

From: [Teresa.Casey](#)
To: [SIDS](#)
Subject: Planning case 320705 – FuturEnergy Knockshanvo
Date: Wednesday 5 August 2026 14:18:38
Attachments: [Teresa OConnell response to Knockshanvo Response F reports July 2026.doc](#)

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To whom it may concern,

Please find my observations attached in relation to the responses received for the Knockshanvo windfarm, case 320705.

I would be grateful if you could let me know that you have received this and that it will be submitted as part of the review of Knockshanvo windfarm.

Many thanks,
Teresa

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Teresa O'Connell

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4th August 2026

Re: Planning case PA03.320705 – FuturEnergy Knockshanvo Designated Activity Company

I would like to bring the following observations to the Boards attention in relation to the responses received for the proposed Knockshanvo Windfarm planning application:

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1. Executive Summary

This submission responds to the Further Information and Response F material submitted in support of the proposed Knockshanvo Wind Farm. Having reviewed the Applicant's responses and the associated technical material, I do not consider that the Further Information resolves the principal concerns previously raised regarding cumulative environmental effects, residential amenity, Hen Harrier, hydrology, private water supplies, shadow flicker, noise, habitat loss, biodiversity, landscape character and project splitting.

The central concern is not the absence of mitigation measures. The central concern is that the Applicant has not transparently demonstrated, through a clear and independently verifiable evidential pathway, that the predicted impacts can be avoided, reduced or managed to an acceptable level.

In many instances, the conclusions presented remain dependent upon assumptions, modelling outputs, future management, monitoring, operational controls, compensation proposals or habitat enhancement measures. These do not, in themselves, demonstrate that the impacts have been fully identified, quantified, avoided or controlled.

A recurring issue throughout the Applicant's material is the compartmentalised treatment of environmental effects. Residents, habitats, water resources, wildlife and landscape receptors experience the combined effect of development on the ground. The Commission is therefore requested to consider the cumulative outcome of Knockshanvo together with Oatfield and other existing, permitted and proposed wind energy developments within the wider upland landscape.

The key outstanding concern is that the Applicant has not provided a single transparent demonstration of the environmental condition that would actually be experienced if Knockshanvo, Oatfield, Lackareagh / Kilbane, Fahybeg, Ballycar and Carrownagowan are considered cumulatively across the same receiving environment.

2. Central Position and Approach

This submission is framed on the basis that the Applicant has responded to many of the topics raised. The issue is not simply whether a response was provided. The issue is whether the response demonstrates, with sufficient transparency and evidential support, that the conclusion relied upon by the Applicant is robust.

The repeated unresolved issue is that many conclusions are asserted rather than demonstrated. In particular, the Applicant relies upon mitigation and future management as proof of acceptability, without first transparently demonstrating the full extent of the impact requiring mitigation.

The planning question for the Commission is therefore whether the Applicant has demonstrated an acceptable residual impact after considering cumulative effects, receptor-specific evidence, ecological functionality, hydrological pathways and residential amenity as they would be experienced on the ground.

3. Hen Harrier Habitat Displacement, Compensation/Enhancement, Forestry-Cycle Effects, Cumulative Impacts and Gortacullin Bog NHA

The material presented does not transparently demonstrate that the proposed compensation and enhancement measures are proportionate to the full functional Hen Harrier habitat loss arising from the proposed Knockshanvo Wind Farm, either alone or cumulatively with the proposed Oatfield Wind Farm.

The Applicant states that "near a turbine" was defined as within 500 m for a cumulative GIS exercise, that this 500 m distance was selected because Pearce-Higgins et al. identified significant avoidance of turbines between 250 m and 500 m, and that, in the specific case of Hen Harrier, a 500 m radius is considered highly conservative because Hen Harrier have the potential to experience significant avoidance to a distance of 250 m.

The habitat-loss conclusions presented are materially dependent upon the displacement assumptions selected. However, the assessment does not transparently demonstrate how the 250 m complete-displacement assumption, the wider 250 m to 500 m reduced-use zone, forestry-cycle habitat variability, modern turbine scale, compensation and enhancement lands, and cumulative Knockshanvo/Oatfield effects have been incorporated into the final habitat-loss balance. The evidential pathway linking these assumptions to the assessment's conclusions is therefore not fully apparent from the material presented.

The assessment does not transparently demonstrate the quantity of functionally suitable Hen Harrier habitat available prior to the application of displacement assumptions, nor the quantity remaining following application of those assumptions. As a consequence, the relationship between habitat availability, displacement and habitat-loss conclusions is not clearly demonstrated.

A further uncertainty arises in relation to the assessment's conclusion that there is no potential impact on Hen Harrier populations associated with nearby Special Protection Areas. The Applicant's assessment records Hen Harrier use of the Wind Farm Site and identifies displacement-related loss of foraging habitat, yet the SPA conclusion appears to rely on a distance-based screening approach without transparently demonstrating the GIS measurement basis for that distance or whether the functional displacement footprint of the development has been included. Where displacement effects extend beyond the physical turbine or infrastructure footprint, the relevant ecological footprint is wider than the mapped development footprint. The assessment should therefore demonstrate whether the stated SPA separation distance has been measured to the nearest site boundary, nearest turbine, nearest associated infrastructure, or the full Hen Harrier displacement footprint, and should explain how Irish Hen Harrier telemetry and wind-farm research have been considered before excluding functional linkage.

The assessment does not explain whether more recent Irish telemetry-based Hen Harrier research has been considered in support of the conclusion that SPA connectivity can be excluded. Irish wind-farm research has used GPS-tagged Hen Harriers to investigate actual movement patterns and foraging behaviour. The assessment does not identify whether any Irish telemetry-derived foraging-distance information was reviewed, nor does it explain why a fixed distance threshold is considered sufficient to exclude functional linkage where Irish research has investigated actual movement ecology.

Irish telemetry-based research has examined Hen Harrier movement behaviour and foraging ecology in an Irish wind-farm context. The assessment does not identify whether findings from that body of work were considered when concluding that functional linkage with nearby SPA populations could be excluded. It has been suggested in Irish planning assessments and submissions that telemetry-derived Hen Harrier foraging distances in Ireland may extend beyond the generic 10 km values commonly referenced in screening assessments. The assessment does not explain whether any Irish telemetry-derived estimates of Hen Harrier ranging behaviour were reviewed when concluding that a site approximately 11 km from the Slieve Aughty Mountains SPA could be excluded from further consideration on connectivity grounds.

Consequently, the basis upon which the adequacy of the proposed compensation, enhancement and habitat-management measures has been evaluated against the full extent of functional Hen Harrier habitat loss is not transparently demonstrated within the assessment.

Hen Harrier Habitat-Use Context

The ornithology material records that Hen Harrier were observed regularly commuting over the Wind Farm Site and occasionally hunting within the Wind Farm Site. The material further records that the majority of foraging flights occurred within open habitats to the north of, or encircled by, the Wind Farm Site, whereas only a small proportion of observed flights occurred within the mature forestry that comprises most of the Wind Farm Site.

This evidence demonstrates that the assessment extends beyond the direct footprint of turbine foundations, hardstands and associated infrastructure. The ornithology data identify regular commuting activity and use of open habitats within the wider landscape surrounding the proposed development. Functional habitat availability, landscape connectivity, open habitat, peatland and wet grassland habitats, forestry-stage suitability, displacement effects and cumulative interactions therefore form part of the basis upon which habitat-loss conclusions are derived.

The conclusions regarding Hen Harrier habitat use, flight activity and habitat availability are dependent upon the underlying vantage point survey dataset. While the Applicant has responded to concerns regarding survey coverage, their response material does not transparently demonstrate the extent to which survey visibility constraints, observer coverage limitations or differences between individual vantage point

datasets may influence interpretation of flight activity across the wider landscape. The assessment therefore does not fully demonstrate the degree of confidence that can be attached to the recorded distribution of Hen Harrier activity, particularly where conclusions regarding habitat use, displacement and collision risk depend upon observations collected from a limited number of fixed observation locations.

The assessment relies upon vantage point observations to characterise Hen Harrier use of the wider landscape. However, the Applicant's application does not demonstrate the proportion of the wider foraging landscape that was observable from the survey network at any one time, nor does it quantify the potential influence of topography, vegetation cover, survey distance and observer visibility on the probability of detecting low-level Hen Harrier movements. Accordingly, the completeness of the flight activity dataset cannot be independently verified from the material presented.

The assessment records that only a small proportion of observed Hen Harrier activity occurred within mature forestry. However, the assessment does not transparently demonstrate whether detection probability within forested areas differed from that within open habitats. Where survey visibility is constrained by topography, forestry cover, vegetation structure or observer location, observed activity levels may not necessarily represent actual activity levels. Accordingly, the assessment does not demonstrate that lower recorded activity within forestry habitats reflects lower ecological use rather than lower detectability.

The central issue is therefore not the area physically occupied by infrastructure, but the extent of habitat that remains functionally available to Hen Harrier following the application of displacement assumptions. The assessment's conclusions on habitat availability rely upon assumptions relating to displacement, habitat suitability and habitat use across the wider landscape.

However, the assessment does not transparently demonstrate the extent of habitat that remains functionally available to Hen Harrier following the application of those displacement assumptions. Nor does it clearly demonstrate how habitat availability has been quantified once the assumed 250 m complete-displacement zone and the wider 250 m to 500 m reduced-use zone have been taken into account.

The assessment further does not transparently demonstrate the quantity of functionally suitable Hen Harrier habitat available prior to the application of displacement assumptions, nor the quantity remaining following their application. As a consequence, the relationship between habitat availability, displacement and the resulting habitat-loss conclusions is not clearly demonstrated within the material presented.

Turbine Scale and Applicability of Pearce-Higgins

The displacement approach adopted within the assessment relies upon evidence derived from a study context involving turbines that are materially smaller than those proposed at Knockshanvo. The assessment nevertheless applies a 250 m complete-displacement assumption without transparently demonstrating how differences in turbine scale have been accounted for within the habitat-loss calculation.

The Pearce-Higgins study records an implied/weighted average rotor diameter of approximately 47.2 m, a weighted average hub height of approximately 48.7 m and a weighted average blade-tip height of approximately 72.3 m for the historic study context. The proposed Knockshanvo turbine dimensions are approximately 102.5 m to 110.5 m hub height, 179.5 m to 185 m blade-tip height and 149 m to 163 m rotor diameter.

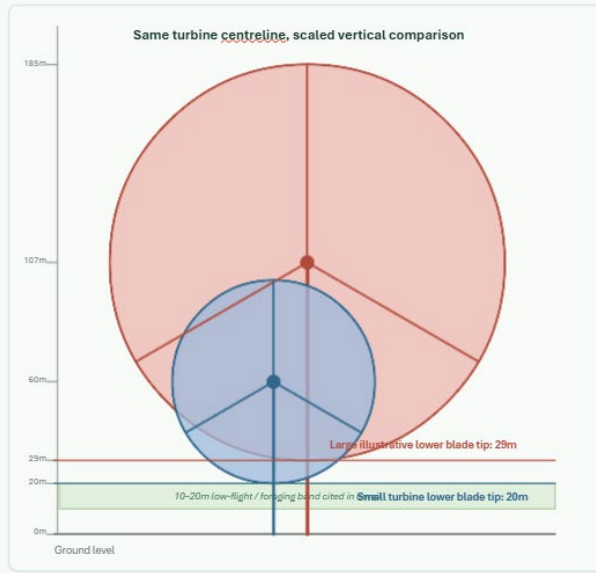
These comparisons demonstrate a substantial difference in scale between the turbines forming the basis of the cited evidence and those proposed within the development. The assessment does not transparently demonstrate how those differences in hub height, blade-tip height, rotor diameter and swept area have been evaluated in the application of displacement assumptions.

The habitat-loss conclusions therefore rely upon displacement assumptions derived from a materially different turbine context, while the evidential basis linking those assumptions to the dimensions of the proposed Knockshanvo turbines is not clearly apparent from the material presented. As a consequence, the relationship between turbine scale and the adopted 250 m complete-displacement assumption is not transparently demonstrated within the assessment.

Parameter	Pearce-Higgins historic turbine context	Proposed Knockshanvo turbine context	Relevance to clarification request
Hub height	Approx. weighted average 48.7 m	Approx. 102.5-110.5 m	Modern turbines are materially taller.
Blade-tip height	Approx. weighted average 72.3 m	Approx. 179.5-185 m	Blade-tip height is materially greater.
Rotor diameter	Approx. 47.2 m	Approx. 149-163 m	Moving rotor plane is materially larger.
Minimum rotor-blade height used in sensitivity	Approx. 20 m	Approx. Range 21m – 36m.	Modern lower blade remains close to the low-level foraging band used in the sensitivity logic.

Small and large turbine overlap: lower blade-tip distance from ground

The comparison keeps the argument grounded in geometry: the larger rotor occupies much greater vertical space while the lower blade tip remains near the low-flight context.



Why this matters

The large rotor disc overlaps the lower-airspace context but occupies a much greater vertical extent. That supports testing whether the 250m full-displacement surrogate is robust for a materially larger moving structure.

Geometry shown on this slide

Small comparator

Tip 100m | hub 60m | blade 40m | lower tip 20m

Large illustrative

Tip 185m | lower tip 29m | implied hub 107m | radius 78m

Sensitivity link

$29\text{m} \div 20\text{m} = 1.45$; $250\text{m} \times 1.45 = 362.5\text{m}$

Use discipline: the 29m figure is an illustrative midpoint, not a fixed turbine-model value. The Knockshanvo envelope can produce a lower rotor point of approximately 21m–36m depending on hub/blade pairing.

