

# Bat Specialist Report

## for the final layout of the proposed Msenge Emoyeni Wind Energy Facility

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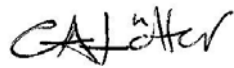
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Signed for Inkululeko Wildlife Services (Pty) Ltd by:



Dr Caroline Lötter, Pr. Nat. Sci.

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## 1. Introduction

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Presented herein are the bat specialist comments and recommendations from Inkululeko Wildlife Services (IWS) regarding the final layout of turbines for the proposed Msenge Emoyeni (Msenge) Wind Energy Facility (WEF) near Bedford in the Eastern Cape Province. It is understood by IWS that under the final turbine layout, the Msenge WEF will comprise up to 21 turbines with a maximum hub height of 135 m and a maximum rotor diameter of 160 m.

## 2. Methodology

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Initial pre-construction bat monitoring for the proposed Msenge WEF was performed by IWS team members between December 2011 and April 2013 (NSS 2013, 2014).

The project subsequently underwent an amendment, for which IWS performed a brief site survey / walkthrough during 21-22 May 2018. The survey entailed a visual assessment of landscape and habitat features in terms of their potential significance for bats, during driven and on-foot inspection of areas where infrastructure was planned. Notable observations were recorded in writing and with photographs and GPS waypoints. Findings from the survey were reported by IWS in July 2018 (IWS 2018).

For further project amendment, IWS completed six additional months of pre-construction bat monitoring between 9 February and 10 June 2021 and between 28 September and 24 November 2021. The results of this monitoring including a refined bat sensitivity map, and an updated (comparative) bat impact assessment for the project amendment, were reported in March 2022 (IWS 2022a and 2022b).

A second bat specialist walkthrough for the proposed Msenge WEF was, therefore, not considered necessary. The IWS (2022a) bat sensitivity map was nonetheless updated based on presently available satellite imagery for the site (Google Earth 2022), and recent communications with relevant landowners or occupants (Nick Bowker, Michael Jeggens, and Morne Pietersen pers. comm. May 2022) regarding the status of certain onsite water supply points. Effort was focussed on reviewing sensitivities up to 200 m from proposed turbine positions and within 150 m of proposed roads.

## 3. Results & Discussion

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Shown in **Figure 1** are IWS' GPS tracks from the May 2018 walkthrough, in relation to the final layout of turbines for the proposed Msenge WEF. The updated bat sensitivity map for the site is presented in **Figure 2**. Bat sensitivities associated with the 21 proposed turbine positions for the Msenge WEF are summarized in **Table 1**.

Changes to the sensitivity map included the removal of the 200 m High sensitive buffer around each of four farm reservoirs, based on confirmation from the relevant landowners or occupants (Nick Bowker, Michael Jeggens, and Morne Pietersen pers. comm. May 2022) that these reservoirs no longer retain water (**Figure 1**).

At all 21 proposed turbine positions, the turbine bases and (maximum 80 m) blades will be wholly situated in Medium bat sensitive areas. Therefore, the 21 proposed turbine positions may remain unchanged from a bat impact perspective.

## 4. Conclusion

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IWS confirms that bat sensitivity recommendations have been properly considered in designing the final layout of the Msenge WEF, and that the 21 proposed turbine positions under the final layout may remain unchanged from a bat impact perspective.



IWS also confirms that the IWS (2022a) bat impact mitigation recommendations still apply to the Msenge WEF.

Curtailment is not required at any of the proposed turbine positions. However, as previously advised by IWS (2022a), initial mitigation should be measured against the South Africa bat fatality threshold guidelines (MacEwan *et al.* 2018).

The Msenge WEF site is situated in the Drakensberg Montane Grasslands, Woodlands, and Forest ecoregion and since the 21 x 80 m-blade turbines will have a 1 866 ha Area of Influence as shown in **Figure 2**, the bat fatality threshold for this WEF has been calculated according to the MacEwan *et al.* (2018) guidelines as:

0.2 bat fatalities for every 10 ha x 1 866 ha / 10 ha = 37.32 bat fatalities per annum

Should the actual number of insectivorous bat fatalities (adjusted for biases such as carcass persistence and searcher efficiency) exceed the calculated bat fatality threshold, and/or should one or more fatalities of frugivorous or conservation priority insectivorous bat species occur, adaptive mitigation should take place, and bat fatality monitoring must continue to monitor the efficacy of adaptive mitigation.

Adaptive mitigation should involve turbine curtailment as prescribed by IWS (2022a):

“Curtailment will require implementation of an initial cut-in speed of 7 m/s (measured at 60 m above ground level) during temperatures above 10 °C (measured at 10 m above ground level) for three hours after sunset in March, April, and May, and from sunset until midnight (00h00, but ideally 01h00) in November, December, January, and February.”

The calculated threshold should be included in the project Environmental Management Programme (EMPr), together with the condition that the bat fatality threshold may only be re-calculated if there is a change in the turbine layout and/or the turbine blade length, and/or when newer threshold guidance is published.

