# VOLUME I

## THE PROPOSED AMENDMENT AND SPLIT OF THE AUTHORISED SAN KRAAL WIND ENERGY FACILITY, NORTHERN AND EASTERN CAPE PROVINCES (HARTEBEESTHOEK EAST WEF)

**On behalf of**

## HARTEBEESTHOEK WIND POWER (PTY) LTD

**June 2021**

## DFFE Reference: 14/12/16/3/3/2/1029, 14/12/16/3/3/2/1029/AM1, and 14/12/16/3/3/2/1029/2/AM1

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# PROJECT DETAILS

| | |
|---|---|
| DFFE Reference: | 14/12/16/3/3/2/1029 and 14/12/16/3/3/2/1029/AM1 and 14/12/16/3/3/2/1029/2/AM1 |
| Arcus Reference: | 3329 Hartebeesthoek East WEF |
| Title: | Amendment Report for the Proposed Hartebeesthoek East Wind Energy Facility, Northern and Eastern Cape Provinces |
| EAP: | Ashlin Bodasing - Arcus Consultancy Services South Africa (Pty) Ltd |
| Project Applicant: | Hartebeesthoek Wind Power (Pty) Ltd |
| Report Status: | Revised Final Amendment Report – For Public Comment |

| **Changes made to this Report** | **Section** |
|---|---|
| Date changed from December 2019 to June 2021 | Volume I: Section 1 to 11 |
| Public Participation was updated to reflect process current process | Volume I |
| Added details of the Potential Wake Effect of the Proposed Development on the Operational Noupoort Wind Farm. | Volume I |
| Added the Wake Effect Analysis Report as part of the Specialists Studies | Volume II |
| Typographical and grammatical errors were corrected and minor clarifications were made throughout the document. | Volume I: Section 1 to 11 |
| Added details regarding the appeal process. | Volume I |

**Note: No changes were made to Volume II: Specialist Assessment Reports / Letters. The Wake Effect Analysis Report was added to the Specialists Studies Volume II.**

## PUBLIC PARTICIPATION LOCATION DETAILS

**Invitation to Comment:** Members of the public, local communities, and stakeholders are invited to comment on the draft Amendment Report which is made available for public review and comment from **Friday, 11 June 2021 to Monday, 12 July 2021** at the following locations.

| Location | Physical Address | Contact person | Availability |
|---|---|---|---|
| **Electronic Copy Location** | | | |
| **Arcus Website** | https://arcusconsulting.co.za/projects/ | Aneesah Alwie<br>021 412 1529 | From Friday, 11 June 2021 to Monday, 12 July 2021 |
| **Hard Copy Location** | | | |
| **The Don Guesthouse** | 34 Murray St,<br>Noupoort, 5950 | Lizl de Swardt<br>049 843 1075 | From Saturday, 12 June 2021 to Sunday, 13 June 2021 |
| **Noupoort Library** | 6 Shaw Street,<br>Noupoort, 5950 | Martha Van Eyk<br>084 243 1609 | From Monday, 14 June 2021 to Monday, 12 July 2021 |
| **Kindly take note of COVID-19 Protocols**<br>No Mask = No Entry<br>Please sanitize before and after use of the reports | | | |
| **Comment Submission** | | | |
| **Comments can be submitted to:**<br>Arcus Consultancy Services South Africa (Pty) Ltd<br>Office 607 Cube Workspace<br>Icon Building<br>Cnr Long Street and Hans Strijdom Avenue, Cape Town, 8001<br>T +27 (0) 21 412 1529 l E projects@arcusconsulting.co.za | | |

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# 1 INTRODUCTION

## 1.1 Previous Application Background

On 28 June 2018 the Department of Fisheries, Forestry and Environment issued an Environmental Authorisation (EA) to San Kraal Wind Power (Pty) Ltd (San Kraal) for the construction of a 390 MW Wind Energy Facility (WEF) with its associated 132kV grid connection (DFFE Ref.: 14/12/16/3/3/2/1029 and 14/12/16/3/3/2/1029/AM1).

On 26 September 2019 San Kraal lodged an amendment application with the DFFE in respect of the EA issued on 28 June 2018. The proposed amendments sought to amend the authorised wind turbine specifications from 390 MW to up to 124 MW and split the original EA issued for the San Kraal WEF into two WEFs. The amendment had the following detail:

- **Hartebeesthoek East (up to 124 MW) consisting of up to 20 turbines with a generating capacity of up to 6.2 MW each (The Proposed Project) (DFFE Reference: 14/12/16/3/3/2/1029/2/AM1)**; and
- San Kraal WEF (up to 217 MW) consisting of up to 35 turbines with a generating capacity of up to 6.2 MW each (subject to a separate report, assessment and application, DFFE Reference: 14/12/16/3/3/2/1029/1/AM1).

**The DFFE approved the abovementioned amendments and issued the amended EAs to Hartebeesthoek Wind Power (Pty) Ltd and San Kraal Wind Power (Pty) Ltd on 08 June 2020.**

## 1.2 Appeal Background

On 30 July 2020, the Appeals Directorate received and appeal from Noupoort Wind Farm (RF) (Pty) Ltd ('Noupoort') against the approval of the amendment applications authorised above. The appeal broadly premised on the following grounds: Error of fact, Socio-Economic Impacts and Mitigation Hierarchy. Concerns raised in the appeal have been summarised below:

- Noupoort are concerned that Wake Effect (WE) within the amendment reports was not adequately addressed in terms of impacts on the Noupoort WEF. Noupoort are stated that the amended turbine layout and specification approved above "alters the wake impacts of the Noupoort WEF" and that "power curves and downstream wake effects have changed" due to the amendment.
- Moreover, Noupoort indicated that the updated Wake Effect impact analysis (compiled July 2020) that was submitted to them during the appeals commenting period, was not subjected to a transparent and fair Public Participation Process.

The ground of appeal mentioned above was upheld by the Minister. The second ground of appeal, which was Need and Desirability, has since been dismissed by the Minister.

A decision on the appeal against the approval of the amendment applications was reached by Minister Barbara Creecy – Minister of Forestry, Fisheries and the Environment – on 07 June 2021. Interms of the Appeal decision, the Hartebeesthoek EA is suspended untol the updated wake effect impact assessments are subjected to a 30 day Public Particiaption Process and the revised EIR submitted back to the Department for decision making. Directions of the ruling given by the Minister read as follows:

> *"In the present matter. I have taken note of the wake impact analysis reports, in respect of the amendment applications, albeit outside of the EIA process. In light hereof, the appropriate remedy is to direct, as I hereby do, the applicant is to subject the wake impact analysis reports dated 01 July 2020, to a public participation as*

*contemplated in the 2014 EIA Regulations. Any comments received from I&APs, as well as responses thereto by the applicants, must be incorporated into the final Amendment Reports, for submission to the Department for reconsideration of the amendment applications. In this regard, the timeframes prescribed by the 2014 EIA Regulations must be adhered to."*

## 1.3 Current Application Background (this report)

As instructed by the Minister in the Appeal decision, the applicant is subjecting the updated wake effect reports to a 30 days Public Participation Process in line with Chapter 6 of the 2014 EIA Regulations. The comments received from I&AP's will be captured and responded to in the final EIR which will be resubmitted to the Department for reconsideration.

As the proposed amendments require authorisation from the DFFE, Hartebeesthoek Wind Power (Pty) Ltd appointed Arcus Consultancy Services South Africa (Pty) Ltd ('Arcus'), as the Environmental Assessment Practitioner (EAP).

The proposed development site is located south-east of the town of Noupoort in the Umsobomvu Local Municipality (ULM) which forms part of the Pixley ka Seme District in the Northern Cape Province. A small portion of the development site falls within the Inxuba Yethemba Local Municipality, within the Chris Hani District of the Eastern Cape Province. The town of Middelburg and Colesberg are located approximately 25 km and 58 km to the south and north-east of the site, respectively (Figure 1.2).

Two amendment applications for Environmental Authorisation (EA) have been submitted to the DFFE as each WEF will be required to have its own environmental authorisation. The number of turbines and the generation capacity which are being applied for with each application is defined below:

- **Hartebeesthoek East (up to 124 MW) consisting of up to 20 turbines with a generating capacity of up to 6.2 MW each (subject to a separate report, assessment and application, DFFE Reference: 14/12/16/3/3/2/1029/2/AM1); and**
- San Kraal WEF (up to 217 MW) consisting of up to 35 turbines with a generating capacity of up to 6.2 MW each (The Proposed Project) (DFFE Reference: 14/12/16/3/3/2/1029/1/AM1).

**The focus of this amendment report is on the Hartebeesthoek East WEF consisting of up to 20 turbines**.

## 1.4 The Authorised San Kraal WEF

On 28 June 2018, the DEA approved the following infrastructure as part of the San Kraal WEF (Figure 1.1).

***Table 1.1: Co-ordinates, as per the EA, of the Authorised WEF Site and Associated Infrastructure***

| | **Authorised Latitude** | **Authorised Longitude** |
|---|---|---|
| **Alternative (preferred site)** | | |
| **North-West Corner** | -31.2063 | 24.9859 |
| **North-East Corner** | -31.2071 | 25.1307 |
| **South-West Corner** | -31.3137 | 24.9994 |

| | Authorised Latitude | Authorised Longitude |
|---|---|---|
| **South-East Corner** | -31.2463 | 25.11517 |
| **Substation location (centre point)** | -31.2485 | 25.0171 |
| **Construction camp laydown area** | -31.22331 | 24.04544 |
| **Construction camp laydown area** | -31.20918 | 25.05522 |
| **Preferred powerline route (Preferred Alternative)** | | |
| **Start** | -31.24968 | 25.015103 |
| **Middle** | -31.28241 | 24.908770 |
| **End** | -31.3550 | 24.825598 |
| **Access to Site** | -31.20165 | 25.043173 |
| **Access to site** | -31.195366 | 24.961452 |

For the authorised 390MW San Kraal WEF and associated infrastructure including electrical grid connection located south-east of the town of Noupoort, the following project descriptions apply:

- A maximum generating capacity of 390MW in total;
- 78 turbines with a generation capacity between 3 - 5 MW and a rotor diameter of 150 m, a hub height of 150 m and a blade length of 75 m (all maximums);
- Foundations (25 m x 25 m) and hardstands associated with the wind turbines;
- Internal access roads of between 8 m (during operation) and 14 m (during construction) wide to each turbine;
- Medium voltage cabling between turbines and the on-site switching station (10000 $m^2$), to be laid underground where technically feasible;
- Overhead medium voltage cables between the on-site switching station and on-site substation (approximately 4 km in length) and between turbine rows where necessary;
- An on-site substation & OMS complex (180000 $m^2$) to facilitate stepping up the voltage from medium to high voltage (132 kV) to enable the connection of the WEF to the national grid;
- A 25 km 132 kV high voltage overhead powerline from the on-site substation to the proposed Umsobomvu Substation to the national grid;
- Temporary infrastructure including a construction camp with batching plant (40000 $m^2$); and
- A laydown area approximately 7500 $m^2$ in extent, per turbine.

