

# Bat Specialist Walkthrough Report for the Umsinde Emoyeni Wind Energy Facility

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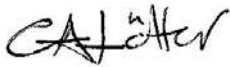
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Signed for Inkululeko Wildlife Services (Pty) Ltd by:



Dr Caroline Lötter, Pr. Nat. Sci.

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## 1. Introduction

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Presented herein are the findings of, and recommendations from, a bat specialist walkthrough by Inkululeko Wildlife Services (IWS) for the proposed 147 MW Umsinde Emoyeni (Umsinde) Wind Energy Facility (WEF) near Murraysburg in the north-eastern Western Cape Province. The Environmental Authorisation (EA; DFFE Ref: 14/12/16/3/3/2/686) for the Umsinde WEF was granted on 6 September 2018 and amended on 20 April 2021 and 7 June 2022. Under the latter EA amendment, it is understood by IWS that the Umsinde WEF will comprise up to 33 turbines with a maximum hub height of 160 m and a maximum rotor diameter of 180 m. A substation and O&M buildings, and a temporary construction camp and laydown area are also proposed. A bat specialist walkthrough for the proposed gridline for the project was not considered necessary.

## 2. Methodology

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The walkthrough for the Umsinde WEF was conducted during 4-7 April 2022 and 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 which correspond with the then proposed layout of infrastructure shown in **Figure 1**. The walkthrough was focussed, particularly, on the locations of 33 preferred and 11 alternative turbine positions, the substation and O&M buildings, a construction camp, and three temporary laydown areas. Notable observations were recorded in writing and with photographs and GPS waypoints. Findings from the walkthrough were subsequently used to refine the bat sensitivity map for the Umsinde WEF, which was previously presented with the IWS (June 2021) Results from Additional Pre-construction Bat Monitoring for the Umsinde WEF. That report also provides the methodology which was used for the sensitivity mapping.

## 3. Results & Discussion

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IWS' GPS tracks and waypoints are shown in **Figure 1**. Photographs taken at GPS waypoints where bat important features were observed are provided in **Figure 2**. The revised bat sensitivity map is presented in **Figure 3**. Infrastructure-associated bat sensitivities and mitigation recommendations for the Umsinde WEF are summarized in **Table 1**.

Six features were identified, which require buffering that was not previously included in the Umsinde WEF bat sensitivity layer. Five water supply points (each represented by a farm reservoir, livestock drinking trough, and/or wind pump) were found at Waypoints W1, W2, W27, W28 and W29, and a small but distinct rocky outcrop was encountered at W30. Each of these six features has been buffered with a 200 m High sensitive buffer. The additional buffering does NOT overlap with any proposed infrastructure for the Umsinde WEF.

The proposed substation and O&M buildings, construction camp, and three temporary laydown areas are all situated in areas which have Low-Medium sensitivity in terms of bats. As such, no bat impact mitigation measures for this proposed infrastructure are required in addition to those measures (such as minimizing terrestrial habitat disturbance and light pollution), which have already been prescribed in the IWS (September 2020) Comparative Bat Impact Assessment for the Umsinde WEF.

At 29 proposed (including 21 preferred and eight alternative) turbine positions, the turbine bases and (maximum 90 m) blades coincide with Low-Medium bat sensitive areas only. The walkthrough confirmed that, from a bat impact perspective, development of turbines at these locations is most preferable - with one minor exception:

Alternative turbine positive 23 n ad is situated in an area with small, scattered, rocky outcrops (difficult to capture with GIS) and, therefore, its re-positioning by 270 m (three blade lengths) to the north should be considered, if feasible.

At eight proposed (including 5 preferred and 3 alternative) turbine positions, the turbine bases coincide with Low-Medium bat sensitive areas, and the blades coincide with Low-Medium and Medium sensitive areas. The



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walkthrough confirmed that, from a bat impact perspective, development of turbines at these locations is second most preferable.

At five proposed turbine positions (i.e. preferred positions 2 n, 5 n, 7 n, 8 n, and 23 n), the turbine bases coincide with Medium bat sensitive areas, and the blades coincide with Low-Medium, Medium, Medium-High and/or High sensitive areas. Preferred turbine position 5 n is situated ~100 m from the rim of a gorge with a stream and, therefore, its re-positioning by 90 m to the south should be considered, if feasible. At preferred turbine position 2 n, 90 m blades will encroach into a Medium-High sensitive area and, therefore, if a turbine is developed here, curtailment will have to be implemented unless it is repositioned >90 m away from Medium-High sensitive areas. At preferred turbine position 8 n, 90 m blades will encroach into a High sensitive area and, therefore, this position must be dropped or re-positioned.

