GBWAG (1)

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Observation on Proposed Wind farm and related works within the townlands of Cloonaheen, Ballincor Demesne, and Curralanty, Co. Offaly, and Clonfree, Castletown and Cronekill, Co. Tipperary.

















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AN COIMISIÚN PLEANÁLA
LDG- 068954
ACP-
02 JUL 2026
Fee: € 50 Type: Cash
Time: 11.15 By: hand

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EXECUTIVE SUMMARY

Preliminary Note: Two copies of this submission have been lodged. This copy includes the Signatories; the other does not. They are otherwise identical in substance, so the Inspector need only read this version. The second copy is lodged to safeguard the submission in the event that any signatory withdraws their support

The Greater Birr Wind Action Group respectfully submits that permission for the proposed Ballincor Wind Farm should be **refused**. This Executive Summary draws together the grounds of objection developed across the thirteen technical chapters of this submission. It is addressed to An Coimisiún Pleanála as the competent authority. The chapters stand on their own; this summary is a guide to them, not a substitute for them.

This objection is not a stand against climate action. It is a demonstration that this particular development, on this particular site, pulls against the very climate, water and restoration commitments the State has made for itself. The thread running through every chapter is maladaptation. The proposal is presented as climate action yet on the applicant's own documents it would strip out tens of thousands of cubic metres of carbon-storing peat, press down on an active floodplain at precisely the moment it needs to be safeguarded, set back a State-funded raised-bog restoration, and load construction pressure onto a catchment already at Poor status.

Critically, this harm is not a price that must be paid. Offaly already produces roughly 11% of the country's renewable electricity from just 2% of its land, 25% of total output in the Eastern region, so the additional benefit here is slight and obtainable elsewhere at far lower environmental cost. A development that cuts against the State's own climate, water and restoration goals cannot be weighed as if its renewable output were the only figure on the page.

Two structural facts frame everything that follows.

1. The site is designated "Not Suitable" for wind energy development in both Offaly and Tipperary County Development Plans.
2. The applicant has expressly waived both derogation pathways: Article 6(4) IROPI under the Habitats Directive and Article 4.7 under the Water Framework Directive.

There is no balancing exercise and no fallback. Full compliance with Article 6(3) and Article 4(1)(a) must be demonstrated on the application as filed. Any single adverse effect that cannot be excluded on the application as filed is sufficient to require refusal. The grounds below identify many.

Each chapter is independently sufficient to justify refusal. Taken together, the grounds establish not a series of isolated faults but a consistent pattern which runs through the entire assessment in the same direction. Five themes recur across the chapters:

1. **Every discretionary choice runs in the same direction.** At each point where the governing methodology permitted a choice, the most permissive option was taken; the highest daytime noise threshold, the lowest-precaution ground and receiver-height parameters, a summer-only survey, viewpoints that avoid the affected population, sensitivity ratings below the applicant's own criteria. Each choice may be defensible alone; their uniform direction is not. It consumes every margin the methodology was designed to build in.

2. **Omission at the centre, not the margins.** The most important things are the ones not assessed. Phosphorus, named as the main water-quality issue, was never reported; the mandatory valley noise correction was never performed; the highest-density bird activity zone was excluded from the collision model; the principal waste streams were never quantified; the deepest peat closest to the SAC has no ground investigation; no nocturnal Barn Owl survey was conducted in six years. The gaps sit precisely where the analysis most needed to be done.

3. **Mitigation that is deferred, undesigned, or incapable of functioning when needed.** A "Negligible" peat rating rests on a temporary works design that does not yet exist; a track design is handed to an unappointed specialist; pollution control is built as though the site were dry, when it floods every winter; the sole Barn Owl mitigation can only be triggered by evidence the monitoring is structurally incapable of generating. A measure that cannot function under the conditions that trigger it is not mitigation — and People Over Wind (C-323/17) prohibits reliance on unassessed mitigation.

4. **Assessment at the wrong scale — cumulative and receptor effects that never reach the people affected.** The cumulative landscape assessment never reaches the individual dwellings where the effect is experienced; four wind developments in one bird Zone of Influence each treat the others as background,

producing a circular nil-effects result, the in-combination airspace effect on aviation is not assessed at all. The reality is assessed away by the level of generality at which the question is asked.

5. **Assertion in place of analysis.** The conclusions that matter most rest on bare numbers with no workings shown: firm conclusions of "ample capacity" drawn from a single incomplete week of traffic data; a shadow-flicker compliance case whose derivation is never disclosed; a waste finding internally inconsistent with the chapter's own assessment. Certainty under EU law comes from calculation applied to the receptor and that calculation has frequently not been done.

The grounds of objection are summarised below in chapter order. Each summary states the principal point only; the corresponding chapters that will follow set out the forensic analysis in full, grounding every objection in the applicant's own submitted documents: its survey data, its consultants' reports, its modelling outputs, and testing each against the statutory guidance and methodology the applicant itself adopted as governing. The strength of each ground lies in that discipline: it is the applicant's own record, measured against the applicant's own standards.

Chapter 2 — Site Selection, the County Development Plan and Coolglass

- **Ground 1 -** The site is designated Not Suitable for wind energy in two County Development Plans.
- **Ground 2 -** The designation is the output of a rigorous, SEA'd, AA'd, OPR-reviewed statutory exercise, and the site failed on every criterion.
- **Ground 3 -** Offaly is already delivering far beyond its renewable obligations, and doing so within its designated areas; this development sits outside them.
- **Ground 4 -** The CDP designation carries European, not merely local, weight under RED III, and a grant would put the State in breach of its own EU-law representations. Further the applicant's reliance on RED III is self-defeating.

- **Ground 5 -** The Supreme Court's decision in Coolglass, properly read, requires refusal. None of the three narrow Coolglass exceptions that could displace the presumption of CDP compliance applies.

- **Ground 6 -** The applicant's site selection contradicts its own published site-selection policy and the site selection process fails the EIA Directive alternatives requirement.

Chapter 3 — Hydrology

- **Ground 1 - Wrong WFD classification** — the compliance case is demonstrated against "Moderate" when the waterbody's WFD status is Poor and At Risk; under Weser (C-461/13) any further deterioration of an already-failing element is prohibited.
- **Ground 2 - Area For Action programme of measures** — the WFD test against the River Basin Management Plan is identified, populated with every relevant fact, and then left unanswered — a Holohan lacuna that cannot be cured by condition.
- **Ground 3 - Phosphorus, iron and key pollutants** — phosphorus, the named driver of failure, is never baselined or reported; iron, visible in the applicant's own photographs, is neither baselined nor monitored.
- **Ground 4 - Baseline sampling failure** — the primary discharge pathway and five named tributaries were never sampled or were recorded as Bad and then ignored.
- **Ground 5 - Construction in Flood Zone A/B and the Justification Test** — four turbines sit in Flood Zone A/B. Flood Zone A/B is explicitly classified as inappropriate for wind energy infrastructure thereby triggering the Justification test. The test fails on every criterion and the mitigation cannot function under the flood conditions the Flood Risk Assessment itself confirms.
- **Ground 6 - The Gravels-and-Esker "Window" Excluded by the Red Line -** The applicant has circled out a GSI-mapped pocket of gravels and esker inside the application area, treating it as a separate feature. It is not. A peat-to-gravel boundary is a recognised conduit for groundwater discharge toward the SAC. Turbines T1–T4 will load its margin, yet its function as a preferential pathway has not been assessed, because it has been defined out of the assessment. This presents the lacuna Holohan prohibits.

- **Ground 7 - Access tracks in Flood Zone A/B** — no ground investigation, no workable design, and a track design openly deferred to an unappointed specialist, in the most sensitive eastern corridor.
- **Ground 8 - Construction loading on the floodplain** — a flood-risk mechanism, compaction of an active floodplain raising flood levels against the SAC. This was never characterised or assessed.
- **Ground 9 - Peat stability** — Nine of twelve trial pits collapsed; the "easy to manage" characterisation is contradicted by the applicant's own moisture readings of up to 946%; and the "Negligible" peat-stability rating rests on temporary works that have not yet been designed, the same reliance on undesigned mitigation that preceded the Meenbog peat failure.
- **Ground 10 - The SWMP** - the central water-protection mechanism, cannot function under the flood conditions the applicant's own FRA confirms.
- **Ground 11 - The hydrogeological pathway to Sharavogue Bog SAC** - is confirmed and then dismissed without explanation and no mitigation is designed for it.
- **Ground 12 - The Natura Impact Statement** - is internally contradictory: a single flawed analytical block dismisses every potential adverse effect across all qualifying interests.

Chapter 4 — Ornithology

- **Ground 1 - Survey methodology** - The dominant eight-season Ecology Ireland dataset cannot support a complete and definitive Appropriate Assessment. Surveys were concentrated in the middle of the day, with zero dawn and dusk coverage in summer, near-zero dusk coverage in winter, absent height-band classification, non-compliant watch durations, and concurrent watches violating the statistical independence assumptions of the NatureScot model. No nocturnal surveys, acoustic monitoring or radar were conducted in any season. The CRM author acknowledges methodology deviation across many aspects and the inability to calculate dawn/dusk recording rates. The single strong Tobin season does not retrospectively validate eight deficient ones.

- **Ground 2 - The highest-density activity zone and absent spatial coverage -** The Brosna North Corridor, where densities for four SPA qualifying-interest species are 4.7 to 8.0 times higher than the modelled zone, was excluded from the Collision Risk Model with no commuting-flight analysis to replace it. Turbine T5 falls outside every viewshed at every height in every season.
- **Ground 3 - Baseline completeness -** Several SPA qualifying-interest species, including pintail, curlew, teal, shoveler, kingfisher and Greenland white-fronted goose, were CRM-modelled but then excluded from individual population-level significance assessment, on a "fewer-than-ten-records" threshold that is itself a product of the survey failures and is not applied consistently.
- **Ground 4 - Population denominators -** Denominators are applied at scales that understate SPA-level mortality significance, without addressing the conservation-trajectory question the NPWS/DAU expressly requires.
- **Ground 5 - Avoidance rates -** The avoidance rates relied upon have been challenged by the regulatory authority as inapplicable to this turbine scale and landscape type and their sensitivity is excluded from the reported uncertainty ranges.
- **Ground 6 - Displacement and connectivity -** Displacement distances are based on smaller turbines in different landscapes, and ex-situ SPA connectivity is assessed by inverting the precautionary principle thereby treating absence of proof as proof of absence.
- **Ground 7 - Logical inconsistencies in the reasoning -** Five specific steps in the developer's reasoning do not hold: the pintail dismissal, the repeated use of the 1% threshold mechanism, the selective application of large-flock caution to black-tailed godwit, the whooper swan diel-gap acknowledgement carried through without consequence, and the height-overestimation argument.
- **Ground 8 - Protected species assessment.**
  Priority species are each assessed inadequately. For curlew and merlin, post-submission field evidence directly contradicts the developer's conclusion. For white-tailed eagle, the 1% annual mortality threshold was applied to a national wild population of 150 — precisely the category the CRM's own author identified as biologically implausible. For golden plover, the assessment never asks whether the development undermines recovery potential for a population already at 50% of its

baseline. A further seven species of conservation concern are assessed inconsistently with their national populations or regulatory status.

- **Ground 9 - Mitigation.**
  There is no dedicated operational bird mitigation. The assessment rests entirely on its own adequacy — which Grounds 1–2 disprove — with a post-consent adaptive-management mechanism the DAU has previously stated it cannot approve.
- **Ground 10 - Cumulative effect.**
  The in-combination assessment in the NIS is not merely inadequate, it is absent. No developer across the Zone of Influence has calculated combined collision mortality across the four primary developments on the shared SPA populations; the combined figure from three developments alone — 46.8–118.3 golden plover collisions per year on a population already 50% below its SPA baseline — has never appeared in any document before any competent authority, despite the requirement to do so.

Chapter 5 — The Barn Owl

This is an exceptional case: the site lies within the highest-density Barn Owl area ever documented in Ireland, supporting a nationally important population, with confirmed breeding within 160 m of a turbine and a pre-construction carcass already recovered at the site boundary.

- **Ground 1 - Failure to comply with NPWS scoping requirement** — the DAU required dedicated, species-specific Barn Owl surveys; none were conducted, and desk study and consultation were substituted.
- **Ground 2 - Structurally inadequate survey methodology** — no nocturnal, acoustic or dusk/dawn survey in six years; the resulting absence of data was used to conclude negligible collision risk — a circular argument.
- **Ground 3 - No survey in the critical June/July window** — the window for detecting calling juveniles and confirming breeding success was missed every year, leaving the impact assessment structurally incomplete.
- **Ground 4 - Collision risk relies on incomplete and superseded evidence** — a single behavioural figure from a 2015 charity position paper is relied on while the CIEEM best-practice guidance and the peer-reviewed USGS/Ecosphere study

(which lists Barn Owl among the five most population-sensitive raptors) are omitted.

- **Ground 5 - Internal contradiction** — the narrative finds the population of National importance while the impact matrices apply County importance and Medium sensitivity, producing "not significant" conclusions the applicant's own framework cannot sustain.
- **Ground 6 - Mitigation incapable of functioning** — the sole measure (MM90) names no species, sets no trigger and specifies no response, and depends on detecting fatalities the daytime, unfenced monitoring is structurally incapable of generating.

