



## Nocturnal Monitoring of Birds: Why, when and how?

### A case study for a proposed wind turbine on farmland in south east Cornwall adjacent to protected sites of importance for wintering birds

#### Introduction:

Windfarms may act as barriers to birds causing them to change direction during migration or during regular flights. Many birds fly at night and so may be more likely than daytime species to suffer collisions as turbines will be less visible. It is important that the potential impact on nocturnal birds is fully assessed during the planning process and this is particularly important if the proposal site is near to any protected sites of bird importance. The level of survey effort should be proportionate to the potential impact of a proposed windfarm on bird species and the potential for pitfalls, such as reduced visibility, should be taken into account.

Monthly nocturnal and daytime bird surveys were carried out on farmland in south east Cornwall between October 2014 and March 2015 to support a planning application for a proposed single wind turbine. Surveys were undertaken in accordance with detailed discretionary advice provided by Natural England as the site was adjacent to the Plymouth Estuaries Complex SPA and St John's Lake SSSI, important for wintering birds.

The aim of the surveys was to assess the potential impact on bird species that use the land or fly within 500 metres of the proposal site. Collision risk was calculated based on the use of the proposal site by birds during the surveys, as per Scottish Natural Heritage guidelines.

#### Results & conclusions:

Low level nocturnal bird activity was recorded during the nocturnal surveys. Individual Barn Owl were recorded calling near to the proposal site, although no birds were noted flying through the airspace or landing on the site itself. Tawny Owls were also heard calling within the vicinity of the site and individuals were recorded flying a number of times within the vicinity of the site, see Map 1 for example flight lines. Collision risk for these species was very low.

No signs of any waders or wildfowl roosting either on or within 500 metres of the proposal site were found with no birds recorded flying over the proposal site during nocturnal surveys. No significant accumulations of these species were seen foraging. The surrounding habitats did not appear to be attractive to significant accumulations of waders or waterfowl; no ducks or geese were recorded during the survey period.

The surveys showed a mixed pattern of bird activity, with no clear nocturnal patterns of behaviour. The main constraint during the nocturnal surveys was reduced visibility. Although the night vision equipment improved overall visibility, its maximum range was 200 metres. Therefore to identify birds the surveyors also needed to look at the shape and behaviour of individuals and listen for any calling.



#### Methods:

**Data Collection:** Data were collected via a mixture of fixed viewpoint surveys coupled with walkover surveys. Surveys included much nocturnal survey time consisting of dawn (starting 90 minutes before sunrise), midday (10am – 2pm), dusk (finishing 90 minutes after sunset) and night (3 hours during the night). 1 1/2 hour walkovers of all fields within 500 metres of the proposed wind turbine were also carried out at night and during the day to search for roosting species.

Standard bird Vantage Point methodology was used.

#### Equipment:

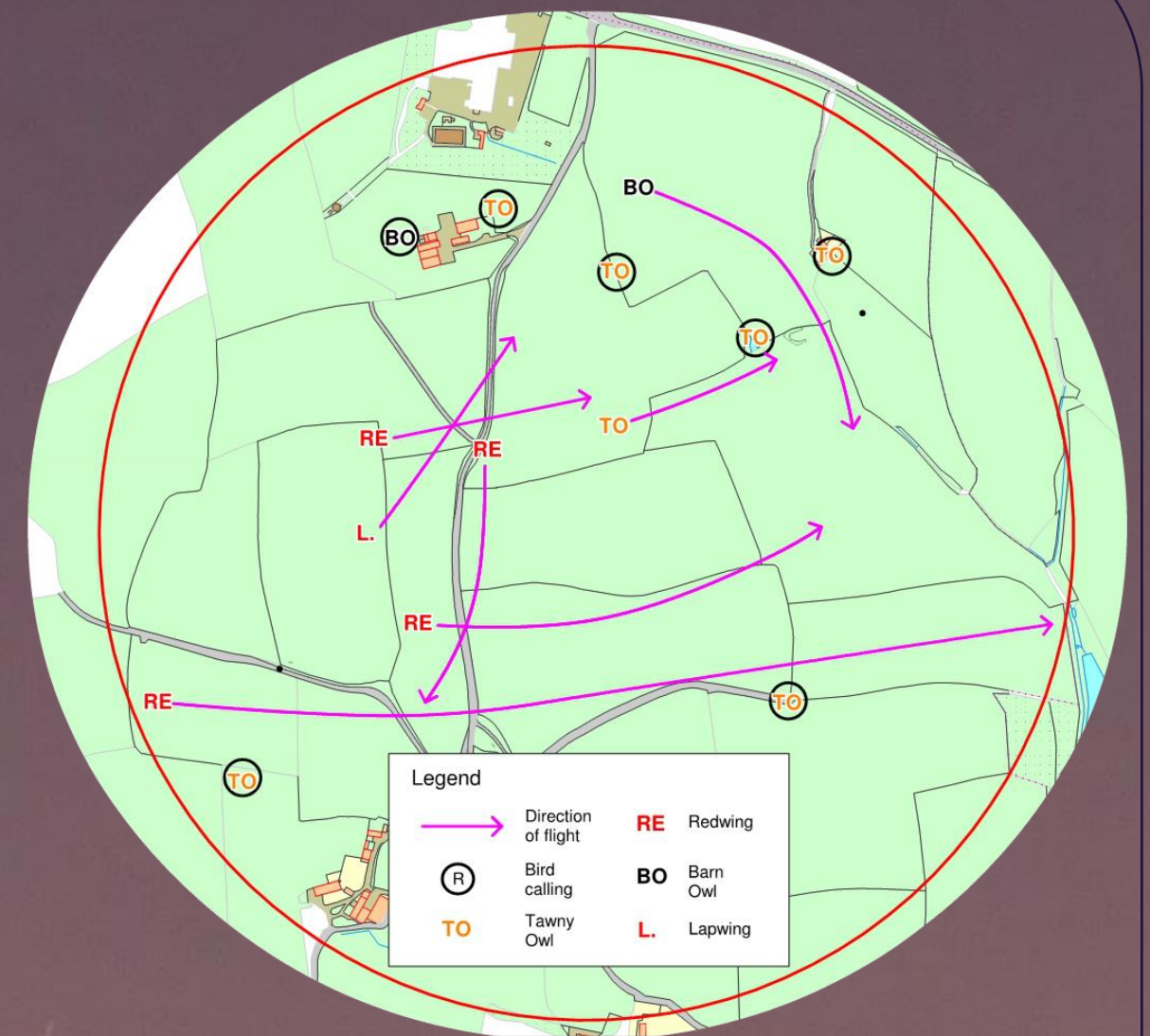
- Night vision scope – Yukon, Exelon 3x50/4x50 Gen Super Night Vision Monocular – 3 x magnification, 13° field of view, minimum focus distance 2.5 m
- Range 200 metres
- Binoculars