Two proposed turbine positions are situated in Medium-High sensitive areas. The base and 90 m blades of a turbine at preferred position 1 n will coincide with a Medium-High sensitive area and, therefore, turbine curtailment will have to be implemented unless it is repositioned >90 m away from Medium-High sensitive areas. At preferred turbine position 4 n, 90 m blades will encroach into a High sensitive area and, therefore, this position must be dropped or re-positioned.

## 4. Recommendations

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Based on the reported infrastructure-associated bat sensitivities, development of turbines is NOT advised at preferred turbine positions 4 n and 8 n unless these turbines are repositioned to be >90m away from the High sensitivity areas. If preferred turbine positions 1 n and 2 n are not re-positioned, curtailment of turbines at these positions will need to be implemented. Re-positioning should be considered for preferred turbine position 5 n, and alternative turbine position 23 n ad, if feasible.

Turbine curtailment specifications were last described by IWS (2021), as follows: “Where turbines encroach into Medium-High sensitive areas, implement curtailment of all these turbines as soon as each starts operating. Curtailment will require implementation of an initial cut-in speed of 4.5m/s between 1 September and 31 May, when temperatures are 12°C or higher, during the following seasonal time periods: a) Autumn: 18h30 to 04h00; b) Spring: 19h00 to 04h00; and c) Summer: 20h00 to 04h00.

As previously advised by IWS (2021), initial mitigation should be measured against the bat fatality threshold guidelines (MacEwan *et al.* 2020 or later). Adaptive mitigation should take place if fatalities exceed the calculated bat fatality threshold for the Umsinde WEF, and bat fatality monitoring must continue to monitor the efficacy of adaptive mitigation.

## 5. Concluding Remarks on Final Layout

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Based on the bat (and other specialist) walkthrough findings and recommendations, the layout of the proposed Umsinde WEF was amended and is shown in **Figure 4** in relation to the bat sensitive areas.

The proposed substation and O&M buildings are situated in an area with Low-Medium sensitivity for bats. As such, no bat impact mitigation measures for this proposed infrastructure are required in addition to those measures (such as minimizing terrestrial habitat disturbance and light pollution), which have already been prescribed in the IWS (September 2020) Comparative Bat Impact Assessment for the Umsinde WEF.

The proposed temporary construction camp, laydown area, and batching plant near the WEF entrance are situated in a High sensitive buffer around a nearby wetland. However, these temporary areas of disturbance: i) are unlikely to cause bat fatalities like turbines; ii) are situated outside the nearby wetland (as delineated and confirmed by the project aquatic specialist, The Biodiversity Company); and iii) will be rehabilitated post-construction (confirmed by Nala Environmental Consulting). Therefore, no bat impact mitigation measures for these areas of disturbance are required in addition to those measures (such as minimizing terrestrial habitat



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disturbance and light pollution), which have already been prescribed in the IWS (September 2020) Comparative Bat Impact Assessment for the Umsinde WEF.

No turbine tower or blades will encroach into any High bat sensitive area. Two turbines (Turbines 1 and 14), which are proposed in Medium-High sensitive bat areas, will require curtailment as described earlier. If bat fatalities exceed the calculated bat fatality threshold for the Umsinde WEF, adaptive mitigation should take place (such as curtailment of additional turbines, and/or installation of bat deterrents), and bat fatality monitoring must continue to monitor the efficacy of the adaptive mitigation.

## 6. References

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- MacEwan, K., Aronson, J., Richardson, E., Taylor, P., Coverdale, B., Jacobs, D., Leeuwner, L., Marais, W., Richards, L. 2020. *South African Bat Fatality Threshold Guidelines*. Edition 3. South African Bat Assessment Association, South Africa.
- IWS. 2020. *Comparative Bat Impact Assessment for the Umsinde Emoyeni Wind Energy Facility*. Inkululeko Wildlife Services, Pretoria.
- IWS. 2021. *Results from Additional Pre-construction Bat Monitoring for the Umsinde Emoyeni Wind Energy Facility*. Inkululeko Wildlife Services, Pretoria.





