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## **RE: AMENDMENT OF ALBANY WIND FARM APPLICATION – AVIFAUNAL**

Ms Evans,

### Introduction

'WildSkies Ecological Services (Pty) Ltd' (WildSkies) previously assessed the avifaunal impacts of the proposed Albany Wind Farm near Grahamstown in the Eastern Cape (WildSkies, 2018; & updated 2020). The avifaunal impact assessment was conducted under contract to 'Coastal & Environmental Services (Pty) Ltd' (CES). The project proponent, 'EDF Renewables (South Africa)' (EDFR) has decided to amend the application to reduce the number of proposed turbines from 66 to 43. WildSkies has been asked to provide a comparison of the avifaunal impacts of the previous versus new proposed layouts.

### Original findings

The original avifaunal impact assessment made the following main findings with respect to avifaunal impacts:

- » *Construction of the facility will result in a certain amount of destruction and removal of natural vegetation which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The required mitigation is to adhere to the sensitivity map contained in this report. This will reduce the significance to LOW NEGATIVE.*
- » *Disturbance of birds is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site. No specific mitigation is required.*

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

## Proposed changes to application

Table 1 below summarises the proposed changes to the application. The most important change is the reduction from 66 to 43 turbines.

Table 1. Summary of proposed changes to the application.

Feature	Change
Number of turbines	Up to 43 (as per the new layout)
Power output per turbine	Up to 6 MW <b>No longer relevant to mention, as per DEFF meeting</b>
Facility output	Up to 297 MW
Turbine hub height	Up to 130 m
Turbine rotor diameter	Up to 170 m
Turbine blade length	Up to 85 m
Turbine tip height	Up to 215 m
Turbine platform area	3 900 m <sup>2</sup>
Turbine road width	14 m to be rehabilitated to 8 m

The turbine coordinates are shown in Appendix 1.

## Effect of proposed changes on original findings

### Proposed change to facility rotor swept area

The turbine model remains unchanged with a rotor diameter of up to 170m. The rotor swept area of each turbine is therefore 22 698.01m<sup>2</sup>. The rotor swept area for the full wind farm was previously then 1 498 068.60m<sup>2</sup> (66 x 22 698.01m<sup>2</sup>). The new proposed wind farm will have a rotor swept area of 976 014.43m<sup>2</sup> (43 x 22 698.01m<sup>2</sup>). This represents a reduction in rotor swept area of approximately 35%. Simplistically speaking, and assuming that all turbine positions present an equal collision risk, this means that the wind farm could pose 35% less collision risk to birds. This is a very positive change.

### Changes to foundation & hard stand specifications

The area of habitat or ground surface destroyed by the foundations and hard stands per turbine under the original authorisation remains unchanged. However at a wind farm level a reduction in the total habitat destruction of approximately 35% can be expected.

### Changes to proposed facility layout & comparative sensitivity mapping

Due to the reduction from 66 to 43 turbines a change in the layout of the facility is necessary. Figure 1 shows the original layout and Figure 2 shows the new layout. The new proposed layout avoids all avifaunal sensitive areas identified previously.

Figure 3 shows turbines only (both original & current proposed) in order to more clearly demonstrate the difference between the original 66 turbine layout and the new 43 turbine layout. Pink icons show the new proposed positions and black icons show the original positions. It is clear that a number of turbines in the far north-west have been dropped, as well as in the centre of the site. A number of turbines have also moved slightly. A summary of the changes is presented in Appendix 1.

