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For attention:

16 November 2021

Jo-Anne Thomas
Director
Savannah Environmental

Dear Jo-Anne

PART 2 AMENDMENT FOR KORANA SOLAR ENERGY FACILITY GRID CONNECTION: AVIFAUNA

1. BACKGROUND

South Africa Mainstream Renewable Power Developments (Pty) Ltd (the applicant) is looking to undertake an amendment to the Environmental Authorisation (EA) for the Korana Solar Energy Facility (SEF) Grid Connection. Alternative 1B has been authorised within the Grid EA. The applicant would like to amend the grid connection for alternative 1A to be the preferred alternative for the grid routing (see Figure 1 below). The Alternative 1A grid routing will be the same routing authorised for the Korana WEF Grid to the 400kV Khai-Ma collector substation. **These alternatives have already been assessed in the SEF and Grid impact assessments that were undertaken in 2014/2015.** In order to amend the alternatives, a Part 2 Amendment process is required.

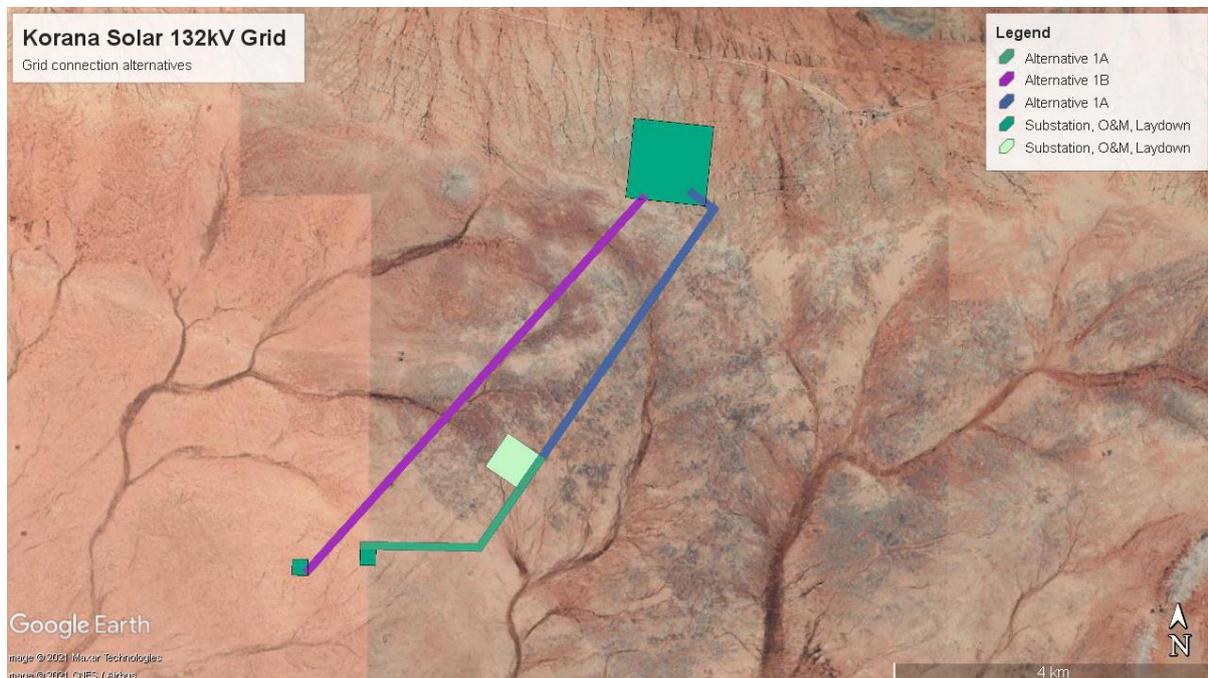


Figure 1: The assessed grid alternatives for the Korana Solar Energy Facility. Alternative 1B is the currently approved alternative.

2. ASSESSMENT OF THE PROPOSED GRID CONNECTION

The proposed infrastructure and routing represent a relatively small subset of the infrastructure that was previously assessed (see Chris van Rooyen Consulting November 2014. Bird Impact Assessment: Korana Solar Energy Facility, Pofadder, Northern Cape. Unpublished report to Savannah Environmental). No additional fieldwork was therefore necessary for this assessment, as the fieldwork included these sections. The impact ratings for the Alternatives 1A and 1B were as follows¹:

Nature: Bird collisions, particularly priority species, with the proposed grid connection: Option 1A		
	Without mitigation	With mitigation
Extent	Low (5)	Low (5)
Duration	Long-term (4)	Long-term (4)
Magnitude	Moderate (6)	Low (4)
Probability	Highly Probable (4)	Probable (3)
Significance	(5+4+6) x 4 = 60 (Medium/high)	(5+4+4) x 3= 39 (Medium)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but not entirely	
Mitigation:		
<p>The proposed transmission line for evacuation of the electricity generated by the solar energy facility should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, 5 metres apart, alternating black and white. See APPENDIX A for the type of BFD which is recommended.</p>		
Cumulative impacts: Site specific		
<p>The difficulties associated with the quantification of cumulative impacts at a study area level have already been explained above. The risks that power lines pose to avifauna, and specifically to Ludwig's Bustards, is well researched (Shaw 2013). These power lines will increase the already high collision risk to the species that power lines pose throughout its range. Evidence of Ludwig's Bustard collision mortality was recorded under the existing Aggeneys – Aries 400kV line. No quantification of this impact for the study area has been undertaken, but it can be assumed that it is a regular occurrence (Shaw 2013) and was confirmed by a landowner. The key question therefore is to what extent powerline collisions will contribute to this existing and potentially significant mortality factor. All in all, it is envisaged that collisions of priority species particularly, Ludwig's Bustard, with the 132kV grid connection will have a medium/high cumulative impact at study area scale. If the recommendations in this report are implemented, it is envisaged that the</p>		

¹ In the report 1A was labelled alternative 1 and 1B was labelled Alternative 2.

cumulative impact of this mortality factor could be reduced, but will remain at a medium level in the study area.

Cumulative impacts: Regional

The cumulative collision impact of several new sub-transmission lines associated with the renewable energy facilities within a 100km radius around Pofadder will probably be at a medium level, specifically for Ludwig's Bustard. There are already several hundred kilometres of high voltage lines in this area, to which these lines will now be added, assuming all these facilities are constructed. However, it should be borne in mind that the grid connections are relatively short compared to the existing high voltage lines. Mitigation of these impacts through the marking of earthwires will further reduce the collision impact.

Residual Impacts: It is envisaged that mitigation will reduce but not entirely eliminate collision mortality.

Nature: Bird collisions, particularly priority species, with the proposed grid connection: Option 1B

	Without mitigation	With mitigation
Extent	Low (5)	Low (5)
Duration	Long-term (4)	Long-term (4)
Magnitude	High (8)	Moderate (6)
Probability	Highly Probable (4)	Probable (3)
Significance	(5+4+8) x 4 = 68 (High)	(5+4+6) x 3= 45 (Medium)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes, but not entirely	

Mitigation:

The proposed transmission line for evacuation of the electricity generated by the solar energy facility should be marked with Bird Flight Diverters (BFDs) for its entire length on the earth wire of the line, 5 metres apart, alternating black and white. See **APPENDIX D** for the type of BFD which is recommended.

Cumulative impacts: Site specific

The difficulties associated with the quantification of cumulative impacts at a study area level have already been explained above. The risks that power lines pose to avifauna, and specifically to Ludwig's Bustards, is well researched (Shaw 2013). These power lines will increase the already high collision risk to the species that power lines pose throughout its range. Evidence of Ludwig's Bustard collision mortality was recorded under the existing Aggeneys – Aries 400kV line. No quantification of this impact for the study area has been undertaken, but it can be assumed that it is a regular occurrence (Shaw 2013) and was confirmed by a landowner. The key question therefore is to what extent powerline collisions will contribute

to this existing and potentially significant mortality factor. All in all, it is envisaged that collisions of priority species particularly Ludwig's Bustard, with the 132kV grid connection will have a high cumulative impact at study area scale. If the recommendations in this report are implemented, it is envisaged that the cumulative impact of this mortality factor could be reduced, but will remain at a medium level in the study area.

Cumulative impacts: Regional

The cumulative collision impact of several new sub-transmission lines associated with the renewable energy facilities within a 100km radius around Pofadder will probably be at a medium level, specifically for Ludwig's Bustard. There are already several hundred kilometres of high voltage lines in this area, to which these lines will now be added, assuming all these facilities are constructed. However, it should be borne in mind that the grid connections are relatively short compared to the existing high voltage lines. Mitigation of these impacts through the marking of earthwires will further reduce the collision impact.

Residual Impacts: It is envisaged that mitigation will reduce but not entirely eliminate collision mortality.

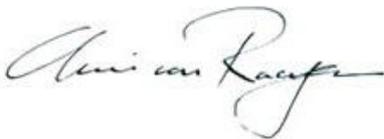
3. CONCLUSIONS AND RECOMMENDATIONS

I considered the proposed amendment to the powerline routing, and my findings are as follows:

- The construction and operation of the Alternative 1A will not change the nature or significance of any of the impacts previously assessed in any significant manner.
- The construction and operation of the proposed Alternative 1A is not likely to result in any additional impacts that were not previously assessed.
- No additional management outcomes or mitigation measures in terms of avifaunal impacts would be applicable to the proposed Alternative 1A.

It is therefore recommended that the amendment is authorised from an avifaunal perspective. It should be noted that Alternative 1A was also the preferred alternative from an avifaunal perspective in the original specialist report, because Alternative 1B was deemed riskier due to its location close to a water point which increases the risk of collisions.

Sincerely



Signed:

Name: Chris van Rooyen

Position: Director/ Avifaunal Specialist