S. 37

File With _____

SECTION 131 FORM

Appeal NO:_PL 310789 **Defer Re O/H** ☐

TO:SEO

Having considered the contents of the submission dated/ received 31-01-23

from

Wind Aware Dromchair I recommend that section 131 of the Planning and Development Act, 2000 be/not be invoked at this stage for the following reason(s):. Not circulated Pending review by Inspector / Board

E.O.: Lisa Quinn **Date:** 8/2/23

To EO:_____

Section 131 not to be invoked at this stage. ☐

Section 131 to be invoked – allow 2/4 weeks for reply. ☐

S.E.O.:_____ **Date:**_____

S.A.O:_____ **Date:**_____

M _____

Please prepare BP _____ **- Section 131 notice enclosing a copy of the attached submission**

to: _____

Allow 2/3/4weeks – BP_____

EO: _____ **Date:** _____

AA: _____ **Date:** _____

S. 3

File With _____

CORRESPONDENCE FORM

Appeal No: PL 310789

M Carleton

Please treat correspondence received on 31-01-23 by e-mail **as follows:**

1. **Update database with new agent for Applicant/Appellant** _____
2. **Acknowledge with BP** 20
3. Keep copy of Board's Letter ☐

1. RETURN TO SENDER with BP _____
2. Keep Envelope: ☐
3. Keep Copy of Board's letter ☐

Amendments/Comments
3rd party response to S.131 response.
Wind Aware
Dromahair

4. Attach to file

(a) R/S ☐ (d) Screening ☐

(b) GIS Processing ☐ (e) Inspectorate ☐

(c) Processing ☐

RETURN TO EO ☑

Lita / Lisa.

	Plans Date Stamped ☐ Date Stamped Filled in ☐
EO: Lita Clarke	**AA:** Cathy Carleton
Date: 01-02-23	**Date:** 02/02/23

Aisling Reilly

From: Appeals2
Sent: Tuesday 31 January 2023 16:50
To: Lisa Quinn; Lita Clarke
Subject: FW:
Attachments: WAD-171 Complete Observations on Further Information, Leitrim, ABP-310789, 31-Jan-2023.pdf

From: Bord <bord@pleanala.ie>
Sent: Tuesday, January 31, 2023 4:00 PM
To: Appeals2 <appeals@pleanala.ie>
Subject: FW:

From: Jack O'Sullivan <jackosullivan2006@gmail.com>
Sent: Tuesday, January 31, 2023 3:51 PM
To: Appeals2 <appeals@pleanala.ie>; Bord <bord@pleanala.ie>
Subject:

The Secretary,
An Bord Pleanála,
64 Marlborough Street,
Dublin 1,
D01 V902

Dear Sir,

Further Information Requested by An Bord Pleanála in connection with Appeals Against the Decision by Leitrim County Council to Grant a Ten-year Planning Permission to Coillte CGA for an 8-Turbine Wind Farm, Electrical Substation, Grid Connection, Partial Demolition and Alteration of Agricultural Buildings, Upgrading of Existing Tracks and Roads, Construction of New Site Access Roads, and Associated Works in the townlands of Bargowla, Boleymaguire, Braudphark, Derreens, Derrybofin, Derrycullinan, Derrycullinan Beg, Drummanacappul, Garvagh, Garvagh Glebe, Glassalt, Lisfuiltaghan, Seltan, Sheena and Tinnybeg, County Leitrim

Leitrim County Council Planning Reference No. 20 / 120

An Bord Pleanála Case Reference ABP-310789-21

OBSERVATIONS ON BEHALF OF WIND AWARE DROMAHAIR ON ON THE FURTHER INFORMATION RECEIVED BY AN BORD PLEANÁLA FROM THE APPLICANT

In response to the Board's letter dated 04 January 2023, enclosing copies of further information received by An Bord Pleanála on 08 December 2022, in response to the Board's letter dated 11 November 2022, to the applicant, Coillte CGA, I am attaching observations on this further information, on behalf of the Wind Aware Dromahair community group.

Please note that the cover letter has been signed not only by myself as agent, but by a number of members of the Wind Aware Dromahair community group.

Wind Aware Dromahair trusts that An Bord Pleanála will refuse to grant planning permission for the proposed wind farm for reasons based on the grounds of our earlier appeal, and on the observations now submitted to the Board, and for other reasons which the Board may consider appropriate for refusing permission.

An acknowledgement that our observations have been received would be much appreciated.

Yours faithfully,

Jack O'Sullivan

Environmental Management Services

****

An Tinteán Nua,
Ballymanus,
Castlepollard,
County Westmeath,
Ireland.

Loc8 Code: MJQ-56-27G Eircode N91 PP76
Telephone +353 44 966 2222
Mobile +353 86 381 9811
E-mail jackosullivan2006@gmail.com

****

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Leitrim County Council Planning Reference 20 / 120

An Bord Pleanála Case Reference No. 310789-21

OBSERVATIONS ON BEHALF OF WIND AWARE DROMAHAIR ON THE FURTHER INFORMATION RECEIVED BY AN BORD PLEANÁLA

31 January 2023

Environmental Management Services
Comhairleoirí Comhshaoil
Environmental and Planning Consultants

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31 January 2023

The Secretary,
An Bord Pleanála,
64 Marlborough Street,
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Further Information Requested by An Bord Pleanála in Connection with Appeals Against the Decision by Leitrim County Council to Grant a Ten-year Planning Permission to Coillte CGA for an 8-Turbine Wind Farm, Electrical Substation, Grid Connection, Partial Demolition and Alteration of Agricultural Buildings, Upgrading of Existing Tracks and Roads, Construction of New Site Access Roads, and Associated Works in the Townlands of Bargowla, Boleymaguire, Braudphark, Derreens, Derrybofin, Derrycullinan, Derrycullinan Beg, Drummanacappul, Garvagh, Garvagh Glebe, Glassalt, Lisfuiltaghan, Seltan, Sheena and Tinnybeg, County Leitrim

Leitrim County Council Planning Reference No. 20 / 120

An Bord Pleanála Case Reference No 310789-21

OBSERVATIONS BY WIND AWARE DROMAHAIR ON THE FURTHER INFORMATION RECEIVED BY AN BORD PLEANÁLA FROM THE APPLICANT

We have been requested by the **Wind Aware Dromahair** community group to submit the attached observations on the further information received by An Bord Pleanála in response to the Board's letter to the applicant, Coillte Cuideachta Ghníomhaíochta Ainmnithea (Coillte CGA), dated 11 November 2022. The further information was forwarded to us on 04 January 2023, with a request by the Board to make submissions or observations.

We are submitting separate observations on further information received by An Bord Pleanála in connection with appeals made against a decision by Sligo County Council to grant planning permission to the same applicant for a smaller portion of the same wind farm which would be located in County Sligo, including two wind turbines, a meteorological mast, underground cabling, access tracks and roads,

provision of amenities and other works (Sligo County Council planning reference **20 / 251**; An Bord Pleanála case reference **310788-21**).

The **Wind Aware Dromahair** community group is a locally based unincorporated group, representing the interests of residents, farmers, small business owners, ecotourism operators, and other persons living in and around the area where the proposed wind farm would be located. Members of Wind Aware Dromahair have collectively, and also in many cases individually, a *"direct and vital interest"* in the result of this appeal, as they would be directly affected by the wind farm if it were to be granted permission and if it were to be constructed.

The address of Wind Aware Dromahair is:

c/o Dr Brigitte Christoph,
Beagh,
Dromahair,
County Leitrim.

The members of Wind Aware Dromahair trust that An Bord Pleanála will refuse to grant planning permission for the proposed wind farm for reasons based on the grounds of our appeal, on our observations on the further information sent to us by the Board, and for any other reasons which the Board may consider appropriate for refusing permission.

Yours faithfully,

Jack O'Sullivan.

Jack O'Sullivan
Environmental Management Services
On behalf of Wind Aware Dromahair

Also signed by:

Adrienne Diamond A. Diamond
Christina Guckian Christina Guckian
Dr Brigitte Christoph B. Christoph
TRACY RYNN. Tracy Rynn.

SEAMUS HAZLETT Seamus Hazlett
IAN HAZLETT Ian Hazlett
31st JAN 2023
SEAMUS KELLY Seamus Kelly
Graham Robertson G. Robertson.

