

25 May 2023

**Attention:**  
**SAVANNAH ENVIRONMENTAL (Pty) Ltd**  
Jo-Anne Thomas: joanne@savannahsa.com

**To whom it may concern:**

**AVIFAUNA SPECIALIST INPUT FOR THE PART 2 AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION (EA) FOR THE PROPOSED ESTABLISHMENT OF THE KAROSHOEK GRID INTEGRATION INFRASTRUCTURE i.e. ON-SITE SUBSTATION/SWITCHING YARD AND 400KV POWERLINE FROM SITE 1.4, 3, 4, AND 5 TO THE FEATURE ESKOM MTS 400KV POWER LINE PROPOSED TO THE WEST OF THE SITE, AS PART OF THE LARGER KAROSHOEK SOLAR VALLEY DEVELOPMENT, 30KM EAST OF UPINGTON, WITHIN THE KHARA HAIS LOCAL MUNICIPALITY IN THE NORTHERN CAPE PROVINCE.**

**Background**

FG Emvelo (Pty) Ltd is proposing to amend the Environmental Authorisation (EA) for the Karoshoek Grid Connection, as part of the Karoshoek Solar Valley Development Project, by extending the EA validity by an additional ten (10) years. Extension of the validity of the EA will ensure that the EA remains valid for the undertaking of the authorised activities.

Savannah Environmental have been appointed as the Registered Environmental Assessment Practitioner (EAP) to prepare the Application. The EA Amendment will be completed in terms of Regulation 30(1)(a) of the Environmental Impact Assessment (EIA) Regulations, 2014, as amended, including additional specialist studies and public participation required by the DFFE. Condition 6 of the First Issue Environmental Authorisation, Issued on 20 March 2013, DEA Reference 14/12/16/3/3/2/288 states that:

*“This activity must commence within a period of three (3) years from the date of issue. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.”*

Consequent amendments to extend the validity of the authorisation have been made as follows:

- 14/12/16/3/3/2/288/AM1 – authorised on 11 November 2015 extending validity to 20 March 2018
- 14/12/16/3/3/2/288/AM2 – authorised on 11 April 2018 extending the validity to 20 March 2023

The applicant, FG Emvelo (Pty) Ltd thus requests that the Competent Authority amends condition 6 of the EA as amended (DFFE Reference 14/12/16/3/3/2/288/AM2; dated 11 April 2018) as follows:

**From:** “This activity must commence within a period of three (3) years from the date of issue”

**To:** “This activity must commence within a period of twenty (20) years from the date of issue”

It should be noted that the EA for the project has not been lying dormant for 10 years. All specialists undertook a re-assessment of the potential environmental impacts associated with the PV1 area of the project in 2020.

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The Biodiversity Company was appointed to provide specialist inputs for this Amendment Application. This report is a component of the Ecological Assessment and the Scope of Work for this report is as follows:

- Confirmation of the status of the environment compared to that at the time of the original assessment was done at a desktop level only, and no site visit was conducted.
- An indication as to whether the impact rating as provided in the initial assessment remains valid; if the mitigation measures provided in the initial assessment are still applicable; or if there are any new mitigation measures which need to be included into the EA, should the request to extend the commencement period be granted by the Department.
- An indication as to whether there are any new assessments/guidelines which are now relevant to the authorised development which were not undertaken as part of the initial assessment, must be taken into consideration and addressed in the report.
- A description and an assessment of any changes to the biophysical environment that has occurred since the initial EA was issued.
- A description and an assessment of the surrounding environment, in relation to new developments or changes in land use which might impact on the authorised project, the assessment must consider the following:
  - Similar developments within a 30km radius; and
  - Identified cumulative impacts, and where possible the size of the identified impact must be quantified and indicated, i.e., hectares of cumulatively transformed land.

### **Assumptions and Limitations**

A field survey was not conducted as part of this assessment and the assessment was conducted at a desktop level only. Nevertheless, based on the previous reports and satellite imagery where it is apparent that little has changed in the area since the last field assessment, there is a high level of confidence in the understanding of the present ecological condition.

