and a *"specific Ornithological Mitigation Plan should be developed and implemented for all of the Choje wind farms".*[1]

26.2. I&APs raised concern that the recommendations in the *"draft Ornithological Mitigation Plan"* are based on uncertainty, and the measures are vague and not site-specific. Specifically, Sam Ralston (Birds and Renewable Energy Project Manager from BLSA) noted that *"much more work is required to flesh the recommendations out and test the effectiveness and feasibility".*[2] Furthermore, that *"operational phase mitigation measures proposed in the EMPr are not proactive and are too vague".*[3] In response to these issues, the EAP indicated that *"the plan (draft Ornithological Mitigation Plan) is intended to be a working document which will be finalised for implementation prior to operation. Inputs from key stakeholders such as Birdlife and EWT will be sought during this finalisation"* (emphasis added). The EAP further stated that *"the requirement for the implementation of the Ornithological Mitigation Plan as well as the finalisation thereof … has been included within the EMPr submitted to DFFE with the final BA Report".*[4]

26.3. If landowners were not approached at the outset so that the specialist could inspect their properties for nests, and the draft Ornithological Mitigation Plan (which is currently weak in terms of its proposed mitigation) is still a work in progress and subject to change – then it is unclear how the mitigation hierarchy has been implemented in this case where the bulk of the information required to inform the assessment and mitigation is unknown or inadequate. Although the avifaunal specialist has stated that they are "*highly confident that the field survey team did locate all relevant nests on the development site and outside that where full access was possible"*, this is not possible if neighbouring properties were not accessed with a view to assessing the presence of nests first-hand.[5]

[1] Wind Garden Appendix C9: Comments and Responses Report at pages 17-18.
[2] Wind Garden Appendix C9: Comments and Responses Report at page 35.
[3] Wind Garden Appendix C9: Comments and Responses Report at page 36.
[4] Wind Garden Appendix C9: Comments and Responses Report at page 36.
[5] Wind Garden Appendix C9: Comments and Responses Report at pages 17-18.

26.4. More is required to be done – including engagements with key stakeholders from BLSA (i.e. prior to the operational phase) particularly as key stakeholders have already raised concern with the draft mitigation plan during the public participation process. More information and more consultation is required to rectify deficiencies in the draft Ornithological Mitigation Plan.

Post-mitigation rating for avifaunal impacts

26.5. The post-mitigation rating for avifaunal impacts reflects - according to the avifauna specialist - the expected extent, duration, magnitude and probability of the impact following the implementation of the recommended mitigation measures. In terms of this approach, one of the mitigation measures proposed is the use of a single blade painted black during construction which – according to the specialist - results in a significance score of 56 being mitigated down to a rating of 26. In other words, the assessment relies on the efficacy of the measure to achieve mitigation. The comments and response report records *"all turbines located within the cautionary buffers must have a single blade painted black during construction. Given this is a novel mitigation, which has been proven to be effective internationally, a post-construction monitoring scheme should be implemented to determine its effectiveness".*[6]

26.6. Therein lies the flaw in logic used by the avifaunal specialist and which illustrates the defective application of mitigation in this case. The effectiveness of the mitigation measure is uncertain. The efficacy is speculative as admitted by the specialist. The effectiveness is left to be determined accurately in the construction phase and only after the authorisation for the projects has been granted. This defies logic and circumvents the impact mitigation hierarchy. If the mitigation proves ineffective, the entire assessment of impact mitigation would have been premised upon a falsehood.

26.7. There is no credible basis upon which the efficacy of the mitigation measures can be relied upon by the EAP in circumstances where the avifauna specialist admits that the determination of effectiveness has not been undertaken in the current assessment process and ultimately that the evaluation of mitigation is to be done *ex post facto* and is entirely dependent on post-

[6] Wind Garden Appendix C9: Comments and Response Report, pages 22-23.

construction monitoring. This defeats the one of the singular most important objectives of EIA, namely that necessary and credible information (regarding project impact and mitigation) is required before a decision is taken in connection with a project.

27. There is no guarantee that buffers will be respected. The fact that turbines are still reflected within the cautionary buffers in circumstances where the efficacy of mitigation is untested and to be verified in the post construction phase is unacceptable.

Avifaunal impacts

28. AVISENSE previously peer-reviewed the avifaunal studies for the proposed Wind Garden and Fronteer WEFs and provided detailed comments on those studies. AVISENSE was unable to complete a subsequent review of the avifaunal specialist's responses to AVISENSE's earlier comments during the previous commenting period for the revised BARs at time in June – July 2021. AVISENSE could only complete their subsequent peer-review in August 2021 but by that time the EAP had prematurely submitted the final BARs to the DFFE for decision-making. Due to the subsequent I&AP complaint and resultant DFFE investigations which occurred during the remainder of 2021 (and which culminated in the DFFE's requirement that the EAP undertake this commenting period), this is the first formal opportunity to table the results of the additional inputs prepared by AVISENSE.

29. AVISENSE has reviewed (i) the EAP / specialist responses to specific aspects of the AVISENSE peer reviews of the bird studies for the proposed Wind Garden and Fronteer WEFs, and (ii) the revisions of the two avifaunal studies dated June 2021. We confirm that the issues raised previously by AVISENSE have been largely dismissed. This is a serious flaw in the assessment. In fact, no substantive changes to either of avifaunal studies has been made since the previous comments by AVISENSE, notwithstanding the deficiencies and problems with the assessment identified by AVISENSE. Bizarrely, no substantive changes to either of avifaunal studies has been made between the drafts made available for public comment in June 2021 and the final BARs now belatedly made available in January 2022. This is seriously problematic. It presupposes that the avifaunal specialists have no intention of correcting or changing their studies in order to address the deficiencies point out by AVISENSE. It also flies in the face of Best Practice Guidelines, which has substantially changed

since the final BARs were released for public comment. AVISENSE has confirmed in writing that the fundamental problems with the two studies highlighted in the original peer review have not been addressed.

30. The large eagle nest survey methods, effort and efficacy remain questionable, as do the specific whereabouts of eagle nest sites that were included as relevant to the two assessments but were not present at the indicated locations when AVISENSE surveyed the area in April 2021.

31. Given that the predicted significance of impacts on birds of the proposed Wind Garden and Fronteer WEFs are largely dependent on the distribution of Martial and Verreaux's Eagle nests in relation to the proposed turbine layouts, these inconsistencies and deficiencies must still be fully addressed. In the absence of the avifaunal impact studies having been updated to address these deficiencies, NEMA dictates that the precautionary principle must be applied in this context. This principle mandates action to protect the environment when there is a scientifically plausible but unproven risk, and the principle provides a rationale for immediate intervention to protect Martial and Verreaux's Eagle from impacts while definitive studies are undertaken.

32. The models used to estimate eagle flight behaviour and collision risk (and hence the significance of unmitigated and residual impacts on these key species) are based on (i) inaccurate and possibly deficient distributions of occupied nest sites, and (ii) insufficient and/or insufficiently reliable and accurate vantage point data. Based on the failure to supply adequate detail regarding the field methods used and the distribution and quantity of observer effort applied, it is not possible to take this comment any further without further detail.

33. The stubborn and indefensible insistence on applying <u>minimal protective buffers</u> around the affected eagle nests – buffers that are substantially smaller than those considered to be local best practice (e.g. Verreaux's Eagle; BirdLife 2021), or than those likely to be established as best practice in forthcoming guidelines documents (e.g. Martial Eagle; G. Tate pers. comm.) - remains highly problematic. Importantly, the new Verreaux's Eagle guidelines were published in November 2021 (i.e. prior to the release of the final BARs for public comment) have completely been ignored by the specialist. The new Guidelines have been extensively workshopped by various specialists and industry and represents the most up-to-date scientific information regarding impact assessment

and mitigation on Verreaux's Eagles. No explanation has been provided as to why the avifaunal impact assessment was not updated following the publication of the new Verreaux's Eagle guidelines in November 2021.

34. Once the eagle nest surveys for the proposed Wind Garden and Fronteer WEF sites have been fully completed and the specific locations of occupied and active nesting territories have been verified, the latest versions of the VERA model and whatever equivalent guidelines is currently available for Martial Eagle must be applied to the avifaunal impact studies. The outputs of more definitive studies and these models – both based on large quantities of accurate, high resolution flight data derived from large samples of GPS-tagged eagles in broadly comparable habitats to those in the Wind Relic area – must then be used to map avian impact sensitivity and impact risk in relation to the two proposed wind farms. Without this additional assessment and information, any decision in terms of NEMA will undermine the section 2 NEMA principles.

35. Given that the concerns previously raised have largely been ignored, the key findings of AVISENSE's reviews remain essentially the same, as follows:

35.1. The bird impact studies for the proposed Wind Garden and Fronteer WEFs are superficially adequate only. The studies lack the accuracy, completeness and detail required to fully identify and evaluate the impacts of each of the proposed developments. In other words, the assessment is inadequate.

35.2. The survey work on cliff-and tree-nesting raptors is deficient in scope, extent and intensity, possibly resulting in important sites not being detected and therefore not being factored into the impact assessments.

35.3. The impact assessments and bird studies underplay the potential severity of the impacts of the two developments on threatened and collision-prone species such as Verreaux's Eagle, Martial Eagle, Crowned Eagle (and possibly Secretary bird, Lanner Falcon and Blue Crane), and over-estimate our current ability to mitigate such impacts, resulting in residual impact ratings that are overly lenient on the two development proposals.

35.4. These project-specific failings are still compounded and magnified in the two reports' attempts to evaluate the cumulative impacts of these and other renewable energy projects in the region on local populations of threatened birds.

36. Detailed comments prepared by AVISENSE are attached. Itemised responses are also provided to each of the rebuttals provided by the avifaunal specialist. The supplied "Response to peer review…" documents for each of the two projects are identical therefore these comments apply equally to both projects and the deficiencies in the avifaunal studies. The DFFE's attention is specifically drawn to the specific and detailed counter-arguments (and peer-review) provided by AVISENSE which show that the information is neither accurate, sufficient nor credible. The current state of information does not inform responsible or relevant decision-making regarding the sustainability of impacts.

Failure to respond to I&AP concerns

37. A comment was submitted to the EAP 8 July 2021 by Dr. Angela Stoeger of the Department of Behavioural and Cognitive Biology at the University of Vienna. Dr Stoeger is an acknowledged expert on elephant communication. The essence of the comment was threefold: (1) elephant communication occurs up to significant distances of 10km; (2) the argument in the revised BARs that low-frequency noise does not affect elephants is absolutely incorrect; (3) low-frequency noise travels great distances and anthropogenic wind turbine noise generated impacts travel up to 20km. According to Dr. Angela Stoeger, the statement in the assessment reports / studies that elephant and rhino communication and welfare is not adversely affected is dramatically incorrect and totally unsubstantiated from a scientific point of view. This represents a serious and fatal flaw in the assessment.

38. The competent authority's attention is specifically drawn to the concern raised by AVISENSE, an acknowledged global expert, which show that the information is neither accurate, sufficient nor credible. The current state of information does not inform responsible or relevant decision-making regarding the sustainability of impacts required in terms of NEMA.

39. The EAP fails to deal with this issue (as evidenced by Appendix C9 of the final BARs). The EAP's

response is limited to responding to Dr Stoeger's comment by providing a summary / paraphrasing the findings of the academic paper (co-authored by Dr Stoeger) instead of grappling with the issues and flaws identified by Dr Stoeger as the author of the comment and the academic paper in question. We reiterate that Dr Stoeger is one of the co-authors of the academic report. It is pointless responding to this project -related impact by restating in the EAP's opinion what the academic paper purports to address. Logic dictates that if the author of an academic peer reviewed paper stipulates that the findings in the BARs / specialist studies are incorrect and unsubstantiated from a scientific point of view that the substance of this concern would be addressed.

40. The assumptions about what conditions wind turbines operate in and the impact on elephant communication is flawed. There is no evidence that a specialist study undertaken by a recognised and acknowledged expert in the field of elephant communication has addressed this concern in the assessment process. The area of influence for subsonic noise impacts extends well beyond 20km and would include and encompass the whole of Kwandwe private game reserve. There is no evidence that Dr Stoeger was registered as an I&AP notwithstanding the use and tabling of her comment in the comments and response report. Dr Stoeger, a renowned expert, has been deprived of the opportunity to respond to the EAP's flawed interpretation of the paper and the implications of that for impact assessment.

41. In addition, the response by the EAP to the comments raised by Mr. Chris Pike, an objecting landowner from Lukhanyo Game Reserve, is wholly inadequate. Mr. Pike made the point that the land neighbouring the proposed project area *"relies exclusively on eco and hunting tourism as a source of income"*.[7]

42. Socio-economic related questions due to high visual impacts as raised by Mr. Pike have not been responded to. The credibility, objectivity and independence of the socio-economic specialist was questioned at the outset of the process and stakeholders indicated that they do not have any faith or trust in the merit of the socio-economic assessment undertaken. Conclusions were reached in favour of the developments on the back of no consultation with directly affected neighbouring landowners and that continues to permeate the assessment. It is a fatal omission and fatal bias.

[7] Appendix C9: Comments and Responses Report at page 29.

No empirical evidence or specialist tourism impact study exists to justify the socio-economic specialist scoring of the impact rating for immediate and adjacent farms to the project sites as a medium negative impact.