Figure 1 IWS' GPS tracks and waypoints in relation to the then proposed layout of infrastructure for the Umsinde Emoyeni WEF



**W1:** Working wind pump, reservoir with water, and trough with water



**W2:** Working wind pump, and trough with water, with overflow into veld



**W27:** Working wind pump



**W28:** Reservoir with water



**W29:** Working wind pump and reservoir with water



**W30:** Rocky outcrop

**Figure 2** Photographs taken at GPS waypoints where bat important features were observed during the walkthrough



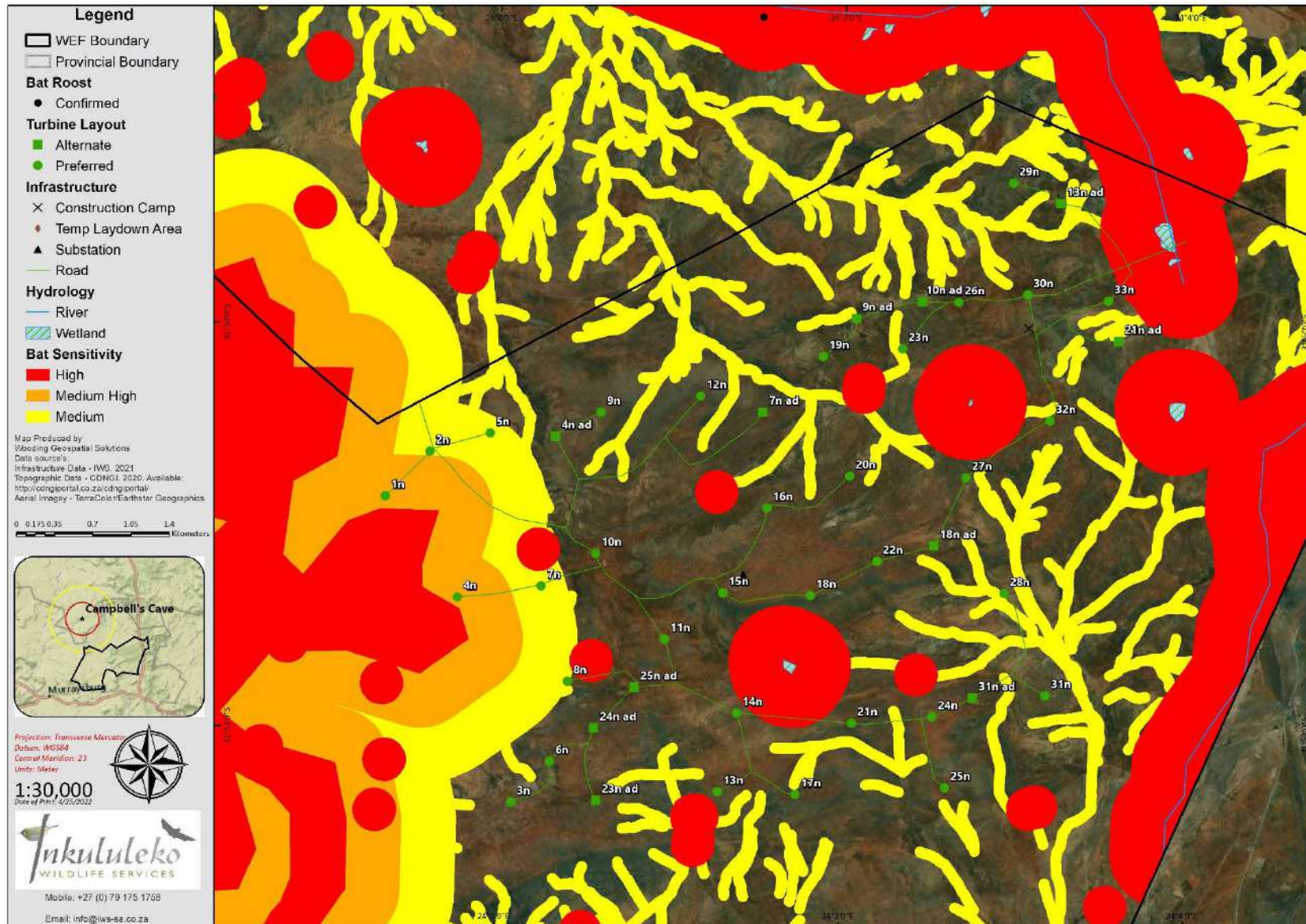


Figure 3 Updated bat sensitivity map in relation to the previous proposed layout of infrastructure for the proposed Umsinde WEF