***Table 1.2: Technical Details of the Authorised WEF and Grid Connection***

| Component | Description / Dimensions |
|---|---|
| **WEF** | |

| Component | Description / Dimensions |
|---|---|
| Location of the Site | Approximately 6km south-east of the town of Noupoort |
| Farm and SG Codes | RE 181 Holbrook: C02100000000018100000<br>1/11 Beskuitfontein: C04800000000001100001<br>RE/13 Beskuitfontein:C04800000000001300000<br>15/182 Hartebeeshoek: C02100000000018200000<br>3/182 Hartebeeshoek:C02100000000018200003<br>14 Hartebeeshoek: C04800000000001400000<br>46/182 Hartebeeshoek: C02100000000018200046 |
| Site Access | An existing public gravel road (the Oorlogpoort Road) will be used to access the site. The road is situated off the N9 south of the town of Noupoort, to the north of the site. |
| Export Capacity | 390 MW |
| Proposed Technology | Wind Turbines |
| Number of Turbines | 78 |
| Hub Height from Ground Level | 150 m |
| Rotor Diameter | 150 m |
| Width and Length of Internal Roads | Internal roads width: Up to 14m during construction and up to 8m during operation<br>Internal roads length: Approximately 53km |
| **Powerline (Grid Connection)** | |
| Location of the Site | Approximately 9km south of Noupoort |
| Length | Approximately 25km |
| Farm and SG Codes | 15/182 C02100000000018200000<br>47/182 C02100000000018200047<br>RE/13 C04800000000001300000<br>3/1 C04800000000000100003<br>RE/11/1 C04800000000000100011<br>18/1 C04800000000000100018<br>RE/1/1 C04800000000000100001<br>RE/118 C03000000000011800000<br>RE/136 C03000000000013600000<br>RE/135 C03000000000013500000<br>Farm 2 C04800000000000200000<br>RE/13/1 C04800000000000100013<br>8/3 C04800000000000300008<br>14 C04800000000001400000 |

| Component | Description / Dimensions |
|---|---|
| Preferred Access | Existing gravel road on Farm Hartebeeshoek (owned by Umsobomvu Municipality) off N9 at -31.195366°; 24.961452° |
| Export Capacity | 132 kV |
| Proposed Technology | Eskom specifications (concrete or steel monopole or lattice towers) |
| Height of Poles | A max of 45m |
| Width and Length of Servitude | 34m in width and 25 in length |

## 1.5 Aim and Purpose of this Report

This report highlights the proposed amendments to the authorised San Kraal WEF and associated grid connection. The report aims to comply with the relevant National Environmental Management Act, 1998 (Act 107 of 1998 - NEMA) EIA Regulations, 2014, as amended. The report further aims to provide the updated assessment of the specialist's studies conducted for the authorised San Kraal WEF and provide an opinion if the proposed amendments that should be granted by the DFFE.

# 2 DETAILS OF THE PROPOSED AMENDMENTS

The amendment being applied for is to split the authorised San Kraal Wind Energy Facility (WEF) into two separate wind energy facilities, namely San Kraal WEF (Split 1) and Hartebeesthoek East WEF ('Split 2') ('HBH East') (Figure 2.1). San Kraal WEF (Split 1) is subject to a separate amendment application process. This report focuses on the amendments relating to the HBH East WEF application only. The proposed components requiring amendments are detailed below for the Hartebeesthoek East WEF.

***Table 2.1: Changes to the Holder of the Authorisation***

| | Authorised | Amendment |
|---|---|---|
| **Holder of Authorisation** | San Kraal Wind Power (Pty) Ltd | Hartebeesthoek Wind Power (Pty) Ltd |
| **Company Representative** | Louis Dewavrin | Sheldon Vandrey |
| **Name of Development** | The 390MW San Kraal Wind Energy Facility (WEF) and associated 132kV grid connection transmission line south-east of the town of Noupoort within the Umsobomvu Local Municipality in the Northern Cape Province and the Inxuba Yethemba Local Municipality in the Eastern Cape Province. | The up to 124 MW Hartebeesthoek East Wind Energy Facility south-east of the town of Noupoort within the Umsobomvu Local Municipality in the Northern Cape Province and the Inxuba Yethemba Local Municipality in the Eastern Cape Province. |

***Table 2.2: Co-ordinates of the Hartebeesthoek WEF Site***

| | Proposed Latitude | Proposed Longitude |
|---|---|---|
| **Alternative (preferred site)** | | |
| **North-West Corner** | 31° 14' 48.3813" S | 25° 00' 47.0361" E |
| **North-East Corner** | 31° 15' 13.5878" S | 25° 04' 23.8153" E |
| **South-West Corner** | 31° 17' 40.4183" S | 24° 58' 35.1404" E |
| **South-East Corner** | 31° 17' 39.9187" S | 25° 02' 53.8629" E |
| **Substation location (centre point)** | 31° 15' 55.44" S | 25° 2' 1" E |
| **Construction camp laydown area** | 31° 13' 23.92" S | 24° 2' 43.58" E |
| **Construction camp laydown area** | 31° 12' 33.05"S | 25° 3' 18.79" E |

***Table 2.3: Technical Details of the Hartebeesthoek WEF***

| Component | Description / Dimensions |
|---|---|
| **WEF** | |
| Location of the Site | Approximately 6km south-east of the town of Noupoort |
| Farm and SG Codes | RE 181 Holbrook: C02100000000018100000<br>15/182 Hartebeeshoek: C02100000000018200000<br>14 Hartebeeshoek: C04800000000001400000<br>RE/13 Beskuitfontein: C04800000000001300000<br>1/11 Beskuitfontein: C04800000000001100001 |
| Site Access | An existing public gravel road (the Oorlogpoort Road) will be used to access the site. The road is situated off the N9 south of the town of Noupoort, to the north of the site. |
| Export Capacity | Up to 124 MW |
| Proposed Technology | Wind Turbines |
| Number of Turbines | Up to 20 |
| Hub Height from Ground Level | Up to 137 m |
| Rotor Diameter | Up to 175 m |
| Width and Length of Internal Roads | Internal roads width: Up to 14m during construction and up to 8m during operation<br>Internal roads length: Approximately 50 km |

For the proposed up to 124 MW Hartebeesthoek East WEF and associated infrastructure located south-east of the town of Noupoort, within the Umsobomvu Local Municipality in the Northern Cape Province, and a small portion within the lnxuba Yethemba Local Municipality in the Eastern Cape Province.

The facility will comprise the following:

- A maximum generating capacity of 124 MW in total (below the authorised 390 MW);
- 20 turbines with a generation capacity of up to 6.2 MW and a rotor diameter of 175 m, a hub height of 137 m and a blade length of 87.5 m (all maximums) ***(changing from authorised)***;
- Foundations (25 m x 25 m) and hardstands associated with the wind turbines ***(not changing from authorised)***;
- Internal access roads of between 8 m (during operation) and 14 m (during construction) wide to each turbine ***(not changing from authorised)***;
- Medium voltage cabling between turbines and the on-site switching station (approximately 10000 $m^2$), to be laid underground where technically feasible ***(not changing from authorised)***;
- Overhead medium voltage cables between the on-site switching station and San Kraal substation and between turbine rows where necessary ***(be removed or amended)***,
    - Amendment to read: "Overhead medium voltage cables between the on-site substation and San Kraal substation and between turbine rows where necessary;
- An on-site substation & OMS complex to facilitate stepping up the voltage from medium to high voltage (132 kV) to enable the connection of the WEF to the national grid ***(not changing from authorised and can be removed for this amendment)***;
- A 25 km 132 kV high voltage overhead powerline from the on-site substation to the proposed Umsobomvu Substation to the national grid ***(not changing from authorised)***;
    - Note: This overhead powerline is applicable to this proposed development, however, as part of a separate basic assessment application process, Hartebeesthoek East are applying for three grid connection options to connect to the proposed Umsobomvu Substation and to the national grid.[1]
- Temporary infrastructure including a construction camp with batching plant (40000 $m^2$) ***(not changing from authorised)***; and
- A laydown area approximately 7500 $m^2$ in extent, per turbine ***(not changing from authorised)***.

The proposed HBH East WEF will comprise 20 wind turbines with a generation capacity of 6.2 MW each for a total WEF output of up to 124 MW. The wind farm will connect to the SK-PH collector substation via medium voltage lines, which will, in turn, connect to the Umsobomvu Substation via an approved 132 kV transmission line. The new on-site substation, collector substation and other associated infrastructure are subject to a separate Basic Assessment Process.

[1] The three grid connection options is: electricity is transferred via a proposed 132 kV OHL from the proposed HBH East on-site substation (1) to the San Kraal substation and via the HBH Corridor to the Umsobumvu substation OR (2) to the Phezukomoya substation and via the Phezukomoya corridor to the Umsobomvu substation OR (3) to the San Kraal substation and via the San Kraal corridor to the Umsobomvu substation. From either of these substations electricity is transferred to the proposed SK-PH Collector substation OR directly to the proposed Umsobomvu substation via one of three corridor options, i.e. San Kraal Corridor, Phezukomoya Corridor or the proposed HBH Corridor.