43. The probability and magnitude scoring provided by the socio-economic specialist are not based on empirical data or a specialist tourism impact assessment and therefore it is not a credible basis to rely on for the final outcome of negative impacts being "medium significant" and "not high". This is entirely self-serving and, as the socio-economic specialist himself admits that he *"cannot definitively say based on the evidence throughout the rest of the report say that the magnitude and probability for the changes in tourism activity will be at the top end of the scale".*[8] There is nothing to justify that response.

44. Lukhanyo Lodge has nine wind turbine positions directly in the immediate view of the front of the lodge. Two of those turbines are within a 1.5km distance and seven of those turbines are within a 5km distance.[9] This has a *"very high"* impact on the economic viability of Lukhanyo.[10] The lack of respect shown to directly impacted I&APs undermines the credibility and objectivity of the process. As described by the I&AP, Mr. Pike, it shows a total lack of consideration by the EAP of I&AP concerns and comments.[11]

The information tabled does not enable the DFFE to give effect to or support sustainable development

45. The deeply compromised socio-economic impact studies illustrates that the disadvantages of the proposed Wind Garden and Fronteer WEFs have not been assessed. A meaningful cost benefit analysis of the relative advantages and disadvantages is not possible based on current reporting.

46. <u>Economically:</u> Advantages associated with proposed Wind Garden and Fronteer WEFs are speculative, being based on no actual or verified data regarding the direct SED benefit of these projects. Disadvantages in terms of impacts on sustainability of existing operations is either

[8] Appendix C9: Comments and Responses Report at page 30.
[9] Appendix C9: Comments and Responses Report at page 30.
[10] Appendix C9: Comments and Responses Report at page 30.
[11] Appendix C9: Comments and Responses Report at page 30.

discounted or excluded and therefore this disadvantage is unquantified. Impacts on property values and investments in game reserves and eco-tourism similarly remain unaddressed.

47. Environmentally: The imperative of renewable energy at the level of national policy does not outweigh the significant negative impact on individual reserves at the project scale and the protected area network at the broader regional scale. The incompatibility between the proposed Wind Garden and Fronteer WEFs and the protected areas which are sustaining biodiversity and ecological processes and increased resilience to climate change has not been resolved. The EIA process adopts a singular and predetermined mindset that views the goal of the National Protected Area Expansion Strategy as less important than renewable energy.

48. Socially: The impacts on employees and communities whose livelihoods depend on sustainability of eco-tourism operations and game reserves in the region is not addressed.

49. The benefits identified in the final BARs (repeatedly emphasised in a manner which motivates in favour of the projects) in connection with both the Wind Garden and Fronteer WEF is entirely disproportional and unrelated to the long-term impact on the sustainability of existing ecotourism operations and the contribution of the tourism sector to the regional economy.

50. A critical aspect that is deficient is the failure to treat the three elements of sustainable development in an integrated and balanced manner where each of the social, environmental and economic considerations are afforded a similar weight in terms of benefits and costs. What the EAP fails to embrace is the manner in which the assessment motivates for the approval of the projects by downplaying environmental or socio-economic costs and suddenly emphasising the net benefit of the projects which are according to the EAP "*expected to partially offset localised environmental costs of the windfarm*". The cost benefit analysis underpinning the entire EIA is flawed and biased. The entire assumption around quantification of localised environmental costs is inadequate because no tourism impact assessment has been undertaken.

Visual

51. The visual impact assessments are flawed and no rational justification is provided for why the VERY

HIGH and HIGH negative visual impacts have not been avoided and mitigated through a sensitivity screening analysis and process. Expert visual specialists commissioned by I&APs have been tabled throughout the process yet the EAP persists with ignoring the implications of this peer-review which demonstrates that the integration of visual impacts is deeply flawed.

52. Given the high proportion of approved WEFs that rely on subsequent NEMA amendment processes in order to increase the height and size of turbines, (and therefore the visual impact) there is no guarantee that the EIA has in fact assessed the largest turbine which could be installed on site i.e., the worst-case scenario according to page 31 of the comments and responses report.

53. The EAP is requested to confirm in writing that the specifications of the turbines as utilised in the impact assessment is/are as a matter of fact the largest turbine which could be installed on the sites, and it is not practically possible for a larger turbine to be installed on the sites (which is what the EAP expressly claims in the reports).

Environmental injustice

54. The ultimate beneficiaries of these two projects are identified by the EAP as private offtake and industrial users, according to the EAP but the details of this are yet to be confirmed. The EAP has since distanced itself that it is a mining operation that will be the beneficiary of the electricity generated.

55. This concern raised by I&APs about the apparent disconnect between localised significant adverse impacts – which are experienced exclusively with the receiving environment / study area - in order to serve the interests of a private off taker and/or industrial user has not been resolved.

56. The imbalance between significant adverse impacts on a public good i.e., the landscape and wilderness in the receiving environment compared to the “need” of proprietary or private commercial interests of a private off taker / industrial user offends the principle of environmental justice encapsulated in, among others, section 2 of NEMA.

Persistent assessment flaws / omissions

57. Certain fundamental overriding assessment flaws persist and undermine the process. These are highlighted below:

57.1. The 'narrative' of the BARs has from the outset been weighted heavily towards the predetermined conclusion that the projects should be approved. The pro-project stance has persisted throughout, irrespective of I&APs concerns raised or the nature, severity and duration of identified impacts (some assessed, others dismissed outright).

57.2. The substance of the BARs is lacking in several key respects (which has been verified by external specialist input). For example:

57.2.1. The impact on tourism and the effect on the sustainability of existing game reserves and eco-tourism operations has not been assessed or quantified at all during the EIA process. The final BARs state that the effects of the WEFs on tourists' decisions to visit reserves in the affected area have not been confirmed in a South African wildlife context. The issue is unresolved. The EAP justifies this information gap with reference to "*primary research undertaken*" and "*international literature*" to conclude that the overall effect on the eco-tourism industry is not anticipated to be detrimentally negative. This is not supported by defensible evidence-based opinion. As a result, the findings are speculative and cannot be relied upon as a basis for rendering a defensible, objective and informed decision by the DFFE.

57.2.2. Secondly, the noise impact studies do not address the specific nature of the concern raised regarding subsonic noise impacts on megafauna, repeatedly identified as a concern by I&APs throughout the process. No justification has been tendered for this information gap in the final BARs.

57.2.3. Thirdly, several issues raised in connection with the avifauna impact assessments undertaken for the projects have not been addressed in the responses to comments or in the final BARs. Again, the issues raised remain unresolved. These issues – and others – have been set out fully in the comments submitted by I&APs as well as independent specialist inputs procured

by I&APs as part of the EIA process. Again, no reasonable explanations have been tendered for this information gap. Certain specialists engaged by I&APs were not available during the limited commenting period previously provided and therefore their inputs could not be procured within the timeframes of the process in terms of the EIA Regulations. For this reason, the following deficiencies are evident:

57.2.3.1. visual sensitivity mapping has not been fully integrated into the assessment and this undermines the impact mitigation hierarchy.

57.2.3.2. the consequential effect of high negative visual impacts on socio-economic conditions in the receiving environment (despite the EAP's repeated assertions to the contrary) have not been evaluated or assessed.

57.2.3.3. ring-fencing as irrelevant or dismissing I&AP concerns does not satisfy the obligation to evaluate and assess the impact in question.

Impacts on water resources / geohydrology

58. A core concern raised by IA&Ps is the absence of a relevant geohydrological specialist study relating to the assessment of groundwater impacts associated with the proposed water uses and the sustainability of such uses in this context. The lack of a comprehensive specialist geohydrological impact study means that the assessment of cumulative impacts in accordance with the EIA Regulations and the assessment of the nature, significance and consequences of the impact and risk to environmental conditions is deficient.

59. The EIA process is required to consider all environmental, economic and technical aspects of the projects, as the projects are required to be considered from a sustainable development perspective. Potential impacts identified in the final BARs as a result of the projects include disturbance and the loss of pans, impact on watercourses through physical disturbance, increase in surface water runoff that could lead to hydrological changes, an increase in sedimentation and erosion and impact on

localised surface water quality.[12] None of this addresses the sustainability of the proposed direct and cumulative uses of a scarce resource (groundwater).

60. The NEMA principles require that the competent authority must be satisfied that the proposed listed activities will not compromise sustainable development or conflict with the general objectives of Integrated Environmental Management stipulated in Chapter 5 of NEMA, and that any potentially detrimental environmental impacts resulting from the listed activities must be mitigated to acceptable levels. Specialist impact assessment reports are crucial for the sake of determining if the proposed projects will result in unacceptable cumulative impacts on the receiving environment and, furthermore, whether the measures currently outlined in the EMPr are adequate to mitigate the impacts of the projects to acceptable levels.

61. The final BARs identified negative water impacts associated with the projects, but groundwater impacts have not been subjected to a comprehensive geohydrological specialist assessment. In terms of the Department of Environmental Affairs and Development Planning guideline regarding hydrological impact studies, specialist hydrological input into the EIA process is triggered when *"it has been established that an activity coincides with an environmental condition that makes the environmental impact likely".*[13] We submit that the impact on ground water is "likely" given that the EAP has indicated that a water use licence has been applied for and, furthermore, that I&APs have raised concern about the over utilisation and unsustainable demand on water resources and the concomitant loss arising therefrom as well as concerns about a declining water table adversely impacting on the environment (including wetlands, springs or river systems).

62. In terms of the comments and responses report, an I&AP stated*: "Please can you share the studies conducted showing the availability of this water and assist in answering the following questions: … What will the permanent effect on ground water levels be on the properties where the proposed windfarms will be situated?"* [14] In response the EAP states: "*A groundwater feasibility study was undertaken by JG Afrika, including consideration of water availability and feasibility of use for the*

[12] Final BARs at page 295.
[13] Department of Environmental Affairs and Development Planning "*Guideline for Involving Hydrogeologists in EIA Process* at page v.
[14] Appendix C9: Comments and Responses Report at page 194.

project, as well as indications of areas to investigate further for the establishment of boreholes. This report is included in Appendix R(6) of the Revised BAR with a summary provided in Chapter 2 of the BA Report".[15] The EAP further states that *"[b]ased on DWS data, the project site falls within the P10A, P10B, Q91B and Q91C quaternary catchments"* and *"[g]roundwater in all catchments is classified as under-utilised. The dominant groundwater use is for livestock watering".*[16]

63. The EAP's sole reliance on the report undertaken by JG Afrika should be viewed with circumspection in context. The *"Desktop Groundwater Feasibility Assessment for Choje Windfarm Projects, Eastern Cape"* (i.e. Appendix R6 to the revised BARs) is described as a *"preliminary groundwater feasibility report"* and it was dated 25 September 2019.[17] There are some serious limitations to any reliance by the DFFE on the conclusions drawn in this report, which on its own version points out the following:

> *"Target areas were identified at a desktop level throughout the priority areas. The target list would be augmented with a site review, following which a geophysical survey should be conducted at target areas to identify optimal drilling locations. An additional consideration would be to review existing borehole resources in the project area subject to landownership agreement. Existing resources would need to be subjected to yield and water quality tests to assess the suitability of use within the project."*[18]

64. The high-level report is as far as the EAP has taken this critical sustainability issue. The report itself notes that ground truthing is necessary to assess the extent of the project-related impacts. The clear inference being that project-related impacts on groundwater resources have not been assessed.

65. We note further that this report is dated September 2019 and that a change in environmental factors may have occurred in the intervening period which requires more thorough assessment of the impacts on groundwater to date. The limitations of the desktop report should be considered in

[15] Appendix C9: Comments and Responses Report at page 194.
[16] Appendix C9: Comments and Responses Report at page 194.
[17] Appendix R6 of the Wind Garden revised BAR at "Verification Page".
[18] Appendix R6 of the Wind Garden revised BAR at page 15.

light of a comment from a Commenting Official from Proto – CMA (Department of Water and Sanitation: Eastern Cape) during the public participation process who stated that *"[t]he applicant must conduct a comprehensive geohydrological study which will aid in establishing the sustainable yields and quality of the groundwater resource"* (emphasis added).[19]

66. We agree with this comment especially in light of the final BARs noting that a Water Use License for water uses identified in section 21(c) and 21(i) of the National Water Act[20] would be required where activities are undertaken within 500m of watercourses and pans.[21] The final BARs further recognised that the *"impact on all watercourse and wetland systems through the possible increase in surface water runoff on riparian form and function through hydrological changes"* was limited to an assessment of aquatic impact identified during the EIA process.[22] This is not the same as evaluating the sustainability of the proposed and cumulative water uses on groundwater resources.

67. Given that there is a risk that ground water levels on the properties where the proposed windfarms will be situated may be impacted by the developments, it is crucial that this impact be comprehensively assessed through a specialist geohydrological study as part of the NEMA assessment. The information this relates to and the underlying concern regarding environmental impact are directly relevant to the environmental mandate of the DFFE in considering and deciding applications for environmental authorisation in terms of section 24 of NEMA.

68. The information relating to ground water presented during the EIA process is in the form of a 2019 desktop study that does not focus specifically on P10A, P10B, Q91B and Q91C quaternary catchments with relate to the proposed Wind Garden and Fronteer WEFs specifically, but rather a review of the quaternary catchments pertaining to the Choje Windfarm Projects generally. The assessment of geohydrological impacts, adequate water availability and the impact of the proposed Wind Garden and Fronteer WEFs on the sustainability of the water resource and the ecological groundwater reserve have not been properly assessed.[23]

[19] Appendix C9: Comments and Responses Report at page 120.
[20] Act No. 36 of 1998.
[21] Final BAR at page 295.
[22] Final BAR at page 189.
[23] Appendix C9: Comments and Responses Report at pages 120-121.