Figure 1: Minimum rotor-blade-height comparison. The 29 m / 20 m comparison is used only to explain the 362.5 m sensitivity test. It does not establish a biological threshold.

Indicative rotor swept-area comparison

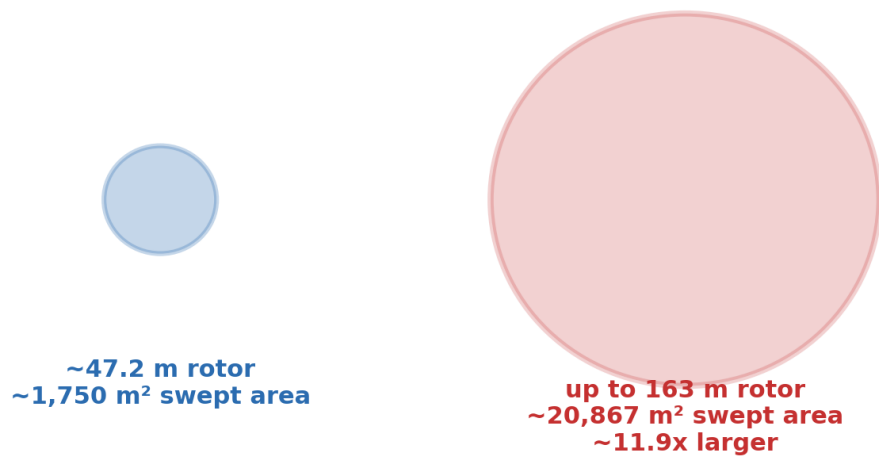


Figure 2: Indicative rotor swept-area comparison. The figure illustrates the substantial difference in turbine scale between the historic study context and the proposed Knockshanvo turbines.

The 250 m / 500 m Displacement Issue

The habitat-loss conclusions are materially dependent upon the displacement assumptions selected. However, the assessment does not transparently demonstrate the basis upon which those assumptions

have been applied, nor does it demonstrate the extent to which alternative interpretations of the cited evidence would influence the resulting habitat-loss calculations.

The Applicant’s response records that a 500 m distance was used in a cumulative GIS exercise because Pearce-Higgins et al. identified significant avoidance between 250 m and 500 m. The response also states that, in the specific case of Hen Harrier, a 500 m radius is considered highly conservative because Hen Harrier have the potential to experience significant avoidance to a distance of 250 m.

The assessment therefore relies upon a 250 m complete-displacement assumption while simultaneously recognising evidence of significant avoidance between 250 m and 500 m. The manner in which the wider reduced-use zone has been incorporated into, excluded from, or weighted within the habitat-loss calculations is not transparently demonstrated within the material presented.

The assessment further does not demonstrate how habitat occurring within the acknowledged 250 m to 500 m avoidance zone contributes to the final habitat-loss figures. As a consequence, the relationship between the cited avoidance evidence, the adopted displacement assumptions and the resulting habitat-loss conclusions is not clearly apparent from the assessment.

The habitat-loss conclusions are therefore dependent upon assumptions regarding complete displacement, reduced habitat use and functional habitat availability, while the evidential pathway linking those assumptions to the final habitat-loss figures is not transparently demonstrated within the material presented.

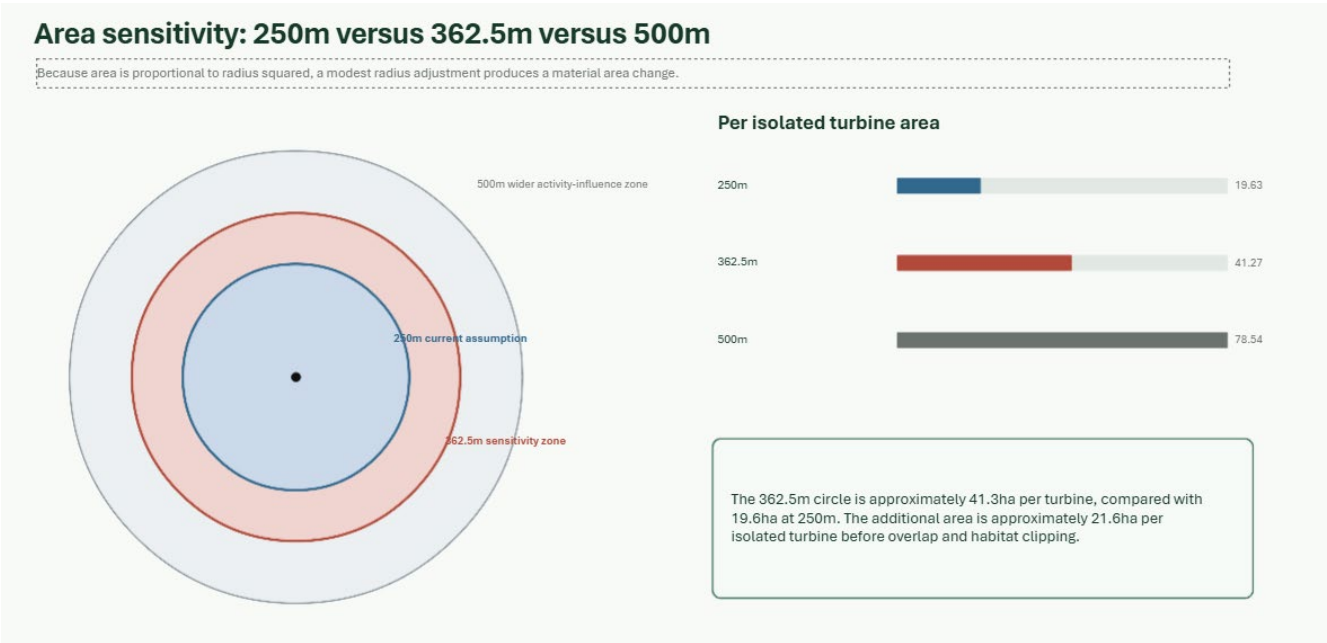


Figure 3: Illustrative displacement-buffer sensitivity. The 362.5 m distance is not advanced as an ecological threshold. It illustrates the materiality of the Applicant’s selected 250 m assumption because buffer area increases with the square of radius.

Sensitivity Calculation

The 362.5 m sensitivity calculation illustrates the extent to which the habitat-loss conclusions are influenced by the displacement radius adopted within the assessment. The calculation is presented as a sensitivity analysis and not as an ecological threshold.

The sensitivity calculation is derived from a comparison of minimum rotor-blade clearance above ground level, using a ratio of 29 m to 20 m ($29/20 = 1.45$). Application of this ratio to the adopted 250 m complete-displacement distance produces an illustrative sensitivity distance of 362.5 m ($250 \text{ m} \times 1.45 = 362.5 \text{ m}$).

The comparison highlights the difference between the rotor geometry of the proposed turbines and the turbine context from which the cited displacement evidence was derived. The resulting sensitivity analysis demonstrates that relatively modest changes in displacement assumptions generate materially different habitat-loss outcomes.

The calculation is based on the standard circular area formula:

$$\text{Area} = \pi r^2 / 10,000$$

The resulting comparison demonstrates that habitat-loss estimates are highly sensitive to the displacement radius applied, with buffer area increasing in proportion to the square of the selected radius.

Radius	Area per turbine	Area for 9 turbines before overlap removal
250 m	19.63 ha	176.71 ha
362.5 m	41.28 ha	371.54 ha
500 m	78.54 ha	706.86 ha

Equivalent Weighted Habitat-Loss Illustration

Scenario	Full-displacement zone	Reduced-use zone to 500 m	Equivalent loss per turbine
Applicant-style 250 m scenario	19.63 ha	58.90 ha x 52.5%	50.56 ha
362.5 m sensitivity scenario	41.28 ha	37.26 ha x 52.5%	60.84 ha

The sensitivity analysis demonstrates that relatively modest changes in the displacement radius produce materially different habitat-loss outcomes. The 362.5 m sensitivity scenario results in an increase of

approximately 10.28 ha per turbine, or 20.3%, before overlap removal and before clipping to suitable Hen Harrier habitat.

Across the nine proposed Knockshanvo turbines, the equivalent weighted habitat-loss calculation increases from 455.04 ha under the 250 m scenario to 547.58 ha under the 362.5 m sensitivity scenario, a difference of approximately 92.54 ha prior to overlap removal and habitat clipping.

The cumulative sensitivity assessment for the combined Knockshanvo and Oatfield developments identifies a difference of approximately 142.5 ha between the Applicant's displacement assumptions and the 362.5 m sensitivity scenario. These results demonstrate the extent to which habitat-loss outcomes are influenced by the displacement assumptions adopted within the assessment and illustrate the material effect that alternative, but plausible, displacement assumptions have on the calculation of functional habitat loss.

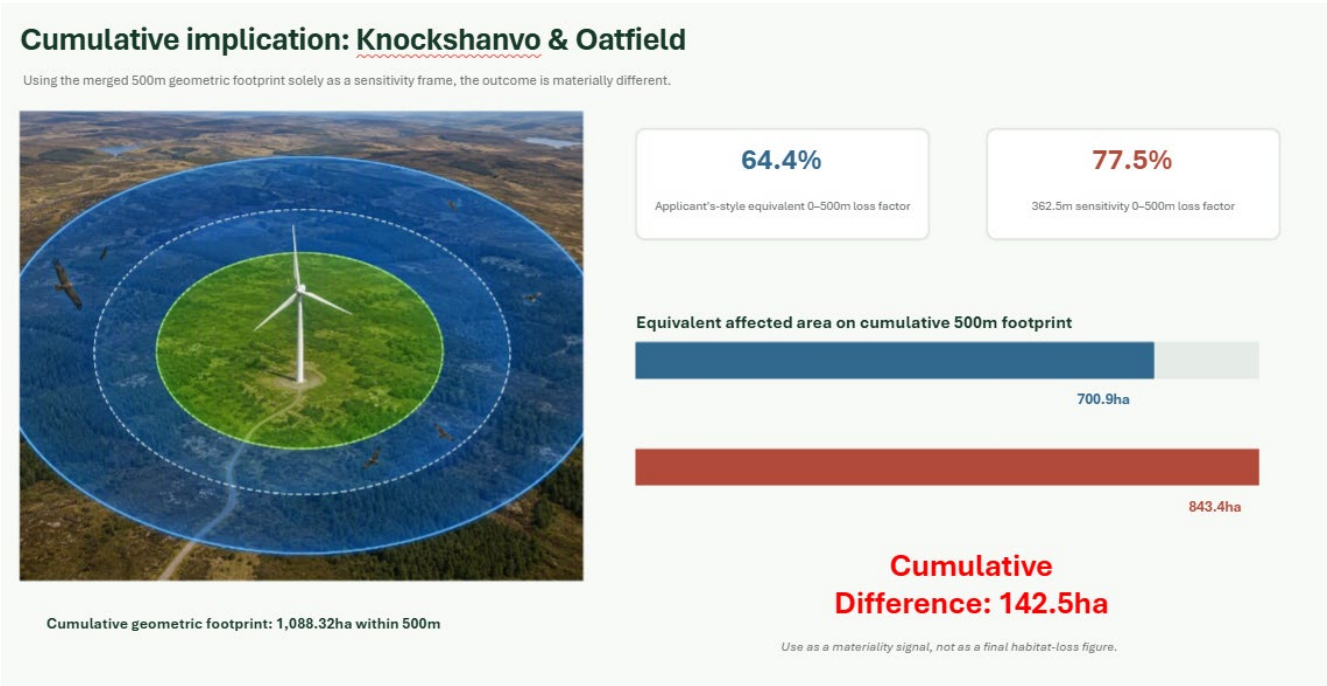


Figure 4: Sensitivity testing implication on cumulative basis

Equivalent habitat-loss sensitivity within 0–500m

The test keeps the wider 500m framework as presented by Pearse-Higgins but moves the complete-displacement zone from 250m to 362.5m.

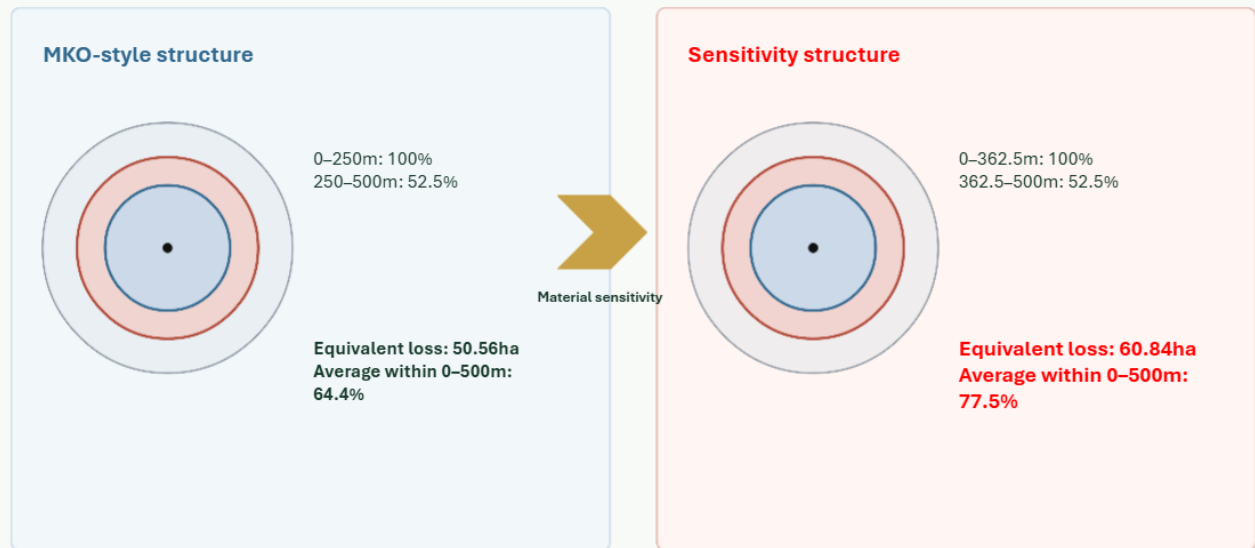


Figure 5: Geometric area effect of alternative buffer radii. This illustration is not a final habitat-loss calculation. Final calculation requires clipping to suitable Hen Harrier habitat, overlap removal, forestry-stage treatment and cumulative Knockshanvo/Oatfield assessment.

