



To: Laura Finn Senior Planning Inspector

From: Dr Maeve Flynn, B.Sc. PhD. MCIEEM, Inspectorate Ecologist

Re: The construction of 7 no. wind turbines and associated infrastructure (Carrig Renewables windfarm) in the townland of Faddan Beg, County Tipperary and potential impacts on bird species with regard to possible connections of local populations of waterbirds with Special Protection Areas in the wider landscape. Focus on Whooper Swan.

Date 12/03/2025

1. Introduction

This technical note has been prepared in relation to the First Party Appeal ABP-318689-23 Carrig Renewables windfarm. Impacts on ornithology were the second reason in Tipperary County Councils decision to refuse planning permission for the Windfarm. The Planning Authority considered that the applicant had failed to demonstrate that the development would not have an adverse impact on the site integrity of the local sites within the Natura 2000 Network.

In a submission to Tipperary County Council dated 27th October 2023, the Department of Housing, Local Government & Heritage (DHLGH) raised a number of ecological concerns, including ornithological issues. These included a range of possible impacts on birds listed on Annex I of the Birds Directive and Birds of Conservation Concern in Ireland (BOCCI- Birds of Conservation Concern in Ireland 4: 2020-2026):

- risks posed by the windfarm in terms of ex-situ adverse effects on bird species including Whooper Swan, and duck species Teal, Shoveler and

Pintail which may be connected with SPA sites River Little Brosna Callows, Middle Shannon Callows and Lough Derg.

- collision risk and displacement of bird species at the windfarm site

As part of the First Party appeal to An Bord Pleanála a detailed response was submitted addressing these issues among others and additional bird survey data including an updated collision risk assessment included.

This technical note has been prepared to assist the Senior Planning Inspector and the Board in the consideration of impacts on bird species with particular focus on (wintering) Whooper Swan (*Cygnus cygnus*), and other bird species recorded at the windfarm site that are also listed as special conservation interest (SCI) bird species of Special Protection Areas (SPAs) in the wider landscape.

In my capacity as Inspectorate Ecologist, I have the relevant expertise to provide a professional opinion as to the adequacy of the information before the Inspector and the Board to undertake Appropriate Assessment (AA) and Environmental Impact Assessment (EIA) in relation to ornithology impacts. I have read all the relevant documents related to the ornithological impact assessment as part of the EIAR, the Natura Impact Statement and the First Party Response document. I made a site visit to the windfarm site on 14th June 2024.

2. Bird species recorded and possible connections to SPA populations in the wider landscape

Having reviewed the methodologies described the survey effort, results and accompanying figures, I am satisfied that comprehensive bird surveys were undertaken to inform the ornithological impact assessment and Appropriate Assessment for the proposed windfarm development. Surveys were undertaken inline with current best practice and using standard methodologies over the period September 2020 to March 2023 as described in the EIAR and NIS and further surveys were conducted from April to September 2023, results of which are presented in the First Party Response document. Surveys included:

- Vantage point surveys (4 X VPs with 36hrs effort for each survey season- Viewshed presented (Fig 7.2)
- Breeding walkover survey,

- Breeding raptor survey
- Winter walkover survey (transects in addition to VPs)
- Hen harrier roost survey
- Waterbird distribution surveys- wider area – significant wetlands and waterbodies within min of 8km of the Wind Farm Site were surveyed for waterbirds during the 2020/2021, 2021/2022 and 2022/2023 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Wind Farm Site. Included Little Brosna Callows and Dovegrove Callows.

I note that the wider area surveyed as part of the waterbird distribution survey is based on encompassing areas that take account of foraging ranges of key species including Whooper swan (<5km from night roost during winter season) and Greenland white-fronted goose (5-8km from night roost) which are Annex I waterbirds listed as species of special conservation interest (SCI) of SPAs within 15km of the Wind Farm Site. These distances are derived from Scottish Natural Heritage guidance *Assessing Connectivity with Special Protection Areas (SPAs)* (Version 3, 2016)¹. This guidance is relied upon in the EIAR and NIS as part of the rationale in identifying 'connectivity' between development proposals and Special Protection Areas (SPAs).