Chapter 6 — Biodiversity

This vast pillar of the Application was assessed receptor by receptor against the Article 6(3) standard, the Appropriate Assessment is *NOT* complete, precise and definitive, and free of lacunae as Holohan requires. For several protected species the survey method could not detect the species it was meant to find.

KER 1 — Marsh Fritillary (*Euphydryas aurinia*)
Annex II; Bern Convention Appendix II; national status "inadequate." The developer's own EIAR concludes the likely outcome is total loss of the local breeding population.

- **Ground 1 — Inadequate baseline: no adult butterfly survey and single-season larval-web data.** No targeted adult survey was conducted during the May–June flight period in any year so population size, distribution, dispersal and flight activity are all unknown. The baseline rests on one September 2023 visit, which the developer itself admits "cannot anticipate" future web positions, contrary to its own committed NBDC methodology requiring repeated annual surveys. This presents a *Holohan* lacuna.
- **Ground 2 — The developer's own logic leads to total population loss.** EIAR S. 6.6.3.3.3 concludes profound, permanent loss of the local breeding population by two undisputed routes — 69% direct habitat destruction and hydrological degradation of the remaining 31% — engaging *Sweetman* and the Bern Convention prohibition on disturbance during breeding.
- **Ground 3 — Internal contradiction: "total loss" and "retained population" used simultaneously.** The assessment elsewhere refers to "the retained Marsh Fritillary

population" colonising the receiving site; a population cannot be both totally lost and retained, the contradiction is never resolved.

- **Ground 4 — Inconsistent receiving-site figures: 4.8 ha vs 2 ha.** Chapter 20 MM51 commits 4.8 ha, BEMP Appendix 6-1 states 2 ha, leaving the competent authority unable to determine what area is actually committed — neither precise nor definitive.
- **Ground 5 — MM50 (vegetation cutting) is self-defeating.** Cutting to disperse adults is contradicted by the developer's own account that the species is largely sedentary (<100 m) and that the foodplant is absent everywhere else on site, so displaced adults have nowhere viable to go.
- **Ground 6 — MM48 (larval translocation) directs larvae into habitat to be destroyed.** Larvae are moved into the same 0.1 ha the developer says will be permanently degraded, contrary to the developer's own cited authority (Butterfly Conservation 2023) that such translocation is "unacceptable."
- **Ground 7 — MM51 (receiving site) unproven and unsecured.** The receiving site lacks the larval foodplant, has no stated timeline for achieving the required density, and no legally enforceable management agreement — failing the *People Over Wind* standard.

KER 2 — Sharavogue Bog SAC (Site Code 000585)

Priority habitat 7110 in active, State-funded restoration; SAC boundary ~10 m from the site, T8 ~0.1 km.

- **Ground 1 — Irreconcilable contradiction between NIS Tables 6-1 and 6-2.** Table 6-1 records a viable groundwater pathway and "potential for likely significant effects"; Table 6-2 then dismisses all adverse effects with no intervening analysis — the precise lacuna *Holohan* prohibits.
- **Ground 2 — The "400 m from construction" claim is unverifiable.** No drawing anywhere in the submission substantiates the buffer distance the dismissal relies on.
- **Ground 3 — A single flawed analytical block dismisses every qualifying-interest attribute.** One unjustified 400 m/100 m Zone-of-Influence figure, applied to a wrongly selected reference point, is used to answer "No" to every attribute row — including the hydrological-regime attributes carrying centimetre-level conservation targets, all without any SAC-specific survey.
- **Ground 4 — Wrong hydrogeological model: bedrock ZoI applied to a near-surface peat system.** The 100 m ZoI is derived from bedrock-aquifer modelling and

cannot assess the shallow, laterally mobile acrotelm water table responsible for the confirmed upwelling.

- **Ground 5 — No receptor-end measurement.** Groundwater monitoring targets the public water-supply boreholes; no piezometer is placed at the SAC boundary and no SAC water-table trigger threshold is defined anywhere.
- **Ground 6 — Restoration trajectory not assessed.** The assessment never asks whether any change to the lagg-zone water table could arrest or reverse the post-2021 rewetting trajectory, engaging *Sweetman* (constitutive characteristics) for a site in active recovery.
- **Ground 7 — Physical habitat buffer eliminated without assessment.** The transitional habitat between site and SAC — performing surface-hydrological buffering, ecological connectivity and dust/particulate buffering — is removed (including 2.82 ha of WN7 bog woodland) with no assessment and no mitigation.
- **Ground 8 — Atmospheric nitrogen deposition never reviewed.** Deposition already stands ~163% above the conservation target (13.2 vs 5 kg N/ha/yr), yet no modelling of additional construction-phase loading was done - the most ecologically relevant atmospheric pathway was left unassessed.
- **Ground 9 — No mitigation designed for the identified pathway.** Because Table 6-2 concludes no effect, no SAC-directed mitigation exists; the SWMP/CEMP address only watercourse surface water, not the near-surface groundwater pathway confirmed in Table 6-1.
- **Ground 10 — The SWMP fails under foreseeable flood conditions.** The FRA confirms T8/T9 and access roads flood at the 1% AEP event and that roads must not be used after heavy rain, yet the SWMP requires an ECoW on site during exactly those rainfall events — irreconcilable and fatal to a mitigation-dependent no-effect finding.

KER 3 — Aquatic Ecology

Atlantic Salmon, Brown Trout (incl. Croneen sub-population), three lamprey species, European Eel, White-clawed Crayfish. Primary receiving water (Little Brosna_040) is Poor / At Risk.

- **Ground 1 — Wrong WFD baseline for the primary receiving waterbody.** The entire aquatic and SWMP assessment is built on a Moderate baseline (Chapter 9 Table 9-5) when Appendix 9-1 confirms the Little Brosna_040 has deteriorated to Poor — engaging the absolute *Weser* prohibition.

- **Ground 2 — Survey windows miss the migration and spawning seasons.** The July base-flow survey has virtually no chance of detecting salmon (Oct–Jan return) or seaward-migrating silver eel (Sept onwards), the species the assessment purports to evaluate.
- **Ground 3 — The Croneen brown trout sub-population is omitted entirely.** A genetically distinct, nationally significant population specific to this area and waterbody, named in IFI's own documentation is never mentioned; the word "Croneen" appears nowhere, so no electrofishing, no impact assessment and no mitigation address it.
- **Ground 4 — European Eel: acknowledged everywhere, assessed nowhere.** The developer accepts eel almost certainly uses every watercourse on site, then provides no survey, no culvert-passage assessment of the 14 crossings, and no eel-specific mitigation, despite Critically Endangered status and independent EC protection.
- **Ground 5 — White-clawed Crayfish: wrong detection method.** "Not expected to occur" rests on a daytime visual search for a nocturnal species with NBDC records 4 km downstream on the same waterbody; the standard Peay (2002) nocturnal torchlight/refuge protocol was not followed.
- **Ground 6 — Critical channel section left without baseline data.** The main Little Brosna channel adjacent to T8/T9, most exposed to construction sedimentation, was never electrofished, despite being accessible; a survey-design choice, not a physical constraint.
- **Ground 7 — No fish-passage assessment for 14 watercourse crossings.** IFI specifically required careful crossing design; none is assessed for passage, including at lamprey-confirmed crossings — a *Holohan* gap.
- **Ground 8 — Mitigation fails at peak flood / peak sensitivity.** The SWMP fails at T8/T9 under the flood conditions that coincide with peak migratory and spawning activity, so sediment can reach the Croneen network uncompensated by recolonisation.

KER 4 — Bats

All Irish bats Annex IV (Article 12 strict protection); Lesser Horseshoe additionally Annex II.Annex II. Eight species confirmed; four at HIGH collision risk;

- **Ground 1 — Internal inconsistency and opaque activity categorisation.** The "slight" pre-mitigation conclusion cannot be reconciled with nightly averages exceeding 3,675 registrations and four high-collision-risk species at Moderate-to-High activity. There is no quantitative collision modelling, predicted annual mortality, or

population-level assessment. The activity categories cannot be independently verified and the Board cannot satisfy itself the risk is properly characterised; a Holohan lacuna.

- **Ground 2 — No operational curtailment despite Medium collision risk.** The primary evidence-based mitigation, operational curtailment of cut-in speeds (50–90% fatality reduction) is absent, deferred to a post-construction "recommendation if required" with no trigger thresholds, algorithm or enforcement. This reverses the precautionary principle (operate first, restrict only if monitoring reveals mortality), and under People Over Wind hypothetical future mitigation cannot carry an AA conclusion.
- **Ground 3 — Cumulative assessment circular and substantively absent.** A 23-turbine cluster within 4 km (Skehanagh, Carrig, Ballincor) is treated as "existing baseline," producing no combined mortality figure, no Skehanagh post-construction data, and no cumulative fragmentation or additive roost-pressure analysis. The "nil plus nil equals nil" methodology is not a lawful cumulative assessment.
- **Ground 4 — Accepted turbine mortality engages Article 12.** The developer accepts likely operational bat mortality, which on the *Drumakilla* line of authority constitutes deliberate killing and a significant environmental effect.
- **Ground 5 — No Regulation 54 derogation obtained pre-consent.** *Hellfire Massey* requires the derogation licence before planning permission; none has been obtained, and a grant cannot substitute for it.
- **Ground 6 — With both EU derogations waived, refusal is the only lawful outcome.** Because adverse effects cannot be excluded and the IROPI/Article 4.7 fallbacks are waived, the Article 12 engagement is decisive.

KER 5 — Slender Cottongrass / lagg-zone flora (*Eriophorum gracile*)

Flora (Protection) Order 2015 species in the Sharavogue lagg — the primary element of local distinctiveness. (Grounds follow the KER 2 hydrological findings.)

- **Ground 1 — A confirmed FPO species dependent on the unassessed pathway.** *E. gracile* occurs only where a stable base-rich water supply is maintained, and that supply depends on the very groundwater pathway the NIS identified in Table 6-1 and then failed to trace to its receptor.
- **Ground 2 — The lagg system's distinctiveness is not protected.** Identified by NPWS as one of the best-developed lagg systems in the country and unique among Irish raised bogs, its supporting hydrology is exposed by the connectivity failure and no adverse-effect finding can stand against it.

KER 6 — Otter (*Lutra lutra*)

Annex II and Annex IV (Article 12); qualifying interest of River Shannon Callows SAC.

- **Ground 1 — Survey effort undated, unqualified and access-constrained.** No otter survey dates, durations, reach lengths or surveyor qualifications are recorded, and the same drainage-ditch access limits that hampered the aquatic survey applied to the holt search — unacknowledged as a completeness gap.
- **Ground 2 — Holt baseline incomplete.** The one identified (inactive) holt sits on the very ditch network the survey could not properly access, so the baseline cannot support a complete integrity assessment.
- **Ground 3 — *Hellfire Massey* pre-consent obligation not met.** The NPWS scoping response named *Hellfire Massey* directly and required any necessary Regulation 54 derogation in advance of permission; that obligation has not been discharged.

Chapter 7 — Noise

- **Ground 1 — A pattern of permissive choices** — the most permissive daytime threshold, lowest-precaution ground and receiver-height parameters, a summer-only survey, and cumulative effects scoped out — every choice in the same direction, leaving no headroom.
- **Ground 2 — The mandatory valley correction was never performed** — the IoA GPG S. 4.3.9 +3 dB correction for concave terrain — the exact geometry of this site — is absent from all nine noise documents; applying it reverses the compliance position at a high number of residential properties.
- **Ground 3 — Background survey below the instrument floor** — 85–96% of night-time data points fall below the Rion NL-52's 25 dB floor, with derived backgrounds as low as 17.8 dB, producing limits more permissive than the true environment warrants.
- **Ground 4 — CDP consistency (DMS-109) not demonstrated** — the Offaly CDP requires demonstrated consistency with the WHO 2018 Guidelines; the assessment engages WHO 2018 only to argue against it and produces no Lden calculation.
- **Ground 5 — Model applied outside its validated range** — ISO 9613-2 is used beyond its validated source height and distance, in the direction of under-prediction under the stable nocturnal conditions characteristic of midland raised bog.

- **Ground 6 — Cumulative exceedances scoped out, not assessed** — the applicant's own model predicts night-time exceedances at six properties, dismissed under a scoping rule rather than assessed as the EIA Directive requires.

Chapter 8 — Landscape and Visual Impact (LVIA)

- **Ground 1 — Misstatement of the adopted statutory landscape designation** - The LVIA states "Moderate and Low" sensitivity; the adopted Offaly Landscape Character Assessment classifies the site High/Moderate. Because sensitivity is the foundational input, every significance finding is built on a baseline that misdescribes the verifiable statutory position.
- **Ground 2 — Mischaracterisation of the receiving environment** - The Applicant mischaracterises the landscape character, baseline and value of the receiving environment against its own adopted framework.
- **Ground 3 — Viewpoint selection and omission** - The densest receptor clusters have no effective viewpoint; Birr (~5,000 people, on rising ground) is effectively unassessed and Shinrone and Riverstown not at all; the night-time aviation-lighting effect is disposed of in a single paragraph with no montage, viewpoint or receptor analysis.
- **Ground 4 — Significance suppressed at every controllable input** - The "Medium-low" residential sensitivity rating is unsupported by the chapter's own criteria and contradicts GLVIA3; corrected to High, the chapter's own findings cross its significance threshold. Magnitude ratings, "neutral" quality findings, unexamined "moderate" effects, the conceded long duration and the mechanical application of the scoring matrix all suppress significance in the same direction.
- **Ground 5 — The cumulative assessment never reaches the receptors** - Conducted at landscape level, the cumulative assessment never reaches the dwellings within the triangle of three developments (26 turbines); the permitted Carrig development is not properly brought into the baseline; the cumulative ZTV is dismissed without evidence; the Community LVIA conducted a receptor-level analysis the Applicant omits which raises the 'significant-effect' proportion to 92%.