Environmental Management Services
Comhairleoirí Comhshaoil
Environmental and Planning Consultants

An Tinteán Nua, Ballymanus, Castlepollard, County Westmeath
An Tinteán Nua, Baile Mhánais, Baile na gCros, Co. an Iarmhí, N91 PP76.
Telephone 044 966 2222 Mobile 086 381 9811 E-mail jackosullivan2006@gmail.com

Further Information Requested by An Bord Pleanála in Connection with Appeals against the Decision by Leitrim County Council to Grant a Ten-year Planning Permission to Coillte CGA for an 8-Turbine Wind Farm, Electrical Substation, Grid Connection, Partial Demolition and Alteration of Agricultural Buildings, Upgrading of Existing Tracks and Roads, Construction of New Site Access Roads, and Associated Works in County Leitrim

Leitrim County Council Planning Reference 20 / 120

An Bord Pleanála Case Reference No 310789-21

OBSERVATIONS BY WIND AWARE DROMAHAIR ON THE FURTHER INFORMATION RECEIVED BY AN BORD PLEANÁLA FROM THE APPLICANT

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Leitrim County Council Planning Reference 20 / 120

An Bord Pleanála Case Reference No 310789-21

OBSERVATIONS BY WIND AWARE DROMAHAIR ON THE FURTHER INFORMATION RECEIVED BY AN BORD PLEANÁLA FROM THE APPLICANT

1. INTRODUCTION and BACKGROUND

On 29 July 2020, McCarthy Keville O'Sullivan Ltd., t/a MKO, applied to Leitrim County Council on behalf of Coillte Cuideachta Ghníomhaíochta Ainmnithea (Coillte CGA) for planning permission for a proposed wind farm consisting of 8 turbines and other ancillary works described in the application and supporting documents; and consisting of:

i) Eight conventional three-blade wind turbines with a maximum overall blade height of up to 170 metres;

ii) Installation of reinforced concrete foundations for the turbine towers;

iii) Associated hardstanding areas;

iv) Upgrading of approximately 10.9 kilometres of existing forest roads and tracks, and construction of approximately 6.9 kilometres of new access roads, and a new link road between the R280 regional road and the L4282 local road;

v) A 38 kV permanent electricity substation and a wind farm control building;

vi) A proposed permanent meteorological mast with a maximum height of up to 100 metres;

vii) Underground electrical (20 or 33kV) and communications cables;

viii) Connection of the proposed wind farm to the national electricity grid;

ix) Partial demolition and alteration of two agricultural buildings and the use of agricultural land for road construction;

x) Felling and permanent loss of some 55.1 hectares of commercial forestry, and replanting of the same area of forestry on one or more alternative sites;

xi) Recreation and amenity works;

xii) Permanent site drainage; and,

vii) Other associated site works not specifically mentioned above.

The application is for a ten-year permission, with a 30-year operational life (from the date of commissioning), and was accompanied by an Environmental Impact Assessment Report (EIAR), a Natura Impact Statement, supplementary plans for the management of construction, and for the extraction, removal and disposal of peat and soil, and by indicative drawings and maps.

On 15 June 2021, Leitrim County Council decided to grant planning permission for the relevant portion of the proposed wind farm, subject to 34 conditions; and on 12 July 2021, the Council's decision was appealed to An Bord Pleanála by Wind Aware Dromahair (An Bord Pleanála Case Reference No. **310789**). Two other appeals against that decision were made to the Board:

i) a third party appeal by Peter Sweetman and Associates (Wild Ireland Defence CLG); and,

ii) a first party appeal by MKO on behalf of the applicant, Coillte CGA.

On 08 December 2022, McCarthy Keville O'Sullivan Ltd., t/a MKO, submitted to An Bord Pleanála on behalf of Coillte Cuideachta Ghníomhaíochta Ainmnithea (Coillte CGA) a detailed response to two requests made on 11 November 2022 by the Board for significant further information about the proposed Croagh wind farm. It was necessary for the Board to make two FI requests, as Coillte CGA had made two separate planning applications on account of the windfarm site extending across the Sligo-Leitrim county boundary, with the greater part of the wind farm in County Leitrim.

We have now been requested by Wind Aware Dromahair to submit observations on the further information received by the Board.

It is relevant to our observations that a concurrent planning application was submitted by the same applicant to Sligo County Council for those portions of the wind farm which would be located in County Sligo, if permitted, including two wind turbines, a meteorological mast, underground cabling, access tracks and roads, amenity works and other associated works (Sligo County Council planning reference **20 / 251**). A decision made by Sligo County Council to grant planning permission for this portion of the wind farm has also been appealed to the Board (An Bord Pleanála case reference **310788**).

The entire wind farm, if permitted by the Board, would consist of 10 turbines, an electrical substation, grid connection, partial demolition and alteration of agricultural buildings, upgrading of existing tracks and roads, construction of new site access roads, installation of land drains across the proposed site, and removal of trees to facilitate construction and operation of the proposed wind farm. The greater proportion of the wind farm site (80% approximately) is located close to the western boundary of County Leitrim, with a smaller proportion of the site (20%) in County Sligo.

2. WIND AWARE DROMAHAIR

The observations which follow are being made on behalf of **Wind Aware Dromahair**, a community-based environmental protection group which was formed in response to proposals by Coillte CGA for construction of a large wind farm consisting of ten 170metre-high turbines, spread across a site of approximately 670 hectares, comprising upland blanket bog and commercial forestry plantations over fifteen townlands in counties Sligo and Leitrim.

On 01 September 2020, Wind Aware Dromahair made submissions to Leitrim and Sligo County Councils in response to the planning application dated 29 July 2020; and, on 25 May 2021, Wind Aware Dromahair submitted to Leitrim and Sligo County Councils detailed and lengthy observations on the further information provided to both planning authorities by the applicant. When Leitrim and Sligo County Councils decided to grant planning permissions for the relevant portions of the proposed wind farm, Wind Aware Dromahair appealed both of these decisions to An Bord Pleanála.

Wind Aware Dromahair also provided to An Bord Pleanála observations on two other appeals – a first party appeal by MKO on behalf of Coillte CGA, and a third party appeal by Mr Peter Sweetman.

Additional details of Wind Aware Dromahair; including membership, committee members, aims and activities, are provided in our submissions mentioned above. Members of Wind Aware Dromahair have collectively, and also in many cases

individually, a *"direct and vital interest"* in the decision to be made by An Bord Pleanála, as they would be directly affected by the wind farm if it were to be granted permission and if it were to be constructed.

3. OBSERVATIONS ON THE FURTHER INFORMATION PROVIDED BY MKO ON BEHALF OF THE APPLICANT, COILLTE CGA

3.1 Summary of Key Issues Raised in the Applicant's Further Information

The Board's further information request may be summarised as:

1. The Board has expressed concern about the adequacy of the further information previously submitted by the applicant in response to separate requests from Sligo and Leitrim County Councils; especially the information received about the stability analysis of borrow pits, peat repositories and settlement ponds, and whether they would effectively provide safe and permanent retention of peat and other materials, without risk of adverse environmental impacts or serious injury to properties;

2. An Bord Pleanála is therefore requesting information which demonstrates that the applicant has a clear understanding of the existing land and ground conditions associated with the construction of the proposed peat repositories and the drainage of these repositories, given the type and condition of rock at the repository locations, and the hillside siting of the northernmost repository;

3. Given that the proposed development is located in a low noise area; and, while recognising that there are substantial separation distances between proposed turbines and existing houses, the Board considers that there is residual potential for adverse effects arising from low frequency noise and amplitude modulation, and is therefore requesting further information from the applicant on how such adverse effects would be mitigated in the event that they may arise.

The further information received (the applicant's responses) may be summarised as:

1. A lengthy *"Geotechnical and Peat Stability Assessment Response"* report, prepared by Fehily Timoney & Company, and giving details of the construction of the proposed borrow pit and peat repositories, with further stability analyses and contingency measures in the event of failure, using "TALREN 4" slope stability computer software which can model the

stability of geotechnical structures, such as the proposed peat repositories;

2. A report by Hydro Environmental Services Ltd, giving information on water quality and drainage control at the proposed borrow pit and at the peat and spoil repositories, supplemented by computer-generated representations of the borrow pit and the peat and spoil repositories, prepared by TANTEK 4D, a Sligo-based engineering firm specialising in digital technology; and,

3. A report by AWN Consulting, addressing the noise and vibration issues raised by An Bord Pleanála, and concluding that there is no residual potential for adverse effects arising from either low frequency noise or amplitude modulation.

