SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

Proposed Development of the 140 MW Beaufort West Wind Farm in the Prince Albert Local Municipality, Western Cape Province

Draft Environmental Authorisation (EA) Amendment Assessment Report

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Confidentiality Statement

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED DEVELOPMENT OF THE 140MW BEAUFORT WEST WIND FARM IN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE

DRAFT ENVIRONMENTAL AUTHORISATION (EA) AMENDMENT ASSESSMENT REPORT

Executive Summary

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as Mainstream) was issued with an Environmental Authorisation (EA) for the proposed construction of the 140MW Beaufort West Wind Farm in the Prince Albert Local Municipality in the Western Cape Province. Authorisation was granted on 13 February 2017, by way of EA Reference No 12/12/20/1784/1 (**Appendix A**). The proposed wind farm is located approximately 50km south of Beaufort West in the Western Cape Province.

The Beaufort West Wind Farm originally formed part of development proposals for a Wind and Solar Energy facility which was authorised on 20 March 2012 (DEA Reference 12/12/20/1784). The EIA and associated specialist studies assessed the potential visual impacts in relation of the proposed PV array and 260 turbine wind farm layouts, on non-adjacent land parcels. Turbine specifications included a hub height of 80m and a rotor diameter up to 101m (i.e. a maximum height of 130.5m at blade tip).

Subsequently, Mainstream proposed amendments to the EA which involved dispensing with the northern-most site and splitting the southern component of the development into two separate 140MW wind farms, namely Beaufort West Wind Farm and Trakas Wind Farm. Site layouts and turbine specifications were also amended to allow for up to 70 turbines on each wind farm, with a hub height and rotor diameter of 150m (i.e. a maximum height of 225m at blade tip). The amendment in respect of the Beaufort West Wind Farm was authorised on 13 February 2017, by way of EA Reference No 12/12/20/1784/1 (**Appendix A**).

Mainstream is now proposing to submit a Part 2 Amendment Application to allow for amendments to the turbine specifications stipulated in the amended EA for the Beaufort West Wind Farm to allow for greater project efficiency and viability. The proposed amendments are as follows:

- Increased turbine hub height: from 150m up to 200m;
- Increased rotor diameter: from 150m to up to 200m.

Accordingly, Mainstream has appointed SiVEST to act as the independent Environmental Assessment Practitioner (EAP) to undertake a Part 2 Amendment process as required in terms of Regulation 32 of GN R. 982. This amendment report has thus been compiled in accordance with the provisions of Regulation 32 (1) of the EIA Regulations 2014, (as amended).

As part of the EA amendment process for the proposed Beaufort West Wind Farm undertaken in 2017/2018, the following specialist studies were undertaken:

- Agricultural Potential Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Biodiversity Assessment (fauna);
- Biodiversity Assessment (flora);
- Heritage Assessment;
- Noise Impact Assessment;
- Socio-economic Impact Assessment; and
- Visual Impact Assessment.

As these specialist studies considered the impacts of turbines with a maximum hub height of 150m and with a maximum rotor diameter of 150m, it was necessary to determine if further input would be required from any of the specialists in respect of the abovementioned proposed amendments. Accordingly, specialists were commissioned to assess the impacts of the proposed amendments in respect of the following:

- Avifauna;
- Bats;
- Noise;
- Visual.

Although the specialist assessments did not identify any new environmental risks or impacts, it was found that the proposed amendments could result in a potential increase in the significance of negative impacts in respect of avifauna and bats. Specialist studies did however determine that the potential negative impacts resulting from the proposed amendments would remain unchanged with the implementation of specific new mitigation measures. Impacts remain unchanged in respect of noise and visual.

The proposed Wind Energy Facility (WEF) layout has been refined to incorporate the recommendations and mitigation measures provided by the Avifaunal and Bat specialists. As a result, the number of turbines being proposed for Beaufort West has been reduced from 70 turbines to 40.

The advantages and disadvantages of the proposed amendment were explored to provide an indication of the potential benefits and drawbacks. Based on the feedback received from the specialists, it is evident that the advantages outweigh the disadvantages, mainly due to the fact that the larger turbines may reduce the total number of turbines required to generate the optimum output capacity.

A Public Participation Process (PPP) as required in terms of Chapter 6 of the EIA Regulations, 2014, (as amended) is being conducted in respect of the Part 2 Amendment application for the Beaufort West Wind Farm. This includes:

- Notification of affected landowners and Provincial Authority;
- Notification of potential Interested and Affected Parties (I&APs) by way of newspaper advertisements and site notices;

- The Draft EA Amendment Assessment Report has been made available on SiVEST's website to all I&APs, key stakeholders and Organs of State (OoS) / Authorities for comment and review for a period of 30 days;

All comments received throughout the EA amendment process will also be included in the Comments and Response Report (C&RR).

In light of the above, it is concluded that the EA should be amended in line with the specifications as proposed and that the increased risks and impacts identified can be mitigated to acceptable levels provided the recommended mitigation measures are implemented.

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

PROPOSED DEVELOPMENT OF THE 140MW BEAUFORT WEST WIND FARM IN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE

DRAFT ENVIRONMENTAL AUTHORISATION (EA) AMENDMENT ASSESSMENT REPORT

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GLOSSARY OF TERMS

ABBREVIATIONS

ATNS	- Air Traffic Navigation Services
C&RR	- Comments and Response Report
CV	- Curriculum Vitae
DAFF	- Department of Agriculture, Forestry and Fisheries
DEA	- Department of Environmental Affairs
DMR	- Department of Mineral Resources
DoE	- Department of Energy
DWS	- Department of Water & Sanitation
EA	- Environmental Authorisation
EAP	- Environmental Assessment Practitioner
ECP	- Emissions Control Plan
EIA	- Environmental Impact Assessment
EIAr	- Environmental Impact Assessment Report
EMC	- Electromagnetic Compatibility
EMI	- Electromagnetic Interference
EMPr	- Environmental Management Programme
ESA	- Early Stone Age
EWT	- Endangered Wildlife Trust
FEIAr	- Final Environmental Impact Assessment Report
GIS	- Geographic Information System
GN	- Government Notice
GPS	- Global Positioning System
HIA	- Heritage Impact Assessment
I&AP(s)	- Interested and Affected Parties
IPP(s)	- Independent Power Producers
KM	- Kilometre(s)
M	- Metres
MSA	- Middle Stone Age
MW	- Megawatt
NCR	- National Noise Control Regulations
NC DENC	- Northern Cape Department of Environment and Nature Conservation
NEMA	- National Environmental Management Act (Act No. 107 of 1998)
NSD	- Noise Sensitive Development
OoS	- Organs of State
RE	- Renewable Energy
REIPPPP	- Renewable Energy Independent Power Producer Procurement Programme
PPA	- Power Purchase Agreement
PPP	- Public Participation Process
SA	- South Africa
SA CAA	- South African Civil Aviation Authority
SAHRA	- South African Heritage Resources Agency
SANRAL	- South African National Roads Agency SOC Limited

SKA	- Square Kilometre Array
VIA	Visual Impact Assessment
WEF	- Wind Energy Facility
WESSA	- Wildlife & Environment Society of South Africa
WTG	- Wind Turbine Generator

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DRAFT ENVIRONMENTAL AUTHORISATION (EA) AMENDMENT ASSESSMENT REPORT

1 INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as Mainstream) was issued with an Environmental Authorisation (EA) for the proposed construction of the 140MW Beaufort West Wind Farm, in the Prince Albert Local Municipality in the Western Cape Province. Authorisation was granted on 13 February 2017, by way of EA Reference No 12/12/20/1784/1 (**Appendix A**).

The Beaufort West Wind Farm originally formed part of development proposals for a Wind and Solar Energy facility which was authorised on 20 March 2012 (DEA Reference 12/12/20/1784). The EIA and associated specialist studies assessed the potential visual impacts in relation to the proposed photovoltaic (PV) array and 260 turbine wind farm layouts, on non-adjacent land parcels. Turbine specifications included a hub height of 80m and a rotor diameter up to 101m (i.e. a maximum height of 130.5m at blade tip).

Subsequently, Mainstream proposed amendments to the EA which involved dispensing with the northern-most site and splitting the southern component of the development into two separate 140MW wind farms, namely Beaufort West Wind Farm and Trakas Wind Farm. Site layouts and turbine specifications were also amended to allow for up to 70 turbines on each wind farm, with a hub height and rotor diameter of 150m (i.e. a maximum height of 225m at blade tip). The amendment in respect of the Beaufort West Wind Farm was authorised on 13 February 2017, by way of EA Reference No 12/12/20/1784/1 (**Appendix A**).