### **Results and Outcomes**

- 1 The following assessments were considered for this report:
  - 1.1. Simon Todd Consulting. 2012. Proposed Karoshoek Solar Valley Development. Fauna & Flora Specialist Report.
  - 1.2. Savannah Environmental. 2012. Environmental Impact Assessment Process Final Environmental Impact Report. Proposed Establishment of the Karoshoek Grid Integration Infrastructure, As Part of The Larger Karoshoek Solar Valley Development, Northern Cape Province.
  - 1.3. 3Foxes Biodiversity Solutions. 2020. Basic Assessment for the Ilanga PV Solar 1 Facility and Associated Infrastructure, Upington, Northern Cape. Avifauna Specialist BA Report.
  - 1.4. Savannah Environmental. 2020. Upilanga PV1. Final Basic Assessment Report.
- 2 Avifauna:
  - 2.1. Six (6) IUCN listed species are expected to occur in the area, all of which are susceptible to some degree, to either or both electrocution or collision from power line infrastructure. The following SCC are listed: *Neotis ludwigii* (endangered), *Falco biarmicus* (near threatened),

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*Ardeotis kori* (near threatened), *Polemaetus bellicosus* (endangered), *Spizocorys sclateri* (near threatened) and *Sagittarius serpentarius* (endangered).

2.2. The screening tool assigned the following species a high sensitivity rating: *Neotis ludwigii*, *Aquila verreauxii* and *Falco biarmicus*. This indicates that these species are known to occur in the area.

2.3. Due to the relatively long length of power line infrastructure required for this project, the potential for negative impacts is high.

2.4. Major impacts on avifauna are most likely to occur during the operational phase and without mitigation these will operate on a long term basis.

3 Impact Risk Factors from the Grid Integration Infrastructure Report included the following:

3.1. Construction Phase:

- Vegetation clearing for roads, etc. could impact listed plant species as well as high-biodiversity plant communities. Vegetation clearing will also lead to habitat loss for fauna and potentially the loss of sensitive faunal species, habitats and ecosystems.
- High erosion risk may result due to the loss of plant cover and soil disturbance created during the construction phase. This may impact downstream riparian and wetland habitats if a lot of silt enters the drainage systems. Although the effects would probably only become apparent during the operational phase, the impact stems from the construction phase and suitable mitigation measures will also need to be applied at this stage.
- Presence and operation of construction machinery on site. This will create a physical impact as well as generate noise, pollution and other forms of disturbance at the site.
- Increased human presence can lead to poaching, illegal plant harvesting and other forms of disturbance such as fire.
- Loss of connectivity & habitat fragmentation may result due to the presence of the generation infrastructure, roads, site fencing and other support infrastructure of the development.

3.2. Operational Phase:

- Maintenance activities such as vegetation clearing will impact the biodiversity of the site if not conducted in a sensitive manner.
- Persistent avifaunal impacts would potentially result from the presence of power transmission infrastructure at the site.

4 The Avifauna Impact Assessment from the Grid Integration Infrastructure Report included the following:

4.1. Avifaunal Impacts

Direct and indirect impacts of the development on avifauna would result from habitat loss, as well as from the risk of electrocution and collisions with transmission lines. Larger species, such as eagles, flamingos, cranes and bustards, many of which are listed, are particularly vulnerable to impacts from transmission infrastructure. Transmission line-related impacts may account for large proportion of mortalities in vulnerable species. Unless mitigation measures are implemented, the significance of this impact is potentially very high on account of the fact that the risk would be persistent and would remain for as long the transmission infrastructure is in place.