All of these reports include, and are based on, references to previous specialist reports, to the relevant sections of the applicant's EIAR (July 2020) and to the applicant's further information responses provided to the two County Councils in March 2021.

3.2 Peat Stability Assessment and Site Drainage

It is recognised that peat stability, drainage of the site, and the control of surface water run-off are some of the most difficult issues facing the applicant; given the nature of the site; and it is our observation that these difficulties are a strong indication of the inherent unsuitability of the site.

The "*Geotechnical and Peat Stability Assessment Response*" report, prepared by Fehily Timoney & Company (final version 08 December 2022) is the third report on geotechnical and stability issues prepared on behalf of the applicant. Previous reports included:

i) "Geotechnical and Peat Stability Assessment Report for Croagh Wind Farm", also prepared by Fehily Timoney & Company, and submitted as appendix 8-1 of the EIAR (final version 19 June 2020); and,

ii) "Geological, Hydrological & Hydrogeological Responses to Submissions in Relation to Croagh Wind Farm, Co. Leitrim", prepared by Hydro-Environmental Services and dated 15 March 2021, in response to a further information request issued by Leitrim County Council on 22 September 2020.

The earliest report (June 2020) included a site walkover, ground investigation, and peat stability risk assessment, and the second report (15 March 2021) included a further site walkover, collection of surface water samples, investigation of field hydrochemistry, and stream flow monitoring. The third report, dated 08 December 2022, and forming part of the further information on which we are now submitting observations, repeats significant sections of the Peat &Spoil

Management Plan (Appendix 4-2 of the EIAR), and includes slope stability check, using the Talren 5 slope stability software. New material includes schematic drawings of peat repositories numbered 1 and 2, the output of the Talren 5 slope stability model, and computer-generated, representations of the Borrow Pit and the Peat & Spoil Repositories, prepared by TANTEK 4D (appendices 1 and 3 of the further information response).

The recent peat stability assessment reports do not contain updated conclusions, other than the original conclusions in the applicant's EIAR. However, the further information includes a letter dated 08 December 2022, from Hydro Environmental Services, prepared in response to the Board's request for further information. This letter provides no new information, but draws significantly from the information presented in the previous peat stability and drainage reports; and it concludes that:

> *"Comprehensive drainage proposals have been prepared for the Croagh Wind Farm development. The Updated Drainage Plans submitted with the Further Information submission to the planning authorities in April 2021, are backed up with supporting calculations (HES, 2021(a), 2021 (b)). The details provided are comprehensive, comply with IFI requirements and are of a detailed construction phase design standard that provide the highest level of protection recommended by the EPA.*
>
> *The drainage management proposal for this development, including those at the peat repositories and borrow pit, are technically sound and based on many years of experience of working on similar sites. They include fail-safe and several levels of controls in series. The application of the drainage management as outlined will ensure compliance with EU Surface Water Regulations and WFD requirements while also maintaining the baseline hydrology of the site and downstream receiving waters (surface water and groundwater)".*

Our observations on this conclusion are as follows:

1. With the exception of the computer modelling, there is no additional on-site information or data presented in the further information; all of the ground data used in the current further information response are taken from earlier reports presented with the applicants EIAR (2020) or in the further information response submitted in 2021;

2. The proposed levels of control of the surface water drainage and run off cannot be considered entirely fail-safe, as the proposed system is based on a series or train of precautionary measures, listed as check dams, silt traps, settlement ponds, etc., that will be applied in series to ensure the protection of downstream watercourses, as described in the applicant's responses to Sligo and Leitrim County Councils' requests for further

information. While this type of arrangement may provide some degree of safety or protection in the event of rainfall levels above the capacity of the system design, it would be likely to be overwhelmed, with resulting failure, as a consequence of very heavy, intense or extreme rainfall events. One common mode of failure is for the first installation, e.g., a silt trap or check dam to be overwhelmed, thereby releasing an instantaneous larger volume of water which would overwhelm the downstream installations.

Controlling surface water drainage and run-off is extremely difficult to undertake completely safely, and the fact that such a series of installations has been proposed is a clear indication of the unsuitability of the site from hydrological perspective.

3. It is also risky to rely on older information, and thereby not to take into account more recent investigations of peat slides and other evidence of the instability of peat when disturbed (see section 3.5 below).

3.3 Peat Stability Assessment – Comparison with the Garvagh Glebe Wind Farm site.

On 23 September 2008, a major peat slide occurred at the nearby Garvagh Glebe North wind farm, Corrie Mountain, Drumkerrin, Co. Leitrim.[1] Although local rainfall amounts were low during the seven day period leading up to the Garvagh Glebe North failure, intense rainfall was recorded in the period of seven to fourteen days prior to the slide.[2]

Because this windfarm is extremely close to the Croagh windfarm, a comparison of site conditions at the Garvagh Glebe windfarm and site conditions at the Croagh wind farm was included in the "*Geotechnical and Peat Stability Assessment Report for Croagh Wind Farm*", prepared by Fehily Timoney & Company, and submitted as appendix 8-1 of the EIAR, section 9, page 34. As this report has been referenced in the current further information response by the applicant, we consider it appropriate to briefly review the comparison.

The report by Fehily Timoney & Company states that the failure at Garvagh Glebe occurred in 2008 in a low strength deep peat area at the head of a watercourse and natural drainage route, and the failure took place following the construction of a section of access track. Ground conditions comprised blanket peat over a

[1] Dykes and Jennings, 2011. Peat slope failures and other mass movements in western Ireland, August 2008. Quarterly Journal of Engineering Geology and Hydrogeology 44(1); pp 5-16, February 2011.

[2] Long, Michael, Paul Jennings, and Roselyn Carroll, 2011. "Irish Peat Slides 2006 – 2010"; published March 2011. Accessed via the UCD Research Repository.

thin soft clay layer with an approximate thickness of 0.2m. The failure occurred within the soft clay layer underlying the peat.

A second, and notably smaller peat failure, also occurred at the Garvagh Glebe site while constructing an access road along a ridge line in the southwest of the site; and this failure occurred on relatively thin peat on steep ground.

The key characteristics of the major failure at Garvagh Glebe were listed by Fehily Timoney & Company as:

1. The site is located at the head of a watercourse/natural drainage route;
2. Peat thicknesses are of up to 6.3m;
3. There is a layer of weak clay below peat; and,
4. The undrained shear strengths of the peat ranged from 2 to 4kPa.

The report noted that there is a soft silt/clay deposit underlying the peat at Croagh; and the deposit recorded on the Croagh site, based on descriptions from trial pits, appears similar to the deposit present on the Garvagh Glebe site. However, the presence of an underlying soft deposit is quite common on peatland sites and some of these sites have been successfully developed in the past.

The report goes on to state that, in comparison to the location where the major failure occurred on the Garvagh Glebe site, the proposed development footprint at the Croagh site has significantly less likelihood of a similar failure, for the following reasons:

1. The heads of watercourse/natural drainage routes have been avoided;
2. There is a reduced peat thicknesses at the Croagh site (the deeper peat deposits on the Croagh site are located in areas of flat terrain);
3. Relatively higher strength clay exists below the peat at the Croagh site; and,
4. Higher undrained shear strengths in peat (5 to 45kPa with an average of 18kPa) have been recorded on the Croagh wind farm site.