69. The sustainability of water use and water abstraction cannot be divorced from the requirements of NEMA to assess all project related impacts and the reasoning that a water use licence has been applied for in terms of the National Water Act is simply inadequate. Although we recognise that a Water Use Licence has been applied for and that specialist studies (such as a geohydrological impact assessment) will likely be undertaken during that process, this does not obviate the need for undertaking a geohydrological assessment in the context of section 24 of NEMA. The issue cannot be treated in a silo. While we have no objection to thorough water impact studies being conducted through the National Water Act process, in terms of the basic assessment process underway in terms of NEMA, all cumulative impact must be assessed. The preliminary desktop groundwater study for the Choje Windfarm project area dated September 2019, inserted as Appendix R6 of the revised BARs, does not suffice in this regard. In the absence of a comprehensive geohydrological impact assessment report being prepared and submitted to the DFFE with the final BARs and final EMPRs, there is a risk that the EAP will not have placed before the decision-maker all relevant considerations needed in order to make a reasonable decision in accordance with the requirements of the EIA Regulations.

Concluding comments

70. Overall, the process lacks impartiality, accountability and transparency. The efficacy of the entire EIA process has been called into question by the failure to address adequately the project impacts and concerns raised throughout the process. The strong perception held by many I&APs remains that their concerns have not been resolved, with the reporting and assessment displaying an inherent bias towards motivating in favour of the projects being approved.

71. The minutes of public meetings issued by the EAP are sanitised and do not represent a fair refection of the substance of issues raised by I&APs, thus further disempowering the concerns of I&APs.

72. Minutes of meetings were released to I&APs for comment and input outside of the formal EIA process. This is evident from the fact that the last public hearing was conducted virtually on 7 July 2021, the public commenting period closed on 21 July 2021, yet I&APs were only furnished with the draft meeting notes on 25 July 2021. This further limits the ability to I&APs to engage meaningfully. Many issues of substance were discussed in the virtual meetings, yet the minutes are not released

to I&APs until after the comment period closes. This is neither fair nor meaningful.

73. During the public participation meetings, various I&APs repeatedly raised concerns regarding the limited timeframes and truncated comment periods within which I&APs were required to provide inputs as well as concerns regarding the credibility of the findings in the specialist reports, particularly the socio-economic impact studies. These concerns were strongly fuelled by the fact that the specialists had indicated that only a small sample group of affected stakeholders had been engaged in order to derive primary research data regarding localised impacts of the proposed wind farms. It was however pointed out to the EAP and specialist during a public meeting that <u>at least 5 directly affected stakeholders</u> (i.e. the game farms surroundings the wind farms) had in fact not been approached or formally engaged **<u>AT ALL</u>** by the socio-economic specialist. Therefore, it was not possible for the socio-economic impact studies to draw any relevant or evidence-based conclusions regarding the impacts of the wind farms on the neighbouring game farms and associated ecotourism operations. This fact notwithstanding, the conclusions drawn at the outset of the assessment in favour of the projects being approved have continued to influence the process. The initial lack of credibility and perception of biased assessment has not been addressed or resolved. Conclusions tainted by bias and lack of objectivity (and not underpinned by appropriate, objective assessment methodologies) have continued to undermine the credibility of the assessments. The inescapable inference being that the process is marred by a lack of professional objectivity in the specialist studies undertaken.

74. In addition to the above, the factual position in reports and specialist studies is often misrepresented as the most directly impacted properties / affected eco-tourism operations were not consulted at the appropriate time before conclusions were drawn to dismiss or negate I&APs concerns. Several I&APs raised questions and comments of substance throughout (i.e. during) the assessment process yet the EAP only responded to issues raised in the formal comment period in the comments and responses report. Outside that framework, the EAP did not respond to direct questions or emails from I&APs. There was in other words only controlled and managed responses to issues raised – this does not equate to meaningful engagement. The EAP-controlled dialogue (by focussing only on the comments and responses report) is disempowering and removes the ability for I&APs to engage meaningfully with the process <u>during the process</u> or with the EAP's responses to issues raised outside the scope of the comments and responses report. Selective responses to

I&AP identified issues effectively shuts down participation.

75. Various conclusions reached in the final BARs are not evidence-based but speculative. The efficacy of many mitigation measures is not evidence-based or supported by scientific data but rather speculative and reliant on post-authorisation monitoring.

76. The approach to cumulative impact assessment and the slavish adherence to a 30km radius of the site is the effect of ensuring that cumulative visual impacts have not been assessed as the cumulative visual impact of this and similar projects extends beyond a 30km radius.

77. The placement of turbines does not respect the information regarding all impacts / sensitivities identified in the final BARs and visual inputs is a key case in point which is selectively applied to the exclusive and sole benefit of the proponent and to the detriment of the environment.

78. The reports submitted to the DFFE do not enable the Department to discharge its obligations in terms of section 2 of NEMA.

79. The information in the final BARs does not support decision-making by the competent authority that is capable of promoting sustainable development as envisioned in terms of the Constitution and NEMA, which requires securing ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.[24] This goal of ensuring sustainable development is not achievable on the basis of the incomplete and inadequate assessments.

RICHARD SUMMERS INC.

Per. R.W. Summers

10 February 2022

[24] Constitution of the Republic of South Africa, 1996 at section 24.

AVISENSE CONSULTING

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6th August 2021

Richard Summers
Richard Summers Inc.
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57 Prestwich Street, De Waterkant,
Cape Town

Dear Richard

Peer reviews of bird impact studies for the proposed Wind Garden and Fronteer Wind Farms, Eastern Cape: comments on authors' responses

Having now been through both (i) the authors' itemised responses to specific elements of our peer reviews of the bird studies for the proposed Wind Garden and Fronteer Wind Farm developments, and (ii) submitted revisions of the two reports, we can confirm that the authors have been largely dismissive of the issues we have raised, and as a result have made no substantive changes to either of their reports.

Our comments on the itemised responses are attached separately (note that the supplied "Response to peer review…" documents for each of the two projects are identical).

Overall, and not surprisingly, we are not happy with the authors' responses and feel that the fundamental problems with the two studies highlighted in our review have not been addressed.

The large eagle nest survey methods, effort and efficacy remain in question, as do the specific whereabouts of eagle nest sites that were included as relevant to the two assessments but were not present at the indicated locations when we surveyed the area in April 2021. Given that the predicted significance of impacts on birds of the two projects is largely dependent on the distribution of Martial and Verreaux's Eagle nests in relation to the proposed turbine layouts, we feel strongly that these inconsistencies and deficiencies must still be fully addressed.

Similarly, we believe that the models used to estimate eagle flight behaviour and collision risk (and hence the significance of unmitigated and residual impacts on these key species) are based on what appear to be (i) inaccurate and possibly deficient distributions of occupied nest sites, and (ii) insufficient

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and insufficiently reliable and accurate vantage point data. This perception may stem partly from the authors' continued failure to supply adequate detail on the field methods used and the distribution and quantity of observer effort applied. But even if these failings are addressed, the authors' insistence on applying minimal protective buffers around the affected eagle nests – buffers that are substantially smaller than those considered to be local best practice (e.g. Verreaux's Eagle; BirdLife 2021), or than those likely to be established as best practice in forthcoming guidelines documents (e.g. Martial Eagle; G. Tate pers. comm.) - remains highly problematic.

We strongly recommend that, once the eagle nest surveys for the two WEF sites have been fully completed and the specific locations of occupied and active nesting territories have been verified, the authors apply the latest versions of the VERA model and whatever equivalent is currently available for Martial Eagle, and that the outputs of these models – both based on large quantities of accurate, high resolution flight data derived from large samples of GPS-tagged eagles in broadly comparable habitats to those in the Wind Relic area – are used to map avian impact sensitivity and impact risk in relation to the two proposed wind farms.

In closing, and given that the authors have chosen to largely ignore the issues we have raised, the key findings of our reviews remain essentially the same:

1. The bird impact studies for the Wind Garden and Fronteer Wind Farm proposals are superficially adequate, but still lack the accuracy, completeness and detail required to fully identify and evaluate the impacts of each of the proposed developments.
2. The survey work on cliff-and tree-nesting raptors contributing to the two studies still appear to be deficient in scope, extent and intensity, possibly resulting in important sites not being detected and therefore not being factored into the impact assessments.
3. The impact assessments still underplay the potential severity of the impacts of the two developments on threatened and collision-prone species such as Verreaux's Eagle, Martial Eagle, Crowned Eagle (and possibly Secretarybird, Lanner Falcon and Blue Crane), and over-estimate our current ability to mitigate such impacts, resulting in residual impact ratings that are overly lenient on the two development proposals.

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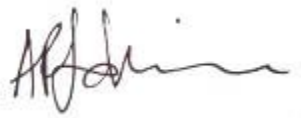
4. These project-specific failings are still compounded and magnified in the two reports' attempts to evaluate the cumulative impacts of these and other renewable energy projects in the region on local populations of threatened birds.

Sincerely



Andrew Jenkins & Anthony van Zyl

KWANDWE AND GREAT FISH RIVER NATURE RESERVE

Makana Municipality, Eastern Cape

Review of Wind Garden and Fronteer Wind Energy Facilities from a HIA and Cultural Landscape Perspective

Prepared for

Richard Summers Inc.

Prepared by

Sarah Winter Heritage Consultant

10 February 2022

CONTENTS

A. BACKGROUND TO THE REVIEW

Comment on the Cultural Landscape component of the Final Heritage Impact Assessment (HIA) and Environmental Basic Assessment Report (BAR) of the proposed Wind Garden and Fronteer Wind Energy Facilities (WEFs) was requested by Richard Summers Inc. acting on behalf of Kwandwe Private Nature Reserve.

B. PURPOSE OF THE REVIEW

The purpose of this review is the following:

1. Determine whether the previous comments on cultural landscape aspects have been addressed in the HIA and Final BAR, particularly in relation to flaws that were previously highlighted.
2. Provide a statement of heritage significance of the landscape comprising Kwandwe Nature Reserve and its relationship with the adjoining Great Fish Nature Reserve and the potential impact of the proposed WEF projects on this significance.

The first point above is addressed fairly succinctly given that the previous concerns raised with respect to cultural landscape issues remain unresolved and still represents a fatal flaw in the heritage and environmental process. This is addressed in Section C below.

The primary focus of this review is the second point including the following assessment:

1. The heritage significance of Kwandwe Nature Reserve and adjoining Great Fish Nature Reserve culminating in a statement of heritage significance which focuses on cultural landscape significance, the assessment criteria of the National Heritage Resources Act (Act 25 of 1999; NHRA) as well as the three tier system of grading heritage significance (Grade I = national; Grade II = provincial; Grade III = local).
2. The identification of criteria for assessing the impact of wind energy facilities on this landscape with reference to the principle of avoidance rather than mitigation and the identification of no-go areas based on the criteria of visual impact and landscape integrity.

It should be noted that the current review has involved a ‘ground-truthing’ exercise having visited the Kwandwe and Great Fish Nature Reserves and their surroundings in November 2022.

C. REVIEW OF THE FINAL BAR WITH RESPECT TO CULTURAL LANDSCAPE

All concerns previously raised with respect to cultural landscape issues have not been addressed and are summarised as follows:

1. Notwithstanding the critical new information provided by the specialist Cultural Landscape Assessments, the primary findings around the carrying capacity of the cultural landscape and the significant number of problematic turbine positions have been dismissed in the final HIA and BAR.
2. It is inconceivable in a HIA process for the findings of a heritage specialist to be dismissed based on the economic feasibility of a project. The ramifications for such an argument in heritage and environmental practice is seriously problematic.
3. The question of economic feasibility is outside of the ambit of the provisions of Section 38 (3) (d) of the NHRA, which refers to an evaluation of the heritage impact of development relative to the sustainable social and economic benefits to be derived from the development.
4. The extent to which other 'economic sustainable' mitigations measures can result in an acceptable level of heritage impact is unfounded. It is very clear from the Cultural Landscape Assessments that a moderate level of impact is achievable by limiting the turbine positions to low lying areas and maintaining buffers around routes and farmsteads. There are no grounds to dispute this information.
5. The conclusion of the revised HIA reports that the development will constitute an additional layer to the cultural landscape and that through the implementation of 'economically feasible' recommendations will 'preserve' and in some cases 'enhance' the 'older layers' in the cultural landscape is regarded as a misconception of heritage management principles and role of cultural landscape assessment in HIA processes.

The Final BAR Comments and Responses Report dated July 2021 is very inadequate in dealing with cultural landscape concerns. Reference to the fact that cultural landscape issues have been rated in the same way as palaeontological issues is representative of a serious misconception of cultural landscape heritage management. The consideration of socio-economic issue as over-riding heritage impacts from a cultural landscape perspective is not qualified.

D. KWANDWE AND GREAT FISH RIVER NATURE RESERVE CULTURAL LANDSCAPE

The following statement of cultural significance expands the work of the specialist Cultural Landscape Assessments of the WEF projects. It provide a regional perspective which is regarded as a missing from previous work and critical to decision making in terms of adequately addressing cultural landscape issues.

Section 3 (2) (b) of the NHRA includes “landscapes and natural features of cultural significance” as part of the national estate. The extent to which the landscape comprising Kwandwe and the Great Fish Nature Reserves constitutes a heritage resource worthy of protection from a heritage management perspective is outlined below. It has high heritage significance in terms of the following preliminary statement of significance.