The amended made provision for the construction of a total number of 70 wind turbines, each with a hub height of up to 150m and a rotor diameter of 150m. In light of advancements in wind turbine technology, Mainstream is proposing amendments to the turbine specifications stipulated in the EA for the Beaufort West Wind Farm to allow for greater project efficiency and viability. The proposed amendments are as follows:

- Increased turbine hub height: from 150m up to 200m;
- Increased rotor diameter: from 150m to up to 200m.

The increased rotor diameter and tower hub height would result in a maximum tip height of 300m Although other authorised elements of the project, such as the total output capacity and the associated infrastructure, will remain unchanged, the number and location of turbines will change in accordance

with the findings of the specialist studies. The modified turbine specifications may however be construed as a change in the scope of the EA and may result in changes in the associated impacts, thus requiring an amendment application in terms of Part 2 of Chapter 5 of the EIA Regulations 2014, as amended.

Accordingly, Mainstream has appointed SiVEST to act as the independent EAP to undertake the Part 2 Amendment process as required in terms of Regulation 32 of GN R. 982. This amendment report has thus been compiled in accordance with the provisions of Regulation 32 (1) of the EIA Regulations 2014, as amended, and includes:

- an assessment of all impacts related to the proposed change;
- an evaluation of the advantages and disadvantages associated with the proposed change;
- provision of measures to ensure avoidance, management and mitigation of any impacts associated with such proposed change; and
- identification of any changes required to the EMPr.

The report will be made available for public comment for a period of 30 days in terms of the standard requirements by the competent authority, namely the Department of Environmental Affairs, (DEA) in-line with legislation (refer to **Appendix B**). Comments received will be addressed and incorporated into the final report for submission to the DEA.

1.1 Expertise of Environmental Assessment Practitioner (EAP)

SiVEST Environmental Division has considerable experience in the undertaking of EIA and Amendment Application processes. Staff and specialists who were involved in this Amendment Application process and contributed to the compilation of this report are detailed in **Table 1** below.

Table 1: Project Team

Name and Organisation	Role
Andrea Gibb – SiVEST SA (Pty) Ltd	Project Coordinator
Stephan Jacobs – SiVEST SA (Pty) Ltd	Environmental Assessment Practitioner (EAP)
Kerry Schwartz – SiVEST SA (Pty) Ltd	Environmental Consultant / GIS and Mapping
Hlengiwe Ntuli – SiVEST SA (Pty) Ltd	Public Participation Consultant
Chris van Rooyen	Avifaunal Specialist
Stephanie Dippenaar – Stephanie Dippenaar Consulting	Bat Specialist
Morne de Jager – Enviro Acoustic Research	Noise Specialist
Kerry Schwartz & Andrea Gibb - SiVEST SA (Pty) Ltd	Visual Specialist

As per the requirements of the EIA Regulations 2014, (as amended), the details and level of expertise of the persons who prepared the EA Amendment Assessment Report are provided in **Table 2**. CVs for each team member are provided in **Appendix F**.

Table 2: Expertise of the EAP

Environmental Practitioner	Stephan Jacobs
Contact Details	stephanj@sivest.co.za
Qualifications	B.Sc. Environmental Sciences (undergraduate) and B.Sc. (Hons) Environmental Management and Analysis
Professional Affiliations	IAIAsa (International Association for Impact Assessment)
Expertise	Stephan joined SiVEST in May 2015 and holds the position of Environmental Consultant in the Johannesburg and Pretoria offices. Stephan specialises in the field of Environmental Management and has been extensively involved in Environmental Impact Assessment (EIA) and Basic Assessment (BA) processes for various types of projects / developments, particularly energy generation and electrical distribution projects. Stephan thus has vast experience with regards to the compilation of EIAs and BAs. Additionally, Stephan has extensive experience in undertaking public participation and stakeholder engagement processes. Stephan has also assisted extensively in the undertaking of fieldwork and the compilation of reports for specialist studies such as Surface Water and Visual Impact Assessments. Stephan also has experience in Environmental Compliance and Auditing and has acted as an Environmental Control Officer (ECO) for several infrastructure projects.

2 Project Overview

2.1 Project Location

The proposed wind farm is located within the Prince Albert Local Municipality, approximately 50km south of Beaufort West in the Western Cape Province. The Beaufort West Wind Farm project is situated on portions of the following farms:

- Portion 1 of the farm Trakas Kuilen No. 15;
- Remainder of the farm Trakas Kuilen No. 15, and
- Portion 1 of the farm Witpoortjie No. 16.

The layout assessed in the Final Environmental Impact Assessment Report (FEIAr) is indicated **Figure 1** below.

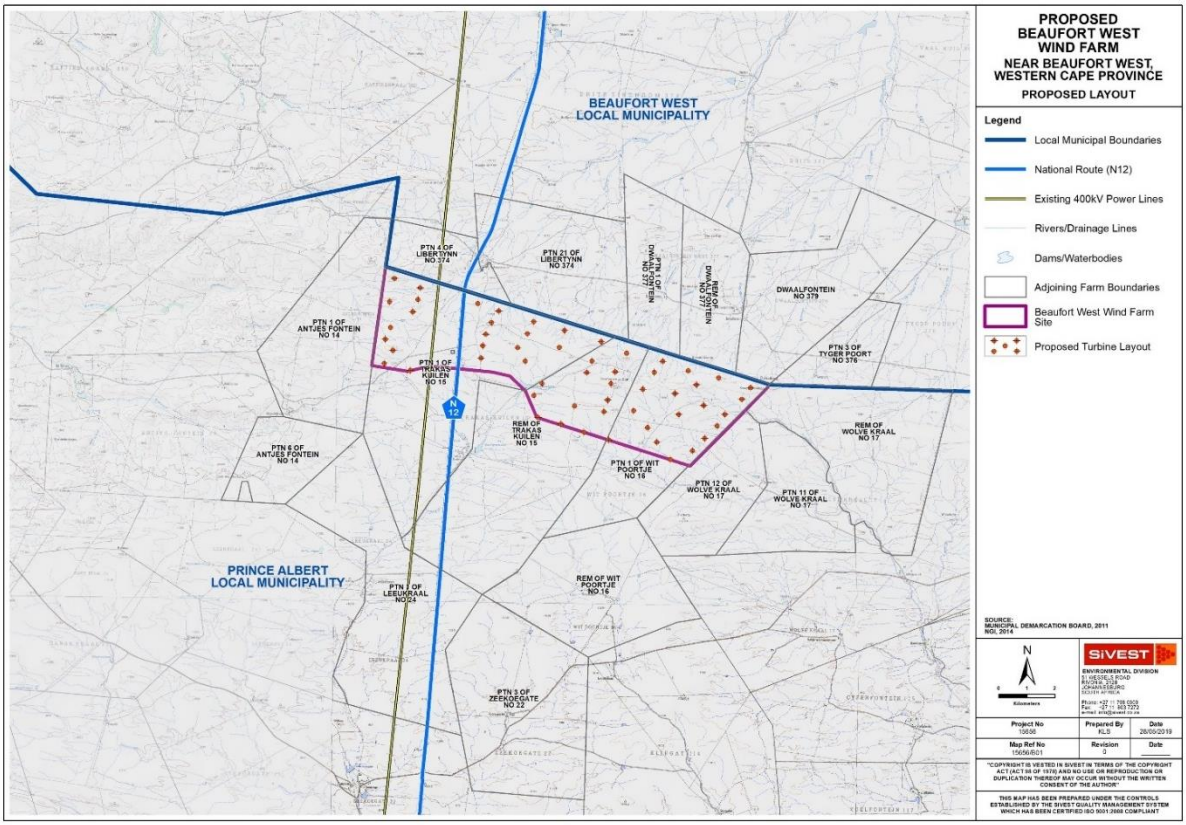

Figure 1: Layout Assessed in FEIAr

As per Condition 15 of the EA dated 13 February 2017, the above layout has not been approved. The final development layout map must be made available for comments and the holder of the EA must consider such comments and thereafter submit the final development layout to the DEA for written approval prior to commencement of the activity. The final development layout will be determined during the detailed design phase once the project has been awarded preferred bidder status. As such, this amendment process does not cover obtaining approval of the development layout.

2.2 Authorised Project Components

In terms of the amended EA for the Beaufort West Wind Farm dated 13 February 2017, (DEA Ref No 12/12/201784/1), the following components were authorized:

- A wind farm with
  - an export capacity of up to 140MW;
  - a total of up to 70 wind turbines with a hub height of 150m and a rotor diameter of 150m.
- Site access roads;
- Internal roads up to 13.5m wide and up to 6km;
- Site fencing;
- Hardened lay down areas for turbine assembling; and
- Operation and maintenance building.

2.3 Listed Activities

As per the EA for the Beaufort West Wind Farm (DEA Reference No 12/12/20/1784/1), the following activities indicated in Listing Notice 1 and Listing Notice 2 (GN R. 386 &387) were authorised in terms of the National Environmental Management Act (NEMA), 1998 and the Environmental Impact Assessment Regulations, 2010, which were applicable at the time of the original EA.