Our observations are that the proposed Croagh wind farm site would **not** have a significantly less likelihood of a peat slippage or failure similar to that which occurred at Garvagh Glebe, for the following reasons:

1. The heads of watercourses and natural drainage routes have **not** been avoided, as is clear from figure 4-3 on page 16 of Appendix 8-1 of the EIAR; this figure shows that turbines T01, T03 and T10 would be located very close to the headwaters of streams; while the area of the 2016 peat slide is very close to the location of turbine T05 (see copy of **Figure 4-3** below);

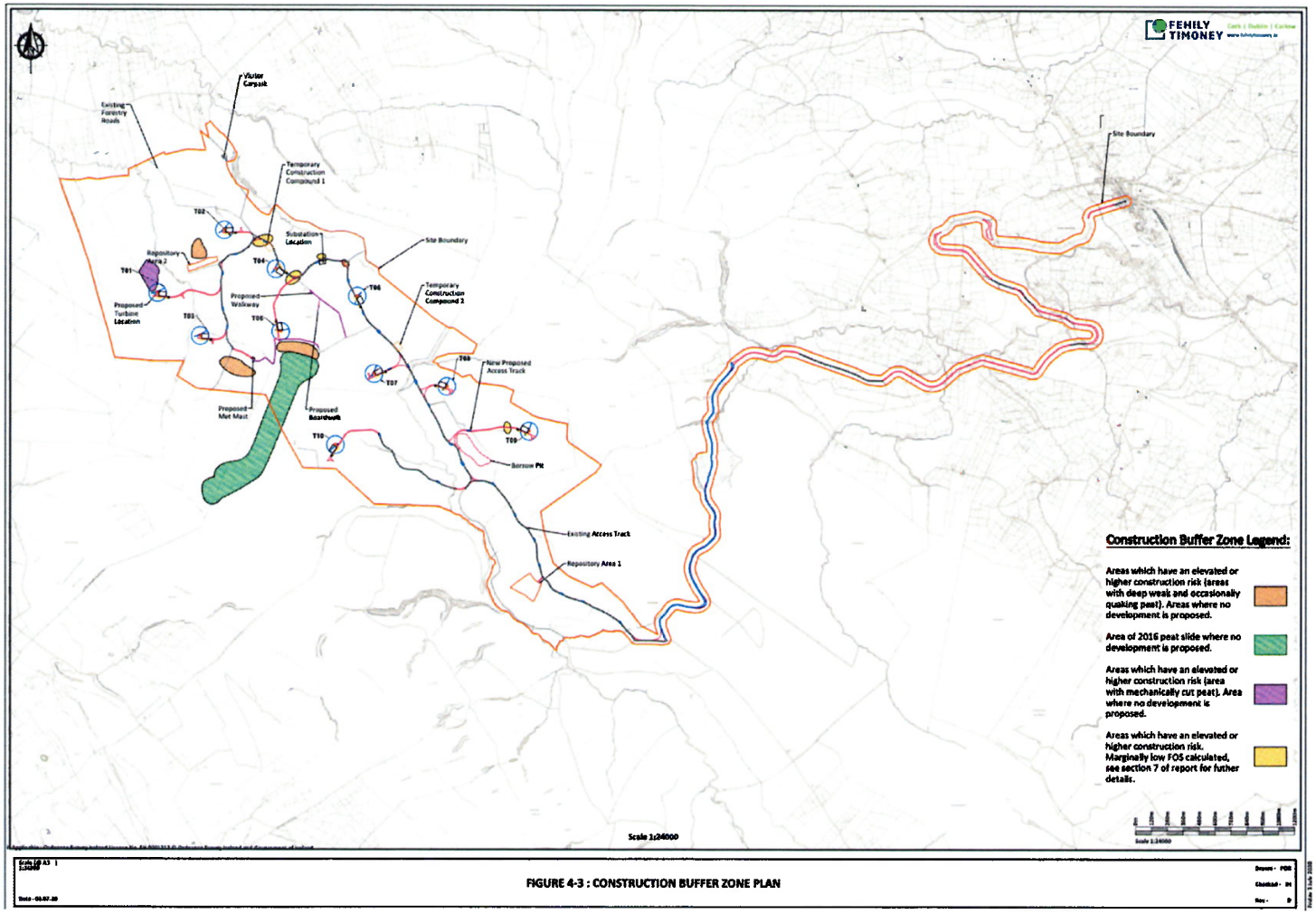


Figure 3.3.1 Copy of Figure 4-3, from page 16 of Appendix 8-1 of the applicant's EIAR, showing area where a peat slide occurred in 2016, close to proposed locations of turbines T01, T03 and T10.

Section 3.3 Continued

2. Even though the report states that there is a reduced peat thickness at the Croagh site, with some deeper areas of peat, this information does not conclusively show that a peat slippage would not occur in the future;

3. Even though the report states that higher undrained shear strengths of the undisturbed peat have been recorded on the Croagh wind farm site, there are some areas with shear strengths as low as 5kPa, very close to the upper range of the shear strength of 4kPa in the undrained peat at Garvagh Glebe; and that leaves little or no margin of safety;

4. The wind turbines on the Garvagh Glebe site are 70 metres high, while the proposed turbines at the Croagh wind farm site would have a height of up to 170 metres; and,

5. It is obvious that the amount of excavation, construction of the turbine power bases, and the specifications of the road is required to carry these much larger and heavier towers and turbines, would involve much higher heavy loadings on the peat and the underlying clay layer, and it cannot therefore be stated that the proposed wind farm at the Croagh site has less likelihood of a peat slippage or failure similar to which occurred at Garvagh Glebe; and,

6. It is therefore our observation that the Croagh windfarm site is subject to a level of risk of peat slippage or peat failure no less than the Garvagh Glebe site, and possibly even greater because of the larger turbines involved, i.e., the proposed site is inherently unsuitable.

3.4 Site Drainage and Run-off

In addition to the points raised in section 3.2 above, it is our further observation that the applicant's proposals for the control of surface water run-off from the subject site during construction and operation of the proposed wind farm, and prevention of adverse impacts of drainage from the site, are not sufficiently robust to eliminate "downstream" damage to vulnerable and sensitive habitats.

While measures proposed in the applicant's further information response seem to be very comprehensive and detailed, we would point out that constructing the access roads, turbine bases, work areas, crane pads, hard-standings and other facilities will require substantial removal of vegetation cover and the excavation of peat and mineral subsoil, giving rise to potential sources of sediment-laden water, including drainage and seepage water resulting from road and turbine base excavation.

Other sources of sediment would include stockpiled excavated material and the erosion of sediment from site drainage channels; and all of these activities could

result in the release of suspended solids to surface waters, leading to increased turbidity which in turn could affect water quality in the local drains and for some distance downstream. Dewatering of excavations and especially borrow pits has the potential to impact on local groundwater levels during the construction phase.

The problems with these engineering solutions is that they depend completely on very good design and construction; and if there are any breaks or accidents, or if the mitigation measures are not constructed exactly to specification, the contents of a settlement pond could be released very quickly, with downstream effects even more damaging than would be caused by the contaminated run-off itself. These types of mitigation measures also depend on the absence of rainfall events which could overwhelm the design capacity of the system (as pointed out above). Overall therefore, while it may be possible to reduce the risk, it is not possible to eliminate it completely, or satisfactorily.

3.5 Peat Slides and Blanket Bog Failures

The applicant's initial review of historical peat slides in the area, though useful at the time, has not been updated, and therefore does not include more recent events, nor the results of recent investigations into the causes and effects of peat slides.

For example, two very recent papers by Dr Alan P. Dykes reported an increasing incidence of peat slides and blanket bog failures, together with the likelihood that their frequency will increase in the near future because of climatic change. His investigation of recent peat landslides in Ireland found that:

> *"The frequency of occurrence of large blanket bog failures appears to have been increasing throughout the last 130 years—although the average remains just below three per decade. This should perhaps be viewed in the context of apparently increasing annual rainfall for Ireland, although there is no significant statistical relationship. For the failures with known dates of occurrence, a higher frequency associated with higher autumn rainfall is clearly indicated, but very heavy summer rainfall following prolonged hot and dry periods — predicted to become a more common scenario — is a recognised risk factor.*
>
> *Three recent peat landslides seem to reinforce known common risk factors for the respective types of failure, in particular the possibility of very large bog flows from very low gradient (< 5°) convex slopes and smaller, probably less mobile bog slides from steeper slopes — although both types can deliver hundreds or thousands of tonnes of polluting peat particles to watercourses and so cause potentially significant economic as well as ecological damage for many kilometres downstream.*

Climate change predictions of warmer, drier summers but with a generally higher frequency of high magnitude rainfall events may be expected to cause more such landslides in the spring or summer than has been the case over the last century. Figure 7a suggests an increasing frequency of these types of failures but this may reflect greater scientific and management interest in recent years with more detailed and complete reporting of events.