	Without mitigation	With mitigation
<b>Extent</b>	Regional (3)	Local (1)
<b>Duration</b>	Long term (5)	Short term (2)
<b>Magnitude</b>	Medium-high (7)	Low (2)
<b>Probability</b>	Highly probable (4)	Probable (3)
<b>Significance</b>	<b>High (60)</b>	<b>Very Low (15)</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	
<b>Irreplaceable loss of resources?</b>	Yes	
<b>Can impacts be mitigated?</b>	To a large extent	

**Mitigation:**

- *Ensure that all new lines are marked with bird flight diverters along their entire length, but particularly in areas where larger birds are likely to pass, such as near drainage lines, dams or pans and hills. If the new lines were to run parallel to existing unmarked lines this would potentially create a net benefit as this could reduce the collision risk used by the older line.*
- *All new power line infrastructure should be bird-friendly in configuration and adequately insulated. These activities should be supervised by someone with experience in this field.*
- *Any electrocution and collision events that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented.*

**Cumulative Impacts:**

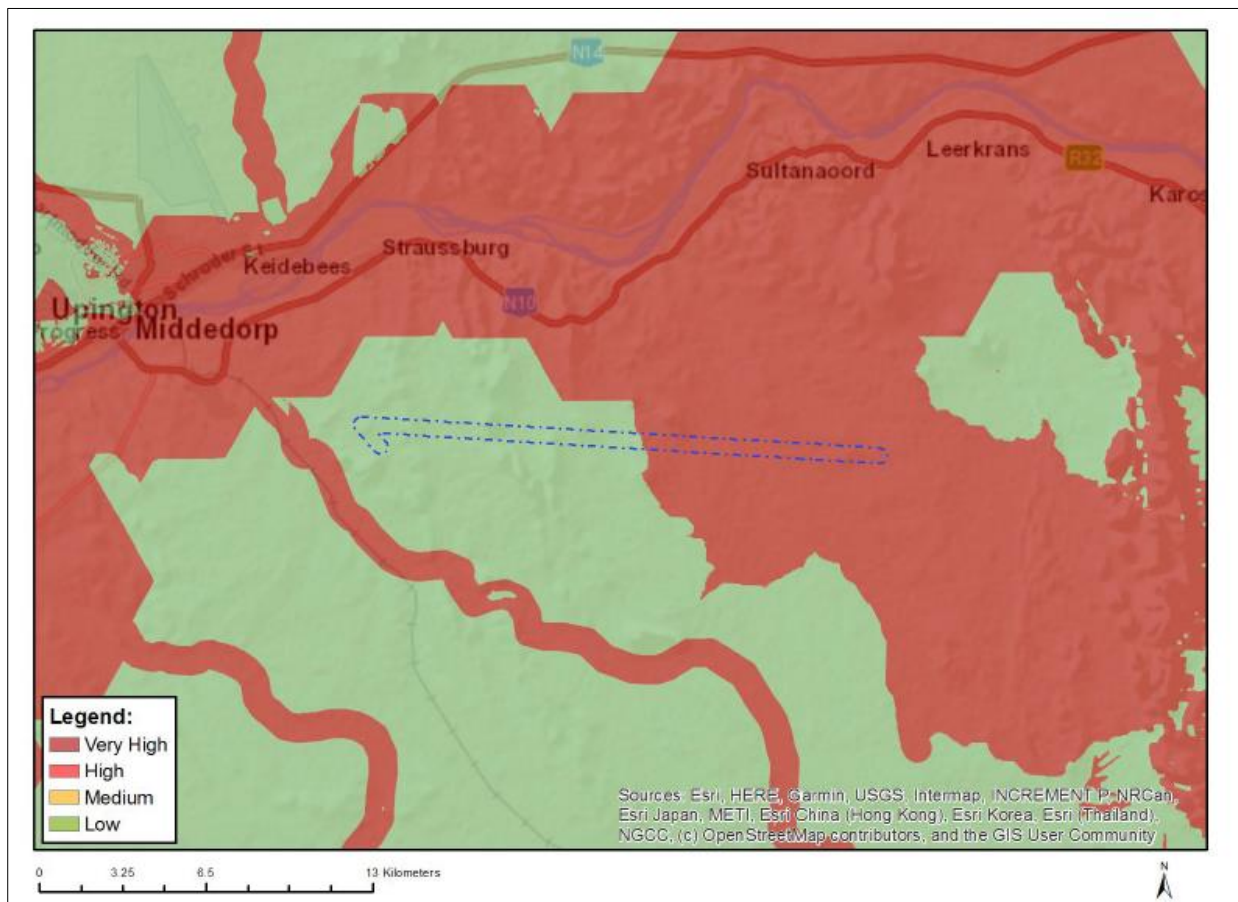
- *The development would contribute to cumulative avifaunal impacts in the area resulting from electrocution and collisions.*