## 2.1 Conditions of Authorisation to be Retained or Changed

| No. of Condition in EA | Page No. | Current Condition | Amend / Correct Condition | Motivation / Reason for change request |
|---|---|---|---|---|
| Construction Camp laydown area | 6 | Longitude: 31°13'23.92" S<br>Latitude: 24°2'43.58" E | Longitude: 31°13'23.95" S<br>Latitude: 25°2'44.04" E | Co-ordinate provided was not as per the approved location. |
| Technical details for the proposed powerline:<br>Height of poles | 8 | "A max of 30 m" | "A max of 45 m" | Maximum height permitted based on SACAA and as approved in the original EA. |
| Condition 59. | 18 | All internal powerline/cables must follow internal access roads. | All internal powerline/cables must follow internal access roads where technically feasible. | Allow for scope if following the internal access roads is not technically feasible. |
| Condition 60. | 18 | All powerlines linking the turbines to the on-site substation must be buried. | All internal powerline/cables must follow internal access roads where technically feasible. | Allow for scope if following the internal access roads is not technically feasible. |

# 3 LEGISLATIVE REQUIREMENTS

The Amendment Report was compiled in compliance with the National Environmental Management Act No. 107 of 1998 (NEMA) EIA Regulations 2014, as amended. Hartebeesthoek Wind Power (Pty) Ltd are applying for an amendment and split of the EA issued by the DEA (DEA Reference No. 14/12/16/3/3/2/1029 and 14/12/16/3/3/2/1029/AM1) in terms of Regulation 31 and 32 of the NEMA EIA Regulations. Regulation 31 of the NEMA EIA Regulations 2014, as amended states that:

*'An environmental authorisation may be amended by following the process prescribed in this Part if the amendment will result in a change to the scope of a valid environmental authorisation where such change will result in an increased level or change in the nature of impact where such level or change in nature of impact was not-*

*(a) assessed and included in the initial application for environmental authorisation; or*

*(b) taken into consideration in the initial environmental authorisation;*

*and the change does not, on its own, constitute a listed or specified activity.'*

In compliance with Regulation 32 of the NEMA EIA Regulations 2014, as amended the specialists assessed the proposed changes to the approved project description and highlighted the advantages and disadvantages of the proposed amendments, and finally provided further recommendations or mitigation measures if necessary.

***Table 3.1: Legislative Requirements of the Amendment Report***

| Contents of the Amendment Report | Reference |
|---|---|
| 32 (1) The applicant must within 90 days of receipt by the competent authority of the application made in terms of regulation 31, submit to the competent authority – | |
| (a) A report, reflecting – | |
| An assessment of all impacts related to the proposed change | Section 6: Specialist Assessment of the Proposed Amendments<br>Volume II – Specialist Reports |

| | |
|---|---|
| Advantages and disadvantages associated with the proposed change; | Section 7: Advantages and Disadvantages of the Proposed Amendments |
| Measures to ensure avoidance, management and mitigation of impacts associated with such proposed change; and | Section 10: Recommendations and Conclusion |
| Any changes to the EMP. | Appendix B: EMPr |
| aa. Had been subjected to a Public Participation Process (PPP), which had been agreed to by the competent authority, and which was appropriate to bring the proposed change to the attention of potential and registered interested and affected parties, including organs of state, which have jurisdiction in respect of any aspect of the relevant activity, and the competent authority, and | Section 8: Public Participation |
| bb. Reflects the incorporation of comments received, including any comments of the competent authority. | Section 8: Public Participation |

## 3.1 Authorised Listed Activities

The following listed activities were applied for and approved by the DEA. The listed activities will not change based on the amendments being applied for.

| LISTING NOTICE | ACTIVITIES |
|---|---|
| LN 1 GN R327[2] | 11(i); 14, 19 (i); 24 (ii); 56 (ii) |
| LN 2 GN R325[3] | 1; 6; 9; 15. |
| LN 3 GN R324[4] | 4 (a)(i)(bb) & (g)(bb)(ee); 12(g)(ii); 18 (a)(i)(bb) |

## 3.2 DFFE Comments on Draft Amendment Report

Since this amendment report has already been through a 30-day commenting period (26 September 2019 to the 25 October 2019 (both days inclusive), the EAP has included comments received from the DFFE on 28 October 2019 below The table below reflect the responses to the comments submitted by the DEA and also highlights the sections in the report, where these have been addressed.

| No. | Comment from DFFE | EAP Response | Section in Report |
|---|---|---|---|
| The Environmental Authorisation (EA) issued for the above application by this Department on 28 June 2018 (14/12/16/3/3/2/1029); the Application for Environmental Authorisation (EA) and Draft Amendment report received by the Department on 26 September 2019 and the acknowledgement letter from the Department dated 15 October 2019, refer. | | | |
| The application for amendment of the EA addresses the following: | | | |
| i. | The applicant, San Kraal Wind Power (Pty) Ltd intends to split the EA for 14/12/16/3/3/2/1029 into two smaller projects within the authorised boundary. | | |

[2] "Listing Notice 1 of the EIA Regulations, promulgated under Government Notice R983 of 4 December 2014, as amended by Government Notice R327 of 7 April 2017."

[3] "Listing Notice 2 of the EIA Regulations, promulgated under Government Notice R984 of 4 December 2014, as amended by Government Notice R325 of 7 April 2017."

[4] "Listing Notice 3 of the EIA Regulations, promulgated under Government Notice R985 of 4 December 2014, as amended by Government Notice R324 of 7 April 2017."

| No. | Comment from DFFE | EAP Response | Section in Report |
|---|---|---|---|
| ii. | In addition, the applicant intends to amend the following | | |
| | a) Split of the authorised San Kraal WEF into two smaller projects within the authorised boundary i.e. San Kraal Split 1 and Hartebeesthoek East WEF Split 2; | | |
| | b) Change the name and coordinates of the development; | | |
| | c) Change to the holder of the Hartebeesthoek East WEF Split 2 to Hartebeesthoek Wind Power (Pty) Ltd; | | |
| | d) Change Hub Height up to 137m, rotor diameter of 175m and turbine output of up to 6.2 MW; | | |
| | e) Project output of up to 74.4MW; | The project output of the Hartebeesthoek East WEF is 124 MW. Comment (e) must be corrected to state the following:<br>"Project output of up to 124 MW" | |
| | f) Turbine numbers reduced to 35 turbines and | The turbine number for the Hartebeesthoek East WEF was reduced to 20 turbines. Comment (f) must be corrected to state the following:<br>"Turbine numbers is reduced to 20 turbines for Hartebeesthoek East WEF" | |
| | g) A new final layout. | | |
| iii | The amendment is requested as the authorised technology is no longer the most efficient turbine model and it will ensure their project is amongst the forefront of technological advancements. The amendment will result in fewer turbines with increased MW that would be less than or equal to the overall authorised 275 MW. | …… The amendment will result in fewer turbines with increased MW that would be less than or equal to the overall authorised 275 MW. Comment (iii) must be corrected to state the following:<br>"The amendment will result in fewer turbines with increased MW that would be less than or equal to the overall authorised 390 MW". | |
| iv. | There are no amendments being applied for in terms of the grid connection and associated infrastructure related to the original EA with reference number 14/12/16/3/3/2/1029. | | |
| v. | Two Separate amendment applications and reports have been submitted to the Department in order to facilitate the split of the EA. The applications are currently registered with the Department as 14/12/16/3/3/2/1029/1/AM1 and 14/12/16/3/3/2/1029/2/AM1. | | |
| <u>The Department has the following comments on the abovementioned application (14/12/16/3/3/2/1029/2/AM1):</u> | | | |
| a. | Please ensure that the following information as a minimum in terms of Regulation 32(1)(a) of the EIA Regulations, 2014: | | |
| | • an assessment of all impacts related to the proposed changes | Specialists were requested to identify changes, if any, to the impact significance ratings, recommendations and mitigation measures contained in the previous EIA. These were assessed and provided in a report or letter by each specialist. | Section 6 and Volume II |

| No. | Comment from DFFE | EAP Response | Section in Report |
|---|---|---|---|
| | • advantages and disadvantages associated with the proposed changes; | Based on specialist assessments, the advantages and disadvantages is provided in a table. | Section 7 and Volume II |
| | • measures to ensure avoidance, management and mitigation of impacts associated with such proposed change in turbine specification and any other components proposed for amendment; | Revised mitigation measures was recommended by the Heritage and Avifauna specialist, this was considered and changes was implemented before drafting the Draft Amendment Report. | Section 6.5 and Section 6.7. |
| | • any changes to the EMPr subsequent to additional mitigation recommendations by the specialist studies for the proposed project specifications. | Changes to the EMPr was based on revised mitigation measures from the Avifauna and Heritage specialist report. | Section 9 and Appendix B |
| b. | Please ensure that you submit a Layout Plan as authorised with the EA, as well as the Layout Plan for the proposed amendments. | Layout plan as authorised with the EA and the layout plan for the proposed amendments is presented in figures attached to this report. | Figure 1.1; Figure 2.1; Figure 5.1. |
| c. | Please ensure that the final reports must include a motivation specific to the proposed amendment. The report must contain all necessary that is relevant to the changes applied for. | A descriptive motivation is provided in the Amendment Report. | Section 5 |
| d. | The EAP must provide confirmation that the proposed amendment or and the changes does not, on its own, constitute a listed or specified activity in terms of the EIA Regulations, 2014 as amended; | No further listed activity is triggered by the proposed amendments. The listed activities as provided in this report are those activities already authorised. | Section 3.1 |
| e. | Please ensure that a list of registered interested and affected parties as per Regulation 42 of the NEMA EIA Regulations, 2014, as amended is provided; | The list of registered interested and affected parties has been updated and is included as per Regulation 42 of the NEMA EIA Regulations, 2014, as amended. | Appendix D |
| f. | Please ensure that copies of original comments received from I&APs and organs of state, which have jurisdiction in respect of the proposed activity are submitted to the Department with the final Amendment Report. Kindly ensure that the Square Kilometer Array (SKA) comments and comments from this Departments Biodiversity and Conservation Directorate are included in the document. | All original comments received from organs of state and from I&APs in respect of the proposed activity have been included in this final submission for authorisation. Where comments were not received from an organ of state within the comment period, the EAP followed up to request comment. Proof of this correspondence is also included in this final submission. | Appendix G and Appendix H |