Table 1 Summary of infrastructure-associated bat sensitivities and mitigation recommendations for the Umsinde WEF

| Infrastructure                             | Walkthrough observations | Bat sensitivity |                | Bat impact mitigation recommendations  |
|--|--------------------------|-----------------|----------------|--|
| Substation and O&M buildings               |                          | LM              |                |  |
| Construction camp                          |                          | LM              |                |  |
| Temporary laydown area 1 near Turbine 10 n |                          | LM              |                |  |
| Temporary laydown area 2 near Turbine 27 n |                          | LM              |                |  |
| Temporary laydown area 3 near Turbine 14 n |                          | LM              |                |  |
| Preferred turbine positions                |                          | Turbine base    | Turbine blades |  |
| Turbine 1 n                                | Close to drop off        | MH              | MH             | Consider repositioning 90m to the north AND implement curtailment; OR reposition >90m from MH areas. |
| Turbine 2 n                                |                          | M               | M & MH         | Implement curtailment; OR reposition >90m from MH areas.   |
| Turbine 3 n                                |                          | LM              | LM             |  |
| Turbine 4 n                                |                          | MH              | MH & H         | Reposition >90m away from H areas AND implement curtailment; OR reposition >90m from MH areas.       |
| Turbine 5 n                                | Close to gorge drop off  | M               | M              | Consider repositioning 90m to the south.   |
| Turbine 6 n                                |                          | LM              | LM             |  |
| Turbine 7 n                                |                          | M               | M              |  |
| Turbine 8 n                                | Close to drop off        | M               | LM, M & H      | Reposition >90m away from H areas.   |
| Turbine 9 n                                |                          | LM              | LM             |  |
| Turbine 10 n                               |                          | LM              | LM             |  |
| Turbine 11 n                               |                          | LM              | LM             |  |
| Turbine 12 n                               |                          | LM              | LM             |  |
| Turbine 13 n                               |                          | LM              | LM             |  |
| Turbine 14 n                               |                          | LM              | LM             |  |
| Turbine 15 n                               |                          | LM              | LM             |  |
| Turbine 16 n                               |                          | LM              | LM             |  |
| Turbine 17 n                               |                          | LM              | LM & M         |  |
| Turbine 18 n                               |                          | LM              | LM             |  |



| Infrastructure                       | Walkthrough observations             | Bat sensitivity |                | Bat impact mitigation recommendations     |
|--------------------------------------|--------------------------------------|-----------------|----------------|---|
|                                      |                                      | Turbine base    | Turbine blades |   |
| <b>Preferred turbine positions</b>   |                                      |                 |                |   |
| Turbine 19 n                         | Close to episodic stream             | LM              | LM             | Repositioning not considered essential.   |
| Turbine 20 n                         |                                      | LM              | LM             |   |
| Turbine 21 n                         |                                      | LM              | LM             |   |
| Turbine 22 n                         |                                      | LM              | LM             |   |
| Turbine 23 n                         |                                      | M               | LM & M         |   |
| Turbine 24 n                         |                                      | LM              | LM             |   |
| Turbine 25 n                         |                                      | LM              | LM             |   |
| Turbine 26 n                         |                                      | LM              | LM             |   |
| Turbine 27 n                         |                                      | LM              | LM & M         |   |
| Turbine 28 n                         |                                      | LM              | LM & M         |   |
| Turbine 29 n                         |                                      | LM              | LM             |   |
| Turbine 30 n                         |                                      | LM              | LM             |   |
| Turbine 31 n                         |                                      | LM              | LM             |   |
| Turbine 32 n                         | LM                                   | LM & M          |                |   |
| Turbine 33 n                         | LM                                   | LM & M          |                |   |
| <b>Alternative turbine positions</b> |                                      |                 |                |   |
| Turbine 4 n ad                       | Close to episodic stream and gorge   | LM              | LM             | Repositioning not considered essential.   |
| Turbine 7 n ad                       |                                      | LM              | LM             |   |
| Turbine 9 n ad                       |                                      | LM              | LM & M         |   |
| Turbine 10 n ad                      |                                      | LM              | LM             |   |
| Turbine 13 n ad                      |                                      | LM              | LM & M         |   |
| Turbine 18 n ad                      |                                      | LM              | LM             |   |
| Turbine 21 n ad                      | LM                                   | LM & M          |                |   |
| Turbine 23 n ad                      | In an area with small rocky outcrops | LM              | LM             | Consider repositioning 270m to the north. |
| Turbine 24 n ad                      |                                      | LM              | LM             |   |
| Turbine 25 n ad                      |                                      | LM              | LM             |   |
| Turbine 31 n ad                      |                                      | LM              | LM             |   |