Forestry-Cycle Effects

The assessment relies upon habitat availability within a dynamic commercial forestry landscape in which habitat suitability is expected to fluctuate as forestry stands are felled, regenerated and mature. While forestry-cycle effects are acknowledged within the assessment, the material presented does not demonstrate how the quantity of functionally suitable Hen Harrier habitat varies throughout the operational life of the project. Instead, the analysis proceeds to conclusions on habitat loss, compensation and enhancement without presenting the habitat-availability profile upon which those conclusions depend.

Habitat suitability within such forestry landscapes is inherently variable through time. However, the assessment does not identify the minimum amount of suitable Hen Harrier habitat available at any point during the forestry cycle, nor does it distinguish between average habitat availability over the operational life of the project and periods when habitat availability may be materially lower than that average. As a consequence, the extent to which fluctuations in habitat suitability influence the habitat-loss conclusions is not clearly demonstrated.

The assessment further relies upon compensation, enhancement and habitat-management measures as part of the overall conclusion that effects on Hen Harrier are acceptable. However, the analysis presented does not demonstrate how those measures relate to the full range of habitat conditions that may occur

throughout the forestry cycle. The stated habitat-loss figures, and the conclusions drawn from them, are therefore not accompanied by a transparent demonstration of habitat availability during periods when suitability is expected to be at its lowest.

The assessment does not clearly establish whether the habitat-loss conclusions are based on average habitat availability, minimum habitat availability, or the maximum simultaneous loss of functionally suitable Hen Harrier habitat that may arise during the operational life of the project. The relationship between forestry-cycle habitat variability and the resulting habitat-loss conclusions is therefore not transparently demonstrated within the material presented.

Adequacy and Timing of Compensation/Enhancement

Existing habitat function and future habitat benefit are treated within the assessment as components of the overall habitat balance. However, the extent to which future ecological gains are relied upon to offset current habitat loss is not transparently demonstrated.

The assessment should also clarify whether the proposed habitat enhancement measures have the potential to influence Hen Harrier distribution within the wider site and whether any such change in habitat use has been considered when assessing predicted displacement and collision risk.

Where habitat management measures are intended to improve foraging suitability or prey availability, the Applicant should demonstrate how any associated increase in bird activity within areas affected by predicted displacement or collision risk has been assessed and taken into account.

The assessment does not transparently demonstrate whether the proposed compensation, enhancement and prey-improvement measures may alter Hen Harrier distribution within the wider landscape. These measures are proposed specifically because they are expected to increase the ecological suitability of affected lands for Hen Harrier. However, the assessment does not demonstrate whether any resulting increase in Hen Harrier activity has been incorporated into the displacement, collision-risk or cumulative-effect assessment. Consequently, the ecological implications of increasing habitat attractiveness within a landscape containing operational turbines have not been transparently evaluated.

The conclusions presented rely upon compensation, enhancement and habitat-management measures as components of the overall habitat-loss balance. However, the assessment does not clearly demonstrate ecological equivalence, timing, certainty or deliverability across the period during which displacement effects arise.

The assessment does not distinguish between habitat that is already functioning as suitable Hen Harrier foraging habitat at the time displacement occurs and habitat whose future ecological value is dependent upon management interventions, habitat maturation or other future actions. As a consequence, the relative

contribution of existing suitable habitat and future projected habitat improvement is not clearly presented within the overall habitat balance.

Habitat displacement is assessed as arising during the operational life of the development. However, the assessment does not demonstrate the extent to which the ecological value relied upon to offset that displacement is available at the time the displacement occurs, the extent to which future management is required to achieve the intended ecological benefit, or the timeframe over which that benefit is expected to arise.

The assessment concludes that compensation, enhancement and safeguarding measures are sufficient. However, the supporting analysis does not demonstrate how the ecological function attributed to those measures relates to the timing of habitat loss, nor does it demonstrate how habitat equivalence has been evaluated across the period over which displacement effects are predicted to occur. The relationship between the stated habitat-loss figures and the ecological function of the proposed compensation and enhancement package is therefore not transparently demonstrated.

The assessment does not transparently demonstrate the basis upon which habitat creation, habitat enhancement, forestry-management measures and future habitat gains have been classified within the assessment. In particular, it is not clear how the assessment distinguishes between measures intended to avoid or reduce habitat loss and measures whose ecological function is to offset habitat loss after it has occurred. The role of these measures within the overall habitat-loss balance is therefore not transparently demonstrated.

Accordingly, the assessment does not clearly establish whether the ecological value relied upon to offset habitat loss is available at the time the loss occurs, whether it becomes available progressively over time, or how equivalence between habitat loss and habitat provision has been evaluated across that period.

Cumulative Knockshanvo and Oatfield Assessment

The cumulative assessment material identifies Hen Harrier as one of the key ornithological receptors shared by the proposed Knockshanvo Wind Farm and the proposed Oatfield Development. The material records Hen Harrier nests during Oatfield breeding surveys in 2022 and 2023, with distances from the nearest proposed Oatfield turbine stated within the assessment.

Cumulative effects arising from the two developments are addressed within the assessment. However, the analysis presented does not demonstrate the cumulative extent of functional Hen Harrier habitat loss arising from the combined turbine layouts prior to the application of mitigation, compensation, enhancement or habitat-management measures. The cumulative conclusion is presented without a transparent demonstration of how the combined turbine arrays, displacement assumptions and habitat availability interact across the wider landscape.

The material does not present a merged cumulative habitat-loss calculation showing all Knockshanvo and Oatfield turbine locations, the combined interaction of displacement zones, the treatment of overlapping buffers, the extent of suitable habitat remaining following habitat clipping, or the influence of forestry-cycle assumptions on habitat availability. As a consequence, the basis upon which cumulative habitat loss has been quantified is not transparently demonstrated.

The assessment therefore does not clearly establish the extent of peak functional habitat loss, average functional habitat loss, or the cumulative availability of suitable Hen Harrier habitat across the combined Knockshanvo and Oatfield developments. The relationship between the cumulative habitat-loss conclusions and the underlying displacement assumptions, habitat-availability assumptions and forestry-cycle assumptions remains insufficiently transparent within the material presented.

The documentation should further explain whether Hen Harrier territories recorded within the Knockshanvo study area and those recorded within the adjacent Oatfield study area have been assessed as components of a wider interconnected regional population network. The cumulative assessment would benefit from greater clarity regarding how movement, habitat use and potential displacement between these neighbouring areas have been considered when evaluating the significance of effects.

The cumulative assessment does not appear to demonstrate whether movements between neighbouring nesting, roosting and foraging areas have been evaluated as part of a connected population system operating across the wider upland landscape. The assessment instead presents the recorded territories largely within individual project boundaries. As a consequence, the basis upon which cumulative displacement, redistribution of activity, habitat connectivity and potential barrier effects have been assessed across the wider landscape is not transparently demonstrated.

The cumulative assessment would also benefit from a clearer explanation of how the availability of alternative habitat has been evaluated in the event that displacement occurs. In particular, it is not apparent how the assessment has considered the combined influence of other existing or permitted wind energy developments within the wider upland landscape when determining the capacity of neighbouring habitats to accommodate displaced birds.

The cumulative assessment concludes that displaced Hen Harrier are unlikely to experience significant cumulative effects. However, the assessment does not transparently demonstrate the carrying capacity of neighbouring habitats or the extent to which other existing, permitted or proposed wind energy developments have reduced the availability of alternative functionally suitable habitat within the wider upland landscape. The conclusion that displaced birds can successfully relocate therefore remains dependent upon assumptions regarding alternative habitat availability that are not fully demonstrated within the material presented.

The cumulative conclusions are not accompanied by a transparent demonstration of the habitat-loss pathway linking displacement assumptions, habitat availability, forestry-cycle effects and cumulative turbine interactions to the final cumulative effect conclusions.

Gortacullin Bog NHA

The available material records the Applicant's position that Gortacullin Bog NHA is approximately 10 m west of the proposed development, that no works are proposed within the designated site, and that effects on the integrity of Gortacullin Bog NHA arising from ornithological features are considered not significant because the NHA is not designated for ornithological qualifying interests.

The assessment does not present the issue as one of direct physical impact within Gortacullin Bog NHA. The assessment also records Hen Harrier use of open habitats within and surrounding the wider landscape in proximity to the proposed development.

Displacement effects form a central component of the Hen Harrier assessment. However, the material presented does not demonstrate how the displacement assumptions applied within the assessment interact spatially with the Gortacullin Bog NHA boundary, adjacent peatland and bog habitats, enhancement areas, or other habitats relied upon within the overall ecological assessment. The relationship between the assumed displacement zones and these habitats is therefore not transparently illustrated within the material.

The assessment does not clearly demonstrate the extent to which habitats in proximity to Gortacullin Bog NHA form part of the habitat resource considered available to Hen Harrier following the application of displacement assumptions. Nor does it transparently illustrate how those assumptions relate to the wider network of peatland, bog and enhancement habitats surrounding the proposed development.

The interaction between the 250 m complete-displacement assumption, the 250 m to 500 m reduced-use zone, the 362.5 m sensitivity illustration, the NHA boundary, adjacent peatland habitats, enhancement lands and landholding boundaries is not clearly demonstrated within the assessment. The interaction between displacement assumptions and adjacent habitat resources is therefore not readily identifiable from the assessment material.

Landowner Consent and Legal Deliverability of Enhancement/Compensation Lands

The ecological benefit attributed to compensation, enhancement and habitat-management lands forms part of the basis upon which effects are concluded to be acceptable. However, the assessment does not

transparently demonstrate the extent to which those ecological benefits are secured, available and capable of being maintained for the duration assumed within the assessment.

The assessment relies upon compensation, enhancement, safeguarding and habitat-management lands as part of the overall conclusion that effects on Hen Harrier are acceptable. The availability, deliverability and long-term ecological management of those lands form part of the basis upon which the compensation and enhancement package is assessed.

The material presented does not transparently demonstrate the legal basis upon which all lands relied upon for compensation, enhancement, safeguarding or habitat management are available for the purposes identified in the assessment. While conclusions are drawn regarding the adequacy of the compensation and enhancement package, the relationship between those conclusions and the legal status, management arrangements and long-term availability of the lands concerned is not clearly demonstrated within the material.

Where habitat-management, compensation, enhancement or safeguarding measures extend beyond lands directly controlled by the Applicant, the assessment does not transparently demonstrate the legal mechanism by which those measures are secured, implemented and maintained for the duration assumed within the assessment.

Therefore, the assessment does not clearly establish the extent to which the ecological benefits relied upon are supported by lands that are demonstrably available, capable of being managed for the intended purpose and secured for the relevant duration of the project. The evidential basis underpinning the deliverability of the compensation and enhancement package therefore remains insufficiently transparent within the assessment.

The assessment further does not present a clear linkage between individual compensation, enhancement and habitat-management parcels and the ecological function attributed to those parcels within the overall habitat-loss balance. As a result, the basis upon which legal deliverability, ecological function and habitat-loss conclusions have been integrated within the assessment is not readily apparent from the material presented.

SPA Functional Linkage, Distance Measurement and Displacement

The assessment's conclusion that the Proposed Development will have no impact on Hen Harrier populations associated with nearby Special Protection Areas is not adequately demonstrated on the material presented. The issue is not whether the available material proves that SPA birds are using the Wind Farm Site. The issue is that the assessment does not transparently demonstrate the evidential basis upon which functional linkage has been excluded.

The assessment records Hen Harrier use of the Wind Farm Site and identifies potential displacement-related loss of foraging habitat. The Applicant's ornithology assessment identifies the potential loss of 58.57 hectares of Hen Harrier foraging habitat through displacement within the Wind Farm Site post-construction and relies on compensation and enhancement measures to reduce that effect. The same material identifies 54.2 hectares of compensation habitat and 46.5 hectares of enhancement land, giving a total of 100.7 hectares of compensation and enhancement for Hen Harrier. Those findings confirm that the Wind Farm Site is functionally relevant to Hen Harrier and that the predicted effect is not confined to the physical infrastructure footprint.

The assessment simultaneously identifies the Wind Farm Site as functionally relevant to Hen Harrier, accepts displacement-related habitat loss requiring compensation and enhancement measures, and concludes that no impact on Hen Harrier populations associated with nearby Special Protection Areas is likely to arise. The relationship between these conclusions is not transparently demonstrated. If the affected habitat is of sufficient ecological significance to require a substantial compensation and enhancement package specifically targeted at Hen Harrier, the basis upon which the same habitat is considered incapable of contributing to any functional relationship with nearby SPA populations is not clearly explained. The assessment therefore does not transparently demonstrate the evidential basis upon which functional connectivity with the Slieve Aughty Mountains SPA has been excluded.