Table 3: Authorised Listed activities in terms of the NEMA Regulations

Listed Activities
GN R. 386 Item 15: *"The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads less than 30 metres long."*
GN R. 387 Item 1(a)(i): *"The construction of facilities or infrastructure, including associated structures or infrastructure, for the generation of generation of electricity where the electricity output is 20 megawatts or more; or the elements of the facility cover a combined area in excess of 1 hectare."*
GN R. 387 Item 2: *"Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares of more."*

The proposed amendments will not result in any changes to the authorised activities and will not introduce any new activities.

2.4 Assessment of Environmental Impacts

As part of the previous EIA amendment process for the proposed Beaufort West Wind Farm undertaken in 2016, the following specialist studies were undertaken:

- Agricultural Potential Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Biodiversity Assessment (fauna);
- Biodiversity Assessment (flora);
- Heritage Assessment;
- Noise Impact Assessment;
- Socio-economic Impact Assessment; and
- Visual Impact Assessment.

It should be noted that the previous EIA amendment process and associated specialist studies considered the impacts of turbines with a maximum hub height of 150m and with a maximum rotor diameter of 150m. Impacts identified in the specialist reports are summarised in the tables below.

Table 4: Original Rating of Impacts during <u>construction</u> of the proposed WEF and associated infrastructure

Specialist Study	Impact	Pre-Mitigation Rating	Post Mitigation Rating
Agricultural Potential	Loss of agricultural land.	Low (-)	N/A
	Erosion.	Low (-)	N/A
	Veld degradation.	Low (-)	Low (-)
	Loss of topsoil.	Low (-)	N/A
Avifauna	Habitat loss and displacement of species.	Low (-)	Low (-)
Bats	Habitat loss and displacement of species.	Low (-)	Low (-)
Biodiversity (Flora)	Removal of vegetation in the construction areas. .	Medium (-)	Low (-)
Biodiversity (Fauna)	▪ Habitat loss and degradation of fauna. ▪ Direct faunal impacts due to construction.	Medium (-)	Low (-)
Heritage and Palaeontology	Direct impact on palaeontology and archaeology.	High (-)	Medium (-)
	Direct impact on cultural landscape.	Medium (-)	Low (-)
Noise	Noise resulting from construction vehicles, generators and activities such as piling, concrete mixing and steel works.	Medium (-)	Low - Medium(-)
Socio-Economic	Local procurement.	Medium (+)	Medium (+)
	Increased social ills.	Low (-)	Low (-)
	Disruption to agricultural activities.	Low (-)	Low (-)
	Loss of agricultural land.	Low (-)	Low (-)
	Property prices and desirability of property.	Low (-)	Low (-)
Visual	N/A	N/A	N/A

Table 5: Original Rating of Impacts during <u>operation</u> of the proposed WEF and associated infrastructure

Specialist Study	Impact	Pre-Mitigation Rating	Post Mitigation Rating
Agricultural Potential	Loss of agricultural land.	Low (-)	N/A
	Erosion.	Low (-)	N/A
	Veld degradation.	Low (-)	Low (-)
	Loss of topsoil.	Low (-)	N/A
Avifauna	Priority species mortality due to collision with turbines.	Medium-High (-)	Low (-)
	Disturbance and displacement.	Medium (-)	Low (-)
Bats	Collision risks with turbines.	Medium (-)	Low (-)
	Habitat loss and displacement.	Medium (-)	Low (-)

Biodiversity (Flora)	Removal of vegetation in the construction areas.	Low (-)	Low (-)
Biodiversity (Fauna)	▪ Habitat loss and degradation of fauna. ▪ Direct faunal impacts.	Low (-)	Low (-)
Heritage and Palaeontology	Direct impact on palaeontology and archaeology.	Medium (-)	Low (-)
	Direct impact on cultural landscape.	Medium (-)	Low (-)
Noise	Noise generated by operational wind turbines (boundary impacts).	Medium (-)	Low (-)
	Noise generated by operational wind turbines (sensitive sites).	Low-Medium (-)	Low (-)
Socio-Economic	Local procurement.	Medium (+)	Medium (+)
	Increased social ills.	Negligible	Negligible
	Disruption to agricultural activities.	Negligible	Negligible
	Loss of agricultural land.	Low (-)	Low (-)
	Tourism activities (positive)	Low (+)	Low (+)
	Tourism activities (negative)	Low (-)	Low (-)
	Property prices and desirability of property.	Low (-)	Low (-)
Visual	Impact on fixed receptors.	High (-)	High (-)
	Impact on temporary receptors.	High (-)	High (-)

3 PROPOSED AMENDMENTS

3.1 Changes to Authorised Elements of the Project

As previously mentioned, the amended EA made provision for the construction of a total number of 70 wind turbines, each with a hub height of up to 150m and a rotor diameter of 150m. Mainstream is now proposing amendments to the turbine specifications stipulated in the amended EA for the Beaufort West Wind Farm to allow for greater project efficiency and viability. The proposed amendments are as follows:

- Increased turbine hub height: from 150m up to 200m;
- Increased rotor diameter: from 150m to up to 200m.

Other authorised elements of the project such as the total output capacity (140MW) and the associated infrastructure remain unchanged.

The increased rotor diameter and tower hub height would result in a maximum tip height of 300m, an increase of 75m from that which was assessed in the EIA amendment application and the associated specialist studies. Hence these new turbine specifications could potentially change the impacts previously identified.

Accordingly, where necessary, the specialists have been asked to re-evaluate the findings of their original reports in light of the proposed new turbine specifications.

An additional amendment is included in the application, this being an amendment to the contact details

for the holder of the EA. This is however merely an administrative amendment and does not require any further assessment.

3.2 Motivation

The turbines available on the market are constantly improving and as new technology becomes available the turbine specifications often change. These modifications mean that what is perceived as the optimal wind turbine option can change because of the following:

- **Improved technology certified and available subsequent to original EA:**
  The technology behind all renewable energies is currently advancing at an intense pace and new developments are being brought to the marketplace at very short intervals. Thus, the wind turbine technology has advanced since the undertaking of the EIA for the Beaufort West Wind Farm and new and improved models are available that the applicant would like to consider in order to optimise the project.
- **Better fit for purpose technology is available today to suit the wind resource of the site:**
  More up-to-date turbine models are more efficient, and some are better suited to the native wind conditions on the site. Being in a position where these turbines can be considered will allow for the optimisation of the project driving improved overall efficiency.
- **Larger wind turbine generators require fewer turbines:**
  Larger turbines have larger generators per turbine, larger generators per turbine result in fewer turbines which can increase the efficiency, higher energy production and profitability of the overall project. This can also benefit the environment.
- **Market supply constraints for certain turbines including older technology:**
  Due to current considerable demand for wind energy across the world the demand for wind turbines is outstripping supply of certain manufacturers and thus waiting times have increased to the degree that projects are having to consider alternative models if their projects are to be implemented timeously.

The main reason for the proposed increase in the hub height and rotor diameter is to ensure that the most efficient wind turbines available on the market can be used at the time of construction. It is however important to note that the final turbine model and specifications will only be determined once the project is selected as a preferred bidder in the Department of Energy's (DoEs) future Renewable Energy Independent Power Producer Procurement Programme's (REIPPPP) bidding rounds.

4 IMPACTS RELATED TO PROPOSED AMENDMENTS

In order to ascertain if further input would be required in relation to the above-mentioned proposed amendments, each of the specialist studies conducted during the EIA phase of the development was investigated in terms of its applicability. The following determinations were made:

Table 6: Investigation of EIA Phase Specialist Studies

Agriculture	Not applicable - The turbines are still within the assessed footprint.
Avifauna	An avifauna specialist was commissioned to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment

	will change the level or nature of impacts that were previously assessed and authorised.
Bats	A bat specialist was commissioned to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment will change the level or nature of impacts that were previously assessed and authorised.
Biodiversity (flora)	Not applicable - The turbines are still within the assessed footprint.
Biodiversity (fauna)	Not applicable - The turbines are still within the assessed footprint.
Heritage	Not applicable - The turbines are still within the assessed footprint.
Noise	A noise specialist was commissioned to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment will change the level or nature of impacts that were previously assessed and authorised.
Socio-Economic	Not applicable - No change in construction milestones or employment opportunities to be provided.
Visual	A visual specialist was commissioned to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment will change the level or nature of impacts that were previously assessed and authorised.

A summary of the Specialist's findings commissioned as part of this amendment process is provided below.

4.1 **Avifauna Impacts**

Considering the proposed amendments, Chris van Rooyen *et al* of Chris van Rooyen Consulting were requested to revisit the avifaunal impact assessments previously undertaken for the proposed Beaufort West Wind and Solar Energy facility and the subsequent amendment application (Avisense 2011, Avisense 2016 and Van Rooyen *et al* 2016). The impact which is specifically relevant in this instance is the risk of priority species mortality due to collisions with the turbines in the operational phase. The assessment report is attached as **Appendix C1**.