| No. | Comment from DFFE | EAP Response | Section in Report |
|---|---|---|---|
| g. | Proof of correspondence with the various stakeholders, including organs of state which have jurisdiction in respect of the proposed activity, must be included in the final Amendment Report. Should you be unable to obtain such comments, proof should be submitted to the Department of the attempts that were made to obtain the comments. | Proof of all correspondence during the amendment application process is included in this final amendment report submission. | Appendix G and Appendix H |
| h. | All issues raised and comments received during the circulation of the draft Amendment Report from I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the final amendment report, including comments from this Department, and must be incorporated into a Comments and Response Report; | All issues raised and comments received during the comment period have been included in this report and responded to where applicable. The comments and response table has been updated to reflect this. | Appendix H |
| i. | All comments from I&APs must be adequately responded. Please note that a response such as "noted" is not regarded as an adequate response to an I&AP's comments | The EAP has not summarised any comments received. All comments included in the comments and response table, are included as they were received. Copies of the comments received have also been included to ensure that nothing has been misrepresented. | Appendix G and Appendix H |
| j. | The requirements of the acknowledgement letter 15 October 2019 must also be fulfilled. | The requirements included in the acknowledgement letter dated 15 October 2019 have been fulfilled. | |
| k. | The Department requires that you clearly indicate which conditions in the EA are applicable to the above project i.e. 14/12/16/3/3/2/1029/2/AM1. Ensure that the Environmental Management Programme (EMPr) has mitigations and measures applicable only to the abovementioned project as well. | The EAP has indicated which condition in the original EA are applicable to this project. The EMPr contained the mitigation measures applicable to this project. | Section 2.1 |
| l. | Please ensure that confirmation must be obtained from all the specialists that undertook studies from the original EIA process that there will be no new impacts that will arise from the proposed amendments. The specialists used as part of the original EIA process must provide comment. | The team of specialists to support the project team are the same as the original specialists. The only new specialist is the bat specialist. Each specialist reviewed the amendments to the authorised development and provided an opinion and assessment of the changes. Where necessary, additional site work was conducted in order to assess the potential impacts of the proposed amendments. | Section 6 and Volume II |

| No. | Comment from DFFE | EAP Response | Section in Report |
|---|---|---|---|
| m. | Further, clearly indicate whether conditions for the grid infrastructure are to be removed in entirety or retained to some extent. It would be best to list which conditions of the EA are relevant to amendment process. | Clarification is provided within this Final Amendment Report. | Section 2.1 |
| n. | You are requested to submit one (1) unprotected electronic copy (1 USB) and one (1) hard copy of the final Amendment Report to the Department. Please ensure that this copy contains an electronic version of the amendment application form. | One USB and one hard copy of the final report is submitted. The amendment application form has been included as requested. | |
| You are also advised to comply with the requirements of the Regulations 32 of the EIA Regulations 2014, as amended. | | The EAP has complied with the requirements of the Regulations 32 of the EIA Regulations 2014, as amended. | |
| Further note that in terms of Regulation 45 of the EIA Regulations 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of the these Regulations, unless an extension has been granted in terms of Regulation 3(7). | | This is acknowledged and the EAP will ensure that the final report is submitted within the regulated timeframes. | |
| You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department. | | The applicant has been made aware of the Section 24F of NEMA, 1998, as amended. | |

# 4 THE PROJECT TEAM

The coordination and management of this amendment application process is being conducted by Arcus Consultancy Services South Africa (Pty) Ltd ('Arcus') with the lead EAP being Ashlin Bodasing. Refer to Appendix A for the EAP's Declaration of Interest and Curriculum Vitae.

**Ashlin Bodasing**

| | |
|---|---|
| Qualifications | Bachelor of Social Science (Geography and Environmental Management) |
| Experience in Years | 16 |
| Experience | Ashlin Bodasing is the Technical Director at Arcus, located in Cape Town. Having obtained her Bachelor of Social Science Degree from the University of Kwa-Zulu Natal; she has over 14 years' experience in the environmental consulting industry in southern Africa. She has gained extensive experience in the field of Integrated Environmental Management, environmental impact assessments and public participation. She has also been actively involved in a number of industrial and infrastructural projects, including electricity power lines and substations; road and water infrastructure upgrades and the installation of telecommunication equipment, greenfield coal mines, as well as renewable energy facilities, both wind and solar. Ashlin has major project experience in the development of Environmental Impact Assessments, Environmental Management Plans and the monitoring of construction activities. Her areas of expertise include project management, environmental scoping and impact assessments, environmental |

management plans, environmental compliance monitoring and environmental feasibility studies. Experience also includes International Finance Corporation Performance Standards and World Bank Environmental Guidelines environmental reviews. She has worked in Mozambique, Botswana, Lesotho and Zimbabwe.

**Aneesah Alwie**

| | |
|---|---|
| Qualifications | Bachelor of Science (Environmental and Water Science) |
| Experience in Years | 8 |
| Experience | Aneesah Alwie is an Environmental Consultant at Arcus. Having obtained her Bachelor of Science Degree (Environment and Water Science) from the University of the Western Cape; she has over 10 years public relations experience in conjunction with 6 years' experience as support to a technical team and 2 years' experience as a professional. She has also attended certified training courses in Environmental Law and Compliance. Aneesah assists in report writing and public participation processes and manages the EIA processes for projects across South Africa. She has a proven track record in producing work of quality standards, within timeframes and budgets. Her excellent organisational and project management skills development enables smooth flow of the assigned project duties and client relations. Starting off as administrator at Arcus she still provides on-going administrative and technical support to colleagues to ensure that their projects are completed in time and within budget. |

Arcus is a specialist environmental consultancy providing environmental services to the renewable energy market. Arcus has advised on over 150 renewable energy projects with in-house specialist services and environmental management, in South Africa and the United Kingdom.

## 4.1 Specialist Input

The team of specialists to support the project team are the same as the original specialists (see Table 4.1 below). The only new specialist is the bat specialist[5]. Each specialist reviewed the amendments to the authorised development and provided an opinion and assessment of the changes. Where necessary additional site work was conducted in order to assess the potential impacts of the proposed amendments.

***Table 4.1: Specialist Team***

| Technical Discipline | Specialist Organisation | Lead Specialist |
|---|---|---|
| Aquatic / Freshwater | Enviro Sci | Brian Colloty[6] |
| Bats | Arcus | Jonathan Aronson |
| Bats External Review | Private Consultant | Monika Moir |
| Avifauna | Chris van Rooyen Consulting | Chris van Rooyen |
| Ecology (Fauna and Flora) | 3foxes | Simon Todd |
| Cultural Heritage | ACO Associates cc | Tim Hart |
| Noise | Enviro Acoustic Research cc | Morné de Jager |
| Social | Tony Barbour | Tony Barbour |
| Agriculture and Soils | Agricultural Research Council – Soil, Climate and Water | Garry Paterson |
| Traffic | SMEC South Africa (Pty) Ltd | Charlotte Xhobiso |

[5] The original specialist, Animalia (Werner Marais) no longer conducts bat assessments and therefore a new specialist was appointed.

[6] Brian Colloty was the original specialist, but this was under another company, he no longer works for that company.

| | | |
|---|---|---|
| Visual Impact | SiVest | Andrea Gibb |
| Wake Effect | 3E | David Schillebeeckx |

# 5 MOTIVATION FOR THE PROPOSED AMENDMENT

The authorised turbine model with specifications of 150 m hub height and 150 m rotor diameter is no longer the preferred wind turbine technology. The applicant, therefore, wants to amend the authorised turbine specifications to reduce the number of turbines and to change the hub height to up to 137 m and the rotor diameter to up to 175 m to facilitate the most efficient turbine model and to further future proof the project amidst rapid technology developments.

From the authorised application, Hartebeesthoek Wind Power (Pty) Ltd intended to bid and develop the Hartebeesthoek East WEF under the Department of Energy's REIPPPP. For Hartebeesthoek to meet the bidding requirements, the applicant proposed to split the authorised San Kraal WEF into two smaller wind farms (namely San Kraal Split 1 WEF and Hartebeesthoek East WEF).

The split of the authorised San Kraal WEF will see fewer turbines being erected and the maximum authorised capacity (390 MW) will not be exceeded. The MW per WTG of the authorised San Kraal WEF would be increased, and fewer turbines will be built (fewer turbines with increased MW would be less than or equal to the overall authorised 390 MW).

The authorised layout has been updated due to the project split and reduction in the number of proposed wind turbines, from 78 to 20 turbines, for the Hartebeesthoek East WEF (Figure 5.1).

The findings and assessment of the authorised San Kraal WEF (Arcus, 2018) indicated that renewable energy is strongly supported at a national, provincial and local level. Therefore, the need and desirability of the authorised San Kraal WEF (Arcus, 2018) remain valid.

The development of and investment in renewable energy is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all make reference to renewable energy. At a provincial level, the development of renewable energy is supported by the Northern Cape Provincial Growth and Development Strategy and Northern Cape Provincial Spatial Development Framework, as well as the Eastern Cape Provincial Development Plan (2014) and the Eastern Cape Climate Change Response Strategy.

The establishment of the proposed WEF and the other renewable energy facilities in the Umsobomvu Local Municipality (ULM) and Inxuba Yethemba Local Municipality (IYLM) may place pressure on local services, specifically medical, education and accommodation. This pressure will be associated with the potential influx of workers to the area associated with the construction and operational phases of renewable energy projects proposed in the area, including the proposed WEF. The potential impact on local services can be mitigated by employing local community members.

In addition, as indicated below, this impact should also be viewed within the context of the potential positive cumulative impacts for the local economy associated with the establishment of renewable energy as an economic driver in the area.

The establishment of the proposed WEF and other renewable energy projects in the area also has the potential to create a number of socio-economic opportunities for the ULM and IYLM, which, in turn, will result in a positive social benefit. Figure 5.2 shows the WEF site and a 35km radius and reflect any renewable energy projects within this radius. The positive cumulative impacts include the creation of employment, skills development and training opportunities, creation of downstream business opportunities. The Community Trusts associated with each project will also create significant socio-economic benefits.

# 6 SPECIALIST ASSESSMENT OF THE PROPOSED AMENDMENTS

The previous EIA conducted by Arcus in 2018 assessed the potential impacts of developing the original San Kraal WEF using specialist input. The same methodology was utilised during this EA Amendment process.

Specialists were commissioned to:

- Assess the changes proposed in relation to the amendment application,
- Determine the impacts as a result of the proposed amendment,
- Assess whether or not the mitigation measures proposed in the EIA are valid for the proposed amendment or not,
- Discuss the advantages and the disadvantages in respect of the amendments for the specialist environmental feature, and
- Provide a reasoned opinion as to whether or not the proposed amendment should be authorised.

The San Kraal WEF Final EIA Report (Arcus, March 2018) concluded that there are no negative high residual impacts, including potential cumulative impacts associated with the proposed development.

During the current EA Amendment application process specialists were requested to identify changes, if any, to the impact significance ratings, recommendations and mitigation measures contained in the previous EIA. Extracts and summaries from specialist letters and reports provided during this EA Amendment application process are provided below. Specialist EA Amendment letters and reports are provided in Volume II.

