

RIETKLOOF WIND FARM (RF) (PTY) LTD

RIETKLOOF WIND ENERGY FACILITY PART 2 AMENDMENT OF EXISTING ENVIRONMENTAL AUTHORISATION: DEA 14/12/16/3/3/1/1977/AM1

FINAL AMENDMENT REPORT

28 JUNE 2022

DRAFT



wsp

2 PROJECT DESCRIPTION

2.1 EIA PROCESS HISTORY

Rietkloof initiated project planning in 2009 commencing with monitoring of wind in the area and securing land rights. The Final Environmental Impact Assessment Report (FEIAR) was submitted to the DEA in September 2016.

On 23 November 2016 the DEA granted the EA authorising only 9 of the proposed 60 turbines with an output capacity of 36MW (DEA Ref: 14/12/16/3/3/2/899). The DEA furthermore authorised a construction camp in proximity to turbines 31 and 32 instead of the construction camp alternatives which were assessed during the EIA process and presented as the preferred alternatives. All other associated infrastructure was authorised in the EA. The Project Description from the original EA is extracted below and details what was authorised in the original EA:

- *Up to 9 turbines (between 1.5MW and 4MW in capacity each), each with a foundation of 25m in diameter and 4m in depth;*
- *A hub height of each turbine will be up to 120m, and the rotor diameter up to 140m;*
- *Permanent compacted hard-standing laydown areas for each wind turbine (70m x 50m) 21ha in total, required during construction and for on-going maintenance purposes;*
- *Electrical turbine transformers (690V/33kV) adjacent to each turbine (up to 10m x 10m);*
- *200m wide corridor along the access road and internal access roads to allow for micro siting of the roads up to 9m wide;*
- *Internal access roads up to 9m wide, including structures for stormwater control to access each turbine location and turning circles. Where possible, existing roads will be upgraded;*
- *33kV overhead powerlines linking groups of wind turbines to onsite 33/132kV substation(s);*
- *Underground 33kV cabling between turbines buried along access roads;*
- *A 33/132kV onsite substation with a total footprint of approximately 200m x 200m;*
- *Up to 4 x 120m tall wind measuring lattice masts strategically placed within the wind farm development footprint to collect data on wind conditions during the Operational phase;*
- *Temporary infrastructure including a construction camp (~10ha) and an on-site concrete batching plant (~1 ha) for use during the construction phase; and,*
- *Fencing, up to 4m in height, will be limited around the key infrastructure including construction camp and substation.*

An appeal of the EA decision was submitted by the applicant, and a final decision was issued by the DFFE on 11 November 2017 and the appeal was dismissed and the issued EA upheld.

Subsequently, SANBI amended and reduced the critical biodiversity areas (SANBI, 2017) and the South African government furthermore gazetted² eight areas earmarked for renewable energy development in South Africa. These areas are known as Renewable Energy Development Zones (REDZ) and the proposed Rietkloof WEF falls within the Komsberg REDZ. Rietkloof furthermore relooked at alternative ways to reduce the ecological impact to an acceptable level through the agricultural conservation area of a minimum of 4000 ha., The remaining Rietkloof WEF (51 turbines) were approved by the issuance of an EA dated 10 April 2019 (Ref: 14/12/16/3/3/1/1977). The EA authorised up to 51 turbines of a maximum generating capacity of 174MW in total, with a hub height of 125m and the rotor diameter of 160m. A subsequent administrative amendment to the EA was issued on 09 May 2019.

The Appeals Directorate received an appeal on behalf of six appellants, against the decision of the Department to grant the 2019 EA to the applicant. An appeal decision was issued on 16 July 2019, which dismissed the appeal by the appellants, and the granting of the 2019 EA was confirmed.

² Government Notice 114 of 16 February 2018.

However, as part of the appeal response, the Department was directed to merge the 2016 and 2019 EAs, in order to remove specific conditions that did not allow for the positioning of the now authorised 51 turbines (section 2.4.5 of the decision). Subsequent to the appeal decision issued in July 2019, the two EAs (issued on 23 November 2016 and 10 April 2019) were successfully merged on 16 September 2019 and assigned a combined Reference 14/12/16/3/3/1/1977/AM1. This EA authorises up to 60 (sixty) wind turbines of a maximum generating capacity of 183MW in total, with a hub height of up to 120m (original 09 turbines) and 125m (additional 51 turbines); and the rotor diameter of up to 140m (original 09 turbines) and 160m (additional 51 turbines).

The merged EA issued in September 2019 authorises the development of the 183MW Rietkloof WEF and associated infrastructure near Matjiesfontein in the Western Cape Province. The authorised infrastructure is outlined in **Table 2-1**.

Table 2-1: Authorised infrastructure in terms of the September 2019 EA

| COMPONENT | DESCRIPTION / DIMENSIONS |
|---|--|
| Total area of the site | 27 608.09 ha |
| Size of Buildable Area i.e. project infrastructure footprint (only referred layout, inclusive of all associated infrastructure) | ~126.6ha |
| Area Occupied by Each Turbine and hard standing area | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of 0.35ha each. |
| Generation Capacity (at 132kV point of utility connection) | Up to 183MW generation capacity. |
| Technology | Wind |
| Number of Turbines | Up to 60 |
| Turbine Hub Height | Turbine positions (18, 19, 20, 3[1], 32, 33, 37, 38, 39): hub height of up to 120m ³ Turbine positions (all other numbers - the 51 turbines): A hub height of 125m |
| Rotor Diameter | Turbine positions (18, 19, 20, 3[1], 32, 33, 37, 38, 39): up to 140m ¹ Positions of other 51 turbines a rotor diameter of up to 160m |
| Turbine Foundation Area | Each turbine foundation will be 25m diameter x 4m deep for each of the 60 turbines, approximately ~3.75ha. |
| Area of Electrical Turbine Transformers of preferred operations | 100m ² (10m x10m) per turbine. |
| Location of Maintenance Building Assessment Site | O&M buildings will be in proximity of the Substation. |

³ An administrative error was made in the text of this line item, where the turbine location no. 31 was erroneously indicated as location no. 3. An email was issued to DFFE on 25 September 2019 requesting that this be corrected.

| COMPONENT | DESCRIPTION / DIMENSIONS |
|--|---|
| Size of Operations and Maintenance Building(s) | O&M building includes operations, on site spares storage and workshop. |
| Area of Preferred Construction footprint and batching plant footprint | Construction camp will be approximately 10ha and onsite concrete batching plant of up to 1ha. Construction camp alternative 10. |
| width of Internal Roads | No more than 9m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads. |
| Area of Internal Roads | ~90ha |
| Type and Height of Fencing | Approximately 4m high palisade or mesh fencing where required. |
| Sewage | Conservancy Tanks (with portable toilets during the construction phase). |
| Met Masts | Up to 4 x 125m tall wind measuring lattice masts strategically placed within the wind farm development footprint to collect data on wind conditions during the operational phase. |
| Power Evacuation | |
| Area of internal Onsite Substation | 200m x 200m – 4ha |
| Onsite Substation Capacity | 33kV and 132kV yards – substation alternative 5. |
| Specifications of onsite switching stations, transformers, invertors, onsite cables etc. | The medium voltage collector system will comprise of cables (1kV up to and including 33kV) that will be run underground, except where a technical assessment suggests that overhead lines are applicable, in the facility connecting the turbines to the onsite substation. |
| Closest Grid Connection Point | Bon Espirange Switching Substation |
| Power lines | 33kV overhead powerlines linking groups of wind turbines to onsite 33&132kV substation(s). |

A Part 2 Amendment Process for the amendment of the existing EA for the Rietkloof WEF (DFFE Reference: 14/12/16/3/3/1/1977/AM1) was initiated in December 2021 for a reduced 47-turbine layout (as well as other substantive and administrative amendments). The Draft Amendment Report was released for a 30-day public participation period from 09 December 2021 to 31 January 2022, which was later extended to 03 March 2022 to allow I&APs additional time to review and comment on the reports) as per the requirements of Section 32 (1) of the EIA Regulations (2014, as amended). Due to unforeseen circumstances, the Part 2 Amendment Application was **withdrawn** before the Department of Forestry Fisheries and the Environment (DFFE) had made a decision on the application.

Figure 2-1 provides a high-level representation of the EA history for the Rietkloof WEF. Copies of the relevant EA documentation is appended as **Appendix A**.

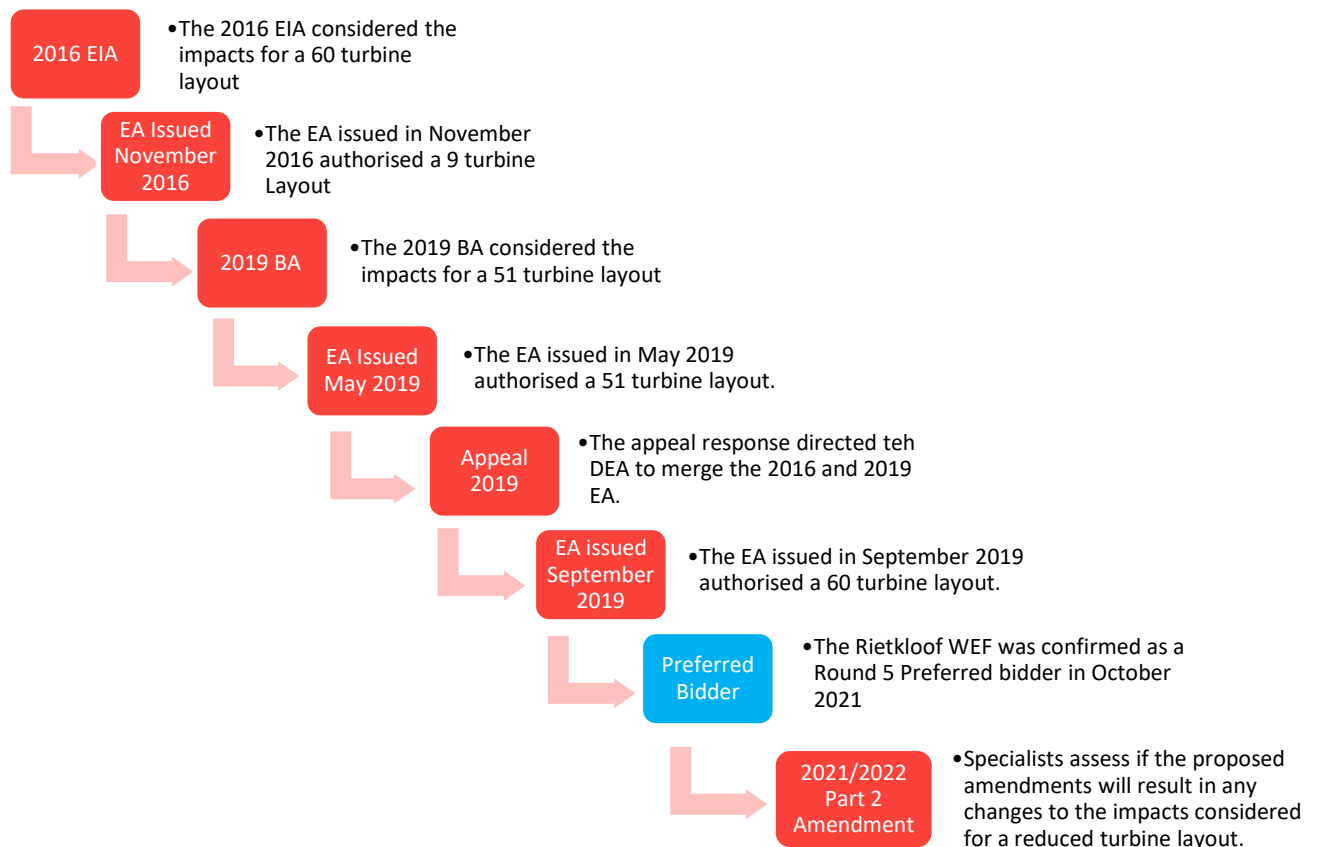


Figure 2-1: High-level Representation of the EA History for the Rietkloof WEF

2.2 PROJECT AREA

The Rietkloof WEF falls within the Laingsburg Local Municipality which is located in the Central Karoo District Municipality. The closest town within the Western Cape Province is Matjiesfontein, situated approximately 15km south of the project area (**Figure 2-2**). Laingsburg is a further 30km east of Matjiesfontein, along the N1 national road in the Western Cape Province.

The R354 is the main arterial road providing access to the project area, where there are a number of existing local, untarred roads providing access within the project area.

The Rietkloof WEF is currently authorised over 12 properties described in **Table 2-2** below. These land portions, collectively referred to as the project area for the Rietkloof WEF, are currently used for animal husbandry, game farming and agriculture, including grazing of sheep. The project area can be accessed via the R354 that connects to the N1 between Matjiesfontein and Laingsburg.

3 OVERVIEW OF PART 2 AMENDMENT PROCESS

3.1 TERMS OF REFERENCE

WSP Group Africa (Pty) Ltd (WSP) was appointed to undertake the amendment process in terms of Regulation 31 and 32 of the EIA Regulations (2014), as amended.

The amendment application process followed to date is summarised below:

- Payment of the prescribed application fee for the application for the variation of the EA was made on **13 April 2022**.
- The application for the amendment of the EA was submitted to the DFFE on **19 May 2022**.

Section 32 of the EIA Regulations (2014), as amended requires that the DAR be subject to a public participation process prior to submission to the DFFE.