*...It acts like a screening stage, removing from the Habitats Regulations Appraisal plans/projects which clearly have no connectivity to a site's qualifying interests or those where it is very obvious that the conservation objectives for the site's qualifying interests will not be undermined despite a connection. To assess whether there are processes or pathways by which the proposal may influence the site's qualifying interests, it is important to consider the distances that some species may travel beyond the boundary of their SPAs. This guidance provides information on **dispersal and foraging** distances for a range of bird species which are frequently encountered when considering plans and projects (SNH, 2016)*

¹ [Assessing connectivity with special protection areas.pdf](#)

The surveys undertaken and assessment methods presented aim to establish connections between species recorded in and around the windfarm site with SPA sites in the wider area including Dovegrove Callows SPA, River Little Brosna Callows SPA, Middle Shannon Callows SPA and Lough Derg (Shannon) SPA.

In screening the need for Appropriate Assessment (AA), the potential for significant effects on the SCI species in the form of disturbance, displacement and collision risk could not be excluded without further assessment which included determining connections with the SPA populations. In addition, the potential for deterioration in water quality in waterbodies connected to the downstream SPA sites due to construction activity was identified as a potential impact mechanism that required further assessment and mitigation.

The NIS goes on to consider these sites in more detail and the potential for adverse effects in view of conservation objectives. In doing so, the potential for adverse effects on a number of species was ruled out based on a combination of factors including survey results and relating findings to evidence-based estimates of ranges where available (SNH, 2016). The First Party response document further expands on the scientific justification and evidence relied upon in reaching these conclusions.

Overall, there was low use of the proposed windfarm site by species identified as key ornithological receptors (KOR) including SCI listed species, and it is not considered a site with significant ex-situ value for SPA sites in the wider area. The following table summarizes bird species recorded during surveys within the zone of influence of the i.e. recorded at windfarm site / within 500m that are also special conservation interest (SCI) of the following SPA sites; Dovegrove Callows SPA, River Little Brosna Callows SPA, Middle Shannon Callows SPA and Lough Derg (Shannon) SPA (See also NIS 3.4.4 and table 3-4)).

Bird species	Summary of records at wind farm site and consideration in NIS assessment to inform AA
Golden Plover (Annex I; SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA)	Wintering No records within windfarms site (foraging /roosting). All records within 500m are commuting birds. No regular flight lines identified. No significant adverse effects from disturbance, displacement or barrier effect

	Collision risk- negligible at local population level (2.34 birds/ year)
Whooper Swan (Annex I; SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA)	<p>Wintering</p> <p>Regularly recorded within 500m of the windfarm site- majority of records are flying/ travelling. No records utilizing habitats within the site.</p> <p>Known roost site within 400m of site boundary.</p> <p>Species not considered a SCI species at risk based on exclusion of ecological connections to SPA sites due to distances, survey data and lack of regular flight lines that would connect to Little Brosna Callows in particular.</p> <p>Adverse effects on SPA sites excluded.</p> <p>Impacts on local population (roost beyond recommended buffer to prevent significant disturbance, no significant effects predicted for displacement or barrier effect).</p> <p>Collision risk: estimated at 0.326 birds / year, considered negligible at county population level</p>
Lapwing (SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA; Red Listed)	<p>Wintering</p> <p>No records within windfarms site (foraging /roosting). All records within 500m are commuting birds. No regular flight lines identified.</p> <p>No significant adverse effects from disturbance, displacement or barrier effect</p> <p>Collision risk- negligible for county level (2.9 birds/ year)</p>
Shoveler (SCI of River Little Brosna Callows SPA; Red Listed)	<p>Wintering</p> <p>One observation within 500m of the windfarm (foraging). All other records beyond 500m.</p> <p>Majority of records form Little Brosna Callows.</p> <p>Adverse effects excluded</p>
Black-headed Gull (SCI of River Little Brosna Callows SPA & Middle Shannon Callows SPA)	<p>No records of species using habits within the windfarms site either during breeding or wintering season. All observations of birds in flight</p> <p>No significant adverse effects from disturbance, displacement or barrier effect</p> <p>Collision risk-</p> <p>Wintering: 1.26 collisions/ year. >1% for county population level (based on County Tipperary numbers-</p>