Approval of the project must be contingent, inter alia, on whether the bat impact mitigation measures have been included in the Final EMPr and that these will be strictly implemented during operation.

## 5. References

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- MacEwan, K., Aronson, J., Richardson, E., Taylor, P., Coverdale, B., Jacobs, D., Leeuwner, L., Marais, W., Richards, L. 2018. *South African Bat Fatality Threshold Guidelines*. Edition 2. South African Bat Assessment Association, South Africa.
- NSS. 2013. *Msenge Emoyeni, Brakfontein & Amakhala Emoyeni IV: Final Bat Monitoring & Impact Assessment*. Natural Scientific Services, Johannesburg, South Africa.
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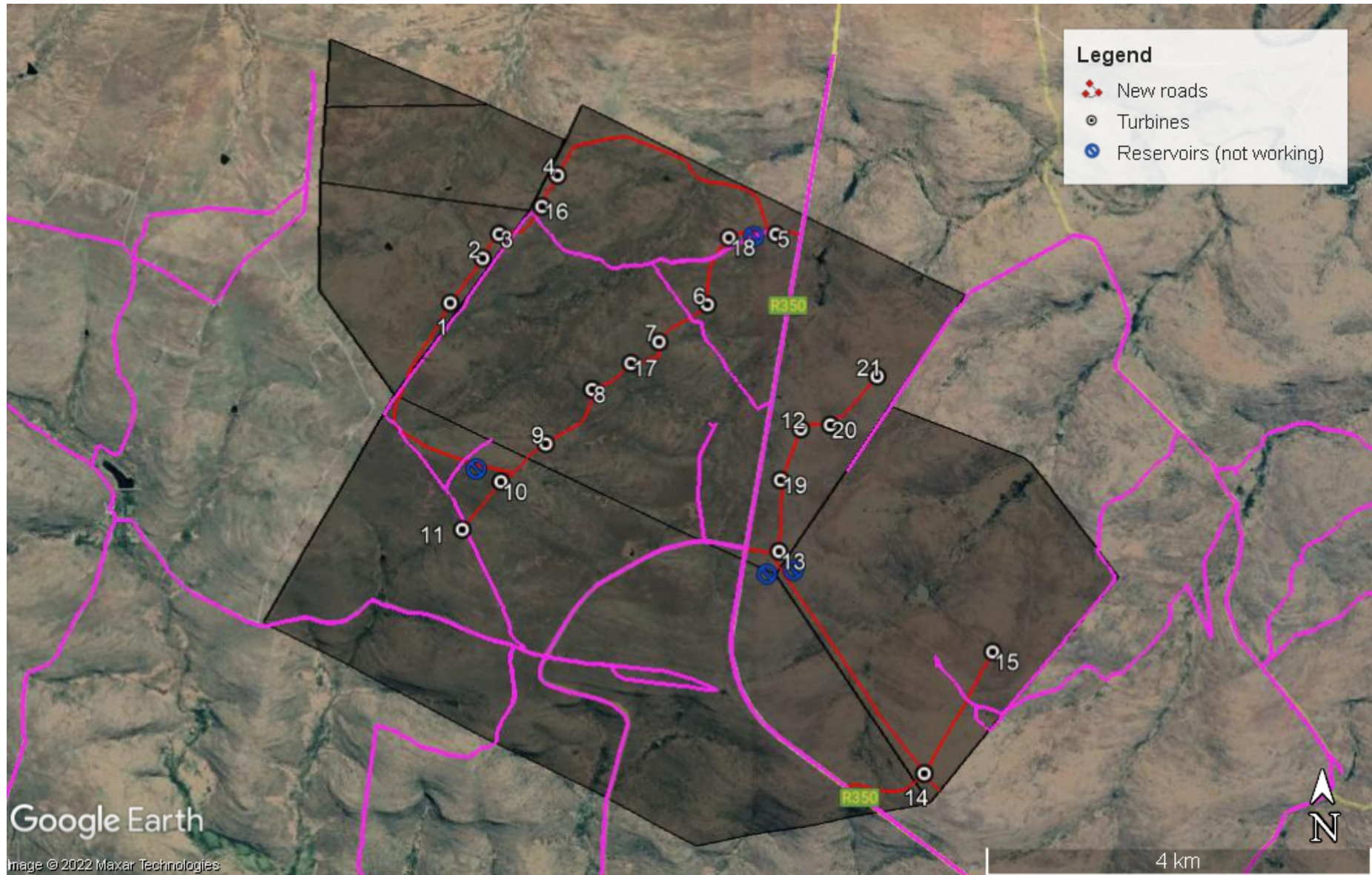


Figure 1 IWS' May 2018 GPS tracks (pink) in relation to the final proposed layout of infrastructure for the Msenge Emoyeni WEF