It should be noted that a Part 2 Amendment Process for the amendment of the existing Environmental EA for the Rietkloof WEF was initiated in December 2021 for a reduced 47-turbine layout (as well as other substantive and administrative amendments). The Draft Amendment Report was released for a 30-day public participation period from 09 December 2021 to 31 January 2022, which was later extended to 03 March 2022 to allow I&APs additional time to review and comment on the reports) as per the requirements of Section 32 (1) of the EIA Regulations (2014, as amended). Due to unforeseen circumstances, the Part 2 Amendment Application was **withdrawn** before the Department of Forestry Fisheries and the Environment (DFFE) had made a decision on the application.

In December 2021, WSP facilitated the following initial public participation process (PPP) on behalf of Rietkloof:

- Provision of the Draft Amendment Report (reflecting the 47-turbine layout) for a 30-day comment period (09 December 2021 to 31 January 2022, which was later extended to 03 March 2022 to allow I&APs additional time to review and comment on the reports) as per the requirements of Section 32 (1).
- All interested and affected parties (I&APs) (as per the existing Rietkloof database) were notified by WSP of the availability of the DAR for comment. Copies were made available at the Matjiesfontein Community Centre (Matjiesfontein) and Laingsburg Library (Van Riebeeck street), as well as on the WSP webpage (<https://www.wsp.com/en-ZA/services/public-documents>) for ease of access.
- Two newspaper adverts in a provincial (The Cape Times – **9 December 2021**) and local newspaper (Die Courier – **10 December 2021**) introducing the project and requesting public input.
- Site notices were placed along the boundary fence of the project site and at various locations in Laingsburg and Matjiesfontein.

Comments received from registered stakeholders to date have been captured and responded to within the Stakeholder Engagement Report (**Appendix Q**).

WSP has subsequently facilitated the following additional PPP on behalf of Rietkloof for this Part 2 Amendment Process, in accordance with Section 32 of the EIA Regulations (2014, as amended):

- Provision of the Draft Amendment Report (reflecting the updated 32-turbine layout) for a 30-day comment period (**19 May 2022 to 21 June 2022**) as per the requirements of Section 32 (1).
- All interested and affected parties (I&APs) (as per the existing Rietkloof database) were notified by WSP of the availability of the DAR for comment. Copies were made available at the Matjiesfontein Community Centre (Matjiesfontein) and Laingsburg Library (Van Riebeeck street), as well as on the WSP webpage (<https://www.wsp.com/en-ZA/services/public-documents>) for ease of access.
- Two newspaper adverts in a provincial (The Cape Times – **19 May 2022**) and local newspaper (Die Courier – **20 May 2022**) introducing the project and requesting public input.

- Site notices have been placed along the boundary fence of the project site and at various locations in Laingsburg and Matjiesfontein.

The Final Amendment Report includes copies of all public participation records and has been submitted to DFFE for decision-making purposes. All I&APs will thereafter be notified of the DFFE’s decision.

3.1.1 ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Independent EAP to undertake the Part 2 Amendment processes. The CV of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B**. **Table 3-1** details the relevant contact details of the EAP.

Table 3-1: Details of the EAP

| EAP | WSP GROUP AFRICA (PTY) LTD |
|-----------------------|--|
| Company Registration: | 1999/008928/07 |
| Contact Person: | Ashlea Strong |
| Physical Address: | Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg |
| Postal Address: | P.O. Box 98867, Sloane Park 2151, Johannesburg |
| Telephone: | 011 361 1392 |
| Fax: | 011 361 1301 |
| Email: | Ashlea.Strong@wsp.com |

STATEMENT OF INDEPENDENCE

Neither WSP nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any business, financial, personal or other interest that could be reasonably regarded as being capable of affecting their independence. WSP has no beneficial interest in the outcome of the assessment

3.2 LEGAL FRAMEWORK

On the 7th April 2017 the Minister of Environmental Affairs promulgated amendments to the EIA Regulations (2014), as amended (GNR 982) in terms of Chapter 5 of the National Environmental Management Act (No. 107 of 1998), as amended (NEMA). Regulations 31 and 32 of the EIA Regulations (2014), as amended, details the process for a Part 2 (Substantive) amendment of an environmental authorisation where a change of scope occurs, but a listed activity is not triggered.

The proposed amendments detailed in section 4, below do not trigger any new listed activities in terms of the EIA Regulations (2014), as amended. Furthermore, no additional properties will be affected by the amendments that were not originally assessed. However, part of the amendments applied for were not originally assessed as part of the original EIA process and therefore the potential in impacts is assessed as part of this report.

A variety of administrative changes are being applied for as well as some substantive amendments. The details of all amendments are dealt with in section 4 below.

4 PROPOSED AMENDMENTS TO THE EA

Rietkloof now proposes to follow a Part 2 Amendment Process for the amendment of the September 2019 EA (DFFE Ref: 14/12/16/3/3/1/1977/AM1).

A Part 2 Amendment Process for the amendment of the September 2019 EA (DFFE Ref: 14/12/16/3/3/1/1977/AM1) was initiated in December 2021 for a reduced 47-turbine layout (as well as other substantive and administrative amendments). The Draft Amendment Report was released for a 30-day public participation period from 09 December 2021 to 31 January 2022, which was later extended to 03 March 2022 to allow I&APs additional time to review and comment on the reports) as per the requirements of Section 32 (1) of the EIA Regulations (2014, as amended). Due to unforeseen circumstances, the Part 2 Amendment Application was **withdrawn** before the Department of Forestry Fisheries and the Environment (DFFE) had made a decision on the application.

Rietkloof has recommenced with the Part 2 Amendment application for the Rietkloof WEF, applying for the same amendments as detailed in the Draft Amendment Report (dated December 2021), with the following primary changes:

- Amend the number of authorised turbines to up to 32 turbines of up to 7MW capacity each (as opposed to 47 turbines); and
- Amend the turbine number of Turbine 3 on page 9 of the EA to correctly refer to Turbine 31 (administrative amendment).

This Final Amendment Report has therefore been updated accordingly.

Table 4-1 below outlines the amendments proposed to the existing EA. **Figure 4-1** shows the original 60-turbine layout. **Figure 4-2** illustrates the 47-turbine layout as well as proposed new construction camp location, which was initially released for a 30-day public participation period between December 2021 and March 2022. **Figure 4-3 illustrates the Final 32-turbine layout updated as a result of comments received during the public review period. This 32-turbine Final Layout is also included in the Amended EMPr (Appendix G).**

Table 4-1: Proposed amendments to the Rietkloof EA (DFFE Ref: 14/12/16/3/3/1/1977/AM1)

| ASPECT TO BE AMENDED | AUTHORISED | PROPOSED AMENDMENT | EA REFERENCE |
|--|---|---|---|
| Technical Aspects | | | |
| Number of Turbines | Up to 60 | Up to 32 of up to 7MW capacity each | <ul style="list-style-type: none"> – Page 9 of EA (page 11 in full document) – Row 6 of the table outlining the infrastructure associated with the facility |
| Area Occupied by Each Turbine and hard standing area | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of 0.35ha each | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of 0.45ha each | <ul style="list-style-type: none"> – Page 9 of EA (page 11 in full document) – Row 3 of the table outlining the infrastructure associated with the facility |

**ASPECT TO BE AUTHORIZED
AMENDED**

PROPOSED AMENDMENT EA REFERENCE

| | | | |
|----------------------------|---|--|---|
| Turbine Hub Height | Turbine positions (18,19,20,3,32,33,37,38,39): hub height of up to 120m Turbine positions (all other numbers- the 51 turbines): A hub height of 125m | All Turbines up to 125m | <ul style="list-style-type: none"> – Page 9 of EA (page 11 in full document) – Row 7 of the table outlining the infrastructure associated with the facility |
| Rotor Diameter | Turbine positions (18,19,20,3,32,33,37,38,39): up to 140m Positions of other 51 turbines a rotor diameter of up to 160m | All Turbines up to 180m | <ul style="list-style-type: none"> – Page 9 of EA (page 11 in full document) – Row 8 of the table outlining the infrastructure associated with the facility |
| Turbine Foundation Area | Each turbine foundation will be 25m diameter x 4m deep for each of the 60 turbines, approximately ~3.75ha. | Each turbine foundation will be 25m diameter x 4m deep for each of the <u>32</u> turbines, up to ~3.75ha in total | <ul style="list-style-type: none"> – Page 10 of EA (page 12 in full document) – Row 9 of the table outlining the infrastructure associated with the facility |
| Construction Camp Location | Construction Camp Alternative 10 | In terms of the final layout the construction camp has been moved to existing batching plant previously utilised by Roggeveld WEF. | <ul style="list-style-type: none"> – Page 10 of EA (page 12 in full document) – Row 13 of the table outlining the infrastructure associated with the facility |
| Width of Internal Roads | No more than 9m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads | No more than 12m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads | <ul style="list-style-type: none"> – Page 10 of EA (page 12 in full document) – Row 14 of the table outlining the infrastructure associated with the facility |
| Condition 14.2 | The EMPr amendment must include the following: 14.2. The Final Conservation Management Plan. | Remove condition. | <ul style="list-style-type: none"> – Condition 14.2 (page 14 of EA – page 16 in full document) |
| Condition 36 | The location of the construction camp, as well as the internal substation must be relocated and placed in proximity to turbine 31 and turbine 32. | Remove condition. | <ul style="list-style-type: none"> – Condition 36 (page 17 of EA – page 19 in full document) |

**ASPECT TO BE AUTHORISED
AMENDED**

PROPOSED AMENDMENT EA REFERENCE

| | | | |
|--|---|--|--|
| Condition 135 | Rietkloof must engage with Cape Nature and provide them with the opportunity to provide input to the final Conservation Management Plan, which must be submitted to the DEA along with the final EMPr for approval, prior to the commencement of construction | Remove condition. | – Condition 135 (page 26 of EA – page 28 in full document) |
| Administrative Aspects | | | |
| <i>The Draft Amendment Report dated December 2021 detailed a proposed administrative change to the contact details of the holder of the EA. This amendment is no longer being applied for and the contact details included in the EA will remain the same.</i> | | | |
| Update the turbine number | Turbine positions (18,19.20,3,32.33,37,38.39): | Turbine positions (18,19.20, 3[1] ,32.33,37,38.39): | – Page 9 – include the missing number [1] directly after turbine number 3 to refer to correct turbine number 31 and not 3. |
| Amend the Holder of the EA | Rietkloof Wind Farm (Pty) Ltd | Rietkloof Wind Farm (RF) (Pty) Ltd | – Page 1 – Contact Details – Page 2 of EA (Page 4 of full document) – Contact Details |

5 IMPACT ASSESSMENT

5.1 IMPACT ASSESSMENT METHODOLOGY

To ensure a direct comparison between various specialist studies, a standard rating scale has been defined and was used to assess and quantify the identified impacts. This is necessary since impacts have a number of parameters that need to be assessed. Four (4) factors need to be considered when assessing the significance of impacts, namely:

- Relationship of the impact to temporal scales - the temporal scale defines the significance of the impact at various time scales, as an indication of the duration of the impact.
- Relationship of the impact to spatial scales - the spatial scale defines the physical extent of the impact.
- The severity of the impact - the severity/beneficial scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on a particular affected system (for ecological impacts) or a particular affected party. The severity of impacts can be evaluated with and without mitigation in order to demonstrate how serious the impact is when nothing is done about it. The word ‘mitigation’ means not just ‘compensation’, but also the ideas of containment and remedy. For beneficial impacts, optimization means anything that can enhance the benefits. However, mitigation or optimization must be practical, technically feasible and economically viable.
- The likelihood of the impact occurring - the likelihood of impacts taking place as a result of project actions differs between potential impacts. There is no doubt that some impacts would occur (e.g. loss of vegetation), but other impacts are not as likely to occur (e.g. vehicle accident) and may or may not result from the proposed development. Although some impacts may have a severe effect, the likelihood of them occurring may affect their overall significance.

Each criterion is ranked with scores assigned as presented in **Table 5-1** to determine the overall significance of an activity. The criterion is then considered in two categories, viz. effect of the activity and the likelihood of the impact. The total score recorded for the effect is cross referenced against the score for the likelihood and are then read off the matrix presented in **Table 5-2**, to determine the overall significance of the impact (**Table 5-3**).

The overall significance is either negative or positive. The environmental significance scale is an attempt to evaluate the importance of a particular impact. This evaluation needs to be undertaken in the relevant context, as an impact can either be ecological or social, or both. The evaluation of the significance of an impact relies heavily on the values of the person making the judgment. For this reason, impacts of especially a social nature need to reflect the values of the affected society.

Negative impacts that are ranked as being of “**VERY HIGH**” and “**HIGH**” significance will be investigated further to determine how the impact can be minimised or what alternative activities or mitigation measures can be implemented. For impacts identified as having a negative impact of “**MODERATE**” significance, it is standard practice to investigate alternate activities and/or mitigation measures. The most effective and practical mitigations measures will then be proposed. For impacts ranked as “**LOW**” significance, no investigations or alternatives will be considered. Possible management measures will be investigated to ensure that the impacts remain of low significance.

Please note that this impact assessment methodology was utilised for the 2016 EOH Final EIA Report as well as the 2019 WSP Final BA Report and has been utilised again for this amendment process in instances where the proposed amendment results in a change in the original impacts.