	<p>which may be underestimate of wintering population) – X to negligible</p> <p>Breeding: negligible for county level (0.19 birds/ year)</p>
<p>Cormorant</p> <p>(SCI Lough Derg (Shannon))</p>	<p>Only SCI of Lough Derg SPA recorded within 500m.</p> <p>6/22 observations within 500m</p> <p>Connectivity excluded for species due to distance of forage range.</p> <p>Adverse effects excluded.</p>
<p>Pintail</p> <p>(SCI Middle Shannon Callows SPA)</p>	<p>Wintering</p> <p>One observation within 500m of windfarm site.</p> <p>118 observations ranged from between 2-10.5 km, with most from Little Brosna Callows.</p>
<p>Teal</p> <p>(SCI Middle Shannon Callows SPA)</p>	<p>Wintering</p> <p>One record within windfarm site. 6 observations within 500m of turbine layout. Significant areas for this species outside windfarm site.</p> <p>No adverse effects from disturbance, displacement, barrier effect or mortality from collision risk</p>

I note that Greenland White Fronted goose, an SCI for Dovegrove Callows SPA, River Little Brosna Callows SPA and All Saints Bog SPA was not recorded within a zone of influence of the windfarm. The closest record was 7.7km distant and connectivity to SPA sites was excluded from the windfarm site. Similarly, it is demonstrated that SCI species associated with Lough Derg (Shannon) SPA can be excluded from further assessment due to clear lack of ecological connections with the windfarm site. The possibility of ex-situ connections for all other SCI species were fully investigated where core foraging ranges were not available based on a precautionary approach.

The potential for connections between a locally occurring Whooper Swan population and the SPA sites for which the species is listed in the wider area is a justified concern of the DHLGH. A local flock with regularly occurring numbers of up to 26 individuals utilise an open water roost site within 400m of the windfarms site boundary (600m of nearest turbine). However, I consider that the MKO ornithology team have provided robust rationale of their approach and using the best available scientific information in terms of evidence from the literature cited, comprehensive

survey work and analysis of data determined that firm ecological connections between the local whooper swan population and SPA populations at River Little Brosna Callows and Middle Shannon Callows can be excluded. The SNH SPA connectivity distances based on core foraging ranges is just one factor in the determination. The survey approach balanced the local windfarm area with the wider landscape via the waterbird distribution surveys which encompassed the little Brosna Callows. These surveys would have picked up on regular movements from the roost site to the Callows to the north. The mapped distribution on Drawing 7.4.9.3 illustrates these observations with clear concentrations around Little Brosna Callows and more dispersed observations to west of the windfarm site.

The DHLGH submission states that it is entirely possible that there may be some intermittent movements to and from core SPA sites and I agree that this cannot be ruled out with absolute certainty. However, the test for AA is based on being able to remove reasonable scientific doubt when coming to a determination on the exclusion of adverse effects on site integrity and I consider that the First Party has demonstrated this. I consider that based on the scientific information before the Board that the favorable conservation condition of Whooper swan (and all other SCI bird species assessed) will not be undermined by the proposed development.

I note the lack of nocturnal bird surveys was identified by DHLGH as a concern regarding assessment of movements of species between SPA sites. The use of methods described by the DHLGH are not standard and as described by the applicant, the use of use of automated sensing techniques, such as radar would not be suitable at the windfarm site. The first Party response document addresses survey methods and confirm that they are line with current best practice and follows the recommendation of Scottish Natural Heritage (SNH) Recommended bird survey methods to inform impact assessment of onshore wind farms (2017). The recommended methods for Geese and other waterfowl state that vantage point surveys targeting swans and geese should be undertaken “between and including dawn and dusk.” This includes the hour before sunrise, the diurnal daylight hours and the dusk period. This was achieved by the applicant, as is noted in Appendix 7-4 of the EIAR, by starting/finishing a winter vantage point survey the hour before/after sunrise/sunset.

Finally, I bring the Inspectors and the Boards attention to the fact that site specific conservation objectives have recently been set for the River Little Brosna Callows SPA (NPWS February 2025). Attributes and targets related to ex-situ effects and barrier effects have been set for SCI species (see table below). Of note is that the SNH foraging distances from night roosts are referenced, acknowledging that this will vary depending on site and landscape. I consider that the publication of updated SSCO's does not change the overall conclusions reached in the NIS and supporting documents.