**Residual Impacts:**

- *Despite mitigation actions, some birds are still likely to be killed on an occasional basis..*

5 Site sensitivity for the Karoshoek Grid Integration is as follows:

- 5.1. The Project Area was identified with the Environmental Screening Tool as possessing a Very High sensitivity within a Terrestrial Biodiversity Theme. This is due to overlap with Critical Biodiversity Areas and FEPA subcatchments.



*Figure indicating the Relative Terrestrial Biodiversity Theme Sensitivity as identified by the Environmental Screening Tool*

- 5.2. Since the time of release of the Final Environmental Impact Assessment Report for the Karooshoek Grid Integration (Savannah, 2012), the Northern Cape Department of Environment and Conservation released the Northern Cape Critical Biodiversity Areas dataset (NCDENC, 2016). According to this dataset, the site overlaps with a Critical Biodiversity Area 1 and a Critical Biodiversity Area 2. It is important that these limitations are considered going forward.

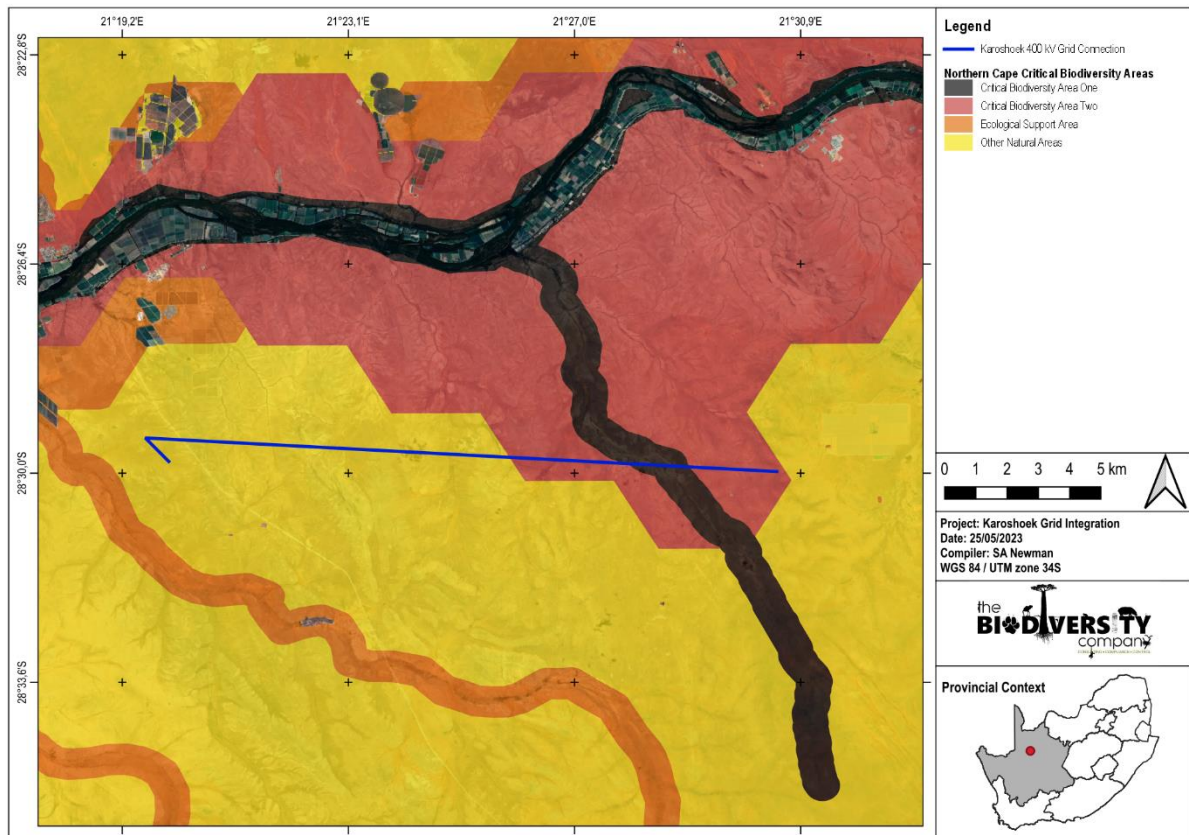


Figure illustrating the site relative to the Northern Cape Critical Biodiversity Areas dataset (2016)

