



EAR
Enviro Acoustic Research

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Date: 11 September 2019
Ref: Zonnequa WF

Savannah Environmental (Pty) Ltd
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Attention: Ms. Lisa Opperman

Dear Madam

SPECIALIST STUDY: NOISE IMPACT ASSESSMENT: PROPOSED ZONNEQUA WIND FARM NEAR KLEINSEE: CHANGE OF WIND TURBINE SPECIFICATIONS, CHANGE IN LAYOUT AND REDUCTION IN NUMBER OF WIND TURBINES

The above-mentioned issue as well as report SE-GZWF/ENIA/201808-Rev 1 is of relevance.

I conducted an Environmental Noise Impact Assessment (ENIA) during August 2018 for the proposed Zonnequa Wind Farm (WF). With the input data as used, this assessment indicated that the proposed project will have a noise impact of a **low significance** on all Noise Sensitive Developments (NSDs) in the area during the construction and operational phases.

This assessment used the sound power emission levels of the Vestas V136 3.6 MW wind turbine with a maximum sound power level of 103.9 dBA. The assessment highlighted a potential noise level of 42 dBA at NSD04 (the reason for the **medium** significance at night). The noise assessment used the precautionous approach considering the low ambient sound levels measured during the site visit done during February 2018.

The wind energy market is fast changing and adapting to new technologies as well as site specific constraints. Optimizing the technical specifications can add value through, for example, minimizing environmental impact and maximizing energy yield. As such the developer has been evaluating several turbine models, however the selection will only be finalized at a later stage once the most optimal wind turbine is identified (factors such as meteorological data, price and financing options, guarantees and maintenance costs, etc. must be considered).

Because of the availability of more optimal or efficient wind turbines, the developer of the Zonnequa WF is considering reducing the number of wind turbines, the layout as well as the wind turbine specifications. As the specifications of the final selection is not yet defined, this review evaluates a scenario with a wind turbine with a sound power emission level of 105 dBA (similar to the wind turbines considered by the developer). The changes include:

- Reduction of the number of turbines from **up to 43 turbines to up to 35 turbines**
- Hub height from **up to 130m to up to 150m**
- Tip height from **up to 205m to up to 240m**
- Individual turbine capacity from **up to 4.5MW to up to 7MW**

It should be noted that the change in wind turbine specifications such as the wind turbine hub height and rotor diameter does not relate to sound power emission levels, which depends on the model and make of a wind turbine. For the same model and make, a change in specifications such as hub-height and rotor diameter has an insignificant impact on sound power emission levels. Therefore, there is no advantage or disadvantage in terms of acoustics by changing the wind turbine specifications such as turbine hub height as well as rotor diameter. By changing the wind turbine model and make to a wind turbine with a lower sound power emission levels however will have a significant advantage on acoustics (reduced noise emissions).

The reduction in the number of wind turbines resulted in a slight change in the layout though no wind turbines were moved closer to any NSD, with a number of wind turbines close to NSD01 removed. The layout was remodeled considering the sound power emission level preferred wind turbine (105 dBA) with the updated model calculating a noise level of 37.1 dBA at NSD01, a reduction in noise level of 4 dB.

Therefore, considering the location of the wind turbines and the potential noise impact, it is my opinion that the change will not increase the significance of the noise impact.

An updated noise impact assessment will not be required and the findings, mitigation measures and recommendations as contained in the previous document (report SE-GZWF/ENIA/201808-Rev 1) will still be valid. In terms of noise, this change will be acceptable.

Should you require any further details, or have any additional questions, please do not hesitate to call me on the above numbers.

Yours Faithfully,



Morné de Jager
Enviro-Acoustic Research cc