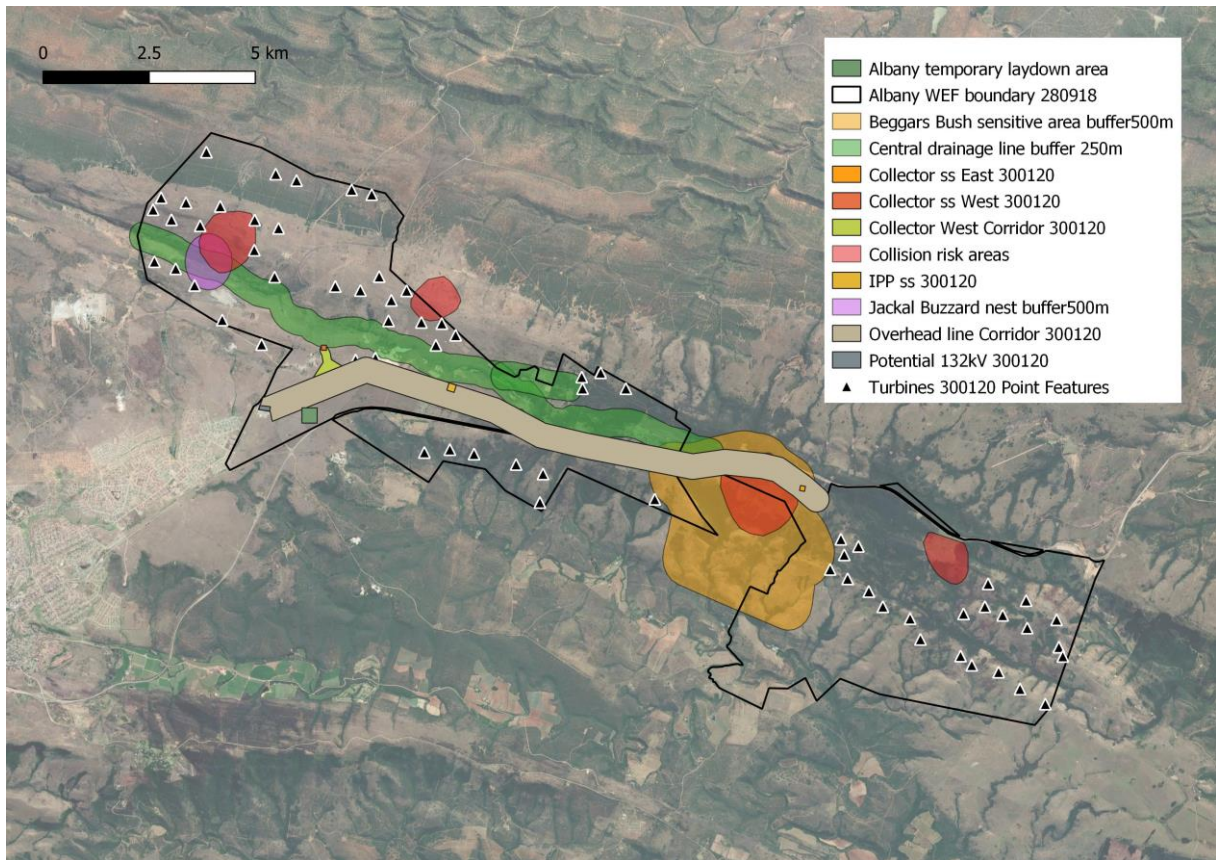


Figure 1. The original proposed layout with avifaunal sensitivity mapping.