- 5.3. It can be noted from both the Fauna & Flora Specialist Impact Assessment Report (Simon Todd Consulting, 2012) and the Environmental Impact Assessment Process Final Environmental Impact Report for the Karoshoek Grid Integration (Savannah, 2012) that the site overlaps high and very high sensitivity areas, most of which are within the drainage lines. Provided that the management measures are correctly implemented, the linear infrastructure will have moderate to low significance and can be mitigated to acceptable levels.

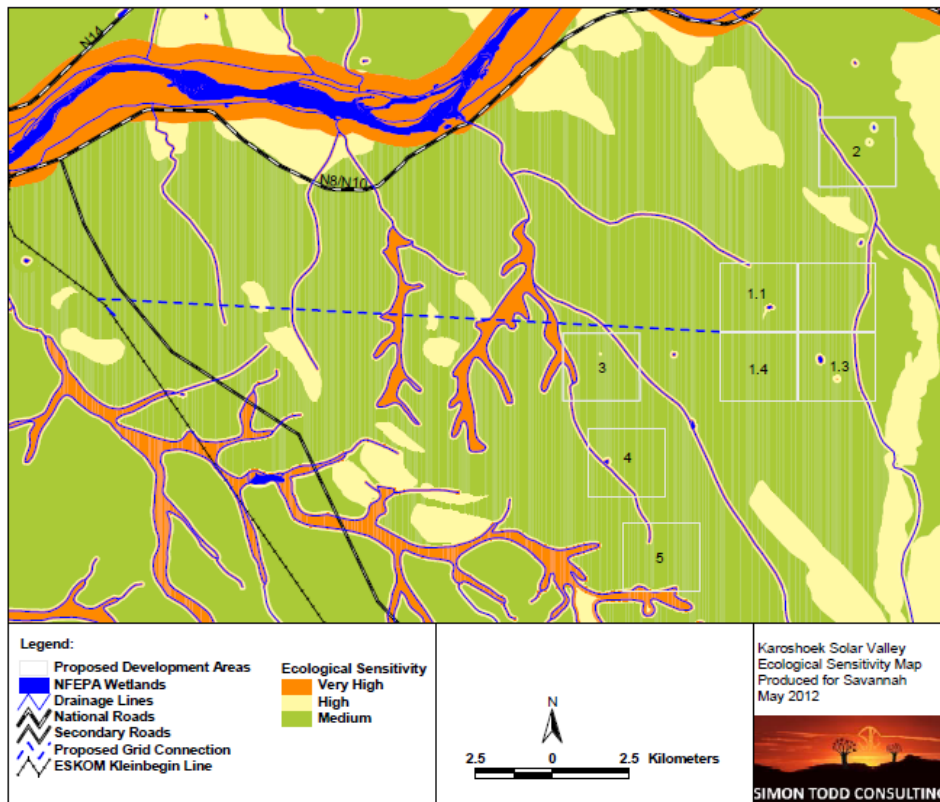
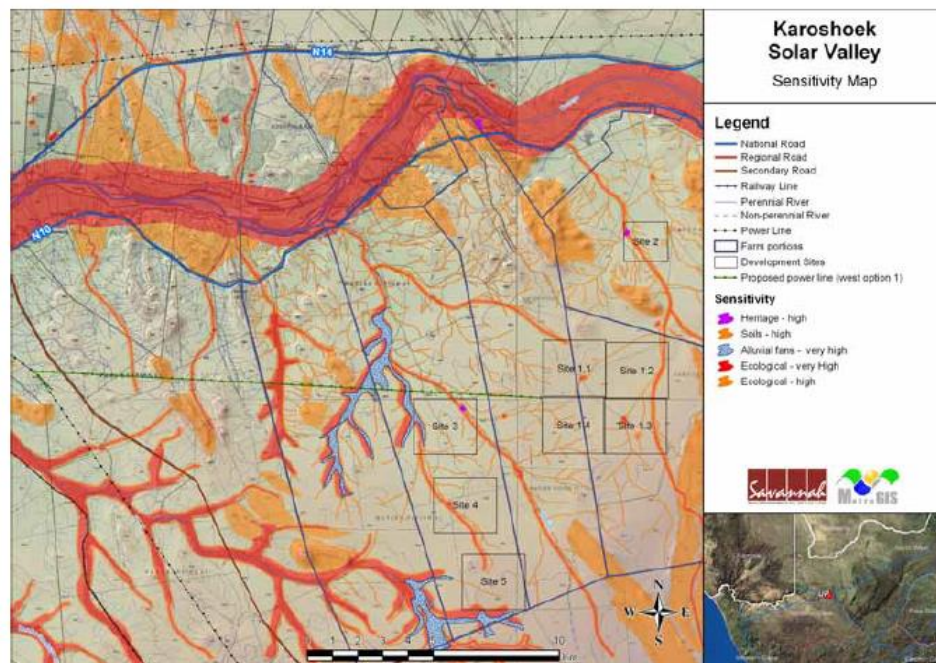