Table 5-1: Criterion used to rate the significance of an impact.

| | | | | |
|-------------------------------|--|--|--|---|
| Effect | Temporal Scale | | | |
| | Short term | Less than 5 years | 1 | |
| | Medium term | Between 5 and 20 years | 2 | |
| | Long Term | Between 20 and 40 years (a generation) and from a human perspective almost permanent. | 3 | |
| | Permanent | Over 40 years and resulting in a permanent and lasting change that will always be there. | 4 | |
| | Spatial Scale | | | |
| | Localised | At localised scale and a few hectares in extent | 1 | |
| | Project Area | The proposed site and its immediate environs | 2 | |
| | Regional | District and Provincial level | 3 | |
| | National | Country | 3 | |
| | International | Internationally | 4 | |
| | Severity | Impact (Negative) | Benefit (Positive) | |
| | Slight / Slightly Beneficial | Slight impacts on the affected system(s) or party (ies) | Slightly beneficial to the affected system(s) or party (ies) | 1 |
| | Moderate / Moderately Beneficial | Moderate impacts on the affected system(s) or party(ies) | An impact of real benefit to the affected system(s) or party (ies) | 2 |
| Severe / Beneficial | Severe impacts on the affected system(s) or party (ies) | A substantial benefit to the affected system(s) or party (ies) | 4 | |
| Very Severe / Very Beneficial | Very severe change to the affected system(s) or party(ies) | A very substantial benefit to the affected system(s) or party (ies) | 8 | |
| Likelihood | Likelihood | | | |
| | Unlikely | The likelihood of these impacts occurring is slight | 1 | |
| | May Occur | The likelihood of these impacts occurring is possible | 2 | |
| | Probable | The likelihood of these impacts occurring is probable | 3 | |
| | Definite | The likelihood is that this impact will definitely occur | 4 | |

Table 5-2: The Significance Matrix

| LIKELIHOOD | | Effect | | | | | | | | | | | | | |
|-------------------|--|---------------|---|---|----|----|----|----|----|----|----|----|----|----|----|
| | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 1 | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 3 | | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 4 | | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

Table 5-3: The Significance Rating Table

| SIGNIFICANCE | DESCRIPTION |
|------------------|---|
| Low | Acceptable impact for which mitigation is desirable but not essential. The impact by itself is insufficient even in combination with other low impacts to prevent the development being approved. These impacts will result in either positive or negative medium to short term effects on the social and/or natural environment. |
| Moderate | An important impact which requires mitigation. The impact is insufficient by itself to prevent the implementation of the project but which in conjunction with other impacts may prevent its implementation. These impacts will usually result in either a positive or negative medium to long-term effect on the social and/or natural environment. |
| High | A serious impact, if not mitigated, may prevent the implementation of the project (if it is a negative impact). These impacts would be considered by society as constituting a major and usually a long-term change to the (natural &/or social) environment and result in severe effects or beneficial effects. |
| Very High | A very serious impact which, if negative, may be sufficient by itself to prevent implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigable and usually result in very severe effects, or very beneficial effects. However, this is very specific to each specialist study and does not necessarily mean no-go. |

5.2 2016 IMPACT SUMMARY⁵

Table 5-4 provides a summary of the impacts identified during the 2016 S&EIA undertaken for the original 60 Turbine WEF.

Table 5-4: 2016 Impact Assessment Summary

| IMPACT IDENTIFIED | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|---------------------|----------|--------------------|-----------------|
| Agriculture, Soil and Land Use Capacity | | | | |
| Increase in erosion potential | Planning and Design | Negative | Moderate | Low |
| Increase in renewable energy development | Planning and Design | Negative | Low | Low |
| Loss of agricultural crop land | Planning and Design | Negative | Moderate | Low |
| Managing of hazardous chemicals | Construction | Negative | Moderate | Low |
| Loss of grazing, game and livestock from unplanned fire | Construction | Negative | High | Low |
| Loss of agricultural potential due to poor management of the soil stockpile | Construction | Negative | Moderate | Low |

⁵ The full 2016 specialist reports can be made available on request.

| IMPACT IDENTIFIED | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|--|---------------------------|----------|--------------------|-----------------|
| Soil profile disturbance and resultant decrease in soil agricultural capability | Construction | Negative | Very High | Low |
| Establishment of renewable energy infrastructure on agricultural land | Construction | Negative | Moderate | Low |
| Increase in erosion potential | Construction | Negative | Moderate | Low |
| Loss of agricultural crop land | Construction | Negative | Moderate | Low |
| Increase in erosion potential | Operational | Negative | Moderate | Low |
| Establishment of renewable energy infrastructure on agricultural land | Operational | Negative | Moderate | Low |
| Establishment of new access roads | Operational | Positive | High | High |
| Decommissioning and removal of renewable energy infrastructure on agricultural land | Decommissioning | Positive | Moderate | Moderate |
| Biodiversity – Terrestrial Flora | | | | |
| Impact on vegetation and listed plant species due to transformation within the development footprint. | Construction | Negative | Moderate | Low |
| Soil erosion risk as a result of clearing and disturbance within the development footprint and adjacent affected areas. | Construction | Negative | Moderate | Low |
| Following construction, the site will be highly vulnerable to soil erosion. | Operational | Negative | Moderate | Low |
| Following construction, the site will be highly vulnerable to alien plant invasion. | Operational | Negative | Moderate | Low |
| Soil Erosion Risk Following Decommissioning will be high. | Decommissioning | Negative | Moderate | Low |
| Alien plant invasion will be highly likely within disturbed areas following decommissioning. | Decommissioning | Negative | Moderate | Low |
| Biodiversity – Terrestrial Fauna | | | | |
| Direct faunal impacts due to the construction phase noise and physical disturbance. | Construction | Negative | Moderate | Moderate |
| Faunal impacts due to operational activities of the wind farm such as noise, and human presence during maintenance activities. | Operational | Negative | Moderate | Low |
| Faunal Impacts due to Decommissioning Phase activities such as noise and disturbance due to the presence of construction staff and the operation of heavy machinery. | Decommissioning | Negative | Moderate | Low |
| Avifauna | | | | |
| Habitat loss associated with the construction phase. | Planning and Construction | Negative | Low | Low |
| Disturbance and displacement associated with the construction phase. | Planning and Construction | Negative | Low | Low |
| Activities and/or presence of intrusive structures cause birds to permanently move away from infrastructure. | Operational | Negative | Moderate | Moderate |

| IMPACT IDENTIFIED | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|-----------------|---------------|---------------------------|------------------------|
| Turbine collision mortality | Operational | Negative | Low | Low |
| Powerline collision mortality associated with the placement of 33kV Powerlines throughout the project site | Operational | Negative | Moderate | Moderate |
| Bats | | | | |
| Destruction of bat roosts due to earthworks and blasting | Construction | Negative | Moderate | Low |
| Loss of foraging habitat | Construction | Negative | Moderate | Low |
| Bat mortalities due to direct blade impact or barotrauma during foraging activities (not migration). | Operational | Negative | High | Low |
| Artificial lighting | Operational | Negative | High | Low |
| Loss of foraging habitat | Decommissioning | Negative | Low | Low |
| Surface Water and Wetland | | | | |
| Loss of riparian systems and disturbance to alluvial water courses. | Construction | Negative | Moderate | Low |
| Loss of wetlands and wetland function in the construction phase. | Construction | Negative | Moderate | Low |
| Increase in sedimentation and erosion in the construction, operational and decommissioning phases. | Construction | Negative | Moderate | Low |
| Impact on localised surface water quality. | Construction | Negative | Moderate | Low |
| Impact on localised aquatic systems due to the storage of hazardous substances. | Construction | Negative | Moderate | Low |
| Impact on riparian systems through the possible increase in surface water runoff on riparian form and function during the operational and decommissioning phases. | Operational | Negative | Moderate | Low |
| Loss of riparian systems and disturbance to alluvial water courses. | Decommissioning | Negative | Moderate | Low |
| Increase in sedimentation and erosion in the construction, operational and decommissioning phases. | Decommissioning | Negative | Moderate | Low |
| Impact on localised surface water quality. | Decommissioning | Negative | Moderate | Low |
| Impact on riparian systems through the possible increase in surface water runoff on riparian form and function during the operational and decommissioning phases. | Decommissioning | Negative | Moderate | Low |
| Noise | | | | |
| Impact of construction increase in ambient noise levels. | Construction | Negative | Low | Low |
| Impact of the operational noise on the surrounding environment. | Operational | Negative | Low | Low |
| Impact of decommissioning increase in ambient noise levels. | Decommissioning | Negative | Low | Low |
| Visual | | | | |
| Visual impact of construction activity | Construction | Negative | Moderate | Moderate |
| Construction camp alternatives 1, 2 and 3. | Construction | Negative | Low | Low |

| IMPACT IDENTIFIED | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|--|-----------------|----------|--------------------|-----------------|
| Impact of the layout on sensitive visual receptors. | Operational | Negative | High | High |
| The access road, including alternatives 1 and 2. | Operational | Negative | Moderate | Moderate |
| Visual impact of the on-site substation. | Operational | Negative | Moderate | Moderate |
| Shadow flicker | Operational | Negative | No Impact | |
| Visual impact of decommissioning activity. | Decommissioning | Negative | Moderate | Moderate |
| Traffic and Transport | | | | |
| Traffic impact as a result of transportation of concrete towers. | Construction | Negative | Low | Low |
| Traffic impact as a result of transportation of Steel Towers. | Construction | Negative | Low | Low |
| Traffic as a result of Operations. | Operational | Negative | Low | Low |
| Traffic impact as a result of Maintenance. | Operational | Negative | Low | Low |
| Heritage | | | | |
| Destruction of precolonial / stone age material. | Construction | Negative | Very High | Moderate |
| Destruction of Stone Walling Features (BV_SW1 - BV_SW17) and associated Historical Artefact Scatters (BV_Hist1 – BV_Hist3) | Construction | Negative | Very High | Moderate |
| Destruction of Graves (formal and informal burials) (HV_G1 – BV_G2) | Construction | Negative | Very High | Moderate |
| The Destruction of Homesteads / Farmhouse Complexes (BV_HS1 – BV_HS6) | Construction | Negative | Very High | Moderate |
| The impact of the construction of the proposed Rietkloof WEF on the cultural landscape. | Construction | Negative | Very High | Moderate |
| Palaeontology | | | | |
| Disturbance, damage or destruction of fossil heritage within development footprint during the construction phase | Construction | Negative | Moderate | Low |
| Potential improved palaeontological database. | Construction | Positive | Low | High |
| Socio-Economic | | | | |
| Creation of employment and business opportunities during the construction phase | Construction | Positive | Low | Moderate |
| Technical advice for local farmers and municipalities. | Construction | Positive | N/A | Moderate |
| Impact of construction workers on local communities. | Construction | Negative | Moderate | Low |
| Influx of job seekers. | Construction | Negative | Low | Low |
| Risk to safety, livestock and farm infrastructure. | Construction | Negative | Moderate | Low |
| Increased risk of grass fires. | Construction | Negative | Moderate | Low |

| IMPACT IDENTIFIED | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|-----------------|-----------------------|--------------------|-----------------|
| Impacts associated with construction vehicles. | Construction | Negative | Moderate | Low |
| Impacts associated with loss of farmland. | Construction | Negative | Moderate | Low |
| Potential impact on tourism. | Construction | Negative | Low | Low |
| Creation of employment and business opportunities associated with the operational phase | Operational | Positive | Low | Moderate |
| Creation of an alternative income source for farmers, which in turn can assist to reduce and or prevent job losses in the farming sector. | Operational | Positive | Low | Moderate |
| Benefits associated with the establishment of a Community Trust. | Operational | Positive | Moderate | High |
| Promotion of clean, renewable energy. | Operational | Negative/ Positive | Moderate (-) | Moderate (+) |
| Visual impact associated with the proposed WEF and the potential impact on the areas rural sense of place. | Operational | Negative | Moderate | Moderate |
| Potential impact of the WEF on local tourism. | Operational | Negative | Low | Low |
| Assessment of Power Lines and Substation. | Operational | Negative | Low | Low |
| Potential visual impacts associated with access roads and construction camps (all alternative locations). | Operational | Negative | Low | Low |
| Social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. | Decommissioning | Negative | Low | Low |

5.3 2019 IMPACT SUMMARY⁶

Table 5-5 provides a summary of the impacts identified during the 2019 BA undertaken for the 51 Turbine WEF.