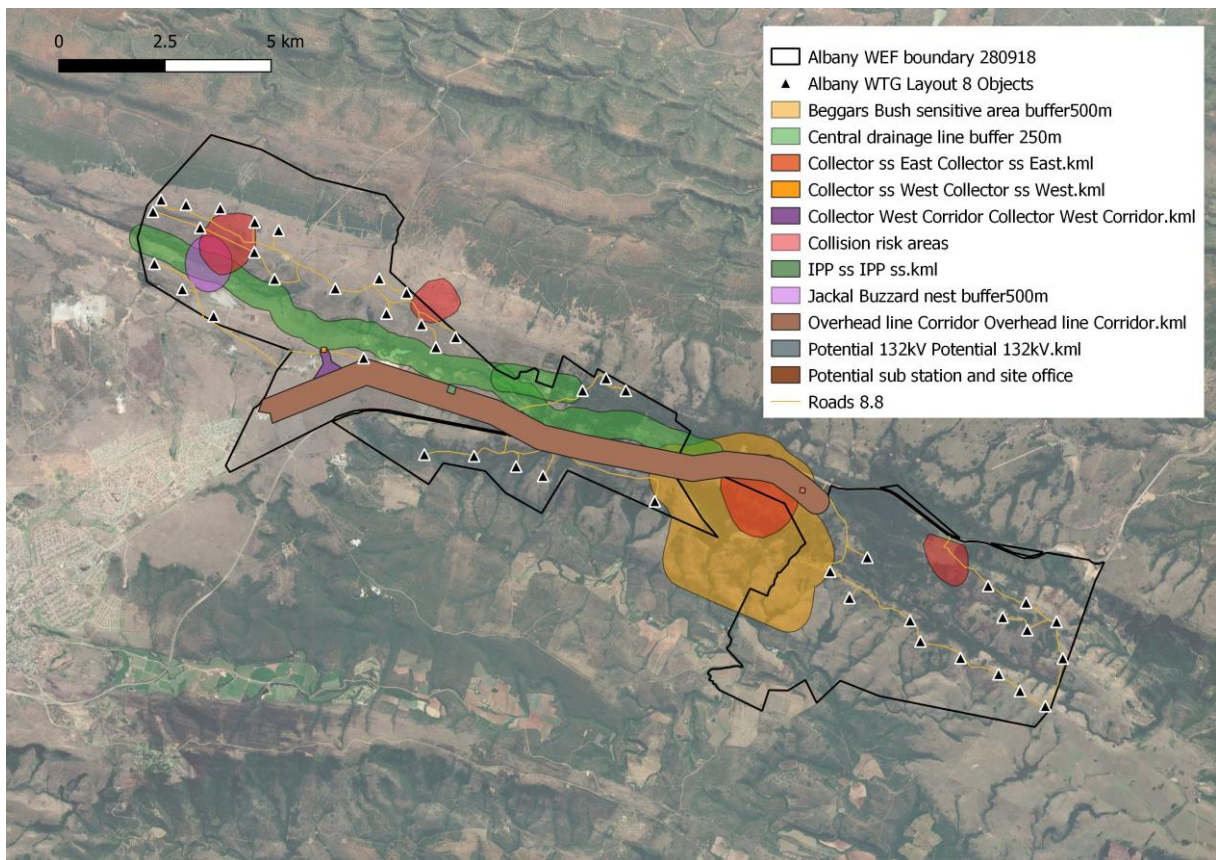


Figure 2. The new proposed layout with avifaunal sensitivity mapping.