- The pristine quality of the landscape as a Protected Natural Environment primarily for conservation and biodiversity purposes, as well as associated eco-tourism use.
- The role of Kwandwe Nature Reserve as a significant anchor in terms of natural landscape protection status at a regional, sub-regional and local scale. This role is defined by its strategic location adjacent to the Great Fish Nature Reserve and forming part of an interlinking system of nature reserves contributing to the biodiversity, wilderness landscape character and tourism base of the region extending along the Great Fish River and constituting a bio-diversity corridor which is continuous with the Addo biodiversity corridor.
- The high visual integrity of the landscape with minimal visual intrusions, especially infrastructural development. It possesses varied topographical conditions resulting in open, expansive views from open plains and hilltops which contrast with enclosed views along the riverine corridor. Dominant expansive views southwards are framed by a mountain ridge that forms a strong and continuous presence in the landscape and defines an outer boundary of the visual catchment area contributing to a sense of containment of Kwandwe Nature Reserve. This visual integrity is experienced from within the Nature Reserves but also along a network of historic scenic routes traversing the broader region.
- The experiential qualities of the landscape in terms of its wilderness landscape character based on a combination of land use as a nature reserve with very limited extractive opportunities, an ephemeral settlement pattern embedded in nature, the very dramatic meandering serpentine qualities of the Great Fish River, the unique indigenous vegetation composed of “Albany thicket” containing many endemic species and forming part of the Greater Cape Floristic Region, as well as animal species endemic to the region. The landscape possesses a powerful overall sense of remoteness and stillness.

- The role of the landscape adjacent to the Great Fish River as a linear element in the landscape and marker of a shifting frontier during the Frontier Wars (1779 to 1879) reflecting the evolution of the history of the country and the history of European colonialism in Africa. It is highly representative of the Zuurveld cultural landscape located between the Great Fish and Sundays Rivers as a zone of contact, conflict and contestation, survival and dispossession between late 18th and early 19th century. In addition, the role of the Great Fish River as a late 18th century colonial boundary, later an apartheid boundary in the creation of Ciskei as a 'Bantustan'.
- Embedded within this landscape are a number of sites associated with the Frontier Wars e.g. Double Drift 1835, Fort Brown 1835, Fort Wiltshire (1811). During this period, the landscape contributed to a line of military surveillance with signal towers established overlooking the Great Fish River Valley, connecting Makhanda (formerly known as Grahamstown) to Fort Beaufort to the north.
- A network of 'poorts' and drifts evident in the landscape navigating the topography of mountains and riverine corridors. These crossing points and movement passages have been used by both animals and peoples to traverse the landscape for centuries and serve as subtle but important historical markers.
- The role of the Great Fish River as a frontier zone with its meandering serpentine alignment and dense thicket. This is in contrast to the open landscape qualities of the late 17th frontier along the Liesbeek River in Table Bay or the semi-arid conditions of the 18th century northern frontier of the west coast and karoo regions.
- The role of this wilderness landscape in representing the notion of 'safari' as derived from the Swahili word for 'journey' and associated with a search for transcendence, a journey of discovery and change and its linkages with the notion of 'frontier', establishing edges or boundaries of control, and the resultant shifting ideas of order beyond the boundary.
- A sense of balance and harmony associated with the pristine nature of the landscape beyond the urban periphery, which is in contrast to a colonial and apartheid system which disrupted the long tradition of a symbiotic relationship between nature and people, and the delicate balance between nature, agriculture and settlement.

Heritage Grading:

In terms of the three tier system of NHRA for grading heritage resource, Kwandwe Nature Reserve, together with the Great Fish Nature Reserve and a stretch of the Great Fish River Corridor is worthy of being considered for possible Grade II heritage status.

E. ACCEPTABLE THRESHOLDS OF CHANGE: HERITAGE MANAGEMENT IMPLICATIONS FOR THE IMPACT OF WIND ENERGY FACILITIES ON CULTURAL LANDSCAPE SIGNIFICANCE

Based on the above preliminary statement of significance it is clear that proposed WEF projects require a cautious approach to an assessment of impacts from a cultural landscape perspective.

The landscape comprising the Kwandwe and Great Fish Nature Reserves has limited capacity to accommodate change given that the experiential qualities of this landscape are primarily related to its sense of remoteness and stillness resulting from an ephemeral pattern of human intervention on the landscape, and a current pattern of land use related to biodiversity conservation and eco-tourism.

While the principle of 'green energy' is not incompatible with landscape conservation objectives, the degree of compatibility of large scale 'green energy' facilities needs to be balanced against the unacceptably high visual impacts on the integrity of landscapes of high natural and cultural significance.

The desirability of the location of wind energy facilities needs to be viewed from a consolidated regional landscape perspective with the demarcation of clearly identified no-go areas.

Based on the criteria of visual impact and landscape integrity, there is a need to retain unfettered vistas from within the wilderness zone, (both day and night), notwithstanding the impact of the existing Waainek turbines which are limited in number (8 turbines) above the skyline when viewed from within the reserves.

F. CONCLUSIONS

The cultural landscape issues are still inadequately addressed in the Final HIA and BAR reports due to the fact that the primary recommendations of the specialist Cultural Landscape Assessments have not been adequately integrated into the final reports.

The primary recommendations of the specialist Cultural Landscape Assessments have been dismissed.

Therefore, the revised HIA reports have still not met the requirements of Section 38 (3) of the NHRA.

Notwithstanding the findings and recommendations of the Cultural Landscape Assessments, there is a regional perspective clearly missing from previous work and which critical to decision

making in terms of adequately addressing cultural landscape issues. This regional respective incorporates the Kwandwe and Great Fish River Nature Reserves and a stretch of the Great Fish River Corridor as being of possible Grade II heritage status. The implications of this status from a heritage management perspective have not been considered in the heritage assessment and environment process.

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Savannah Environmental, July 2021. Public and Responses Report of Wind Garden Wind Farm, Eastern Cape

ADDENDUM A:

Declaration of Independence:

Sarah Winter declares that she is an independent heritage practitioner with expertise and experience in heritage impact assessments and that the review has been carried out in an objective manner. She has no interest, be it business, financial, personal or other, in the proposed Albany Wind Energy Farm other than fair remuneration for professional work performed in connection with a review of the Heritage Impact Assessment.

Expertise:

Name	Qualification	Professional Accreditation	Years of Experience
Sarah Winter	BA Archaeology and Anthropology (UCT) 1989 Master of City and Regional Planning (UCT) 1995	Association of Heritage Practitioners (Accredited member)	Heritage practitioner 20 years

Sarah Winter has 20 years of experience as a heritage practitioner with extensive experience in undertaking heritage impact assessments. She co-authored the Department of Environmental Affairs and Development Planning Guidelines for Involving Heritage Specialists in Environmental Impact Assessments (2005). Her specific area of expertise is in cultural landscape assessments undertaken as part of heritage impact assessments, municipal heritage inventories, conservation management plans and planning policy frameworks. She also co-authored the specialist Heritage and Scenic Study for the Western Cape Provincial Spatial Development Framework (2013).

Sarah is a founder member of Association of Professional Heritage Practitioners. She has taught on the Robben Island Museum-University of the Western Cape Heritage and Museum Studies Programme, the University of Cape Town Landscape Architecture Masters Programme and the UCT MPhil in Conservation of the Built Environment Programme.

Sarah served on the Councils of Heritage Western Cape (HWC) (2010 – 2016) and the South African Heritage Resources Agency (SAHRA) (2015 – 2016). She chaired the HWC Built Environment and Landscape Committee (BELCOM) (2010 – 2016) and was a member of the HWC Impact Assessment Committee (IACOM) (2010 – 2013). She is currently a member of the HWC IACOM (2019 onwards).

RICHARD SUMMERS INC.
ATTORNEYS

Savannah Environmental (Pty) Ltd
Attention: Ms. Nicolene Venter

Our ref: RWS/cfa/CSP20-003
Your ref: 14/12/16/3/3/1/2314 and 14/12/16/3/3/1/2315

Per e-mail: nicolene@savannahsa.com

16 February 2022

Dear Nicolene

RE: SUPPLEMENTATION OF COMMENTS ON THE FINAL BASIC ASSESSMENT REPORTS FOR THE PROPOSED WIND GARDEN WIND ENERGY FACILITY AND FRONTEER WIND ENERGY FACILITY, EASTERN CAPE PROVINCE [UNDER DFFE REF. NO.: 14/12/16/3/3/1/2314 AND 14/12/16/3/3/1/2315 RESPECTIVELY]

1. On 10 February 2022, we submitted comments on the final Basic Assessment Reports ("final BARs") for the abovementioned Wind Garden and Fronteer Wind Energy Facilities as part of the public participation process. As set out in paragraph 20 of our comments, we indicated that Kwandwe in possession material information relating to project-related impacts, including impacts on Critically Endangered Species (Black Rhino), which information is both sensitive and confidential and cannot be released in the public domain. As a result, the EAP was requested to revert to our clients with a mechanism for the introduction of this information into the NEMA EIA process. To date, no such mechanism has been provided for by the EAP.

2. The purpose of this letter is therefore to emphasise the deficiencies in the impact assessment reports and to specifically draw the EAP's attention to our request for a mechanism to introduce sensitive and confidential information relating specifically to impacts on the black rhino population which has not been assessed as part of the EIA process.

3. In the time that lapsed between the release of the revised BARs in 2021 and the final BARs in 2022, our clients had hoped that the impacts of the two proposed WEFs, particularly in light of the substantive comments submitted in 2021, would result in a proper and more comprehensive assessment of all concerns raised about the project impacts. This did not occur.

4. In light of the deficiencies in assessment and information gaps in the reports as well as the EAP's failure to revert on appropriate mechanisms to introduce confidential information into the EIA process, our clients have requested that we submit a redacted version of the independent specialists entitled *"Kwandwe Private Nature Reserve: A socio-economic and conservation assessment"* authored by D Balfour and S Fourie. The report identifies the direct, indirect and cumulative impacts of the abovementioned proposed WEFs on Kwandwe and its surrounds, specifically in relation to the black rhino population.

5. In a bona fide attempt to ensure that the DFFE is in possession of all material information

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relevant to its decision-making process prior to adjudicating on the applications, we attach hereto a copy of the redacted report for inclusion in the final documentation that will be submitted to DFFE. We confirm that the redacted Report may be submitted to the DFFE only for the purposes of adjudicating on the environmental authorisation applications for the proposed Wind Garden and Fronteer WEFs. We also attach a separate report by D Balfour dated 16 February 2022 which confirms that the Final BARs for the projects have failed to address:

5.1. The importance of the biodiversity of the area and in particular the role of the area in conserving black rhino;

5.2. The importance of noise to the natural ecological functioning of large mammals and particularly black rhino and recognized weaknesses (uncertainties) in the current state of knowledge in that regard;

5.3. The contribution of Kwandwe and other Indalo Protected Environment properties to three national strategies i.e., the National protected Area Expansion Strategy (NPAES), the Biodiversity Management Plan (BMP) for black rhino, or the National Biodiversity Economy Strategy (BES).

5.4. The importance of any of the above strategies and discussion of trade-offs that need to be considered in this context.

6. We point out that our client's personal information recorded in the redacted report is protected in terms of the Protection of Personal Information Act No 4 of 2013. We therefore request that Savannah refrains from disclosing this information on any public platforms and refrains from providing access to the redacted Report to other registered stakeholders / interested and affected parties without the prior written approval of Kwandwe.

7. We trust that the reports will be accepted by the EAP for the purposes of supplementing the concerns raised in our comments dated 10 February 2022.

Yours sincerely,
RICHARD SUMMERS INC.