The occurrence of three large bog flows and/or bog slides in a single year is exceptional given the average of 0.3 such (reported) events per year over the last 130 years. Two were most likely triggered by high but not exceptional rainfall, and the third appears to have been initiated by a separate head-loaded peat flow associated with construction of a windfarm access road.[3]

Another paper by the same author suggests an increasing probability of peal landslides, with climate change identified as major cause:

"*There is an increasing threat of future peat landslides from several influences. Firstly, climate change scenarios for western Britain and Ireland are consistently predicting warmer, drier summers and wetter winters. More frequent storms bringing high intensity rainfall can be expected to result in continuing occurrences of blanket bog failures of various types and sizes. More frequent and intense summer desiccation with associated cracking of the surface peat will make the peatlands more susceptible to failure due to the adverse hydrological effects of subsequent heavy rainfall*".[4]

These two papers clearly identify a higher level of risk then suggested in the applicant's further information; and therefore we must conclude that there is significant uncertainty in the risk assessment of peat slides, the probability of which may increase as a consequence of constructing the windfarm in the proposed location.

[3] Alan P. Dykes, 2022. Landslide investigations during pandemic restrictions: initial assessment of recent peat landslides in Ireland. *Landslides* (2022) 19: 515-525. Published online: 30 December 2021.

[4] Alan P Dykes, 2011. Natural and anthropogenic causes of peat instability and landslides. Pristine Mire Landscapes, Proceedings of the 13th International Peat Congress, Tullamore, 2008.

3.6 Impacts of Climate Change as a Risk Factor

One of the most significant issues which An Bord Pleanála has raised in the request for further information is that the proposed peat "*repositories would be effective in providing for the permanent retention of peat and other materials*". It is our understanding that the term "*permanent*" means many decades, perhaps four or five decades at least, and maybe more; in the case of an engineering structure, or a building for example, "permanent" is normally taken to mean at least 100 years!

It is therefore essential that the applicant's EIAR and further information response should have considered the impacts of climate change over a longer term, and not merely for the next 10 or 20 years.

In particular, we would suggest that the applicant should have considered in more detail the effects of extreme rainfall events likely to occur in the area, including the 1-hour, 12-hour, 24-hour and 48-hour events with recurrence intervals of 10, 25, 50 and 100 years. This is the standard method used for determining extreme rainfall volumes, and these are the rainfall events that typically cause most flooding and damage.

It is also appropriate to point out that Met Éireann's rainfall projections for the next few decades show that the frequency of heavy precipitation events will increase by approximately 20% during the winter and autumn months.[5]

An IPCC report on regional climate projections states that over Northern Europe between 1980-1999 and 2080-2099 the median change in precipitation was a 15% increase for the months of December, January and February, 12% for March, April and May, 2% for June, July and August, and 8% for September, October and November. Relative to the wettest period in 1980-1999 there was a 43% increase in heavy precipitation events in December, January and February.[6]

An assessment from C4I (Community Climate Change Consortium for Ireland), also quoted in Met Éireann's Technical Note 61, states that over Ireland by mid-century there is likely to be:

1. An increase of about 15% in winter rainfall amounts;
2. Drier summers with 20% lower precipitation in some areas, most likely in the east and southeast;
3. A 20% increase in the two-day extreme rainfalls, especially in northern areas and smaller increases in the one-day and five-day extremes; and.

[5] https://www.met.ie/climate/services/rainfall-return-periods

[6] Met Éireann, Technical Note 61: "Estimation of Point Rainfall Frequencies"; D.L. Fitzgerald, October, 2007.

4. More frequent rainfall extremes in autumn.

A more recent research report by the Environmental Protection Agency quotes the Flood Risk Assessment made by the Office of Public Works in 2018, which considered "*the assessment of risk for two potential future scenarios, the Mid-Range Future Scenario – increase in rainfall of 20% and sea level rise of 500 mm (20 inches), and High-End Future Scenario – increase in rainfall of 30% and sea level rise of 1000 mm (40 inches)*".[7]

It is our understanding that the predicted increase in winter precipitation will cause damage to buildings and infrastructure, along with "*drainage capacity unable to cope during periods of intense rainfall" and the risk to water quality*".[8]

All this data would suggest an increase in extreme rainfall events for durations of 24 hours or more, especially in autumn and winter. These predicted increases in rainfall, and especially in the number and frequency of heavy precipitation events, have not been adequately considered by the applicant in any of the reports provided (including the further information response), and it is our observation that within the next decade the proposed mitigation measures to control surface water run-off from the proposed site would be inadequate and easily overwhelmed, as a consequence of climate change.

It is our observation that by failing to take the long-term effects of climate change into account, the applicant further information response has not adequately answered the question set by An Bord Pleanála, namely, can the proposed repositories provide for the permanent storage of peat and other materials without significant risk of adverse environmental impacts.

[7] Enhancing Integration of Disaster Risk and Climate Change Adaptation into Irish Emergency Planning; EPA Research Report No. 419; by Peter Medway, Dug Cubie and Martin Le Tissier; MaREI, the SFI Research Centre for Energy, Climate and Marine, Environmental Research Institute, University College Cork; August 2022.

[8] Built Environment Climate Resilience and Adaptation; EPA Research Report No. 418; by Mark Scott, Louise Burns, Mick Lennon and Oliver Kinnane, School of Architecture, Planning and Environmental Policy, University College Dublin; August 2022; Section 3.4.1, page 27.

3.7 Observations on the Applicant's Reliance on the Wind Energy Guidelines

One of the outstanding issues raised by the planning application for the Croagh Wind Farm, and not fully clarified in any of the further information responses provided by the applicant, is the status of the "*Wind Energy Development Guidelines for Planning Authorities*" (DoEHLG, 2006), commonly referred to as the "2006 Guidelines"

The applicant's EIAR, produced in July 2020, states in section 1.2.1 that:

> "*The 'Wind Energy Development Guidelines are currently the subject of a targeted review. The proposed changes to the assessment of impacts associated with onshore wind energy developments are outlined in the document 'Proposed Revisions to Wind Energy Development Guidelines 2006 – Targeted Review' (December 2013), the 'Review of the Wind Energy Development Guidelines 2006 – Preferred Draft Approach' (June 2017), and the Draft Wind Energy Development Guidelines (December 2019)* [our comment: the "**2019 Draft Guidelines**"]. *A consultation process in relation to the 2019 document concluded on 19 February 2020".*
>
> *"At time of writing, the Draft Guidelines have not yet been adopted, and the relevant guidelines remain those published in 2006. Notwithstanding this, however, due to the timelines associated with the planning process for renewable energy projects, it is possible that a version of the draft guidelines may be finalised during the consideration period for the current proposed development. Towards this end it is anticipated that the Croagh Wind Farm will be capable of adhering to the relevant noise and shadow flicker standards".*

More recent information which we have been able to obtain about the status of the Wind Energy Development Guidelines comes from a Dáil question and answer session on Tuesday, 25 January 2022, when Mr Peter Burke, T.D., Minister of State at the Department of Housing, Local Government and Heritage replied to a question by Mr Denis Naughten, stating that:

> *"My Department is currently undertaking a focused review of the 2006 Wind Energy Development Guidelines. The review is addressing a number of key aspects including noise, setback, shadow flicker, community obligation, community dividend and grid connections.*
>
> *Guidance on the noise aspect is currently being finalised by my Department in conjunction with the Department of Environment, Climate and Communications (DECC), which has primary responsibility for environmental noise matters. Significant work has been undertaken on the noise elements and the two Departments recently met to discuss new*

developments in this regard including consideration of the impact of the revised 2030 target to generate up to 80% of our electricity from renewable sources and the need to ensure that proposals regarding the measurement and assessment of noise from wind turbines are fit for purpose. These aspects are currently being considered and further engagement between the Departments is expected imminently. Following this inter-departmental engagement, I will be in a better position to provide an update on the expected publication date of the revised Guidelines, the finalisation of which remains a priority.

It should also be noted that the review and finalisation of the Guidelines has been included as a specific action in the recently published Climate Action Plan.