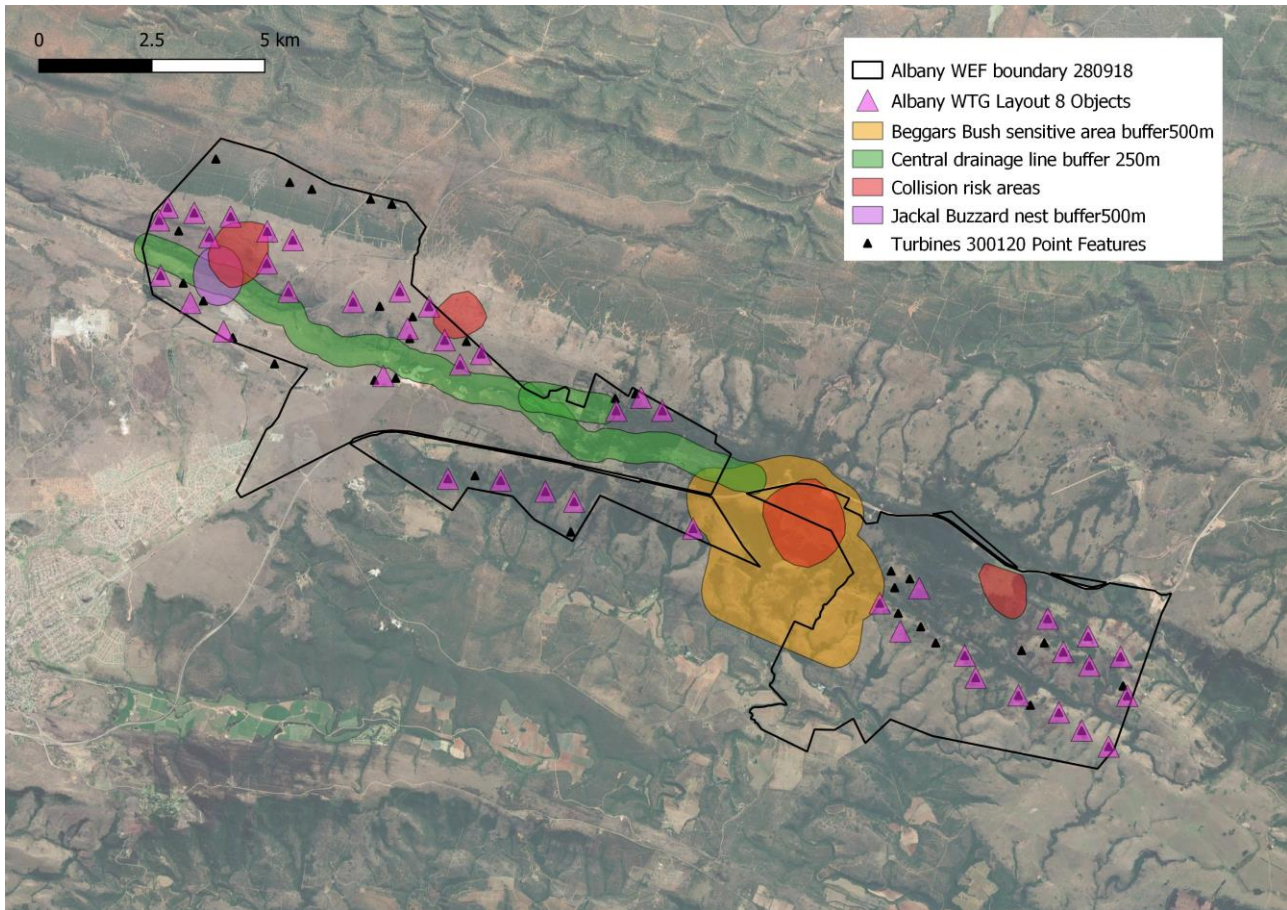


Figure 3. The two turbine layouts together.

### Consideration of other new information

In addition to the proposed project changes, we consulted the following information to determine that no significant changes had taken place subsequent to the original assessment:

- » Land use on site. No significant changes have taken place.
- » Bird species conservation status. No significant changes have taken place.
- » Best practice guideline updates or new species specific guidelines. None applicable.
- » Review of lessons learnt at operational wind farms (Ralston-Paton et al, 2017). This work was used in the original avifaunal assessment.

There has been no relevant significant change to any of the above since the original assessment.

## Conclusion & Recommendations

Although the reduction in turbine numbers is substantial, in our view there will not be a reduction in the significance ratings of the avifaunal impacts. These ratings are categorical and the change is not sufficient to warrant dropping the significance from Moderate to Low for example. The impacts and their ratings are summarised below in Table 2.

Table 2. Summary of changes to avifaunal impact significance ratings.

<b>Impact</b>	<b>Original finding</b>	<b>New finding</b>
Habitat destruction	Moderate negative, reduced to Low negative by mitigation	Unchanged
Disturbance of birds	Low negative	Unchanged
Displacement of birds	Low negative	Unchanged
Collision of birds with turbines	Moderate negative reduced to Low negative by mitigation	Unchanged
Collision & electrocution of birds on overhead power line	High negative reduced to Low negative by mitigation	Unchanged

## References

WildSkies Ecological Services. 2020. Albany Wind Energy Facility: Avifaunal Impact Assessment. Unpublished report submitted to Coastal & Environmental Services.

