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5 April 2023

**Attention:**

**SAVANNAH ENVIRONMENTAL (Pty) Ltd**

Michael Morreira: Michael@savannahsa.com

**To whom it may concern:**

**ECOLOGICAL SPECIALIST INPUT FOR THE PART 1 AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION (EA) FOR THE PROPOSED CONSTRUCTION OF THE 55.5 MW SPRINGBOK WIND ENERGY FACILITY (WEF) ON THE FARM O'NABABEEP, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE.**

**Background**

Mulilo Renewable Projects Developments (Pty) Ltd (Mulilo) is proposing to amend the Environmental Authorisation (EA) for the Springbok Wind Energy Facility, by extending the EA validity by an additional five (5) 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 1.7 of the First Issue Environmental Authorisation, Issued on the 27th of July 2011, DEA Reference 12/12/20/1721 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:

- 12/12/20/1721 – authorised on the 27 June 2014 extending the validity to the 27th of June 2016.
- 12/12/20/1721/AM3 – authorised on the 18 May 2016 extending the validity to the 27th of July 2018.
- 12/12/20/1721/AM6 – authorised on the 3 August 2018 extending the validity to the 27th of July 2021.
- The most recent 12/12/20/1721/AM8 – 28 June 2021 extending the validity to the 27th of January 2023 which states the following:

*“This activity must commence within a period of eleven (11) years and six (6) months from the date of issue of the authorisation (i.e. the EA lapses on 27 January 2023). 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.”*

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The applicant, Mulilo Renewable Projects Developments (Pty) Ltd thus requests that the Competent Authority amends Condition 1.7 of the original EA (Page 4) as amended (DFFE Reference: 12/12/20/1721/1/AM8; dated 28 June 2021) as follows:

*“This activity must commence within a period of sixteen (16) years and six (6) months from the date of issue of the authorisation (i.e., the EA lapses on 27 January 2028). 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.”*

It should be noted that the EA for the project has not been lying dormant for 11 years. All specialists undertook a re-assessment of the potential environmental impacts associated with the project in 2014/2015, and again in 2017/2018, as part of the "Part 2" Application for amendment of the EA processes, the latter which was granted by the Department on 25 June 2018.

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:

- A single site visit to confirm the status of the environment compared to that at the time of the original assessment. This is required in order to make a statement as to whether the environment has changed since the original assessment supported by a site verification report.
- 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**

The field survey for this assessment was undertaken during April 2023 which constitutes a late dry-season survey. Accordingly, flora and fauna that are not active during this period will not be recorded and therefore may influence the results. Nevertheless, based on the previous reports and considering the structure of the habitats and dominant flora species, 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. DJ Environmental Consultants. 2010. Environmental Impact Report for a proposed wind farm in Springbok.
- 1.2. Nick Helme Botanical Surveys. 2010. Addendum to the Specialist Impact Assessment for Proposed Springbok Wind Energy Facility, Northern Cape: Vegetation Component.
- 1.3. Mouton, P.le F N. 2010. Wind Farm Project at Springbok, Northern Cape – Specialist Report on Reptiles
- 1.4. Jacobs, D. 2010. Assessment of the Impacts on Bats of Proposed Wind Energy Facility Development by Mulilo Renewable Energy.

### 2 Vegetation:

- 2.1. Few Species of Conservation Concern (SCC) were encountered during the initial site visit. None of these species were observed during the current, albeit this may be attributed to seasonal affects. However, increased livestock presence within the Project Area may also be a contributing factor. There are currently people who have occupied the farm and using it for pastoral purposes.
- 2.2. The key habitats are large areas of exposed rock, especially those with shallow grit pans either on the dome or along the fringes, shallow soils surrounding granite domes, dense clusters of boulders on steep slopes (especially those on south slopes), and any quartzitic ridges or patches. This is still applicable to the present report.

### 3 Reptiles:

- 3.1. A high diversity of reptile species was expected to occur within the Project Area as indicated in the first assessment. This is attributed to the Succulent Karoo inherently supporting a high diversity of reptiles as well as the varied habitat physiognomy within the Project Area. The present condition of the Project Area is still in congruency with this statement.
- 3.2. Two reptile SCC were expected to occur within the project area. *Chersobius signatus* (Speckled Dwarf Tortoise) and *Lamprophis fiskii* (Fisk's House Snake). The previous assessment had recorded the species within the project area and was still confirmed during the present survey. However, at the time of the initial assessment, the species was listed as Vulnerable, but presently it is listed as Endangered. This denotes that there is an increase in the sensitivity of the site within a herpetofauna context. By limiting the presence of livestock and Pied Crows, it is possible that the Project Area will provide a suitable refuge habitat for this species. Consequently, this will be a positive impact.

4 Chiroptera (Bats):

4.1. The original bat assessment indicated that the Project Area supported limited bat species and there was no – minimal bat activity. *Pipistrellus rusticus* and *Pipistrellus hesperidus* were the only species recorded. Accordingly, impacts to bat species were not considered to be considerable for this project. Although no passive acoustic techniques were utilised for the present survey, rock crevices and overhangs were examined as potential roost sites. No bat species were observed during the field survey.

5 The Impact Assessment from the Vegetation Specialist Study report included the following:

5.1. Impact Assessment

Impact	Rating after mitigation
Permanent loss of vegetation in development footprint	Medium Negative
Long-term but temporary loss of vegetation in development footprint	Medium Negative
Indirect impacts – Habitat fragmentation	Low Negative

5.2. Cumulative impacts were not assessed quantitatively but were regarded as potentially being low.

6 The Impact Assessment from the Fauna (Reptile and Bat) Specialist Study report included the following:

6.1. Impact Assessment

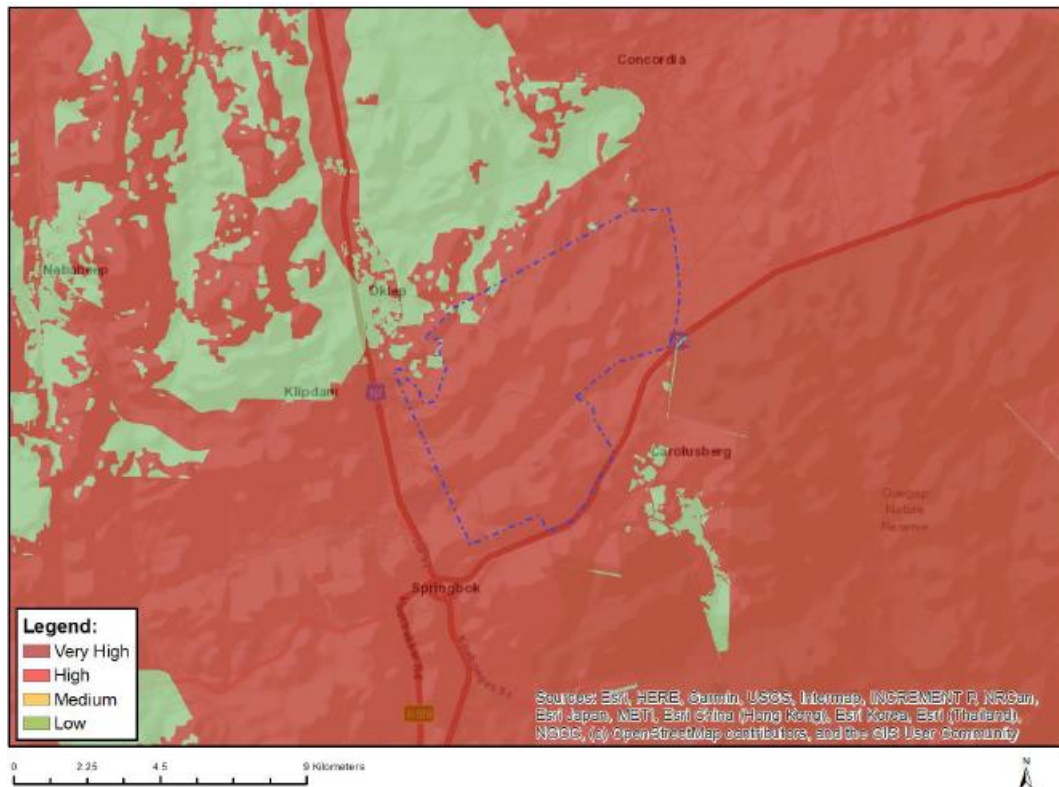
Impact	Rating after mitigation
Direct mortality during construction	Low Negative
Loss of habitat	Low Negative
Increase in roadkill	Low Negative
Barrier effect of internal roads and fencing	Low Negative
Collisions with turbine blades	Low Negative
Barotrauma	Low Negative
Disturbance from noise pollution	Low Negative

