
PROPOSED ESTABLISHMENT OF THE EXXARO WEST COAST WIND FARM AND ASSOCIATED INFRASTRUCTURE ON A SITE NEAR BRAND SE BAAI IN THE WESTERN CAPE

DEA ref: 12/12/20/1932

MOTIVATION FOR AMENDMENT OF ENVIRONMENTAL AUTHORISATION - SUBMISSION TO NATIONAL DEA

Prepared for:

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1. INTRODUCTION

Exxaro Resources obtained an authorisation for the construction of a wind energy facility and associated infrastructure on a site near Brand se Baai, Western Cape Province (DEA Ref No: 12/12/20/1932) in June 2011.

Following additional planning and consultation with potential turbine suppliers, project details associated with the proposed wind energy facility have been amended and updated on the basis of additional information obtained from the wind industry and turbine suppliers, as well as on the basis of practicality for construction and operational activities. In this regard, the following amendments have been requested for the proposed project:

- » Amendment of the entity authorised to undertake the project.
- » The increase in height of the turbine hub to circa 100m with a diameter rotor of circa 100m.

In terms of Condition 1.6 of this Environmental Authorisation, it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved. In this regard, Exxaro Resources have requested DEA's approval to amend the project description as detailed above. Savannah Environmental has prepared this motivation in support of this request/application on behalf of Exxaro Resources, and provides some detail pertaining to the significance and impacts of the proposed change to the project description in order for the competent authority to be able to reach a decision.

2. AMENDMENT OF THE ENTITY AUTHORISED TO UNDERTAKE THE PROJECT

In terms of this Environmental Authorisation, the entity authorised to undertake the project is Exxaro Resources. It is however the intention of Exxaro Resources to develop the project under a Special Purpose Vehicle (SPV). Exxaro Resources hereby requests the amendment of the Environmental Authorisation to reflect the SPV as the project developer. This SPV is currently registered as Triple Advanced Investments 103 (Pty) Ltd. A request to change the name of this company to Tiqua Wind Farm (Pty) Ltd has been submitted to the Companies and Intellectual Properties Commission, and the name has been successfully reserved. This company is to be majority owned by Exxaro Resources together with partners, still to be identified. As such, the commitments made within the EIA process remain valid.

3. AMENDMENT OF HEIGHT OF TURBINES

In terms of the environmental authorisation, the project description referred to the installation of 26 wind turbine units (circa 80m in height) with a circa 100 m diameter rotor.

Following analysis of the wind data collected on site, and in finalising the site development plan, Exxaro Resources is now proposing to install up to 26 turbines with an increased hub height up to circa 100 m with a circa 100m diameter rotor. This will enable the developer to increase the net energy production for the wind farm, thereby increasing the efficiency of the facility. The activity as described in the authorisation is hereby requested to be amended as follows:

- Up to 26 wind turbine generators with a hub height of up to 100m, rotor diameter of up to 100 m.

In addition, it is requested that the reference to steel towers within the Authorisation be amended to refer to a tower, as the material to be used for the tower is as yet unknown and could comprise any other material. The towers will however remain solid (i.e. lattice towers will not be used).

3.1. Motivation for Amendment

In order to verify the potential for a change in the impacts on visual exposure as well as avifauna, the amendment has been presented to the visual and avifauna specialists engaged as part of the EIA for their review, consideration and comment. These are attached as Appendix A and Appendix B respectively.

The following is relevant to the Exxaro West Coast Wind Energy Facility site:

- » Location: The site is located away from residential areas. The site is located on land owned by Namakwa Sands, North West of Vredendal in the Western Cape Province. The broader study area is an arid, sparsely populated area with the majority of the population located within the towns of the area.
- » Environmental sensitivity: From the specialist investigations undertaken within the EIA process for the proposed wind energy facility development site, no absolute environmental 'no go' areas were identified. Through the assessment of impacts associated with the proposed Exxaro West Coast Wind Farm, both potentially positive and negative impacts were identified. Due to the remote location of the proposed wind energy facility, and the nature of the surrounding land use, the majority of environmental impacts are expected to be of **low to moderate** significance.

