

POST CONSTRUCTION BIRD MONITORING FRAMEWORK

The bird monitoring work done to date on the Castle WEF site has established a baseline understanding of the distribution, abundance and movement of key bird species on and near the site. However this is purely the 'before' baseline and aside from providing input into turbine micro-siting, it is not very informative until compared to post construction data. The following programme has therefore been developed to meet these needs. Post construction monitoring of live bird abundance and movement should be conducted for at least 1 year and carcass searches for at least 2 -3 years and repeated every 5 years thereafter.

1. During construction bird monitoring

It is envisaged that movement of ornithologists on site may be restricted for safety reasons during certain components of the construction process. The following is therefore a 'minimal input' programme designed to provide at least some insight into the reaction of key bird species to the construction activities on site:

- » Focal site visits. These are probably the most important aspect of this phase of the programme, as they will provide insight into the effects of construction on for example the pair of Verreaux's Eagles near site. For this reason, the site should be visited at least twice during each breeding season (June to December) during which construction takes place, and ideally each season between now and construction.

These activities should comprise approximately two to three days on site twice per year, by the specialist alone.

2. Post construction monitoring

The intention with post construction bird monitoring is to repeat as closely as possible the methods and activities used to collect data pre-construction. One very important additional component needs to be added, namely mortality estimates through carcass searches. The following programme has therefore been developed to meet these needs, and should start as soon as possible after all turbines are turning (Note this should not wait until official commissioning of site).

Bird monitoring

The 12 walked transects of approximately kilometre each that have been done during pre-construction monitoring should be continued, as should the four vehicle based road count routes. The focal sites already established as well as any new focal sites identified by the 'during construction monitoring' should be monitored. All other incidental sightings of priority species (and particularly those suggestive of breeding or important feeding or roosting sites or flight paths) within the broader study area will be carefully plotted and documented. The four Vantage Points already established should be used to continue data collection post construction. The exact positioning of these may need to be refined based on the presence of new turbines and roads. A total of 12 hours of observation will be conducted at each vantage point on each site visit, resulting in a total of 24 hours direct observation on site per site visit. The activities at the control site should be continued, i.e. two Vantage Points, six Walked transects and two Vehicle Based transects.

It is estimated that the above activities will require 12 days on site by an observer team of 2 people, for four site visits in a 12 month period, including the control site.

Collision casualty surveys

This is a new component of the methodology. The area surrounding the base of all turbines should be searched up to a radius of 75% of the height of tip of blade above ground for collision victims. The frequency at which these searches need to be conducted is at least weekly for the first month of the programme and thereafter at a frequency determined by this initial work, but likely to be two weekly. Any suspected collision casualties should be comprehensively documented (for more detail see Jenkins *et al*, 2012). It is also important that associated infrastructure such as power lines and wind masts be searched for collision victims according to similar methods. It should be noted that the best practice guidelines on this aspect are currently under revision, and that the above detailed requirements may change by the time of the construction of this facility. The most up to date version of these guidelines available at the time should be adhered to at all times.

It is important that in addition to searching for carcasses under turbines, an estimate of the detection (the success rate that searchers achieve in finding carcasses) and scavenging rates (the rate at which carcasses are removed and hence not available for detection) is also obtained (Jenkins *et al*, 2012). Both of these aspects can be measured using a sample of carcasses of birds placed out in the field randomly. The rate at which these carcasses are detected as well as the rate at which they decay or are removed by scavengers should be measured. It is important that at least 20 carcasses are used, and that this is done twice in a 12 month period, in summer and in winter. Although it is important to try to use

carcasses similar in size and other factors to the target species for the site, this is unlikely to be achievable in practice. It is more likely that a readily obtainable species will be used, such as ducks or geese.

Since the mortality searches need to be done more frequently than the other monitoring), this may require a separate team with different skills and hopefully based closer to the site. This should be discussed with the specialist as soon as the project is confirmed as going ahead.

At this stage the time required for this component of monitoring is difficult to determine since it will also be dependent on the exact methods, i.e. dogs and other options. This should be discussed more with the developer as the time approaches.