Per: R W Summers

CONFIDENTIAL

Kwandwe Private Game Reserve

A socio-economic and conservation assessment

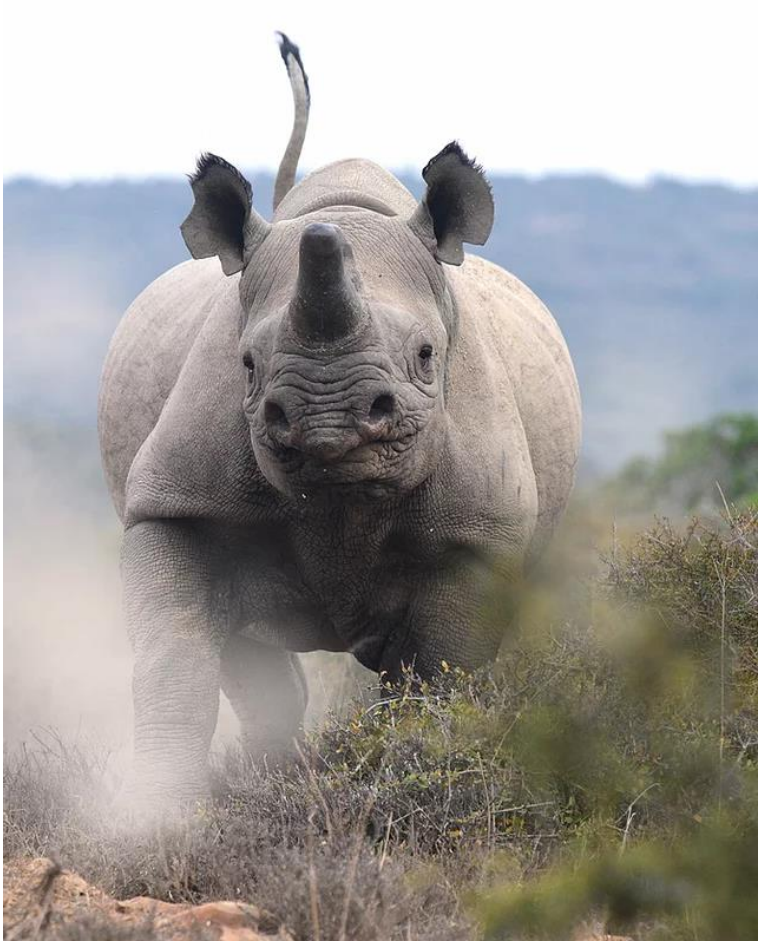

Photo credit: https://www.kwandwerhinotrust.org.za/

Report for: Kwandwe Private Game Reserve

Compiled by: D. Balfour (*PhD*) & S. Fourie (*PhD*)

Date: 18 July 2021

Table of Contents

Introduction

Kwandwe Private Game Reserve is an approximately 200 km^2 protected area straddling the Great Fish River 30km north of Makhanda in the Eastern Cape. Sited upstream of the Great Fish River Nature Reserve, Kwandwe Private Game Reserve is a prime example of healthy and/or rehabilitating Albany Thicket, and home to most indigenous species including an important population of the critically endangered black rhino (*Diceros bicornis minor*). As with many ecotourism ventures in the region, prior to being managed as a prime ecotourism destination, Kwandwe Private Game Reserve was managed for livestock, and in common with many similarly managed properties, there was substantial risk of the natural vegetation becoming severely degraded. The turnaround resulted, not only in a win for biodiversity but also a win for the local economy which, by some measures, increased by a factor of four and contributed to the greater bio-regional trend of developing a biodiversity economy. Notably, this took place before the State had formerly developed the Biodiversity Economy Strategy as a strategic approach to rural development.

Recent proposals to build two wind farms at sites on the southwestern boundary and at elevations that overlook Kwandwe Private Game Reserve and the Great Fish River Valley, have raised concerns for the managers of the Reserve and beyond. The primary concern being that the presence of the windfarms will directly and indirectly, negatively affect the intrinsic value of the broader area, and this will have cascading effects that will undermine the ecotourism value that is being leveraged from the property. Any activity, intervention or construction that may result in the underlying biodiversity and landscape resources being compromised will undermine, not only site based activities on Kwandwe Private Game Reserve but will also challenge the resilience of the collective of properties and potentially threaten the underlying viability of the local biodiversity economy. The opportunity costs to future ecotourism and protected area expansion initiatives in the region also need to be taken into consideration.

Importantly, the concerns are not only applicable at the level of Kwandwe Private Game Reserve. Any activity, intervention or construction in the area that may result in the underlying biodiversity and landscape resources being compromised will serve to directly counter three national strategies[1]. These are a) the National Biodiversity Economy Strategy (BES; DFFE, 2016), b) the National Protected Area Expansion Strategy (NPAES; NPAES, 2016), and c) the Biological Management Plan for Black Rhino (BMP; DFFE, 2013). For these reasons, any decision to authorize the proposed wind farms, which is essentially industrial infrastructure, need to consider the direct and indirect costs of the proposed development including all externalities and any future opportunity costs of the proposed developments. A balanced and fair accounting of the contributions of Kwandwe Private Game Reserve, and indeed the collective contributions of all ecotourism reserves, is necessary for a full understanding and a robust cost-benefit analysis.

This report addresses the importance of Kwandwe Private Game Reserve in its own right and as an integral component of the larger bioregional economy. It focusses on the contribution to, and importance of a) black rhino conservation, b) conserving nationally identified priority vegetation types in the Albany Thicket, and c) the emergence and importance of the local

[1] Not only are these national strategies, they are specifically strategies of the Department of Fisheries, Forestry and Environment.

biodiversity economy. It comments on the catalytic effect of the larger biodiversity economy initiatives in the region and notes the potential opportunity costs of undermining them. Referencing the Basic Assessment Report (BAR) and selected specialist studies, the report identifies contextual inadequacies and highlights where there simply is insufficient information to make the rational decisions that are necessary to address the development application.

The structure of the report is to present factual information dealing with black rhino and thicket conservation, followed by a brief summary of the intent of the three national strategies mentioned above and pen-ultimately a detailing of key technical aspects of noise impact that require further consideration. The report is concluded by a section that synthesizes and interprets the material in relation to the risks posed to Kwandwe Private Game Reserve, the three national strategies, and the potential opportunity costs if the decision is made to proceed with the proposed developments. In so doing it addresses flaws in the reports and identifies gaps in current knowledge.

Part A: Rhino conservation

Introduction

Global distribution, status and threats to rhinos

Global rhino numbers are a mere fraction of what they were 200 years ago. From an unknown number, but likely to be between 120,000 and 150,000 or more globally in the early 1800s, there remain fewer than 30,000 rhinos today. The most recently published global population figures for the five species are presented below.

Table 1. Summary data for the five extant rhino species (from https://www.iucnredlist.org/; Emslie *et al*., 2018).

Species	Continent	Range countries	Estimated number (2017)	IUCN Red List status
Greater one horned rhino	Asia	2	3,588	Vulnerable
Javan rhino	Asia	1	65-68	Critically endangered
Sumatran rhino	Asia	1	80-156	Critically endangered
Black rhino	Africa	11[2]	5,495	Critically endangered
White rhino	Africa	9[3]	18,067	Near threatened

[2] Botswana, Kenya, Malawi, Mozambique, Namibia, Rwanda, South Africa, Eswatini, Tanzania, Zambia and Zimbabwe.
[3] Botswana, Kenya, Mozambique, Namibia, South Africa, Eswatini, Uganda, Zambia and Zimbabwe.

As with all large terrestrial mammalian herbivores, the conservation status of the five rhino species is under pressure (Ripple, 2015). In addition to habitat loss and fragmentation, all rhino species face intense pressure from illegal hunting of individual animals for their horn (Milliken & Shaw, 2012). The value of the illegal trade in rhino horn was estimated to be between USD 64 and 190 million in 2013 (Nelleman et al., 2014) with a kilogram of horn anecdotally fetching in the region of USD 36,000/kg or more when sold to the end user (Mander, 2012), but also estimated to be between USD 35,000/kg and USD 65,000/kg in 2013/14 (Hübschle, 2016). At these prices, there is clear incentive for syndicated crime with global reach, as well as local people, to take considerable risks to acquire and sell rhino horn (Kennaugh, 2015). This has been the driving force behind the substantially increased poaching pressure that has been placed on global rhino populations over the last decade (Emslie *et al*., 2018).

Rhinos in Africa

The historical continental range and trends of African rhino populations have been documented elsewhere (Milliken, 1992), and are only dealt with here in summary. The two African species of rhino had very different population trajectories in the 20th century. Towards the end of the 20th century there were six extant sub-species of African rhino; two white rhino and four black rhino sub-species (Emslie and Brooks, 1999). Less than two decades later (2017), two of these sub-species had been hunted to effective extinction. The western black rhino *(D. b. longipes*) "*is now considered to have gone extinct in its last known habitats in Northern Cameroon*" (IUCN Red List, 2012) and the northern white rhino (*C. s. cottoni*), of which there were three known surviving individuals on a private ranch in Kenya in 2016, and two of which, including the only male, were 40 years or older (Brett, 2016)[4].

Table 2. Summary range State data for the five African sub-species as of the end of 2017 (adapted from Emslie *et al*., 2018).

Species	Ceratotherium simum			Diceros bicornis			Total
Sub-species	cottoni	simum		bicornis	minor	michaeli	
Range State							
Botswana		452			50		50
Kenya	3	513				745	745
Malawi					28		28
Mozambique		29			1		1
Namibia		975		1,857			1857
Rwanda						19	19
South Africa		15,625		331	1,632	83	2046
eSwatini		66			21		21
Tanzania					5	155	160
Uganda		22					0
Zambia		14			48		48
Zimbabwe		367			520		520
Total	3	18,063		2,188	2,305	1,002	5,495

[4] [redacted]

Southern white rhino had been hunted to national extinction in all range States except South Africa by 1900. Aided by successful protection and innovative conservation measures, the sub-species increased in numbers from less than 100 individuals and reached a high of over 20,000 in the early 21st century, with many of them relocated to historical range states (see Emslie *et al*., 2018). Black rhino on the other hand were initially abundant. The continental population was estimated to be 100,000 in the 1950s, and 65,000 in the early 1970s, but again due to illegal hunting, had declined to an estimated 14,785 in 1980 and 2,475 by 1995 (Emslie & Brooks 1999; Linklater & Shrader, 2017).

Black rhino in South Africa

History

South African conservation efforts have long been critical to the survival of the white rhino – a story which is well known (Emslie and Brooks, 1999) and will not be repeated here, save to say that key to the success of the conservation efforts between 1960 and 2000 was; a) provide a secure environment in suitable habitat and b) manage their density to enable growth which requires that their range is also expanded through the translocation of founder populations to new properties.

The dramatic collapse of the black rhino population in the second half of the 20th Century was followed by a period of recovery during which the continental population grew from a low of approximately 2,500 to an estimated 5,495 by the end of 2017 (Emslie *et al*., 2018). This recovery took place during a 15 year hiatus in poaching pressure which lasted until 2008.

Of the two sub-species indigenous to South Africa, it was estimated that the arid adapted *D.b. bicornis*, numbered only 300 in 1970[5] (Hearn et al., 2004) *i.e*., less than 1% of the continental black rhino population of 65,000. In the case of the more widespread *D.b. minor*, the other sub-species indigenous to South Africa and the most numerous sub-species of black rhino in the mid-20th, the population crashed across its range under poaching pressure in the 1970s and 1980s to an estimated 1,450 in 1997 (Emslie & Brooks, 1999). In this process the relative importance of range State national populations increased dramatically. By way of illustration, in 1980 the Tanzanian and Zambian populations collectively contributed ˜74% to the sub-species total and South Africa contributed 7%. By contrast, in 1997 Tanzania and Zambia contributed 3% of the remaining animals and South Africa contributed 72% (Emslie & Brooks, 1999). The continental ratios have again shifted with South Africa currently holding [redacted] of the continental black rhino, and between them, Namibia, Kenya, Zimbabwe and South Africa holding [redacted] of all black rhino.

Population dynamics

With the exception of two surviving *D.b.minor* populations in KwaZulu-Natal (Hluhluwe-iMfolozi Park and uMkhuze Game Reserve), all populations of black rhino in South African black were created through translocations and introduction or reintroduction over the past half century. The net result is that, as of December 2010, over 85% of the black rhino in South Africa were a

[5] Although it is known that they were more abundant and fairly widespread a century or two earlier.

consequence of the establishment of new, or the restoration of previously existing, black rhino populations (Knight *et al*., 2013).

The number of black rhino in South Africa increased reasonably steadily from approximately [redacted] in 1990 to an estimated [redacted] in 2017. This reflects a national growth rate of close to 5% per annum. Most of the population, and thus the growth, has taken place on state protected areas as most of the rhino have historically been on State protected areas. This is however changing, and since 1990 there has been increasing private ownership of black rhino. It is currently estimated that 25% of the national black rhino herd is in private hands (see Emslie *et al*., 2018; Figure 1).

Figure 1. Number of black rhino in South Africa between 1989 and 2020 and the number that were in private ownership (adapted from Emslie *et al*., 2018).

Natural distribution

In broad terms, and with perhaps small notable exceptions, black rhino are historically understood to have covered most of South Africa (Knight *et al*., 2013). Individuals of the arid adapted *D.b. bicornis* were found in the drier western regions and the country and *D.b. minor* was found more to the north east of the country. In general, again with perhaps notable exceptions, black rhino are understood to have been more common in the northern regions of South Africa although there is clear evidence from early traveler's writings, of their presence in the south western and eastern Cape, although they appear to have been absent from the "Transkei" (Skead, 2007).

Records suggest that densities of black rhino were relatively low in the southern, western and central regions of the Cape provinces, but they were known to be high in the approximately 17,000 km^2 Albany Thicket of the Eastern Cape (Skead, 2007). The composition and structure of the Albany thicket formed prime habitat for black rhino, and this remains true to this day with the Great Fish River and surrounding valleys and ridges which are at the heart of the thicket biome (Mucina *et al*., 2006) being key areas for rhino conservation.

Albany Thicket ecology

Mega-herbivores such as elephants and black rhinos are important components of the ecology of Albany Thicket, and thus the Great Fish River valley. They play a key role in maintaining the overall structure of thicket vegetation (Cowling *et al*., 2009), and contribute to factors determining the composition of the vegetation, particularly the succulents (Cowling and Kerley, 2002) and euphorbias (Cowling *et al*., 2009) which are favoured browse species. Together with elephants, black rhino encourage coppicing in woody shrubs and contribute to structuring the "skirt" around *Portulacaria afra* plants. Sigwela *et al*. (2004) showed how significantly more seeds are dispersed by indigenous large mammals including black rhino, than by goats, which generally have a deleterious impact on Albany Thicket.

The State sponsored promotion of livestock farming, and particularly of goats, in the first 20th Century led to widespread and significant degradation of Albany Thicket (see Taylor et al., 2016). Much of the degradation included the selective browsing and subsequent elimination in vast areas of spekboom (*Portulacaria afra*). There is evidence that even in the short space of a decade, heavy browsing, especially by mohair-producing angora goats, can convert dense shrubland into a desert-like state (Vlok & Euston-Brown, 2002). Of some [redacted] km^2 formerly covered in spekboom-rich thicket, some [redacted] has undergone severe degradation and [redacted] moderate disturbance.