6.2. Cumulative impacts were not assessed.

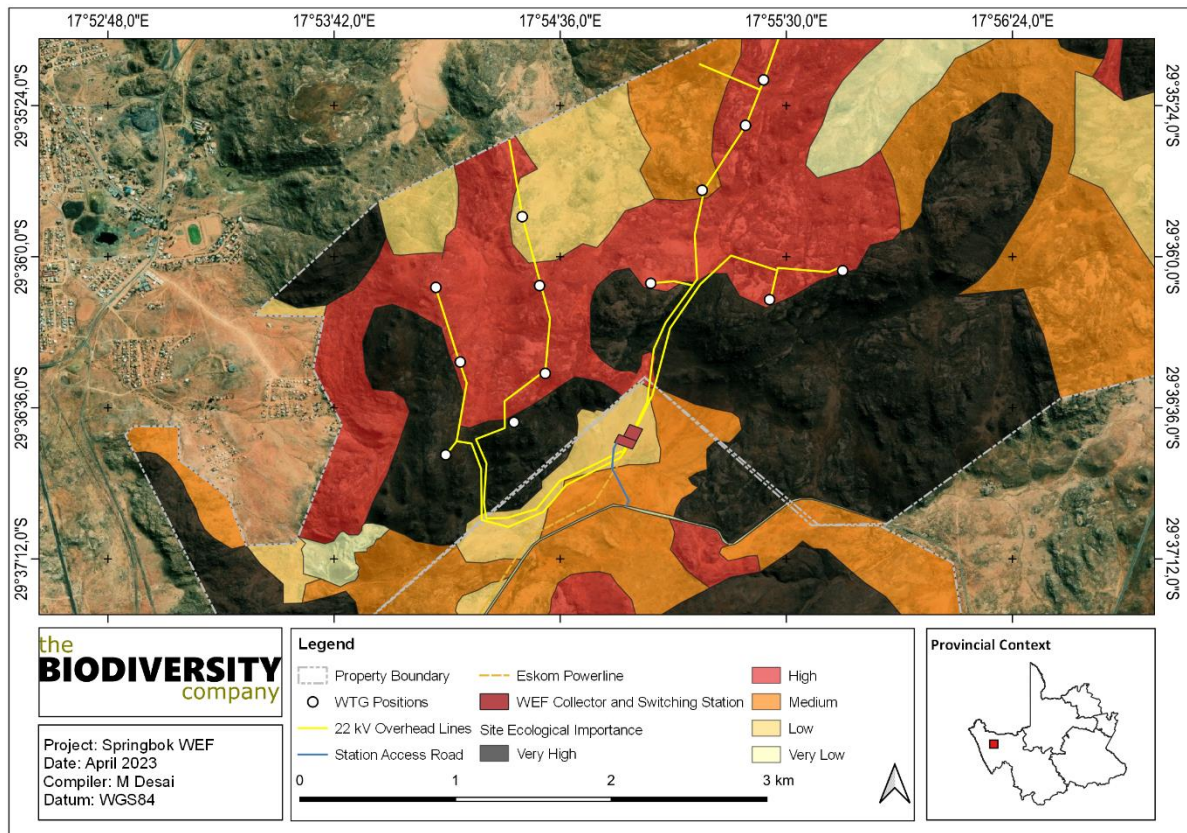
7 The Site Sensitivity Verification (TBC 2022) for the Springbok WEF Part 2 Amendment, does not include an impact assessment and associated tables due to its nature as a Site Sensitivity Verification.

8 The conclusions of the Site Sensitivity Verification for the Springbok WEF is as follows:

- 8.1. 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, Ecological Support Areas and Protected Areas Expansion Strategy Focus Areas.



- 8.2. The Site Ecological Importance (SEI) as provided by the Species Environmental Assessment Guidelines (SANBI, 2020) was determined for the Project Area. This will provide the most appropriate and up to date sensitivity information. A multi-taxon approach was considered for the SEI determination.
- 8.3. The Project Area was a mosaic of Very Low to Very High habitats. Habit congruent with the Screening Tool. The Very High SEI areas were due to the presence of SCC, as well as its Functional Integrity and very low Receptor Resilience.
- 8.4. Based on the layout design, there is overlap of infrastructure with 'High' and 'Very High' SEI areas. Appropriate mitigation measures would be to minimise the footprints of these as much as possible and rehabilitation of degraded areas. The Switching and Collector Stations overlap with 'Low' SEI habitats.



- 9 Mitigation measures prescribed by each of the reviewed specialist reports remain applicable and must be adhered to.
  
- 10 Cumulative impacts were not assessed as part of the initial studies however, they are assessed as part of the Sensitivity Verification Report. Impacts of the proposed layout change in isolation are expected to be low overall and high when considered cumulatively.

<b>Impact Nature: Cumulative habitat loss within the region</b>		
The development of the proposed infrastructure will contribute to cumulative habitat loss and thereby impact the ecological processes in the region.		
	<b>Overall impact of the proposed development considered in isolation</b>	<b>Cumulative impact of the project and other projects in the area</b>
<b>Extent</b>	Very low (1)	High (4)
<b>Duration</b>	Moderate term (3)	Long term (4)
<b>Magnitude</b>	Low (4)	Moderate (6)
<b>Probability</b>	Probable (3)	Definite (5)
<b>Significance</b>	<b>Low</b>	<b>Moderately High</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Moderate	Low
<b>Irreplaceable loss of resources?</b>	No	Yes
<b>Can impacts be mitigated</b>	To some degree, but most of the impacts result from the construction and operation activities of the various facilities that cannot be well mitigated.	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Establish set-aside and offset areas for associated projects.</li> <li>• Development and implementation of Rehabilitation Plans.</li> <li>• Development and implementation of Alien Invasive Plant Control Programmes.</li> </ul>		

11 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.

12 In order to manage the impacts effectively, the following additional mitigation management should be put into place for the general impacts associated with flora and fauna:

Impact Management Actions	Implementation	
	Phase	Responsible Party
<p>Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted to flat areas as far as possible. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. All disturbed footprints to be rehabilitated and landscaped after construction is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to the project area vegetation type.</p> <p>Existing servitudes, access routes, and especially roads must be made use of.</p>	<p>Life of operation</p>	<p>Project manager, Environmental Officer</p>
<p>All laydown, chemical toilets etc. should be restricted to outside of the project area. No materials may not be stored within the project area, and all materials must be removed from the project area once the construction phase has been concluded. No permanent construction structures/formwork should be permitted. No storage of vehicles or equipment will be allowed outside of the designated project areas.</p>	<p>Construction/Operational Phase</p>	<p>Environmental Officer &amp; Design Engineer</p>
<p>Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. All livestock should always be kept out of the project area, especially areas that have been recently re-planted.</p>	<p>Operational phase</p>	<p>Environmental Officer &amp; Contractor</p>
<p>A hydrocarbon 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. No servicing of equipment to take place within the project area unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and placed in containers. Appropriately contain any diesel or oil storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment. Construction activities and vehicles could cause the spillage of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area.</p>	<p>Life of operation</p>	<p>Environmental Officer &amp; Contractor</p>
<p>It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.</p>	<p>Life of operation</p>	<p>Project manager, Environmental Officer</p>
<p>A fire management plan needs to be compiled and implemented to restrict the impact that fire might have on the surrounding areas.</p>	<p>Life of operation</p>	<p>Environmental Officer &amp; Contractor</p>
<p>Any protected plant that may be present needs a relocation or destruction permit for any individual that may be removed or destroyed due to the development. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. All protected and red-list plants should be relocated, along with as many other geophytic species as possible.</p>	<p>Life of operation</p>	<p>Project manager, Environmental Officer</p>



Impact Management Actions	Implementation	
	Phase	Responsible Party
Plant and animal Search and Rescue must be conducted prior to construction. This is especially important for the local population of <i>Chersobius signatus</i> . Species must be relocated to adjacent natural areas.	Planning Phase, Pre-Construction	Project manager, Environmental Officer & Contractor
A qualified environmental control officer must be on site when construction begins. 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. Should any large nests be observed within the project area construction should stop immediately and a qualified specialist must be contacted.	Construction Phase	Environmental Officer, Contractor
The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments: <ul style="list-style-type: none"> <li>Signs must be put up to enforce this.</li> </ul>	Construction/Operational Phase	Project manager, Environmental Officer
The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna.	Construction	Project manager, Environmental Officer & Design Engineer
Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to nocturnal mammals.	Construction/Operational Phase	Environmental Officer
No trapping, killing, or poisoning of any wildlife is to be allowed: <ul style="list-style-type: none"> <li>Signs must be put up to enforce this.</li> </ul>	Life of operation	Environmental Officer
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings, dust and erosion is limited. The speed limits should be restricted to a maximum of 30 km/h within the project area.	Life of operation	Health and Safety Officer
Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.	Construction/Operational Phase	Project manager, Environmental Officer & Design Engineer
Schedule activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons: <ul style="list-style-type: none"> <li>Driving on access roads at night should be restricted in order to reduce or prevent wildlife road mortalities which occur more frequently during this period.</li> </ul>	Life of operation	Project manager, Environmental Officer & Design Engineer
Any holes/deep excavations must be dug and planted in a progressive manner and should not be left open overnight: <ul style="list-style-type: none"> <li>Should the holes remain open overnight they must be covered temporarily to ensure no small fauna species fall in.</li> </ul>	Planning and Construction	Environmental Officer & Contractor, Engineer
Ensure that cables and connections are insulated successfully and adequately to reduce electrocution risk.	Life of project	Environmental Officer & Contractor, Engineer
Compilation of and implementation of an Alien Invasive Plant Management Plan for the project area.	Life of operation	Project manager, Environmental Officer & Contractor