Ralston-Paton, S., Smallie, J., Pearson, A., & Ramalho, R. 2017. Wind energy's impacts on birds in South Africa: a preliminary review of the results of operational monitoring at the first wind farms of the Renewable Energy Independent Power Producer Procurement Programme Wind Farms in South Africa. In preparation.

## Appendix 1. Summary of turbine coordinates.

Turbine	Coordinate	Coordinate
WTG 01	33°14'09.82" S	26°34'06.03" E
WTG 02	33°14'13.02" S	26°34'25.00" E
<del>WTG 03</del>	<del>33°14'23.84" S</del>	<del>26°34'13.93" E</del>
WTG 04	33°14'15.29" S	26°34'51.10" E
WTG 05	33°14'27.71" S	26°34'35.82" E
WTG 06	33°14'24.29" S	26°35'17.78" E
WTG 07	33°14'43.27" S	26°35'17.05" E
<del>WTG 08</del>	<del>33°15'40.86" S</del>	<del>26°35'24.13" E</del>
WTG 09	33°15'00.37" S	26°35'32.41" E
WTG 10	33°15'06.39" S	26°36'18.77" E
WTG 11	33°14'28.98" S	26°35'35.76" E
<del>WTG 12</del>	<del>33°15'39.71" S</del>	<del>26°36'58.43" E</del>
WTG 13	33°15'00.08" S	26°36'52.25" E
<del>WTG 14</del>	<del>33°15'15.22" S</del>	<del>26°37'01.49" E</del>
<del>WTG 15</del>	<del>33°15'28.32" S</del>	<del>26°36'59.13" E</del>
WTG 15	33°15'22.35" S	26°36'57.79" E
WTG 16	33°15'48.73" S	26°37'30.37" E
WTG 17	33°15'29.29" S	26°37'24.39" E
<del>WTG 18</del>	<del>33°15'30.01" S</del>	<del>26°37'39.95" E</del>
WTG 19	33°15'43.94" S	26°37'35.45" E
WTG 20	33°15'37.74" S	26°37'50.44" E
<del>WTG 21</del>	<del>33°15'51.99" S</del>	<del>26°36'49.38" E</del>
WTG 21	33°15'50.69" S	26°36'40.41" E
<del>WTG 22</del>	<del>33°15'56.66" S</del>	<del>26°36'34.03" E</del>
WTG 23	33°16'53.30" S	26°38'04.42" E
WTG 24	33°16'52.17" S	26°37'26.69" E
<del>WTG 25</del>	<del>33°16'50.37" S</del>	<del>26°37'46.12" E</del>
WTG 26	33°17'00.14" S	26°38'34.84" E
WTG 27	33°17'05.76" S	26°38'56.88" E
<del>WTG 28</del>	<del>33°17'23.88" S</del>	<del>26°38'54.93" E</del>
WTG 29	33°16'12.86" S	26°39'26.89" E
<del>WTG 30</del>	<del>33°16'04.12" S</del>	<del>26°39'26.58" E</del>
<del>WTG 31</del>	<del>33°16'01.52" S</del>	<del>26°39'40.29" E</del>
WTG 31	33°16'03.70" S	26°39'45.12" E
WTG 32	33°16'11.49" S	26°40'00.25" E
WTG 35	33°17'21.99" S	26°40'22.31" E
<del>WTG 40</del>	<del>33°17'44.29" S</del>	<del>26°42'43.89" E</del>
WTG 41	33°18'06.70" S	26°42'35.98" E
<del>WTG 42</del>	<del>33°18'12.69" S</del>	<del>26°42'49.25" E</del>
<del>WTG 43</del>	<del>33°17'57.67" S</del>	<del>26°42'46.54" E</del>
<del>WTG 44</del>	<del>33°17'49.50" S</del>	<del>26°42'58.81" E</del>
WTG 44	33°17'57.82" S	26°43'04.30" E
<del>WTG 46</del>	<del>33°18'20.62" S</del>	<del>26°43'05.67" E</del>
WTG 46	33°18'23.62" S	26°42'50.71" E