Chapter 9 — Shadow Flicker

- **Ground 1 — Wrong baseline weather data** - Every "Expected" compliance figure rests on a single sunshine fraction, and the EIAR cannot keep its account of that fraction straight: the text attributes it to Mullingar station (83 km away, record ending 1979-2006), while the model in fact ran Birr data (1981–2010) , two irreconcilable sources, neither reconstructable from the other. In any event both are the wrong station choice and deliberately so. Gurteen lies *4.5 km from the site with data running to July 2026* and was never used, cited or acknowledged; it shows 27.5% more annual sunshine than the Birr data the model chose to apply, which would, if used, change the math and narrow the margin of compliance at every receptor.
- **Ground 2 — Undisclosed derivation** — the method combining sunshine and wind-direction fractions is never disclosed, no formula, no worked example, so no inspector can verify a single compliance figure.
- **Ground 3 — Inverted site geometry** — 65 of 129 assessed homes sit above the blade bottom of their nearest turbine; residents look across at or into the lower rotor arc, not up at it — concentrated and severe across the southern (38/39), eastern (67%) and western (64%) arcs. Not considered in the analysis.
- **Ground 4 — Study boundary too small** — the 1,630m boundary excludes 56 properties the applicant's own software reached (to 1,905m), two on the line, and one mapped but never modelled — 58 identified homes were never assessed.
- **Ground 5 — Model cuts off where the worst events begin** — At the elevated properties, shadow flicker occurs when the sun is low in the sky — the conditions producing the longest, most horizontal and most penetrating shadows and the most intense flicker. The applicant's assessment reduces these to a single annual-hours figure that conveys nothing of their intensity.
- **Ground 6 — Shadow-day data withheld and impact understated** — the total shadow-days column the applicant's own software produced appears nowhere in the EIAR; 34 homes recording 25–147 days of flicker appear as entirely unaffected.
- **Ground 7 — Compound multi-turbine flicker never assessed** — 44 of 129 properties lie within the simultaneous shadow zone of two or more turbines; none has been assessed for compound exposure.

Chapter 10 — Roads, Traffic and Transportation

- **Ground 1 -** The applicant's own ATC survey records an 85th-percentile speed of 94.4 km/h on the R492 (18% over the limit; maximum 137.7 km/h) — the design speed for which visibility splays must be set, and which the recorded 160m splay does not meet.
- **Ground 2 -** The three submitted documents state three different visibility figures for the same junction (215m, 160m, 160m) — an unexplained 55m discrepancy at the foundation of the safety case; the Road Safety Audit is a preliminary 45-minute Stage 1/2 audit in benign conditions, its Designer Response form blank, with unresolved safety actions and the road mis-numbered throughout.
- **Ground 3 -** The evidence base is an incomplete week of R492 data (tubes damaged, PM peak missed), a single-day junction count and a single survey season; the 12.23km grid-connection trenching across two counties, the concrete-pour surges (which roughly treble HGV traffic on pour days) and the AIL deliveries are presented as minor percentage increases.

Chapter 11 — Equine

- **Ground 1 — Materially incomplete and inadequate treatment of equine receptors** — a named stud was assessed as a residential dwelling; an FAO-endangered native breed within 1.1km is not named, described or assessed anywhere; a third holding was never assessed for equine activity despite a confirmed night-time noise exceedance.
- **Ground 2 — Unacceptable, unassessed risk to equine welfare, breeding viability and human safety** — supported by peer-reviewed evidence on the equine visual system and by British Horse Society guidance identifying shadow flicker as a horse-spooking hazard.
- **Ground 3 — Contrary to planning precedent and the precautionary principle** — and unsupported against documented industry concern.

Chapter 12 — Material Assets

- **Ground 1 - Birr Aerodrome (EIBR):** A 50-year-old IAA-licensed civil aerodrome and EASA-standard Designated Training Organisation whose fixed training circuit Turbines 2 and 4 directly overlap. The applicant told An Coimisiún Pleanála lay "outside the zone of influence." For the operator the conflict is structural, not occasional: 180 m turbines (~590 ft) would force circuit altitudes above 1,090 ft where 800 ft is standard, the circuit is fixed by runway orientation and prevailing wind and cannot simply be moved, and a student pilot's normal ±200 ft variation could leave only tens of feet of clearance over a turbine tip. The turbines also degrade the River Brosna visual-navigation reference on which VFR training depends, in uncontrolled Class G airspace with no radar safety net. Most seriously, the applicant never consulted the operator despite express directions from both the IAA and An Coimisiún Pleanála — its only correspondence was misaddressed to a different windfarm at a different location — leaving a safety-critical Material Asset uncharacterised, in breach of Schedule 6.
- **Ground 2 - Emergency / rotary-wing aviation corridor:** the unobstructed airspace over the western Slieve Bloom on which Coast Guard, Air Corps and HEMS operations depend in poor weather, constricted at the point to which those operations are funnelled.
- **Ground 3 - I-LOFAR:** Ireland's premier radio astronomy facility at Birr Castle, whose operation depends on the radio-quiet of the same landscape; turbines generate electromagnetic interference within the operative Radio Quiet Zone. 5km exclusion zone is required. T1 sits at 4.96km from the iLOFAR site.
- **Ground 4 - Birr OETC:** a State-affiliated outdoor education centre whose statutory function depends on the amenity of the River Brosna corridor the development would degrade.

Chapter 13 — Waste Management

- **Ground 1 — Reliance on waste facilities that are closed, unavailable, or mischaracterised** — the seven EPA-licensed facilities on which the conclusion depends do not, on their current status, bear that weight.
- **Ground 2 — Construction and demolition waste not quantified** — the principal waste streams are never quantified.

- **Ground 3 — Inadequate treatment of hazardous waste from the BESS** — the hazardous waste arising from the battery energy storage system is not provided for.
- **Ground 4 — No waste collection companies or receiving facilities identified**
- **Ground 5 — Failure to address statutory and stakeholder consultation responses on waste**
- **Ground 6 — No reference to the statutory Regional Waste Management Plans**
- **Ground 7 — The chapter's own assessment is internally inconsistent**

Conclusion

The grounds set out above are *not* a collection of isolated technical complaints. They are the recurring expression of a single pattern. The assessment is built selectively from the applicant's own documents, and at every point where the governing methodology permitted a choice, the choice runs in the same direction - toward compliance. The most important matters are omitted not at the margins but at the centre: the named pollutant never measured, the mandatory correction never applied, the highest-activity zone excluded from the model, the breeding window never surveyed. Where analysis was required, assertion is offered in its place, firm conclusions of "no significant effect" resting on bare numbers with no working shown, and in more than one chapter a circular logic in which the absence of data produced by an inadequate survey is then relied upon as evidence of absence of impact. Mitigation is deferred to designs that do not yet exist or promised in forms that cannot function under the very conditions that would trigger them. And the cumulative and receptor-level realities, the four developments in one airspace, the combined collision mortality, the effect at the individual dwelling, are assessed at a level of generality that never reaches the people and places affected most.

No single one of these failures stands alone, and that is the point. Each leap of logic is made in the same direction; each gap falls in the same place; each unproven assertion serves the same conclusion. A pattern this consistent is not the product of oversight. It is the shape of an assessment engineered toward a predetermined answer. On the applicant's own documents, held to the applicant's own standards, that answer cannot be sustained.

Because the applicant has waived both the Article 6(4) IROPI and Article 4.7 WFD derogations, there is no balancing exercise and no fallback. Full compliance must be

demonstrated on the application as filed, and on multiple independent grounds it is not. Each chapter is independently sufficient to justify refusal; together they are decisive.

Finally, this development is advanced as climate action. On the applicant's own documents it would excavate carbon-storing peat, compact an active floodplain, undermine a State-funded bog restoration and add pressure to a Poor-status catchment — in a county already delivering far beyond its renewable obligations. The marginal climate benefit is negligible and available elsewhere at lower environmental cost. This is the definition of maladaptation: environmental harm done in the name of environmental good.

The Greater Birr Wind Action Group respectfully requests that An Coimisiún Pleanála refuse permission for the proposed Ballincor Wind Farm.

Chapter 1 — Introduction

Appendix 1-1 – Signatories

This submission is made by the Greater Birr Wind Action Group to An Coimisiún Pleanála in objection to the proposed Ballincor Wind Farm development (Case Reference: PAX92.324279). This chapter sets out who we are, the goal we set ourselves, the approach we took, and the independent expertise we relied upon. It then records the legal protections that converge on this site, identifies the two structural problems that define the application, and sets out the procedural matters we respectfully ask the Commission to consider.

1.1 Greater Birr Wind Action Group

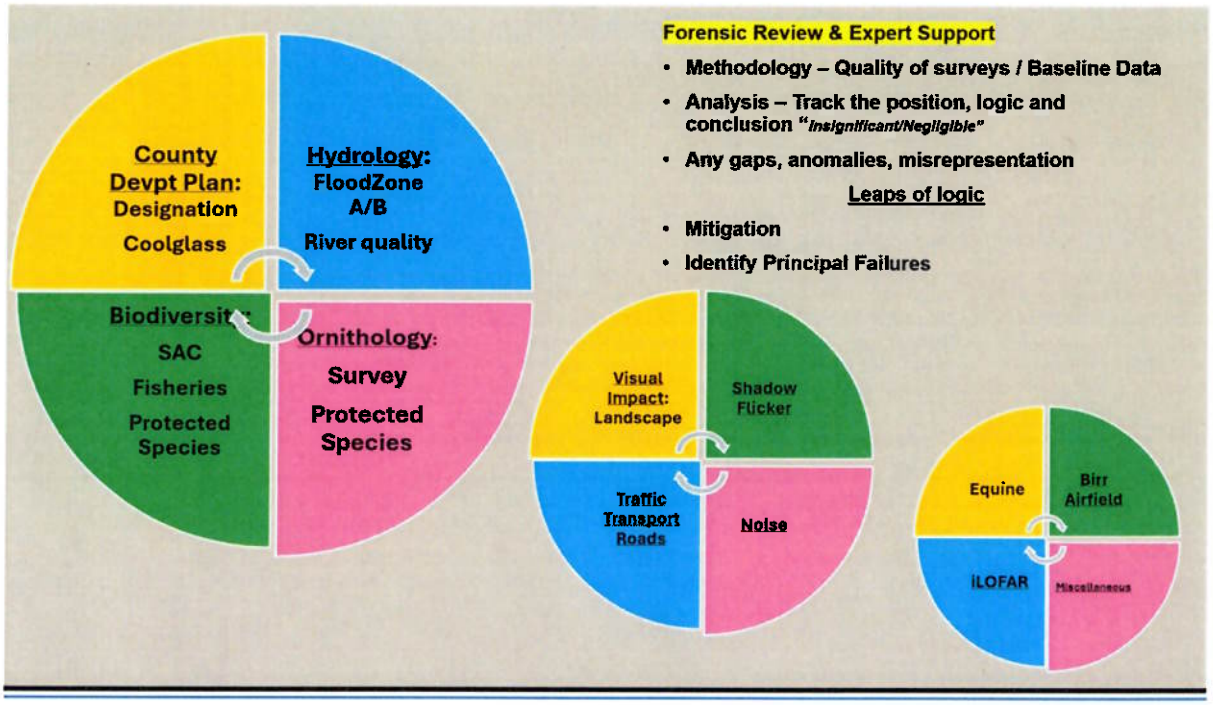
The Greater Birr Wind Action Group is a community committee established with a single purpose: to collect, advance, and present the concerns of the wider Ballincor community to An Coimisiún Pleanála in respect of the proposed Ballincor Wind Farm development (Case Reference: PAX92.324279).

This submission represents not one voice but many — the families, farmers, landowners, and residents of the surrounding area who share a common stake in the outcome of this decision. See Appendix 1 for a full list of signatories who have resourced and endorsed this submission. We came together because the scale of what is proposed demanded a collective response. This submission represents the views of all signatories listed at the end of this introduction.

We are committed to the protection, conservation, and defence of our natural and built environment, its land, water, waterways, air, flora, fauna, and the communities that depend on them. We do not oppose progress. We oppose harm and we ask that the protections already enshrined in law be upheld, not overridden.

1.2 Our Goal

Our goal was to test whether this application, measured against the applicant's own methodology and its own submitted data, can lawfully be granted. We concluded it cannot. This chapter and the thirteen that follow set out why — not by importing external standards, but by holding the applicant to its own.



1.3 Our Approach

To meet the demands of this process our group undertook a lengthy, costly, and often exhausting effort. We make no apology for the length of this submission. Its length reflects the scale of the issues we encountered, their number, their complexity, and the considerable challenge of disentangling the Applicant's reasoning across many hundreds of pages of documentation.

