

Minimum Requirements for Avifaunal Impact Assessment for Wind Energy Facilities

Wind energy facilities can have unintended negative impacts on avifauna, but many of these impacts can be avoided with careful planning and siting of the facility. For this reason, BirdLife South Africa and the Endangered Wildlife Trust (EWT) recommend that an objective, structured and scientifically rigorous impact assessment by an avifaunal specialist is included in the impact assessment for all proposed wind farmsⁱ. These proposed terms of reference are in line with international best practice and are intended to set a minimum standard for impact assessment throughout the industry.

An avifaunal impact assessment for a wind energy facility should follow a two-tier processⁱⁱ:

1. Scoping – which will encompass a review of existing literature and data, as well as site visit to inform the design of a site-specific survey and pre-construction monitoring plan.
2. Impact assessment – systematic and quantified monitoring over four seasons that will inform a full Environmental Impact Assessment (EIA) detailing and analyzing the significance of likely impacts and available mitigation options.

1. Scoping

The scoping assessment should be based on a review of existing literature and bird atlas dataⁱⁱⁱ, the BirdLife South Africa and Endangered Wildlife Trust Avifaunal Wind Farm Sensitivity Map, distance from protected areas and recognized Important Bird Areas, as well as avifaunal data collected during a brief site visit to the proposed wind farm site. The Scoping Report should contain the following information:

- a. A description of the site in terms of the avifaunal habitats present
- b. A list of bird species and priority bird species^{iv} likely to occur on the proposed site, with information on the relative value (in terms of breeding, nesting, roosting and foraging) of the site for these birds;
- c. A description of the likely seasonal variation in the presence/absence of priority species and preliminary observations of their movements.
- d. A preliminary delineation of areas that are potentially highly sensitive, no-go areas that may need to be avoided by the development;
- e. A preliminary description of the nature of the impact that the proposed development may have on the bird species present;
- f. A description of any mitigation measures that may be required to manage impacts related to the monitoring and assessment of the site^v.

The results of the scoping study, particularly information regarding the diversity and abundance of priority species that are likely to be present, proximity to important flyways, wetlands or other focal sites, and topographic complexity, should be used to:

- a. Highlight if there are any obvious red flags to the proposed development on all or parts of the site;
- b. Inform the required scope, effort, intensity and design of the baseline monitoring and impact assessment.

2. Impact assessment

The avifaunal impact assessment should be based on data collected from detailed site visits. Site visits must be of sufficient frequency to adequately sample all major variations in environmental conditions, with no fewer than four visits spanning all four seasons^{vi}. The degree of effort during each survey should be informed by the likely sensitivity of the site and the species it contains, as well as the size of the proposed wind farm.

The impact assessment must include an analysis (statistical measurement and mapping) of the following variables:

- a. Abundance estimates for small terrestrial birds (in most cases not priority species, but potentially affected on a landscape scale by multiple developments in one area), through linear transect surveys, fixed point counts or reporting rates;
- b. Absolute counts, density estimates or abundance indices for large terrestrial birds and raptors, through road transects or vantage point monitoring;
- c. Flight behavior of priority species flying in or near the future rotor swept area of the proposed development area^{vii};
- d. Occupancy/numbers/breeding success at any focal raptor sites;
- e. Bird numbers at any focal wetlands and local movements between waterbodies;
- f. Full details of any incidental sightings of priority species;
- g. Collision mortalities related to any existing guyed lattice masts and existing powerlines.

The results of this analysis should be used to:

- a. Develop a topographical map indicating the area that would be impacted by the proposed development alternatives^{viii} and the location of key habitats and flyways that should not be developed or otherwise transformed.
- b. Inform the final turbine layout (or where the layout cannot be finalized within the EIA, the assessment should be used to define no go areas and areas that should be sufficiently buffered).
- c. Assess the significance of the potential impact of the proposed project alternatives and related activities - with and without mitigation - on avifaunal species and communities (with regards to potential disturbance, displacement, habitat loss and mortality through collision), including consideration of the spatial and temporal extent of these impacts.
- d. Inform actions that should be taken to prevent or, if prevention is not feasible, to mitigate negative impacts during the planning, construction and operational phases of the development.
- e. Inform the nature and extent of monitoring required during and post-construction^{ix}.
- f. Highlight if the proposed development, is fatally flawed^x and should not be recommended for approval.

The avifaunal impact assessment must include a description of the limitations and assumptions of the assessment. Where other proposed facilities are proposed in or near to the development in question, the impact assessment must include consideration of cumulative impacts^{xi}.

Important note on impact assessment, monitoring and reference sites.

In order to fully understand and successfully mitigate the possible impacts of proposed wind farms including the wind turbines and associated infrastructure on avifauna, it is essential that objective, structured and scientific monitoring of avifauna be initiated prior, during and post-construction. This should follow the *BirdLife South Africa / Endangered Wildlife Trust: best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa*^{xii}. These guidelines are in line with international best practice and include monitoring protocols for evaluating wind energy development proposals in terms of their impacts on avifauna.