When finalised, the revised Guidelines will be issued under section 28 of the Planning and Development Act 2000, as amended. Planning authorities and, where applicable, An Bord Pleanála, must have regard to guidelines issued under section 28 in the performance of their functions generally under the Planning Acts. ***In the meantime, the current 2006 Wind Energy Development Guidelines remain in force****"* [our emphasis].

It is our observation that the Minister's reply ignores two problems which have a bearing on the further information response by the applicant, and which must be taken into account by the Board.

Firstly, the original Wind Energy Development Guidelines, issued in 2006, have an "official" status; they are intended to provide planning guidance to the relevant authorities, and we might add that the Government has defended them as an important policy since the time when they were issued. Therefore there is no doubt that the 2006 Guidelines constitute a "policy" within the meaning given in the EU Directive 2001/24/EC on the assessment of the effects of certain plans and programmes on the environment, otherwise known as the Strategic Environmental Directive.

It is also clear, and Board will be aware, that the 2006 Wind Energy Development Guidelines have not been subjected to Strategic Environmental Assessment, and their legality must therefore be in doubt. By allowing these guidelines to remain in force, Ireland is in breach of the EU Strategic Environmental Directive 2001/24/EC (see section 3.8 below).

Secondly, while we understand that the "2019 Draft Guidelines" may have been subjected to Strategic Environmental Assessment, the Minister's reply has made it very clear that these draft guidelines are not yet in force, and the "2006 Guidelines" must be considered and taken into account by An Bord Pleanála when assessing the planning application, the appeals, and the applicant's further information response.

It is therefore our observation and submission to the Board that:

i) When determining the current planning application for the Croagh Wind Farm, the Board should **not** have regard to the 2006 Wind Energy Development Guidelines, even if they remain in force simply because of a failure to bring a revised set of guidelines into force;

ii) The 2006 Wind Energy Development Guidelines are hopelessly out of date, given the increasing size and height of wind turbines, and their environmental impacts, together with the increasing recognition that large-scale onshore wind farms are not the optimum way to increase Ireland's share of renewable energy; and,

iii) Given that the draft Revised Wind Energy Guidelines 2019 have not been formally adopted, and they do not have legal force, the Board should not be bound be them, or use compliance with these guidelines as a basis for granting planning permission for the proposed wind farm.

3.8 Requirement that the Competent Authorities of a Member State must Comply with EU Legislation and Judgments of the CJEU – Case C 24/19

The fact that the 2006 Wind Energy Development Guidelines are considered to be those in force (as stated by the Minister), but which have not been subjected to Strategic Environmental Assessment, may appear an obscure matter, but in fact there are serious consequences for An Bord Pleanála if the 2006 Wind Energy Development Guidelines are relied upon by the Board.

These consequences follow from the judgment in case **C 24/19**, in which the Court of Justice of the European Union, responded to a request for a preliminary ruling on the interpretation of Articles 2(a) and 3(2)(a) of Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment – the Strategic Environmental Assessment (SEA) (OJ 2001 L 197, p. 30).[9]

The background to this important and relevant case was that, on 30 November 2016, following a procedure that began in 2011, the Flanders Department of Land Planning (Belgium) granted development consent for the installation and operation of five wind turbines. The consent was subject to compliance with certain conditions laid down by: (i) an order of the Flemish Government (the 'Order'); and, (ii) a circular on the '*Assessment framework and conditions for the installation of wind turbines*' (the 'Circular'). It will be immediately obvious that

[9] Judgment of the Court (Grand Chamber), delivered 25 June 2020, in Case C-24/19, *A and Others against Gewestelijke stedenbouwkundige ambtenaar van het departement Ruimte Vlaanderen, afdeling Oost-Vlaanderen*

this 'Circular' was in some respects similar to Ireland's Wind Energy Development Guidelines.

The applicants in the case, known only as "***A and Others***", in their capacity as residents near the site proposed for the wind farm project, brought an action before the Council for Consent Disputes (equivalent to An Bord Pleanála) seeking the annulment of the development consent. In support of their action, they submitted that the Order and the Circular, based on which the consent was granted, infringed Article 2(a) and Article 3(2)(a) of Directive 2001/42, as neither the Order nor the Circular had been subject to an environmental assessment, contrary to the provisions of the Directive. Against this background, the Council for Consent Disputes decided to stay the proceedings and to refer questions for a preliminary ruling to the CJEU.

Essentially, the local residents in Belgium challenged a wind farm consisting of five turbines which had been permitted, based on conditions outlined in a regional government Order from 2006 and a Circular on the Assessment framework and conditions for the installation of wind turbines. They argued that the consent granted should be annulled on the basis that the Order and the Circular should have been preceded by a SEA, and were therefore in breach of Article 2(a) and Article 3(2)(a) of Directive 2001/42 on the assessment of the effects of certain plans and programs on the environment (the SEA Directive).

At issue was the interpretation of the above Articles. Article 2(a) defines plans and program as: "*plans and program ... - which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and - which are required by legislative, regulatory or administrative provisions*"

Article 3(2)(a) provides that an environmental assessment shall be carried out for all plans and program:

> *"(a) which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC"*

The Court of Justice of the European Union (CJEU) had to consider whether the Order and the Circular amounted to a plan or programme, and also the implications for a development such as the proposed wind farm, in the event that the Court found that there was a violation of EU law by a Member State.

3.8.1 What Are Considered to be Plans and Programmes Within the Meaning of the Directive

According to established case law (cases C-567/10, C-160/17, and C-321/18), the CJEU considered that, under Article 2(a) of the Directive, the adoption of plans or programmes (in this case the Order and the Circular) does not need to be compulsory. It is sufficient that such plans and programmes are provided for by national legislative or regulatory provisions, which determine which are the competent authorities, and what is the procedure for their adoption.

Therefore, a measure must be regarded as 'required' under Article 2(a) of the SEA Directive where the legal basis of the power to adopt the measure is found in a particular national provision, even if the adoption of that measure is not mandatory. Therefore, in the case discussed, the definitions of plans and programmes covers the Order and, subject to verification by the referring court, also covers the Circular.

The CJEU therefore found that the Order and the Circular constituted plans or programmes under the SEA Directive, and it found that a SEA should have been carried out prior to their adoption by the Belgian government in 2006.

3.8.2 The Circumstances Under which an Environmental Assessment Must be Carried Out

Firstly, the Order and the Circular concern the energy sector, which is specifically referred to in Article 3(2)(a) of the Directive as one of the sectors for which an environmental assessment is required.

Secondly, as regards the question of whether the Order and the Circular define the framework for future development consent for projects, as set out by Article 3(2)(a) of the Directive, the CJEU stated the following: According to established case law (cases C-671/16 and C-43/18), the environmental assessment is needed if the measure "*establishes a significant body of criteria and detailed rules for the grant and implementation of one or more projects that are likely to have significant effects on the environment*".

In this regard, the CJEU considered that the concept of a 'significant body of criteria and detailed rules' must be construed qualitatively and not quantitatively. Therefore, in the Belgian case cited, the importance of the requirements laid down by the Order and the Circular – that provide conditions relating to the installation and operation of wind turbines as regards, inter alia, shadow flicker, safety procedures, and noise emissions – indicate that those instruments constitute a framework, which is non-exhaustive, but which is sufficiently significant from a qualitative point of view to require the execution of an environmental assessment.

Both the Order and the Circular contained various provisions in relation to the installation and operation of wind turbines, including measures on shadow flicker, safety, and noise levels.

3.8.3 The Consequences of the CJEU Judgment for the Competent Authorities in a Member State

The Court of Justice outlined the consequences for a Member State and national competent authorities (such as Leitrim or Sligo County Councils, or An Bord Pleanála) of a breach of EU law in the following terms:

a) Member States are "*required to eliminate the unlawful consequences*" of breaches of EU law. Competent national authorities are "*under an obligation to take all the necessary measures, within the sphere of their competence, to remedy the failure to carry out an environmental assessment*" which can involve "*adopting measures to suspend or annul that plan or program*".

b) Only the Court of Justice may, in exceptional cases, temporarily suspend the Application of EU law.

The CJEU concluded that in cases where a SEA is required but is not carried out, **the plan or program, as well as all permissions for projects based on the plan or program, must be annulled**.