Our approach was forensic and methodical. We committed from the outset to two disciplines. First, we relied only on the guidelines and sources cited by the Applicant themselves, many of them outdated and redundant. Second, we relied only on information contained within the Applicant's own submission, drawing on their documents exclusively, despite their failings. The strength of every ground that follows lies in that discipline: it is the Applicant's own record, measured against the Applicant's own standards.

The Applicant's conclusions are built upon complex assessment matrices. We reverse-engineered each of those conclusions back to its source data in order to understand the foundational inputs and drivers behind the findings of "not significant," "negligible," and "no adverse effect." Beginning with the baseline data contained across all Appendices, we traced the Applicant's analysis into the EIAR and followed that analysis through to the conclusions drawn in the Appropriate Assessment and Natura Impact Statement. This end-to-end tracing was essential because it is only by following the thread from raw data to final conclusion that the weaknesses in the Applicant's case become apparent. Where independent verification

was impossible, or the necessary data was simply not available, we conducted our own study or sourced professional expertise in order to represent the case fairly.

In many instances the Applicant departed from standard practice and failed to include basic information on methodology. This is not a matter of preference. It is a requirement of any assessment that claims be transparent, reliable, and independently verifiable. By way of example, we requested through An Coimisiún Pleanála access to the coordinates for the Vantage Points and viewsheds used in the ornithology study, and, separately, access to the data logs needed to verify the dates, times, and personnel associated with that survey effort. An Coimisiún Pleanála duly requested this information from the Applicant. No information was supplied. The study is, as a consequence, fundamentally unverifiable. While the CRM consultant acting on behalf of the Applicant in Appendix 7-2 has identified many of the flaws inherent in the Ornithology study, and the data that is available allows us to infer serious shortcomings, inference should not be necessary. A failure to respond to a direct request from the Commission, in respect of a study of this environmental significance, is not a neutral act. It is an obstruction of the transparent process upon which this assessment depends.

What that process exposed is a consistent and troubling pattern: gaps in baseline data, unexplained assertions, selective and incomplete analysis, and the misappropriation of evidence. Even where the underlying data is robust, the analysis built upon it fails to represent it faithfully, relying instead on unsupported leaps of logic to arrive, chapter after chapter, at conclusions of "insignificant" or "negligible" impact. This submission documents those failures in full.

1.4 Independent Expert Support

To test the Applicant's material we engaged independent technical expertise. Each expert is introduced in the chapter to which their work relates, and all expert reports are appended to the appropriate chapter. The expert reports should be read in advance of the chapter they support. The principal independent contributors are:

Dr Pamela Bartley (Chapter 3 — Hydrology)

Dr Pamela Bartley of Hydro-G is an Expert Service Provider Hydrogeologist and water-focused civil engineer with over 25 years of field practice in water, lands, soils and geology. Her doctorate is in karst groundwater impact, and her practice is built on the Source–Pathway–Receptor risk-assessment model. She is IOSH-certified as Project Supervisor for

the Design and Construction Stage. Her independent hydrogeological review (Appendix 3-1, June 2026) informs Chapter 3, the Hydrology, Hydrogeology, Peat Stability and Flood Risk chapter throughout.

Dr Pat (Patrick) Moran (Chapter 4 — Ornithology)

Dr Patrick Moran is an independent professional ecologist holding a first-class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA Management (UCD), an M.Sc. in Geographical Information Systems (Ulster University, Coleraine), a Higher Diploma in Environmental and Planning Law (King's Inns), and an M.Sc. in Environmental and Climate Change Law (UCD). He has over 25 years' experience conducting ecological surveys on both an academic and professional basis, and has peer-reviewed EIARs and NISs for public bodies including An Bord Pleanála, the Office of Public Works and local authorities, as well as private clients. His independent peer review of the avifaunal assessment (Appendix 4-6) underpins Chapter 4, the Ornithology chapter.

Allegro Acoustics (Chapter 7 — Noise)

Allegro Acoustics is an independent acoustics expert consultancy engaged to review the noise assessment. Working from the applicant's own data, its consultant report (Appendix 7-1) independently corroborates this submission's central findings — including the absence of measured background data above 9 m/s, the failure to demonstrate compliance at higher wind speeds, and the extreme quiet of the receiving environment (with background levels recorded as low as 23.9 dB by day and 18.8 dB by night, below the instrument's reliable measurement floor).

1.5 The Protections Afforded to This Site

The site of the proposed Ballincor Wind Farm is defended by layer upon layer of legal protection, principally the EU Habitats Directive, the EU Birds Directive, the Water Framework Directive, the Wildlife Acts, the Bonn Convention on the Conservation of Migratory Species of Wild Animals, the County Development Plan, and the Shannon River Basin Management Plan. European law, national legislation, planning policy, and species protection all converge on this landscape and its waters. These are not abstract instruments, they were enacted precisely to prevent the kind of harm this project risks.

We present these protections not as a checklist but to impress upon the Inspector the weight of what is being asked. The assessment before An Coimisiún Pleanála is not a routine planning judgement. It is a decision that will determine whether legally protected habitats, EU-protected species, and a catchment already singled out for ecological recovery are to be safeguarded or sacrificed. As the Supreme Court affirmed in *Coolglass*, the rigour demanded by such a decision must match its consequences.

1.6 How to Read This Submission

The Executive Summary that precedes this chapter is a guide to the grounds of objection; it is not a substitute for the chapters themselves. Each chapter is independently sufficient to justify refusal, and, taken together, the grounds are decisive. Every ground is tested against the Applicant's own adopted methodology and guidance, and against the Applicant's own submitted data. The appendices to each chapter contain the underlying technical material and should be read in advance of the chapter they support.

One feature of this application frames everything that follows. The Applicant has expressly waived both derogation pathways available to it — Article 6(4) IROPI under the Habitats Directive, and Article 4.7 under the Water Framework Directive. There is therefore no balancing exercise and no fallback. Full compliance with Article 6(3) and Article 4(1)(a) must be demonstrated on the application as filed. Any single adverse effect that cannot be excluded on the application as filed is sufficient to require refusal. The grounds that follow identify many.

1.7 The Two Structural Problems with This Application

We draw the Inspector's attention to two overarching deficiencies that define this application.

1.7.1 A Site in Conflict with Itself

The proposed development site is subject to a suite of environmental constraints that actively conflict with one another in the Developer's application. The hydrology of the site is perhaps the most striking example. Either the Applicant manages flood risk and surface water, and in doing so alters the water table upon which the Sharavogue Raised Bog SAC depends for its conservation status; or it preserves the precise hydrological conditions the bog requires, and accepts that the site cannot safely accommodate what is proposed. The same tension recurs throughout: mitigation timing necessary to protect one species contradicts the construction windows required to protect another; measures to stabilise ground conditions on one hand compromise drainage pathways on the other. To resolve one constraint is, repeatedly, to trigger the next.

This is a site where the challenges are interlocked, and where the consequences of intervention in one system cascade into others. That reality demands a holistic assessment. Instead, the Applicant has siloed each issue, addressing constraints in isolation, chapter by chapter, as though they do not interact. They do. And it is this submission's purpose to show where, and how.

1.7.2 The Distance Between Evidence and Conclusion

Across every environmental pillar of this application there is a persistent and measurable gap between the evidence the Applicant gathered and the conclusions the Applicant drew. In some instances the data sets are non-verifiable, as in ornithology; but even where robust baseline data is acknowledged, it is then set aside. Identified risks are diminished rather than assessed. Cumulative effects are not confronted. The result is an application that reads not as an assessment built from evidence, but as a case constructed to reach a destination, with the evidence arranged — or omitted — accordingly. The detailed grounds that follow demonstrate this, chapter by chapter, using the Applicant's own data.

1.7.3 A Note on the Environmental Impact Assessment

It is for An Coimisiún Pleanála, and not the Applicant, to carry out the Environmental Impact Assessment. The EIAR is the raw material from which the Commission must conduct that assessment. Where that raw material is wholly inadequate and frequently inaccurate, a lawful and complete EIA cannot be performed on the application as filed. The deficiencies

documented in the chapters that follow are not peripheral; they go to the Commission's ability to discharge its own statutory function.

1.8 Further Information — A Request to An Coimisiún Pleanála

We are concerned that the Applicant may be afforded an opportunity, through a Further Information process, to respond selectively to matters raised by third-party submissions, and thereby seek to cure fundamental gaps, omissions, unsupported assumptions, and unresolved inconsistencies in the application, one by one or piecemeal.

Our submission will identify numerous such issues. They are not isolated or narrowly technical in nature. They arise from the particular complexity and sensitivity of this site. Any attempt to resolve a deficiency in one aspect may have direct and consequential effects elsewhere in the EIAR and NIS. One problem resolved in one chapter will, on this site, create or deepen a problem elsewhere. To permit the Applicant to address failings in isolation would be to repeat the very error we have identified in the EIAR itself: the siloing of issues that are, in practice, inseparable. The Commission's process must take this into account.

For that reason, we respectfully request that any Further Information sought by An Coimisiún Pleanála not be treated as a narrow clarification of individual points, paragraphs, or chapters. Where new surveys, revised modelling, additional mitigation, altered drainage proposals, amended construction methodologies, revised layouts, new environmental conclusions, or new technical assessments are introduced, those matters must be assessed in the context of the application as a whole and their implications must be traced across the full EIAR, NIS, and planning assessment. To permit otherwise would be to allow the Applicant to address in isolation what this submission will demonstrate to be inseparable.

We also request that, if the Commission considers exercising its powers under section 37F of the Planning and Development Act 2000, as amended, it should clearly distinguish between genuine clarification and material new information. Section 37F permits the Commission to seek further information, including revised environmental information or revised particulars, plans or drawings; however, where such material contains significant additional information on the effects of the proposed development on the environment, it must be made available for inspection and opened to further submissions or observations. We request that any further-information response from the Applicant which goes beyond clarification be treated, where appropriate, as significant additional environmental information, and that third parties be given a meaningful opportunity to review and respond to it.

The issues raised in this submission are the product of months of sustained and detailed work. If the Applicant is given the opportunity to revise or supplement its case, those most affected by the outcome, the community, are entitled to assess and respond to what is presented.

1.9 Recovery of Expenses

The costs incurred by this community were not of our choosing. They escalated in direct response to the absence of baseline data, the poor quality of the analysis presented, and the necessity of engaging independent technical expertise to verify, corroborate, and ultimately expose what we believed from the outset: that the Applicant's submission contained fundamental and systemic failings, and that its own documentation could not withstand scrutiny.

This is a complex Strategic Infrastructure Development application, supported by extensive developer-funded technical material. Meaningful public participation has required the community to obtain independent input on matters including hydrology, peat and groundwater conditions, ecology, ornithology, noise, traffic, and landscape and visual effects. These costs arise directly from the scale, complexity, and technical nature of the application, and were compounded by the need to interrogate and address the deficiencies within the Applicant's own material, work that is necessary to assist the Commission in testing the adequacy of what has been submitted.

The Greater Birr Wind Action Group respectfully requests that An Coimisiún Pleanála exercise its statutory discretion under section 37H(2)(c) of the Planning and Development Act 2000, as amended, to direct the Applicant to make a contribution to the reasonable costs incurred by the local community in obtaining the independent expert advice necessary to prepare and present this observation.

1.10 Conclusion

The assessment of site suitability for wind energy development is properly the function of the planning authority and in this case that work has already been carried out by Offaly County Council through a rigorous, expert-led sieve-mapping process, culminating in the clear designation of this area as Not Suitable. That designation reflects the considered judgement of qualified professionals operating within a statutory framework.

While it is not the function of a local community to undertake a detailed technical evaluation of the suitability of lands for wind energy development, this community has found itself compelled

to engage in order to defend, and give effect to, a planning determination that has already been made.

The chapters that follow do so not to substitute for that expert assessment, but to demonstrate through site-specific evidence across hydrology, hydrogeology, ornithology, biodiversity, visual amenity, noise, and material assets, that the Not Suitable designation is firmly grounded in real, significant, and non-mitigable constraints. A clear and compelling case for refusal of the proposed Ballincor Wind Farm stands.