Black rhino and Albany Thicket

At the heart of the Eastern Cape lies the Albany Thicket Biome (Mucina *et al*., 2006), and at the heart of the Albany Thicket run the Great Fish River and the Sundays River valleys. The vegetation of the Albany Thicket Biome varies across the landscape and is mapped as discrete vegetation types (Mucina *et al*., 2006), or as eco-regions, *i.e*., the dry, inland areas of the Fish, Sundays, and Gamtoos river valleys; b) the mesic coastal areas of the same river valleys; and c) the intermontane valleys to the north and west. The Thicket vegetation contains a high proportion of both leaf and stem-succulent shrubs such as *Portulacaria afra* (Spekboom), *Euphorbia bothae* (dominant along the Fish River Valley), *Euphorbia ledienii* and *Euphorbia coerulescens* (Noorsdoring) (Vlok *et al*., 2003).

Black rhinos are recorded as having been present in most of current day Eastern Cape excluding the country north of a line drawn from Cathcart through to Willowvale (Skead, 2007; Table 7.1). Evidence suggests that black rhino were most abundant in the region inland of the coast from the Sundays River mouth to the Great Fish River mouth and passing through current day Great Fish River Nature Reserve (GFRNR) and Addo Elephant National Park (AENP) and west towards and past Kommadagga and Darlington Dam (Skead, 2007).

Following the sustained period of hunting of the species, the last free roaming black rhino in the Eastern Cape is thought to have been shot near Fort Beaufort in 1885 (Skead, 2007). Regional local exterminations, which took place over the period of close to a century, were recorded and many of these took place in the last refuges for black rhino in places such as "Addo bush" and "Peddie" (Skead, 2007; Table 7.3); areas which lie at the core of the Thicket Biome.

There remains uncertainty as to which sub-species of black rhino was historically present in the Albany Thicket (Knight *et al*., 2013). This has resulted in populations of both sub-species having

been reintroduced into properties in the region, and thus being present in the Albany Thicket today. As the natural boundaries between the sub-species were not "hard-edged", their distribution is thought to have reflected differences in habitat and climate, and it is likely that beneficial adaptations to these factors are found within the two sub-species. In order to conserve this genetic variation, the Biodiversity Management Plan for Black Rhino in South Africa (the black rhino BMP) stipulates that the two sub-species should not be mixed (Knight *et al*., 2013).

Current day black rhino populations in Albany Thicket

Having been absent from the Eastern Cape for 80 years, and from many regions in the eastern Cape for over 100 years, black rhino were first reintroduced to AENP in the 1960s (Hall-Martin & Penzhorn, 1977). There have been a number of subsequent reintroductions, including the replacement of the east African *D.b. michaeli* sub-species, which had originally been placed into the AENP, with *D.b. bicornis*. The GFRNR was restocked with *D.b. minor* in the 1980s and 1990s, and *D.b. minor* founder populations have been reintroduced to [redacted] reserves in the Albany Thicket region. A small population of *D.b. bicornis* has also been established in the thicket vegetation within the Baviaanskloof Nature Reserve. These reintroductions and the subsequent growth of the founder populations has resulted in a local headcount of approximately [redacted] rhino. This comprises approximately [redacted] *D.b. bicornis* on two State protected areas and [redacted] *D.b. minor* on one State reserve, and approximately [redacted] *D.b.minor* on [redacted] properties. The *D.b. minor* populations on private property have the potential to grow by a further [redacted]%. Notably, the density of black rhino that these properties are able to carry, and to remain productive, are among the highest recorded in South Africa and even continentally.

Significance of individual black rhino populations

A key aspect of the black rhino BMP is that it promotes active management of each population of black rhino in a manner that will encourage growth of the population and, importantly, to favour larger populations see (Balfour *et al*. 2019). The IUCN African Rhino Specialist Group has established criteria for ranking black rhino populations reflecting their relative contribution to the conservation of the species (or sub-species). Using these criteria, the *D.b.minor* population on Kwandwe Private Game Reserve is an “Important 1” population as defined by the IUCN (Emslie & Brooks, 1999) and has the potential to be a “Key 2” population.

Black rhino protection

With the intensity of the global poaching pandemic as mentioned in the introduction, significant rhino losses have been experienced in many State protected areas in South Africa, the largest of which are Kruger National Park and Hluhluwe-iMfolozi Park. Much of this poaching effort has targeted white rhinos as they have larger horns and tend to spend more time in open easily-accessible areas. This phenomenon, as well as other factors, such as proximity to international boundaries and high human populations in large areas of semi-urban development has made these areas vulnerable to poaching. The converse also applies, and

regions with predominantly black rhino[6], hilly terrain and often impenetrable Albany Thicket have been less targeted by rhino poachers. As ease of access to white rhino declines due to their increasing scarcity, the relatively unpoached areas with black rhino are likely to become more attractive to poachers. It is well established that rhino poaching is aided by "staff insiders" informing the poaching networks – working as a collective the Indalo Association has been able to minimize this phenomenon and to effectively keep poaching levels low.

In response to local initiatives, and subsequently aligned with the nationally supported Integrated Wildlife Zones initiative (https://www.peaceparks.org/wildlife_zones/), work has been done to secure, not only individual private properties, but the region of the Albany Thicket which is home to around [redacted] rhino including two Important populations. With the population size and the security, the Albany Thicket Wildlife Protection Zone, for want of a better name, has real potential to contribute to South Africa's and the continents black rhino conservation in a meaningful manner.

The significance of private rhino ownership

While private ownership of wild large mammals in many countries in the world is legally not possible and they fall under a status known as *Res nullius* (or belonging to no one), the Game Theft Act (Act 105 of 1991) changed that in South Africa, and "game", which includes black rhino, can be privately owned. An important consequence of enabling private property rights over black rhino, subject to certain conditions being met, is that an economy has been established around the species and a number of private properties have invested in them (see also Clements *et al*., 2021). This has contributed to the expansion of the range and the number of black rhino on private property in South Africa, including in the Albany Thicket and on Kwandwe Private Game Reserve (see statistics in the section above and in Figure 1).

Kwandwe Private Game Reserve

Kwandwe Private game Reserve sits at the core of the Albany Thicket and is a key member of the Albany Thicket Zone. It has a population approaching [redacted] which would make it an important population under the IUCN categorization. Because of its protected area status, it has signed a management agreement with the State under which it commits to managing the land to meet biodiversity conservation objectives and it is held accountable for implementation of the plan by being audited by the state.

[6] White rhino are not thought to be indigenous to the Albany Thicket.

PART B: State policy and a sustainable economy

Having established the importance and the potential future contribution of the Albany Thicket in general and the Albany Thicket Zone specifically for black rhino conservation, this section briefly identifies the key State policies to which the area contributes.

National strategies

The biodiversity economy

The biodiversity economy of South Africa encompasses businesses and economic activities that either directly depend on biodiversity for their core business, or that contribute to conservation of biodiversity through their activities. Commercial ecotourism meets both these criteria and is thus a key component of the biodiversity economy (DEA, 2016).

The National BES aims to optimize the economic benefits of the wildlife[7] industries by 2030. Envisioned growth will be sustainable and importantly, achieved through cooperation between the private sector, government and communities in a manner that supports transformation. A key element of the BES is that it is intended to develop and grow rural economies, an approach that has clear value where rural economies are being eroded by the dominant trend of urbanization in the country.

The Indalo Private Game Reserve Association

Nine private protected areas in the Albany Thicket Biome have formed an association, the Indalo Private Game Reserve Association (Indalo, 2020)[8], as a juridical association of Eastern Cape Private Game Reserves, with the mission "to foster a pattern of land use that is ethically accepted and that is conducive to social responsibility, biodiversity preservation and ecologically sound wild area management on privately owned land". (Antrobus & Snowball, 2019). The landowners/properties/units have, collectively through Indalo, signed an agreement with the provincial Department of Economic Development, Environmental Affairs and Tourism to declare 700 km^2 of the 1,150 km^2 land under their management as a "Protected Environment" in terms of the National Environmental Management: Protected Areas Act (Act 57 of 2003). Of this land an estimated 68% is Albany Thicket (Muir et al., 2011), and Kwandwe Private Game Reserve comprises 19,500 ha. As substantial areas of Albany Thicket has been previously degraded through livestock farming, the Indalo Association, not only collectively provide the expertise and carry the cost of conserving these landscapes, they are actively rehabilitating areas which require it (Indalo, 2020). Kwandwe Private Game Reserve individually contributes over 190 km^2 to three vegetation types i.e., Great Fish Thicket, Great Fish Noorsveld and Albany Broken Veld, that are listed as "poorly protected" in the NPAES.

Addressing the issue of community development, all members of Indalo have had community development projects for over a decade (Motala, 2010; Antrobus & Snoball, 2019) with some of them having formed Foundations. The focus of these development projects are training in

[7] The strategy also seeks to regulate the bioprospecting industry but that is not a focus of this report.

[8] Kwandwe is a key member of the Indalo Association.

health care; skills training in finances, hospitality, parenting and leadership; assistance with computer skills; and bursaries for the local primary schools. In addition to the biodiversity economy, Indalo contributes meaningfully to the National Tourism Strategy (2016/16 – 2019/20), which acknowledged the growing role of ecotourism in economic growth and job creation as South Africa transitions from a resource-based to a services economy. Underpinning this contribution by Indalo is the increase in the number of people employed from 1,133 in 2008 to 1,531 in 2018. In a rural community this is particularly important considering that approximately 85 % of the employees had Grade 12 or lower as their highest level of education and a third are under 35 years old (Antrobus & Snowball, 2019). Importantly, the Indalo properties collectively employ over four times as many people as the original agricultural farms did (Muir, 2011). This is striking in contrast to the figures provided in Appendix L: Socio Economic Impact which indicate that over the decade spanning 2008 to 2018, the agricultural sector has experienced a significant decline, shedding over 230 forma jobs.

National protected area expansion strategy

Protected areas are enabled and established by law with the purpose of being managed for biodiversity conservation (NEM:PA, 2003). In addition to providing safe environments for biodiversity, fostering ecological sustainability and resilience to climate change, they contribute to important ecosystems services and the underpinning of rural livelihoods and economic development, especially in marginal agricultural areas (NPAES, 2016).

The National Protected Area Expansion Strategy (NPAES) sets targets at national and provincial level, for the protection of South Africa's 969 ecosystems. Currently, AENP and GFRNR contribute the most to conservation of Albany Thicket. However, as many of the individual vegetation types of which Albany Thicket is comprised are under-protected, the additional area conserved by the private sector in general, and Indalo in particular, is an important contribution to national targets. As indicated in the section above, this totals approximately 70,000 ha to national biodiversity targets, of which Kwandwe Private Game Reserve contributes 19,500 ha.

A feature of the NPAES is to encourage and facilitate the establishment of connectivity in the landscape as a form of adaptation to climate change. The NPAES explicitly promotes the Biodiversity Stewardship Programme (BSP), in which private land owners are incentivized to formally declare their land in priority areas to contribute to national targets in this regard. Activities that discourage investment by local land owners in participating in the BSP clearly work directly against the national programme and strategy.

Biodiversity Management Plan: black rhino

The BMP for black rhino in South Africa (BMP, 2013) is a national strategy with an implementation plan which aims to achieve five strategic objectives. They are; a) Effective biological management of individual populations[9], b) effective population monitoring, c) effective protection of populations, d) sufficient and appropriate human capacity to achieve these objectives, and e) effective coordination between management of the various

[9] A key aspect of this is to ensure positive population growth at a rate of 5%/annum or higher.

populations to achieve better conservation outcomes. Indalo and Kwandwe Private Game Reserve contribute to all these objectives in a meaningful manner.

Current policy development processes in DFFE

Over the past 18 months a High Level Panel, appointed by the minister of DFFE, has reviewed the policies, legislation and practices on matters of elephant, lion, leopard and rhino management, breeding, hunting, trade and handling (DFFE, 2021). This has resulted in a draft policy statement being released by DFFE for which comments are sought and the process finalizes at the end of July 2021. Although it covers many issues, a key element of the draft policy is the inclusion of, for the first time in South Africa, a definition of "sustainable use" in relation to biological resources. Clearly, the definition in the draft policy specifies, among others, that sustainable use does not contribute to the long-term decline of a natural resource, does not lead to the loss of biodiversity or lead to loss of ecological integrity in an ecosystem, and considers social and economic impacts of activities including disadvantages and benefits. It is worth noting that the ecotourism activities of the Indalo Association are consistent with this definition.

PART C: Noise

Wind turbines are recognized as one of the main sources of anthropogenic noise in the environment (Colby et al. 2009, Dunn 2016, Hansen et al. 2017, Helldin et al. 2012, Lovich and Ennen 2013, Luther and Gentry 2013). A growing number of studies have demonstrated that anthropogenic noise can affect animals in various ways (Pater et al. 2009, McGregor et al. 2013, Gill et al. 2014, Read et al. 2014, Shannon et al. 2015, Rosa and Koper 2018, Berger-Tal et al. 2019, Kunc and Schmidt 2019, Jerem and Mathews 2021). Most research on the impacts of noise has focused on birds and marine mammals and comparatively little is known about the impacts of noise on terrestrial animals (Shannon et al. 2015, Kunc and Schmidt 2019, Jerem and Mathews 2021, Wildlife Society 2007).