The SPA screening conclusion should therefore explain whether the stated separation distance from Slieve Aughty Mountains SPA has been measured from the SPA boundary to the nearest Wind Farm Site boundary, nearest turbine, nearest associated infrastructure, turbine-array centroid, site centroid, or another reference point. The Applicant's NIS states that the Wind Farm Site is approximately 11 km from the Slieve Aughty Mountains SPA. The assessment also does not appear to provide a mapped measurement line, GIS methodology or coordinate-based calculation from which the stated 11 km separation distance can be independently verified. In the absence of a reproducible GIS-based measurement, it is not possible to independently verify whether the stated separation distance has been measured to the nearest SPA boundary, the nearest turbine location, another project feature, or the wider ecological effect footprint of the development.

This omission is material because the ecological footprint of the development extends beyond the turbine bases where displacement effects are accepted. If the stated 11 km separation distance is relied upon, and a 362.5 m functional displacement extension is applied, the effective ecological separation distance would reduce to approximately 10.6km. This calculation does not prove SPA connectivity, however, it demonstrates that the conclusion is sensitive to the measurement basis and to whether the functional displacement footprint is included.

The assessment should not treat displacement as relevant when quantifying local Hen Harrier habitat loss but irrelevant when assessing potential SPA connectivity. If operational displacement is capable of reducing the functional value of Hen Harrier foraging habitat around turbines, then that displacement footprint

forms part of the ecological impact zone and should be considered when assessing any source-pathway-receptor relationship with nearby Hen Harrier SPAs.

Irish Hen Harrier wind-farm research further supports the need for an evidence-led assessment rather than reliance on a simple fixed-distance assumption. The UCC WINDHARRIER project was explicitly focused on expanding the evidence base on Hen Harrier ecology and wind-farm interactions in Ireland for policy makers, industry and other stakeholders. UCC states that impacts of land-use change are often mediated through impacts on foraging success and that this was investigated using novel GPS tags combined with traditional vantage point watches. The same UCC summary states that the findings highlight the importance of open habitats suitable for Hen Harrier foraging and that habitat selection differed between wind-farm and control sites.

The WINDHARRIER Final Project Report also confirms that Hen Harrier foraging behaviour was one of the core areas examined and that GPS tags were deployed on adult Hen Harriers, while noting the limitations arising from small sample sizes. This evidence does not establish that Hen Harrier from Slieve Aughty Mountains SPA use the Knockshanvo site. It does, however, demonstrate that Irish assessment of Hen Harrier wind-farm interactions should consider actual movement ecology, foraging behaviour and habitat use, rather than relying solely on a generic distance threshold. The assessment does not explain why a fixed distance threshold is considered sufficient to exclude functional linkage where more recent Irish research has investigated actual movement patterns and foraging behaviour using GPS-tagged Hen Harriers.

Accordingly, the conclusion that Hen Harrier SPA effects can be excluded is not adequately demonstrated unless the Applicant provides a clear GIS-based explanation of the distance measurement methodology, incorporates the functional displacement footprint into the assessment, and explains how Irish telemetry-based and wind-farm-specific Hen Harrier research has been considered in reaching the conclusion that Hen Harrier recorded within and around the Wind Farm Site are functionally separate from nearby SPA populations.

The assessment does not appear to explain why the screening exercise relies upon a nominal distance-based exclusion where the Applicant simultaneously accepts that the project will result in displacement-related loss of Hen Harrier foraging habitat and requires a substantial compensation and enhancement package. The assessment therefore does not transparently demonstrate why habitat considered sufficiently important to require compensation is considered incapable of contributing to a functional relationship with nearby SPA populations.

The assessment records that the Wind Farm Site is functionally relevant to Hen Harrier, identifies displacement-related habitat loss, and relies on substantial compensation and enhancement measures specifically designed for Hen Harrier. In those circumstances, the conclusion that the affected habitat has no functional relationship with nearby SPA populations requires clear evidential support. The assessment does not transparently demonstrate the basis upon which such a relationship has been excluded.

Hen Harrier Conclusion

The assessment addresses Hen Harrier habitat loss, displacement, compensation, enhancement, forestry-cycle effects, cumulative effects and habitat management. However, the material presented does not transparently demonstrate how these components combine to support the conclusion that the predicted effects on Hen Harrier are acceptable.

The central issue is not the existence of mitigation, compensation or enhancement measures. The central issue is the extent to which the adequacy of those measures can be evaluated against the full extent of functional habitat loss arising from the development.

The habitat-loss conclusions rely upon a number of interrelated assumptions, including the adoption of a 250 m complete-displacement distance, the treatment of the 250 m to 500 m reduced-use zone, the applicability of historic turbine-displacement evidence to materially larger modern turbines, forestry-cycle habitat availability, cumulative Knockshanvo/Oatfield effects, interactions with adjacent peatland and bog habitats, and the ecological function and legal deliverability of compensation and enhancement lands. The relationship between those assumptions and the resulting habitat-loss conclusions is not transparently demonstrated throughout the assessment.

Collectively, the material does not demonstrate the habitat-loss pathway linking displacement assumptions, habitat availability, forestry-cycle effects, cumulative interactions, compensation measures and enhancement measures to the final conclusion that Hen Harrier effects will be acceptable. The evidential pathway from underlying assumptions to final conclusions is therefore not fully apparent from the material presented.

In addition, the conclusion that there is no potential impact on Hen Harrier populations associated with nearby SPAs should not be accepted without further explanation. The assessment does not transparently demonstrate the GIS basis for the stated SPA separation distance, whether the functional Hen Harrier displacement footprint has been included in that distance assessment, or how Irish telemetry-based and wind-farm-specific Hen Harrier research has been considered before excluding functional linkage. The Applicant should therefore be required to provide a boundary-based and displacement-footprint-based SPA connectivity assessment before any conclusion of no SPA impact is accepted.

The assessment acknowledges Hen Harrier habitat loss, displacement, compensation requirements, enhancement measures, cumulative interactions and habitat management. However, the material does not transparently demonstrate how these components have been integrated into a single cumulative assessment of functional habitat availability, habitat connectivity and long-term population effects. The resulting conclusion that effects on Hen Harrier will not be significant therefore remains dependent upon a series of assumptions that cannot be independently verified from the information presented.

Consequently, the assessment does not transparently demonstrate that the ecological implications of increasing habitat attractiveness within a landscape containing operational turbines have been evaluated or incorporated into the final conclusions on Hen Harrier effects.

4. Hydrology, Hydrogeology and Private Water Supply Responses

I do not accept that the Applicant has demonstrated that the Proposed Development will not adversely affect local hydrology, groundwater conditions, surface water systems or private water supplies.

The central issue is whether the Applicant has demonstrated, using receptor-specific evidence, that those measures will be effective in the particular geological, hydrological and hydrogeological conditions at Knockshanvo and in relation to the private water supplies and downstream water receptors that may be affected.

MKO's own response records that hydrology and water-related concerns were recurring themes in third-party submissions, including concerns regarding local private groundwater wells, public water supplies, groundwater quality, surface water quality, flooding, downstream designated sites, the Water Framework Directive assessment, forestry felling and cumulative effects with Oatfield Wind Farm. These concerns were therefore not isolated to one objector but were raised by multiple third parties, including specialist and community submissions.

Recurring Third-Party Concerns Confirm that Water Protection is a Material Issue

The Applicant's own response identifies water-related concerns as recurring themes in third-party submissions. These included potential effects on downstream surface water abstractions, Castle Lake Public Water Supply, the Shannon (Lower)_060 Drinking Water Protected Area, Broadford Public Water Supply boreholes, local private groundwater wells, Gortacullin Bog NHA, Doon Lough NHA, the Water Framework Directive Compliance Assessment, cumulative assessment with Oatfield Wind Farm, water quality from felling operations and flood risk.

Concerns regarding private wells, surface water, groundwater and flooding cannot be treated as isolated or speculative. The Applicant's own response confirms that these concerns were recurring and arose across multiple submissions. That reinforces the need for a transparent, receptor-specific and independently verifiable assessment.

These third-party concerns support the position that the hydrological assessment should not be treated as a narrow site-drainage issue. The concerns relate to wider water quality, protected water resources, downstream receptors, groundwater, public supply and private water supply protection.

Reliance on Generic Mitigation Rather than Site-Specific Demonstration

Each upland catchment has its own geology, peat conditions, drainage network, groundwater pathways, slope conditions, bedrock characteristics and receptor sensitivities. A conclusion of no significant effect should therefore be based on the demonstrated conditions at this site and the affected receptors, not on general experience from other developments.

The Applicant's response relies too heavily on precedent and the asserted effectiveness of mitigation rather than demonstrating the actual hydrological and hydrogeological behaviour that will occur at Knockshanvo during construction, operation and decommissioning.

Private Water Supplies Have Not Been Demonstrated to be Protected

One of my principal concerns is the protection of private water supplies. The Applicant's response does not demonstrate, through well-specific evidence, that my private water supply and other local private supplies will remain unaffected.

The response appears to rely on desk-based information, conceptual hydrogeological interpretation, assumed limited groundwater connectivity, separation distances and mitigation. It does not demonstrate that all relevant private wells have been identified by direct survey, that receptor-specific baseline water quality has been established, or that baseline yield and seasonal variation have been documented before development.

In the absence of receptor-specific baseline water-quality data, baseline yield information and direct hydrogeological investigation, the conclusion that private supplies will remain unaffected remains an assumption rather than a demonstrated outcome.

Absence of Door-to-Door Well Search is Material

The Applicant's response records that Hydro-G raised the absence of a door-to-door well search and that the assessment of local groundwater wells relied on desk-study information; I consider this issue material.

Private wells are specific receptors. Their vulnerability depends on their location, depth, construction, source aquifer, recharge pathway, maintenance condition, yield, seasonal behaviour and relationship to local drainage and groundwater flow. A desk-based assessment cannot replace a receptor-specific assessment where private water supplies may be affected.

Private water supply risk has not been adequately addressed unless the Applicant demonstrates the location, baseline quality, baseline quantity and hydrogeological setting of each relevant private supply.

Baseline Monitoring is Necessary to Identify Future Change

I remain concerned that comprehensive baseline monitoring has not been demonstrated for private water supplies. Without a reliable baseline, future changes in water quality, water quantity, turbidity, sediment, colour, taste, yield or seasonal reliability may be difficult to attribute or assess.

The absence of baseline monitoring does not reduce risk. It reduces the ability of affected residents to prove future change. That is not an acceptable basis for concluding that private water supplies are protected.

A proper assessment should establish existing conditions before construction begins, including seasonal variation, so that any future deterioration can be identified and addressed promptly.

Upland Position, Drainage Alteration and Groundwater Pathways

I have raised concerns regarding the relationship between proposed upland infrastructure and downstream or downslope receptors, including private water supplies. The Applicant has not demonstrated that all relevant surface water and groundwater pathways have been fully understood.

Wind farm infrastructure introduces turbines, hardstandings, access tracks, borrow pits, drainage systems, excavations, felling areas and construction compounds into an upland environment. These works can alter

drainage patterns, intercept shallow flows, concentrate runoff, change recharge conditions and create new preferential pathways. The Applicant has not demonstrated, through receptor-specific evidence, that such changes cannot affect local private supplies.

Where uncertainty remains regarding groundwater connectivity or subsurface flow pathways, the conclusion of no effect should not simply be assumed from mitigation design.

Borrow Pits and Excavation Create Additional Hydrological Uncertainty

The Proposed Development includes borrow pits and turbine base excavations. The Applicant's response records that short-term temporary excavation dewatering may be required in some turbine base excavations and that pumped water would be treated before discharge.

This confirms that groundwater and excavation water interactions are not merely theoretical. Excavation and dewatering may alter local flow conditions, intercept shallow groundwater, mobilise sediment, and require treatment and discharge management. The assessment has not demonstrated that these activities cannot affect local private water supplies or downstream water receptors.

The treatment of pumped excavation water is a mitigation measure. It does not, by itself, demonstrate that hydrological effects have been avoided.

Surface Water Quality Protection Depends on Mitigation Performance

The Applicant's response relies on silt traps, settlement ponds, swales, interceptor drains, buffered outfalls, clean-water diversion, Silbuster treatment and other drainage controls. I do not dispute that such measures may be useful, but I do not accept that the existence of these measures demonstrates that impacts are excluded.

The assessment does not adequately demonstrate the consequences of mitigation failure, extreme rainfall, blocked drains, overtopping, poor maintenance, sediment accumulation, construction-phase error or longer-term drainage degradation. The conclusion of no significant effect therefore depends on mitigation performing successfully throughout construction and operation.

A conclusion dependent on future mitigation reliability should not be treated as equivalent to demonstrated avoidance of hydrological impact.

Flood Risk and Runoff Conclusions Depend on Assumptions

The Applicant's response states that the site is in Flood Zone C, that flood risk is low and that runoff will be attenuated and released at greenfield rates. It also refers to the infrastructure footprint representing approximately 1.7% of the site area and a potential 0.6% increase in runoff in an ultra-conservative assessment.

These figures do not resolve the concern.

Flood and runoff impacts depend not only on the total site footprint but also on where infrastructure is located, how drainage is altered, how flows are concentrated, the condition of peat and soils, the performance of settlement infrastructure, storm intensity and cumulative effects.

The assessment has not demonstrated the consequences of drainage infrastructure failure, future maintenance deficiencies, or increasingly intense rainfall events over the operational life of the development.

Forestry Felling and Water Quality

The Applicant's own summary identifies potential effects on water quality due to proposed felling operations as a recurring third-party concern. I consider this important because felling can alter runoff, sediment movement, nutrient release, drainage behaviour and soil stability.