Figure taken from the Fauna & Flora Specialist Impact Assessment Report (Simon Todd Consulting, 2012)



Sensitivity Map taken from the Environmental Impact Assessment Process Final Environmental Impact Report (Savannah, 2012)

- 6 Mitigation measures prescribed by each of the reviewed specialist reports remain applicable and must be strictly adhered to.
- 7 All prescribed mitigation measures and supporting recommendations presented will help to achieve an acceptable residual impact. These measures and recommendations will remain applicable for the requested extension of the EA. To this end, these measures have been included in the updated EMPr for this development as per the requirements of the Environmental Authorisation.
- 8 In order to manage the impacts effectively, the following additional mitigation management should be put into place for the general impacts associated with avifauna:

**Management Outcome: Habitats**

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
All development areas must be clearly demarcated. No development is to occur in areas possessing 'Very High' SEI wherever practicable. Only the 'High' SEI areas that have been authorised for development should be intruded into. Pylons may only be considered in "Very High SEI" areas where it is not feasible to span the area entirely. In such instances the minimum possible number of pylons with the smallest possible footprint must be utilised and the disturbance footprint must be strictly controlled. A service track (jeep track) is permissible in Very High SEI areas only to the extent required to establish and maintain the powerline, and only if no other access options are available in areas of lower sensitivity.	Life of operation	Project Manager	Infringement into these areas	Ongoing
Areas of indigenous vegetation outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.	Life of operation	Project Manager	Natural Areas (Karoo scrub, Rocky outcrops and Riparian thicket)	Ongoing
All activities must make use of existing roads and tracks as far as practically and feasibly possible.	Life of operation	Project Manager	Roads and paths used	Ongoing
All laydown areas, chemical toilets etc. should be restricted to existing transformed areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. Use of re-usable/recyclable materials are recommended.	Construction	Project Manager Foreman	Laydown areas and material storage & placement.	Ongoing
Progressive rehabilitation of areas that have been cleared of invasive plants will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion.	Life of operation	Project Manager	Site footprint rehabilitation	Ongoing
Areas that have been disturbed but will not undergo development must be revegetated with indigenous vegetation.	Life of operation	Project Manager	Rehabilitated areas	Ongoing