Impact Management Actions	Implementation	
	Phase	Responsible Party
The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. The footprint of the roads must be kept to prescribed widths.	Construction/Operational Phase	Project manager, Environmental Officer & Contractor
Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests from entering the site	Life of operation	Environmental Officer & Health and Safety Officer
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces: <ul style="list-style-type: none"> <li>No non-environmentally friendly suppressants may be used as this could result in the pollution of valuable water sources.</li> </ul>	Life of operation	Contractor
Waste management must be a priority and all waste must be collected and stored effectively.	Life of operation	Environmental Officer & Contractor
Litter, spills, fuels, chemical and human waste in and around the project area must be cleared and safely/appropriately stored immediately.	Construction/Operation/Closure Phase	Environmental Officer & Health and Safety Officer
Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area and provided in the ratio as stipulated in the Health and Safety Act.	Life of operation	Environmental Officer & Health and Safety Officer
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.	Life of operation	Environmental Officer & Health and Safety Officer
Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site or stored in pits.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within and in close proximity to the project area such as the nearby rocky outcrops and to inform contractors and site staff of the presence of red-listed faunal species (such as the Riverine rabbit), their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr. The avoidance and protection of the high sensitivity areas must be included in a site induction. Contractors and employees must all undergo the induction and be made aware of the "no-go" areas to be avoided.	Life of operation	Health and Safety Officer
Speed limits of 30 km/h must be put in place to reduce erosion: <ul style="list-style-type: none"> <li>Dust generated, especially by earth moving machinery, must be minimised through wetting of the soil surface and putting up signs to enforce speed limits. Speed bumps must be built to force slow speeds;</li> <li>Signs must be put up to enforce this.</li> </ul>	Life of operation	Project manager, Environmental Officer
Where possible, existing access routes and walking paths must be made use of.	Life of operation	Project manager, Environmental Officer

Impact Management Actions	Implementation	
	Phase	Responsible Party
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds. This is to be done according to the Re-vegetation and Habitat Rehabilitation Plan.	Life of operation	Project manager, Environmental Officer
The stormwater must be managed as part of the plan for the existing Gamma substation.	Life of operation	Project manager, Environmental Officer

13 It is the opinion of the specialist that based on the observations made during the field survey, that the ecological importance of the site has not decreased considerably, although there is evidence of degradation through livestock. In consideration that the WEF has been previously authorised the proposed development may proceed, under the condition that all mitigation measures provided in this report and previous reports are adhered to.

14 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

Mahomed Desai

Biodiversity Specialist

The Biodiversity Company



## 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	
<p>Mitigation:</p> <p>“Mitigation”, means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.</p> <p>Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind</p>		
<p>Residual Impacts:</p> <p>“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).</p>		

6 April 2023

**Attention:**

**SAVANNAH ENVIRONMENTAL (Pty) Ltd**

Michael Morreira: Michael@savannahsa.com

**SOIL / AGRICULTURAL POTENTIAL SPECIALIST INPUT FOR THE PART 1 AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION (EA) FOR THE PROPOSED CONSTRUCTION OF THE 55.5 MW SPRINGBOK WIND ENERGY FACILITY (WEF) ON THE FARM O’NABABEEP, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE**

**Background**

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  - 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**

No soil or agricultural impact assessment was conducted as part of the initial 2010 Springbok Wind Power Generation Facility environmental assessment. Findings herein only consider the site sensitivity, and where required, provide supporting recommendations and mitigation measures.

### **Results and Outcomes**

The agricultural potential assessment for the proposed project was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations, 2014 (No. 326, 7 April 2017) of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998). The approach has taken cognisance of the recently published Government Notice 320 in terms of NEMA dated 20 March 2020 as well as the Government Notice 1150 in terms of NEMA dated 30 October 2020: "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation". The National Web based Environmental Screening Tool (DEFF, 2023) has characterised the land capability sensitivity of the proposed project area as "Medium".



The soil forms found within the proposed project area include Dundee, Mispah, Glenrosa, Kinkelbos and Bare rock (Figure 1). The project area is dominated by shallow yellow-sandy soils that are underlain by saprolithic horizons and hard rock horizons. Dundee soil form consists of an alluvial material over a hard rock. Mispah soil form consists of an orthic topsoil on top of a hard rock. Glenrosa soil form consists of an orthic topsoil on top of a saprolithic subsoil horizon. Lastly, the Kinkelbos soil form consists of an orthic topsoil on top of an albic subsoil that is underlain by a neocarbonate horizon.

The proposed project area is mainly used for grazing; however, no considerable impacts were observed. The following are the possible environmental impacts expected for the project:

- Soil erosion may result as a potential impact where disturbance occurs during the construction phase;
- Sediment displacement and accumulation may occur nearby water sources throughout the project's lifespan;
- Increase in traffic during the construction phase may also result into sediment displacement and soil compaction along the proposed roads; and
- The removal of vegetation and change in local topography during construction phase may also result into alteration to the surface run-off dynamics.

Mitigation Measures:

- Make use of existing roads or upgrades tracks before new roads are constructed. The number and width of internal access routes must be kept to a minimum;
- A stormwater management plan must be implemented for the development. The plan must provide input into the road network and management measures;
- Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from infrastructure placement can be used for rehabilitation efforts;
- The cleared and stripped areas must be revegetated after the construction phase, to avoid soil erosion; and
- An alien invasive plant species and control programme must be implemented from the onset of the project.

### **Sensitivity Verification**

The baseline findings and the sensitivities as per the Department of Agriculture, Forestry and Fisheries (DAFF, 2017) national raster file concur with one another. The proposed Springbok wind power generation facility is mostly characterised with "Low" to "Moderate" land capability sensitivities. Some small portions in the assessment area falls within "Very Low to Low" sensitivities (see Figure 2). It therefore is the specialist's opinion that the land capability and land potential of the resources in the regulated area is characterised by "Low" to "Moderate" sensitivities.

### **Conclusion**

The dominant soil forms identified within the proposed project area are Mispah and Glenrosa soil forms. The soil forms are characterised with a low agricultural capability and land potential, according to the (DAFF, 2017).

The proposed project area is associated with non-arable lands, due to its soil type and the harsh climatic conditions. Furthermore, the harsh climatic conditions that are associated with high

evapotranspiration potential demands of the area consequently result into a very restricted choice of crops due to the heat and moisture stress. The area is not favourable for most cropping practices, which corresponds to the current livestock activity in the area.

Therefore, the proposed Springbok wind power generation facility will have little to no impact on the agricultural potential of the project area.

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,



Maletsatsi Mohapi

Soil scientist (SSSSA 1092)