To avoid duplication of effort, it is recommended that the methods used in avifaunal impact assessment (described above) are designed such that the data gathered can also be used for pre-construction monitoring. In other words the impact assessment and pre-construction monitoring should be the same thing.

It is also recommended that, where possible, impact assessment/pre-construction monitoring at the proposed development site is coupled with the collection of directly comparable data at a nearby, closely matched control site. This will provide much-needed context for the analysis of pre- vs. post-construction monitoring data.

The reference site must be studied at the same time as the proposed development site.

There may be instances where a suitable control site is not available, but the specialist must clearly indicate when and why a control site will not be used. Should a control site not be used, it may be necessary to conduct monitoring over a longer period to account annual variation in the presence of some species and strengthen the conclusions .

In order to ensure consistency and comparability of results across projects, BirdLife South Africa requests the opportunity to review the proposed monitoring methodology prior to monitoring being initiated. BirdLife South Africa and Wildlife Energy Programme (WEP) - EWT also request that bird monitoring reports be forwarded to them, where the data will be centrally stored and analyzed by these organizations, to facilitate the assessment of results on a multi-project, landscape and national scale.

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Notes

ⁱ A list of avifaunal specialists who have agreed to follow the *BirdLife South Africa / Endangered Wildlife Trust: best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa* is available at www.birdlife.org.za and www.ewt.org.za. Alternatively please email energy@birdlife.org.za.

ⁱⁱ The National Environmental Management Act EIA regulations indicate that facilities for the generation of electricity where: (i). the electricity output is more than 10 megawatts but less than 20 megawatts; or (ii.) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare, need only be subject to a Basic Assessment process. However, it is recommended that these minimum requirements be applied to all wind energy facilities that meet the thresholds for electricity generation activities in Listing notices 1 and 2. The extent of the monitoring required (for example with regards to number of days and number of focal point surveys) would, however, be influenced by the size of the project. Should capacity of the proposed wind farm fall below the thresholds of the listed activities for electricity generation, but trigger other non-electricity-related listed activities, we recommend that an avifaunal specialist be consulted to guide on the scope of the assessment. The level of monitoring required would need to be decided on a case-by-case basis and should be dictated by the receiving environment.

ⁱⁱⁱ Available bird atlas data includes the Southern African Bird Atlas Project (1 and 2), Coordinated Waterbird Counts, Coordinated Avifaunal Roadcounts, Birds in Reserves Project.

^{iv} Please refer to Annexure A of the Avian Wind Farm Sensitivity Map (Retief et al., 2012) for a list of priority species. Priority species are birds which are thought to be particularly vulnerable to the potential impacts of wind farms as a result of their conservation status (threatened species), distribution (endemic, near-endemic and range restricted species) and behavior which may make them susceptible to impacts from wind energy through displacement and direct collision with the wind turbines. These species should be the primary (but not necessarily the sole) focus of subsequent monitoring and assessment at the proposed site.

^v For example, if guyed lattice masts are already in place for monitoring wind speed, the specialist may recommend that these be marked if there is a significant risk of priority species colliding with the wires.

^{vi} It is important to ensure that avian specialist impact assessments address seasonal variance in order to account for migratory species, different altitudinal and seasonal movements of local non-migratory species as well as the changes in behaviour and flight patterns linked to breeding behaviour. This requirement may be relaxed in exceptional circumstances, for example if there is a high degree of confidence in existing information and a low risk to priority species. Please consult with an avian specialist and BirdLife South Africa in this regard.

^{vii} In some situations, where proposed wind energy developments are likely to impinge on flyways used by relatively large numbers of threatened and impact sensitive birds, and particularly where these movements are likely to take place at night or in conditions of poor visibility (e.g. the Cape Columbine Peninsula), it may be necessary to use radar to gather sufficient information on flight paths to fully evaluate the development proposal and inform mitigation requirements. This methodology has significant cost implications and would only need to be considered in areas where wind energy potentially poses a high risk to birds.

^{viii} The consideration of alternatives is central to impact assessment and all reasonable and feasible development alternatives should be investigated to help identify the best practicable environmental option. Since the location of a wind farm and the positioning of the turbines are key factors influencing the significance of the impacts on birds, alternative sites and alternative layouts should be considered. It is recognised that there are substantial cost implications to including site alternatives in the EIA process. Potential impacts on birds should therefore be considered in the screening of potential sites. This will reduce the likelihood of fatal flaws being encountered within the EIA process.

^{ix} These recommendations should be included in the EMP

^x For example, if the development is likely to have irreversible negative impacts on the conservation status of a species.

^{xi} When considering cumulative impacts the distribution, spatial requirements and population dynamics of potentially affected priority species should be considered, together with the likelihood of impacts from other proposed developments occurring.

^{xii} A copy of these guidelines is available at <http://www.birdlife.org.za/conservation/birds-and-wind-energy> and www.ewt.org.za. A list of a list of avian specialists who have agreed to follow the best practice guidelines is also available from these websites.