Summary of attributes and targets for site specific conservation objectives for the River Little Brosna Callows SPA [004086]

Attribute/ measure	Target	Note (of relevance)	Assessment
Winter population % change	Long term winter population is stable or increasing	No impacts to SPA site for any species that could undermine this target.	No impacts predicted for SPA population
Winter spatial distribution Hectare, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target (within SPA)		No impacts to SPA site for any species that could undermine this target.
Disturbance at wintering site Intensity, frequency, timing and duration	Disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution (within/ adjacent to SPA)		No impacts to SPA site for any species that could undermine this target.
Barriers to connectivity and site use Number, location, shape and hectares	Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or movement within the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact	The windfarm will not pose a barrier to movements to any species to ecologically important sites outside of the SPA. Populations considered separate
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable	In general, the foraging distance of wintering Whooper	The habitats at the windfarm site do

Location, hectares, and forage biomass	habitat and available forage biomass to support the population target	Swan from night roosts is estimated to be less than 5km (Scottish Natural Heritage, 2016), although this will vary depending on site and landscape	not provide any ex-situ foraging habitat
Roost spatial distribution and extent Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target		Roost site for local whooper swan population is outside of range of SCI population.
Supporting habitat quality: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Suitable supporting habitats include those highlighted in the attributes for foraging and roosting habitat	The windfarm site is outside of range of SCI species and does not host quality supporting habitat

Overall, I am satisfied that based on the evidence provided in the First Party appeal that adverse effects on site integrity of SPA sites, part of the Natura 2000 network of sites can be excluded for the proposed development (alone and in combination with other plans and projects) based on the best available scientific information available in view of the conservation objectives of those sites and that no reasonable scientific doubt remains as to the absence of such effects.

3. Impacts on Local bird populations

The evaluation and impact assessment follows the industry standard using Percival (2003) *Birds and wind farms in Ireland: a review of potential issues and impact assessment* and the collision risk model follows Scottish Natural heritage guidance / Band Model.

Eighteen bird species classified as key ornithological receptors (KORs) were identified and examined in detail for likely significant effects in terms of habitat loss, disturbance displacement and mortality from collision with wind turbines.

The assessment of impacts on KORs undertaken by the applicant shows no effect significance of greater than *Low* (as per Percival 2003 criteria) or long-term slight negative as per standard EPA criteria. Significant cumulative effects with other projects are not predicted at any scale.

The Board will note that the National Parks and Wildlife Service (NPWS) owns and manages close to 100ha of wetland adjacent to the proposed windfarm site at Sharragh and Abbyville. The location of the proposed windfarm site in the center of this wider peatland and wetland complex is considered by DHLGH to be part of an ecological corridor connecting a range of ecologically valuable sites.

In their submission on the original application to Tipperary County Council, DHLGH describe their concerns that development of the site would reduce current and future ecological connectivity and damage future potential to restore habitats. The DHLGH acknowledge that while management and habitat restoration measures are aimed at peatland habitats, the rewetting of lands makes the wider area more attractive to wildfowl, a feature that could be undermined by the development of the site.

The assessment presented in Chapter 7 ornithology and updated bird survey and collision risk models provides a comprehensive assessment of the individual species recorded at the windfarm site in view of the current baseline in terms of regional/ county importance. However, I consider that the context of the site in the local environment in view of the DHLGH concerns of interrupting ecological connections with adjacent peatland sites has not been fully addressed and impacts on local bird population underestimated. The lack of identified significant effects doesn't mean that the proposed development is benign in terms of impacts. Development of the site will permanently alter the character of the landscape for bird species and excludes areas of peatland habitat that could potentially be restored in the future.

With the exception of raptor species Kestrel and Buzzard, Whooper Swan was the most frequently observed bird species flying over/ in proximity to the windfarm. Flight activity is described as random across the windfarm site with no distinct regular flight paths to/from the known roost site (see figure 7.4.9.1). However, the regularity of observations shows that the locally occurring flock evaluated as being of county importance (EIAR 7.4.19) passes regularly through this air space while moving around the wider area between foraging sites and the roost site. The fact that of 42 recorded observations during VP watches, only 16 flights were recorded over the windfarm could underestimate the overall impacts as 32 observations were within 500m with the remainder illustrated on figure 7.4.9.1 as being just beyond this distance. For a birds of the size and range of Whooper swans these distances are

not significant, and I consider that the impacts predicted for disturbance and barrier effects and collision risk for this locally occurring population may be underestimated.

4. **Conclusion**

The Board needs to be satisfied that adverse effects on the integrity of SPA sites can be excluded and that significant effects at National and regional population levels will be avoided. I consider that the applicant has provided this information for bird species assessed in both the NIS and EIAR and in the application of mitigation and monitoring measures where effects were identified.

However, the introduction of the windfarm at this location will result in local level impacts that may be underestimated particularly for the local population of Whooper Swans and in terms of the current and future ornithological ecological value of the site.

Signed:



Dr Maeve Flynn

Inspectorate Ecologist