BIRD MONITORING PROGRAMME FOR THE CONSTRUCTION AND OPERATIONAL PHASE

1. PURPOSE

This document serves as a framework for the set-up of the bird monitoring during the construction and operational phase of the wind energy facility. The relevant best practice guidelines published by BirdLife (version as relevant at the time of setting up the programme) should also be read in conjunction with this framework document and should be considered when setting up bird monitoring.

2. Construction Phase Monitoring

Construction phase bird monitoring must be implemented in line with applicable guidelines. This monitoring can be used to:

a) Determine if the proposed mitigation measures (e.g. buffers) are implemented by the developer, and whether or not they are effective in minimising impacts on sensitive birds during construction.
b) Provide insights into the triggers and duration of any observed changes in species presence, abundance and behaviour,
c) Provide an opportunity to gather additional data on priority species and focal points (particularly where nest sites have been identified).

Based on the pre-constrauion Avfaunal monitoring conducted by the specialist in 2020 the following recommendations were made:

- Suitable pro-active mitigation be implemented at all turbines within a 5.2 km radius around all Verreaux's Eagle nests during daylight hours, once the wind farm commences with operations, to reduce the risk of collisions of Verreaux's Eagles with the turbines. Suitable pro-active mitigation measures should be selected prior to commencement of construction, informed by best-available information at the time of implementation.
- All internal medium voltage cables are placed underground except those sections where, due to ecological, geological or topographical reasons, trenching will not be a practical option, confirmed by appropriate independent specialists.
- For those sections where the medium voltage cables have to run above-ground, the proposed pole designs must be approved by the avifaunal specialist, preferably with input from the Endangered Wildlife Trust, to ensure that the designs are raptor-friendly.
- Bird flight diverters are fitted to all the 33kV overhead lines.

In addition to the above, active breeding in the immediate surroundings must also be monitored during construction by the Environmental Control Officer (ECO) during site visits and audits. Should any bird nests be found that are likely to be disturbed by construction activities, these will not be relocated without first consulting an avifaunal specialist. If nests cannot be relocated, other mitigation measures must be investigated.

The construction Phase ECO, and the on-site Environmental Manager (or Environmental Officer (EO) as the case may be) should have sufficient experience and knowledge of local avifauna to identify red data and priority bird species, as well as their nests. The ECO and Environmental Manager/EO must then, during audits/site visits, make a concerted effort to look out for such breeding activities of red data species, and such efforts may include the training of construction staff (e.g. in Toolbox talks) to identify red data species,

followed by regular questioning of staff as to the regular whereabouts on site of these species. If any nests or breeding locations for these species are located, the avifaunal specialist is to be contacted for further instruction.

3. Post-Construction Monitoring

Operation phase bird monitoring must be implemented in line with the most recent and applicable officially accepted guidelines. The aims of this monitoring will include:

- To compare the abundance index for all the priority species within the development area after construction against the pre-construction baseline to measure actual displacement due to the construction and operation of the wind farm. Recommended survey method is line transect counts.
- To estimate the risk of priority species colliding with the wind turbines by recording actual collisions and comparing post-construction flight patterns with pre-construction baseline data. Recommended methods are carcass searches and Vantage Point (VP) watches.

As stated in the best practice guideline[1], *As a minimum, survey protocols used in the pre-construction monitoring should be repeated during the first two years of operation and should be combined with monitoring of fatalities. The need for further monitoring of bird abundance and movements should be reviewed at the end of this to determine if it is necessary to continue with some, or all, components of this work. The need for further monitoring of fatalities should also be reviewed after the first two years, and then again on an annual basis. Carcass searches must, however, be repeated in the fifth year, and again every five years thereafter*.

4. Landowner Consultation

Before the carcass search commences and before a carcass search team is appointed for monitoring in the operation phase, the Landowners/ Farmers must be consulted. The consultation should outline the methods of the carcass searches. Details, e.g. frequency of searches, contact/ responsible persons, access control, etc. must be discussed and agreed with the Landowners/ Farmers. To ensure the safety of Landowners/ Farmers it is also recommended that a background check is done on all employees/ members of the carcass search team before they are appointed and that proof of this is kept. The carcass search team should be introduced to the Landowners/ Farmers. Landowners/ Farmers should at all times be kept informed of the whereabouts of the carcass search team. All relevant EMPr conditions, e.g. no hunting/ killing of animals, no fires on site, no camping on site, etc. will apply to the carcass search team. They must therefore be inducted to the Wind Farm and made aware of all rules, regulations and code of conduct. Landowner Requirements agreed upon will be signed and form part of this Report.

This document must be updated as and when required to ensure compliance with the relevant Best Practice Guidelines.

[1] A.R. Jenkins, C.S. van Rooyen, J.J. Smallie, J.A. Harrison, M. Diamond, H.A. Smit---Robinson and S. Ralston (2015). Best---Practice Guidelines for assessing and monitoring the impact of wind energy facilities on birds in southern Africa. Third Edition, 2015