#### Constraints:

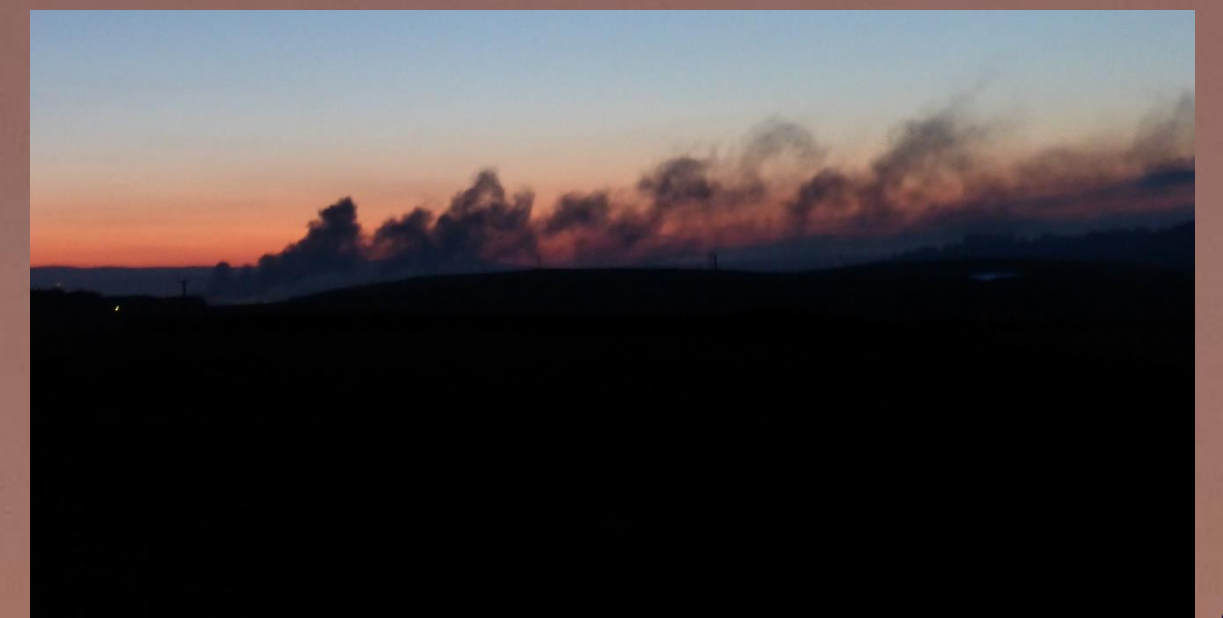
As one would expect, visibility during nocturnal surveys is greatly reduced when compared with daytime surveys. The maximum range of the night vision scope was 200 metres. However birds at this distance were sometimes difficult to see clearly, therefore surveyors not only relied on specialist equipment to identify species, but they also needed to use other means of identification for example bird calls. Many nocturnal birds do not call when in flight but it was often possible for surveyors to record birds by studying their shape and behaviour. These surveys were supported by nocturnal walkover surveys, this allowed additional areas to be inspected.

#### Additional data collected:

- Times of high tide and low tide
- Times of sunrise and sunset
- Weather conditions: temperature, cloud cover, wind speed and wind direction



Map 1. Example survey map showing flight lines of bird species recorded during nocturnal vantage point surveys. Red circle denotes 500 m buffer from proposed turbine location.



View across the site after sunset.



As for daytime bird species, the potential impact of proposed windfarms on nocturnal birds should also be fully assessed during planning, particularly if protected sites of bird importance are adjacent. Surveys should be proportionate to the potential impact of the proposed development, using up to date guidance and specialised equipment. The potential for pitfalls, such as reduced visibility, should also be taken into account.