Table 5-5: 2019 Impact Assessment Summary

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|----------------|--|----------------------------------|----------|--------------------|-----------------|
| Climate | | | | | |
| C1 | Limited impact on climate change due to emissions from machinery and vehicles on the site during construction. | Construction/ Decommissioning | Negative | Low | Low |
| C2 | The manufacturing of the materials associated with the project, and associated transportation to site will result in indirect GHG emissions. There will be no GHG emissions directly associated with power | Operation | Negative | Moderate | Low |

⁶ The full 2019 specialist reports can be made available on request

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|--|---------------------|----------|--------------------|-----------------|
| | generation from the facility in the operation phase due to the nature of the technology. | | | | |
| C3 | The project may be regarded as having a positive impact in terms of GHG emissions associated with the development of power generation capacity in South Africa i.e. less GHG emissions per unit of power contributed when compared to conventional fossil fuel derived power. | Operation | Positive | High | High |
| Topography | | | | | |
| T1 | The development of infrastructure such as turbines, internal access roads, fencing etc. will result in the need for site clearance, top soil removal and earthmoving activities associated with the road and infrastructure construction. These activities will result in a minor change in the topographical profile of the site. | Construction | Negative | Low | Low |
| T2 | The Rietkloof WEF will not result in any changes to the vertical ground profile within the study area; however, the height of the turbines add a secondary visual dimension to the study area which can visually change the topography in the area. | Operation | Negative | Moderate | Moderate |
| Geology | | | | | |
| G1 | Site preparation will be required in terms of vegetation clearance and bulk earthworks. In addition, concrete foundations will be required for the supporting of the wind turbines. | Construction | Negative | Low | Low |
| Agriculture, Soils and Land Capability | | | | | |
| ASLC1 | Inappropriate storm water design may lead to an increase in surface soil erosion. | Planning and Design | Negative | Moderate | Low |
| ASLC2 | Increase in renewable energy development in the local area will result in a gradual reduction of available agricultural land over time. | | Negative | Moderate | Low |
| ASLC3 | The development of access roads could result in the loss of irrigated agricultural crop land. | | Negative | Moderate | Low |
| ASLC4 | The planning and design phase of a new wind farm will result in the loss of local soil types. | | Negative | High | High |
| ASLC5 | The potential for soil contamination as a result of hazardous chemical spills and leakages (such as those from vehicles, generators etc.) could lead to soil contamination and a loss of fertile soils if not managed appropriately. | Construction | Negative | Moderate | Low |
| ASLC6 | Fires originating from the construction site could escape into and burn the natural | | Negative | Very High | Low |

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|--|---------------------------|----------|--------------------|-----------------|
| | vegetation leading to the loss of grazing and possibly game and livestock. | | | | |
| ASLC7 | During the construction phase, the incorrect stockpiling of the soil horizons (specifically topsoil) could potentially result in a decrease of agricultural viability/potential. | | Negative | Moderate | Low |
| ASLC8 | Excavations for the construction of the turbines and associated infrastructure will disturb the soil profile. If topsoil becomes buried, or subsoil rock, that is less suitable for root growth, remains at the surface, the agricultural suitability of the soil, that will become available for agriculture again after decommissioning of the WEF, will be reduced. | | Negative | Very High | Low |
| ASLC9 | During the construction phase the WEF infrastructure (permanent and temporary) will result in the loss of low agricultural land. | | Negative | Moderate | Low |
| ASLC10 | Impacted areas and hard surfaces associated with the construction phase will cause and increase in run-off, particularly after rainfall events which could lead to soil erosion. | | Negative | High | Low |
| ASLC11 | During the construction phase the construction of access roads may result in the permanent loss of existing croplands. | | Negative | High | Low |
| ASLC12 | During the operational phase an increase in hard surfaces (hardstands and roads) will increase run-off and potentially lead to soil erosion. | Operational | Negative | High | Low |
| ASLC13 | During the operational phase the WEF infrastructure will result in the loss of low quality agricultural land. | | Negative | Moderate | Low |
| ASLC14 | The new access roads that will be built for the WEF will allow the landowners and neighbours easier access to farm areas that were previously inaccessible or difficult to access. | | Positive | High | High |
| ASLC15 | During the decommissioning phase the decrease in renewable energy development in the local area will result in an increase of available agricultural land. | Decommissioning | Positive | High | High |
| Natural Vegetation and Animal Life | | | | | |
| BIO1 | Impact on vegetation and listed plant species due to transformation within the development footprint | Planning and Construction | Negative | High | Moderate |
| BIO2 | Faunal impacts due to the construction phase noise and physical disturbance | | Negative | Moderate | Moderate |
| BIO3 | Soil erosion risk as a result of clearing and disturbance within the development footprint and adjacent affected areas | | Negative | Moderate | Low |

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|-----------------|--|---------------------------|----------|--------------------|-----------------|
| BIO4 | Faunal impacts due to operational activities of the WEF such as noise, and human presence during maintenance activities | Operation | Negative | Moderate | Low |
| BIO5 | All areas disturbed during construction will remain vulnerable to disturbance for some time into the operational phase and will require regular maintenance to ensure that erosion is minimised. | | Negative | Moderate | Low |
| BIO6 | Disturbed areas are vulnerable to alien plant invasion and it is likely that road verges, crane pads and other cleared or disturbed areas will be foci for the infestation of alien plants. Uncontrolled infestation can result in invasion into the intact rangeland and where woody species are involved, this can result in loss of biodiversity and a decline in ecosystem services. | | Negative | Moderate | Low |
| BIO7 | Faunal Impacts due to Decommissioning Phase activities such as noise and disturbance | Decommissioning | Negative | Moderate | Low |
| BIO8 | Decommissioning will result in a lot of disturbance which will leave the site vulnerable to erosion. | | Negative | Moderate | Low |
| BIO9 | Decommissioning will leave the site vulnerable to alien plant invasion. | | Negative | Moderate | Low |
| Avifauna | | | | | |
| AV1 | Development of the infrastructure footprints inevitably causes the loss of foraging and nesting habitat for most locally resident species of birds. | Planning and Construction | Negative | Moderate | Low |
| AV2 | Disturbance of avifauna due to construction activities | | Negative | Moderate | Low |
| AV3 | Activities and/or similar presence of intrusive structures cause birds to permanently move away from infrastructure | Operation | Negative | Moderate | Moderate |
| AV4 | Collision mortality with the turbines | | Negative | Low | Low |
| AV5 | Powerline collision mortality associated with the placement of 33kV Powerlines throughout the project site | | Negative | Moderate | Moderate |
| Bats | | | | | |
| BAT1 | Destruction of bat roosts due to earthworks and blasting | Construction | Negative | Moderate | Low |
| BAT2 | Loss of foraging habitat. | | Negative | Low | Low |
| BAT3 | Bat mortalities due to direct blade impact or barotrauma during foraging activities, | Operation | Negative | High | Moderate |
| BAT4 | Artificial Lighting | | Negative | High | Low |
| BAT5 | Loss of foraging habitat. | Decommissioning | Negative | Low | Low |

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|------------------------------|---|----------------------------------|----------|--------------------|-----------------|
| Surface Water | | | | | |
| SW1 | Loss of riparian systems and disturbance of the alluvial water courses in the construction and operational phases. | Construction and Decommissioning | Negative | Moderate | Low |
| SW2 | Loss of wetlands and wetland function in the construction phase. | | Negative | Moderate | Low |
| SW3 | Increase in sedimentation and erosion in the construction, operational and decommissioning phases. Impacts include changes to the hydrological regime such as alteration of surface run-off patterns which could occur during the construction, operational and decommissioning phases. | | Negative | Moderate | Low |
| SW4 | Potential impact on localised surface water quality during the construction and decommissioning phases | | Negative | Moderate | Low |
| SW5 | Storage of hazardous substances particular in the construction and operational phase | | Negative | Moderate | Low |
| SW6 | Impact on riparian systems through the possible increase in surface water runoff on riparian form and function during the operational and decommissioning phase | Operation and decommissioning | Negative | Moderate | Low |
| Noise | | | | | |
| N1 | Construction activities will cause an increase in ambient noise levels | Construction | Negative | Low | Low |
| N2 | Operational noise on the surrounding environment | Operational | Negative | Low | Low |
| Visual | | | | | |
| V1 | Visual impact during construction due to dust, vehicles and equipment | Construction | Negative | Moderate | Moderate |
| V2 | Impact of construction camps on visually receptors | | Negative | Low | Low |
| V3 | Impact of wind turbines on visually sensitive points and areas | Operational | Negative | High | High |
| V4 | Impacts of access roads on visually sensitive receptors | | Negative | Moderate | Moderate |
| V5 | Impact of substations on visually sensitive receptors | | Negative | Low | Low |
| V6 | Visual impact of decommissioning activity | Decommissioning | Negative | Moderate | Moderate |
| Traffic and Transport | | | | | |
| TT1 | Traffic impact as a result of transportation of concrete towers | Construction and Decommissioning | Negative | Moderate | Low |
| TT2 | Traffic impact as a result of transportation of Steel Towers | | Negative | Low | Low |
| TT3 | Traffic as a result of Operations | Operational | Negative | Moderate | Moderate |

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|----------------------|--|--------------|----------|--|-----------------|
| TT4 | Traffic impact as a result of Maintenance | | Negative | Low | Low |
| Heritage | | | | | |
| H1 | Impact assessment of destruction of precolonial / stone age material | Construction | Negative | Very High | Moderate |
| H2 | Impact assessment of the destruction of stone walling features | | Negative | Very High | Moderate |
| H3 | Impact assessment of the destruction of graves | | Neutral | Very High | Moderate |
| H4 | Impact assessment of the destruction of homesteads/ farmhouses | | Neutral | Very High | Moderate |
| H5 | The impact of the construction of the proposed Rietkloof WEF on the cultural landscape | | Neutral | Very High | Very High |
| H6 | The impact of the construction of the proposed Rietkloof WEF on the built environment | | Neutral | Very High | Moderate |
| Palaeontology | | | | | |
| P1 | Disturbance, damage or destruction of fossil heritage during the construction phase of the WEF | Construction | Negative | Moderate | Low |
| Social | | | | | |
| SE1 | Creation of Employment Opportunities | Construction | Positive | Moderate | Moderate |
| SE2 | Technical advice on wind energy to local farmers and municipalities | | Positive | N/A- <i>represents the status quo</i> | Moderate |
| SE3 | Presence of construction workers on local communities | | Negative | Moderate | Moderate |
| SE4 | Influx of job- seekers | | Negative | Moderate | Moderate |
| SE5 | Increased risks to livestock and farming infrastructure associated with the construction related activities and presence of construction workers on the site | | Negative | Moderate | Moderate |
| SE6 | Increased risk of grass fires | | Negative | Moderate | Low |
| SE7 | Noise, dust, waste and safety impacts associated with construction related activities and vehicles | | Negative | Moderate | Low |
| SE8 | grazing and productive farmland | | Negative | Moderate | Low |
| SE9 | Impact on tourism | | Positive | Low | Low |
| SE10 | Creation of employment and business opportunities | Operational | Positive | Moderate | Moderate |
| SE11 | Generation of income for farmers | | Positive | Moderate | Moderate |
| SE12 | Benefits associated with the establishment of a community trust | | Positive | Moderate | High |

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|------|---|-----------------|----------|--------------------|-----------------|
| SE13 | Development of infrastructure for the generation of clean, renewable energy | | Positive | Moderate | High |
| SE14 | Visual impacts and associated impact on sense of place | | Negative | Moderate | Moderate |
| SE15 | Impact on tourism | | Negative | Moderate | Moderate |
| SE16 | Impacts associated with decommissioning | Decommissioning | Negative | Moderate | Low |

5.4 CUMULATIVE IMPACTS

During the 2016 EIA and 2019 BA processes all specialists assessed the cumulative impacts that would result from the existing projects within a 30km radius of the site. The surrounding projects have been detailed in **Table 2-3** and illustrated in **Figure 2-4** above. The following projects within a 30km radius were taken into account:

- Kudusberg Wind Project;
- Konstabel Solar Project;
- Roggeveld Wind Project (**Preferred Bidder**, operational);
- Karreebosch Wind Project;
- Rondekop Wind Project;
- Komsberg East and Komsberg West Wind Projects;
- Perdekraal Wind Project (**Preferred Bidder**, operational);
- Witberg Wind Project;
- Sutherland Wind and Solar Project;
- Hidden Valley Wind Project (Karusa and Soetwater wind farms (**Preferred Bidder**, operational));
- Gunstfontein Wind Project;
- Maralla East and West Wind Projects;
- Brandvalley Wind Project (**Preferred Bidder**, to be constructed in due course);
- Esizayo Wind Project; and
- Tooverberg Wind Project.

Subsequent to the 2016 and 2019 studies, the Oya Solar project was approved. The Kudusberg Wind project was also split into two projects, one of which (together with the Oya Solar project) has been identified as a preferred bidder under the Risk Mitigation Round and is due to be constructed in due course.

5.4.1 2016 CUMULATIVE IMPACT SUMMARY⁷

Table 5-6 provides a summary of the cumulative impacts identified during the 2016 EIA undertaken for the original 60 Turbine WEF.

⁷ The full 2016 specialist reports can be made available on request

Table 5-6: 2016 Cumulative Impact Assessment Summary

| IMPACT IDENTIFIED | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|--|---------------|---------------------------|------------------------|
| Agriculture, Soil and Land Use Capacity | | | |
| Change in local land use (for all phases) | Negative | Moderate | Moderate |
| Overall cumulative impact | Negative | Low | Low |
| Biodiversity – Terrestrial Flora | | | |
| Impact on CBAs and Broad-Scale Ecological Processes due habitat loss and the presence and operation of the facility. | Negative | High | Moderate |
| Avifauna | | | |
| The combined impacts from other renewable energy developments within close proximity to the Brandvalley wind farm. | Negative | Moderate | Moderate |
| Electrocution. | Negative | Low | Low |
| Habitat Destruction. | Negative | Low | Low |
| Displacement. | Negative | Low | Low |
| Collision with solar panels. | Negative | Moderate | Low |
| Collision with turbines. | Negative | Low | Low |
| Collision with power lines. | Negative | Moderate | Moderate |
| Bats | | | |
| Cumulative bat mortalities due to direct blade impact or barotrauma during foraging (resident and migrating bats affected). | Negative | High | Moderate |
| Surface Water and Wetlands | | | |
| Overall cumulative impact. | Negative | Moderate | Low |
| Noise | | | |
| Noise increase due to the development of multiple WEF in the same area. | Negative | Low | Low |
| Visual | | | |
| Cumulative Visual impact | Negative | High | High |
| Heritage | | | |
| The construction of the proposed Rietkloof WEF and cumulative impacts on heritage resources. | Negative | Very High | Moderate |
| Palaeontology | | | |
| Disturbance, damage or destruction of fossil heritage within development footprint during the construction phase of the WEF. | Negative | Low | Low |
| Potential improved palaeontological database. | Positive | Low | High |
| Traffic and Transport | | | |
| No cumulative impacts were identified during the 2016 impact assessment. | | | |
| Socio-Economic | | | |
| Cumulative visual impacts associated with the establishment of a number of WEFs on the on the areas rural sense of place and character of the landscape. | Negative | Moderate | Moderate |
| The establishment of a number of renewable energy facilities in the KHLM and LLM will place pressure on local | Negative | Moderate | Moderate |

| IMPACT IDENTIFIED | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|--|----------|--------------------|-----------------|
| services, specifically medical, education and accommodation. | | | |
| The establishment of a number of renewable energy facilities in the KHLM and LLM will create employment, skills development and training opportunities, creation of downstream business opportunities. | Positive | Moderate | High |

5.4.2 2019 CUMULATIVE IMPACT SUMMARY⁸

Table 5-7 provides a summary of the cumulative impacts identified during the 2019 BA undertaken for the 51 Turbine WEF.