maletsatsi@thebiodiversitycompany.com

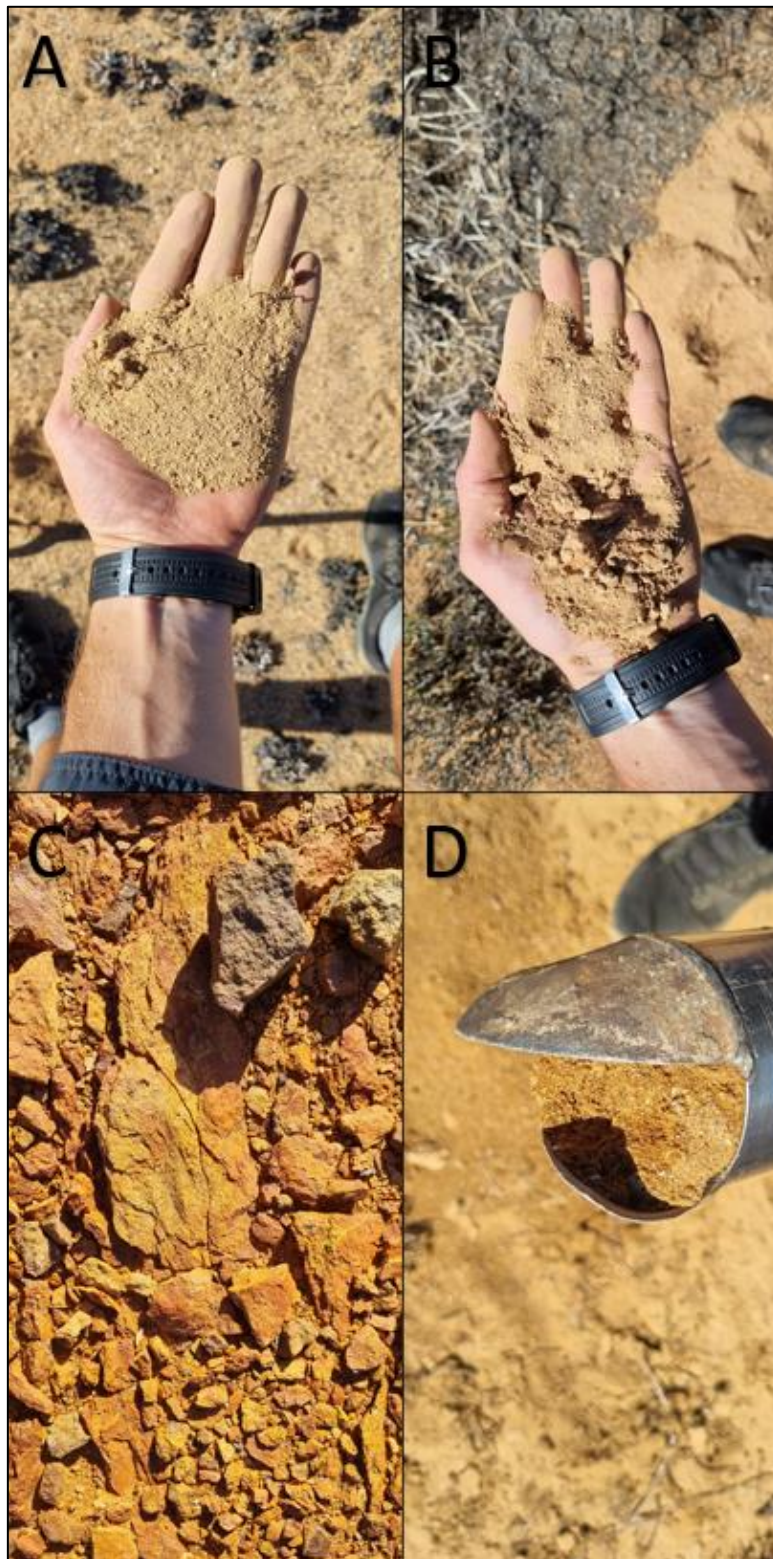
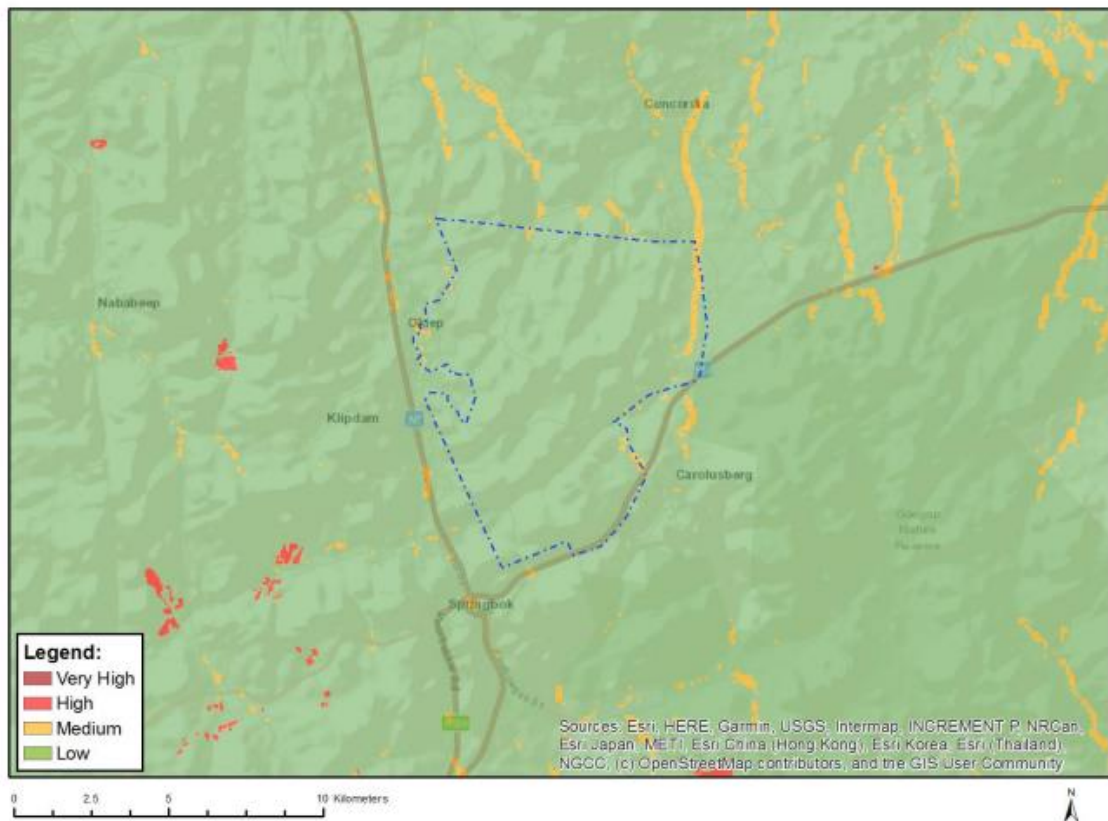


Figure 1. Soils found within the proposed project area; A) Alluvial material on top of a hard rock; B) sandy chromic orthic topsoil that is underlain by saprolithic horizon; C) Bare rock; and D) Neocarbonate horizon with the presence of sporadic carbonates.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

**Sensitivity Features:**

Sensitivity	Feature(s)
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 2. Land Capability Sensitivity (DAFF, 2017)

6 April 2023

AQUATIC SITE SENSITIVITY VERIFICATION

**Savannah Environmental**

Jo-Anne Thomas: joanne@savannahsa.com

**To whom it may concern:**

**ECOLOGICAL SPECIALIST INPUT FOR THE PART 2 AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION (EA) FOR THE PROPOSED CONSTRUCTION OF THE 55.5 MW SPRINGBOK WIND ENERGY FACILITY (WEF) ON THE FARM O'NABABEEP, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE.**

**Background**

Mulilo Renewable Projects Developments (Pty) Ltd (Mulilo) is proposing to amend the Environmental Authorisation (EA) for the Springbok Wind Energy Facility, by extending the EA validity by an additional five (5) years. Extension of the validity of the EA will ensure that the EA remains valid for the undertaking of the authorised activities. The layout of the proposed project is presented in Figure 1.

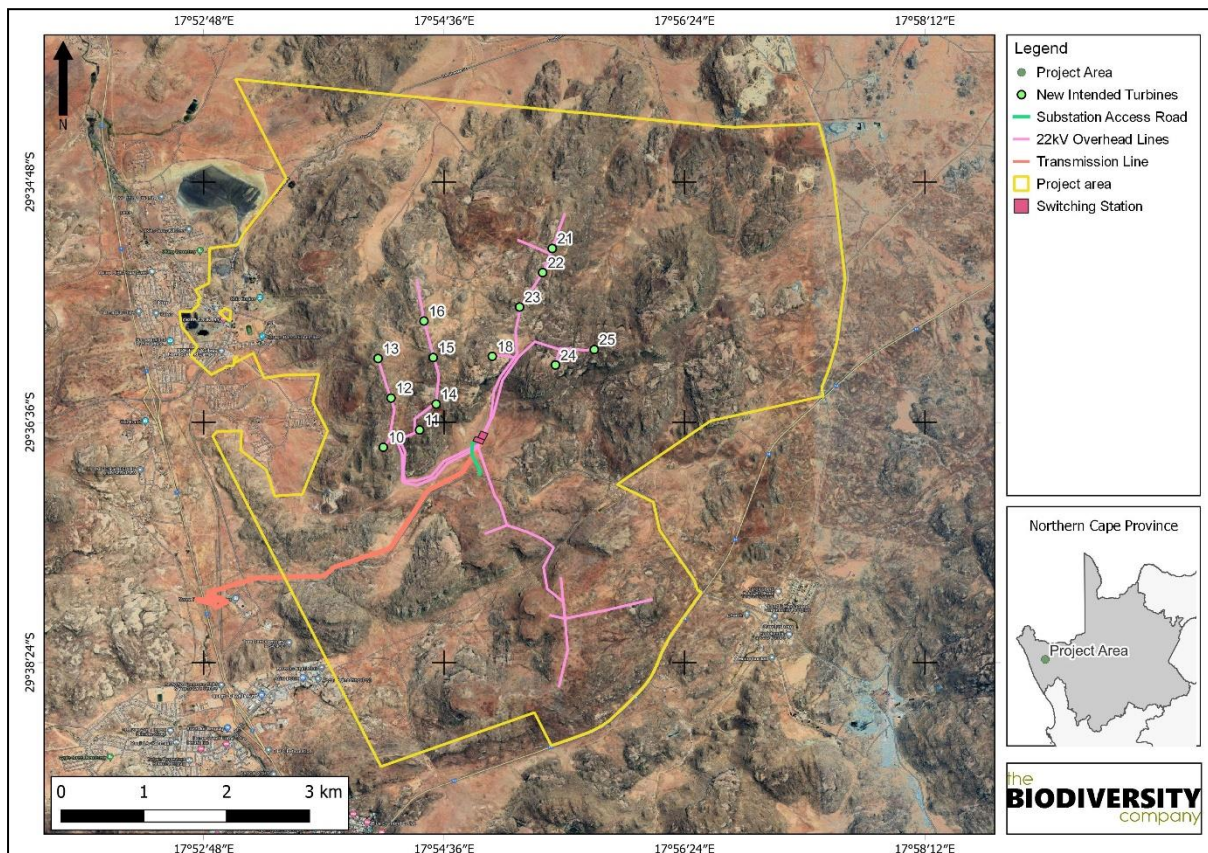


Figure 1: Proposed Updated Layout depicting the current intended position of all wind turbines

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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 1.7 of the First Issue Environmental Authorisation, Issued on the 27th of July 2011, DEA Reference 12/12/20/1721 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:

- 12/12/20/1721 – authorised on the 27 June 2014 extending the validity to the 27th of June 2016.
- 12/12/20/1721/AM3 – authorised on the 18 May 2016 extending the validity to the 27th of July 2018.
- 12/12/20/1721/AM6 – authorised on the 3 August 2018 extending the validity to the 27th of July 2021.
- The most recent 12/12/20/1721/AM8 – 28 June 2021 extending the validity to the 27th of January 2023 which states the following:

*“This activity must commence within a period of eleven (11) years and six (6) months from the date of issue of the authorisation (i.e. the EA lapses on 27 January 2023). 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.”*

The applicant, Mulilo Renewable Projects Developments (Pty) Ltd thus requests that the Competent Authority amends Condition 1.7 of the original EA (Page 4) as amended (DFFE Reference: 12/12/20/1721/1/AM8; dated 28 June 2021) as follows:

*“This activity must commence within a period of sixteen (16) years and six (6) months from the date of issue of the authorisation (i.e., the EA lapses on 27 January 2028). 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.”*

It should be noted that the EA for the project has not been lying dormant for 11 years. All specialists undertook a re-assessment of the potential environmental impacts associated with the project in 2014/2015, and again in 2017/2018, as part of the "Part 2" Application for amendment of the EA processes, the latter which was granted by the Department on 25 June 2018.