- » Visual Impacts associated with the Wind Energy Facility: The most significant impact associated with the proposed wind energy facility and associated infrastructure is the visual impact on the scenic resources and cultural landscape of this region imposed by the components of the facility. The facility is likely to be visible for up to 10km from the site. The majority of potentially significant impacts are however restricted to within 10km of the site. The visual impact is expected to be low beyond the 10km radius. Visually sensitive receptors within this 10 km zone include a number of homesteads/farm settlements, such as Rietfontein, Brand-se-Baai, Baievlei, Graafwater, Kalkvlei, Rooiputs, Hendriksvlei, Voorspoed, Goerap, Sandkop, Houtkraal, Rooivleitjie, Witkoppies and Peddie-se-Kop etc., the Namakwa Sands Mine, the Salt Works in the Sout River, a number of secluded bays along the coast line (remote holiday destinations) and a section of secondary road to the north-east of the study area. The visibility of the wind energy facility could also have a minor visual impact on the buffer area of the Knersvlakte Biosphere Reserve.

A comparative viewshed analysis has been undertaken in order to be able to draw a comparison between the potential visibility of the facility as per the authorised 80m turbine height, and the now proposed maximum 100m turbine height. The Comparative Viewshed Analysis indicates the potential visual exposure of the wind turbine infrastructure at 80m hub-height and the potential additional visual exposure at 100m hub-height. Although the extension of the wind turbines represents a theoretical 25% increase in turbine height, the potentially visible surface area increases by only 17%. The total surface area potentially visible (utilising the 80m hub-height wind turbines) is 434km² and is expected to increase by 75km² when utilising the 100m hub-height option. The area of additional visual exposure is largely devoid of potentially sensitive visual receptors (observers at residences and homesteads within the region) and will not significantly influence areas of higher viewer incidence (observers travelling along secondary and access roads within the region).

The proposed increase in turbine height is not expected to significantly influence the anticipated visual impact, as stated in the original Visual Impact Assessment report (refer to attached statement from the visual specialist).

- » Avifauna Impacts associated with the Wind Energy Facility: The proposed development site is situated in an open, undulating area of coastal Strandveld, adjacent to the estuary of the ephemeral Sout River. The immediate area supports at least 150 bird species, and possibly >230 species, including up to 63 endemics or near-endemics, 22 red-listed species, and eight species which are both endemic and red-listed. The proposed Exxaro West Coast Wind Energy Facility could have a significant, long-term impact on

components of the avifauna of the surrounding area. The most obvious and immediate negative impacts are likely to be on the flamingo's which visit the estuary, the salt pans and the slimes dams of the nearby heavy minerals mining area, and on the sometimes substantial numbers of Ludwig's Bustard which visit the area after good winter rains, and have been recorded breeding on the mining site. These red-listed (and in some cases endemic species) may be disturbed by the construction of the wind energy facility, and/or lose foraging habitat (in terms of the area covered by the construction footprint and by displacement from areas with operating turbines), and/or suffer energetic costs associated with routing around a barrier of wind turbines when commuting between resource areas, and/or sustain mortalities in collisions with the turbine blades. These effects may be reduced to acceptable and sustainable levels by adherence to a proposed mitigation scheme.

Given that the relationship between turbine height and risk to collision prone and disturbance sensitive birds is not well understood or consistent, it is difficult to comment on the change in possible avian impact rating associated with the increased turbine height from 80 m to 100 m. In general principle, a higher reach on each turbine extends collision risk to include higher flying birds, and makes the turbines more conspicuous in the landscape, and hence more likely to produce disturbance effects. In this context, higher turbines probably pose a greater impact risk for birds. However, the magnitude and significance of this increment are not definable at this stage (refer to attached statement from the avifauna specialist).

A comprehensive programme to fully monitor the actual impacts of the facility on the broader avifauna of the area is recommended and outlined, from pre-construction and into the operational phase of the project. Clarity on the environmental impact of this and at least one other facility planned for the same general area can only be reached once pre-construction monitoring has been completed.