## 6.1 Agricultural Potential and Soils

The original soil specialist study was completed in 2016, and for that study, a single larger study area was assessed.

The proposed amendments to the turbine specifications, layout, and the proposed HBH East study area falls within the area originally assessed area. Therefore, the findings of the original report on soils and agricultural potential will remain **unchanged**, specifically:

- The impacts that were identified and the significance ratings assessed as Medium to Low; and
- The impact management and/or mitigation measures.

The likelihood of cumulative impacts is small. Only if other developments (whether wind farms or not) were to occur, using the same access roads and thereby increasing potential soil erosion aspects, would cumulative impacts need to be considered.

***Table 6.1: Agricultural Potential and Soils Impact Assessment (Unchanged from the Original Assessment)***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Loss of Agricultural land | Low | Low | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Neutral | **Medium** | High | High |
| Increased soil erosion hazard | Low | Medium | Medium | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Neutral | **Medium** | High | High |
| **Operational Phase** | | | | | | | |
| Loss of Agricultural land | Low | Low | Low | Negative | **Low** | Low | High |

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| With Mitigation | Low | Low | Low | Neutral | **Low** | Low | High |
| Increased soil erosion hazard | Low | Medium | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Low | Low | Low | Neutral | **Low** | Low | High |

No further recommendations were provided regarding soil impacts of the proposed development.

## 6.2 Aquatic

When considering the authorised development and the proposed amendment, the amendment will make use of an existing track/road network, and any new watercourse crossings will be subject to a separate basic assessment process. The original aquatic impact assessment for the San Kraal project was submitted in 2016 and will remain **unchanged**, although the amendment review was conducted with the following requirement updates, post-2016.

- Macfarlane *et al.,* (2017) Wetland and Rivers Buffers model was utilised in this assessment/review of the proposed amendments. Using this new buffer model, a buffer of 18m was determined for all the watercourses, but the 32m indicated in the 2016 report was retained; and
- Cumulative impact assessment.

With these in mind, the findings of the aquatic assessment can be upheld, especially considering that the modelled buffers are less than those originally prescribed. The final impact of the proposed layout on the aquatic environment with suitable stormwater management and improvement of current water courses crossings will remain low for all impacts assessed.

***Table 6.2: Aquatic Impact Assessment (Unchanged from the Original Assessment)***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Loss of riparian systems and watercourses during | Low | Medium | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Increase in sedimentation and erosion within the development footprint during the construction phase and to a lesser degree the operational phase | Low | Medium | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Impact on localised surface water quality | Low | Low | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| **Operation Phase** | | | | | | | |
| Impact on riparian systems through the possible increase in | Low | Low | Low | Negative | **Medium** | High | High |

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| surface water runoff from hard surfaces and or new road crossings on riparian form and function | | | | | | | |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Increase in sedimentation and erosion within the development footprint during the construction phase and to a lesser degree the operational phase | Low | Medium | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| **Cumulative Phase** | | | | | | | |
| Overall cumulative impact during the construction and operational phases | Low | Medium | Low | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |

In the updated assessment of potential cumulative impacts, no additional impacts or changes to the previously assessed impacts would be required due to the proposed amendment. This is also based on the consideration that the number of roads has been consolidated in this application while keeping the new watercourse crossings away from wide/main stem watercourses, and well away from any known wetlands within the region (closest 1.1 km away). Lastly, there are no changes to the original mitigations or EMPr considerations required.

## 6.3 Ecology

In terms of a comparative assessment of the approved layout and the current amended layout, there are no differences in impact associated with the proposed change. The original extent of new access roads is estimated at 52.7 km, and the combined length of the access roads required on the new amended layout, of San Kraal Split 1 and Hartebeesthoek East WEF, is 57.6 km. The total extent of the roads required for the combined layouts is estimated to increase by less than 10%. Furthermore, the larger turbines are expected to require somewhat larger hardstands and laydown areas, with the result that the footprint of each turbine could potentially increase. However, the total number of turbines would decrease from 78 to 20, with the result that this is likely to offset any increase in the required footprint and the total extent of habitat loss. Therefore impacts resulting from the turbines would remain similar. The assessed impacts are considered robust and conservatively assessed, with the result that the increase is not substantive and would not increase any of the assessed impacts to a higher significance. As such, there are no changes in the assessed impacts associated with the split of the San Kraal project into the two projects as proposed.

In terms of impact on CBAs, the original layout had a total of 8 turbines within CBAs, whereas under the amended layout, only 5 turbines are within the CBA, none which falls in the Hartebeesthoek East site boundary. The impact of the amendment on CBAs would be similar or lower than the original approved layout. The lower number of turbines in the CBA is seen as a positive, albeit minor improvement of the amendment over the original layout with regards to the potential impact on CBAs. As such, no increase in impacts on CBAs associated with the amendment can be expected (Figure 6.1).

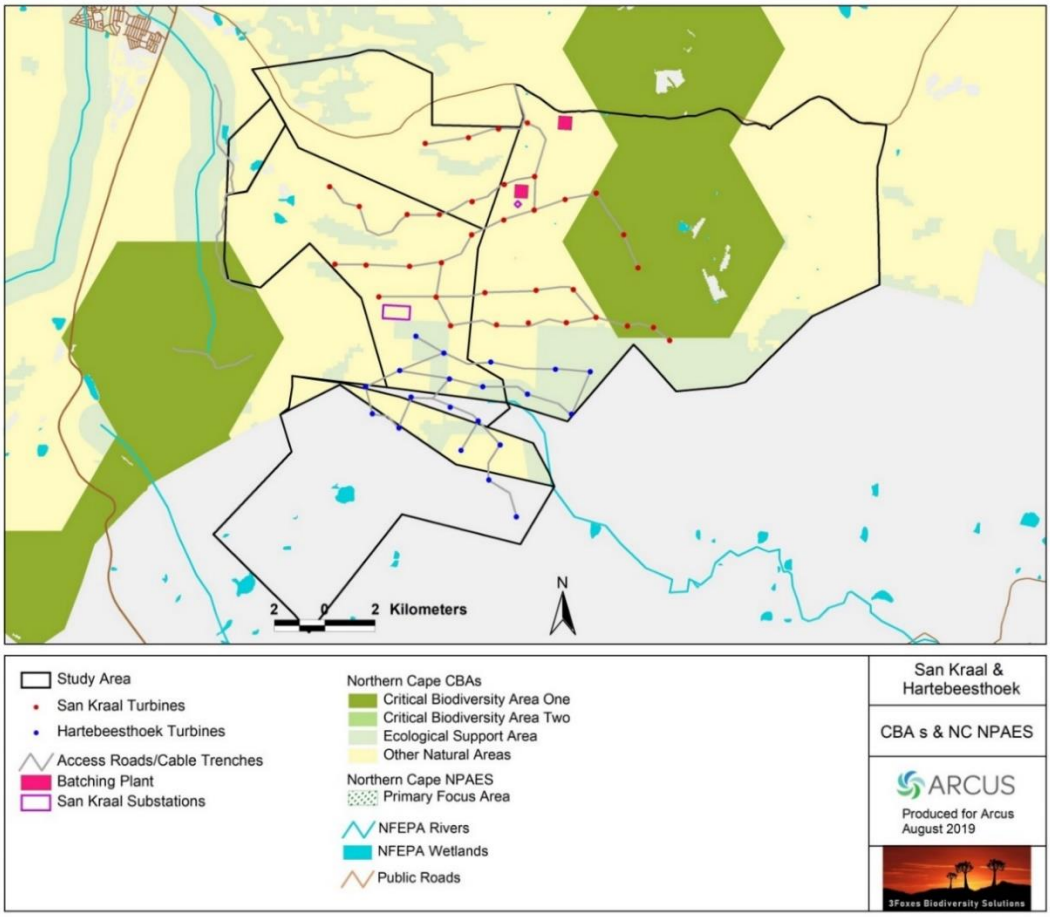


***Figure 6.1: Hartebeesthoek East and San Kraal Split 1 Ecological Sensitivity***

The assessed impacts following the split of San Kraal WEF are similar, and there are no significant differences in impact between the authorised 78 turbine facility and the proposed amendment. The assessment for the San Kraal Wind Energy Facility, before and after mitigation, and the amended turbine layout **remains the same** before and after mitigation (Table 6.3).

***Table 6.3: Ecological Impact Assessment (Unchanged from the Original Assessment)***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Impacts on vegetation and listed or protected plant species resulting from construction activities | Low | High | High | Negative | **High** | High | High |
| With Mitigation | Low | Medium | Low | Negative | **Medium** | High | High |
| Faunal impacts due to construction-phase noise and physical disturbance | Low | Medium | High | Negative | **Medium** | High | High |
| With Mitigation | Low | Medium | Low | Negative | **Medium** | High | Medium |
| **Operation Phase** | | | | | | | |

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| Faunal impacts due to operational activities | Low | Medium | Medium | Negative | **Medium** | High | High |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | Medium |
| Soil Erosion Risk | Low | High | High | Negative | **High** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Alien Plant Invasion | Low | High | Medium | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Impact on Critical Biodiversity Areas and Broad-Scale Ecological Processes | Medium | High | Medium | Negative | **High** | High | High |
| With Mitigation | Low | High | Medium | Negative | **Medium** | High | High |
| **Decommissioning Phase** | | | | | | | |
| Faunal impacts due to decommissioning phase activities | Medium | Low | High | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Medium | High |
| Following decommissioning, the site will be highly vulnerable to soil erosion | Medium | High | Medium | Negative | **High** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Faunal impacts due to decommissioning phase activities | Medium | Low | High | Negative | **Medium** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Medium | High |
| Alien Plant Invasion following decommissioning | Medium | High | Medium | Negative | **High** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |

From an ecological perspective, the changes associated with the amendment, as increasing the impact associated with the development. In addition, cumulative impacts associated with the amendment would be similar to the assessed impacts and are considered acceptable.

The original conclusions regarding the positive acceptability of the development are therefore also upheld for the amendment, and no additional mitigation or avoidance measures are required for the amended layout.

## 6.4 Bats

The newly appointed bat specialist for the amendment assessment conducted a literature review on bats and wind energy impacts with a focus on the relationship between turbine size and bat fatality. In addition, the pre-construction bat monitoring report for the original San Kraal WEF was reviewed, along with the current bat sensitivity buffers. The original monitoring was conducted between July 2015 and September 2016.