List of Signatories – See Appendix 1-1 for signatures and details

Name	Address	Eircode
Brigita Dzimidoliene	Loughkeen, Shinrone, Co Tipperary	R42 C527
Airidas Dzimidlos	Loughkeen, Shinrone, Co Tipperary	R42 C527
Megan Curran	Lacka, Shinrone, Birr, Co Offaly	R42 DX70
David Cleary	Lacka, Shinrone, Birr, Co Offaly	R42 DX70
Mairead Hoctor	Ballycaddy, Sharavogue, Birr	R42 TR04
Maria Derfer	Glasshouse, Shinrone, Birr, Co Offaly	R42 E084
Gerry Mahon	Rathbeg, Sharavogue, Birr, Co Offaly	R42 K330
Sinead Mahon	Rathbeg, Sharavogue, Birr, Co Offaly	R42 K330
Declan Mann	Farm Lodge, Sharavogue, Birr, Co Offaly	R42 W920
Pat Murphy	Sharavogue / Rathbeg	R42 E942
Mary Murphy	Sharavogue / Rathbeg	R42 E942
Heather Drew	Corolanty, Shinrone	R42 H673
Sheila Mann	Farm Lodge, Sharavogue, Birr, Co Offaly	R42 W920
Ali McCarthy	Sharavogue, Birr, Offaly	R42 PA97
Tanya Wrafter	Ballyegan, Birr	R42 Y434
Colm Callaghan	Ballyegan	R42 Y434
Damien Mann	Sharavogue, Birr, Co Offaly	R42 W920
Michelle Mann	Sharavogue, Birr, Co Offaly	R42 W920
B. Hayes	Boveen, Birr	R42 V297
Sara Mann	Sharavogue, Birr, Co Offaly	R42 W920
Paul Mann	Sharavogue, Birr	R42 PA97
Shane Mann	Sharavogue, Birr	R42 W920
Mary Deane Egan	Ballyegan, Birr, Co Offaly	R42 PV30
Liam Egan	Ballyegan, Birr, Co Offaly	R42 PV30
Laura Dargan	Rathbeg, Sharavogue, Birr, Offaly	R42 Y504
Emmett Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 Y504
Hannah Ward	Ballyoughter, Rathcabbin, Co Tipperary	R42 FK06
Sophie Ward	Woodbend Cottage, Birr, Co Offaly	R42 W540
Anne Finnegan	Hillbrook, Crinkle, Birr	R42 RW13
Seamus Hoctor	Rathbeg, Sharavogue, Birr, Offaly	R42 FD76
Ann Hoctor	Rathbeg, Sharavogue, Birr, Offaly	R42 FD76
Shane Hoctor	Rathbeg, Sharavogue, Birr	R42 F799
Edel Hoctor	Rathbeg, Sharavogue, Birr	R42 FD76
Orla Corboy	Clonkelly, Birr	R42 T210
Bobby Corboy	Clonkelly, Birr	R42 T210
Caroline Corboy	Clonkelly, Birr	R42 T210
Mark Corboy	Clonkelly, Birr	R42 T210
Philip Corboy	Clonkelly, Birr, Offaly	R42 T210
Tuli Corboy	Clonkelly, Birr, Offaly	R42 T210
Ruairi Corboy	Clonkelly, Birr, Offaly	R42 T210
Caoimhe Corboy	Clonkelly, Birr, Offaly	R42 T210
Louise Murphy	Rathbeg, Sharavogue, Birr, Co Offaly	R42 P623
Maura Nolan	Ballyegan, Birr, Co Offaly	R42 DP20

Jennifer Nolan	Ballyegan, Birr, Co Offaly	R42 DP20
Amy Nolan	The Gate Lodge, Ballyegan Lane, Ballyegan, Birr, Co Offaly	R42 TK59
Ger Nolan	Ballyegan, Birr, Offaly	R42 DP20
Daniel Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 Y504
Abbie Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 Y504
Séa Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 Y504
Ciara Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 Y504
Ciara Murphy	Ballyegan, Birr, Co Offaly	R42 KF79
Seán Murphy	Ballyegan, Birr, Co Offaly	R42 KF79
Anna Murphy	Ballyegan, Birr, Co Offaly	R42 KF79
Mark Murphy	Ballyegan, Birr, Co Offaly	R42 KF79
E. Holland King	Boveen, Brosna, Birr, Co Offaly	R42 XA72
Anne Davis	Cappaneale / Cappancur, Birr	R42 YV84
Anne Wilmot Hassett	Rathbeg Lane, Sharavogue, Birr, Co Offaly	R42 CP73
Damien Larkin	Loughkeen, Carrig, Birr, Co Tipperary	R42 R260
Bernard Larkin	Loughkeen, Carrig, Birr, Co Offaly	R42 R260
Carmel Larkin	Loughkeen, Carrig, Birr, Co Offaly	R42 R260
Denise O'Brien	Doughkill, Carrig, Birr, Co Offaly	R42 AH31
Niamh O'Brien	Doughkill, Carrig, Birr, Co Offaly	R42 AH31
Jason Tooher	Springfield, Shinrone, Birr	R42 D403
Mairead Slevin	Ardavagga, Shinrone, Birr	R42 TX65
Dominic Slevin	Ardavagga, Shinrone	R42 TX65
Seámie Breen	Clondalla, Birr	R42 W449
Rita Frawley	Clondalla, Birr	R42 W449
Kevin Purcell	Rathbeg, Sharavogue	R42 AX50
Blathnaid Purcell	Rathbeg, Sharavogue	R42 AX50
Jacqueline Stephens (Deane)	Corolanty, Shinrone, Birr	R42 AE77
Johanna Martyn	Lacka, Carrig, Birr, Co Offaly	R42 N280
Eoin Dooley	Lacka, Carrig, Birr, Co Offaly	R42 N280
John Ryan	Moneyshingaun, Shinrone, Birr	R42 N998
Liam Foley	No. 1 Castle Court, Shinrone, Co Offaly	R42 E291
Carol Larkin	Castletown, Fortal, Birr	R42 TH73
Adrian Smyth	Corolanty, Shinrone, Birr	R42 TK50
Michael Hannon	Glen Curnig, Shinrone, Birr, Co Offaly	R42 A528
Eleanor Clendennen	Kinnitty, Birr, Co Offaly	R42 HK28
Audrey Hennessy Kennedy	Breaghmore, Clareen, Birr	R42 HR68
James Sampson	Kilbege, Shinrone, Birr, Co Offaly	R42 XD29
Mary Hoctor	Rathbeg, Sharavogue, Birr, Co Offaly	R42 F799
Pat Mann	Sharavogue, Birr	R42 AV66
Peter O'Meara	Newhall, Sharavogue	R42 F840
Jerry Omeara	Clonkelly Birr	R42 XF53
Tony O'Meara	Clonkelly, Birr	R42 XF53
Eamonn O'Meara	Clonkelly, Birr	R42 XF53
Brian Kelly	Sharavogue	R42 AK80
Johnny Tooher	Ballycaddy, Sharavogue	R42 R657

Michele O'Brien	Doughkill, Carrig, Birr	R42 AH31
Mary Murphy	Ballyegan, Birr	R42 KF79
Ann Calvert	Belfield, Shinrone	R42 E181
David Calvert	Belfield, Shinrone	R42 E181
Adrian Hoctor	Rathbeg, Sharavogue, Birr	R42 C998
Joe O'Connor	Riverview Sharavogue Birr	R42 F228
Patrick Headon	Wraymount Stud, Sharavogue, Birr, Co Offaly	R42 YY38
Sean Maher	Rock Lane, Crinkle, Birr	R42 YK81
Hazel Purdue	Loughkeen, Carrig, Birr, Co Offaly	R42 W867
Nicky Joynes	Ballinane, Shinrone, Birr, Co Offaly	R42 WP48
Tim Collins	Loughkeen, Carrig, Birr, Co Offaly	R42 W867
Nichola Culleton	Rathbeg, Sharavogue, Birr, Co Offaly	R42 C998
Pauline Guidera	Ballincaddy, Shinrone, Birr, Co Offaly	R42 V520
Darren Guidera	Ardavagga, Shinrone, Birr, Co Offaly	R42 WY24
Mark Guidera	Killymurray, Shinrone, Birr, Offaly	R42 E422
Anne Marie Page	Killymurray, Shinrone, Birr, Offaly	R42 E422
Michael Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 P865
Marie Walshe	Rathbeg, Sharavogue, Birr, Co Offaly	R42 P865
Teresa Guidera	Ballincaddy, Shinrone, Birr, Co Offaly	R42 V520
Tadhg Guidera	Ballincaddy, Shinrone, Birr, Co Offaly	R42 V520
Seamus O'Meara	Castletown, Birr, Co Offaly	R42 P958
Liam Miller	Sharavogue, Birr	R42 WR50
Shane Connolly	Upper Cloghan, Coolderry, Birr, Co Offaly	R42 HE00
Cathal Miller	Sharavogue, Birr, Co Offaly	R42 WR50
Carol Miller	Sharavogue, Birr, Co Offaly	R42 WR50
Aoife Miller	Sharavogue, Birr, Co Offaly	R42 WR50
Niamh Miller	Sharavogue, Birr, Co Offaly	R42 WR50
Teresa Power	5 Oxmantown Mall, Birr, Co Offaly	R42 HK33
Chrissie Allen	21 Townsend, Birr, Co Offaly	R42 YT93
Emma Miller	21 Meadowbrook, Burkes Hill, Birr, Co Offaly	
Anne Power	5 Oxmantown Mall, Birr, Co Offaly	R42 HK33
Elvia Burke	Boveen, Brosna, Birr, Co Offaly	R42 DH00
Josephine Burke	Hillview, Boveen, Brosna, Birr, Co Offaly	R42 PH22
Patrick Burke	Hillview, Boveen, Brosna, Birr, Co Offaly	R42 PH22
Joseph Burke	Boveen, Brosna, Birr, Co Offaly	R42 DH00
Magella O'Meara	Castletown, Birr	R42 P958
Lisa Deane	Caerhooreigh, Carrig, Birr, Co Offaly	R42 ?V22
Norna Tooher	Clonkelly, Birr, Co Offaly	R42VY22
Paula Carey	8 Corranealach, Birr, Offaly	R42 W935
Tom Wrafter	Ballyegan, Birr	R42 Y434
Margaret Wrafter	Ballyegan, Birr	R42 Y434
Laura Wrafter	Ballyegan, Birr	R42 HY01
Stephen Dunne	Ballyegan, Birr	R42 HY01
Donal Miller	Boveen House, Sharavogue, Birr, Co Offaly	R42 YD45
Elizabeth Miller	Boveen House, Sharavogue, Birr, Co Offaly	R42 YD45

Chapter 2: Site Selection, CDP and Coolglass

Appendix 2-1: Red Ill Parliamentary Question

Appendix 2-2: ACP Precedent on CDP

Appendix 2-3: Joint Committee Energy and Climate; ACP CEO and Senior Planner CDP position

2.0 Introduction

This chapter addresses a single question: whether the Ballincor Wind Farm can be granted permission on a site that both the Offaly and Tipperary County Development Plans have, through formal statutory process, designated as Not Suitable for wind energy development. The answer, applied across empirical, statutory and legal frameworks, is that it cannot.

The factual position is striking. County Offaly has designated 28% of the county as suitable for wind energy development. Offaly produces approximately 11% of Ireland's renewable electricity from 2% of the State's land area, and 25% of total wind energy output in the Eastern Region alone. This is in the context of some counties in our region generating zero.

Offaly is not a county failing to meet its obligations. It is delivering far beyond them, and doing so within the suitable areas its County Development Plan has designated, with a further pipeline of more than 1GW planned to 2032 that remains within those designated areas (Green Energy Conference 2026, Tullamore Court Hotel, 25 February 2026). The question before An Coimisiún Pleanála is therefore not one of necessity, but one of appropriateness and site location.

On site location, the position is equally clear. The Offaly County Development Plan 2021–2027 Wind Energy Strategy applied a step-by-step sieve-mapping methodology — assessing wind speed, grid access, landscape sensitivity, designated ecological sites, flood risk, housing density and heritage. Ballincor failed on every single criterion (Offaly CDP 2021–2027, Wind Energy Strategy). The site sits within a High-Moderate Scenic Sensitivity zone, adjacent to Sharavogue Bog SAC (within 10m, per the Applicant"s own Natura Impact Statement, Table 5.1), within the River Brosna hydrological corridor, in a documented flood zone, with no transmission infrastructure within reasonable proximity, amongst the lowest wind speed category in the county, and with over 300 receptors within 2km of the development envelope. The designation of Not Suitable is not incidental or precautionary — it is the cumulative output of a rigorous, SEA'd, AA'd and OPR-reviewed statutory exercise.

The applicant's own evidence reinforces this conclusion rather than displacing it. The Applicant"s site selection criteria, set out in EIAR Chapter 3, list eleven factors including environmental constraints, population density, planning policy, landscape/visual constraints

and reasonable access to the national electricity grid. The post-hoc justifications the Applicant offers for Ballincor are each directly contradicted by the CDP's findings on the same criteria for the same site. Further, the Applicant has not chosen Ballincor in preference to alternatives. It has simultaneously pursued all five 'alternatives' identified in its scoping exercise. This is a portfolio strategy, not a reasoned site selection.

The legal framework points the same way. The Supreme Court in Coolglass Wind Farm Ltd v An Coimisiún Pleanála [2026] IESC 5 confirmed that the designation of an area in a CDP as not suitable for wind farm development is itself an exercise of proper planning and sustainable development (S.91); that compliance with a climate-aligned CDP will normally satisfy the Section 15(1) climate obligation S.112); and that approving wind development in a protected area within a county where multiple windfarms have already been approved would "make a nonsense of the elaborate structure" of the planning system (S.87). The S.87 hypothetical, constructed deliberately by the Court, maps almost precisely onto the facts of Offaly and Ballincor. The OPR reviewed the Offaly CDP without adverse intervention on the Not Suitable designation, a factor the Supreme Court confirmed at S.129–130 is a proper consideration for the Commission.

An Coimisiún Pleanála's own position reinforces this. At the Joint Oireachtas Committee on Climate, Environment and Energy (26 November 2025), ACP's Chief Executive Peter Mullins and Director of Planning Ciara Kellett confirmed that it would be "very strange" for the Board to grant permission outside areas designated through a statutory spatial planning process.

These five strands — Offaly's empirical performance against national renewable targets, the statutory weight of Offaly's County Development Plan and its Wind Energy Strategy, the applicant's inconsistency with its own stated site selection methodology, the established practice of An Coimisiún Pleanála in CDP exclusion zones, and the authority of the Supreme Court in Coolglass — are not separate arguments. They are mutually reinforcing components of a single conclusion: that the proposed Ballincor Wind Farm is contrary to the proper planning and sustainable development of the area.