The response relies on best-practice mitigation and existing EIAR measures. However, the assessment does not demonstrate that felling-related water quality risks are eliminated in the specific catchments and drainage pathways relevant to affected receptors. Again, the response relies on mitigation rather than transparent demonstration that the environmental effect is avoided.

Cumulative Assessment with Oatfield Wind Farm

The Applicant's own response identifies inadequate cumulative assessment with Oatfield Wind Farm as a recurring hydrology-related concern.

The relevant issue is not simply whether each project has its own drainage design. The relevant issue is the cumulative alteration of runoff, drainage pathways, peatland hydrology, felling, sediment risk, access tracks, borrow pits, construction traffic and downstream water quality risks across the same water environment.

The response does not transparently demonstrate the cumulative hydrological condition that would exist if both developments proceed.

Water Framework Directive and Protected Water Resources

The Applicant's response records that third parties raised concerns regarding the Water Framework Directive Compliance Assessment, downstream public water supplies, drinking water protected areas and designated sites. These are material receptors and regulatory considerations.

A conclusion of no deterioration or no significant effect is not adequately demonstrated where the assessment depends on mitigation performance and where private water supplies have not been verified through receptor-specific baseline assessment. The existence of a WFD assessment is not the same as a transparent demonstration that water quality, water quantity and sensitive receptors will remain unaffected.

Legal and Environmental Context

The Derrybrien wind farm provides a relevant cautionary example. It demonstrates that large upland wind farm construction in peatland conditions can give rise to serious hydrological and environmental consequences where peat systems, drainage and water pathways are disturbed. Derrybrien demonstrates why hydrological risk in upland peatland wind farm developments should not be dismissed merely because mitigation is proposed.

The precautionary approach in European environmental law is also relevant. Where scientific information is incomplete, where potentially adverse effects are identified, and where uncertainty remains, the decision-maker should not resolve that uncertainty in favour of the development without adequate evidence. The principle from Waddenzee is particularly important where effects on protected sites or conservation objectives are relevant: authorisation should not proceed where reasonable scientific doubt remains.

In this context, the Applicant must demonstrate protection of water resources and private water supplies. It is not sufficient to assert that mitigation will work or that similar measures have worked elsewhere.

Monitoring Does Not Prevent Impacts

The Applicant's response relies on management, monitoring and mitigation. Monitoring is not prevention. Monitoring may identify an effect after it occurs, but it does not itself prevent contamination, turbidity, yield reduction, groundwater pathway alteration or flooding.

Where a private water supply is affected, post-event monitoring is not an adequate substitute for prevention, baseline assessment, receptor-specific investigation and enforceable mitigation. The assessment therefore remains insufficient where it relies on future management rather than direct demonstration of no effect.

Hydrology Conclusion

The Applicant has not adequately demonstrated that the Proposed Development will have no significant impact on local hydrology, groundwater conditions, surface water quality, flood risk or private water supplies.

The response relies heavily on generic mitigation measures, conceptual interpretation, desk-based assessment and future monitoring.

It does not demonstrate, through receptor-specific evidence, that private water supplies are protected.

It does not demonstrate that all relevant groundwater and surface water pathways have been identified.

It does not demonstrate that borrow pits, excavations, dewatering, felling, drainage alteration and cumulative effects with Oatfield cannot affect sensitive water receptors.

The Applicant's own response confirms that water-related concerns were recurring themes across multiple third-party submissions, including concerns regarding private groundwater wells, public water supplies, water quality, flooding, downstream designated sites, the Water Framework Directive assessment, forestry felling and cumulative effects. In those circumstances, the Commission should not accept generalised statements of mitigation effectiveness as a substitute for a transparent, receptor-specific and independently verifiable assessment.

Accordingly, I consider that the hydrology, hydrogeology and private water supply assessment remains insufficiently demonstrated. The conclusion of no significant effect is dependent on assumptions and future mitigation performance rather than clear evidence that effects have been fully identified, quantified, avoided and controlled.

5. Shadow Flicker Assessment

I note that the Applicant's own assessment identifies my dwelling, H493, as a shadow-flicker exceedance receptor.

My dwelling is identified as H493 in the Knockshanvo assessment and as H4 in the Oatfield assessment. I am concerned that the Oatfield assessment incorrectly treated my property as an associated or financially involved dwelling, even though my property is not associated with that development. If a higher or less protective shadow flicker criterion was applied to H4 on that basis, the assessment does not demonstrate compliance using the correct residential amenity standard applicable to my dwelling.

The Applicant's modelling predicts daily shadow flicker at my property in excess of the Wind Energy Guidelines daily threshold under all turbine-dimension scenarios assessed. Under one turbine-dimension scenario, the Applicant's own modelling also predicts an exceedance of the annual guideline threshold even after applying a regional sunshine adjustment factor.

The Applicant's conclusion that the shadow-flicker effects at my property are acceptable is therefore dependent upon mitigation and operational controls rather than avoidance through project design. I do not accept that the proposed mitigation measures have been demonstrated to be effective, feasible or environmentally neutral in the specific circumstances of H493.

The proposed mitigation measures, including window blinds, vegetation screening and SCADA-controlled turbine curtailment, do not demonstrate how shadow-flicker effects would be reduced to compliant levels in practice.

- Window blinds do not address outdoor amenity.

- Vegetation screening has not been shown to be physically capable of preventing flicker from turbines located on substantially higher ground. Additional planting may itself cause ecological, residential amenity and safety impacts that have not been assessed. The assessment therefore fails to demonstrate an acceptable residual impact at H493.

Cumulative Assessment & Predicted Impact at H493

The Applicant's Appendix 5-3 identifies H493 as a receptor predicted to experience shadow flicker in excess of the daily guideline threshold under each of the assessed turbine-dimension scenarios. My dwelling is identified as approximately 996 m from proposed turbine T08. Each of the predicted maximum daily values exceeds the 30-minute daily guideline threshold. Under the lowest hub / longest blade scenario, the predicted annual figure of 31 hours, 3 minutes and 13 seconds exceeds the 30-hour annual guideline threshold even after the Applicant's regional sunshine adjustment has been applied.

I therefore do not accept that the shadow-flicker effect at H493 has been avoided by design. The Applicant's own modelling shows that H493 is an affected receptor and that compliance depends on mitigation and subsequent operational intervention.

The assessment does not demonstrate whether residents may experience sequential shadow-flicker exposure from multiple developments at different times and seasons.

Was my house assessed within the cumulative flicker assessment using assumptions influenced by the erroneous associated-dwelling classification in the Oatfield windfarm submission?

My dwelling (H4 in the Oatfield assessment) was **incorrectly classified as an associated dwelling**. I do not accept any higher level of shadow flicker than would apply to an independent third-party residential receptor. The cumulative Oatfield–Knockshanvo assessment identifies H4 as a receptor affected by both

developments. However, the assessment does not transparently demonstrate that H4 has been assessed using the criteria applicable to an independent dwelling rather than criteria influenced by the erroneous associated-dwelling classification.

The cumulative Oatfield–Knockshanvo shadow-flicker assessment predicts for following for my home:

- **54 minutes per day** shadow flicker;
- **130.6 hours per year**;
- 39.18 likely hours per year (30% sunshine assumption was used); however, using Knockshanvo's rate of 30.56%, that would present **39.91 hours likely per year**.

However, the assessment does not appear to demonstrate:

- whether Oatfield flicker occurs at different times of day than Knockshanvo flicker;
- whether different turbine arrays produce flicker in different seasons;
- whether residents may experience flicker on a greater number of days because two developments contribute rather than one.

The cumulative assessment does not transparently demonstrate whether residents may experience sequential shadow-flicker exposure from multiple developments at different times of the day, different times of the year or under different solar orientations. The issue is not confined to whether a single development exceeds a threshold. The assessment should demonstrate the overall frequency with which residents may experience shadow flicker where multiple wind farm developments contribute to the same receptor.

The assessment does not demonstrate the extent to which existing forestry screening has been relied upon in the cumulative shadow-flicker analysis. Given that commercial forestry is periodically felled, thinned and replanted, the assessment should demonstrate that cumulative shadow-flicker predictions remain acceptable throughout the operational life of the development and are not dependent upon temporary screening conditions.

Scale of Shadow-Flicker Exceedance Across Residential Receptors

The Applicant's Response F states that 78 dwellings were assessed for shadow flicker. It further states that 31 dwellings may experience daily shadow flicker in excess of the 30-minute threshold under modelled conditions. It also states that, when the regional sunshine average of 30.56% is applied, four dwellings are predicted to exceed the annual guideline threshold of 30 hours per year.

This demonstrates that shadow flicker is not an isolated or marginal issue associated with one receptor. A substantial number of residential receptors require mitigation to bring predicted effects within guideline limits. In those circumstances, the suitability of the site itself becomes a legitimate planning consideration. The issue is not simply whether mitigation can be proposed after the event. The issue is whether a development that creates such widespread shadow-flicker exceedances is appropriately sited in proximity to existing dwellings in the first instance.

I also note that shadow flicker has been treated in Irish planning decisions and litigation as a genuine residential amenity issue capable of forming part of wider nuisance and amenity concerns. That context

reinforces the importance of assessing the real effect on affected receptors rather than treating shadow flicker as a technical matter capable of being resolved by generic mitigation language.

Reliance on Regional Sunshine Averaging

The Applicant's annual shadow-flicker calculations rely upon a regional sunshine adjustment factor of 30.56%. That adjustment may reduce theoretical annual totals, but it does not demonstrate the actual pattern of shadow-flicker occurrence at H493.

The assessment does not provide a receptor-specific shadow-flicker calendar for H493. It does not identify the number of affected days, the months in which flicker is expected to occur, the time of day at which events would arise, or whether the events cluster during particular parts of the year. I therefore cannot determine from the assessment what the lived experience of shadow flicker at my property would be.

The assessment also does not demonstrate the range of possible outcomes during sunnier-than-average years. Sunshine conditions vary between years. A long-term regional average does not demonstrate that the effect at H493 will remain acceptable in years when sunshine duration is materially above average.

Failure to Assess Outdoor Residential Amenity

The Applicant presents shadow flicker primarily as an indoor phenomenon and proposes mitigation such as window blinds and internal screening. That approach does not reflect the actual use of my property.

My use of H493 is not confined to the interior of the dwelling.

I actively use the external curtilage, garden and surrounding areas for vegetable growing, food production, daily outdoor activities, care of animals located close to the house, and general enjoyment of my property. On sunny days, when shadow flicker is capable of occurring, I am generally outdoors in my garden and around my animals.

The assessment does not assess shadow flicker affecting my garden, vegetable growing areas, animal areas, yard, outdoor work areas or wider residential curtilage. The assessment therefore fails to assess the receptor environment as it is actually used. It addresses only part of the amenity impact and leaves outdoor exposure substantially unassessed.

Window Blinds are Not an Effective Mitigation for H493

I do not accept that window blinds represent an adequate mitigation measure in the circumstances of H493. Blinds do not prevent shadow flicker from occurring. They do not address shadow flicker experienced outdoors. They do not protect the garden, vegetable growing areas, animal areas or external residential amenity.

The proposed use of blinds transfers responsibility onto the affected resident to modify their use of their own home. It does not eliminate the effect at source and it does not provide a solution for outdoor use of the property. For H493, this mitigation is therefore materially incomplete.

Vegetation Screening Has Not Been Demonstrated as Site-Specific or Effective

The Applicant also proposes vegetation screening. I do not accept that this mitigation has been demonstrated to be effective in the circumstances of H493. The reference to planting appears to be a standard mitigation statement rather than a site-specific assessment of my property.

My property is already surrounded by mature trees and vegetation - the Applicant's own modelling nevertheless predicts shadow-flicker exceedances at H493. The assessment does not explain why further planting would succeed where existing mature vegetation has not prevented the predicted exceedance.

The topographical relationship between my property and the proposed turbines is critical. My dwelling is located on steep and hilly ground, with the turbines positioned on substantially higher ground relative to the house. The proposed turbines will tower over my property. In those circumstances, it has not been demonstrated that vegetation screening could physically intercept the rotor-shadow pathway. The Applicant has not demonstrated that planting could prevent shadow flicker from turbines located on elevated ground above the receptor.

This is not a minor point of preference. It goes to the physical capability of the proposed mitigation. A mitigation measure should not be accepted unless it is shown to be capable of working at the receptor to which it is applied. That demonstration has not been provided for H493.

Local Topography, Soils and Wind Exposure Limit the Feasibility of Planting

The Applicant has not considered the practical limitations on establishing meaningful screening vegetation at H493. The area is characterised by exposed upland conditions, elevated wind exposure, steep and hilly ground, shallow soils and challenging growing conditions.

These conditions limit the species, height and density of vegetation that can be successfully established and maintained. The assessment does not include a site-specific horticultural, arboricultural or ecological assessment demonstrating that vegetation capable of materially reducing shadow flicker can be grown and retained here throughout the operational life of the wind farm.

For that reason, the effectiveness of the proposed planting mitigation is assumed rather than demonstrated.

Additional Planting May Create Residential Amenity and Safety Impacts

Additional screening vegetation closer to my dwelling may itself create adverse effects. Planting tall trees or dense screening close to the house could reduce natural light reaching my home and garden. It could impair vegetable growing and food production. It could increase dampness and moisture retention around the dwelling. It could also introduce additional risk during storms in an exposed upland location.

The Applicant has not assessed these secondary impacts. A mitigation measure cannot be treated as acceptable where its own effects on residential amenity, daylight, dampness, use of the garden and storm safety have not been examined.