Table 5-7: 2019 Cumulative Impact Assessment Summary

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|---|---|------------------------------|----------|--------------------|-----------------|
| Agriculture, Soils and Land Capability | | | | | |
| ASLC-C1 | Overall Agricultural Soil and Land Capacity cumulative impact | Operational | Negative | Moderate | Moderate |
| Natural Vegetation and Animal Life | | | | | |
| BIO-C1 | Impact on CBAs and Broad-Scale Ecological Processes due habitat loss and the presence and operation of the facility | Construction and Operational | Negative | Moderate | Low |
| BIO-C2 | Impact on future conservation options due to development within the Roggeveld Area | Operational | Negative | Moderate | Low |
| Avifauna | | | | | |
| AV-C1 | Overall Cumulative Avifaunal Impact | Operation | Negative | Moderate | Moderate |
| AV-C2 | Electrocution | | Negative | Moderate | Moderate |
| AV-C3 | Habitat Destruction | | Negative | Moderate | Moderate |
| AV-C4 | Displacement | | Negative | Low | Low |
| AV-C5 | Collison with various forms of renewable energy infrastructure | | Negative | Moderate | Low |
| Bats | | | | | |
| BAT-C1 | Collison with various forms of renewable energy infrastructure | Operational | Negative | High | Moderate |
| Surface Water | | | | | |
| SW-C1 | Aquatic cumulative impact | Operational | Negative | Moderate | Low |
| Noise | | | | | |
| N-C1 | Overall cumulative noise impact | Operational | Negative | Low | Low |

⁸ The full 2019 specialist reports can be made available on request

| REF. | IMPACT DESCRIPTION | PHASE | STATUS | WITHOUT MITIGATION | WITH MITIGATION |
|----------------------|--|-------------|----------|--------------------|-----------------|
| Visual | | | | | |
| V-C1 | Overall cumulative noise impact | Operational | Negative | High | High |
| Heritage | | | | | |
| H-C1 | The construction of the proposed Rietkloof WEF and cumulative impacts on heritage resources | | Negative | Very High | Moderate |
| Palaeontology | | | | | |
| P-C1 | Disturbance, damage or destruction of fossils (direct, negative impacts) preserved at or beneath the ground surface within the development footprint | | Negative | Moderate | Low |
| Social | | | | | |
| SE-C1 | Cumulative Impact on Sense of Place | Operational | Negative | Moderate | Moderate |
| SE-C2 | Cumulative Impact on Local Services and Accommodation | Operational | Negative | Moderate | Moderate |
| SE-C3 | Cumulative Impacts on Local Economy | Operational | Positive | Moderate | High |

5.5 2021 SPECIALIST STUDIES

The specialists outlined in **Table 5-8** were appointed to undertake the necessary specialist reporting to determine and assess the potential impacts associated with the proposed amendments. Each of the specialists has reviewed the previous studies (2016 and 2019) and the proposed amendments to the projects and has provided a specialist statement as to whether the proposed amendment will change the impacts identified in the previous studies as well as to whether any additional mitigation measures will be required. The Specialist Declarations for the specialists are included in **Appendix D**. A summary of the findings of the 2021 statements are provided below in section 5.6 below.

Table 5-8: Specialists appointed to determine and assess the potential impacts

| NR | ENVIRONMENTAL ASPECT | ASSESSED BY |
|----|------------------------------------|--|
| 1 | Agricultural and Soil Specialist | Johan Lanz |
| 2 | Terrestrial Ecology & Biodiversity | Trusted Partners, Janie Pote and Malcome Logie |
| 3 | Aquatic Specialist | Freshwater Ecologist Network (FEN) Consulting (Pty) Ltd, Christel du Preez |
| 4 | Avifaunal Specialist | Birds and Bats Unlimited, Dr Rob Simmons |
| 5 | Bat Specialist | Animalia Consultants, Werner Marais |

| NR | ENVIRONMENTAL ASPECT | ASSESSED BY |
|----|--------------------------|--|
| 6 | Heritage Specialist | CTS Heritage, Nicholas Wiltshire |
| 7 | Noise Specialist | SafeTech, Dr Brett Williams |
| 8 | Palaeontology Specialist | Natura Viva, Dr John Almond |
| 9 | Social Specialist | Mr Tony Barbour and Schalk van der Merwe |
| 10 | Traffic Specialist | JG Afrika, Avheani Ramawa |
| 11 | Visual Specialist | SiVEST SA, Kerry Schwartz |

5.6 2021 SPECIALIST FINDINGS

5.6.1 AGRICULTURE, SOIL AND LAND USE CAPACITY

Mr Roy de Kock, an agricultural and soil specialist from EOH Coastal and Environmental Services, undertook the 2016 and 2019 agricultural impact assessments. Subsequently, Johann Lanz was appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix E**.

The specialist has noted the following in his Specialist Statement:

- There are no agricultural impacts related to the proposed amendment. It will not change the nature or significance of any of the agricultural impacts assessed in the original study. There are no agricultural advantages or disadvantages related to the amendment.
- No changes or additions to the mitigation measures for agricultural impacts that were recommended in the original assessment are required, and there are therefore no required changes to the EMPr.
- The agricultural impact of the amended project will therefore be identical to the impact that was assessed in the original specialist assessment report.

The agricultural impact ratings as reported above remain relevant without any change as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented

Given the above outcome, this Rietkloof Amendment is supported in terms of agricultural impacts.

5.6.2 BIODIVERSITY

Mr Simon Todd, an ecology specialist from 3Foxes Biodiversity Solutions, undertook the 2016 and 2019 ecology impact assessments. Subsequently, Trusted Partners was appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix F**.

The ecologist found that the proposed changes in technology/infrastructure in respect of capacity output, hub height, rotor diameter, blade length and maximum blade tip height will not result in any change in the nature of impacts, nor in the significance of direct, indirect, or cumulative impacts, of the project. As such, no further ecological assessment are required in this regard.

Given the above outcome, this Rietkloof Amendment is supported in terms of terrestrial ecology impacts.

REMOVAL OF CONSERVATION MANAGEMENT PLAN FROM THE EA

Appendix C includes two professional opinions outlining the reasons behind the recommended removal of the Conservation Management Plan from the EA and subsequently the final EMPr.

The following conclusions made in the Trusted Partners Opinion are relevant:

- The biodiversity across Koedoesberge cannot be managed on a piecemeal basis;
- The ecological functioning of the Koedoesberge and the current farming practice appear to be in relative harmony with each other;
- The establishment and operation of WEFs on the Koedoesberge (as attested to be the numerous and various EAs pertaining to such WEFs) do not have a significant impact on ecological functional and biodiversity on the Koedoesberge;
- Establishment of a conservation area, is highly unlikely to achieve the any objectives envisaged by the current Conservation Management Plan;
- The conservation plan is especially onerous upon the landowner and serves little to address impact that may be resultant from establishment of WEF;
- The biodiversity and ecological functioning of the Koedoesberge is best left as unhindered as in its current form;
- There is particular inconsistency in that the conservation plan method has not been equally applied to the numerous other WEFs in the Komsberg REDZ and elsewhere in South Africa; it appears to be an arbitrary application to RK-WEF.

Therefore, the need for a Conservation Management Plan, detailing specific management of an as yet undefined Conservation Area, with oversight by a Conservation Forum is therefore deemed impractical.

In addition, Rietkloof does not have an agreement with the landowners for the management of or access to the remaining property extent outside of the access roads and turbine platforms, as such they will be unable to implement a Conservation Management Plan.

5.6.3 AVIFAUNA

Dr. Tony Williams, an avifauna specialist from African Insights, undertook the 2016 and 2019 avifauna impact assessments. Subsequently, Birds and bats Unlimited was appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix G**.

The avian re-assessment entailed a short re-assessment of the priority raptors, undertaken in May 2021, to determine if the receiving environment has changed, as well as to summarise the avian impacts of the previous avian assessment report compiled in 2016. The May 2021 survey revealed more species than recorded previously and a Passage Rate fourfold higher (at 0.32 eagles per hour) than in 2016. The re-assessment located a second Verreaux's Eagle nest site (in addition to the one identified in 2016) in the south-western corner of the Rietkloof site, on a large south-facing cliff. The two nests were observed to be attended by an adult during the May 2021 survey. Additional priority birds observed were Ludwig's Bustard *Neotis ludwigii* and Greater Flamingo *Phoenicopterus roseus*. These are Red Data species.

A 3-km buffer around both Verreaux's Eagle nests on site is recommended, in line with the present eagle guidelines (Ralston Paton 2017). It is noted that eleven turbines of the authorised 60 turbine positions occur within the 3-km buffer and four of these lie within 2016 recommended 1.5-km buffer around the Verreaux's Eagle nest. This would result in the repositioning of the eleven turbines (Turbines R01, R02, R03, R04, R05, R06, R07, R09, R10, R11, R12) away from the nest. Additionally, two of the turbines (Turbines R01, R02) that lie outside of the 1.5-km buffer and directly east of the nest appear to lie on the flight paths of eagle flights observed during the 2021 survey.

During the November 2021 site inspection, it was confirmed that the Black Harrier nest suspected by African Insights (2013) is active. The nest is located on the Brandvalley WEF site, but the recommended 3-5 km buffer of

this nest just overlaps the Rietkloof WEF. The nearest turbine (R20) on Rietkloof is 4.9-km away, marginally inside the recommended 5-km buffer of the Birdlife South Africa Black Harrier guidelines. Given the marginal nature of this distance we do not believe this turbine offers much risk to the breeding birds here. In the Northern section of the wind farm, where three turbines occur in the revised layout for the WEF, multiple flights of Black Harriers were recorded in July 2021.

Given that the reduction in numbers of turbines (47%) is more than three-fold higher than the increase in blade length (13%), an increase in avian fatalities is not expected. Taller turbines and longer blades are generally associated with greater avian fatalities (Loss et al. 2013, Thaxter et al. 2020). UCT statisticians (Drs Birgit Erni and Francisco Cervantes Peralta) were requested to model the increase, using a combination of published data (kindly provide by Dr Scott Loss) and the limited South African data of fatalities from hub heights above 80-m (Ralston Paton et al. 2017).

The two graphs below indicate that (i) avian fatalities increase exponentially as hub height is increased (**Figure 5-1**); but (ii) the exponential increase flattens out when South African data are added to the graph (**Figure 5-2**).

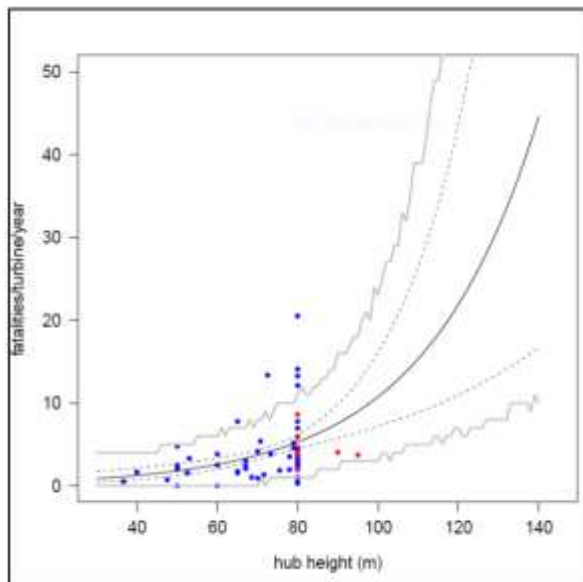


Figure 5-1: Prediction intervals from bootstrapping analyses (jagged line) based on North American hub height/fatality data (Loss et al. 2013 = blue data points) to determine if South African data (= red data points) fall within 95% confidence intervals. All 7 data points fall within the confidence intervals

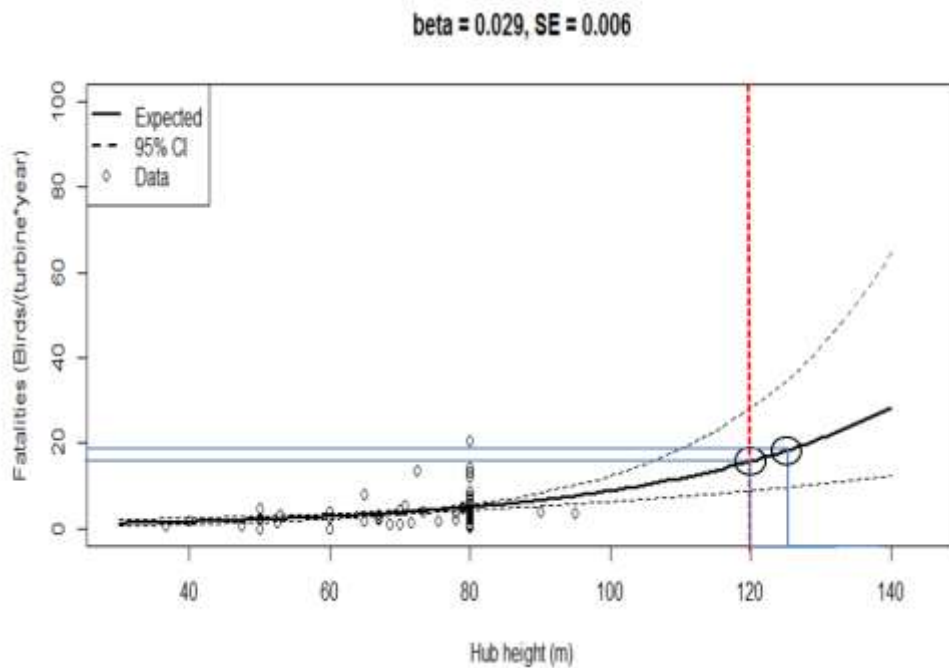


Figure 5-2: Modelled data combining avian fatalities from the USA (Loss et al. 2013) and from South Africa (Ralston-Paton et al. 2017) and their relation to hub height. The South African data (n = 7 farms) include two with hub heights of 90 m and 95 m. The combined data and 95% confidence limits predict that 16 birds (95% CI = 9, 28) will be killed on average per year for 120 m-high turbines and about 19 birds on average for 125 m-high turbines.