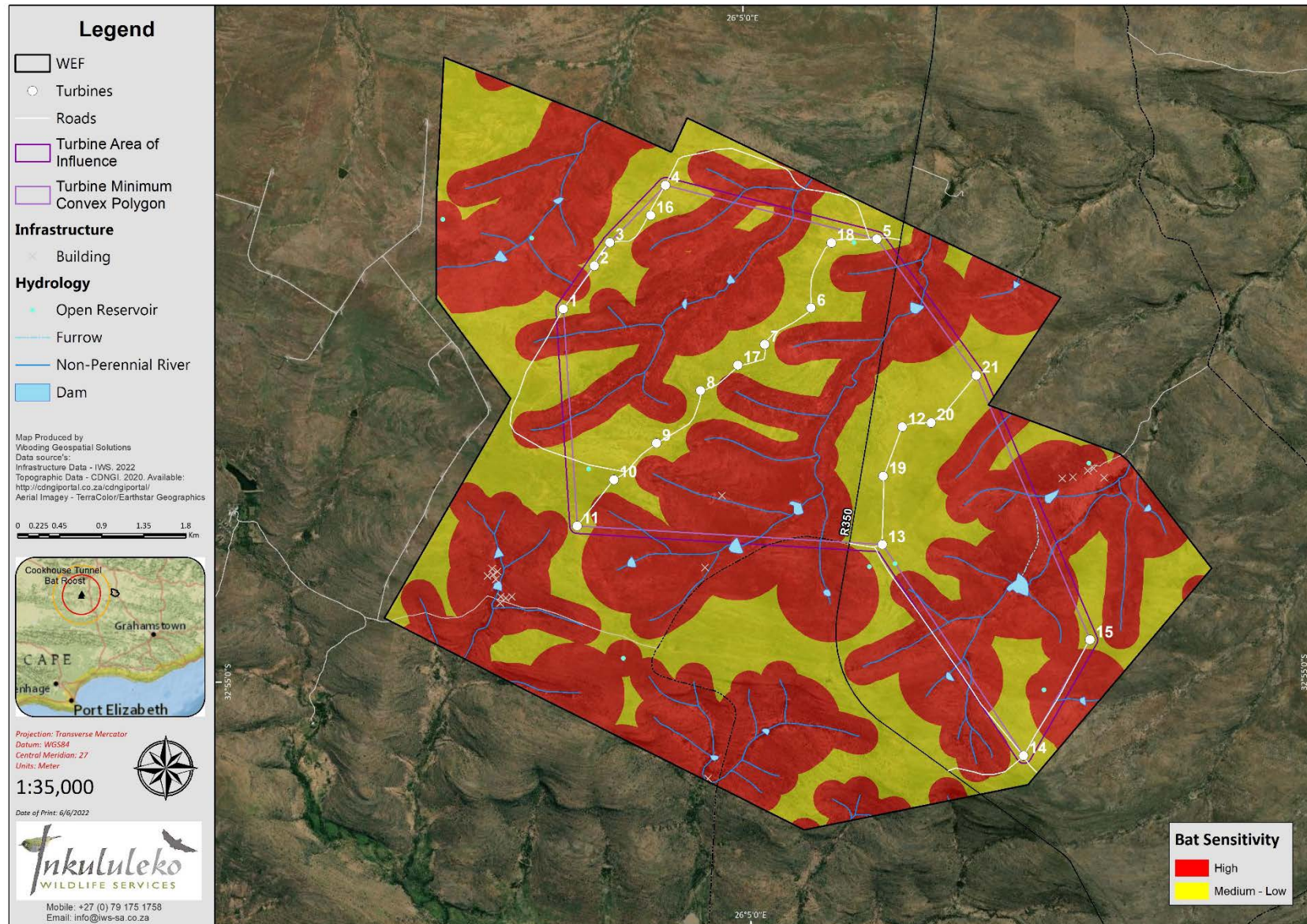


Figure 2 Updated bat sensitivity map for the proposed Msenge WEF

**Table 1 Summary of turbine-associated bat sensitivities and mitigation recommendations for the Msenge WEF**

Turbine positions	Previous walkthrough and/or desktop observations	Bat sensitivity		Bat impact mitigation recommendations
		Turbine base	Turbine blades	
Turbine 1		M	M	None
Turbine 2		M	M	
Turbine 3		M	M	
Turbine 4		M	M	
Turbine 5	Nearby reservoir non-functional	M	M	
Turbine 6		M	M	
Turbine 7		M	M	
Turbine 8		M	M	
Turbine 9		M	M	
Turbine 10	Nearby reservoir non-functional	M	M	
Turbine 11		M	M	
Turbine 12		M	M	
Turbine 13	Nearby reservoirs non-functional	M	M	
Turbine 14		M	M	
Turbine 15		M	M	
Turbine 16		M	M	
Turbine 17		M	M	
Turbine 18	Nearby reservoir non-functional	M	M	
Turbine 19		M	M	
Turbine 20		M	M	
Turbine 21		M	M	