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:

- A single site visit to confirm the status of the environment compared to that at the time of the original assessment. This is required in order to make a statement as to whether the environment has changed since the original assessment supported by a site verification report.
- 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**

It is assumed that the client has provided the specialist with all available data and information surrounding the project at the time of writing. The field survey for this assessment was undertaken during March 2023 which constitutes a late dry-season survey. Accordingly, seasonality was not assessed.




### **Results**




- 1 No aquatic ecology assessment was completed as part of the Environmental Impact Assessment (EIA) that was undertaken for the proposed construction of the 55.5 MW Springbok wind energy facility (WEF) on the farm O’Nababeep, Namakwa District Municipality, Northern Cape, and was therefore **not available for review and consideration for this amendment**. Watercourses are only mentioned in the EMPr (DJ Environmental Consultants, 2010) from a mitigation perspective but not assessed.
- 2 The Biodiversity Company (TBC) conducted a site assessment followed by a Sensitivity Verification in March 2023. The site assessments and site verifications undertaken in 2023 by TBC will therefore be used as the most recent source of information for the purposes of this amendment.
- 3 For the site verification the watercourses which may potentially be affected by the proposed activity were assessed. This was done to adequately assess the current state of these systems which was done to gain a holistic image of the system and which habitat may be affected. The selected sampling location and the location of each crossing can be seen in Table 1 as well as Figure 2.




Table 1: Photos and co-ordinates for the sites sampled sites (March 2023)

Site		Photo
S1	Upstream View	
	Downstream View	
GPS		29°37'36.24"S 17°55'23.25"E
S2	Upstream View	









Site	Photo
<p>Downstream View</p>	
GPS	<p>29°38'5.62"S 17°54'9.34"E</p>
<p>S3</p> <p>Upstream View</p>	
<p>Downstream View</p>	
GPS	<p>29°36'49.43"S 17°54'51.81"E</p>




Site	Photo
<p data-bbox="300 566 400 618">Upstream View</p>	
<p data-bbox="213 790 240 813">S4</p> <p data-bbox="300 981 400 1032">Downstream View</p>	
<p data-bbox="300 1238 336 1261">GPS</p>	<p data-bbox="850 1227 991 1272">29°36'51.28"S 17°54'48.91"E</p>
<p data-bbox="213 1473 240 1496">S5</p> <p data-bbox="300 1462 400 1514">Upstream View</p>	




Site	Photo
<p style="text-align: center;"><b>Downstream View</b></p>	
<p style="text-align: center;"><b>GPS</b></p>	<p style="text-align: center;">29°37'42.95"S 17°53'23.50"E</p>
<p style="text-align: center;"><b>Upstream View</b></p>	
<p style="text-align: center;"><b>Downstream View</b></p>	
<p style="text-align: center;"><b>GPS</b></p>	<p style="text-align: center;">29°37'44.11"S 17°53'35.07"E</p>




S6

Site		Photo
S7	Upstream View	
	Downstream View	
GPS		29°37'43.53"S 17°53'41.44"E
S8	Upstream View	




Site	Photo
<p>Downstream View</p>	
GPS	<p>29°37'38.40"S 17°53'52.95"E</p>
<p>S9</p> <p>Upstream View</p>	
<p>Downstream View</p>	
GPS	<p>29°37'6.79"S 17°54'28.59"E</p>



Site	Photo
<p data-bbox="300 566 400 618">Upstream View</p>	
<p data-bbox="209 790 248 813">S10</p> <p data-bbox="300 981 400 1032">Downstream View</p>	
<p data-bbox="300 1238 339 1261">GPS</p>	<p data-bbox="850 1223 986 1245">29°37'2.49"S</p> <p data-bbox="850 1249 986 1272">17°54'33.03"E</p>
<p data-bbox="209 1473 248 1496">S11</p> <p data-bbox="300 1462 400 1514">Upstream View</p>	

	Site	Photo
	Downstream View	
GPS		29°37'2.54"S 17°54'19.64"E
	Upstream View	
S12	Downstream View	
GPS		29°36'55.31"S 17°54'54.17"E

Site		Photo
S13	Upstream View	
	Downstream View	
GPS		29°37'23.12"S 17°55'7.79"E
S14	Upstream View	



Site	Photo
<p style="text-align: center;"><b>Downstream View</b></p>	
<p style="text-align: center;"><b>GPS</b></p>	<p style="text-align: center;">29°36'31.87"S 17°54'57.48"E</p>
<p style="text-align: center;"><b>Upstream View</b></p>	
<p style="text-align: center;"><b>Downstream View</b></p>	
<p style="text-align: center;"><b>GPS</b></p>	<p style="text-align: center;">29°36'24.17"S 17°54'8.46"E</p>

Site	Photo
<p>Upstream View</p>	
<p>S16</p> <p>Downstream View</p>	
<p>GPS</p>	<p>29°37'57.15"S          17°52'45.95"E</p>

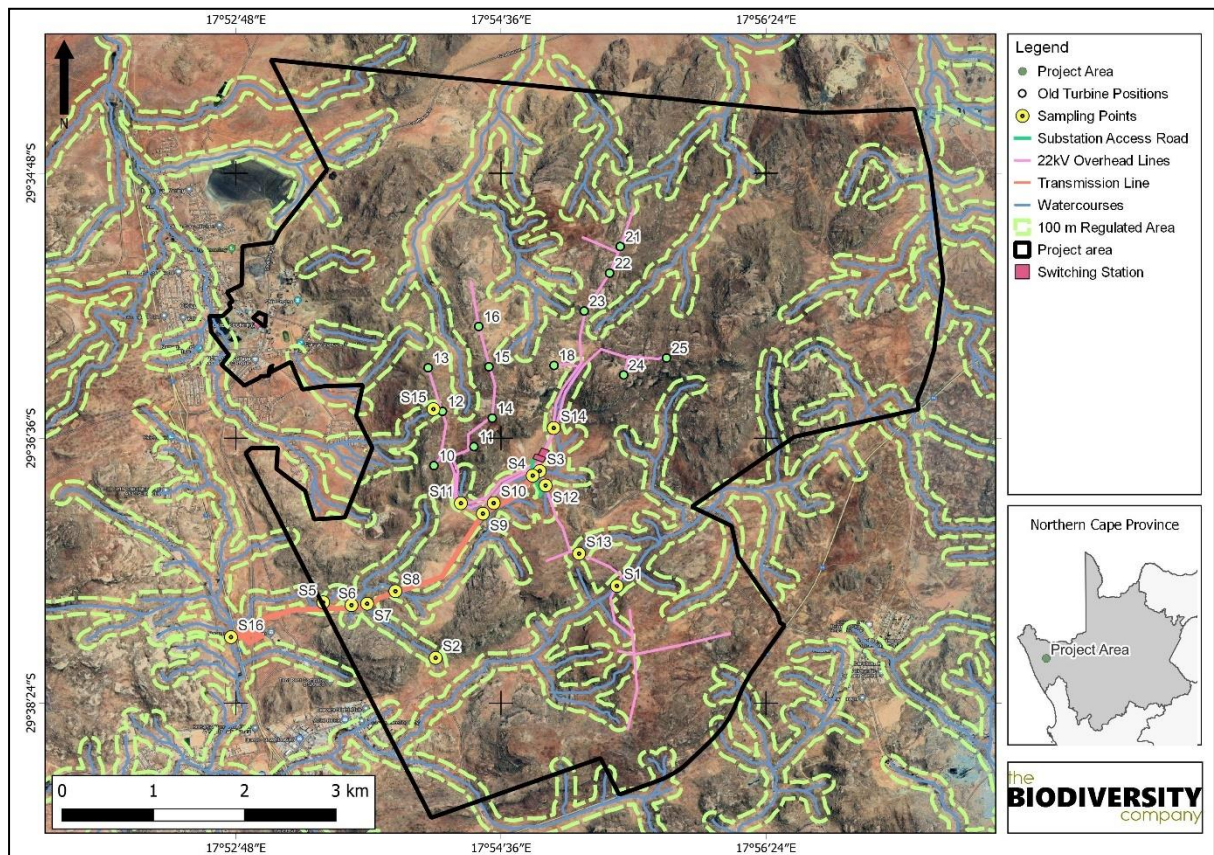


Figure 2: Selected sampling sites for the assessment

- 4 Due to the ephemeral nature of the watercourses in the project area, it is believed that no assessments were conducted. This was the conditions experienced at the time of survey (March 2023) and therefore with the lotic systems contained insufficient water depth or flow, multiple intended methods could not be applied and therefore the focus of this report was habitat preservation. This was not considered in the initial assessment and considered pertinent.
- 5 Based on conditions observed in the field and satellite imagery, riparian areas were delineated in order to identify all sensitive areas considered relevant to the aquatic habitat of the project area. This is presented below in Figure 3. Based on recommendations from Norman, 1996, Peterjohn & Correl, 1984, Blanché, 2002 and Palone & Todd, 1997, a 50 m buffer was assigned to these regions as a 'No Go' area for all associated infrastructure of the proposed project.