Additional Planting May Create Ecological Impacts

The area surrounding my house contains wet heath, dry heath, peatland-associated vegetation and sphagnum moss. I have consistently raised concerns about the ecological value of these habitats and the adequacy of the Applicant's habitat assessment.

Any meaningful vegetation screening would need to be tall and dense. Given the local conditions, effective screening may require non-local evergreen or other substantial planting not characteristic of the existing habitat mosaic. Such planting could disturb, shade, replace or alter existing wet heath, dry heath and sphagnum-rich vegetation.

The Applicant has not assessed whether vegetation screening at H493 would adversely affect existing heathland or peatland-associated vegetation, alter local hydrological conditions, displace existing vegetation communities, or create further ecological change. The proposed mitigation therefore may itself require disturbance or modification of sensitive vegetation that has not been assessed as part of the shadow-flicker mitigation strategy.

I do not accept that vegetation screening can be relied upon where the Applicant has not shown that it is effective, feasible, locally appropriate or ecologically acceptable at H493.

Dependence on SCADA Curtailment and Operational Intervention

The principal effective mitigation appears to be SCADA-controlled turbine shutdown or curtailment. This is significant because it confirms that the effect is not avoided through siting or design. It is expected to occur and must then be controlled by operational intervention.

The assessment does not demonstrate the extent of curtailment that would be required to protect H493. It does not identify how often turbine shutdowns would occur, which turbine or turbines would need to be curtailed, the trigger conditions, the verification process, or the residual flicker likely to remain after mitigation.

Accordingly, the assessment does not transparently demonstrate how compliance at H493 would be achieved in practice. It relies upon future operational management without providing the receptor-specific detail necessary to assess residual impact.

Planning Significance

The Applicant's own assessment identifies widespread shadow-flicker exceedances and identifies H493 as a materially affected receptor. This is not a case where shadow flicker is avoided by careful design. It is a case where exceedances are predicted and then addressed through mitigation after the fact.

Where 31 dwellings are predicted to exceed the daily guideline threshold and four dwellings are predicted to exceed the annual threshold after application of sunshine adjustment, the extent of mitigation required raises a broader issue of site suitability. A development that requires extensive post-construction mitigation across multiple residential receptors should not be treated as equivalent to one where effects have been avoided by siting and layout.

In the specific case of H493, the mitigation package is not demonstrated to work. Blinds do not address outdoor amenity. Planting has not been demonstrated to be physically effective because of the topography and elevated turbine position. Planting has not been demonstrated to be feasible because of exposed upland conditions and shallow soils. Planting has not been demonstrated to be environmentally acceptable because

of the surrounding wet heath, dry heath and sphagnum-rich vegetation. SCADA curtailment has not been defined in sufficient receptor-specific detail.

Shadow Flicker Conclusion

I do not accept that the Applicant has demonstrated an acceptable shadow-flicker impact at H493. The Applicant's own modelling identifies my dwelling as an exceedance receptor. The daily guideline threshold is exceeded under all assessed turbine-dimension scenarios, and the annual guideline threshold is exceeded under one scenario even after application of a regional sunshine adjustment factor.

The assessment does not provide the receptor-specific information necessary to understand the actual frequency, seasonal pattern and lived experience of shadow flicker at my property. It does not assess outdoor amenity impacts. It does not demonstrate that blinds, planting or other generic measures are effective in the site-specific circumstances of H493. It does not assess the ecological or residential amenity consequences of additional planting. It does not define the operational curtailment required to maintain compliance.

Accordingly, the Applicant has not transparently demonstrated that shadow-flicker impacts at H493 can be reduced to compliant levels without introducing additional adverse effects or relying upon undefined ongoing operational intervention. The shadow-flicker assessment therefore remains insufficiently demonstrated and should not be accepted as establishing an acceptable residual impact at H493.

6. Noise and Vibration Assessment

The Applicant has not transparently demonstrated the real-world noise environment likely to be experienced at my property. The assessment demonstrates predicted compliance with adopted noise criteria. It does not demonstrate the actual operational noise environment that would arise at my dwelling once Knockshanvo is considered cumulatively with Oatfield and other surrounding wind farm developments.

My dwelling is identified as H493 in the Knockshanvo assessment and as H4 in the Oatfield assessment. I am concerned that the Oatfield assessment incorrectly treated my property as an associated or financially involved dwelling, even though my property is not associated with that development. If a higher or less protective noise criterion was applied to H4 on that basis, the assessment does not demonstrate compliance using the correct residential amenity standard applicable to my dwelling.

I am also concerned that the cumulative noise assessment does not adequately address the specific receiving environment around Broadford. Broadford is experienced locally as a topographically enclosed valley landscape, with elevated upland ridges around the settlement and multiple wind farm developments proposed, permitted or assessed in that surrounding upland context. The Applicant's response that a receptor cannot be downwind of all turbines at all times does not answer the cumulative issue: residents may be downwind of one or more turbine arrays for substantial periods depending on wind direction, especially where multiple arrays are distributed around the valley landscape.

Noise Was a Material Issue Raised by Multiple Parties

I note that noise concerns were not confined to individual residential objectors. MKO records that Clare County Council raised concern about noise from the Wind Farm Site and the adjoining proposed Oatfield Wind Farm and the implications for residential amenity. AWN also prepared a dedicated response to noise submissions, confirming that noise was a material issue raised through third-party, statutory body and local authority observations.

East Clare Environment Protection CLG also included dedicated sections on noise, public health, residential amenity, low-frequency noise, infrasound and vibration. Noise impacts should therefore be treated as a recurring and material issue rather than an isolated concern.

Direct Noise Impacts at My Property, H493

The Knockshanvo noise assessment includes H493 among the receptors considered in the modelled assessment. The noise chapter identifies H493 within the set of locations with the highest predicted Knockshanvo turbine noise levels. Although the Applicant concludes that no exceedance of the adopted criteria occurs, the inclusion of H493 among the higher predicted locations demonstrates that the noise impact at my dwelling is not immaterial.

Predicted compliance alone does not demonstrate absence of residential amenity impact. The assessment is predictive rather than observational. It depends on assumptions regarding turbine model, turbine sound power, wind speed, propagation, cumulative inputs, atmospheric conditions and operational behaviour. It demonstrates predicted compliance, not measured operational performance at my property.

Incorrect Oatfield Classification of My Dwelling as H4

My dwelling is identified as H4 in the Oatfield assessment. I have previously objected that my house was incorrectly listed as an associated dwelling or financially involved property within the Oatfield planning

documents. This is categorically incorrect. My property is not associated with the Oatfield development, and I have not agreed to accept a higher noise or amenity impact standard.

This issue is material because associated or financially involved dwellings may be treated differently in wind farm noise assessments. If H4 was assessed using a less protective criterion due to an incorrect associated-dwelling classification, the assessment does not transparently demonstrate compliance with the noise limits properly applicable to my dwelling as an independent third-party residential receptor.

The Oatfield noise impact material shows H4 assigned night-time LA90 noise limits of 45.0 dB across the presented standardised wind-speed range. Other receptors in the same table are shown with lower night-time values at comparable wind speeds. This reinforces the need for the Applicant to demonstrate whether H4 was assessed using the correct receptor classification and correct noise criterion.

The issue is not simply whether the predicted level falls below a stated limit. The issue is whether the correct limit was applied in the first instance. If the wrong benchmark was used, the compliance conclusion for H4 is not reliable.

Consequence for Cumulative Knockshanvo and Oatfield Noise

The Oatfield cumulative assessment includes predicted cumulative noise levels for Oatfield and Knockshanvo combined. The cumulative appendix includes H4 within the Oatfield and Knockshanvo cumulative noise table, with H4 shown as a receptor in that combined assessment.

If the cumulative compliance assessment relies on a receptor-specific noise limit derived from the incorrect classification of H4 as associated or financially involved, then the cumulative assessment may have been tested against the wrong standard. In that situation, the assessment would not demonstrate cumulative compliance using the criterion applicable to an independent third-party dwelling.

I therefore do not accept that cumulative noise impacts at my property have been transparently demonstrated unless the Applicant confirms that H4 was assessed as an independent third-party dwelling and that cumulative compliance has been demonstrated using the correct third-party residential noise criteria.

Baseline Noise Monitoring Concerns

In my Oatfield observation, I raised concerns regarding the noise data collection methods. I noted that the noise monitor closest to my house was located next to a large open land drain containing a continuous medium to heavy flow of bubbling water. I also raised concern that the data was measured against H15 rather than H4, even though H4 is my house and is the nearest property on the Eastern Development Area.

This matters because ETSU-R-97 type assessments set noise limits relative to existing background noise levels and wind speed. If baseline background levels are influenced by local water noise or are not measured at the most relevant receptor, the derived limits may not accurately reflect the true background noise environment at my property.

I therefore do not accept that the baseline noise environment at my property has been transparently established unless the Applicant demonstrates that the monitoring location, receptor selection, data exclusions and background corrections accurately represent H4 / H493.

Cumulative Noise in the Broadford Valley Landscape

The cumulative noise assessment should not be treated as a purely numerical exercise at isolated receptors. My dwelling is located within the wider Broadford area, which is experienced locally as a topographically enclosed valley landscape surrounded by elevated upland ridges. Existing, permitted and proposed wind farm developments are concentrated around that upland context.

The Knockshanvo noise chapter identifies cumulative assessment with other wind farms, including Oatfield, Carrownagowan, Fahybeg, Lackerragh and Ballycar. The Oatfield cumulative assessment also considers cumulative operational noise with Knockshanvo, and identifies some other developments as acoustically insignificant due to distance or predicted contribution. However, the broader residential experience is not simply the sound from one development in isolation. It is the lived acoustic environment created by multiple turbine arrays in the same receiving landscape.

The assessment does not transparently demonstrate how the Broadford valley landscape, surrounding elevated ridges and multiple wind farm arrays have been evaluated in terms of cumulative propagation, perception, reflection, screening, funnelling or recurring downwind exposure from one or more arrays.

Downwind Exposure and Prevailing Winds

I note the Applicant's position that receptors cannot be downwind of all turbines at all times. That response does not address the cumulative issue in the Broadford setting. The issue is not whether my dwelling can be downwind of every turbine simultaneously. The issue is whether, where multiple wind farms are positioned around the valley landscape, residents may be downwind of one or more wind farm developments for substantial periods.

Met Éireann states that the prevailing wind direction in Ireland is between south and west, and that wind at a particular location can be influenced by terrain and nearby mountains or hills. In that context, it is important that the assessment demonstrates how local wind direction, terrain and cumulative turbine layout influence the frequency with which residents may experience downwind noise propagation from one or more developments.

In my local context, Knockshanvo and Oatfield are relevant because of their relative position to my property and the prevailing south-westerly to westerly wind regime. The assessment should demonstrate whether the combined operation of these developments has been robustly assessed under prevailing wind conditions, not merely state that a receptor cannot be downwind of every turbine at the same time.

Reliance on Older Guidance and Predictive Modelling

Both the Knockshanvo and Oatfield assessments rely on the 2006 Wind Energy Development Guidelines and ETSU-R-97 / IOA good practice methodology. I acknowledge that these are commonly used in Irish wind farm assessments. However, I do not accept that predicted compliance with these criteria automatically demonstrates absence of residential amenity impact.

The proposed turbines are large modern turbines, and the cumulative context involves several wind farm developments in the same upland landscape. The assessment should demonstrate why the adopted criteria and modelling approach remain fully protective in the specific local circumstances, rather than relying on generic compliance with historic guidance.

Low-Frequency Noise, Infrasound and Amplitude Modulation

The relevant concern is whether low-frequency characteristics, amplitude modulation, tonal character, night-time distinctiveness and cumulative operational conditions have been assessed in a way that reflects the actual receiving environment at my property.

Compliance with an overall numerical noise criterion does not necessarily demonstrate that particular noise characteristics will not affect residential amenity. The assessment should demonstrate how complaints or operational exceedances relating to amplitude modulation or tonal character would be identified, verified and controlled.

Outdoor Residential Amenity

The assessment focuses on noise-sensitive locations associated with dwellings. My use of my property is not confined to the interior of the house. I spend substantial time outdoors in my garden, food-growing areas, yard and animal areas. Residential amenity therefore includes outdoor use of the property, not just indoor noise levels.

The assessment does not transparently demonstrate the effect of operational turbine noise on outdoor residential amenity at my property, including gardening, food production, animal care and general enjoyment of the curtilage. This is particularly important where the issue is cumulative exposure from multiple developments within the surrounding landscape.

Monitoring and Curtailment are Not Avoidance

Any reliance on post-construction monitoring, complaint investigation or operational curtailment does not demonstrate that impacts have been avoided. Monitoring records impacts after they occur - it does not prevent the initial effect on residents.

The Oatfield material and other community material refer to the possibility that turbines may need to operate at reduced capacity or within agreed consent limits to manage noise. If operational constraints are necessary to achieve compliance, that demonstrates that the acceptability of the development depends on future operational management rather than avoidance through siting and design.

I do not accept that a residual noise impact is adequately demonstrated where the assessment relies on future monitoring or control without clearly defining the receptor-specific performance required to protect my property.

Noise Conclusion

The Applicant has failed to demonstrate an acceptable direct or cumulative noise impact at my property. H493 is included among the higher predicted Knockshanvo noise receptors. My property is identified as H4 in the Oatfield material, and I have raised a material concern that it was incorrectly classified as associated or financially involved. If that classification affected the applicable noise criterion, the compliance assessment may have been carried out against the wrong benchmark.