<b>A spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.</b>	Life of operation	Project Manager Contractors Foreman	Spill events, Vehicles dripping.	Ongoing
<b>Eroded areas must be rehabilitated using the appropriate techniques and re-vegetated using indigenous flora.</b>	Life of operation	Project Manager Contractor	Erosion area	Annually
<b>Management Outcome: Avifauna</b>				
<b>Impact Management Actions</b>	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
<b>A qualified ecologist or suitably experienced Environmental Officer must be on site when construction begins to identify avifauna species that will be directly disturbed. The area must be walked though prior to construction to ensure no avifaunal species remain in the habitat and get killed. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated.</b>	Construction	Project Manager Contractor	Presence of any fauna	Ongoing
<b>Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances nocturnal avifauna.</b>	Construction	Project Manager Contractor Foreman	Noise levels	Ongoing
<b>No trapping, killing, or poisoning of any avifauna is to be allowed</b>	Life of operation	Project Manager Contractor	Evidence of trapping or carcasses	Ongoing
<b>The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on avifauna</b>	Construction Phase	Project Manager Contractor	Construction	Ongoing
<b>The design of the grid lines must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa (Jenkins <i>et al.</i>, 2015).</b>	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of electrocuted birds or bird strikes	During Phase
<b>Infrastructure should be consolidated where possible in order to minimise the amount of ground and air space used.</b>	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of bird collisions	During phase
<b>Powerlines must be fitted with industry standard bird flight diverters in order to make the lines as visible as possible to collision-susceptible species. Shaw <i>et al</i> (2021) demonstrated that large avifauna species mortality was reduced by 51% (95% CI: 23–68%). Recommended bird diverters such as flapping devices (dynamic device) and thickened wire spirals (static device) that increase the visibility of the lines should be fitted 5 m apart. The Inotec BFD88 bird diverter is highly recommended due to its visibility under low light conditions when most species move from roosting to feeding sites.</b>	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of bird collisions	During phase
<b>All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution.</b>	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of electrocuted birds	During phase

Install anti-perch devices such as spikes to prevent Pied Crows from nesting/perching. This is especially important to impede excessive predation on <i>Psammobates</i> sp.	Planning and construction	Environmental Officer & Contractor, Engineer	Over predation of tortoise	During phase
Any exposed parts must be covered (insulated) to reduce electrocution risk	Planning and construction	Environmental Officer & Contractor, Engineer	Presence of electrocuted birds	During phase

**Management Outcome: Environmental Awareness Training**

Impact Management Actions	Implementation		Monitoring	
	Phase	Responsible Party	Aspect	Frequency
All personnel to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff of the presence of species, their identification, conservation status and importance, biology, habitat requirements and management requirements within the Environmental Authorisation and the EMPr.	Life of operation	Project Manager Health and Safety Officer Contractor Environmental Officer	Compliance to the training.	As needed

- 9 The proposed grid integration is not expected to result in an increase in impacts or their associated severities since approval of the EA. Disadvantages include an increased risk of collisions with powerlines, as identified in the specialist studies.
- 10 All prescribed mitigation measures and supporting recommendations presented here will help to achieve an acceptable residual impact. These measures and recommendations will remain applicable for the requested extension of the EA. To this end, these measures have been included in the Generic EMPr's for this development as per the requirements of the Environmental Authorisation
- 11 It is the opinion of the specialist, based on the desktop assessment, that the ecological importance of the site has not decreased considerably. In consideration that the Karoshoek Grid Integration has been previously authorised the proposed development may proceed, under the condition that all mitigation measures provided in this report and previous reports are strictly adhered to.
- 12 We trust you find the above in order. If there are any uncertainties or additional information required, please feel free to contact the undersigned.

Kind regards



Andrew Husted  
Project Manager  
The Biodiversity Company



Sarah Newman  
Environmental Consultant  
The Biodiversity Company

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## ENVIRONMENTAL IMPACT METHOD

The impact significance rating methodology, as provided by Nala, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended).

Direct, indirect and cumulative impacts associated with the projects must be assessed in terms of the following criteria:

- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

$$S = (E+D+M) P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

**Example of Impact table summarising the significance of impacts (with and without mitigation)**

Nature: [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	Without mitigation	With mitigation
Extent	High (3)	Low (1)
Duration	Medium-term (3)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind		
Residual Impacts: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).		