By reading what is predicted at the authorised (120-m) and proposed (125-m) hub heights, it is noted that the expected fatalities differ by about three birds (16 vs 19).

This means that with a decrease in the number of turbines the fatalities are also expected to decrease.

In mid-November 2021, following discussions with the client, eleven turbines were relocated away from the newly discovered Verreaux's Eagle nest in the south-west corner of the Rietkloof site. The changes are, thus, highly advantageous in reducing the possible threats to the breeding eagles and the nearest turbines to the eagle nest are now 5.6-km away. As such this is beyond what the new Verreaux's Eagle guidelines (Ralston Paton and Murgatroyd in prep.) recommend (5.2-km) and, thus, unlikely to impact Verreaux's Eagles here.

In November 2021, confirmation was received that Black Harriers are breeding 4.9-km to the west of the Rietkloof WEF (on the Brandvalley WEF) and, thus, marginally within the 3-5-km buffer recommended for this Endangered species. No major impact is expected on this species given that only one short harrier flight has been recorded near the closest turbine (R20⁹) in July and (the current) November 2021 site visits.

Most flights of Black Harriers were recorded on the northern-most ridge. This area is, thus, designated of High sensitivity even though no harrier nests are known here.

The overall appraisal is that the proposed amendments, will thus not alter the previous avifauna impacts as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. Given the above outcome, the Rietkloof Amendment is supported in terms of avifauna impacts.

⁹ Turbine R20 has nevertheless been removed from the 32 Turbine Layout as a precautionary measure.

5.6.4 BATS

Mr Werner Marais, a bat specialist from Animalia, undertook the 2016 and 2019 bat impact assessment. Subsequently, the specialist has been appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix H**.

According to the verification assessment, the proposed turbine layout is in line with the bat sensitivity map as was applicable during the preconstruction guidelines that was in use during the EIA assessment and subsequent amendments. It also respects the current guideline criteria which requires turbine blade length to be outside the high sensitivity buffers, except for Turbines R27, R37 and R49. It is noted that the larger rotor diameter (180m) effectively brings the impact zone of each turbine closer to all bat sensitivity buffers, and no part of the turbine (including the turbine blades) is allowed to intrude into high bat sensitivity buffers. The verification assessment recommends that Turbines R27, R37 and R49 base centre points should be moved to be outside of the high bat sensitivity buffer in the event that a turbine with a 180m rotor diameter is utilised. All other turbines proposed can remain in the currently authorised positions.

A map of the bat sensitivity associated with the Rietkloof turbine layout WEF is included in **Figure 5-3**. It is important to note that the assessed final layout is acceptable from a bat sensitivity perspective if all conditions of the EA are complied with, an operational bat impact monitoring study is conducted for a minimum of 2 years, and Turbines R27, R37 and R49 are relocated outside of the high bat sensitivity buffer (in the event that a turbine with a 180m rotor diameter is utilised¹⁰).

The overall appraisal is that the proposed amendments, will thus not alter the previous bat impacts as long as mitigation measures as detailed and required in the EMP_r (**Appendix P**) are implemented. Given the above outcome, the Rietkloof Amendment is supported in terms of bat impacts.

¹⁰ The new 32 Turbine layout has relocated turbines R27 and R37 outside of the high bat sensitivity buffer as requested. Turbine R49 has been removed from the Final layout.

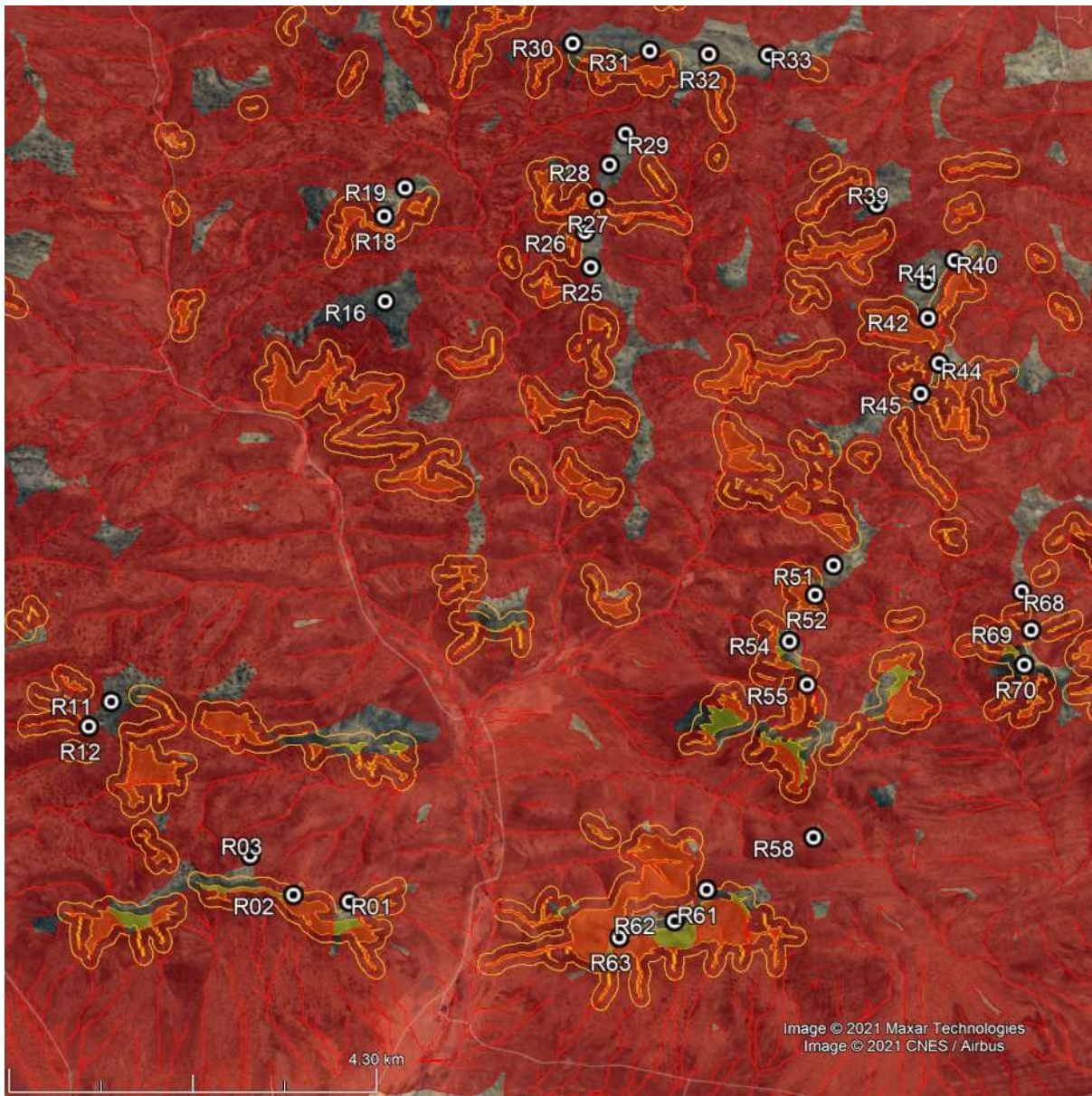


Figure 5-3: Bat sensitivity map of the Rietkloof site with proposed turbine layout (Animalia, 2021).

5.6.5 SURFACE WATER AND WETLAND

Dr Brian Colloty, an aquatic ecology specialist from Environmental and Scientific Assessment Services, undertook the 2016 and 2019 aquatic impact assessments. Subsequently, FEN Consulting has been appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix I**.

It can be concluded that the updated November 2021 layout of the proposed Rietkloof WEF does not pose any additional negative impacts to any watercourses, but rather will generate less impacts and pose less of a risk than the originally assessed layout to the watercourses of the region.

The new location of the construction camp included in the final layout is located below/partially within the 100m GN509 Zone of Regulation. Due to the ecological sensitivity and importance of the watercourses, the upgrading

of access roads directly adjacent to watercourses and upgrading of watercourse crossings by means of installing formal through flow structure poses a moderate risk significance to the watercourses, with the application of the recommended mitigation measures. As a result authorisation by means of a Water Use Licence Application (WULA) in terms of Sections 21 (c) and (i) of the National Water Act, 1998 (Act No. 36 of 1998) must be obtained from the DWS for the proposed development prior to the commencement of any works. It can be noted that this application has already been submitted to the DWS.

The overall appraisal is that the proposed amendments, will thus not alter the previous surface water impacts as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. Given the above outcome, this Rietkloof Amendment is supported in terms of aquatic impacts.

5.6.6 NOISE

Dr Brett Williams, a noise specialist from SafeTech, undertook the original 2016 noise impact assessment. Subsequently, the specialist has been appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix J**.

The revised turbine specification (an increase in hub height and rotor diameter) necessitated the remodelling of noise impacts of the final layout (47 turbine locations)¹¹. The 29 noise sensitive areas that were identified during the 2016 noise assessment were reused in the 2021 remodelling of the noise impact.

The wind turbine generator that was modelled is described in **Table 5-9**. This turbine was chosen to represent the worst-case scenario of a wind turbine up to 7.5 MW and 125m hub height. This model of turbine was chosen as it has published noise data in the WindPro catalogue of wind turbines. Furthermore, the noise data has been tested according to the methods described in IEC 61400-11 and are thus traceable. The modelled hub height (125m). A higher hub height of 180m rotor diameter could influence the results negatively (i.e. the noise could be heard at a further distance from the source), although given the low noise impact this is unlikely.

If a lower final hub height is chosen, the noise impacts could be reduced. Furthermore, if the final turbine that is chosen has a maximum sound power level that is similar or lower than the turbine modelled as part of the 2021 Specialist Statement, it can be assumed that the noise impacts will be similar or lower, irrespective of the turbine manufacturer.

Table 5-9: Turbine Specifications Used in the Noise Model

| | |
|--|----------|
| Manufacturer | ENERCON* |
| Type / Version | E-126 |
| Rated Power | 7.5MW |
| Rotor Diameter | 180m |
| Tower | Tubular |
| Grid Connection | 50 Hz |
| Maximum Sound Power Level | 108.5dB |
| Hub Height | 125m |
| *Sound Power Level dB(A) reference to 1pW from WindPro 3.2 Catalogue | |
| *The specifications of this turbine model were used as the data is available in WindPro. This does not bind the applicant to this specific model, and any turbine model with similar turbine specifications. An equal or lower maximum sound power level would be acceptable for the site. | |

The sound power levels at lower and higher wind speeds as stated above were interpolated from the published data. **The actual sound power levels may thus be less than those stated when the final turbine is selected. The levels used in the re-modelling are thus a worst-case scenario.**

The masking effect of the wind noise will mitigate the impact. The results are based on NO wind noise masking, which in reality rarely occurs. The maximum noise rating limit as per SANS 10103:2008 is 35dB(A) at night and

¹¹ It is noted that the remodelling was undertaken on 47 turbines; however, the final layout will be 32 turbines.

45 dB(A) for day/night i.e., 24 hours. The cumulative effect of developing both the Brandvalley and Rietkloof Wind Energy Projects was modelled using the ENERCON E-126 7500. The maximum noise rating limit as per the DFFE EA (dated 23 November 2016 and DEA Ref: 14/12/16/3/3/2/89) is 45 dB(A).

The modelling results (outlined in Table 5 of the Noise Specialist Statement included in **Appendix J**) indicate that the EA Limit of 45 dB(A) will **not be exceeded at any of the noise sensitive areas**. The impact rating of low (with and without mitigation) as included in the previous noise impact assessments remain valid.

The overall appraisal is that the proposed amendments, will thus not alter the previous noise impacts as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. Given the above outcome, this Rietkloof Amendment is supported in terms of noise impacts.

5.6.7 VISUAL

Mr Michael Johnson, a visual specialist from EOH Coastal and Environmental Services, undertook the 2016 and 2019 visual impact assessments. Subsequently, SiVEST has been appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix K**.

The proposed new turbine specifications would allow for a hub height of 125m and a rotor diameter of 180m, resulting in a maximum height at the blade tip of 215m, between 10m and 25m higher than the height currently authorised. While an increase in the height of the turbines would increase the visibility of the WEF, a GIS-based visibility analysis has shown that, in this instance the increase in visibility would be marginal. Visual impacts resulting from the larger turbines would be greatest within a 1km to 2km radius, from where the increased height of the structure would be most noticeable. However, no potentially sensitive receptors were identified within 2km of a wind turbine placement, and the larger turbines as proposed are not expected to increase the impacts experienced by any of the identified receptors.

In addition, **the change in the turbine specifications being proposed for the Rietkloof WEF has allowed for a reduction in the number of turbines required for the facility. Hence, a total of thirteen (13¹²) turbines have now been removed from the original 60 turbine layout and Rietkloof has advised that the number of turbines is likely to be further reduced to up to 34.¹³ Fewer turbines will result in a slight reduction in the area from which the turbines will be visible (viewshed) there will be less visual clutter in the landscape resulting in a slight reduction in the cumulative impacts experienced.**

In light of this, and the limited human habitation and relatively remote location of the proposed Rietkloof WEF, the proposed changes in the turbine specifications are not expected to result in any increased visual impacts on the identified receptors, or affect any additional receptors in the surrounding area.