4.1.1 Re-assessment of Collision Mortality Impact

The avifaunal specialists conducted a re-assessment of the potential collision impact in order to establish if the original pre-mitigation assessments of Van Rooyen *et al* (2016 & 2017) should be revised in light of the proposed new turbine specifications. The increase of 77.7% in rotor swept area per turbine is significant, and unless the number of turbines is reduced, it will result in an increase in the overall collision risk for priority species. However, should the number of turbines be reduced significantly, the collision rating will remain unchanged, or even be reduced, depending on the extent of the reduction in the number of turbines.

Given the significant proposed increase in rotor swept area, the Avifauna Specialist concluded that, if the proposed change in turbine dimensions is applied to the current 70 turbine layout, the original pre-

mitigation impact significance rating of **"medium - high"** for potential collision mortality will no longer be valid. A collision risk rating of **"high"** would thus be more appropriate.

4.1.2 Revised Mitigation Measures

An assessment was undertaken to determine if the mitigation measures originally proposed for the Beaufort West WEF would need to be revisited in order to retain the residual impact rating as "low" in terms of the following two (2) factors:

- The proposed increase in the rotor diameter will result in an increased risk of collisions for priority species (see **Section 4.1.1** above).
- The "Best Practice Guidelines for Avian Monitoring and Impact Mitigation at Proposed Wind Energy Development Sites in Southern Africa", (Jenkins *et al*. 2011) revised in 2015, requires that either all, or part of the pre-construction monitoring is repeated if there is a time period of three (3) years or more between the data collection and the construction of the wind farm. This re-assessment is 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 current information on the breeding status of priority species at the proposed Beaufort West WEF is recorded.

No additional priority species nests which could be impacted by the proposed WEF, were recorded during the nest searches in June 2019.

It is concluded that the original mitigation measures listed in the Bird Specialist Study (Avisense 2011: 2016) remain valid and do not need to be revised in view of the proposed changes to the turbine dimensions.

4.2 **Bat Impacts**

The original bat impact assessment, and Bat Monitoring Assessment for the proposed Beaufort West Wind and Solar Energy facility and the subsequent amendment application was undertaken by Animalia Consultants (Pty) Ltd in 2016. As these specialists are no longer undertaking bat assessments, Stephanie Dippenaar Consulting was appointed to undertake an assessment of the project amendments with regard to the potential impacts to bats. The assessment report is attached as **Appendix C2**.

The main negative impact of turbines on bats is the encroachment into air space where bats forage or commute. As the proposed increased turbine dimensions will result in a larger rotor swept area and greater overall height per turbine, the bat impact relevant to this amendment is the change in risk of mortality due to direct collision of bats in flight with moving turbines.

4.2.1 Literature Review

Current scientific literature was reviewed to gain insight into the relationship between turbine size and bat mortalities to aid in the assessment of the impacts of greater turbine hub height and rotor diameter.

The literature was also reviewed with a view to identifying effective mitigation measures for the relevant impacts.

Given that a greater turbine hub height would increase the height of the lower blade tip from the ground, it was concluded that the risks for lower flying bat species would be reduced. The increased height of the upper-most blade tip and the greater rotor swept area of the larger turbines would however result in an increased mortality risk for open-air high-flying species such as the Molossidae family (Free-tailed bats).

4.2.2 Species Richness and Activity Trends

A critical assessment was undertaken of the bat species richness and activity levels identified in the original bat impact assessment report. The Bat Specialist concluded that, given the increased airspace that would be occupied by the larger turbines being proposed in this amendment, and the resulting increased mortality risk to the dominant species (*Tadarida aegyptiaca*) detected on site, mitigation conditions need to be carefully re-evaluated during the first few months of the wind farm operation. If deemed necessary, curtailment measures (**Table 7**) should be adapted to a turbine specific mitigation strategy.

4.2.3 Sensitivity Map

In assessing the Sensitivity Map presented in the original bat impact report, it was noted that the sensitivity map identified areas of moderate and high bat sensitivity with designated buffers of 50m and 200m respectively (Animalia 2016). Siting of turbines, and other construction activities, in these buffers should be avoided. Buffer zones therefore stay the same as recommended during the bat monitoring report, but for this amendment, all components, including the turbine blade tips, must be excluded from entering the buffer areas.

The Applicant must ensure that turbines are placed at an appropriate distance away from bat sensitivity areas, based on the finalised turbine dimensions. The turbine layout should be approved by a bat specialist upon finalisation of turbine specifications.

4.2.4 Impact Assessment

Of the impacts identified in the original EIA, only bat mortalities due to direct blade impact or barotrauma during foraging activities, is relevant to this amendment. In the EIA, the impact was identified as high negative (score of -76) without mitigation, and reduced to low negative (score of -26) with mitigations as follows:

- Adhere to the bat sensitivity map (avoid development in the demarcated sensitivity areas and their buffers);
- All turbines must be curtailed below cut in speed and not allow for freewheeling from the start of operation. Bat activity is markedly higher over low wind speed periods. Preventing freewheeling should not affect energy production significantly but will be a significant bat conservation mitigation measure; and
- Implement an operational bat monitoring study immediately after construction of turbines.

Considering the greater turbine dimensions proposed in the amendment application, the impact would remain very high without mitigation but would be reduced to low with implementation of the existing mitigation measures in conjunction with the additional recommended mitigation measures as outlined below.

- A maximum number of 40 turbines, with a hub height of 200 m and a rotor diameter of 200 m, is proposed with a total output of 140MW. If more than 40 turbines with these specifications are installed, the curtailment programme as indicated in the bat monitoring report (Animalia, 2016) is to be applied from the onset of the wind development facility, see **Table 7**. This curtailment then needs to be refined by a bat specialist during the operational phase[1]. Should smaller turbines be deployed, more turbines may be installed, but with the agreement of a bat specialist;
- To account for the lack of data within the sweep of the amended turbine specifications, the appropriate turbines, as indicated by the post-construction bat specialist, should be installed with bat monitoring equipment at height and bat monitoring should start at the onset of turbine operation; and
- An operational bat monitoring study should already be in place at the start of the wind farm operation and should be implemented immediately after construction of turbines. Mitigation measures outlined by the Bat Specialist during the operational monitoring study should be applied with due diligence.

Table 7: **Wind turbine mitigation schedule**

Terms of mitigation implementation	
Spring / Summer peak activity (times to implement curtailment / mitigation)	Late September to early January 20:00 – 03:00
Environmental conditions in which to implement curtailment/ mitigation	Below 9m/s wind speed at 120m above ground level, and above 15°C temperature at 120m above ground level
Summer Autumn peak activity (times to implement curtailment / mitigation)	Mid-January to mid-March 19:00 – 04:00
Environmental conditions in which to implement curtailment/ mitigation	Below 8.5m/s wind speed at 120m above ground level, and above 18°C temperature at 120m above ground level

4.2.5 Conclusion

After review of relevant scientific literature and the long-term preconstruction bat monitoring report (Animalia, 2017), it is concluded that the proposed amendments to the turbine dimensions proposed for the Beaufort West wind energy facility would continue to have an overall negative impact on bats as identified during the bat monitoring study conducted in 2016 (Animalia 2016). The mortality risk for lower flying species detected on site may be reduced due to the increased height of the lower blade tip from the ground. However, there is a higher risk of mortality for high flying species (also the most abundant species on site) due to the increased rotor swept area and height of the upper-most blade associated with the larger turbine dimensions. To account for this higher risk, added mitigation measures are recommended together with the original mitigation measures of the final bat monitoring study (see **Section 4.2.4**).

[1] It should be noted that Mainstream has refined turbine layout for the Beaufort West Wind Farm, thereby reducing the number of turbines being proposed to 40 (**Section 8**). As such, curtailment requirements do not need to be included as mitigation measures.

The overall negative impact for direct blade impact or barotrauma during foraging activities was identified as very high negative (score of -76) without mitigation, and reduced to low negative (score of -26) with mitigations (Animalia, 2016). These impact scores will stay the same if all sensitivity and buffer zones are avoided (**Section 4.2.3**) and if all mitigation measures are applied as described in **Section 4.2.4.**

To reduce bat mortality risk, a three-pronged consideration must be used when selecting the appropriate turbine technology for the wind farm:

- Turbine dimensions with a greater hub height (to increase lower blade tip height and reduce collision risk with lower flying species);
- Turbine dimensions with the smallest rotor diameter (to decrease total tip height and reduce collision risk with high flying species); and
- Least number of turbines required to generate the total megawatt output of the facility.