In the Belgian case, construction of the wind farm had not yet commenced. The Court of Justice stated that it was clear that the consent must therefore be annulled as such consent was adopted on the basis of the plan or program which "*was itself adopted in breach of the obligation to carry out an environmental assessment*". The Court of Justice also held that where installation of a windfarm project "*has commenced, or is even completed*", the consent granted can be annulled (paragraph 89 of the CJEU Judgment).

3.8.4 The Conditions Under Which A National Provision Breaching EU Law can be Provisionally Maintained in Force

The Court also addressed itself to considering those circumstances in which consent granted for projects would not have to be annulled, and these were stated to be limited to the following two situations:

1. Where there is a risk that the annulment "*could create a legal vacuum that is incompatible with that Member State's obligation to adopt measures to transpose another act of EU law concerning the protection of the environment*"; (paragraph 90 of the CJEU Judgment); or,

2. If the consequences of such annulment were "*a genuine and serious threat of disruption to the electricity supply of the Member State concerned which*

could not be remedied by any other means or alternatives, particularly in the context of the internal market" (paragraph 92 of the CJEU Judgment).

When considering those particular circumstances where a grant of permission or consent would not have to be annulled, the CJEU cited case C-411/17. In Case C-411/17, the Court stated that it was permissible to continue the operation of a large-scale energy plant (two nuclear reactors), where this was necessary for the security of energy supply of the Member State as a whole.

However, in its consideration of case **C 24/19**, the Court held that the cessation of activity of a limited number of wind turbines was not likely to have significant implications for the supply of electricity for the whole of Belgium.

It is our submission that the same criteria apply to the proposed wind farm at Croagh in Counties Leitrim and Sligo; if the planning permission granted by Sligo and Leitrim County Councils were to be annulled, or if An Bord Pleanála refused planning permission for the proposed wind farm, this decision would not be likely to have significant implications for the supply of electricity for the whole of Ireland.

It is therefore our concluding observation that the Board cannot grant permission for the proposed Croagh windfarm, given the judgement of the CJEU case **C 24/19** cited above, and the implications of that judgement.

3.9 Noise and Vibration

In making its request for further information (section 3.1 above), An Bord Pleanála noted that the proposed wind farm development would be located in a low noise environment; there is residual potential for adverse effects arising from low frequency noise and amplitude modulation; and the Board therefore sought further information from the applicant on how this problem would be mitigated in the event that adverse effects might arise.

In its response to the above request, the applicant stated in a letter dated 08 December 2022 from AWN Consulting to the applicants agent MKO (Appendix 4 of the further information response), that:

1. *"Measures to mitigate low-frequency noise at noise sensitive locations will be implemented through operational controls for the relevant turbine type, which may include turbine curtailment and/or stopping turbines under specific operational conditions"*;

2. *"Low-frequency noise issues due to the operation of the proposed wind turbines are not expected at the noise sensitive locations"*;

3. *"Neither the EIA or nor the FI documents state that there is a residual potential for adverse effects arising from amplitude modulation"*;

4. *"In the event of a confirmed complaint which indicates potential amplitude modulation associated with turban operation, the operator will employ a qualified acoustic consultant to assess the level of AM"*; and,

5. *"These measures to mitigate amplitude modulation, if required, would consist of the implementation of operational controls for the relevant turban type, including turbine curtail meant and/or stopping turbines on the specific operational conditions".*

It is our observation that these proposed measures are not satisfactory, for the reason that the existing smaller wind farm at Garvagh Glebe continues to produce adverse effects on residential amenity because of the near continuous noise produced by the turbines.

In this context, we might remind the Board that the World Health Organisation night noise guidelines are 40db; while the Irish DoEHLG guidelines are 43db at night; and it must be remembered that an increase of just 3db represents a doubling of noise pressure.

Wind turbine developers and planning authorities also ignore infrasound – sound levels lower than normal human frequency thresholds – despite evidence that our inner ears do detect these infrasound's and at much lower intensities than audible sounds. Infrasound has been linked with effects on short-term memory, concentration, maths, reading, multi-tasking, and with balance disturbances. Infrasound also carries over longer distances, some studies recording it more than 10km from the source.

Recent reports of noise impacts from wind farms comment on the lack of studies on sound levels near wind turbines, and there are suggestions for a minimum acoustic safety distance to be defined. Reports also refer to health complaints caused by stress induced by exposure to noise, with resulting depression, anxiety, and headaches.

Construction work would produce noise and pollution, dust, exhaust from vehicles and construction machinery, and other emissions. During construction, traffic on the local road would increase. Much of the increased traffic will be HGVs and plant machinery. These vehicles will repeatedly be passing close to busy junctions, schools and local housing. This will cause disruption and danger to the inhabitants and the potential for accidents.

Peace and quiet is an important factor for people when buying a home, with one in five prospective home buyers rating it as the most important consideration when choosing where they will buy.

The turbines constantly produce noise when in motion. This interferes with people's ability to sleep. The rotating turbines produce an audible noise like a swish and a thump sound, together with an inaudible but deeply troubling (felt)

sounds that penetrate walls, roofs and loft spaces causing health issues such including stress, sleep deprivation, headaches, high blood pressure, anxiety, tinnitus and depression.

Members of the Wind Aware Dromahair Community Group and other local residents are very concerned about the noise to which they and their families will be exposed. Wind turbines produce different types of noise, normal noise from the swoosh of the blades and perhaps the most damaging, low frequency noise and infrasound.

A report from the prestigious French Académie Nationale De Médecine in Paris recommended that any construction of wind turbines of this size and indeed much smaller, within 1.5km of homes should be suspended immediately pending further research into the ill-effects of noise on human health. The report deplores the lack of studies on sound levels near wind turbines and calls for a minimum acoustic safety distance to be defined. There have been several other reports also outlining the health complaints linked to the stress the noise induces (depression, anxiety, headaches).

Residents of the area living in close proximity to the development have serious concerns about the level of noise that will be generated by the proposed wind turbines. Qualitative data from people living near turbines elsewhere clearly indicates that noise from turbines is a serious problem. The disturbance caused by turbine-generated infra-sound was researched by Dr. Alun Evans of Queens University Belfast, and most recently by Professor Marianna Alves-Pereira. The problem of infra-sound is a serious concern for community members and their families. Sleep disturbance is not conducive to a healthy lifestyle.

The turbines would create noise by day and night, worsening during wet weather, thereby reducing the peaceful character of the area to the detriment of local residents and visitors to the area with possible adverse health effects.

In a personal communication to the members of Wind Aware Dromahair, Professor Alun Evans, Centre for Public Health, Institute of Clinical Science, Queen's University of Belfast, stated that in his opinion, noise from windfarms remains a serious because of ill-health among significant numbers of people living close to these installations. A paper published in 2017 by Professor Evans is regarded as one of the key reviews of the health impacts of windfarm noise.[10]

In his personal communication, Professor Evans says that:

> *"The presence of industrial wind farms in quiet rural areas is guaranteed to disrupt sleep, in a sizeable minority of people, at least. The main price paid is in terms of cardiovascular disease. A recent editorial in the British*

[10] Evans, A. (2017) Environmental Noise Pollution: Has Public Health Become too Utilitarian? Open Journal of Social Sciences, 5, 80-107.

Medical Journal warned, in the strongest terms, that regularly sleeping less than seven hours a night is a disaster for our mental and physical wellbeing. It continued: "As a culture, we in rich countries are in the throes of what Culpin calls "an epidemic of sleeplessness," increasing our risk of depression, anxiety, dementia, stroke, heart disease, obesity, cancer, diabetes, and road traffic crashes."

Moreover, another recent paper observed: "Observational and translational studies indicate that especially night-time noise increases levels of stress hormones and vascular oxidative stress, which may lead to endothelial dysfunction and arterial hypertension. There has also been a slew of publications lately relating environmental noise pollution to accelerated atherosclerosis in humans."

Australia's Administrative Appeals Tribunal (AAT) has declared that the "...noise annoyance" caused by wind turbine generated low-frequency noise and infrasound "is a plausible pathway to disease" based on the "established association between noise annoyance and some diseases, including hypertension and cardiovascular disease, possibly mediated in part by disturbed sleep and/or psychological stress/distress". The AAT also held that "The dB(A) weighting system is not designed to measure [wind turbine noise], and is not an appropriate way of measuring it." (The dB(A) weighting system is the basis of every wind turbine noise guideline in operation around the world.)"