This chapter develops that conclusion through three sequential positions. The first establishes the primacy of the County Development Plan on the law and the facts applicable

to this site. The second engages directly with the question the Supreme Court in Coolglass requires the Commission to ask under s.37G(6) — whether the climate benefit of this particular development justifies material contravention of two County Development Plans — and demonstrates that it does not. The third identifies the mandatory legal preclusions, grounded in EU and Irish law, that climate benefit arguments cannot displace.

An Coimisiún Pleanála is tasked with navigating a dense and at times competing framework of national policy, EU and domestic directives, statutory regulations, technical guidance, environmental principles and an evolving body of case law. That complexity is acknowledged. But complexity does not dilute clarity. When the relevant provisions are properly aligned and assessed cumulatively — across policy, law, environmental protection and proper planning principles, the outcome in this case is not finely balanced. On each determinative issue, empirical, statutory, evidential and legal, the proposed development conflicts with the governing framework.

Refusal is not one of several reasonable conclusions, it is the only conclusion consistent with the law, the evidence, and the statutory mandate of An Coimisiún Pleanála.

2.1 Context: Offaly – The leading provider of Wind Energy output in Ireland

Wind Energy Ireland claimed that for 2024, 32% of electricity in Ireland was renewable and added that "No other country in Europe gets a higher proportion of their electricity from onshore wind than Ireland."

Within that performance and context In January 2026 County Offaly was the **number one** county for renewable energy output. Offaly is consistently ranked in the top 3 performers across the country.

Figure 2.1 Renewable Energy Outputs

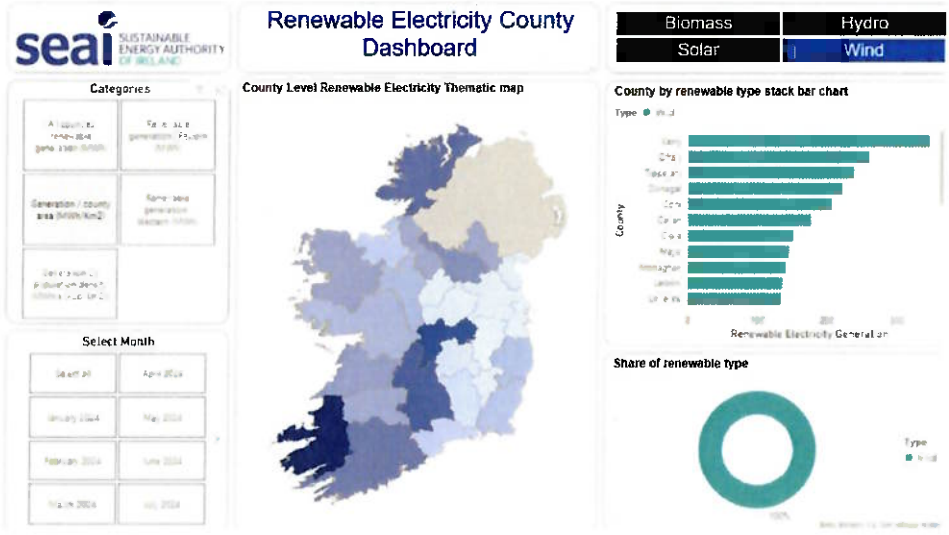
Renewable energy by County Area

Wind output by County in Eastern Region



https://www.seai.ie/renewable-energy/renewable-electricity/about-dashboard/dashboard

Figure 2.2 Wind output by County All of Ireland



https://www.seai.ie/renewable-energy/renewable-electricity/about-dashboard/dashboard

This is in contrast to other leading counties - Cork, Kerry, and Mayo, which benefit from large land bases and extensive hinterlands. Offaly is notably smaller in scale (2,001 km²; population 83,150). See Table 2.1 below.

Table 2.1 County Comparisons

County	Population	Land mass (km²)	% of Republic's land area
Cork	584,156	7,508	10.73%
Kerry	156,458	4,807	6.87%
Mayo	137,231	5,588	7.99%
Offaly	83,150	2,001	2.86%

These figures do not include additional windfarm permissions granted but not operational, the most recent being a development in Cush (57MW) and another in Carrig (44 MW). Offaly delivers 11% of National renewables on a landmass of 2% of the country.

The statistics become more stark when considered at a Regional level. Table 2.2 below displays the Wind Energy output figures for all counties in the Eastern Region.

Table 2.2. Wind Energy Output – Eastern Region

Offaly	**519675 MWh**	**25% of total**
Cavan	341902 MWh	16
Roscommon	270816 MWh	13
Wexford	243444 MWh	12
Wicklow	208697 MWh	10
Monaghon	182048 MWh	9
Waterford	130129 MWh	6
Kilkenny	77903 MWh	4
Laois	46732 MWh	2
Meath	22408 MWh	1
Louth	16335 MWh	1
Carlow	15650 MWh	1
Dublin	**0 MWh**	**0**
Kildare	**0 MWh**	**0**
Longford	**0 MWh**	**0**
Westmeath	**0 MWh**	**0**

SEAI County Dashboard : https://www.seai.ie/renewable-energy/renewable-electricity/about-dashboard/dashboard

Offaly is the leading wind energy producer by a considerable margin. Offaly delivers **one quarter or 25%** of total wind energy output in the Eastern Region. Also note the performances of Dublin, Kildare, Longford and Westmeath. As a county Offaly has contributed beyond its land-mass, population and capacity.

This is a critical starting point in our Submission. The Supreme Court '*Coolglass*' judgement raises the point that Developments have to be considered beyond their local jurisdiction or county boundary. Where suitable and more optimal sites exist elsewhere, the selection of a sub-optimal site — particularly within an area designated as unsuitable and in a county already exceeding its contribution — cannot be justified and is fundamentally unreasonable, inequitable and manifestly unfair. At what threshold will Offaly be considered saturated?

Figure 2.3 below shows existing and future Renewable energy plans within the county.

Figure 2.3: Future Pipeline – within Designated Areas

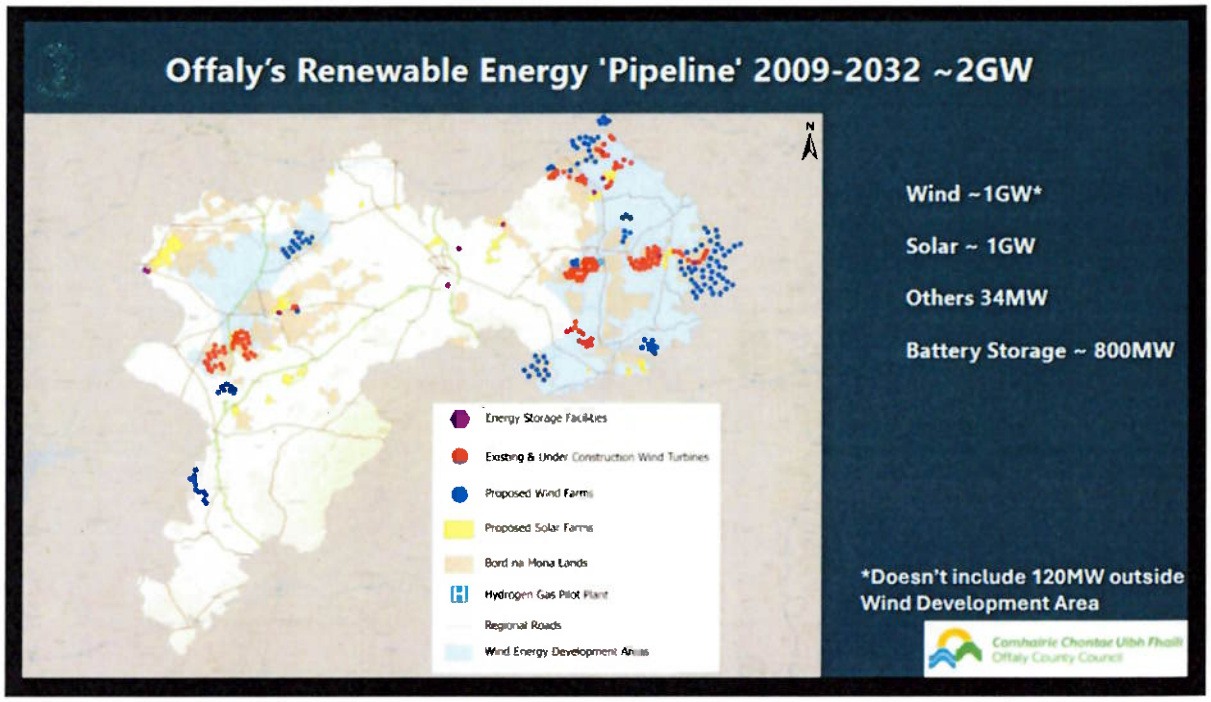


Image taken from Presentation at Green Energy Conference 2026, Tullamore Court Hotel 25/02/2026

The achievements and contribution of County Offaly to renewable targets to-date has already been discussed. The map above presents the planned pipeline and ambition of the county to deliver up to 2032. Note in the bottom right-hand corner that this Pipeline does **NOT** include 120MW 'outside' the wind development designated areas. Offaly County Council are clear that targets can be met within designated areas and consider sites outside designated areas (Ballincor) unnecessary and extraneous to the targets for the county.

To the credit of Offaly County Council, all of this has been achieved through sustainable planning and within the parameters of the Offaly County Development Plan 2021-2027: Wind Energy Strategy. Clearly the approach guided by the Government, the Eastern & Midland Regional Assembly Regional Spatial & Economic Strategy 2019-2031 and executed by Offaly County Council is delivering to the highest standard. To contravene the explicit plans and designations of Offaly County Council is to wholly undermine the planning process.

All of this to say that Offaly is already making an extraordinary contribution to national renewable electricity targets. Planning decisions should explicitly recognise the county's existing role and cumulative delivery in the national context. Offaly is a county approaching saturation on a per capita and per km² basis.

2.2 Offaly County Development Plan – Wind Energy Strategy

The Offaly County Development Plan Wind Energy Strategy has designated 28% of the counties land as suitable for wind energy development. That commitment was established through a formal, statutory plan-making process. Expertise across the County Council prepared the plan on an evidence-led basis (population and housing need, settlement hierarchy, infrastructure capacity, transport and mobility, economic development, community facilities, environmental and heritage constraints, climate adaptation, flood risk, biodiversity/green infrastructure, etc.) and then published it through staged public consultation . Elected members considered the report and ultimately adopted the Plan as the county's primary spatial policy framework. The process was also "quality-controlled" externally to ensure alignment with higher-level national and regional policy and it was subject to statutory environmental assessment (including SEA/AA processes) and oversight/submissions from bodies such as the Office of the Planning Regulator.

The Wind Energy Strategy specifically followed a similar process and was guided in its development by the Eastern & Midland Regional Assembly, Regional Spatial & Economic Strategy 2019-2031. This strategy proposed a 'step by step' sieve mapping analysis of the key environmental, landscape and technical criteria which, it stated, must be balanced in order to identify the most suitable locations for wind energy development.

The following is an extract from the Offaly County Development Plan Chapter 3 (Section 3.2.6) detailing Site selection and site suitability designation criteria

Site suitability is an important factor in determining the suitability of wind farms having regard to possible adverse impacts associated with, for example, residential amenities, landscape, including views or prospects, wildlife, habitats, designated sites, protected structures or bird migration paths and compatibility with adjoining land uses. The Council is therefore required to achieve a reasonable balance between responding to overall positive Government policy on renewable energy and enabling the wind energy resources of the Planning Authority's area to be harnessed in a manner that is consistent with proper planning and sustainable development. The Council recognises that community ownership of wind energy projects enables local communities to benefit directly from local wind energy resources being developed in their local areas, ensuring long-term income for rural communities.

Offaly's Wind Energy Strategy followed the recommended approach and provides a formal site suitability framework, because it explicitly:

1. *Used a step-by-step sieve mapping analysis to identify suitable locations.*
2. *Supplemented that with field analysis and desktop survey, informed by SEA and AA.*
3. *Defined "not suitable" areas by reference to environmental, heritage, landscape constraints and housing density.*

Extract from County Development Plan Chapter 3 Climate Action and Energy Page 75

In so doing, the Offaly County Development Plan 2021-27 specifically addresses the issue of 'Site suitability' across the full spectrum as required. In its conclusion 28% of County Offaly has been designated for Windfarm development, over one quarter of the county.

2.2.1 National and European application

Further and specific to Wind Energy in particular, the role of the CDP has been extended to act as representative for a National SEA for wind energy. Ireland is legally bound by the EU Strategic Environmental Assessment (SEA) Directive to complete a full environmental assessment of any public plan or programme that sets the framework for future development and is likely to have significant environmental effects. A national wind energy strategy clearly meets that threshold.

In the absence of a coherent national Strategic Environmental Assessment for wind energy, the Irish Government has **consistently maintained that this obligation has been met through the preparation of County Development Plans,** which were expressly tasked with identifying areas where wind energy development is appropriate, constrained or not suitable.