An operational monitoring study must be implemented immediately upon construction of the wind farm and already be in place when turbines start to operate. All applicable mitigation measures should be incorporated in the EMPr and mitigation measures recommended by the Bat Specialist during the operational monitoring study must be implemented immediately and in real time.

It should be noted that Mainstream has refined turbine layout for the Beaufort West Wind Farm, thereby reducing the number of turbines being proposed to 40 (**Section 8**). As such, curtailment will not be required as a mitigation measure.

4.3 **Noise Impacts**

Morné de Jager of Enviro Acoustic Research (EAR) was requested to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment will change the level or nature of noise impacts that were previously assessed and authorised. As EAR was not involved in the original Noise Impact Assessment for the proposed Beaufort West Wind and Solar Energy Facility, it was necessary for this Specialist to conduct a full Environmental Noise Impact Assessment of the predicted noise environment resulting from to the development of the proposed Beaufort West Wind Farm. The specialist report (attached as **Appendix C3**) considers the ambient sound levels previously measured in similar areas, the author's expertise, as well as an output of sound propagation model (making use of the worst-case scenario in terms of the precautionary approach) to identify potential issues of concern. A summary of the findings is presented below.

4.3.1 Baseline Assessment

Ambient (background) noise levels were previously measured in the vicinity of the area for a number of renewable wind projects. This data was plotted against wind speeds, with the data analysed with the best curve fitted through this data. This data would be relevant to this area, as the project focus area has a similar developmental status.

These measurements illustrate the rural character of the area during periods with light or no winds, with mainly natural sounds defining the acoustic character. The area would be considered a Rural Noise

District in terms of the SANS 10103:2008 Rating Level. The data also clearly indicate that the ambient sound levels will increase as wind speeds increase.

4.3.2 Noise Impact Determination and Findings

The potential noise impact of operational activities is of a low significance on surrounding receptors in the area. The addition of the Beaufort West Wind Energy facility will cumulatively increase the ambient sound levels in the area but the significance of the cumulative noise impact will be low. The Rietpoort Game Reserve area will be well outside the acoustic zone of influence from the wind turbines and noise impact will be insignificant.

The potential noise impact must be re-evaluated if:

- layout changes result in wind turbines being located within 1 000m of a confirmed Noise Sensitive Development (NSD) (where the structure is used for residential purposes); or
- the developer decides to use a different wind turbine that has a sound power emission level higher than the Acciona WTG used in this report (sound power emission level exceeding 113 dBA re 1 pW).

4.3.3 Management and Mitigation of Noise Impact

The significance of noise during the operational phase is low and additional mitigation measures are not required.

It should be noted that the noise impact is based on sound power emission levels of the Acciona AW125 3000 wind turbine (sound power emission level of 108.4 dBA re 1 pW at 7 m/s) for the Beaufort West WEF. If the developer chooses to use a different wind turbine with a significantly higher sound power emission level, the significance of the noise impact may rise, and the noise impact should be re-evaluated.

4.3.4 Recommendations and Conclusions

The addition of the Beaufort West WEF will cumulatively increase the ambient sound levels in the area but the significance of the cumulative noise impact will be low. The mitigation identified and proposed will ensure that the cumulative impacts remain low.

The potential noise impact must be re-evaluated if:

- The layout changes result in wind turbines being located within 1 000 m of a confirmed Noise Sensitive Development (NSD) (where the structure is used for residential purposes); or
- The developer decides to use a different wind turbine that has a sound power emission level higher than the Acciona WTG used in this report (sound power emission level exceeding 113 dBA re 1 pW).

The potential noise impact of operational activities is of a low significance on surrounding receptors in the area. The addition of the Beaufort West will cumulatively increase the ambient sound levels in the area but the significance of the cumulative noise impact will be low.

Considering the requirements of a Part 2 Amendment, the following can be concluded:

- The proposed change in turbine specifications will not result in a noise impact that is significantly different from the potential noise impact from the authorised wind turbine specifications;
- The proposed change in turbine specifications will not introduce any new advantages or disadvantages in terms of acoustics; and
- This noise impact assessment provides clear and more specific mitigation measures to ensure that the projected noise impact will be managed to a low level at all the identified structures that may be used for residential purposes. This assessment did consider the worst-case scenario.

Considering the low significance of the noise impacts (after mitigation, inclusive of cumulative impacts), it is the opinion of the author that the proposed amendment to the hub height and rotor diameter (from 150m to 200m) of the Beaufort West WEF be authorised.

4.4 **Visual Impacts**

SiVEST's in-house visual specialist team was requested to assess the impact of the proposed amendment to the turbine dimensions and the extent to which the amendment will change the level or nature of visual impacts that were previously assessed and authorized for the Beaufort West Wind Farm. The visual assessment report (VIA) is attached as **Appendix C4**.

In assessing the proposed amendments, the visual specialist found that the increased height as proposed will increase the visibility of the turbines and extend the area from which the turbines will be visible (viewshed). This will be exacerbated by the lack of natural screening elements in the broader study area resulting from the relatively flat terrain and the prevalence of sparse shrubland vegetation cover. However, comparison of the viewshed based on the approved turbine height (225m) with the viewshed based on the proposed new turbine height (300m) showed only minor increases in the area of visibility within a 10km radius of the proposed WEF.

It is important to note that visual impacts are only experienced when there are receptors present to experience this impact. The original VIA for this development found that the broader study area is not typically valued for its tourism significance and there is limited human habitation resulting in relatively few potentially sensitive receptors in the area. In light of this and given the relatively remote location of the proposed Beaufort West Wind Farm, the extended viewshed is unlikely to incorporate any additional receptors.

Visual impacts resulting from the larger turbines would be greatest within a 1km to 2km radius, from where the increased height of the structure would be most noticeable. The VIA for Beaufort West identified one sensitive receptor within the viewshed of the proposed wind farm, this being Rietpoort Game Farm. The farm Rietpoort No 13 comprises multiple farm portions across a relatively extensive area. The exact location and extent of the Game Farm operation is not known and as such it is not possible to accurately determine the proximity of this receptor to the nearest turbine placement. Some portions of the site are only 2.2km from the nearest turbine location, while other portions are more than 10km from the nearest turbine. In addition, there are small areas on the farm which are outside the viewshed for the proposed development. Hence increases in the authorised turbine height would only be marginally noticeable from the north-eastern sector of the farm and visual impacts resulting from the

larger turbines would only be marginally increased. The overall visual impact on the remainder of the farm is expected to remain largely unchanged.

The VIA also identified the N12 national route as being an important arterial route in the area and hence this route could be seen as a potentially sensitive receptor road. This road traverses the Beaufort West development site and passes within 600m of the nearest turbine. As such, increases in the turbine height will be noticeable from sections of this road. It was however noted in the VIA that the section of the N12 which passes through the study area is not considered a scenic route and as such the visual impact of the turbines on passing motorists would only be rated as moderate. Mitigation measures provided in respect of the possible effects of shadow flicker remain valid.

As previously stated, the overall impact rating conducted for the Beaufort West Wind Farm VIA determined that the overall visual impact rating for the proposed development would be high and the significance of these impacts would also be high. It was however stated that impact ratings could be reduced with the implementation of recommended mitigation measures. In light of the above comments, the increase in the proposed turbine height will not change this impact rating. Furthermore, no additional recommendations or mitigation measures will be required and all of the mitigation measures set out in the VIA remain valid.

4.5 Summary of Changes in Impact Ratings

Table 8: Summary of changes in overall impact ratings (Operation Phase)

Specialist Study	Impact	Original Pre-Mitigation Rating	Original Post Mitigation Rating	Revised Pre-Mitigation Rating	Revised Post-Mitigation Rating
Avifauna	Priority species mortality due to collision with turbines.	Medium-High (-)	Low (-)	High	No change
	Disturbance and displacement.	Medium (-)	Low (-)	No change	No change
Bats	Collision risks with turbines.	High (-)	Low (-)	No change	No change
	Habitat loss and displacement.	Medium (-)	Low (-)	No change	No change
Noise	Noise generated by operational wind turbines (boundary impacts).	Low (-)	Low (-)	No change	No change
	Noise generated by operational wind turbines (sensitive sites).	Low (-)	Low (-)	No change	No change
Visual	Impact on fixed receptors.	High (-)	High (-)	No change	No change
	Impact on temporary receptors.	High (-)	High (-)	No change	No change

5 NEW / REVISED MITIGATION MEASURES

In addition to assessing the impact of the proposed amendment to the turbine dimensions, Specialists were requested to provide measures to ensure avoidance, management and mitigation of any impacts associated with such proposed change and identify any changes required to the EMPr. New and/or revised mitigation measures provided by the specialists are outlined in **Table 9** below.

Table 9: New / Revised mitigation measures identified in respect of the proposed amendments.