Although the previous VIA considered a number of other existing and proposed renewable energy and electrical infrastructure developments in close proximity to the Rietkloof WEF, it should be noted that there have been some changes in the status of some of these projects in the interim. Construction is either well under way or has been completed in respect of three of the identified projects, namely Roggeveld, Karuso and Soetwater WEFs. Hence the landscape has already undergone noticeable change.

In addition, Rietkloof and Brandvalley WEFs have both been awarded preferred bidder status and one new project in the broader area has been granted EA and awarded preferred bidder status. This project, namely Oya Energy Facility is a combined Solar PV and Fuel-based Generator Facility (FBGF), located some 25kms north-west of the proposed Rietkloof WEF. Although the different technologies are expected to have different impacts, all renewable energy developments and associated grid connection infrastructure are relevant as they contribute to the alteration of the visual character of the broader area. In this instance however, given the distance from the Rietkloof WEF and the hilly topography in the broader area which limits the visibility of the facility, it is not anticipated that this development will result in any significant increase in the cumulative impacts affecting the landscape or the visual receptors within the assessment area for the Rietkloof project.

¹² The final layout has removed 28 turbines from the original 60-turbine layout

¹³ The final layout has been reduced to a total of 32 Turbines

Having considered the new information relating to renewable energy developments in the broader area, the overall significance of cumulative impacts remains as High Negative, with few mitigation measures available to reduce the impacts.

The overall appraisal is that the proposed amendments, will thus not alter the previous visual impacts as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. Given the above outcome, this Rietkloof Amendment is supported in terms of visual impacts.

5.6.8 TRAFFIC AND TRANSPORT

Mr Hermanus Steyn, a traffic specialist from Aurecon South Africa, undertook the 2016 and 2019 traffic and transport impact assessment. Subsequently, JG Africa has been appointed to review the previous studies and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix L**

Due to the nature of the proposed amendments, a reassessment of the previous impacts was not deemed necessary. Therefore, the traffic and transport impact ratings previously reported remain relevant without any change as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. As such, this Rietkloof Amendment is supported in terms of the traffic and transport impacts.

5.6.9 HERITAGE

Mrs Celeste Booth, a heritage specialist from Booth Heritage Consulting, undertook the 2016 and 2019 heritage impact assessments. Dr John Almond, a palaeontology specialist from Natura Viva, undertook the 2016 and 2019 palaeontology impact assessments. Subsequently, CTS Heritage has been appointed to review the previous studies (both heritage and palaeontological) and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix M**.

The specialist confirmed that there would be no change in the impact on the archaeological, palaeontological and other tangible heritage resources identified during the previous assessments conducted with regards to any of the proposed amendments.

The amendments to the positioning of the infrastructure (i.e. construction camp) would also have no negative impact on the archaeological, palaeontological and other tangible heritage as the area had been assessed during the previous study.

As such the heritage impact ratings remain relevant without any change as long as mitigation measures as detailed and required in the EMPr (**Appendix P**) are implemented. Given the above outcome, this Rietkloof Amendment is supported in terms of heritage impacts.

5.6.10 SOCIO- ECONOMIC

Mr Tony Barbour, a social specialist from Tony Barbour Environmental Consulting and Research, undertook the 2016 and 2019 socio-economic impact assessments. Subsequently, the specialist has been appointed to review the previous studies (both heritage and palaeontological) and consider the effect of the proposed amendments on the previous impacts with reference to the final layout. The outcome of the assessment is outlined in a 2021 Specialist Statement included in **Appendix N**.

Based on a review of changes associated with the amendment there are no changes to the significance ratings reflected in the Rietkloof WEF SIA (2016). In this regard the:

- The reduction on the number of wind turbines and the increase in hub height and rotor diameter of the wind turbines associated with the Part II Amendment will not change the nature or significance of any of the social impacts previously assessed as part of the SIA (2016) for the Rietkloof WEF.

- The mitigation measures for the construction of the Rietkloof WEF listed in the SIA (2016) are appropriate for Part II Amendment. No additional management outcomes or mitigation measures in terms of social impacts are therefore required

It can be concluded that the findings of the previous assessments therefore remain unchanged and valid subject to the implementation of the recommended mitigation measures and management actions contained in the EMPr (**Appendix P**).

Given the above outcome, this Rietkloof Amendment is supported in terms of socio-economic impacts.

5.6.11 GEOTECHNICAL INPUT

In September 2021 JG Afrika undertook a desk top geotechnical assessment for the proposed Rietkloof Wind Energy Facility in the Western Cape (**Appendix O**). The aim of the study was to assess the geological and geotechnical conditions across the study area, and to provide information on the topographical feasibility of the site for the proposed project, as well identify the geological and geotechnical influences and/or constraints on the construction structures.

According to the study the slope gradient map indicates that the turbines are located on gentle slope. The turbines are flanked by steep slopes on the southern portion of the site. The substation and the construction camp site are located on flat terrain. The majority of the internal access roads are characterised by flat to gentle slope along the lower lying valley areas and steep terrain characterises the slope sides.

It is however noted that based on previous investigations in the greater Roggeveld area, the site is anticipated to be underlain by shallow bedrock conditions. Competent, founding conditions can be anticipated in shallow, slightly weathered bedrock conditions, which will have to be assessed during the detailed investigation prior to construction.

Recommendations, in terms of foundations types for the various infrastructure associated with the project are included in report for consideration by the Developer. No fatal flaws from a preliminary geotechnical perspective were identified during the desktop study. The impact will be restricted to the removal and displacement of soil, boulders and bedrock. The potential impact of the development on the terrain and geological environment will be the increased potential for soil erosion, caused by construction activities and the removal of vegetation. Additionally, the aesthetic impact is considered significant due to the required extensive earthworks associated with the project to meet the required horizontal and vertical alignments and curvatures for roads., so the aesthetic impact is significant.

The anticipated impact of the proposed project will have negative effects from a geotechnical perspective and will require mitigation. The mitigation measures suggested in the study have been incorporated into this EMPr.

Areas with steep slope inclinations are not recommended for the energy developments due to the earthworks requirements and the potential need for advanced foundations. The proposed site is considered suitable for the proposed development, provided that the recommendations presented in the geotechnical desktop study report are adhered to and which need to be verified by more detailed geotechnical investigations during detailed design.

It can be concluded that the findings of the previous assessments in terms of geology, therefore remain unchanged and valid subject to the implementation of the recommended mitigation measures and management actions contained in the EMPr (**Appendix P**). Given the above outcome, this Rietkloof Amendment is supported in terms of socio-economic impacts.

5.7 2019 SENSITIVITY MAP

The overall environmental sensitivity of the site is shown in **Figure 5-4** and **Figure 5-5** below based on the final 32-turbine layout inclusive of the new construction camp location.

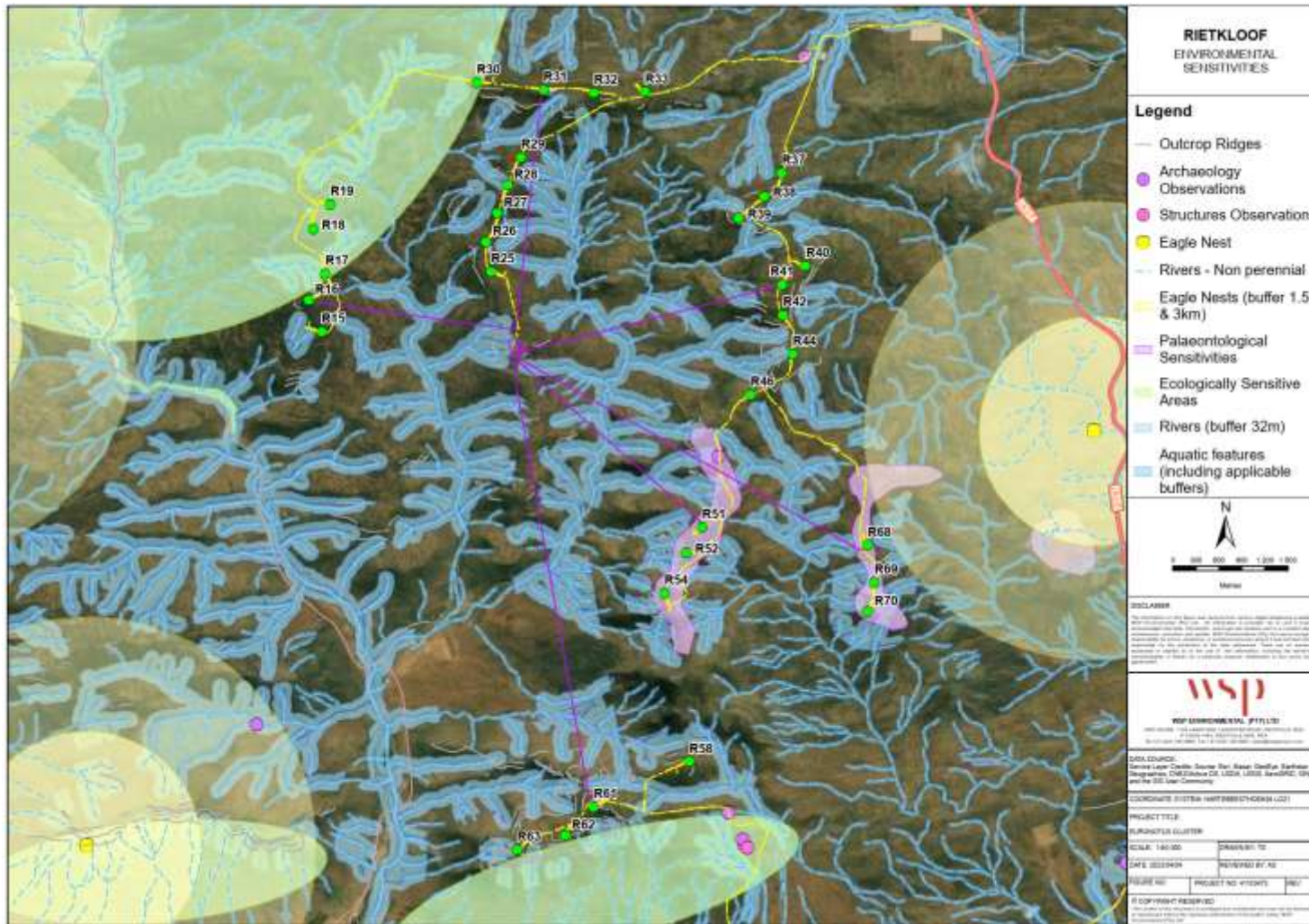


Figure 5-4: Environmental sensitivity map overlay over the Final Rietkloof WEF Layout (Final 32-Turbine Layout)

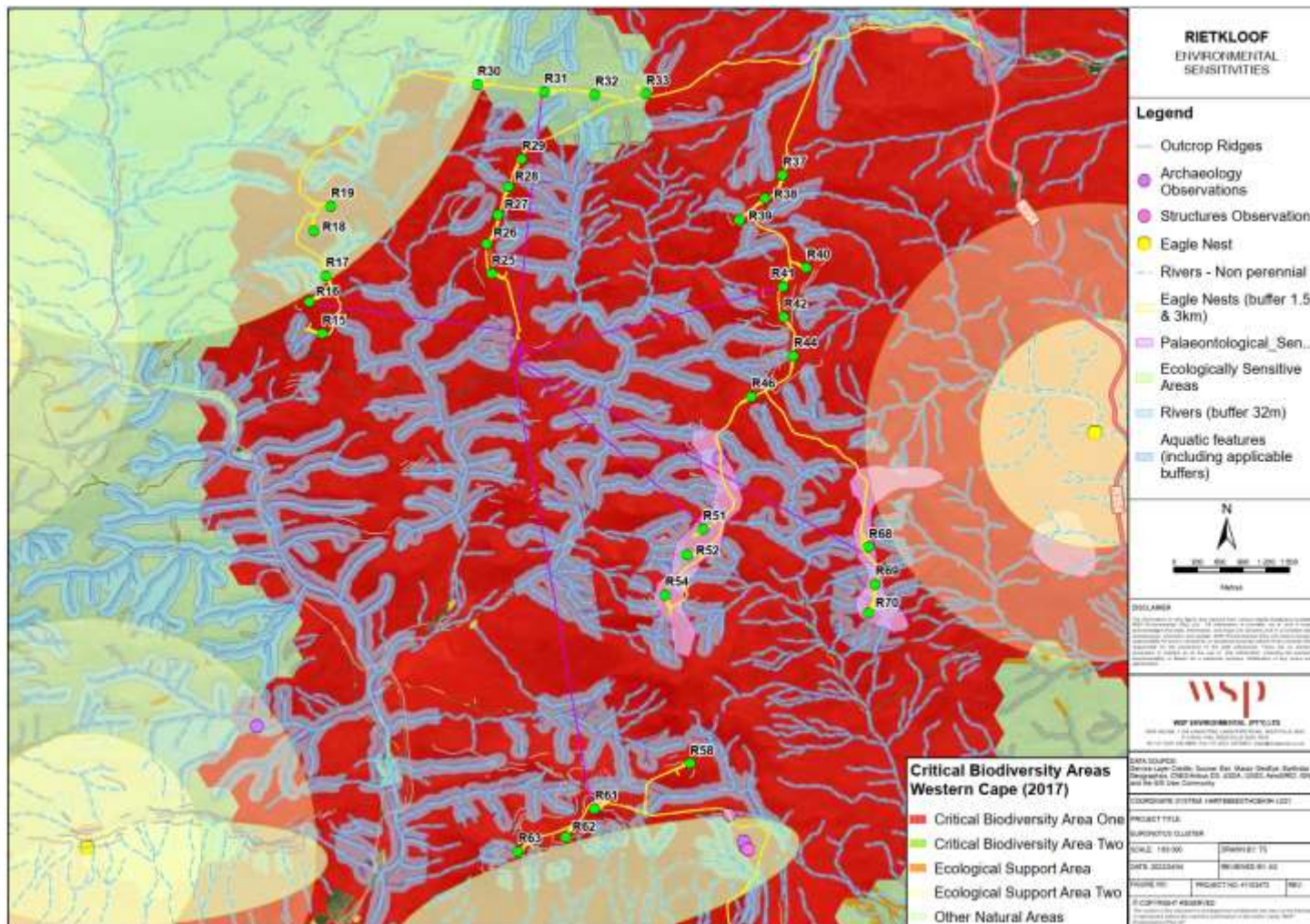


Figure 5-5: Environmental sensitivity map overlay over the Final Rieklouf WEF Layout (inclusive of CBAs) (Final 32-Turbine Layout)

8 ENVIRONMENTAL IMPACT STATEMENT

This FAR is submitted in support of the application for amendment of the EA issued to Rietkloof for the operation of the 183MW WEF near Matjiesfontein in the Western Cape. Due to the fact that the proposed amendments constitute a change of scope, a Part 2 Amendment Process in terms of Regulation 31 of the EIA Regulations (2014), as amended is required.