Under circumstances where little is known, decisions around authorizing projects with noise impacts should take a precautionary approach, particularly in environments where the primary economy is dependent on naturally functioning wildlife populations.

Noise

Noise is defined as any unwanted or disturbing sound that affects the health and well-being of humans and other organisms. The characteristics of noise can vary substantially in amplitude (i.e., loudness), frequency profile (i.e., pitch), and spatial and temporal patterns. The interaction of these characteristics within the temporal and spatial context of a disturbance, prior experience and similarity to relevant biological sounds, essentially determines the impact of noise on wildlife (Blickley *et al.* 2010).

Most anthropogenic noise sources have energy concentrated in low frequencies (<1kHz) (Luther and Gentry 2013), which can travel long distances with relatively little energy loss and are also more difficult to control through noise-abatement structures (Blickley *et al.* 2010) (see Appendix A and B).

Wind turbine noise

The noise generated during the construction phase, and impacts thereof, are sufficiently addressed in the noise impact assessment (with the exception of blasting),and will not be covered by this report. Blasting represents a loud, infrequent, abrupt and unpredictable sound that startles animals, and is generally perceived as a threat, resulting in self-preservation responses (e.g., fleeing, hiding) (Francis and Barber 2013). Animals will most probably move away from the development footprint during construction, but blasting may increase the distance. Since there is still uncertainty whether blasting may be necessary during the construction phase, and no details of the noise levels that could be generated, an assessment of the impact of blasting can't be made.

There have been few studies on the impact of noise generated by the operation of wind farms on selected terrestrial vertebrates (Helddin *et al.* 2012, da Costa et al. 2018, Shannon *et al.* 2015, Lovich and Ennen 2013); little specific data is available and none on the species of concern in this area. Wind turbine noise impacts are also exacerbated by the visual impacts, vibration, shadow and flicker effects from the turbines. During the operational phase, noise from wind turbines originates from either a mechanical or aerodynamic generation, and is present at all frequencies, from the infrasound range to the normal audible range (Colby *et al.* 2009). Enviro Acoustic research has stated that the new generation wind turbines intended for use during this project will not emit mechanical noise, and this will therefore not be considered in this report. However, if that statement is not correct, this issue will need to be revisited.

The aerodynamic noise generated by wind turbines is present at all frequencies, from the infrasound range over low frequency sound, to the normal audible range (Colby *et al.* 2009, Helldin *et al.* 2012). However, most of the sound energy generated by wind turbines falls in the low-frequency noise and infrasound categories (approximately 10Hz to 200Hz). These noise frequencies have been recognised as a special environmental noise problem (see Appendix B), mostly in the human context (Leventhall 2004, Eggermont 2014, Ambrose and Rand 2011, Farboud et al. 2013, Pierpoint 2010) and are one of the most extensively studied sources of infrasound (Verheijen *et al.* 2011). Given that there are many similarities between human hearing and that of other mammals, despite different sensitivities and ranges, this will also briefly be addressed in this report (but see also Appendix B).

The developers plan to use a wind turbine with a sound power emission of 104.9 dBA at windspeeds of 9m/s and above for the Fronteer Wind Farm, and the emissions are expected to attenuate to a level of 45dBA during the day and 42 dBA at night (bar one site) within the zones indicated in Figure 8-4 in the noise assessment (de Jager 2020). A spectral attenuation analysis was not included in the noise assessment report (de Jager 2020), although the sound emission frequency range is expected to be between 31.5 and 8000Hz. However, low frequency noise and infrasound generated by wind turbines does not decay with distance as rapidly as higher frequency sound and can spread far with a low attenuation in the open air (Farboud *et al.* 2013, Maschke 2004). Lovich and Ennen (2013) estimate that this infrasound can propagate for tens of kilometres.

In addition, A-weighting analysis (as used in the Noise Impact Assessment) does not adequately account for low frequency and infrasound, as it removes most or all infrasound components from wind turbine broadband noise (Verheijen *et al.* 2011, Leventhall 2004). It is therefore not possible, from the data presented in the noise impact study, to assess how far noise of these

low frequencies will travel, and to what distance from the turbines the animals in the project area will be affected (see also Appendices A and B).

Amplitude modulation resulting from wind turbine operations is another common noise impact (Lechine and Song 2016, Ambrose and Rand 2011), but as this was not quantified in the Noise Assessment Report, the impact of this will not be separated from the general impact of noise discussed in Section 4.

Sound levels increase significantly when wind speeds are high, and sound levels downwind of the source will also be higher than upwind of the source, due to friction. The project area experiences a bimodal wind regime, with predominantly westerly wind from April to October, and predominantly easterly winds from October to April (Weather Spark). May to February are the windiest months, with wind speeds averaging, 4.7 m/s). Wind speeds average slightly less at 4.2 m/s between May and February.

Noise levels downwind over distance under different wind conditions were not presented in the report, and the impact of this is therefore unknown.

Impact of noise on terrestrial mammals

Noise may have widespread effects on wildlife both near and far from its source (or sources), with many negative effects, ranging from mild to severe (Gill et al 2014, Blickley *et al.* 2010), Heldin *et al.* 2012, Hansen *et al.* 2017, Brumm 2014, Rosa and Koper 2018).

Novel, unpredictable, or noises acoustically similar to biologically relevant sounds are predicted to elicit responses similar to those associated with predation risk (flee, hide, startle responses) (Blickley *et al.* 2011, Francis and Barber, 2013). Noise stimuli at this end of the continuum are often infrequent but are abrupt and unpredictable. At the other end of the continuum, frequent and chronic noise can result in a host of indirect impacts, listed below. These noise stimuli tend to be frequent or chronic and interfere with an animals' abilities to detect important sounds (Blickley *et al.* 2011), especially when their spectral (frequency) content overlaps with biologically relevant sounds. Increases in noise intensity (loudness or amplitude) will increase the severity of the impacts, regardless of whether it is perceived as a threat or masks biologically relevant sounds. Anthropogenic sound has energy mostly below 1 kHz, while birds, amphibians and mammals generally have vocalizations with frequencies between 1 and 5 kHz (Luther and Gentry 2013).

The noise does not need to overlap with peak hearing capabilities or be received at a high intensity to elicit a response. The frequency and intensity of noise are just two of the factors driving responses, with temporal and spatial context of the disturbance, prior experience and similarity to relevant biological sounds also playing key roles (Francis and Barber, 2013, Shannon *et al.* 2015).

The characteristics of the acoustic signal (e.g., frequency, duration, onset, intensity) and the biology of the species (e.g., hearing range, behavioural state, habitat, vocal behaviours) are important in predicting how noise is likely to affect a particular organism (Francis & Barber, 2013; Parris & McCarthy, 2013, Shannon *et al.* 2015).

Direct impacts can be grouped into the following (Blickley *et al.* 2010, Gill *et al.* 2014, Francis and Barber 2013, Jerem and Mathews 2021, Lovich and Ennen 2013, Shannon *et al.* 2015):

- Animal health, e.g., damage to the auditory system
- Inter-species communication, e.g., the masking of sounds important to survival and reproduction, and other social interactions like learning. In this context, it is important to note that an increase of 1 dB in ambient sound level results in an 11% decrease in the original detection level, and 21 % of the original listening area (Barber et al. 2009). Since most of the noise impacts are related to the effect on communication. This is discussed more in Appendix C.
- Predator/prey interaction and detection

Exposure to noise can also result in more indirect impacts, e.g., on fitness, modified habitat use and activity patterns, changes in foraging and anti-predator behaviour, interference with mating and reduced reproductive success and reduced spatial orientation (Lovich and Ennen 2013, Blickley *et al.* 2010, McGregor *et al.* 2014, Barber *et al.* 2009). Harmful physiological responses to noise exposure include hearing loss, elevated stress hormone levels, decreased immune systems and hypertension. Animals also exhibit increased vigilance with increasing background noise, as this decreases the ability to detect predators (Rabin *et al.* 2006, Barber *et al.* 2009, Blickley *et al.* 2001, Lovich and Ennen 2013), resulting in chronic stress and associated physiological responses.

Studies have reported a range of noise intensity levels that initiate negative impacts. A literature survey (Shannon *et al.* 2015) showing that terrestrial wildlife responses begin at noise levels of approximately 40 dBA, with 20% of papers documenting impacts below 50 dBA. Increased stress levels and decreased reproductive efficiency were exhibited at noise levels between 52 and 68 dBA SPL (re 20 µPa) (Shannon *et al.* 2015). Levels of 60–75 dBA have been shown to cause stress (Helldin *et al.* 2012), e.g., increased respiration and heart rate, increased vigilance, and decreased time for grazing in domestic animals such as sheep and horses. Barber *et al.* (2009) reported harmful effects appearing at exposure levels of 55-60 dBA.

There is a relatively poor understanding of how animals make trade-offs between costs and benefits, e.g., the benefits of staying in an area to gain access to food might outweigh the costs of exposure to noise such as signal masking and threshold shifts (Helldin *et al.* 2012, McGregor *et al.* 2014). Obviously, relocation and displacement come at a cost, and may not be feasible due to landscape constraints, e.g., fencing and habitat availability (Gill *et al.* 2014, Álvares *et al.* 2017).

Noise effects are expected to be particularly relevant for species that are more sensitive to human presence and activities, such as large carnivores (da Costa *et al.* 2018). Helldin *et al*. (2012) found that large terrestrial mammals appear to acclimatise to the wind farms during the operational phase, although these responses may vary with species, gender, age, individual, time of the year or type of disturbance.

Habituation is frequently cited as a reason for persistence and an absence of noise impacts, yet research on other stressors indicates that acclimation to a stressor might not release an organism from costs to fitness, according to Wiley (2013) in the case of noise. Furthermore, studies have shown that physiological effects are related to the dose of exposure, which involves the duration of the exposure. Physiological effects can therefore occur at sound pressure levels that do not cause a behavioural response when the animals are exposed for a long period (Francis and Barber 2013). Thus, the influence zone for physiological effects can be larger than the zone of responsiveness (see also WODA 2013).

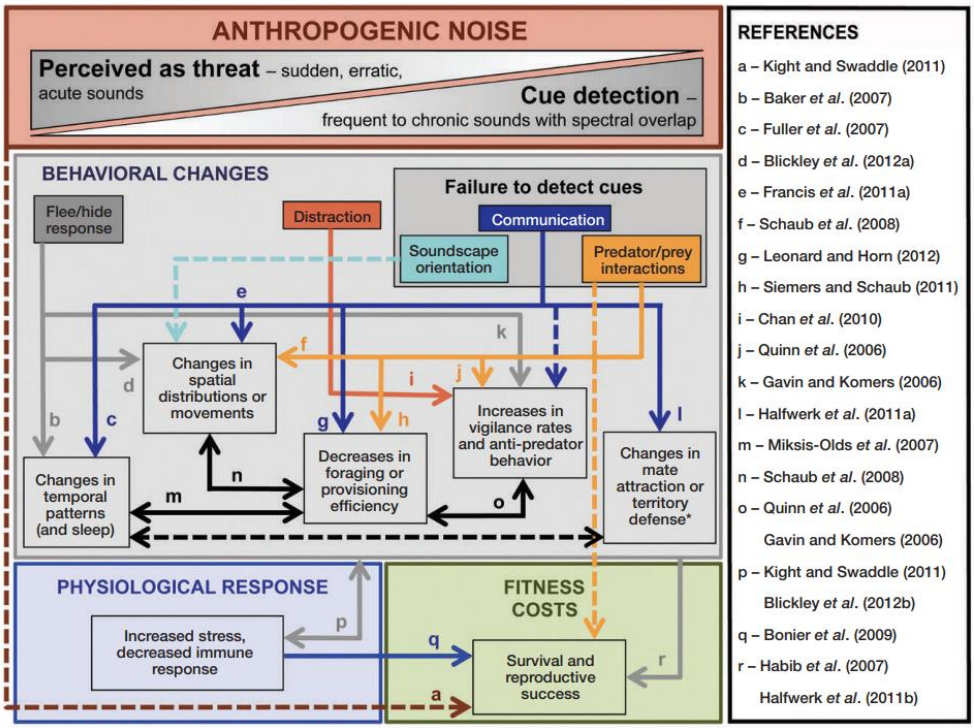

Figure 1. Conceptual framework for understanding how noise stimuli can elicit behavioural responses (source Francis and Barber 2013)

The conceptual zone of influence model (Figure 2) also illustrates the impact of noise over distance - sound intensity falls with increasing distance from the source and therefore impacts are likely to lessen, or at least to change, with distance (McGregor *et al.* 2014).