Of the impacts identified in the EIA, only mortality of species due to collision with turbine blades or due to barotrauma, and cumulative impacts are relevant to this amendment. The significance of all other identified impacts on bats associated with the development will remain the same as per the original bat assessment report for San Kraal WEF. The potential collision impact to bats, as well as the potential cumulative impacts, are currently rated as high before, and medium after mitigation. The primary mitigation measures are avoiding sensitive areas for bats and curtailment. However, even though changes to the turbine dimensions are proposed, which may impact bats, the impact ratings **will not change** from high before mitigation and medium after mitigation. The only change required is to update the sensitivity map, which has been done. Sensitive areas were defined as either high (with a 200 m buffer) or moderate (with a 100 m buffer). The current turbine layout adheres to these buffers, with no turbines located within them.

No bat activity data are available in the area between the heights of 10 m and 80 m or over 80 m, because activity at these heights was not monitored. Despite the available pre-construction monitoring data showing that bat activity at 80 m is low, it would be preferential to maximise the distance between the ground and blade tips by using turbines with the shortest possible blades and the highest possible hub height. This would reduce the number of species potentially impacted upon by turbine blades during the operation phase. It would also be preferential to use shorter blades so that they don't intrude into higher airspaces and in doing so reduces the potential impact to high flying species such as free-tailed bats. Despite the low activity at height, increasing evidence suggests that bats actively forage around wind turbines (Cryan et al. 2014; Foo et al. 2017), so the installation of turbines in the landscape may alter bat activity patterns, either by increasing activity at height and/or increasing the diversity of species making use of higher airspaces.

No additional mitigation measures are required, and as such, no changes to the EMPr are required either.

***Table 6.4: Bat Impact Assessment (Unchanged from the Original Assessment)***

| | **Extent** | **Duration** | **Intensity** | **Status** | **Significance** | **Probability** | **Confidence** |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Destruction of bat roosts due to earthworks and blasting | Medium | Low | High | Negative | **Medium** | Medium | High |
| With Mitigation | Low | Low | Medium | Negative | **Low** | Low | High |
| Loss of foraging habitat | Low | High | Low | Negative | **Medium** | Medium | High |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | High |
| **Operation Phase** | | | | | | | |
| Bat mortalities due to direct blade impact or barotrauma during foraging activities (not migration) | Low | High | High | Negative | **High** | High | High |
| With Mitigation | Low | High | Low | Negative | **Medium** | Medium | High |
| Artificial Lighting | Low | High | Medium | Negative | **Medium** | High | High |
| With Mitigation | Low | High | Low | Negative | **Low** | Low | High |

## 6.5 Avifauna

A re-assessment of the potential turbine collision impact was carried out given the potential changes to the turbine specifications, in light of the proposed amendment and in order to establish if the original pre-mitigation assessment by Van Rooyen *et al*. (2017) and the original mitigation measures need to be revised.

While the increase of 36.11 % in rotor swept area per turbine (from ~17 671 m² to ~24 052 m²) was considered significant, it was also recognised that the 29 % reduction in the planned maximum number of turbines (from 75 to 55) for the combined area reduces the potential impact of the larger turbines significantly, given the fact that fewer, larger turbines are preferable to more, smaller turbines. It is therefore concluded that the original pre-mitigation impact significance ratings are not affected by the proposed changes in the turbine numbers and dimensions.

The mitigation measures originally proposed for the San Kraal WEF by Van Rooyen *et al*. (2017) needed to be revisited, based on the "Best Practice Guidelines for Avian Monitoring and Impact Mitigation at Proposed Wind Energy Development Sites in Southern Africa", (Jenkins *et al*. 2011 as revised in 2015). This re-assessment was necessary in order to take cognisance of any changes in the environment, which may affect the risk to avifauna and to incorporate the latest available knowledge into the assessment of the risks. In order to give effect to this requirement, nest searches were repeated in June 2019 to ensure up to date information on the breeding status of priority species at the proposed Hartebeesthoek East WEF. However, no nests were discovered, which will be directly impacted by the proposed WEF.

Given the proposed changes to the turbine specifications and numbers, a re-assessment of the potential collision impact was carried out for the proposed amendment, in order to establish if the original pre-mitigation significance rating proposed by Van Rooyen (2017) should be revised. While the increase of 36.11% in rotor swept area per turbine was considered significant, it was also recognised that the 29% reduction in the planned maximum number of turbines for the combined area reduces the potential impact of the larger turbines significantly, given the fact that fewer, larger turbines are preferable to more, smaller turbines.

It is therefore concluded that the original pre-mitigation impact significance ratings are not affected by the proposed changes in the turbine numbers and dimensions and will remain **unchanged**. No new mitigation measures are required in addition to the mitigation originally proposed by Van Rooyen et al. 2017.

***Table 6.5: Avifaunal Impact Assessment (Unchanged from the Original Assessment)***

| | **Extent** | **Duration** | **Intensity** | **Status** | **Significance** | **Probability** | **Confidence** |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Displacement of priority species due to construction activities at the wind development area | Low | Low | Medium | Negative | **Medium** | High | Medium |
| With Mitigation | Low | Low | Low | Negative | **Medium** | Medium | Medium |
| **Operation Phase** | | | | | | | |
| Direct mortality of priority species due to electrocution associated with the internal medium | Low | Medium | Medium | Negative | **Medium** | High | High |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| voltage MV powerline at the wind development area | | | | | | | |
| With Mitigation | Low | Medium | Medium | Negative | **Low** | Low | High |
| Displacement of priority species due to habitat destruction at the wind development site | Low | High | Low | Negative | **Medium** | Medium | Medium |
| With Mitigation | Low | High | Low | Negative | **Low** | Low | Medium |
| Direct mortality of priority species due to collisions with the turbines at the wind development area | Low | Medium | Medium | Negative | **Medium** | High | Medium |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | Low |
| **Decommission Phase** | | | | | | | |
| Displacement of priority species due to dismantling activities at the wind development area | Low | Low | Medium | Negative | **Medium** | High | Medium |
| With Mitigation | Low | Low | Low | Negative | **Medium** | Medium | Medium |
| **Cumulative Phase** | | | | | | | |
| Overall Impacts | Medium | Medium | Medium | Negative | **Medium** | High | High |
| With Mitigation | Medium | Medium | Low | Negative | **Low** | Low | Medium |

## 6.6 Noise

The environmental noise impact assessment (ENIA) indicated that the noise impact would remain of medium significance on one potential noise-sensitive development (NSD) in the area during the construction phase, mainly due to night-time construction of the Option 1 overhead line, and of low significance on all the potential noise-sensitive developments (NSDs) in the area during the operational phase, using the Acciona AW125/3000 wind turbine for all operational wind speeds (generating 108.4 dBA) – maximum noise level less than 38.1 dBA at all NSDs.

The applicant is proposing the split of the San Kraal WEF into two smaller wind farms, namely the San Kraal Split 1 and Hartebeesthoek East wind farms (separate amendment application process). The ENIA for the split specifically addressed the following proposed changes in the wind turbine details, including:

- A hub height of 137 m with a rotor diameter of 175 m; and
- Increasing the turbine output to 6.2 MW per turbine.

The change, however, does not move any wind turbines closer than 1,000 m to any identified NSDs and will reduce the number of wind turbines. Considering the proposed changes to the layout, wind turbine specifications and the turbine output, it is the specialists' opinion that the change will not increase or change the significance of the noise impact.

A full noise impact assessment with new modelling was not required, and the recommendations as contained in the previous document are valid. This recommendation is based on the outcome of the report, which indicated that the extent of the potential impact is limited to 1, 000 m from the closest wind turbines.

The impacts, significance, findings and the recommendations of the ENIA report, 2017 will **remain the same**, i.e. medium significance during the construction phase, with mitigation measures to minimise impact and low during the operation phase. While this project will have a very slight noise impact at a number of the closest noise-sensitive receptors, these impacts are of low significance (including the construction of OHL with mitigation) and can be considered insignificant. Similarly, there is no risk of a cumulative noise impact. Furthermore, it was not required to do any additional, or other acoustic studies for the proposed changes and no mitigation measures are recommended for inclusion in the EMPr and conditions to be included in the EA remains as per the 2017 report.

***Table 6.6: Noise Impact Assessment (Unchanged from the Original Assessment)***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Daytime construction of the Access Roads | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Night-time construction of the Access Roads | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Noise from daytime construction traffic | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Noise from night-time construction traffic | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Daytime construction of Wind Turbines | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| Night-time construction of Wind Turbines | Low | Low | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative | **Low** | Low | High |
| **Operation Phase** | | | | | | | |
| Daytime operation of Wind Turbines | Low | Medium | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | High |
| Night-time operation of Wind Turbines | Medium | Medium | Low | Negative | **Low** | Low | High |
| With Mitigation | Medium | Medium | Low | Negative | **Low** | Low | High |
| **Cumulative Phase** | | | | | | | |
| Daytime operation of Wind Turbines | Low | Medium | Low | Negative | **Low** | Low | High |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | High |
| Night-time operation of Wind Turbines | Medium | Medium | Low | Negative | **Low** | Low | High |
| With Mitigation | Medium | Medium | Low | Negative | **Low** | Low | High |

## 6.7 Heritage

A site visit was conducted by ACO from the 8 - 11 April 2019 to assess the new WTG layout and cable/road alignment for heritage impacts. Time constraints meant that only the north-eastern portion of the Hartebeesthoek East WEF could be revisited to assess the WTG layout and cable/road alignment for heritage impacts. While it was not possible to survey all project components within the study area, the combined overall coverage of the 2017 and 2019 surveys was good. The 2017 ACO survey for the original San Kraal WEF covered most of the footprint of the Hartebeesthoek East WEF and provided a good baseline understanding of the archaeological potential of the affected area, which is generally very low. The confidence in the findings is thus high.

The proposed amendments of the Hartebeesthoek East WEF relevant to archaeological resources are a reduction in the number of wind turbine generators (WTG) from the authorised 78 to 20 for this proposed development; and the adjustment of turbine, network cable and road layout within the WEF.

The 2017 survey of the San Kraal WEF indicated that there were very few archaeological sites on the Kikvorsberge. This tends to confirm what has proved to be the case across the Karoo: that high ridges, which are dry, windswept and very cold in winter, seldom attracted more than passing prehistoric human occupation. Unless there is a rock shelter, a source of water or of stone raw material, these areas are not likely to be archaeologically sensitive.