WSP were appointed to undertake the amendment process in terms of Regulation 31 and 32 of the EIA Regulations (2014), as amended. Ashlea Strong acts in the capacity as independent EAP. In addition, various specialists were appointed to assess the proposed amendments to the EA.

The advantages and disadvantages for the proposed amendments are outlined in the table below. It can be noted that no disadvantages have been identified.

| ASPECT TO BE AMENDED | PROPOSED AMENDMENT | ADVANTAGES/ DISADVANTAGES |
|----------------------|--------------------|---------------------------|
|----------------------|--------------------|---------------------------|

| Technical Aspects | | |
|--|--|--|
| Number of Turbines | Up to <u>32</u> of up to 7MW capacity each | <p>Wind turbine generators are constantly under development to increase the potential energy output per wind turbine. These amendments are proposed in order to increase the efficiency of the facility and consequently the economic competitiveness thereof, in turn reducing the electricity tariffs to be charged by the facility which would benefit electricity consumers at large.</p> <p>The increase in generation capacity per turbine to a maximum of up to 7MW is as a result of the advances in turbine technology.</p> <p>As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of generation capacity per turbine.</p> <p>The benefit of increasing the generation capacity of each turbine results in the need to utilise fewer turbine positions than originally authorised.</p> |
| Area Occupied by Each Turbine and hard standing area | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of between 0.35ha and 0.45ha each | <p>The increase in generation capacity per turbine to a maximum of up to 7MW will result in a reduced number of turbine positions being utilised on site.</p> <p>The exact orientation, position and dimensions of the hardstands will be subject to minor change pending the final selection of the TSA. The increased maximum allowable size of the hard standing will allow for these changes should they be required. Furthermore, the increased area will still fall well within the total authorised buildable area of approximately 126.6ha.</p> |
| Turbine Hub Height | All Turbines up to 125m | <p>Wind shear refers to the variation in wind speed over vertical distances. Installing wind turbine generators with a higher hub height will increase the overall performance of the WEF. This amendment will increase the economic competitiveness of the WEF, in turn reducing the electricity tariffs to be charged by the facility which would benefit electricity consumers at large.</p> |

ASPECT TO BE AMENDED

| ASPECT TO BE AMENDED | PROPOSED AMENDMENT | ADVANTAGES/ DISADVANTAGES |
|----------------------------|--|--|
| | | As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of the turbine hub height. |
| Rotor Diameter | All Turbines up to 180m | <p>The power output of a wind turbine is directly related to the swept area of the blades. The larger the diameter of swept area / rotor diameter of the blades, the more power it is capable of extracting from the wind. By potentially installing wind turbine generators with a larger rotor diameter, it will increase the energy output per turbine. This will result in increasing the overall performance of the WEF. This amendment will increase the economic competitiveness of the WEF, in turn reducing the electricity tariffs to be charged by the facility which would benefit electricity consumers at large.</p> <p>As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of the rotor diameter</p> |
| Turbine Foundation Area | Each turbine foundation will be 25m diameter x 4m deep for each of the <u>32</u> turbines, up to ~3.75ha in total | <p>The increase in generation capacity per turbine to a maximum of up to 7MW will result in a reduced number of turbine positions being utilised on site.</p> <p>As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of reducing the number of turbine positions on site.</p> |
| Construction Camp Location | In terms of the final layout the construction camp has been moved to existing batching plant previously utilised by Roggeveld WEF. | <p>The construction camp has been shifted to the existing batching plant area previously utilised by the Roggeveld WEF. The new location has been included in the final layout and falls within the project boundary that has been authorised and therefore will not be increasing the already assessed development footprint.</p> <p>The location of construction camp, was identified by considering the following aspects:</p> <ul style="list-style-type: none"> – Landowner preference and support; – Ease of access to R354; – Selecting a flat area requiring little to no blasting; – An area where a portion of the site is currently disturbed, thus limiting the need for additional vegetation clearance; and – The proposed new location will move the construction camp from an agricultural/undisturbed area to a more disturbed area, that has previously been used by the Roggeveld WEF <p>As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of moving the construction camp.</p> |
| Width of Internal Roads | No more than 12m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads | The final layout makes provision for roads with a maximum width of between 9 and 12m to ensure suitable access to site for all required vehicles and equipment. This is well within the 200m wide corridor that has been authorised in the EA. |

ASPECT TO BE AMENDED

| | PROPOSED AMENDMENT | ADVANTAGES/ DISADVANTAGES |
|--|--|---|
| Condition 14.2 | Remove condition. | <p>As confirmed by the specialists and EAP, there are no disadvantages associated with the amendment of the EA in terms of increasing the maximum allowable road width.</p> <p>The need for a Conservation Management Plan, detailing specific management of an as yet undefined Conservation Area, with oversight by a Conservation Forum is deemed impractical.</p> <p>In addition, Rietkloof does not have an agreement with the landowners for the management of or access to the remaining property extent outside of the access roads and turbine platforms, as such they will be unable to implement a Conservation Management Plan.</p> <p>A full professional opinion outlining the recommendation for removal is included in Appendix C.</p> |
| Condition 36 | Remove condition. | <p>In terms of the final layout the construction camp has been moved to the existing construction camp being utilised by Roggeveld WEF. The area outlined in this condition is not considered an optimal position for the construction camp based on the following:</p> <p>The ecology report shows that the area south and between turbines 31 and 32 is a very-high ecological sensitivity area.</p> <p>The area to the north and between turbines 31 and 32 is very steep and would require excessive amounts of blasting to establish a flat area large enough for the construction camp</p> |
| Condition 135 | Remove condition. | <p>The need for a Conservation Management Plan, detailing specific management of an as yet undefined Conservation Area, with oversight by a Conservation Forum is deemed impractical.</p> <p>In addition, Rietkloof does not have an agreement with the landowners for the management of or access to the remaining property extent outside of the access roads and turbine platforms, as such they will be unable to implement a Conservation Management Plan.</p> <p>A full professional opinion outlining the recommendation for removal is included in Appendix C.</p> |
| Administrative Aspects | | |
| Update the turbine number | Turbine positions (18,19.20, 3[1] ,32.33,37,38.39): | This amendment request is administrative in nature and therefore no disadvantages are foreseen. The advantage is that the correct turbine number will be reflected in the EA. |
| Amend the name of the Holder of the EA | Rietkloof Wind Farm (RF) (Pty) Ltd | We request to amend the name of the Holder of the EA. This amendment request is administrative in nature and therefore no disadvantages are foreseen. |

All of the specialists concluded that the proposed amendments are acceptable with no additional mitigation required.

Additional mitigations as a result of the amendments and as a result of the specialist walkdowns of the Final layout have been included in the updated EMPr.

The updated EMPr is appended to this report (**Appendix P**). The updated EMPr, appended to this report **is the final EMPr which is being submitted to DFFE for approval in line with Condition 16 of the EA. Based on the constraints on the site and the comments received during the initial public review period, a 32-turbine layout will be implemented on the site. The 32-turbine layout has simply dropped turbines from the assessed 47 turbine layout. This 32-turbine layout has taken the micro-siting of turbines R27 and R37 into account, with turbine R47 removed from the layout).**

It can be confirmed that public participation in being undertaken in terms of Chapter 6 of the NEMA EIA Regulations 2014, as amended.

This report was provided to potentially interested and affected parties for a 30-day review period from **19 May 2022 to 21 June 2022**. All comments received have been used to update the FAR which has been submitted to the competent authority, the DFFE. The DFFE is tasked with making a decision on the amendment application.

Based on the findings of the specialists, the EAP recommends that DFFE amends the EA as follows:

| ASPECT TO BE AMENDED | AUTHORISED | PROPOSED AMENDMENT | EA REFERENCE |
|----------------------|------------|--------------------|--------------|
|----------------------|------------|--------------------|--------------|

| Technical Aspects | | | |
|--|---|---|--|
| ASPECT TO BE AMENDED | AUTHORISED | PROPOSED AMENDMENT | EA REFERENCE |
| Number of Turbines | Up to 60 | Up to <u>32</u> of up to 7MW capacity each | <ul style="list-style-type: none"> • Page 9 of EA (page 11 in full document) <ul style="list-style-type: none"> ○ Row 6 of the table outlining the infrastructure associated with the facility |
| Area Occupied by Each Turbine and hard standing area | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of 0.35ha each | Each turbine with a foundation of up to 25m in diameter and up to 4m in depth, compacted hard standing areas of 0.45ha each | <ul style="list-style-type: none"> • Page 9 of EA (page 11 in full document) <ul style="list-style-type: none"> ○ Row 3 of the table outlining the infrastructure associated with the facility |
| Turbine Hub Height | <ul style="list-style-type: none"> • Turbine positions (18,19,20,3,32,33,37,38,39): hub height of up to 120m • Turbine positions (all other numbers- the 51 turbines): A hub height of 125m | All Turbines up to 125m | <ul style="list-style-type: none"> • Page 9 of EA (page 11 in full document) <ul style="list-style-type: none"> ○ Row 7 of the table outlining the infrastructure associated with the facility |
| Rotor Diameter | <ul style="list-style-type: none"> • Turbine positions (18,19,20,3,32,33,37,38,39): up to 140m • Positions of other 51 turbines a rotor diameter of up to 160m | All Turbines up to 180m | <ul style="list-style-type: none"> • Page 9 of EA (page 11 in full document) <ul style="list-style-type: none"> ○ Row 8 of the table outlining the infrastructure associated with the facility |
| Turbine Foundation Area | Each turbine foundation will be 25m diameter x 4m deep for each of the 60 turbines, approximately ~3.75ha. | Each turbine foundation will be 25m diameter x 4m deep for each of the <u>32</u> turbines, up to ~3.75ha in total | <ul style="list-style-type: none"> • Page 10 of EA (page 12 in full document) <ul style="list-style-type: none"> ○ Row 9 of the table outlining the infrastructure associated with the facility |

ASPECT TO BE AMENDED

AUTHORISED

PROPOSED AMENDMENT

EA REFERENCE

| | | | |
|-------------------------------|---|--|---|
| Construction Camp Location | Construction Camp Alternative 10 | In terms of the final layout the construction camp has been moved to existing batching plant previously utilised by Roggeveld WEF. | <ul style="list-style-type: none"> • Page 10 of EA (page 12 in full document) <ul style="list-style-type: none"> ○ Row 13 of the table outlining the infrastructure associated with the facility |
| Width of Internal Roads | No more than 9m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads | No more than 12m wide (turns will have a radius of up to 55m), 200m wide corridor along the access road and internal access roads | <ul style="list-style-type: none"> • Page 10 of EA (page 12 in full document) <ul style="list-style-type: none"> ○ Row 14 of the table outlining the infrastructure associated with the facility |
| Condition 14.2 | The EMPr amendment must include the following: 14.2. The Final Conservation Management Plan. | Remove condition. | <ul style="list-style-type: none"> • Condition 14.2 (page 14 of EA – page 16 in full document) |
| Condition 36 | The location of the construction camp, as well as the internal substation must be relocated and placed in proximity to turbine 31 and turbine 32. | Remove condition. | <ul style="list-style-type: none"> • Condition 36 (page 17 of EA – page 19 in full document) |
| Condition 135 | Rietkloof must engage with Cape Nature and provide them with the opportunity to provide input to the final Conservation Management Plan, which must be submitted to the DEA along with the final EMPr for approval, prior to the commencement of construction | Remove condition. | <ul style="list-style-type: none"> • Condition 135 (page 26 of EA – page 28 in full document) |
| Administrative Aspects | | | |
| Update the turbine number | Turbine positions (18,19,20,3,32,33,37,38,39): | Turbine positions (18,19,20,3[1],32,33,37,38,39): | <ul style="list-style-type: none"> • Page 9 – include the missing number [1] directly after turbine number 3 to refer to correct turbine number 31 and not 3. |
| Amend the Holder of the EA | Rietkloof Wind Farm (Pty) Ltd | Rietkloof Wind Farm (RF) (Pty) Ltd | <ul style="list-style-type: none"> • Page 1 – Contact Details <ul style="list-style-type: none"> ○ Page 2 of EA (Page 4 of full document) – Contact Details |