<b>WTG 47</b>	<b><del>33°18'30.41" S</del></b>	<b><del>26°43'16.42" E</del></b>
WTG 50	33°18'38.06" S	26°43'36.88" E
WTG 51	33°18'51.26" S	26°43'44.74" E
WTG 52	33°19'01.82" S	26°44'15.48" E
<b>WTG 53</b>	<b><del>33°18'35.06" S</del></b>	<b><del>26°44'17.37" E</del></b>
WTG 55	33°18'15.61" S	26°44'36.26" E
<b>WTG 56</b>	<b><del>33°18'30.47" S</del></b>	<b><del>26°44'33.91" E</del></b>
<b>WTG 57</b>	<b><del>33°19'07.17" S</del></b>	<b><del>26°44'26.88" E</del></b>
WTG 58	33°18'36.32" S	26°44'47.82" E
WTG 59	33°18'26.21" S	26°45'05.18" E
WTG 60	33°18'43.89" S	26°45'06.04" E
WTG 61	33°19'12.12" S	26°44'44.32" E
WTG 62	33°19'22.91" S	26°45'00.65" E
WTG 63	33°18'39.09" S	26°45'29.19" E
<b>WTG 64</b>	<b><del>33°17'33.20" S</del></b>	<b><del>26°42'26.21" E</del></b>
WTG 65	33°19'01.52" S	26°45'32.96" E
WTG 66	33°17'15.25" S	26°41'49.15" E
WTG 67	33°14'50.57" S	26°34'00.93" E
<del>WTG 68</del>	<del>33°14'55.08" S</del>	<del>26°34'17.15" E</del>
<b>WTG 68</b>	<b>33°15'06.91" S</b>	<b>26°34'22.18" E</b>
<b>WTG 69</b>	<b><del>33°15'05.72" S</del></b>	<b><del>26°34'31.56" E</del></b>
WTG 70	33°14'17.45" S	26°33'59.87" E
<del>WTG 71</del>	<del>33°15'27.76" S</del>	<del>26°34'52.62" E</del>
<b>WTG 71</b>	<b>33°15'24.00" S</b>	<b>26°34'46.04" E</b>
<b>WTG 72</b>	<b><del>33°13'40.74" S</del></b>	<b><del>26°34'40.51" E</del></b>
<b>WTG 73</b>	<b><del>33°13'54.73" S</del></b>	<b><del>26°35'33.40" E</del></b>
<b>WTG 74</b>	<b><del>33°13'59.12" S</del></b>	<b><del>26°35'49.14" E</del></b>
<b>WTG 75</b>	<b><del>33°14'04.96" S</del></b>	<b><del>26°36'31.10" E</del></b>
<b>WTG 76</b>	<b><del>33°14'07.95" S</del></b>	<b><del>26°36'46.69" E</del></b>
TURBINES REMAINING IN ORIGINAL POSITIONS	1, 2, 4, 5, 6, 7, 9, 10, 11, 13, 16, 17, 19, 20, 23, 24, 26, 27, 29, 32, 35, 41, 50, 51, 52, 55, 58, 59, 60, 61, 62, 63, 65, 66, 67, 70	= 36 TURBINES
<b>TURBINES RELOCATED</b>	<b>15, 21, 31, 44, 46, 68, 71</b>	<b>= 7 TURBINES</b>
<b>TURBINES REMOVED/KILLED</b>	<b>3, 8, 12, 14, 18, 22, 25, 28, 30, 40, 42, 43, 47, 53, 56, 57, 64, 69, 72, 73, 74, 75, 76</b>	<b>= 23 TURBINES</b>