The 2017 archaeological field survey identified 11 sites within the proposed footprint of the Hartebeesthoek East WEF, all of which are historical period buildings, kraals and ruins. These sites fall into two main clusters: a large historical kraal complex (JR008-012, JG013-014) and a smaller kraal complex (JR013-015). JG015 is a rough stone cairn, possibly a boundary marker. No pre-colonial sites were identified within the Hartebeesthoek East WEF.

After consultation with the South African Heritage Resources Agency (SAHRA) case officer, the intention of the 2019 field survey for the Hartebeesthoek East WEF was to concentrate on visiting new WTG locations that were more than 150 m from any position covered by the 2017 survey. The 2019 field survey found no archaeological sites located in that portion of the Hartebeesthoek East WEF. None of the sites now within the Hartebeesthoek East WEF and identified by the 2017 San Kraal HIA were assessed as likely to impacted by the construction of that WEF.

An assessment of the impact of the proposed amendments to palaeontological resources was not conducted as part of the EA Amendment applications as the existing study, done by Dr. John Almond, October 2017, for the authorised San Kraal WEF is still considered to be valid. Dr. John Almond ('Almond') has taken impact assessments in the area for the Noupoort Wind Farm to the East and bordering directly on the San Kraal parcel. The specialists also undertook the San Kraal and Phezukomoya assessment, all of which involved broad field work components prospecting any likely areas outside and within the land parcels involved. This is undertaken to find locales where the underlying palaeontology may be exposed and visible which is not always the case in the actual project areas themselves. Almonds conclusions were therefore based on a solid desktop knowledge of the local geology and palaeontology, reinforced by field observation. The palaeontological finds on the three large land parcels that was surveyed are minimal due to the depleted nature of the mountain-top Katberg deposits, and all the finds made have been on the sides of slopes and gullies where mud strata are exposed. It is based on the general geology of the area that Almonds recommendations and conclusions are derived. The geology throughout the original and amended project areas are similar – the same formations are involved. The land parcels have been well-covered and considered in the original project areas and therefore the original conclusions and recommendations for the

authorised San Kraal WEF should continue to stand and be adhered to for the amendment process.

***Table 6.7: Heritage Impact Assessment (Unchanged from the Original Assessment)***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Impacts to Archaeological Heritage | Low | High | Low | Negative – Neutral | **Low** | Low | High |
| With Mitigation | Low | High | Low | Negative – Neutral | **Low** | Low | High |
| Impacts to Colonial Period Heritage | Low | Low | Low | Negative – Neutral | **Low** | Low | High |
| With Mitigation | Low | Low | Low | Negative – Neutral | **Low** | Low | High |
| Impacts to cultural landscape and setting | Low | Medium | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Low | Medium | Medium | Negative | **Medium** | Medium | High |
| **Palaeontological Heritage Impact** | | | | | | | |
| Impacts to Palaeontology | Low | High | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Low | High | Low | Neutral – Pos | **Low** | Low | High |
| **Operation Phase** | | | | | | | |
| Impacts to cultural landscape and setting | Low | Medium | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Low | Medium | Medium | Negative | **Medium** | Medium | High |

Possible impacts of the proposed WEF on archaeological heritage resources were determined to be of tolerable and generally of low significance and does not change from the original assessment. Based on the comparative assessment of impacts, the cumulative impact assessment made in the 2017 HIA (Hart *et al*, 2017a) remains valid for the revised Hartebeesthoek East WEF: cumulative impacts will be of low consequence for WEFs and tolerable for solar PV facilities with their more intensive impacts on the land within their footprints.

The overall impact of the construction of the Hartebeesthoek East WEF is tolerable and generally of low significance and, from a heritage perspective, the proposed amendments are considered acceptable.

## 6.8 Visual

Baseline information for this amendment report is largely drawn from the original VIA which was based on a desktop-level assessment supported by field-based observation.

Given that the proposed Hartebeesthoek East WEF is located within the project area already assessed for the original San Kraal WEF, it was not considered necessary to undertake any additional fieldwork. Only one of the twenty (20) turbines proposed for the Hartebeesthoek East WEF is located within the zone of 'medium-high sensitivity', and as such the proposed amended layout for the Hartebeesthoek East WEF is considered to be acceptable from a visual perspective.

***Table 6.8: Visual Impact Assessment of the Original Application***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Impact on access roads | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| Impact on cabling | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| **Operation Phase** | | | | | | | |
| Impact on access roads | Medium | Medium | High | Negative | **Medium** | High | Medium |
| With Mitigation | Medium | Medium | Medium | Negative | **Medium** | High | Medium |
| Impact on cabling | Medium | Medium | Medium | Negative | **Medium** | High | Medium |
| With Mitigation | Medium | Medium | Medium | Negative | **Medium** | High | Medium |
| **Cumulative Phase** | | | | | | | |
| Construction Phase | Medium | Medium | High | Negative | **Medium** | High | Medium |
| With Mitigation | Medium | Medium | Medium | Negative | **Medium** | Medium | Medium |
| Operation Phase | Medium | Medium | Medium | Negative | **Medium** | High | Medium |
| With Mitigation | Medium | Medium | Medium | Negative | **Medium** | High | Medium |

***Table 6.9: Updated Visual Impact Assessment based on the Amendments***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Impact on access roads | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | Medium |
| Impact on cabling | Medium | Low | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | Medium |
| **Operation Phase** | | | | | | | |
| Impact on cabling | Low | Medium | Low | Negative | **Low** | Low | Medium |
| With Mitigation | Low | Medium | Low | Negative | **Low** | Low | Medium |

The assessment revealed that impacts associated with the proposed Hartebeesthoek East WEF would be of moderate significance during both construction and decommissioning phases. This could, however, be reduced to low with the implementation of mitigation measures. During operation, visual impacts from the WEF would be of moderate significance with relatively few mitigation measures available to reduce the visual impact. Visual impacts associated with the WEF on-site infrastructure during operation would be of low significance, and cumulative impacts have been rated as medium.

Proposed changes to the authorised WEF development do not give rise to additional visual impacts or exacerbate the impacts previously identified in respect of the original San Kraal WEF.

## 6.9 Social

From a social perspective, the only material change to the previous project design is the reduction in the number of wind turbines from 78 to 20 and the changes to the technical

specifications for the wind turbines. The relocation of some wind turbines to ensure that they fall outside of the constraints areas will not impact on the findings of the SIA undertaken in 2017-2018.

The wind turbines are located on properties owned by three landowners, namely:

- Umsobomvu Local Municipality - 9 wind turbines;
- Mr Erasmus - 6 wind turbines; and
- Mr Taljaard - 5 wind turbines.

The findings of the 2018 SIA indicated that the development of the proposed San Kraal WEF would create employment and business opportunities for locals during both the construction and operational phase of the project. The establishment of a Community Trust will also benefit the local community. The potential negative social impacts could also be effectively mitigated. The proposed development also represented an investment in clean, renewable energy infrastructure, which, given the negative environmental and socio-economic impacts associated with a coal-based energy economy and the challenges created by climate change, represents a significant positive social benefit for society as a whole. The findings of the SIA also indicated that the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) has resulted in significant socio-economic benefits, both at a national level and at a local, community level. These benefits are linked to Foreign Direct Investment, local employment and procurement and investment in local community initiatives.

The significance ratings for the cumulative impacts associated with the Part 2 Amendment Hartebeesthoek East are the same as those for the original San Kraal WEF (SIA January 2018), namely:

- Cumulative impact on sense of place - Medium Negative;
- Cumulative impact on services - Low Negative; and
- Cumulative impact on local economies - High Positive.

The Hartebeesthoek East WEF is located in a proven high wind resource area. The project is needed and desirable for the following reasons:

- Positive impact on climate change;
- Overcoming the country's energy constraints;
- Diversification and decentralisation of supply;
- Reduced costs of energy; and
- Positive economic development, including job creation.

Based on the findings of the SIA, the establishment of the proposed Hartebeesthoek East WEF is supported. In this regard, the project will create significant socio-economic opportunities for the area and have limited potential negative social impacts.

***Table 6.10: Social Impact Assessment (Unchanged from the Original Assessment)***

| | **Extent** | **Duration** | **Intensity** | **Status** | **Significance** | **Probability** | **Confidence** |
|---|---|---|---|---|---|---|---|
| **Construction Phase** | | | | | | | |
| Creation of local employment, training and business opportunities | Medium | Low | Medium | Positive | **Medium** | Medium | High |
| With Enhancement | High | Low | High | Positive | **High** | High | High |
| Impact of construction workers on local communities | Medium | Low | Medium | Negative | **Medium** | Medium | High |

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | High |
| Influx of job seekers | Medium | Low | Low | Negative | **Low** | Medium | Medium |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | Medium |
| Risk to safety, livestock, farm infrastructure and farming operations | Medium | Low | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | High |
| Increased fire risk | Medium | Low | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | High |
| Impacts associated with construction vehicles | Medium | Low | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | High |
| Impact associated with loss of farmland | Medium | Low | Low | Negative | **Medium** | Medium | High |
| With Mitigation | Medium | Low | Low | Negative | **Medium** | Medium | High |
| **Operation Phase** | | | | | | | |
| Development of renewable energy infrastructure | Medium | High | Medium | Positive | **Medium** | Medium | High |
| With Enhancement | Medium | High | High | Positive | **High** | High | High |
| Creation of employment and business opportunities and support for local economic development | Medium | Medium | Low | Positive | **Low** | Medium | High |
| With Enhancement | Medium | Medium | Medium | Positive | **Medium** | High | High |
| Benefits associated with the establishment of a Community Trust | Medium | High | Medium | Positive | **Medium** | Medium | High |
| With Enhancement | Medium | High | High | Positive | **High** | High | High |
| Generate income for affected landowners | Medium | Medium | Low | Positive | **Low** | Medium | High |
| With Enhancement | Medium | Medium | Medium | Positive | **Medium** | High | High |
| Impact on sense of place and rural character of the landscape based on findings of VIA | Medium | Medium | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Medium | Medium – Low | Negative | **Medium – Low** | Medium | Medium |
| Potential impact on property values | Medium | Medium | Medium | Negative | **Medium** | Medium | Medium |
| With Mitigation | Medium | Medium | Low | Negative | **Low** | Medium | Medium |
| Potential impact on tourism | Medium | Medium | Low | Negative | **Low** | Medium | High |
| With Mitigation | Medium | Medium | Low | Negative | **Low** | Medium | High |

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Decommission Phase** | | | | | | | |
| Loss of jobs and associated income | Medium | Medium | Medium | Negative | **Medium** | Medium | High |
| With Mitigation | Medium | Low | Low | Negative | **Low** | Medium | High |

## 6.10 Traffic

The amendment report was produced to assess the proposed amendments and their potential to have a significant change in impact on the traffic and surrounding transportation network. The proposed changes that have the most impact on traffic generated are the number of wind turbines. This will decrease and increase trips generated to the site, respectively. The extent of impact caused by this amendment will be quantified in the capacity and safety analysis.