Specialist Study	New Mitigation Measures
Avifauna	N/A
Bats	Development is restricted to a maximum number of 40 turbines, with a hub height of 200 m and a rotor diameter of 200 m with a total output of 140 MW.
	The turbine layout should be approved by a bat specialist upon finalisation of turbine specifications.
	To account for the lack of data within the sweep of the amended turbine specifications, the appropriate turbines, as indicated by the post-construction bat specialist, should be installed with bat monitoring equipment at height and bat monitoring should start at the onset of turbine operation.
	An operational bat monitoring study should already be in place at the start of the wind farm operation and should be implemented immediately after construction of turbines. Mitigation measures outlined by the Bat Specialist during the operational monitoring study should be applied with due diligence.
	Mitigation conditions need to be carefully re-evaluated during the first few months of the wind farm operation. If deemed necessary, curtailment measures should be adapted to a turbine specific mitigation strategy.
Noise	The potential noise impact must be re-evaluated if: ▪ layout changes result in wind turbines being located within 1000 m of a confirmed NSD; or ▪ the developer decides to use a different wind turbine that has a sound power emission level higher than the Acciona WTG used in this report (sound power emission level exceeding 113 dBA re 1 pW).
Visual	N/A

6 ADVANTAGES / DISADVANTAGES OF THE PROPOSED AMENDMENTS

As required in terms of Section 32(1)(a)(ii) of the 2014 EIA Regulations, (as amended), the advantages and disadvantages of the proposed amendments are outlined in **Table 10** below.

Table 10: Advantages / Disadvantages of the Proposed Amendments

	Advantages	Disadvantages

GENERAL	The proposed increase in hub height and rotor diameter will ensure that the most efficient wind turbines available on the market can be used at the time of construction.	Changes in turbine dimensions may increase environmental impacts (see below).
	Better fit for purpose technology is available today to suit the wind resource of the site, thus allowing for the optimisation of the project, driving improved overall efficiency.	
	Larger turbines have larger generators per turbine and resulting in the need for fewer turbines. This can increase the efficiency, energy production and profitability of the overall project while also benefiting the environment.	
AVIFAUNA	The proposed amendment would be advantageous from a bird impact perspective if the number of turbines is reduced as a result of the amendment.	Should the turbine dimensions increase as proposed, and the number of turbines remain unchanged at 70, the risk of collisions would increase.
BATS	The risk of bat mortality may be decreased for lower flying bat species as the greater turbine hub height associated with the larger turbines would increase the height of the lower blade tip from the ground. .	The increased height of the upper-most blade tip and the greater rotor swept area of the larger turbines would result in an increased mortality risk for open-air high-flying species.
NOISE	N/A	N/A
VISUAL	N/A	N/A

7 PUBLIC PARTICIPATION

In terms of Chapter 6 of the EIA Regulations, 2014, (as amended), a Part 2 Amendment Application requires a 30- day Public Participation Process (PPP). Accordingly, the following PPP process has been undertaken for the Beaufort West Wind Farm:

7.1 Notification of Affected Landowners and Provincial Authority

All affected landowners, as well as the relevant provincial authority (namely the Western Cape Department of Environmental Affairs and Development Planning), were notified about the EA

Amendment Application via email prior to submission of the application to the DEA on 6 August 2019. Proof of these notifications is provided in **Appendix D6**.

7.2 Notification of Potential Interested and Affected Parties (I&AP's)

The advertising process was followed in compliance with Regulation 41 of the EIA Regulations, 2014 (as amended).

Advertisements (in English and Afrikaans) were placed in the "Die Courier" local newspaper on Friday the 13th of September 2019. Proof that the above-mentioned advertisements were placed is provided in **Appendix D2**.

In addition, site notices (in English and Afrikaans) were erected on the boundary of the application site on Friday the 13th of September 2019. A copy of the site notice is provided in **Appendix D1**. Proof of the site notices (including GPS coordinates) which were erected is also included in **Appendix D1**.

I&APs and stakeholders who responded to these advertisements were registered on the project database and sent all relevant information as the amendment process progressed.

7.3 Comment and Review of Draft EA Amendment Assessment Report

The Draft EA Amendment Assessment Report is being made available on SiVEST's website[2] to all I&APs, key stakeholders and OoS / Authorities for comment and review for a period of 30 days, from **Friday 27 September 2019** to **Monday 28 October 2019**, excluding public holidays. In addition, the key stakeholders / OoS / authorities will be sent electronic copies (on CD) of the Draft Report (including all appendices) during the 30-day comment and review period (see **Section 7.8**).

Written notice was given to all I&APs, key stakeholders and OoS / Authorities registered on the database that the Draft EA Amendment Assessment Report was available for comment and review (**Appendix D1**). Electronic copies (CD) of the report were also distributed on written request. All comments received throughout the EA amendment process (including comments received during the Report's commenting period) will be incorporated into the Final EA Amendment Assessment Report, which will then be submitted to the competent authority (namely the DEA) for decision-making. Additionally, all comments received throughout the EA amendment process will also be included in the Comments and Response Report (C&RR) (**Appendix D5**).

7.4 Stakeholders and I&APs

I&APs, key stakeholder and/or OoS / Authorities were identified using:

- Email, sms, fax and post notifications to all I&APs key stakeholder and OoS / Authorities on the project database (Proofs included in **Appendix D1**).
- Referrals.

[2] *http://www.sivest.co.za/, click on Downloads, then browse to the folder '15656 Beaufort West Amendment'*

A full database list of registered I&APs, key stakeholder and OoS / Authorities was compiled and is included in **Appendix D3**.

7.5 Announcing the Opportunity to Participate

The opportunity for I&APs, key stakeholder and OoS / Authorities to participate in the EA amendment process was communicated in the following manner:

- All affected landowners, as well as the relevant provincial authority (namely the Western Cape Department of Environmental Affairs and Development Planning), were notified about the EA Amendment Application via email prior to the application being submitted to the DEA on 6 August 2019 (**Appendix D6**);
- Notification letters, advising of the EA amendment process and comment period were distributed (via email, fax, post and sms) on **Friday the 27th of September 2019** (Notification letter included in **Appendix D1**. Remaining notification proof will be included in Final EA Amendment Assessment Report); and
- The Draft EA Amendment Assessment was made available to the public for review on SiVEST's website for a period of 30 days from **Friday 27 September 2019** to **Monday 28 October 2019** (Proof to be included in Final EA Amendment Assessment Report).

7.6 Proof of Notification

Proof of notification of the I&APs is included in **Appendix D**. More specifically, the types of proofs will be as follows:

- Proof of notification of affected landowners and relevant provincial authority (namely NC DENC) about the EA Amendment Application (**Appendix D6**);
- Site notice text (**Appendix D1**);
- Photographs and Global Positioning System (GPS) Coordinates of site notices (**Appendix D1**);
- Proof of advertisements (namely tear-sheets) in the "Die Courier" local newspaper (**Appendix D2**); and
- Correspondence to and from registered I&APs and key stakeholders (**Appendix D4**).

7.7 Comments and Response Report (C&RR)

Issues, comments and concerns raised throughout the EA amendment process (including comments received during the commenting period for the Draft EA Amendment Assessment Report) will be captured in the Comments and Response Report (CRR) (**Appendix D5**), as and when they are received. The C&RR provides a summary of the issues raised, as well as the responses provided to I&APs, key stakeholders and OoS / Authorities. This information will be used to feed into the evaluation of environmental and social impacts and will also be taken into consideration when finalising the EA Amendment Assessment Report. All comments received to date have been included in the C&RR.

7.8 Distribution to Organs of State (OoS) / Authorities

Table 11 below includes all the key stakeholders / OoS / authorities who will be sent electronic copies (on CD) of the Draft EA Amendment Assessment Report (including all appendices) at the start of the

30-day comment and review period. The report will be accompanied by a cover letter, a copy of which is included in **Appendix C7**. The remaining proofs of distribution (i.e. email notification) will be included in the Final EA Amendment Assessment Report.

It should be noted that all key stakeholders / organs of state / authorities will be contacted near the end of the 30-day comment and review period and will be reminded to submit comments before this period closes. Comments received from key stakeholders / OoS / authorities during the 30-day comment and review period will be incorporated into the Final EA Amendment Assessment Report, which will then be submitted to the competent authority (namely the DEA) for decision-making.