Furthermore, Article 15b of RED III (Directive (EU) 2023/2413) requires Member States to carry out national territory mapping to identify areas suitable for renewable energy. In response to Parliamentary Question 164 (4 November 2025), the Minister confirmed that this obligation has been discharged by collating CDP designations from all local planning authorities. Offaly CDP's Wind Energy strategy (and area designation) is part of Ireland's national renewable energy territorial map submitted to the European Commission. See Appendix 2-1.

This confirmation carries three direct consequences:

1. The CDP designation acts currently as Ireland's national instrument. A grant of permission for Ballincor would contradict Ireland's national territorial mapping submitted under RED III. The State would be acting inconsistently with its own EU law representations. This is particularly relevant in this Proposed development as the Applicant explicitly invokes RED III status and in so-doing is required to comply with the County Development Plan designation.
2. The CDP designation carries European, not merely local weight. It is not open to a developer or ACP to characterise the Offaly exclusion zone as a local policy preference that should yield to national climate objectives. It *is* the national climate objective, spatially expressed.
3. Collateral attack on the CDP is legally untenable. An individual planning application cannot collaterally attack a designation adopted as part of a national statutory process submitted to the EU Commission.

Therefore from a European, National, Regional and Local level the framework provided for in the Wind Energy strategy is acceptable and compliant.

2.2.2 Site Suitability : Ballincor – Sieve Mapping Exercise

The Wind Energy Strategy listed the practical suitability indicators underpinning designation. Table 2.3 below lists the criteria considered and the thresholds applied.

Table 2.3: Suitability Indicators

Criterion	Threshold Applied
Wind speed	> 7.5 m/s at 100 m hub height
Grid access	Within 15 km of transmission network
Setback to dwellings/settlements	As per national & local Development Management Standards (typ. ≥ 500 m–1000 m; project-specific)
Landscape sensitivity	Exclude High Sensitivity zones
Designated sites	Exclude SAC, SPA, NHA, pNHA

Criterion	Threshold Applied
Areas of High Amenity	Exclude areas of high amenity
Protected views / amenity routes	Avoid intrusion or dominance
Housing density	Prefer low / dispersed patterns Assess Population density, growth patterns

Based on this rigorous, independent, transparent and evidence-based assessment both the Offaly and Tipperary County Councils' respective Wind Energy Strategies deem the Ballincor site as **not suitable** for wind energy development.

The Ballincor Wind farm site area was determined to be:

- An area of high-moderate scenic sensitivity with elevated topography - Figure 2.4
- An area of below average wind speeds and no reasonable access to the national electricity grid - Figure 2.5, 2.6, 2.7
- An area requiring special biodiversity protections due to its proximity to Sharavogue Bog SAC, River Brosna SPA and Shinrone Heritage Area 2.8
- An area prone to recurring flooding - Figure 2.9

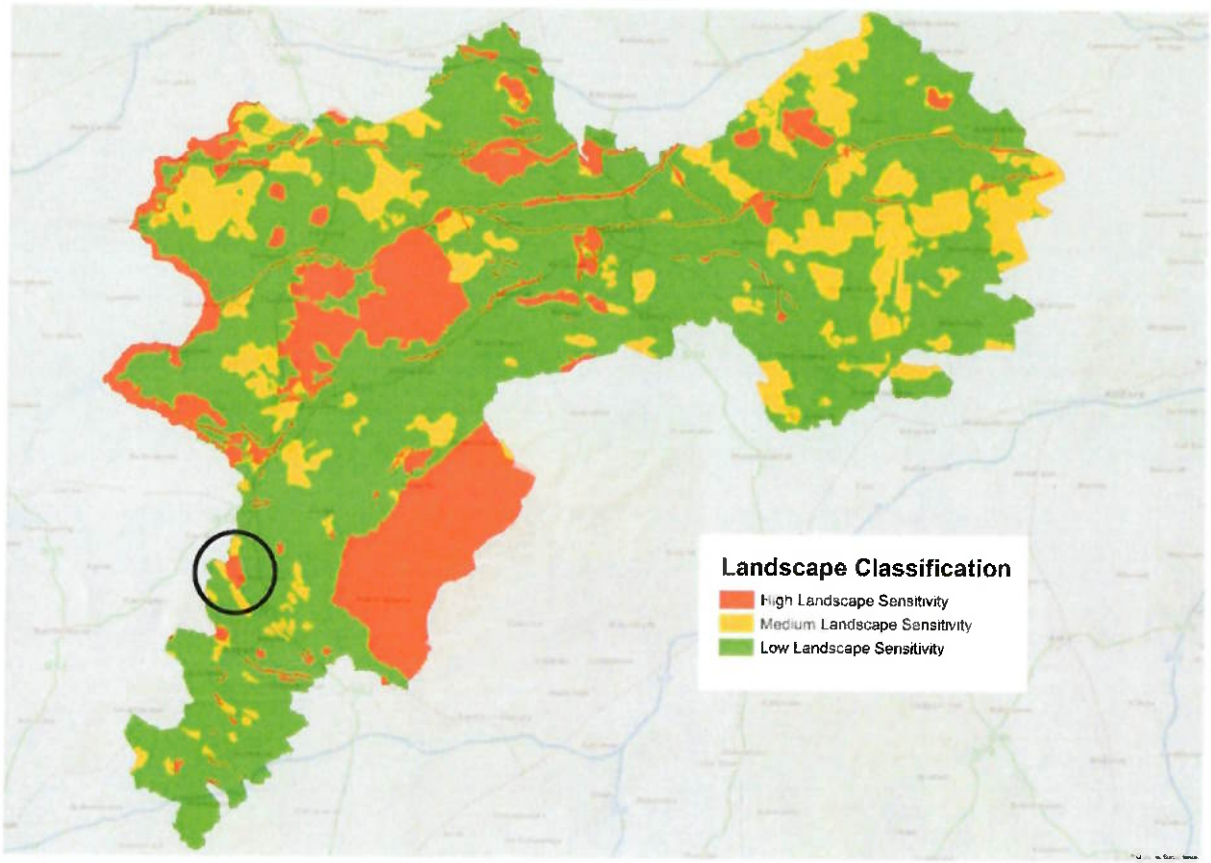
This independent analysis is in stark contrast to the assessment and conclusions of the Applicant. The following review and images are extracted directly from the Offaly Wind Energy Strategy and provide the detail, evidence and assessment absent from the Applicant's submission.

2.2.3 Landscape

The National Landscape Strategy for Ireland (NLS) 2015-2025 recognises the importance of landscape protection and its interconnectivity with biodiversity and climate change. Landscape sensitivity is assessed through the County Landscape Character Assessment/

Figure 2.4 below presents a map classifying landscape sensitivity across County Offaly. The map clearly shows the proposed site as an area of high sensitivity (red) with surrounding areas deemed medium sensitivity.

Figure 2.4 Scenic Sensitivity



Ballincor (circled in black) stands out as an isolated area of High Scenic Value within this part of the County. The map above shows that Ballincor is one of very few areas in the county outside the Slieve Blooms to attract that classification, a rarity which heightens rather than diminishes its protective importance. That classification extends beyond the county boundary line into the Tipperary Development Plan to complete the classification of the windfarm development site.

As will be demonstrated in Chapter 7 Visual Impact and Landscape Character, the proposed site occupies a low-lying position within a valley landscape. The surrounding topography rises to the east and west resulting in elevated vantage points from which the site is widely visible. In particular, the larger population centres of Birr and Carrig overlook the area and currently benefit from its scenic character. Given this terrain, effective screening of a development of this scale is not feasible. The resulting visual impact would therefore extend well beyond the 312 dwellings in the immediate vicinity, leading to a broader and unacceptable loss of protected landscape character to a larger population and across the wider area.

2.2.4 Windspeed and Grid Infrastructure

Figure 2.5 below maps the existing electricity grid infrastructure in County Offaly.

Figure 2.5 Existing Grid Infrastructure

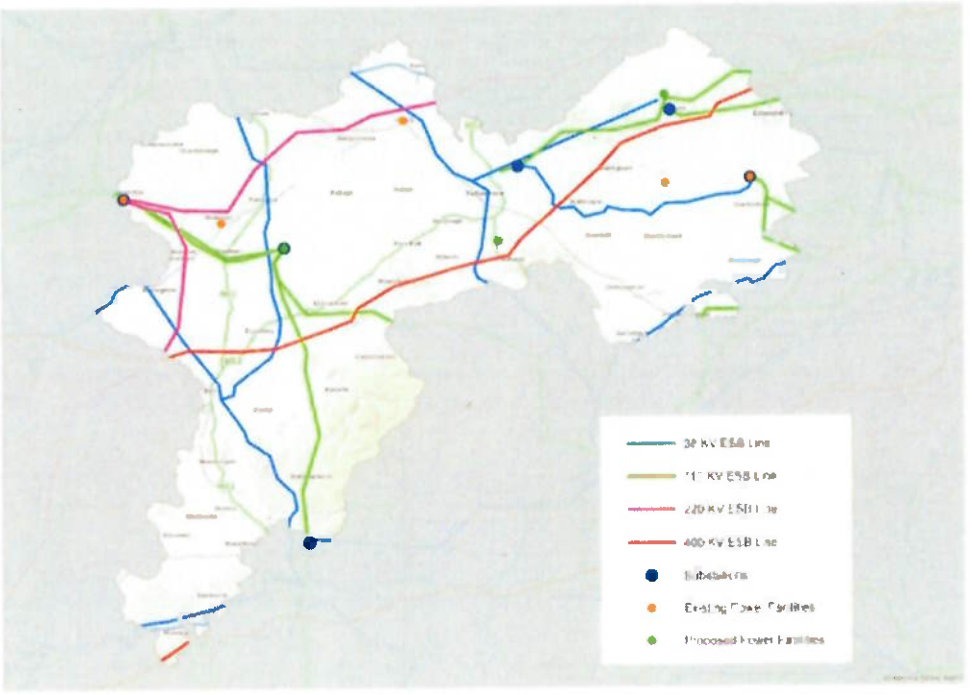


Figure 3.3 Existing Electricity Infrastructure in County Offaly

Note a concentration of infrastructure in designated zones across the county and a notable absence of infrastructure in the Ballincor area. Figure 2.6 below captures average windspeeds and identifies 12 'potential wind energy areas' across the county. Ballincor (white area) is not deemed capable of generating wind output to the degree required and is considered not suitable.

Figure 2.6 Average Windspeeds

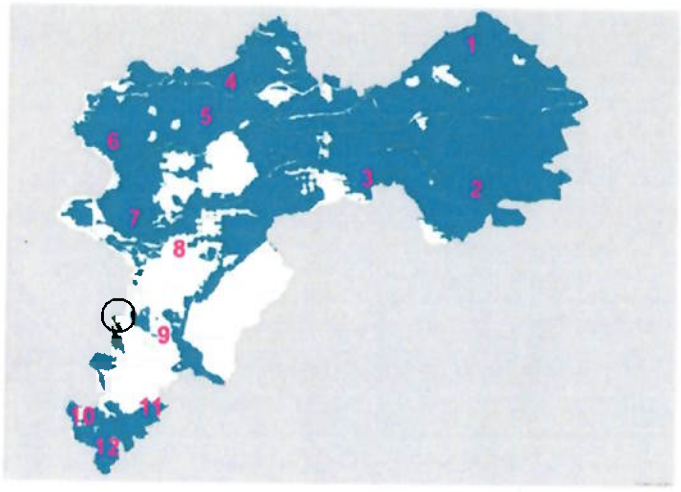
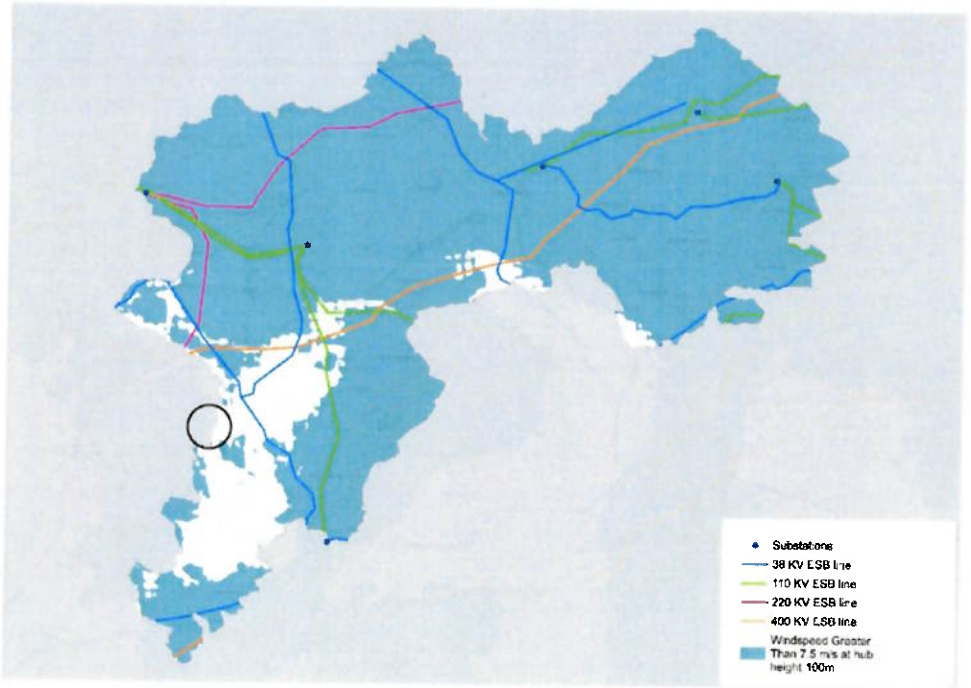


Figure 2.7 below captures the overlay between access to grid and wind capacity and presents the vast expanse of Co Offaly that offers both viable wind speeds and reasonable access to the national electricity grid. The Ballincor area does not adhere on either count.