Two site access point options and 3 intersections have been identified to provide access to the Hartebeesthoek East WEF. Through site visits and desktop studies, each access point was evaluated for its suitability to serve the WEF, taking into consideration site distance lines, intersection/access spacing requirements, speed limits and road surface conditions. Based on the assessment, both Access F and G have the potential to be acceptable access point. Access F will provide access to the portion north of Murray Street, and Access G will provide access to the portion south of Murray Street.


***Figure 6.2 Site Access Points and Intersections***

***Table 6.11: Traffic Impact Assessment based on the Amendments***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|

| Construction / Decommissioning Phase | | | | | | | |
|---|---|---|---|---|---|---|---|
| Impact on increased traffic on the route and access points to the site | Low | Low | Medium | Negative | **Low** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Very Low** | High | High |

Based on the information detailed in the TIA report, the base year and forecast year road capacity has indicated that the proposed development and proposed amendments will have no significant change in impact on the existing road network capacity and the project will maintain acceptable levels of service. Further, the safety assessment has indicated that the proposed development will have some impact at proposed access points. Providing access from national roads will impact the mobility of the road. Therefore adequate traffic control and clear road markings and warnings signs must be provided.

## 6.11 Wake Effect

As part of its EIA application San Kraal Wind Power commissioned 3E to compile a wake effect impact assessment in 2018 , to determine, what effect, if any, the proposed San Kraal development will have on the operational Noupoort Wind Farm. The study concluded that the operation of the San Kraal WEF would result in a 0.96 % loss of production for the Noupoort Wind Farm.

An updated Wake Effect Impact Assessment was undertaken independently by 3E on 01 July 2020, in order to assess and quantify the potential loss of production the Amended San Kraal and Hartebeesthoek East wind farms would cause to the operational Noupoort wind farm. The updated Wake Effect Impact Analysis has been appended to this amendment report in Volume II.

The updated wake effect report concludes that:

- the combined impact of the amended San Kraal and Hartbeesthoek East projects on the Noupoort wind farm is a 1.14% loss of production.
- the impact the amended Hartebeesthoek project would have on Noupoort without including San Kraal in the assessment. Under this scenario Hartebeesthoek East would cause a 0.17% loss of production to Noupoort.

As indicated by 3E the study used 29.8 months of data from a 120 m measurement mast installed at the site. The configuration of this measurement device complies with best practices. The terrain at the site was modelled and a wind flow model was used to extrapolate the wind regime to the location and hub heigh of each wind turbine proposed for this amendment.

The updated Wake Effect report concluded that due to the distance between the existing Noupoort wind farm and the Hartebeesthoek East WEF, the frequency of the wind being rather limited from the sectors of south-south-west and west-south-west, the additional wake impact is quite small – in other words, very low. It is thus not anticipated that the wake effect would result in adverse socio-economic impacts on the Noupoort wind farm

As the wake effect impacts are insignificant, no mitigation measures are proposed which relate to the sustainable operation of the Noupoort Wind Farm.

Before construction can commence, Hartebeesthoek Wind Power will be required to secure final layout approval from DFFE. Prior to submitting its application for final layout approval to the Department, Hartebeesthoek Wind Power will re-update the wake effect impact assessment report based on the final wind turbine layout and model, in order to revise the anticipated loss of production that will be experienced by the Noupoort Wind farm. The

updated wake effect report will once again be sujected to a 30 days Public Participation Process, before a decision can be made by the Department on the final layout approval application.

***Table 6.13: Wake Effect Impact Assessment based on the Amendments***

| | Extent | Duration | Intensity | Status | Significance | Probability | Confidence |
|---|---|---|---|---|---|---|---|
| **Construction / Decommissioning Phase** | | | | | | | |
| Wake Effect Impacts on the Noupoort Wind Farm | Low | Low | Medium | Negative | **Very Low** | High | High |
| With Mitigation | Low | Low | Low | Negative | **Very Low** | High | High |

# 7 ADVANTAGES AND DISADVANTAGES OF THE PROPOSED AMENDMENT

Specialists were requested to provide an opinion on the advantages and disadvantages of the proposed amendment application. Table 7.1 below provides a comparative assessment of the advantages and disadvantages of the proposed amendment to the authorised San Kraal WEF.

***Table 7.1 Advantages and Disadvantages of the Amendment***

| Advantages | Disadvantages |
|---|---|
| A reduction in the number of turbines means a smaller footprint is required and therefore less vegetation clearance and habitat loss. | It is possible that some bat species, particularly those not adapted to use open-air spaces, are being killed at the lower sweep of the turbine blades so increasing the blade length and having a shorter distance between the ground and the lowest rotor point may have a negative impact and potentially place a greater diversity of species at risk. |
| The original layout had a total of 8 turbines within CBAs, whereas under the amended layout, none which falls in the Hartebeesthoek East site boundary. | A marginal disadvantage could possibly arise from the split of the authorised San Kraal WEF if the two projects are not constructed concurrently as prolonged construction periods would exacerbate visual impacts associated with construction. |
| It is likely that splitting the authorised San Kraal WEF into two WEFs, will lead to long term job opportunities, especially if the construction of the WEFs are phased. | The reduced number of turbines and the associated implications in terms of capital expenditure, employment (construction and operational phase), and the impact of construction workers. |
| All turbines are located away from highly sensitive areas, and no turbines are located in no–go areas or buffers. | In terms of the Community Trust, the potential changes would be linked to the reduced revenue associated with the lower generation capacity (MWs). |
| Bat activity and species diversity are greater at ground level than at height. Therefore, even though bats are recorded at heights that would put them at risk from taller turbines, the proportion of bats that would be at risk might be less. | Although quite small (0.17%), the proposed amendment could result in potential operational losses for the Noupoort Wind Farm in terms of a cumulative and direct Wake Effect. |
| The number of bat species that might be impacted would decrease because not all bat species use the airspace congruent with the rotor swept area of modern turbines owing to morphological adaptations related to flight and echolocation. | |
| The reduction in the number of WTGs from that proposed for this portion of the authorised San Kraal WEF is an advantage of the Hartebeesthoek East | |

| Advantages | Disadvantages |
|---|---|
| layout as it reduces the potential for impacts on archaeological sites and material. | |
| The revised layout of the WEF has the advantage of generally increasing the distance between the identified heritage sites and WEF infrastructure, thereby ensuring that no impacts will occur. | |
| Fewer larger turbines are preferable from an avifaunal perspective. | |
| A reduction in the number of turbines will reduce the overall visual impact to identified sensitive receptors. | |
| A reduction in the number of trips to site, therefore decrease in the impacts to traffic. | |

# 8 PUBLIC PARTICIPATION

The I&AP database of the authorised San Kraal WEF EIA (Arcus, 2018) process was used as a baseline for the amendment application and the updated 2020 database was used for this Revised Final Amendment Report. The Socio-economic specialist study for this amendment included consultation and interviews with Interested and Affected Parties (I&APs) and other key informants and stakeholders as necessary in order to assess social impacts.

All I&APs were notified of the intention to submit the original Amendment Report via the placement of adverts in the same newspapers utilised during the previous EIA, i.e. The Herald and Graaff Reinet Advertiser in 2019. Site notices were placed along the boundary of the site to inform I&APs of the amendment application (Appendix C).

Notification letters via email and registered mail will be sent to all I&APs informing them of the availability of the amendment report for review and comment, from the 11 June 2021 to 12 July 2021. The report is made available at the Noupoort Library as a hard copy and digitally on the Arcus website (www.arcusconsulting.co.za/projects).

All comments received for the comment period of the Revised Final Amendment Report will be included in the Comments and Responses Table, and responded to and addressed by the project team, i.e. EAP, Applicant and Specialists as applicable. The Comments and Responses Report with comments received to date is provided with this Revised Final EA Amendment Report (Volume I: Appendix H).

# 9 CHANGES TO THE DRAFT EMPR

The EMPr for the original San Kraal WEF prepared by Arcus in 2018 was amended in respect of the assessment of impacts on archaeological sites and materials within the Hartebeesthoek East WEF.

# 10 RECOMMENDATIONS AND CONCLUSION

Hartebeesthoek Wind Power (Pty) Ltd is proposing the amendment to the already authorised San Kraal Wind Energy Facility (WEF). The proposed amendments to the turbine specifications and layout and the proposed Hartebeesthoek study area falls within the originally assessed area. The split enables a similar amount of energy yield with fewer turbines. Corresponding to this reduction in the number of turbines was a decrease in hub height - from 150 m to up to 137 m, and an increase in rotor diameter - from 150 m to up to 175 m.

The use of renewable energy to provide power to South Africa is supported at International, National, Provincial and Local Government Levels. Further, given South Africa's need for additional electricity generation and the need to decrease the country's dependence on coal-based power, renewable energy has been identified as a national priority, with wind energy identified as one of the most readily available, technically viable and commercially cost-effective sources of renewable energy.

Taking into consideration the findings of this amendment process for the proposed development and the fact that recommended mitigation measures have been used to inform the project design, it is the opinion of the Environmental Assessment Practitioner (EAP) that the negative impacts associated with the implementation of the proposed project have been mitigated to acceptable levels. Figure 10.1 reflects the environmental sensitivity of the proposed development. While the residual impacts of the project will have an impact on the local environment, the extent of the benefits associated with the implementation of the projects will benefit a much larger group of people, in terms of renewable energy supply and positive local and regional economic impact.

The study has concluded that there are no negative high residual impacts, including potential cumulative impacts associated with the proposed amendment application and the amendment can be authorised.

# FIGURES

## APPENDIX A: EAP CV AND DECLARATION OF INDEPENDENCE

# APPENDIX B: ENVIRONMENTAL MANAGEMENT PROGRAMME

## APPENDIX C: PUBLIC PARTICIPATION REPORT