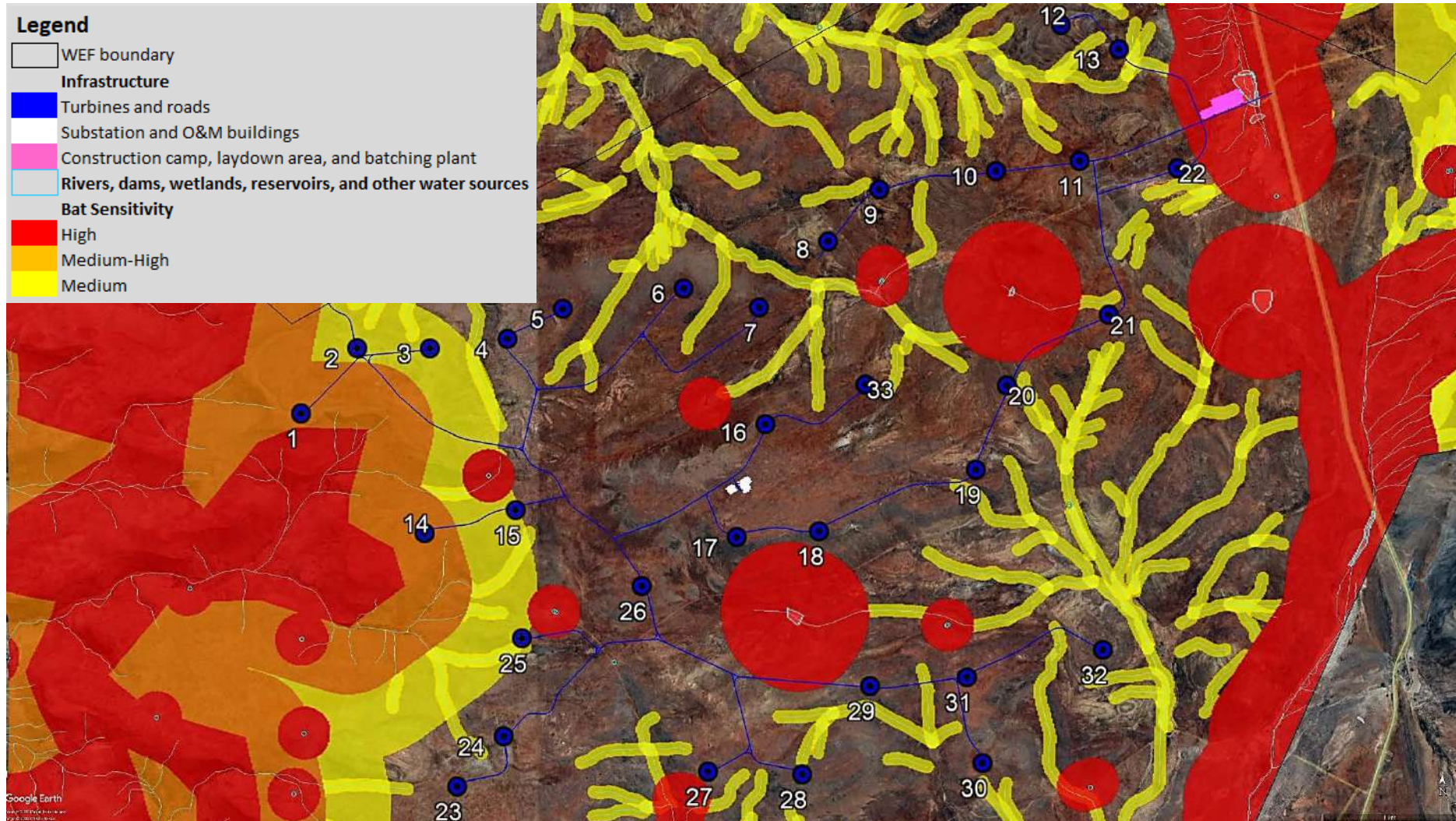


Figure 4 Final layout of the proposed Umsinde WEF in relation to bat sensitive areas