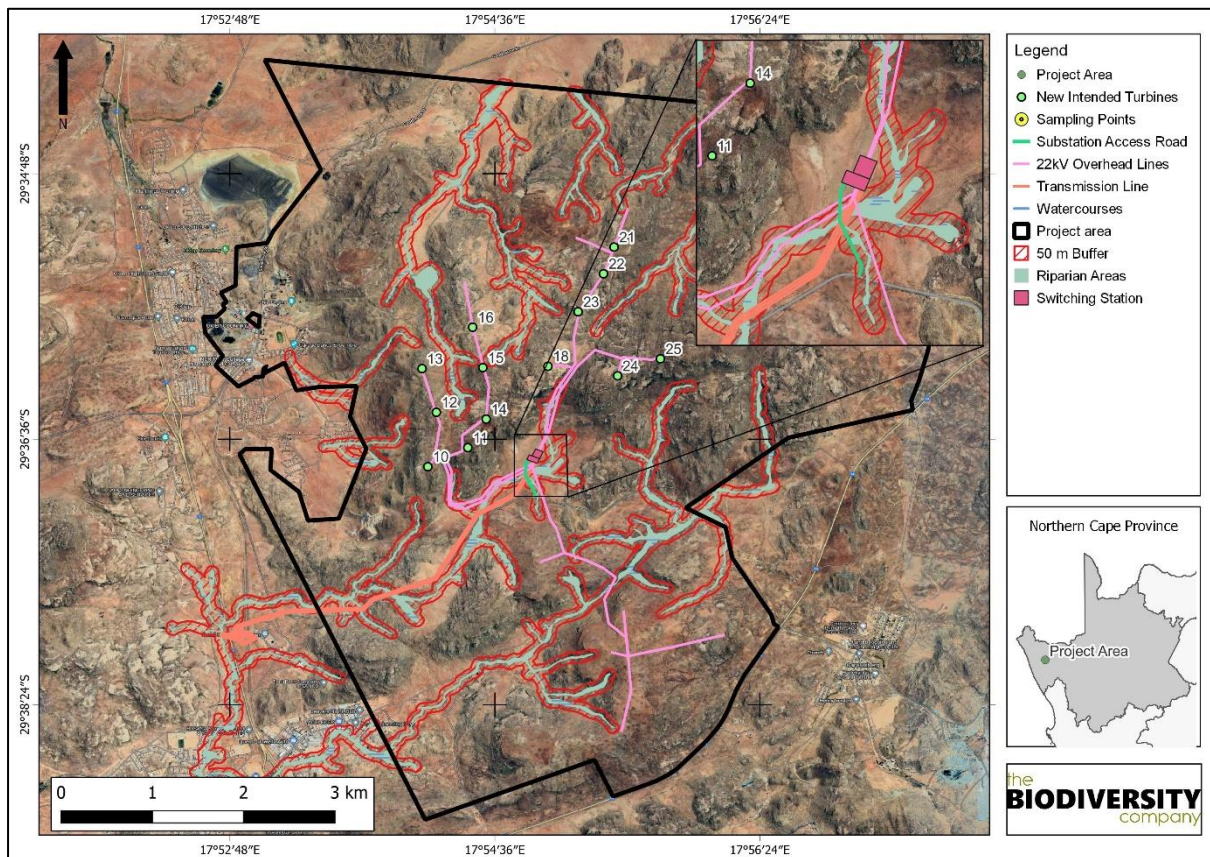


Figure 3: Riparian delineation and associated buffer of the watercourses associated with the project area

- 6 The National Web Based Environmental Screening Tool (NWBEST) has characterised the aquatic biodiversity theme sensitivity for the project area as “Very High” – which required a full assessment (Figure 4). This was due to the presence of Rivers as well as a quinary catchment freshwater ecosystem priority areas in the east. Based on the field assessment with these ephemeral systems considered fully functional, the specialist agrees with the sensitivity assigned by the NWBEST for all watercourses delineated.

### MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

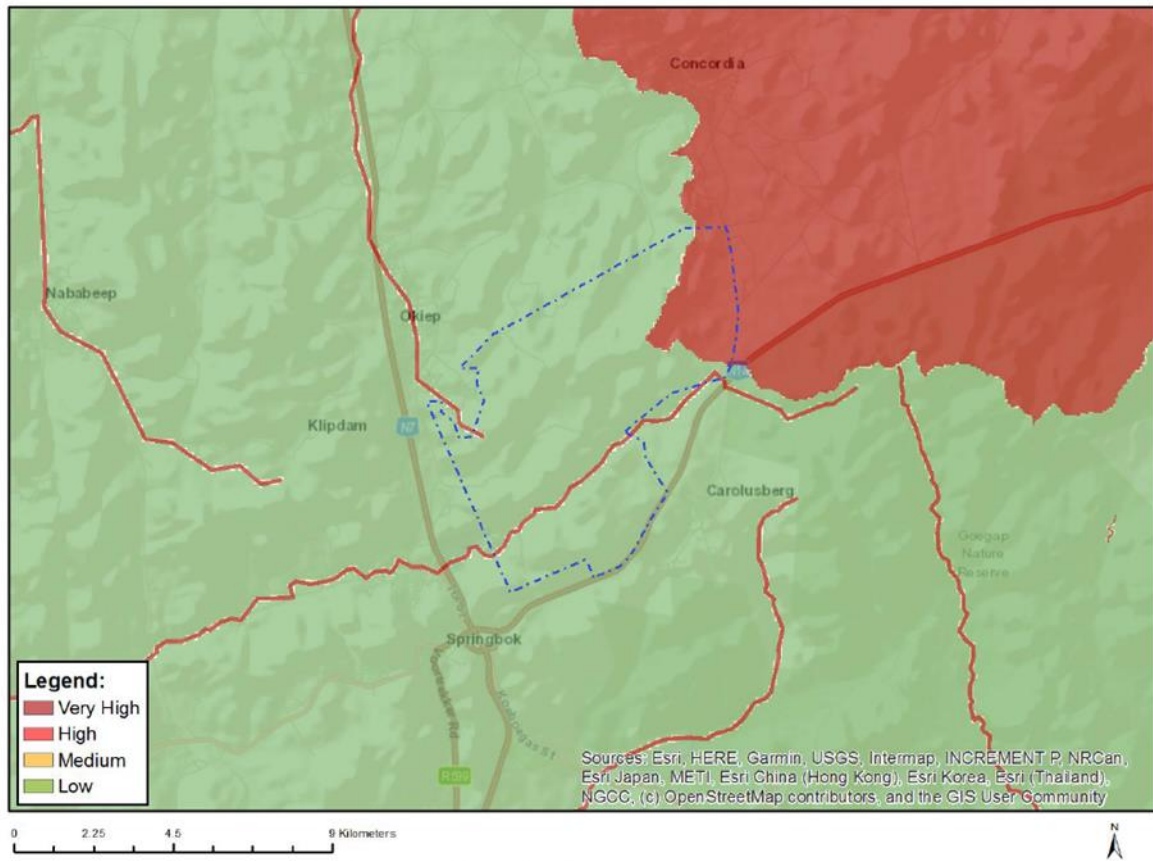


Figure 4: Aquatic Biodiversity Combined Sensitivity (National Web based Environmental Screening Tool)

- 7 With no adequate risk assessment completed for the initial application for the consideration of impacts on watercourses an additional assessment was completed which is added in Table 4. This risk assessment can be used if any water use licencing is required due to certain activities falling within the delineated sensitive areas as outlined by the riparian areas. Based on the completed risk assessment all risks are found to be 'Low' with mitigation and therefore licencing can be completed under a General Authorisation under Section 39 of the NWA (National Water Act) for water uses as defined in Section 21(c) or Section 21(i) (GN 509 of 2016). However, based on the delineated sensitive habitat there are certain activities which are located within the defined watercourse which is considered a 'High' risk and will require a full Water Use Licence Application (WULA).
- 8 A cumulative impact assessment was undertaken for the site assessed in context of the extent of the proposed project area; other developments in the area; and general habitat loss and transformation resulting from other activities in the area (all activities, as required for assessment of cumulative impacts including surrounding wind energy facilities, powerlines and associated infrastructure in the region). The impact table is presented in Table 2:

*Table 2: Cumulative Impacts to biodiversity associated with the proposed project.*

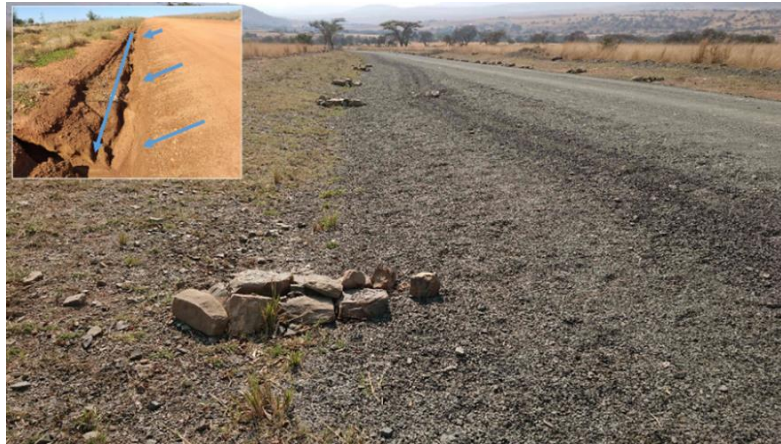
The development of the proposed infrastructure will contribute to cumulative habitat loss, habitat fragmentation at crossing points thereby impacting ecological processes in the region. Increases surface runoff from has the potential to increase water quality perturbations within the catchment.

	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
<b>Extent</b>	Low (2)	Low (2)
<b>Duration</b>	Long term (4)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Highly probable (4)	Definite (5)
<b>Significance</b>	<b>Medium</b>	<b>Medium</b>
<b>Status (positive or negative)</b>	Negative	Negative
<b>Reversibility</b>	Low	Low
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation: Below</b>		
<b>Residual Impacts:</b>		
Will result in the following losses/impacts:		
<ul style="list-style-type: none"> <li>• Less migratory species will be found in the area.</li> <li>• Instream sedimentation</li> <li>• Erosion</li> <li>• Instream and riparian habitat fragmentation</li> </ul>		

9 In order to manage the impacts effectively, the following mitigation management should be put into place as part of the EMPr for the general impacts associated with watercourses. The current EMPr (DJ Environmental Consultants, 2010) glossed over impacts related to the watercourses and are not considered comprehensive enough. The following mitigation measures were suggested to supplement the existing ones:

- 9.1. The recommended buffer zones must be strictly adhered to during the construction phase of the project, with exception of any authorised activities and structures required to traverse an aquatic resource. Any supporting aspects and activities not required to be within the buffer area must adhere to the buffer zone;
- 9.2. Both sensitive and construction areas must be clearly demarcated. No activities should be allowed in the sensitive areas.
- 9.3. Landscape and re-vegetate all cleared areas as soon as possible to limit erosion potential;
- 9.4. It is strongly recommended that the project make use of existing road networks, before new areas are cleared for new access roads;
- 9.5. Install sedimentation/erosion protection measures prior to construction in the form of several rows of sand bags, silt traps and fences, this is particularly important in the access roads leading to/in proximity of any drainage channel and around active working areas for foundations;

- 9.6. Energy dissipation, such as stone berms or blocks must be strategically placed along the road margins as surface runoff leaves the roads and enters the surrounding environment with the potential for severe erosion and damage to road margins (Figure 5). The steeper the slope of the road, the more regular the berms should be spaced and can be as close as one meter apart where necessary;



*Figure 5: Example of road margin erosion prevention.*

- 9.7. The road margins should be hydroseeded with vigorous growing indigenous grasses or biome-specific vegetation that are drought tolerant to lower erosion of these key areas;
- 9.8. The section of roads which will traverse the lowest lying areas/potentially wet areas or steeper slopes will be subjected to traffic from vehicles for inspections and maintenance on site with the potential for damage to habitat and erosion and thus require permeable paving (Figure 6). The permeable paving provides a stable platform to carry the loads of service vehicles whilst the vegetation growing through the permeable pavers compliments the surrounding vegetation, preventing erosion in these key areas;



*Figure 6: Example of permeable paving for roads and habitat maintenance.*

- 9.9. An environmental control officer (ECO) inspection of the project area/development footprint and surrounding influenced areas must be completed during construction and within 1 month following the end of construction activities and within a week after the first rainfall event. Thereafter, routine monitoring should take place for the life of the project. Should erosion be developing this must be immediately addressed through appropriate and adaptive measures.
- 9.10. Control new stands of alien species as they arise; keep disturbances to within footprints and outside of buffer zones;
- 9.11. Land users are required by law, to remove and / or control Category 1 alien and invasive vegetation according to the National Environmental Management: Biodiversity Act (NEMBA: Act 10 of 2004) (September 2020 List – GN1003). Additionally, unless authorised, in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring in proximity to a watercourse;
- 9.12. It is recommended that Category 1 species are prioritised for control, with control of herbaceous weedy species (which would need to include follow-up control);
- 9.13. Foliar herbicide spray must not be used within any of the sensitive riparian areas, rather opt for mechanical removal or direct dribbled application to stumps (use a dye); and
- 9.14. Wet season vegetation rehabilitation surveys need to be conducted of the vegetation within the project footprint to stay on top of the alien vegetation for the life of the project. This will improve the biotic integrity over the long term.
- 9.15. Preventing the introduction, movement and spread of invasive species on and off the construction site, for example by washing down vehicles before they enter the site on designated areas;
- 9.16. Loose soils are particularly prone to loss due to wind or water. It is therefore preferable that construction takes place during the dry season to reduce the erosion potential of the exposed surfaces;
- 9.17. Practice good soil management throughout the project lifecycle;
- 9.18. All removed soil and material must not be stockpiled within/near the sensitive areas. Stockpiling should take place outside of drainage systems and buffer areas. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds;
- 9.19. Avoid the creation of concentrated flow paths wherever possible;
- 9.20. Devise and implement a stormwater management plan for the project footprint;
- 9.21. Install sandbags as a temporary measure around key areas of soil loss to prevent soils washing into the local watercourses;
- 9.22. Signs of erosion must be addressed immediately to prevent further erosion of the area to prevent head-cut erosion from forming;



- 9.23. Temporary and permanent erosion control methods may include silt fences, geotextiles, flotation silt curtains, retention basins, attenuation/detention ponds, interceptor ditches, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching;
- 9.24. Any exposed earth should be rehabilitated promptly by planting suitable drought tolerant vegetation (vigorous indigenous grasses) to protect the exposed soil;
- 9.25. Relandscape to gentler gradients and re-vegetate all cleared areas as soon as possible to limit erosion potential. Sandbags and geotextiles should be used to assist until vegetation has established in these reworked areas;
- 9.26. Stem any head-cut/ erosion gully as it occurs by bulldozing, filling, re-contouring to gentler gradients and re-vegetating; and
- 9.27. The rehabilitation of watercourse banks should take place as an offset to altered land use with associated negative ecological impacts. Key areas where erosion has occurred should be rehabilitated through bank reprofiling to gentler gradients and the revegetation of the reworked banks.
- 9.28. Construction activities must take place during the low flow period (as much as possible). In addition to this, basic stormwater structures such as berms must be designed and implemented prior to and throughout the duration of the construction activities;
- 9.29. Stormwater runoff from the development area should enter drainage systems through diffuse channels fitted with flow attenuation/energy dissipation structures in the form of green infrastructure;
- 9.30. The water resources outside of the specific project site area must be avoided;
- 9.31. Prevent any uncontrolled access of vehicles through the sensitive areas; traffic would cause a significant adverse impact on the hydrology and alluvial soil structure of these areas;
- 9.32. Laydown yards, camps and storage areas must be beyond the watercourse and associated buffer areas.
- 9.33. Reduce emissions and pollutants (e.g., dust, light, noise and vibration, solid/liquid waste) that could negatively impact biodiversity and ecosystem services;
- 9.34. Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the drainage systems;
- 9.35. Ensuring proper disposal of solid and liquid wastes and implementing a protocol for rapid management of any chemical leaks or spills. The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly;
- 9.36. All chemicals and toxicants to be used for the construction must be stored outside the watercourses and in a bunded area;
- 9.37. Appropriately contain any generator diesel storage tanks, machinery spills (e.g. accidental spills of hydrocarbons oils, diesel etc.) or construction materials on site (e.g. concrete) in such a way as to prevent them leaking and entering the environment;
- 9.38. All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site;

- 
- 9.39. Mixing of concrete must under no circumstances take place within the drainage systems. Scrape the area where mixing and storage of sand and concrete occurred to clean once finished;
  - 9.40. All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”;
  - 9.41. Enforcing good behaviour by construction workers, including prohibition of hunting, trapping, fishing and general harassment of wild animals;
  - 9.42. Providing toolbox talks to all site personnel to ensure that they understand and are fully aware of the biodiversity mitigation measures for construction; and have in place procedures for unexpected/unforeseen biodiversity issues arising during works, and for the reporting of and addressing any ecological incidents during work;
  - 9.43. Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the project area. These should not be placed near any watercourse or in buffer zones. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);
  - 9.44. The access road and associated road margins, and silt traps must be inspected on a monthly basis for signs of erosion. When erosion is observed, the area should be rehabilitated within 7 days. In addition, inspections following a >50 mm/ 24 hr rainfall event must occur within 7 days of the event;
  - 9.45. No dumping of construction material on-site may take place;
  - 9.46. All waste generated on-site during construction must be adequately managed and disposed. Separation and recycling of different waste materials should be supported; and
  - 9.47. Make sure all excess consumables and building materials / rubble are removed from site and deposited at an appropriate waste facility.
  - 9.48. Revegetating temporary-use and lay down areas as soon as reasonably practicable after construction activities are complete;
  - 9.49. Separately retaining and storing topsoil and sub-soil stripped from the construction areas for later use during reinstatement;
  - 9.50. Use indigenous and non-invasive species for landscaping and rehabilitation works;
  - 9.51. Using soil, mulch and vegetation debris (that contain natural seed stock) to facilitate natural revegetation of disturbed areas, where reasonably practicable;
  - 9.52. Modify security fencing to minimise barrier effects for small- and medium-sized animals. Modifications to fencing can involve maintaining a gap between the base of the fence and the ground. This could occur across the full extent of, or at regular intervals, along the fence line. This can also involve creating passageways by modifying the fence weave to facilitate animal movement.
  - 9.53. The footprint area of the transmission line (if applicable) must be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas.