Table 11: Distribution of Draft EA Amendment Assessment Report to OoS

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 140MW BEAUFORT WEST WIND FARM WITHIN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE						
DISTRIBUTION OF THE DRAFT EA AMENDMENT REPORT TO ORGANS OF STATE FOR COMMENT						
TITLE	**SURNAME**	**NAME**	**POSITION**	**POSTAL ADDRESS**	**EMAIL ADDRESS**	**DATE OF DISTRIBUTION**
BEAUFORT WEST LOCAL MUNICIPALITY						
Mr	Haarhoff	Kosie	Municipal Manager	Private Bag X582 BEAUFORT WEST 6970	kosieh@beaufortwestmun.co.za admin@beaufortwestmun.co.za	Friday 27 September 2019
Ms	Ruiters	Vuyokazi	Waste Manager	Private Bag X582 BEAUFORT WEST 6970	wastemanager@ beaufortwestmun.co.za	Friday 27 September 2019
PRINCE ALBERT LOCAL MUNICIPALITY						
Mr	Vorster	Anneleen	Acting Municipal Manager	Private Bag X53 PRINCE ALBERT 6930	adminklerk@pamun.gov.za annaleen@pamun.gov.za	Friday 27 September 2019
CENTRAL KAROO DISTRICT MUNICIPALITY						
Mr	Jooste	Stefanus	Municipal Manager	Private Bag X582 BEAUFORT WEST 6970	manager@skdm.co.za	Friday 27 September 2019
Mr	Van Zyl	Gerrit	Manager: Environmental Health Services	Private Bag X582 BEAUFORT WEST 6970	gerrit@skdm.co.za	Friday 27 September 2019
DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA): BIODIVERSITY SECTION						
Mr	Tshitwamulomoni	Stanley	Control Bidiversity officer Grade B	Environmental House 473 Steve Biko Road, Arcadia PRETORIA 0001	StanleyT@environmental.gov.za	Friday 27 September 2019
Mr	Lekota	Seoka		473 Steve Biko Road Arcadia PRETORIA 0083	slekota@environment.gov.za	Friday 27 September 2019
Mr	Rabothata	Mmatlala		473 Steve Biko Road Arcadia PRETORIA 0083	mrabothata@environment.gov.za	Friday 27 September 2019

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 140MW BEAUFORT WEST WIND FARM WITHIN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE						
DISTRIBUTION OF THE DRAFT EA AMENDMENT REPORT TO ORGANS OF STATE FOR COMMENT						
TITLE	**SURNAME**	**NAME**	**POSITION**	**POSTAL ADDRESS**	**EMAIL ADDRESS**	**DATE OF DISTRIBUTION**
WESTERN CAPE DEPARTMENT OF ENVIRONMENTAL AFFAIRS & DEVELOPMENT PLANNING						
Mr	Gerber	Gerhard	Director: Development Facilitation	Private Bag X9086 Cape Town 8000	Gerhard.Gerber@ westerncape.gov.za	Friday 27 September 2019
Mrs	La Meyer	Adri	Directorate: Development Facilitation	Private Bag X9086 Cape Town 8000	Adri.Lameyer@ westerncape.gov.za	Friday 27 September 2019
DEPARTMENT OF WATER AND SANITATION (DWS)						
Mr	Mahunonyane	Moses	Regional Head: Northern Cape	Private Bag X6101 KIMBERLEY 8300	MahunonyaneM@dws.gov.za	Friday 27 September 2019
WESTERN CAPE DEPARTMENT OF CULTURAL AFFAIRS & SPORT						
Ms	Heli	Vuyokazi	Heritage Resource Management	Protea Assurance building Greenmarket Square CAPE TOWN 8001	Vuyokazi.Heli@westerncape.gov.za HWC.HWC@westerncape.gov.za	Friday 27 September 2019
WESTERN CAPE DEPARTMENT OF AGRICULTURE, LAND REFORM & RURAL DEVELOPMENT						
Mr	Herselman	P	Acting Land Use Manager	Private Bag X1 Elsenburg 7607	info@info@elsenburg.com	Friday 27 September 2019
DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES (DAFF)						
Western Cape Department						
Ms	van Rhyn	Petro	Head of Communication	Private Bag X1 Elsenburg 7607	petrovr@elsenburg.com	Friday 27 September 2019
National Department						
Ms	Buthalezi	Thoko	Directorate Land-use & Soil Management	Private Bag X120 PRETORIA 0001	Thokob@nda.agric.za	Friday 27 September 2019
Ms	Marubini	Mashudu	Assistant Director	Private Bag X120 PRETORIA 0001	mashuduma@daff.gov.za	Friday 27 September 2019

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 140MW BEAUFORT WEST WIND FARM WITHIN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE						
DISTRIBUTION OF THE DRAFT EA AMENDMENT REPORT TO ORGANS OF STATE FOR COMMENT						
TITLE	**SURNAME**	**NAME**	**POSITION**	**POSTAL ADDRESS**	**EMAIL ADDRESS**	**DATE OF DISTRIBUTION**
DEPARTMENT OF MINERAL RESOURCES (DMR)						
National Department						
Mr	Msiza	David	The Director General	Private Bag X59 PRETORIA 0001	david.msiza@dmr.gov.za	Friday 27 September 2019
Western Cape Department						
Mr	Mwelase	Vusimuzi	Regional Manager	Private Bag X 9, ROGGEBAAI 8012	vusimuzi.mwelase@dmr.gov.za	Friday 27 September 2019
SOUTH AFRICAN NATIONAL ROADS AGENCY SOC Ltd (SANRAL)						
Ms	Abrahams	Nicole	Environmental Coordinator	Private Bag X19 BELLVILLE 7535	abrahamsn@nra.co.za	Friday 27 September 2019
Mr	Dyers	Shaun	Manager: Statutory Control	Private Bag X19 BELLVILLE 7535	Dyerss@nra.co.za	Friday 27 September 2019
WESTERN CAPE DEPARTMENT OF TRANSPORT AND PUBLIC WORKS						
Ms	Kiva	Wendy	Head of Department	Private Bag X9185 CAPE TOWN 8000	Wendy.Kiva@westerncape.gov.za	Friday 27 September 2019
Mr	Manyathi	T		Private Bag X9185 CAPE TOWN 8000	Transport.Publicworks@westerncape.gov.za	Friday 27 September 2019
SOUTH AFRICAN HERITAGE RESOURCES AGENCY (SAHRA): HEAD OFFICE						
Ms	Higgitt	Natasha	Heritage Officer: Northern Cape	PO Box 4637 CAPE TOWN 8000	nhiggitt@sahra.org.za	Friday 27 September 2019
ESKOM						
Mr	Geeringh	John	Chief Planner	PO Box 1091 JOHANNESBURG 2000	GeerinJH@eskom.co.za	Friday 27 September 2019
SQUARE KILOMETRE ARRAY (SKA)						

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 140MW BEAUFORT WEST WIND FARM WITHIN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE						
DISTRIBUTION OF THE DRAFT EA AMENDMENT REPORT TO ORGANS OF STATE FOR COMMENT						
TITLE	**SURNAME**	**NAME**	**POSITION**	**POSTAL ADDRESS**	**EMAIL ADDRESS**	**DATE OF DISTRIBUTION**
Dr	Tiplady	Adriaan	Manager: Site Categorisation	PO Box 522 SAXONWOLD 2132	atiplady@ska.ac.za	Friday 27 September 2019
SA CIVIL AVIATION AUTHORITY (SA CAA)						
Ms	Stoh	Lizell	Obstacle Specialist	Private Bag X73 HALFWAY HOUSE 1685	obstacles@caa.co.za strohl@caa.co.za	Friday 27 September 2019
AIR TRAFFIC AND NAVIGATION SERVICES (ATNS)						
Ms	Morobane	Johanna	Manager: Corporate Sustainability and Environment	Private Bag X15 KEMPTON PARK 1620	JohannaM@atns.co.za	Friday 27 September 2019
Ms	Masilela	Simphiwe	Obstacle Evaluator	Private Bag X15 KEMPTON PARK 1620	SimphiweM@atns.co.za	Friday 27 September 2019
TRANSNET FREIGHT RAIL						
Mr	Fiff	Sam	Environmental Manager: Freight Rail	PO Box 255 BLOEMFONTEIN 9300	sam.fiff@transnet.net	Friday 27 September 2019
SENTECH						
Mr	Koegelenberg	Johan	Renewable Projects	Private Bag X06 Honeydew 2040	koegelenbergj@sentech.co.za	Friday 27 September 2019
TELKOM						
Ms	van den Heever	Heleen	Ops Manager Central Region	Private Bag X20700 BLOEMFONTEIN 9300	vdheevhd@telkom.co.za	Friday 27 September 2019
Ms	Peters	Ihlaam	Wayleave Officer	10 Jan Smuts Drive Pinelands CAPE TOWN 7404	ihlaamp@telkom.co.za IhlaamP@openserve.co.za	Friday 27 September 2019
ENDANGERED WILDLIFE TRUST (EWT)						

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF THE 140MW BEAUFORT WEST WIND FARM WITHIN THE PRINCE ALBERT LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE						
DISTRIBUTION OF THE DRAFT EA AMENDMENT REPORT TO ORGANS OF STATE FOR COMMENT						
TITLE	**SURNAME**	**NAME**	**POSITION**	**POSTAL ADDRESS**	**EMAIL ADDRESS**	**DATE OF DISTRIBUTION**
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Mrs	Huntly	Philippa	Land Use Advice	Private Bag X5014 Stellenbosch 7599	phuntly@capenature.co.za	Friday 27 September 2019

8 REVISED LAYOUT

In light of the findings of the Avifaunal and Bat specialists, as well as the mitigation measures recommended by these specialists, Mainstream has further refined the proposed layout for the Beaufort West Wind Farm. This new layout specifically relates to the following specialist concerns / comments:

- **Avifauna:**
  - Given the significant proposed increase in rotor swept area, the Avifauna Specialist concluded that, if the proposed change in turbine dimensions is applied to the current 70 turbine layout, the original pre-mitigation impact significance rating of "medium - high" for potential collision mortality will no longer be valid. A collision risk rating of "high" would thus be more appropriate.
- **Bats:**
  - A maximum number of 40 turbines, with a hub height of 200 m and a rotor diameter of 200 m, is proposed with a total output of 140 MW. If more than 40 turbines with a hub height of 200m and a rotor diameter of 200m are installed, the curtailment programme as indicated in **Table 7** is to be applied from the onset of the wind farm operation.