The cumulative assessment does not transparently demonstrate the lived acoustic environment that would arise from Knockshanvo, Oatfield and other surrounding wind farm developments operating within the topographically enclosed Broadford valley landscape. Nor does it adequately address recurring downwind exposure from one or more arrays, outdoor residential amenity, low-frequency or modulated noise characteristics, or the consequences of relying on future monitoring and operational management.

Accordingly, I consider that the noise assessment remains insufficiently demonstrated. The Applicant should be required to demonstrate cumulative compliance at my dwelling using the correct independent third-party receptor classification, receptor-specific baseline data, and a cumulative assessment that properly addresses the Broadford valley setting, prevailing wind conditions and the combined operation of surrounding wind farm developments.

7. Habitat and Biodiversity Response

The response to observations largely restates the Applicant's survey conclusions and mitigation position.

It does not adequately demonstrate that the ecological value, cumulative function, hydrological dependency and long-term recoverability of the habitats affected have been fully assessed. The Applicant does not transparently demonstrate that the Proposed Development will avoid significant habitat and biodiversity effects.

This report places particular emphasis on sphagnum moss. The Applicant's own Appendix 2-1 EIAR Scoping Exercise Responses contains a habitat survey image, provided by Clare County Council, captioned as a wet area with abundant Sphagnum moss, cottongrasses and frequent Bog Asphodel. In Response F, the Applicant focuses narrowly on whether Sphagnum moss was recorded within the development footprint and whether a particular photograph submitted by an observer is likely to show that species. That does not address the wider point that the project documentation itself records abundant Sphagnum moss in the surveyed habitat context.

The issue is whether sphagnum-rich peatland vegetation, wet heath, dry heath, blanket bog, woodland, hedgerows, treelines and Gortacullin Bog NHA have been fully mapped, assessed, protected and considered cumulatively with Oatfield and other surrounding wind farm pressures.

My Original Habitat Concerns Were Wider Than Individual Habitat Labels

In my original submission, I raised concerns regarding the loss and degradation of biodiversity in a landscape containing Gortacullin Bog NHA, dry heath, wet heath, peatland vegetation, reindeer moss, sphagnum moss, woodland and important bird and wildlife corridors. I also raised concerns regarding failure to survey red-listed flora and fauna, cumulative effects with Oatfield, and the loss of habitat connectivity across the wider landscape.

The Applicant's response addresses a number of habitat categories and states that surveys were undertaken. However, the response does not adequately address the ecological function of the habitat mosaic as a whole. A landscape may be ecologically important because of the combination of habitats, hydrological links, foraging resources, shelter, species movement and cumulative connectivity, not merely because individual mapped polygons are assigned separate habitat labels.

Applicant's Own Scoping Material Records Abundant Sphagnum Moss

The presence of sphagnum moss at Knockshanvo is not merely an assertion made by objectors. The Applicant's own Appendix 2-1 EIAR Scoping Exercise Responses contains a habitat survey image captioned: "Wet area with abundant Sphagnum moss and Cottongrasses and frequent Bog Asphodel". This is a material point because it confirms that sphagnum-rich wet peatland vegetation was identified within the project scoping material.

In Response F, the Applicant states that *Sphagnum austini* was not recorded within the footprint of the Proposed Development during dedicated surveys, while also acknowledging that there is potential for it to occur in good condition peatland habitats in the wider area outside the development footprint. The Applicant then states that a photograph provided by me is not likely to contain *Sphagnum austini*, particularly given the reported location along a forestry road.

Accordingly, the relevant question is not simply whether *Sphagnum austinii* was recorded within the development footprint.

The relevant question is whether sphagnum-rich wet heath, bog and peatland-associated habitats have been fully mapped, assessed and protected, including areas adjacent to the footprint, areas affected by drainage changes, forestry felling, construction activity, access tracks, grid works and cumulative development pressures.

Dry Heath and European Dry Heath Habitat

The Applicant has not adequately addressed concerns regarding dry heath habitat. European dry heaths are an Annex I habitat type under the Habitats Directive. The issue is therefore not simply whether the Applicant has labelled particular areas as dry heath or wet heath, but whether all qualifying or potentially qualifying heathland has been identified, mapped, assessed and protected.

My original submission raised concerns that dry heath at Knockshanvo includes ecologically valuable species and that vegetation recovery following previous disturbance has not demonstrated successful restoration. The Applicant's response does not demonstrate, with receptor-specific or habitat-polygon-specific evidence, that all dry heath areas potentially affected by roads, turbine works, construction traffic, felling, drainage and mitigation measures have been fully ground-truthed and assessed.

I therefore do not accept that dry heath effects have been transparently demonstrated. It is not sufficient to assert that habitat surveys were undertaken. The assessment should demonstrate how contested habitat observations were reconciled, how habitat classification uncertainty was addressed, and how habitat functionality and recoverability were evaluated.

Wet Heath, Sphagnum and Peatland-Associated Habitats

Wet heath, sphagnum-rich vegetation and peatland-associated habitats are central to my concerns. These habitats are hydrologically sensitive and may be affected by excavation, drainage, road construction, forestry felling, alteration of runoff and changes to surrounding vegetation.

The Applicant's response records that reindeer moss was observed during botanical surveys and treats it as a typical component of peatland habitats. The Applicant's own scoping material also records abundant *Sphagnum* moss in a wet area with cottongrasses and frequent Bog Asphodel. These points confirm that the site contains peatland-associated vegetation of ecological interest.

The response does not demonstrate that the presence, abundance, ecological function or vulnerability of sphagnum-rich and lichen-rich areas has been fully translated into mitigation, avoidance or habitat-protection requirements. I do not accept that sphagnum-rich or peatland-associated vegetation can be sufficiently addressed by general statements that habitat surveys were undertaken.

Reindeer Moss, Austin's Bog Moss and Rare Bryophyte / Lichen Concerns

My submissions raised specific concerns regarding reindeer moss and sphagnum / bog moss presence within the Knockshanvo landscape. The Applicant's response records that reindeer moss, *Cladonia portentosa*, was recorded during surveys. This is important because it confirms that the concern raised was not fanciful or unsupported.

The Applicant's response does not demonstrate that recording the species was followed by a transparent assessment of its extent, vulnerability, sensitivity to disturbance, sensitivity to nitrogen deposition, or relationship with the wider heath and peatland habitat condition. Acknowledging that the species is present is not the same as demonstrating that its ecological role and protection requirements have been addressed.

I also do not accept that the Applicant's narrow response regarding *Sphagnum austinii* resolves concerns regarding sphagnum-rich peatland vegetation generally. Where the Applicant's own scoping material records abundant *Sphagnum* moss, the assessment should explain how sphagnum-rich habitats have been mapped, protected and assessed, rather than focusing only on whether one named species was recorded within the development footprint.

Gortacullin Bog NHA

The Applicant's response states that the potential pathways for impact include hydrological impacts from excavations and impacts from forestry felling works, and asserts that the potential for impacts has been assessed in the Biodiversity Chapter. That response does not demonstrate that the NHA has been considered as part of a wider connected ecological and hydrological landscape.

Gortacullin Bog NHA does not exist in ecological isolation. It forms part of the same upland peatland, heathland and forestry-edge landscape affected by Knockshanvo and Oatfield. The assessment should demonstrate how hydrology, habitat connectivity, displacement of species, edge effects, drainage alteration, felling, construction disturbance and cumulative effects have been assessed in relation to the NHA and its surrounding supporting habitats.

The issue is not limited to direct works within the NHA boundary. A designated habitat can be affected by changes to surrounding hydrology, ecological connectivity, disturbance and cumulative pressure. The Applicant's response does not transparently demonstrate that those wider effects have been assessed.

Woodland, Hedgerows and Treelines

The Applicant's biodiversity material records unmitigated loss of hedgerow and treeline habitat within the footprint of the proposed wind farm access road and turbine delivery route accommodation areas, and treats this as a significant effect at local scale for bats. Other material available to me refers to the loss of oak-ash-hazel woodland and wet heath, with the Biodiversity Management Plan intended to offset these losses.

I do not accept that this can be treated as a minor or fully resolved issue. Hedgerows, mature treelines, woodland fragments and riparian corridors provide ecological functions that cannot be replaced immediately by new planting. Replacement planting does not replicate mature habitat structure, bat commuting routes, bird nesting opportunities, fungi, lichens, bryophytes, shade, shelter or soil conditions in the short or medium term.

The assessment therefore does not demonstrate ecological equivalence in time, quality or function. A numerical replacement length or area does not demonstrate that the same ecological value will be available when the loss occurs.

Cumulative Habitat Effects with Oatfield and Surrounding Developments

The habitat assessment should not consider Knockshanvo in isolation. Oatfield material identifies wet heath habitat corresponding to Annex I northern Atlantic wet heaths with *Erica tetralix* and records wet heath within

the footprints of several Oatfield turbines and adjacent to roads / connection routes. Oatfield material also identifies dry siliceous heath on the eastern boundary of the western development area.

This demonstrates that heathland and peatland-associated habitats are not confined to one project boundary. They form part of a wider upland habitat mosaic affected by multiple wind farm proposals. The Applicant has not transparently demonstrated the cumulative loss, fragmentation, drainage alteration and long-term ecological change affecting heath, bog, moss, woodland and associated species across the combined Knockshanvo-Oatfield landscape.

The cumulative issue is therefore not resolved by assessing each development separately and then stating that cumulative effects are acceptable. The assessment should demonstrate the combined ecological outcome across both developments and the surrounding upland habitat network.

Mitigation and Habitat Compensation are Not Demonstrated as Ecologically Equivalent

The Applicant relies on biodiversity management, habitat restoration, compensation and enhancement measures. I do not accept that these measures have been shown to provide equivalent ecological function to the habitats that would be lost or disturbed.

Habitat compensation must be assessed by reference to quality, timing, certainty, hydrological function, species composition, structural maturity and long-term deliverability. It is not enough to state that a habitat area will be restored or replaced. The assessment must demonstrate that the ecological function lost will be available when the impact occurs and will be maintained for the relevant duration.

This is particularly important for heath, peatland, sphagnum-rich vegetation, mature woodland and hedgerow / treeline systems, because their ecological function can take many years or decades to develop. The Applicant has not transparently demonstrated that mitigation provides like-for-like ecological function in the relevant timeframe.

Shadow-Flicker Screening Planting Could Create Additional Habitat Impacts

The Applicant's shadow flicker mitigation includes vegetation screening. Such mitigation can be relied upon without assessing its habitat consequences. Around my property, tall screening vegetation capable of intercepting turbine shadow flicker may require non-local evergreen or other dense planting that is not characteristic of the surrounding wet heath, dry heath and sphagnum-rich habitat mosaic.

Additional planting could shade, disturb, replace or alter existing heathland and peatland-associated vegetation. It could also alter local hydrology and reduce sunlight reaching existing habitats and my garden. The Applicant has not assessed these secondary ecological effects. A mitigation measure proposed for one impact cannot be accepted where it creates unassessed habitat impacts.

Failure to Demonstrate Habitat Recoverability

My original submission referred to previous disturbance associated with the temporary meteorological mast and observed that the soil and vegetation had not returned to its previous heath condition in the way assumed by restoration logic. I remain concerned that the Applicant's mitigation assumptions do not adequately address habitat recoverability in exposed upland conditions.

At higher elevations and in exposed upland settings, habitat regeneration may be slow and uncertain. Peatland, heathland, mosses, lichens and mature woody habitats cannot simply be recreated immediately after disturbance. The assessment does not transparently demonstrate the recovery timeline, success criteria or contingency measures if restoration fails.

Habitat Conclusion

The Applicant has not demonstrated that the Proposed Development will avoid unacceptable habitat and biodiversity effects. The response acknowledges or addresses individual topics, but it does not transparently demonstrate the cumulative ecological effect on the wider habitat mosaic of dry heath, wet heath, blanket bog, sphagnum-rich vegetation, reindeer moss, woodland, hedgerows, treelines, Gortacullin Bog NHA and associated wildlife corridors.

The Applicant's own scoping material records abundant Sphagnum moss within a wet area. Response F does not address the significance of that wider sphagnum-rich habitat evidence. Instead, it focuses on whether *Sphagnum austinii* was recorded within the development footprint and whether a particular photograph contains that species. That does not demonstrate that sphagnum-rich peatland vegetation more broadly has been fully mapped, assessed and protected.

The habitat assessment remains dependent on survey conclusions, habitat labels, mitigation promises and future management measures. It does not provide a transparent evidential pathway demonstrating that habitat loss, fragmentation, hydrological alteration, woodland and hedgerow loss, lichen and moss impacts, cumulative effects with Oatfield and secondary mitigation impacts have been fully identified, quantified, avoided and controlled.

Accordingly, I consider that the habitat and biodiversity assessment remains insufficiently demonstrated and should not be accepted as establishing that the residual effects of the Proposed Development are acceptable.

8. Project Splitting, Residential Visual Amenity, Landscape Character & Compensation Lands

The Applicant has not adequately demonstrated that the Proposed Development can be assessed in isolation from the wider cumulative wind farm context in which it would operate. The environmental effects of Knockshanvo would be experienced alongside Oatfield and other surrounding wind energy developments, including effects on residential amenity, visual amenity, landscape character, noise, shadow flicker, hydrology, habitats and Hen Harrier.

The Applicant's response repeatedly states that cumulative assessment has been undertaken and that Oatfield is a separate project promoted by a different developer under separate landowner agreements. That does not resolve the core issue. The core issue is whether the receiving environment has been assessed as it would actually be experienced if multiple surrounding wind farm developments proceed.