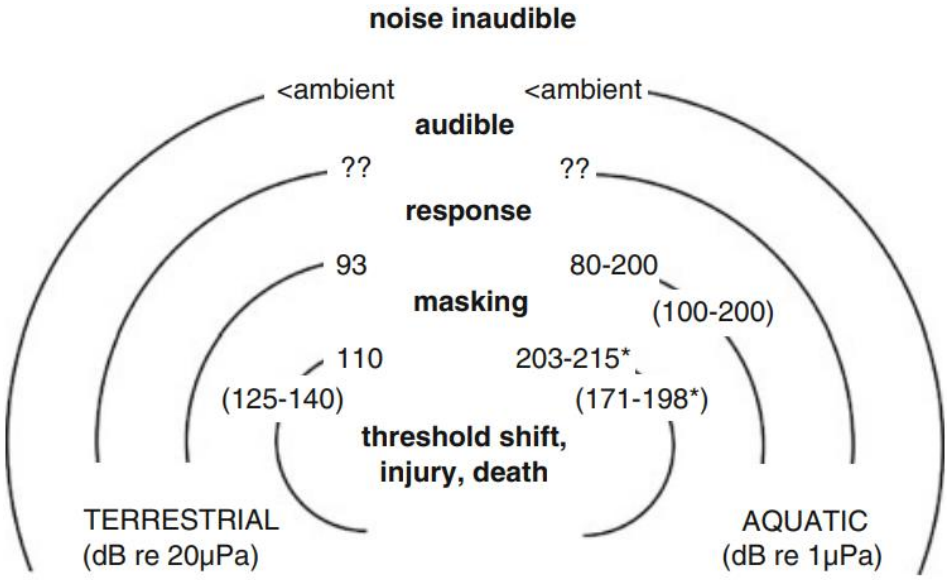

Figure 2. The zones of influence model after Richardson *et al.* (1995). The source is at the centre of the concentric circles. values in dB – for terrestrial organisms not in brackets.

No noise standard exists for terrestrial species (Blickley *et al.* 2010), and as species differ in their ability to tolerate noise; at present it is not possible to predict the impact of the Fronteer Windfarm on individual species. However, the field of impact is likely to be greater for mammals who communicate using infrasound, e.g., rhino and giraffe (von Muggenthaler 2013, von Muggenthaler *et al.* 1993, 2003, Policht *et al.* 2008, Wiseman *et al*. 2014), and other animals with very low frequency vocalisations.

A conceptual framework summarising the impact of noise is presented in Figure 1 below (extracted from Francis and Barber 2013).

Concluding comments

Species differ in their sensitivities to noise exposure (Francis and Barber 2013) - sounds may have their greatest influence on behaviour, which then translates into fitness costs, but how and why noise elicits a response can vary greatly.

It is possible that many mammal species, and certainly the larger terrestrial mammals, will move out of the area during construction, due to noise and other forms of disturbance, with a possible cost to fitness. It is not known whether landscape barriers in the project area may prevent the relocation of these mammals, and whether there is sufficient available habitat and safe denning sites for these animals to move to.

Although this brief was to assess the impacts on large terrestrial animals, the impact of displacement on small species may be more extreme, particularly in key places such as in feeding or breeding areas. Normally, small species have small home ranges, which is a limitation when they need to find new homes, since it forces individuals to outlay a great energy expense (Pereira *et al.* 2018). This may have knock-on effects on larger fauna.

It is also probable that the impact of the operational noise on large terrestrial mammals will extend over a greater area than presented in Figure 8-4 of the BAR, for the following reasons:

- As discussed in the Sections above (and Appendix B), low frequency noise and infrasound both form the largest component of the noise spectrum emitted by wind turbines and have been recognized as a special environmental noise problem. Noise at these frequencies travels further than noise at higher frequencies and their impact increases rapidly with sound level.
- Only noise A-weightings are presented in the assessment report, and if they were also used in the modelling, the contribution of infrasound and low frequency noise is likely to have been underestimated.
- Data on the decay of the sound energy for the IF and LF frequencies over distance, under varying atmospheric conditions (wind, temperature, humidity) has not been provided. We therefore do not know how far and at what intensity the sound in this frequency range will travel, and what impact this could have on the terrestrial mammals.
- Species which use low frequency and infrasound (known species in the area are rhinoceros, lion, hippo, elephant, giraffe, leopard, brown hyena and otter), and predators like leopards who have a greater hearing sensitivity and show a greater response to disturbance by humans, are most likely to be affected in a greater radius from the turbines.

- Ambient sound levels were not measured in the wilderness areas (i.e., away from human habitation), and are therefore not representative of wilderness areas. An increase in noise levels from ambient wilderness levels to operational wind turbine conditions will require a greater adjustment for animals than presented in the noise assessment report.
- Very quiet, clear, frosty winter nights accompanied by temperature inversions, are the times when noise carries the furthest (Rossing 2007). Noise at night has a greater impact on predator/prey relations (Blickley et al. 2014), for example on the terrestrial carnivores of concern in the project; the black footed cat and brown hyena, both of whom are active during the night.

The above impacts all relate to the masking of sounds important to inter- and intra-species communication, and the detection of signals important for survival, predation and reproduction. The "soundscape" of the environment that these animals live in is very intricate, and noise impacts, especially on intra- and inter-specific communication, may have unforeseen consequences.

Responses can also vary between different life-history stages for each species. For example, an organism might show little to no response to noise in terms of habitat occupancy or foraging rate but may experience strong negative impacts in terms of pairing success, number of offspring, physiological stress, or other measures of fitness (Francis and Barber 2013).

One could unpick more specific impacts that noise could have on individual species, e.g.

- masking for female lions with cubs, who can distinguish immediately between roars from their own resident males (the fathers of the cubs) and those from unfamiliar, potentially infanticidal males.
- the masking of the sound of a herd of zebra or giraffe running, which may propagate a series of seismic waves with characteristics unique to that species and can be detected by predators.

Given the current lack of data and uncertainties around the impact of noise on the terrestrial animals in the study area, it is recommended that more research is undertaken to inform decision making. Firstly, more data is needed on the hearing and communication frequency ranges of priority species, as well as information on the impacts of chronic noise on these animals (both predator and prey species).

PART D: Synthesis and reflections against the BAR and specialist reports

Following the State backed rapid expansion of the livestock industry into marginal, and ultimately unproductive, landscapes in the first half of the 20th century many rural economies reverted to wildlife as a land use in the second half of the century (Taylor et al., 2015). The primary driver of this shift back to wildlife was landowners seeking to use their land in a manner that is ecologically (Kerley et al, 1995), and economically sustainable in the absence of government subsidies. This dynamic played out in a significant proportion of the Albany Thicket region of the Eastern Cape and Kwandwe Private Game Reserve as well as other members of

the Indalo Association were part of that shift (e.g., see Antrobus and Snowball, 2019). Figures are not available for other properties, but studies indicate that for those in the Indalo Association and in ecotourism, the number of people employed increased by a factor of four or more compared to livestock farming (Muir *et al*., 2011). This is a significant turnaround, not only in that it brought an end to the unsustainable use of the natural vegetation through ending livestock farming but it simultaneously introduced a sustainable land use and improved the regional economy.

Added to that Kwandwe Private Game Reserve and other members of the Indalo Association have recently contributed to the NPAES by legally committing their land under NEM:PA and contributing 700 km^2 to the conservation of the under-conserved Albany Thicket. Not only is this land now conserved but where appropriate it is undergoing restoration. Importantly both the conservation management and the restoration of these properties is funded through the land owners, and this is only possible if there is a viable and sustainable economy underpinning their enterprises.

The above is notable in its own right, but it is important that Kwandwe Private Game Reserve, as well as a number of other Indalo properties, is making a recognizable contribution to the conservation of *D.b. minor* by hosting and securing [redacted] Together with the combined contribution made by other [redacted] *D.b.minor*, a total of approximately [redacted] are thus conserved by the private sector through the local biodiversity economy.

The direct contribution of the Kwandwe Private Game Reserve and other Indalo properties to three national strategies is significant and deserves not only recognition. Efforts should be made to ensure, not only that this local bioregional economy is not compromised, but that it is provided with an enabling environment to grow and remain sustainable.

In so doing it is important to recognize the synergistic and catalytic roles that the various members of Indalo play, and the importance that economies of scale make towards the region being a success. For example, by clustering together and creating a regional brand, with a range of experiences, the collective is in a stronger position compared to an individual property. It is worth noting that this regional brand extends to State protected areas such as AENP and GFRNR as well as the private sector. A second example is from the field of law enforcement. From a rhino security perspective, by being able to work together and by sharing costs, the collective[10] has been able to launch and maintain an effective security operation that focuses regionally rather than on each property and which has a strong intelligence network, and through this to keep poaching to levels which are substantially below national figures.

The potential exists for the region to contribute further to all three national strategies. The biodiversity economy is not saturated and the size of the biodiversity economy in the Albany Thicket has potential to expand further. There remains potential to expand and to connect properties, thus expanding the protected area estate in priority vegetation types and there is potential to increase the contribution of the region to rhino conservation. Initial discussions have been held to discuss managing the various populations of each species of black rhino in the area as a single “meta-population”. This makes considerable sense from a conservation

[10] In this case it includes State operators such as national and provincial conservation agencies.

biology perspective; what remains is to incentivize more properties to join the collective and to adopt a biodiversity objective.

With this context, it is clear that any initiative that may result in the underlying biodiversity and landscape resources of the region being compromised or that reduces or disincentivizes the regional biodiversity economy, will place not only the existing operations and contributions at risk but there will be future opportunity costs to consider as well. As the region is successfully contributing to three state strategies, any decision to authorize the proposed wind farms will require a significant trade-off that should not be made without a very clear cost-benefit analysis demonstrating that there is a better alternative. Such a cost benefit analysis should be clearly informed by data, and this should be available in the BAR.

Currently the BAR and the specialist studies inadequately address many of the issues raised in this report and these raise concerns as to their adequacy to provide a balanced and fair account of the motivation for the project and a full understanding of the externalities and cost-benefit trades-offs that are at play.

Specifically:

Direct impacts

a) The BAR and specialist study (Appendix J: Noise impact) does not pay adequate attention to the potential direct impact of the operational noise of the wind turbines (see concluding comments for Part C). Indeed, the specialist study falls substantially short of considering adequate detail of how sound may affect the natural ecology of large mammal wildlife, and particularly black rhino and elephant communication, on surrounding properties including Kwandwe Private Game Reserve, and of acknowledging where there is inadequate knowledge to guide effective decision making. Additionally, ambient sound levels were not measured in the wilderness areas (i.e., away from human habitation), and are therefore not representative of wilderness areas. An increase in noise levels from ambient wilderness levels to operational wind turbine conditions will require a greater adjustment for animals than presented in the noise assessment report.
b) The BAR makes no mention of the risks to rhino conservation through the increased presence of people working on the border of the Kwandwe Private Game Reserve or more regionally in the properties of the Indalo Association.
c) The BAR and specialist study (Appendix L: Socio-economic impact) give inadequate recognition of the risks posed to the Kwandwe Private Game Reserve by the proposed development and the subsequent degrading of the natural resource base that the economy is based on due to noise.

Indirect impacts

d) The BAR and specialist study (Appendix L: Socio-economic impact) give inadequate recognition of the potential risks, and the effects on the sustainability posed to the Kwandwe Private Game Reserve by the proposed development and the subsequent degrading of the natural resource base that the economy is based on.
e) The BAR and specialist study (Appendix L: Socio-economic impact) give inadequate recognition of the potential risks posed to the biodiversity economy of the collective

(Indalo Association) if one of its members (Kwandwe Private Game Reserve) is lost due to the negative consequences of the proposed development if it proceeds. The synergies and economies of scale are integral to the operation and resilience of the local biodiversity economy, and this will be at risk if a key member of the Indalo Association (in this case Kwandwe Private Game Reserve) is lost due to the erosion of the natural resource base on which it depends.

f) The BAR and specialist study (Appendix L: Socio-economic impact) give inadequate recognition of the potential for a complete collapse of the Indalo Association and other ecotourism industry players and the reversion of the land to livestock farming. There is potential for gains made and contributions to all three national strategies being reversed, with significant consequences.

Omissions

g) The BAR and specialist study (Appendix J: Noise impact) make no mention of the decay of the sound energy for the IF and LF frequencies over distance and under varying atmospheric conditions (wind, temperature, humidity). We therefore do not know how far and at what intensity the sound in this frequency range will travel, and what impact this could have on the terrestrial mammals. In general the documents do not highlight how little is currently known about the impact of wind turbines on large mammal sociology and ecology and how this may affect the quality of the natural resource base upon which areas such as Kwandwe Private Game Reserve depend.

h) The BAR and specialist study (Appendix L: Socio-economic impact) make no mention of, and thus give no recognition to the Biodiversity Economy Strategy (2016) of the State, let alone the contribution of Kwandwe Private Game Reserve and the Indalo Association to this strategy. As such the reports have not adequately addressed a key aspect of the regional biodiversity economy and do not provide adequate insight and information to provide decisions on trade-offs.

i) The BAR and specialist studies make only cursory mention of the National Protected Area Expansion Strategy (2016), the current contribution of properties to that strategy and the potential for future contributions to this strategy through connecting to properties if the base line conditions are conducive. Kwandwe Private Game Reserve has potential to link through to the GFRNR and to other areas to the west, but this is less likely to happen if the underlying value of the landscape is placed at risk by the proposed development. As such the reports have not adequately addressed a key aspect of the region to contribute to the NPAES and do not provide adequate insight and information to provide decisions on trade-offs.

j) The BAR and specialist studies do not consider the risks and future opportunity costs of placing and operating of essentially industrial machinery, in a landscape that has considerable potential to contribute to at least three national strategies, i.e., the Biodiversity Economy Strategy, the National Protected Area Expansion Strategy and the Biodiversity Management Plan for Black Rhino.

k) The BAR and specialist studies do not consider the BSP and its contribution to the NPAES. A key recognition in the BSP is that the future of biodiversity conservation and protected areas requires contributions from the private sector as well as the state. Private sector contributions need to be incentivized and not to have the contributions

they make be undermined by developments that reduce the value of the resource base on which their economy depends.

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