In light of this, the number of turbines in the refined layout has been reduced to 40. **Figure 2** below shows the refined 40 turbine layout now proposed for the Beaufort West Wind Farm.

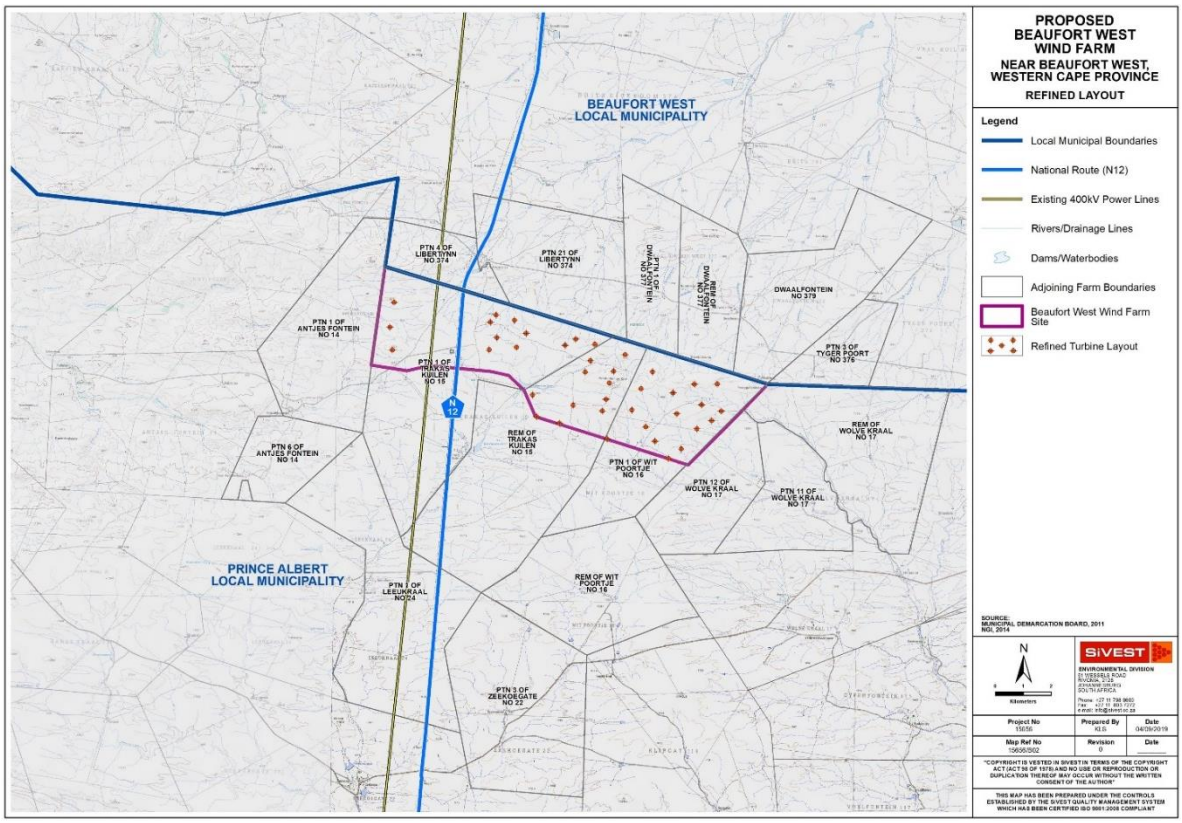

Figure 2: Refined Layout

9 CONCLUSION AND RECOMMENDATIONS

The aforementioned and associated specialist comments and revised reports provide an assessment of the potential impacts, advantages and disadvantages associated with the proposed amendments to the turbine specifications to allow for an increase in the wind turbine hub height and blade length. In light of the fact that the proposed turbines would still be within the development footprint already assessed for the Beaufort West Wind Farm, it was determined that the proposed amendments would only require further assessment from avifaunal, bat, noise and visual specialists. While the proposed amendments would not result in any new environmental risks or impacts, negative impacts could potentially increase in significance in respect of avifauna and bats. Avifaunal and Bat Specialist studies did however determine that potential negative impacts resulting from the proposed amendments would remain unchanged with the implementation of specific new mitigation measures. Impacts remain unchanged in respect of noise and visual.

The proposed WEF layout has been refined to incorporate the recommendations and mitigation measures provided by the Avifaunal and Bat specialists. As a result, the number of turbines being proposed for the Beaufort West Wind farm has now been reduced to 40.

Having received feedback from the various specialists, the advantages and disadvantages were explored providing an indication of the potential benefits and drawbacks of the proposed EA changes. From the assessment, the advantages outweigh the disadvantages mainly due to the fact that the larger turbines will reduce the number of turbines required.

A public participation process is being undertaken to obtain any comments received by I&APs on the proposed amendments for the 140MW Beaufort West Wind Farm. The public review and comment period will be undertaken from **Friday the 27th of September 2019** to **Monday the 28th of October 2019**, over a 30-day period (excluding public holidays). Any comments raised and responses to these comments and concerns will be integrated into the Final Amendment Assessment Report.

9.1 Details of Amendments being Applied For

In light of the above, details of the amendments being applied for are outlined below.

9.1.1 Amendment to Number of Turbines[3] and Turbine Dimensions

Based on the recommendations of the specialists, it is requested that the EA dated 13 February 2017 be amended as follows:

Technical Details (Page 4 of the EA dated 13 February 2017)

From:

- *A maximum of 70 wind turbines with a hub height of 150m with a blade length of 75m;*

[3] An amendment to the number of turbines was not initially under consideration and as such was not indicated in the amendment application form. The reduction in the number of turbines is now being proposed in response to the findings and recommendations put forward in the amendment assessment report compiled by the Avifaunal and Bat Specialists.

To:

- *A maximum of 40 wind turbines with a hub height of 200m with a rotor diameter of 200m;*

From:

Number of Turbines	Up to 70
Hub height from ground level	150m
Rotor diameter	150m

To:

Number of Turbines	Up to 40
Hub height from ground level	Up to 200m
Rotor diameter	Up to 200m

9.1.2 Amendment to Contact Details for the Holder of the EA

Due to the fact that the holder of the EA holder is no longer employed by Mainstream, the name of the holder and the relevant contact details as described on page 2 of the EA should be amended: as follows:

Page 2 of the EA dated 13 February 2017

From:

South African Mainstream Renewable Power Developments (Pty) Ltd
Mr Michael Mangnall
PO Box 45063
CLAREMONT
7735

Telephone Number: (021) 657 4045
Cell phone Number: (083) 785 1492
Fax Number: (021) 671 5665
Email Address: Mike.Mangnall@mainstreamrp.com

To:

South Africa Mainstream Renewable Power Developments (Pty) Ltd
Mr Eugene Marais
PO Box 45063
CLAREMONT
7735

Telephone Number: (021) 657 4040
Fax Number: (021) 671 5665
Email Address: Eugene.marais@mainstreamrp.com

9.2 **Environmental Impact Statement**

SiVEST Environmental Division, as the EAP, is therefore of the opinion that:

- The magnitude and rating of the majority of the environmental impacts of the proposed amendments are expected to remain the same as those already identified in the original EIA Report.
- Although the proposed amendments are expected to result in increased negative impacts in respect of Avifauna and Bats, new mitigation measures have been provided to ensure that these impacts are reduced to their original level of significance.
- The EA should be amended in line with the specifications as proposed.
- The increased risks and impacts identified can be mitigated to acceptable levels provided the revised / additional mitigation measures recommended by the specialists (see **Table 9**) are implemented.

It is trusted that this Draft EA Amendment Assessment Report provides the reviewing authority with sufficient information to make an informed decision regarding the requested amendments.

10 REFERENCES

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