Project Splitting and Cumulative Assessment

The Applicant has not adequately addressed the concern regarding project splitting and cumulative assessment. My concern is not merely whether Knockshanvo and Oatfield are promoted by different developers, are subject to separate landowner agreements, or are contained in separate planning applications. My concern is whether the environmental effects of the developments will be experienced cumulatively within the same receiving environment.

The Applicant's response states that Oatfield is an entirely separate project, progressed independently by a different developer, under separate landowner agreements, and that other than geographical proximity it bears no relation to Knockshanvo. That response addresses ownership and administrative structure. It does not answer the environmental question raised in my submission.

Environmental receptors do not experience impacts according to planning application boundaries. Residents, habitats, private wells, watercourses, Hen Harrier, landscape receptors and local communities experience the combined effect of what is built and operated in the receiving environment. The fact that two developments are promoted separately does not demonstrate that their combined environmental effects are immaterial.

The Applicant's own material acknowledges that cumulative assessment is necessary across a range of topics. Cumulative noise, cumulative ornithological effects, cumulative habitat effects, cumulative hydrology and cumulative landscape / visual effects are all relevant. That fact confirms that the substance of the issue is cumulative environmental effect, not developer identity.

I therefore do not accept that a response based primarily on separate ownership and separate planning applications resolves the concern. The assessment should demonstrate the cumulative outcome if Knockshanvo, Oatfield, Lackareagh / Kilbane, Fahybeg, Ballycar and Carrownagowan operate within the same upland landscape.

The appropriate assessment question is whether the overall environmental effects have been fully identified, quantified and assessed. A cumulative assessment should not simply list surrounding developments and conclude no significant effect. It should demonstrate the combined environmental condition that would exist on the ground.

In my view, the Applicant has not transparently demonstrated the cumulative effects on residential amenity, visual amenity, landscape character, shadow flicker, noise, private wells, hydrology, habitats, peatland, Hen Harrier displacement and biodiversity connectivity. The conclusion that cumulative effects are acceptable

remains dependent on a series of topic-specific assertions rather than a clear integrated assessment of the combined receiving environment.

This is particularly important because European and Irish EIA case law recognises that connected or cumulative environmental effects cannot be avoided by artificially separating elements of development where the consequence would be an incomplete environmental assessment. The concern here is not whether there has been an intention to avoid EIA. The concern is whether the environmental assessment is complete and reliable when the developments are experienced together.

Residential Visual Amenity

The Applicant has not adequately demonstrated the residential visual amenity impact on my property and surrounding residential receptors. The assessment addresses residential visual amenity within 3 km of the proposed turbines, including local townland receptor groups, and acknowledges that some local visual effects may be significant at representative viewpoints. However, the assessment does not transparently demonstrate the cumulative residential experience at receptors affected by both Knockshanvo and Oatfield.

The visual impact at a residential property is not experienced as an abstract landscape category. It is experienced from the house, garden, yard, entrance, local road approaches and outdoor areas used daily by residents. My property is also used extensively outdoors, including for gardening, food production and animal care. Residential visual amenity therefore includes the lived experience of the whole residential curtilage, not only views from selected viewpoint locations.

The Applicant relies on representative viewpoints and townland-level receptor groupings. I do not accept that this demonstrates the full receptor-specific impact at my property, particularly where cumulative effects from Oatfield and Knockshanvo may occur in different directions and may affect both the outlook from the dwelling and the character of the surrounding local environment.

The assessment should demonstrate how turbines would be perceived from my dwelling, garden, outdoor working areas and local access routes, both individually and cumulatively with Oatfield and other surrounding wind farm developments. It should also demonstrate whether mitigation by distance, screening, landform or intervening vegetation is genuinely applicable to my property.

I do not accept that compliance with setback distances, or the statement that only a small number of receptors experience higher effects, is sufficient to demonstrate acceptability. The question is whether the effect on affected receptors has been properly identified and assessed. A significant or locally substantial effect on a small number of homes remains material for those residents.

The visual amenity assessment also needs to be considered alongside shadow flicker and noise. A dwelling affected by visible turbines, shadow flicker exceedances and predicted operational noise should not be assessed as though each effect exists in isolation. The cumulative residential amenity effect is greater than the sum of individual technical chapters.

Accordingly, the Applicant has not demonstrated an acceptable residential visual amenity impact at my property. The assessment remains too dependent on representative viewpoint analysis, generalised receptor groupings and assertions of screening or distance, without demonstrating the actual cumulative residential experience at the affected dwelling and its curtilage.

The assessment evaluates shadow flicker, noise and visual effects as separate technical disciplines. However, it does not transparently demonstrate the cumulative residential amenity effect experienced where the same dwelling may be affected simultaneously by turbine visibility, shadow flicker, operational noise and wider landscape change.

Landscape Character and Broadford Valley

The Applicant has not adequately demonstrated the cumulative landscape impact on the Broadford area. Broadford is experienced locally as a topographically enclosed valley landscape, with surrounding elevated upland ridges forming the wider visual and acoustic receiving environment. Multiple existing, permitted and proposed wind energy developments are located, proposed or assessed within that surrounding upland context.

The Applicant's assessment should therefore address not only the visibility of the Knockshanvo turbines in isolation, but the transformation of the wider landscape character that would result from multiple turbine arrays across the surrounding uplands.

The relevant landscape question is not simply whether turbines can be seen from a particular viewpoint. The question is whether the landscape character of the Broadford area would be materially altered by the cumulative concentration of wind farm development on surrounding elevated ground. The Applicant has not transparently demonstrated that this cumulative transformation has been fully assessed.

The Broadford valley landscape is not experienced in compartments. Residents and visitors experience the ridges, approaches, roads, upland horizons, forestry, peatland, heathland, local settlements and open countryside as one connected landscape. Where multiple wind farms are introduced into that same landscape, the cumulative effect may be one of industrialisation and encirclement rather than isolated turbine visibility.

I therefore do not accept that the Applicant's landscape assessment adequately addresses the specific topographical and cumulative context of Broadford. The assessment should demonstrate how Knockshanvo, Oatfield, Lackareagh / Kilbane, Fahybeg, Ballycar and Carrownagowan interact visually and perceptually across the same landscape unit.

This concern is reinforced by the fact that the same landscape context is relevant to noise, visual amenity, shadow flicker, hydrology, ecology and Hen Harrier habitat. The cumulative landscape issue is therefore not an aesthetic objection alone. It is part of a wider cumulative transformation of the receiving environment.

Accordingly, I do not accept that the Applicant has demonstrated that the landscape character of the Broadford valley and surrounding uplands can absorb the proposed development without unacceptable cumulative change.

Habitat Compensation and Enhancement Lands

The Applicant has not demonstrated that the proposed habitat compensation and enhancement measures provide adequate ecological equivalence for the habitats and species affected. The Applicant relies on habitat compensation, habitat enhancement, forestry restoration and biodiversity management measures to support the conclusion that residual effects will not be significant.

The issue is not whether compensation and enhancement are proposed. The issue is whether those measures are secured, deliverable, timely, ecologically equivalent and sufficient to address the actual functional loss occurring on the ground.

Habitat compensation cannot be assessed by area alone. It must be assessed by reference to habitat quality, ecological function, hydrology, vegetation structure, species composition, connectivity, timescale and certainty of delivery. Loss of mature woodland, hedgerows, peatland, sphagnum-rich vegetation, wet heath, dry heath and Hen Harrier foraging habitat cannot be assumed to be offset immediately by proposed management measures.

In relation to Hen Harrier, the Applicant relies on compensation and enhancement lands to reduce residual impacts. However, if enhancement lands are intended to improve habitat for Hen Harrier, the assessment should demonstrate how increased habitat attractiveness, changed distribution of bird activity, collision risk and cumulative displacement have been incorporated into the final impact conclusions.

In relation to peatland and heathland habitats, the Applicant has not demonstrated that restored or managed land will replicate the ecological function of affected habitats at the time impacts occur. Heathland, sphagnum-rich peatland vegetation, woodland and lichen / bryophyte communities may take many years or decades to develop, and recovery in exposed upland conditions is uncertain.

I also do not accept that mitigation planting proposed for other impacts, such as shadow-flicker screening, can be treated as beneficial or neutral without assessing its ecological consequences. Tall screening vegetation around my property may require planting that is not characteristic of the local wet heath, dry heath and sphagnum-rich habitat mosaic, and may itself create unassessed habitat impacts.

Accordingly, I do not accept that the Applicant has demonstrated ecological equivalence, deliverability or certainty in relation to habitat compensation and enhancement. The assessment remains dependent on future management promises rather than a transparent demonstration that habitat functions affected by the development will be maintained or replaced in practice.

Project Splitting & Habitat Conclusion

The issues raised within this submission are not isolated technical concerns. They are interconnected aspects of the same receiving environment.

The Applicant's own assessment identifies habitat loss, Hen Harrier displacement, shadow flicker exceedances, operational noise impacts, hydrological risks, habitat compensation requirements and cumulative interactions with neighbouring wind farm developments. However, the material presented does not transparently demonstrate how these issues have been integrated into a single cumulative assessment of the environment that would actually be experienced by residents, wildlife, habitats and water receptors.

The conclusions presented throughout the Further Information remain dependent upon a series of assumptions relating to mitigation performance, compensation measures, habitat enhancement, future management, operational controls and monitoring. In many instances, the Applicant has demonstrated that mitigation is proposed, but has not demonstrated that impacts have been avoided.

The assessment also relies on a compartmentalised treatment of environmental effects. Residential amenity, noise, shadow flicker, landscape character, hydrology, habitat loss and biodiversity are assessed largely as separate topics. The material does not transparently demonstrate the cumulative environmental condition that would result if Knockshanvo, Oatfield and other surrounding wind energy developments proceed within the same upland landscape.

Particular uncertainty remains regarding:

- the cumulative displacement and habitat implications for Hen Harrier;
- the relationship between compensation lands and future bird activity;
- SPA functional linkage;
- private water supplies and groundwater pathways;

- cumulative shadow flicker and residential amenity impacts;
- cumulative noise within the Broadford valley setting;
- habitat compensation and ecological equivalence;
- cumulative landscape change;
- and the extent to which cumulative effects have been assessed across the wider receiving environment rather than within individual project boundaries.

Accordingly, I do not consider that the Applicant has provided sufficient evidence to remove reasonable scientific and environmental uncertainty regarding the effects of the proposed development.

For the reasons set out throughout this submission, I respectfully request that the Commission treat the Applicant's conclusions with caution and give significant weight to the remaining uncertainties identified in relation to cumulative effects, residential amenity, biodiversity, hydrology and landscape character. The material before the Commission does not transparently demonstrate that the environmental effects of the proposed development have been fully identified, quantified, assessed and satisfactorily resolved.

9. Consolidated Outstanding Matters

The following matters remain insufficiently demonstrated:

- A merged cumulative Hen Harrier habitat-loss calculation for Knockshanvo and Oatfield.
- The treatment of the 250 m to 500 m reduced-use zone and the effect of modern turbine scale on displacement assumptions.
- The GIS basis for excluding SPA functional linkage, including whether the displacement footprint was incorporated.
- Receptor-specific baseline assessment of private wells and groundwater pathways.
- A cumulative hydrological assessment of drainage alteration, felling, borrow pits, excavation and runoff across Knockshanvo and Oatfield.
- A receptor-specific shadow-flicker calendar for H493 / H4, including days, months, times and sequential Oatfield–Knockshanvo exposure.
- Clarification that H4 was not assessed using any associated-dwelling or financially involved criterion for noise or shadow flicker.
- Cumulative noise assessment using the correct receptor classification and receptor-specific baseline conditions.
- Assessment of Broadford’s topographically enclosed valley setting for cumulative noise, landscape and amenity effects.
- Mapping and protection of sphagnum-rich wet heath, peatland-associated habitat and related hydrological dependencies.
- Ecological equivalence, timing, legal securing and deliverability of compensation and enhancement lands.
- Integrated assessment of cumulative residential amenity where noise, visual impact, shadow flicker and landscape change affect the same property.

10. Final Conclusion and Request to the Commission

The issues raised within this submission are not isolated technical concerns. They are interconnected aspects of the same receiving environment.

The Applicant's own material identifies habitat loss, Hen Harrier displacement, shadow-flicker exceedances, operational noise impacts, hydrological risks, habitat compensation requirements and cumulative interactions with neighbouring wind farm developments. However, the material presented does not transparently demonstrate how these issues have been integrated into a single cumulative assessment of the environment that would actually be experienced by residents, wildlife, habitats and water receptors.

The conclusions presented remain dependent upon assumptions relating to mitigation performance, compensation measures, habitat enhancement, future management, operational controls and monitoring. In many instances, the Applicant has demonstrated that mitigation is proposed, but has not demonstrated that impacts have been avoided or that residual effects are acceptable.

The assessment also relies on a compartmentalised treatment of environmental effects. Residential amenity, noise, shadow flicker, landscape character, hydrology, habitat loss and biodiversity are assessed largely as separate topics. The material does not transparently demonstrate the cumulative environmental condition that would result if Knockshanvo, Oatfield and other surrounding wind energy developments proceed within the same upland landscape.

Accordingly, I do not consider that the Applicant has provided sufficient evidence to remove reasonable scientific and environmental uncertainty regarding the effects of the proposed development.

For the reasons set out in this submission, I respectfully request that the Commission treat the Applicant's conclusions with caution and give significant weight to the remaining uncertainties identified in relation to cumulative effects, residential amenity, Hen Harrier, biodiversity, hydrology, private water supplies, shadow flicker, noise and landscape character.

The material before the Commission does not transparently demonstrate that the environmental effects of the proposed development have been fully identified, quantified, assessed and satisfactorily resolved.