There is also important brain research identifying parts of the brain, the Insula and the Amygdala, as being involved in noise sensitivity and how the body reacts to external stimuli, emotionally, physiologically, and so on. This helps us to understand why some individuals are badly affected while others are not".

These observations by Professor Alun Evans, a noted international authority on environmental noise and public health, may help to explain why some individuals living in the vicinity of wind farms experience severe health effects, while others do not.

Another problem not addressed in the applicant's further information is the generally well-known fact that infra-sound travels over long distances, without any significant attenuation.

For example, a study carried out in Satakunta and Northern Ostrobothnia in Finland showed that the damage caused by infrasound from wind power plants will only decrease significantly more than 15km away from the wind turbines. This study was undertaken after it had been noticed from experience that after the

construction of wind power plants, usually within a few months, people in the surrounding area have begun to get a wide range of symptoms.[11]

A more recent review paper on the health effects of wind turbine sound[12] noted that, even though wind turbine noise is modest when compared to other sources such as transportation (road, rail and air traffic) or industry, it is nevertheless, even at equal sound levels, experienced as more annoying than that of many other sources. Living near a wind turbine or hearing the noise created by wind turbines can lead to chronic annoyance among residents; and this may be a serious problem for many residents.

For other health effects such as sleep disturbance, insomnia or mental health effects, the evidence is inconsistent or insufficient. There is no indication that the low-frequency component has other effects on residents other than normal sound nor that infrasound well below the hearing threshold can have any effect. The level and amplitude modulation of all wind turbine sounds are the main causes for increased annoyance, rather than low-frequency sound or infrasound.

The review paper suggested that the evidence that sleep disturbance caused by the proximity of wind turbines is associated more with the effects of annoyance rather than the wind turbine sound above a certain level. However, new evidence showed an association between total annoyance and health complaints, but the authors considered that firm conclusions could not be drawn from this evidence.

The review paper also concluded that the relevance of other factors such as participation in the planning process, procedural justice, feelings of fairness and balance of costs and benefits of a wind farm is supported by current evidence. As far as the Croagh Wind Farm is concerned, these are quite important comments; as it will be obvious from the statements made by residents that participation in the planning process has not been easy for them, public consultation by the windfarm applicant has been negligible, there is a complete absence of procedural justice, the system is considered to be very unfair and weighted against local residents, and the balance of costs and benefits from the windfarm are strongly skewed in favour of the developer (and, in some cases, the owner of the land on which the windfarm may be located).

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[11] The study was carried out by the Finnish Association for Environmental Health (SYTe) in the spring 2016. Completed translation of the original text: SYTe (2019). "Pilottitutkimus osoittaa infraäänihaitan vähenevän merkittävästi vasta yli 15 kilometrin päässä tuulivoimaloista." 2016. Available at:

https://syte.fi/2019/01/10/pilottitutkimus-osoittaa-infraaaanihaitan-vahenevan-merkittavasti-vasta-yli-15-kilometrin- paassa-tuulivoimaloista/

[12] VanKamp,I.; vandenBerg, F. Health Effects Related to Wind Turbine Sound: An Update. Int. J. Environ. Res. Public Health 2021, 18, 9133. https://doi.org/10.3390/ijerph18179133

It should be clear that the scale of adverse health impacts of windfarm noise would be more serious in a location such as that proposed for the Croagh Wind Farm, where the planning application has resulted in many objections and appeals to the Board.

It is our observation that the Board must take these issues into account, and should not consider solely the simplistic view that the only relevant evidence is that provided by the noise predictions submitted by the applicant.

4. CONCLUDING OBSERVATIONS

1. With the exception of the computer modelling, there is no additional on-site information or data presented in the further information; all of the ground data used in the current further information response are taken from earlier reports presented with the applicants EIAR (2020) or in the further information response submitted in 2021;

2. It is recognised that peat stability, drainage of the site, and the control of surface water run-off are some of the most difficult issues facing the applicant; given the nature of the site; and it is our observation that these difficulties are a strong indication of the inherent unsuitability of the site;

3. The applicant has taken the risk of relying on older information on peat slides, and thereby failed to take into account more recent investigations of peat slides and other evidence of the instability of peat when disturbed;

4. The applicant's proposals for the control of surface water run-off from the subject site during construction and operation of the proposed wind farm, and prevention of adverse impacts of drainage from the site, cannot be considered "fail-safe", nor are they sufficiently robust to eliminate "downstream" damage to vulnerable and sensitive habitats;

5. Contrary to the applicant's assertion, the proposed Croagh wind farm site would **not** have a significantly less likelihood of a peat slippage or failure similar to that which occurred at Garvagh Glebe;

6. There is a higher level of risk of peat slippage than suggested in the applicant's further information; and therefore we must conclude that there is significant uncertainty in the risk assessment of peat slides, the probability of which may increase as a consequence of constructing the windfarm in the proposed location;

7. The predicted increase in rainfall, and especially in the number and frequency of heavy precipitation events, primarily caused by observed and predicted changes in the Earth's climate, have not been adequately

considered by the applicant in any of the reports provided (including the further information response);

8. The proposed mitigation measures to control surface water run-off from the proposed site would be inadequate and easily overwhelmed, as a consequence of climate change;

9. By failing to take the long-term effects of climate change into account, the applicant's further information response has not adequately answered the question set by An Bord Pleanála, namely, can the proposed repositories provide for the permanent storage of peat and other materials without significant risk of adverse environmental impacts;

10. The 2006 Wind Energy Development Guidelines have **not** been subjected to Strategic Environmental Assessment, and their legality must therefore be in serious doubt;

11. By allowing the 2006 Wind Energy Development Guidelines to remain in force, Ireland is in breach of the EU Strategic Environmental Directive 2001/24/EC;

12. When determining the current planning application for the Croagh Wind Farm, the Board should not have regard to the 2006 Wind Energy Development Guidelines, even if they remain in force simply because of a failure to bring a revised set of guidelines into effect;

13. The 2006 Wind Energy Development Guidelines are hopelessly out of date, given the increasing size and height of wind turbines, and their environmental impacts, together with the increasing recognition that large-scale onshore wind farms are not the optimum way to increase Ireland's share of renewable energy;

14. Given that the draft Revised Wind Energy Guidelines 2019 have not been formally adopted, and they do not have legal force, the Board should not be bound be them, or use compliance with these guidelines as a basis for granting planning permission for the proposed wind farm;

15. The Board cannot grant permission for the proposed Croagh windfarm, given the judgement of the CJEU case C 24/19 cited in our observations, and the implications of that judgement;

16 The CJEU concluded that in cases where a Strategic Environmental Assessment is required, but has not been carried out, then the plan or programme, as well as all permissions for projects based on the plan or programme, must be annulled; i.e., planning permissions previously given must be cancelled or withdrawn;

17. A problem not addressed in the applicant's further information is the fact that infra-sound travels over long distances, without any significant attenuation;

18. The presence of industrial wind farms in quiet rural areas is guaranteed to disrupt sleep, in a sizeable minority of people, at least; and any significant amount of sleep disturbance is a disaster for peoples' mental and physical wellbeing;

19. Sleep disturbance caused by the proximity of wind turbines is associated with the effects of annoyance caused by wind turbine sound, more than the effects of the sound itself; but new evidence shows an association between total annoyance and health complaints;

20. Recent brain research is leading towards a greater understanding of why some individuals are badly affected by wind turbine noise, while others are not;

21. The applicant's proposed measures to mitigate the adverse effects of wind turbine noise on public health are not satisfactory; given the locally reliable information and evidence that the existing smaller wind farm at Garvagh Glebe continues to produce adverse effects on residential amenity because of the near continuous noise produced by the turbines;

22. Other issues relevant to the Croagh Wind Farm, such as peoples' difficulties with participating in the planning process, the perceived absence of procedural justice, feelings of unfairness and the lack of balance of costs and benefits of the proposed wind farm, are factors which contribute to the reported adverse health effects and annoyance caused by wind turbine noise; and,

23. These social factors must not be ignored by the Board when it makes its decision on the planning application.

We therefore urge the Board to refuse planning permission for the proposed wind farm.

Jack O'Sullivan

Environmental Management Services

31 January 2023