Based on the above and in terms of Section 41 (1), it is concluded that the environmental impact associated with the proposed project will not be substantively different with the installation of 100m high turbines as compared to the conclusions of the EIA which were based on an 80m high turbine.

On the basis of the above motivation, Exxaro Resources requests that the wording within the authorisation in terms of the project description be amended to accommodate the following changes:

- The authorised entity to undertake the project is Triple Advanced Investments 103 (Pty) Ltd (to be renamed as Tiqua Wind Farm (Pty) Ltd)

- The activity as described in the authorisation is hereby requested to be amended as follows:
 - 26 wind turbines and each turbine will consist of an approximately 100m high tower, a rotor of approximately 100 m diameter consisting of 3 blades.

4. LIST OF APPENDICES

The following Appendices are attached in support of the motivation for amendment:

Appendix A: Visual - statement from MetroGIS

Appendix B: Avifauna – statement from AVISENSE

**APPENDIX A:
VISUAL - STATEMENT FROM METROGIS**



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EXXARO WIND ENERGY FACILITY: BRAND-SE-BAAI (WESTERN CAPE PROVINCE)

Dear Sir/Madam

Please see attached map for a Comparative Viewshed Analysis.

The Comparative Viewshed Analysis indicates the potential visual exposure of the wind turbine infrastructure at 80m hub-height and the potential additional visual exposure at 100m hub-height. Although the extension of the wind turbines represents a theoretical 25% increase in turbine height, the potentially visible surface area increases by only 17%. The total surface area potentially visible (utilising the 80m hub-height wind turbines) is 434km² and is expected to increase by 75km² when utilising the 100m hub-height option. The **area of additional visual exposure** is largely devoid of *potentially sensitive visual receptors* (observers at residences and homesteads within the region) and will not significantly influence *areas of higher viewer incidence* (observers travelling along secondary and access roads within the region).

The proposed increase in turbine height is not expected to significantly influence the anticipated visual impact, as stated in the original Visual Impact Assessment report.

Kind regards

LM du Plessis
Director: MetroGIS (Pty) Ltd.



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|--|-----------------------|--|
| Secondary Road | Proposed WEF Layout | COMPARATIVE VIEWSHED ANALYSIS |
| Other/Access Road | Turbine Positions | Not Visible |
| Non-perennial River/Stream | Internal Access Roads | Potential Visibility
- Calculated at 80m hub-height (surface area = 439km ²) |
| Waterbody/Pan | Overhead Power Line | Potential (Additional) Visibility
- Calculated at 100m hub-height
(additional surface area = 75km ²) |
| Major Distribution Power Line | Substation | |
| Settlement/Homestead | Laydown Area | |
| Affected farms for Wind Energy Facility | | Notes: |
| Wind Energy Facility EIA area (area under investigation) | | - "Visibility" = areas from where any number of turbines (with a minimum of one) may be visible |
| | | - Not incorporating vegetation cover or man-made structures |

**APPENDIX B:
AVIFAUNA - STATEMENT FROM AVISENSE**



August 19 2011

Jo-Anne Thomas
Savannah Environmental (Pty) Ltd

Dear Jo-Anne

Re: Height of the turbines at the proposed Exxaro West Coast Wind Energy Facility

Given that the relationship between turbine height and risk to collision prone and disturbance sensitive birds is not well understood or consistent, it is difficult for me to comment on the change in possible avian impact rating for the Exxaro West Coast WEF introduced by the developer opting to use 100 m high turbines rather than 80 m high machines.

In general principle, a higher reach on each turbine extends collision risk to include higher flying birds, and makes the turbines more conspicuous in the landscape, and hence more likely to produce disturbance effects. In this context, higher turbines probably pose a greater impact risk for birds. However, the magnitude and significance of this increment are not definable at this stage.

Also, these added risks probably could be offset by reducing the number of turbines in the layout.

Sincerely

Andrew Jenkins