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- 9.54. The infrastructure footprint areas must avoid the delineated water resources and adhere to the prescribed buffer areas.
  - 9.55. Vehicles and equipment required for the suspension of cables across watercourses are permitted to access the buffer areas but may not intrude into the delineated watercourses.
  - 9.56. The footprint area must be aligned with the existing road/railway reserves wherever possible. Disturbed areas should be sought as the preferred alignment area.
  - 9.57. The locations of all single circuit angle steel towers which hold the transmission line must be located outside of all delineated watercourses.
  - 9.58. Where feasible all access roads should use existing farm roads before new roads are constructed.
  - 9.59. Preferential flow paths should be identified that intersect with new roads so that silt traps and fences can be installed to avoid siltation of watercourses.
  - 9.60. An appropriate stormwater management plan must be developed for all substations.

In terms of freshwater ecology, there are no advantages of the proposed new layout as no proposed turbines were located within any watercourses. Therefore, the proposed new layout is not expected to result in an increase in expected impacts or their associated severities.

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 amendment to the EA. To this end, these measures should be added to the EMPr.

As such, should the measures described above be implemented, it is the reasoned opinion of the specialist that the proposed layout changes as well as requested extension of the current EA be approved.

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,



Michael Ryan  
Riverine Ecologist  
The Biodiversity Company

## APPENDICES

### ENVIRONMENTAL IMPACT METHODOLOGY

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)**

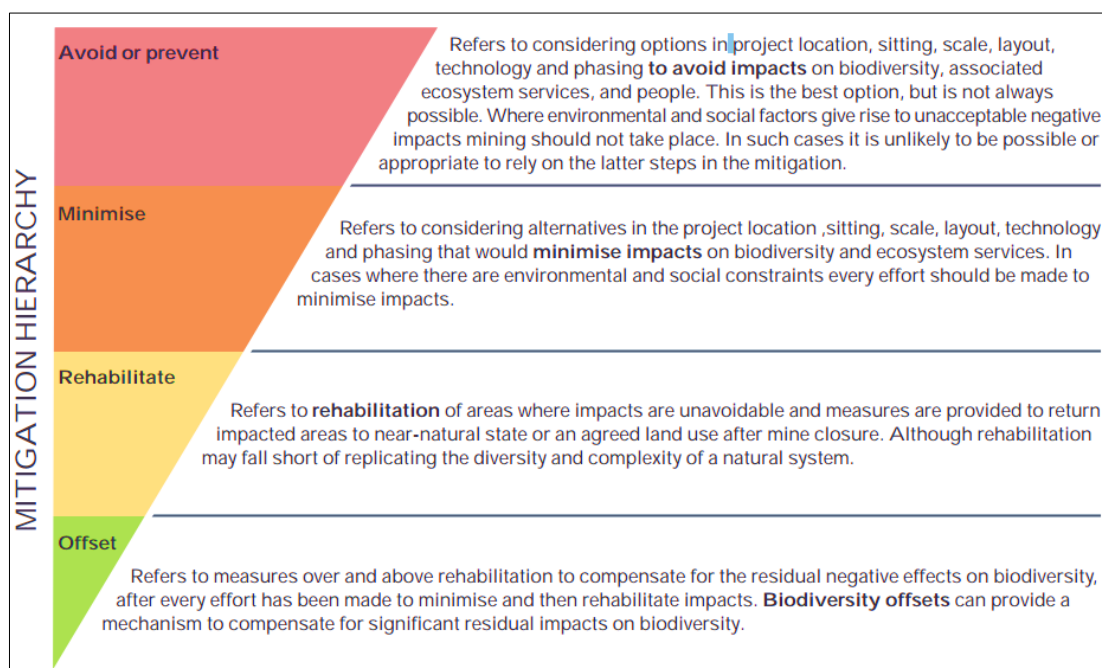
Nature: [Outline and describe fully the impact anticipated as per the assessment undertaken]		
	Without mitigation	With mitigation
Extent	High (3)	Low (1)
Duration	Medium-term (3)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	Medium (36)	Low (24)
Status (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).		

**DWS RISK ASSESSMENT METHODS:**

The risk assessment will be completed in accordance with the requirements of the DWS General Authorisation (GA) in terms of Section 39 of the NWA for water uses as defined in Section 21(c) or Section 21(i) (GN 509 of 2016). The significance of the impact is calculated according to Table 3. The Department of Environmental Affairs (2013) mitigation hierarchy is presented in Figure 7 which indicates the procedure to follow when trying to mitigate any potential environmental impacts that may result from any activity. This is used when ascribing relevant mitigation measures.

*Table 3: Significance ratings matrix*

Rating	Class	Management Description
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated. Wetlands may be excluded.
56 – 169	(M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Wetlands are excluded.
170 – 300	(H) High Risk	Always involves wetlands. Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve.



*Figure 7: The mitigation hierarchy as described by the DEA (2013).*

**DWS RISK ASSESMENT:**

*Table 4: DWS Risk Impact Matrix for the proposed development*

DWS Risk Assessment																				
Aspect/Activity	Severity					Spatial scale	Duration	Consequence	Frequency of activity	Frequency of impact	Legal Issues	Detection	Likelihood	Significance	Without Mitigation	With Mitigation	Mitigation Measures	Type of Watercourse (PES)		
	Flow Regime	Water Quality	Habitat	Biota	Severity															
<b>Construction Phase (SDP outside but proximal to Sensitive Areas unless stated otherwise)</b>																				
Access routes	2	2	2	3	2,3	1	3	6,3	4	4	1	2	11	68,75	Moderate	Low	See above - Mitigation Measures	Drainage areas to the north (N/A)		
Clearing vegetation	2	2	2	3	2,3	1	3	6,3	4	3	1	2	10	62,5	Moderate	Low				
Construction of PV station	2	2	3	3	2,5	1	3	6,5	4	3	1	2	10	65	Moderate	Low				
Construction of laydown yard	2	2	2	3	2,3	1	3	6,3	4	3	1	2	10	62,5	Moderate	Low				
Stormwater, sedimentation and erosion	3	3	2	2	2,5	1	3	6,5	3	3	1	2	9	58,5	Moderate	Low				
Contamination and pollution	1	2	2	3	2,0	1	3	6,0	3	3	5	2	13	78	Moderate	Low				
Operation of machinery & equipment	1	2	3	3	2,3	1	3	6,3	5	4	1	1	11	68,75	Moderate	Low				
Earthworks	2	2	3	3	2,5	1	3	6,5	5	4	1	1	11	71,5	Moderate	Low				
Ablution, eating areas and litter	1	2	2	2	1,8	1	3	5,8	5	2	1	2	10	57,5	Moderate	Low				
Rehabilitation and final landscaping	2	2	3	2	2,3	1	3	6,3	1	3	5	2	11	68,75	Moderate	Low				
Establishment of alien vegetation	2	3	5	3	3,3	1	3	7,3	3	2	5	1	11	79,75	Moderate	Low				
Any Aspect or Activity WITHIN the delineated Sensitive Areas	4	4	5	5	4,5	2	5	11,5	5	4	5	3	17	195,5	High	High	See above - Mitigation Measures	Drainage areas to the north (N/A)		
<b>Operational Phase (SDP outside but proximal to Sensitive Areas unless stated otherwise)</b>																				
Stormwater, sedimentation and erosion	3	3	2	2	2,5	1	3	6,5	3	3	5	2	13	84,5	Moderate	Low				
Alien vegetation encroachment and proliferation	2	3	5	3	3,3	1	3	7,3	3	2	5	1	11	79,75	Moderate	Low				
Hydrocarbon contamination	1	2	2	3	2,0	1	3	6,0	3	3	5	2	13	78	Moderate	Low				
Operation of PV Station	2	2	3	3	2,5	2	2	6,5	2	2	1	1	6	39	Low	Low				
Any Aspect or Activity WITHIN the delineated Sensitive Areas	4	4	5	5	4,5	2	5	11,5	5	4	5	3	17	195,5	High	High				