Figure 2.7 Grid and Wind Capacity



A review of EirGrids Grid Implementation Plan (2023–2028) and EirGrid's Transmission Development Plan 2021–2030 lists a series of reinforcements and upgrades across the existing network but no projects are planned to extend the current network/infrastructure within reasonable proximity of the Ballincor development site.

Further the Application proposes the Dallow 110Kv as a base for grid connection. This sub-station is already overloaded or restricted. EirGrid's operational Wind Dispatch Tool

documentation identifies contingency-driven constraint conditions involving the Dallow–Shannonbridge 110 kV interface and includes Dallow within defined constraint-group configurations. This demonstrates that generation connecting via Dallow 110 kV is exposed to binding transmission constraints and outage-related dispatch-down risk.

Data from EIRGRIDS annual reports, see Table 2.4 below, shows that the rate of curtailment/constraint across the country is rising fast from 6% in 2020 to 13-14% in 2023. These numbers do not consider or include the spate of wind farm connections over the last 2 years nor the level of applications that have been granted permission but are not yet connected to the Grid.

Table 2.4 Annual Rates of Curtailment/Constraint

Year	Total Dispatch-Down % (approx.)
2020	~6%
2021	~9–10%
2022	~11–12%
2023	~13–14%

All of this calls into the question the legitimacy of a windfarm application when all agree the Grid is not ready nationally and as evidenced above locally. The cost is to the end user – the consumer, not the wind developer.

To choose a site far removed from existing and future planned infrastructure is unnecessary, inefficient and sub-optimal from a planning perspective generating additional and unnecessary environmental, social, civil and economic disturbance and displacement.

2.2.5 Biodiversity protections

Figure 2.8 below shows the extent and location of the European and National Designated sites in County Offaly as listed in Chapter 4 'Biodiversity and Landscape' in Volume 1 of the County Development Plan. Independent Appropriate Assessment screening was undertaken to assess the potential impacts of this Wind Energy

Strategy on Natura 2000 sites. In addition, a Strategic Environmental Assessment was carried out to assess wider potential biodiversity impacts in relation to this Wind Energy Strategy. The proposed site Ballincor would lie adjacent to Sharavogue Bog SAC.

Figure 2.8 European and National Designated Sites

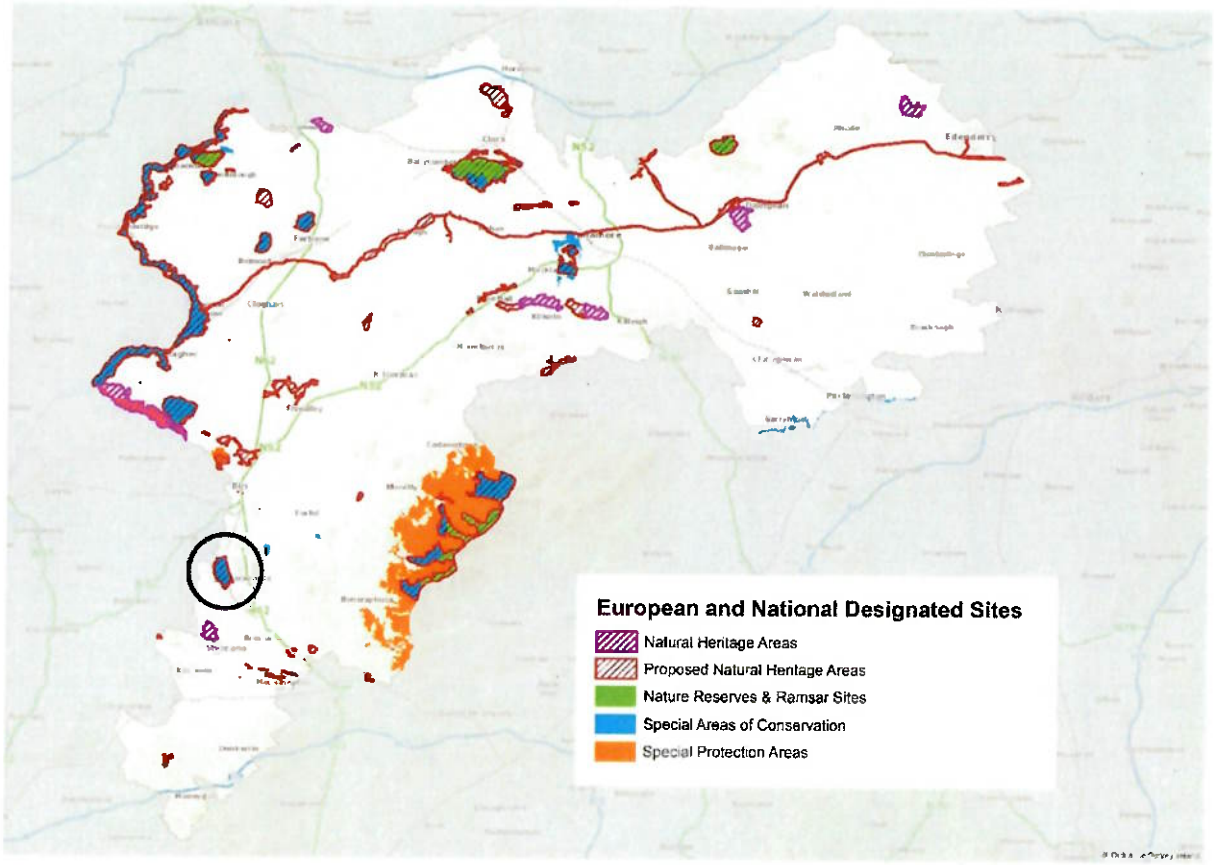


Table 5.1 below extracted from the Applicant's AA/NIS document reaffirms this position as it confirms the **10m** distance between the development and Sharavogue Bog SAC. Further it confirms the potential for likely significant effects on this SAC.

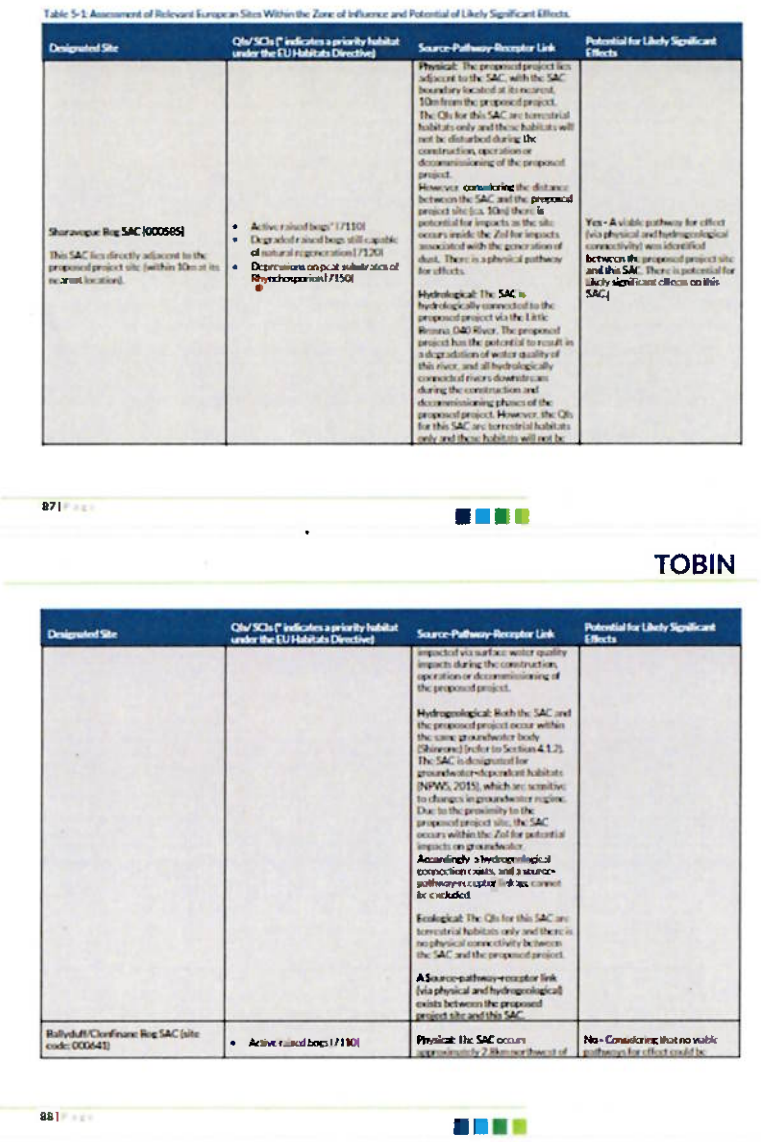


Table 5-1: Assessment of Relevant European Sites Within the Zone of Influence and Potential of Likely Significant Effects.

Designated Site	Qis/SCIs (* indicates a priority habitat under the EU Habitats Directive)	Source-Pathway-Receptor Link	Potential for Likely Significant Effects
Sharavogue Bog SAC (000685) This SAC lies directly adjacent to the proposed project site (within 10m at its nearest location).	• Active raised bogs* (7110) • Degraded raised bogs still capable of natural regeneration (7120) • Depressions on peat substrates of Rhynchosporion (7150)	Physical: The proposed project lies adjacent to the SAC, with the SAC boundary located at its nearest, 10m from the proposed project. The QIs for this SAC are terrestrial habitats only and these habitats will not be disturbed during the construction, operation or decommissioning of the proposed project. However, considering the distance between the SAC and the proposed project site (ca. 10m) there is potential for impacts to the site occurs inside the ZoI for impacts associated with the generation of dust. There is a physical pathway for effects. Hydrological: The SAC is hydrologically connected to the proposed project via the Little Brosna, 040 River. The proposed project has the potential to result in a degradation of water quality of this river, and all hydrologically connected rivers downstream during the construction and decommissioning phases of the proposed project. However, the QIs for this SAC are terrestrial habitats only and these habitats will not be	Yes - A viable pathway for effect (via physical and hydrogeological connectivity) was identified between the proposed project site and this SAC. There is potential for likely significant effects on this SAC.

Designated Site	Qis/SCIs (* indicates a priority habitat under the EU Habitats Directive)	Source-Pathway-Receptor Link	Potential for Likely Significant Effects
		impacted via surface water quality impacts during the construction, operation or decommissioning of the proposed project. Hydrogeological: Both the SAC and the proposed project occur within the same groundwater body (Shinrone) (refer to Section 4.1.2). The SAC is designated for groundwater-dependant habitats (NPWS, 2015), which are sensitive to changes in groundwater regime. Due to the proximity to the proposed project site, the SAC occurs within the ZoI for potential impacts on groundwater. Accordingly a hydrogeological connection exists, and a source-pathway-receptor link cannot be excluded. Ecological: The QIs for this SAC are terrestrial habitats only and there is no physical connectivity between the SAC and the proposed project. A Source-pathway-receptor link (via physical and hydrogeological) exists between the proposed project site and this SAC.	
Ballyduff/Clonfinane Bog SAC (site code: 000641)	• Active raised bogs (7110)	Physical: The SAC occurs approximately 2.8km northeast of	No - Considering that no viable pathways for effect could be

The River Brosna runs along and within the proposed development site. The River Brosna forms part of a specially protected hydrological corridor that connects and links a wide range of SACs and SPAs, the most notable are the River Little Brosna Callows SPA, the Dovegrove Callows SPA, the River Shannon Callows SAC. This was explicitly referenced in the ACP Inspectors Report ABP 318666-23, dated Sept 15th, 2025 where the Inspector lists the full and vast range of SACs, SPAs and heritage sites in the area that required consideration as part of this Application. See full list below.

7.0 Appropriate Assessment

7.1 1. The prospective Applicant intends to submit a Screening for Appropriate Assessment (AA) and a Natura Impact Statement with the application.

7.1 2. Natura 2000 European Sites within 15 km of the site include the following

7.2 Special Protection Areas (SPAs)

- River Little Brosna Callows SPA (004086) - 9.72 km north-west
- All Saints Bog SPA (004103) - 11.46 km north
- Dovegrove Callows SPA (004137) - 8 33 km north
- Slieve Bloom Mountains SPA (004160) - 12 55 km west
- Lough Derg (Shannon) SPA (004058) – 13 99 km west

7.3. Special Areas of Conservation (SACs)

- Sharavogue Bog SAC (000585) – 0 71km north-west
- Lisduff Fen SAC (002147) – 4 89 km west
- Ballyduff/Clonfinane Bog SAC (000641) - 4 82 km north-west
- Liskeenan Fen SAC (001683) - 6.34 km north-west
- Arragh More (Derrybreen) Bog SAC (002207) – 6 56 km north-west
- Kilcarren-Firville Bog SAC (000647) – 7.63km north-west
- Scohaboy (Sopwell) Bog SAC (002206) – 8 65 km southwest
- Island Fen SAC (002236) – 8 99 km north-west
- Ridge Road SW of Rapemills SAC (000919) – 10 5 km north

- All Saints Bog and Esker SAC (000566) – 11.5 km north-west
- Lough Derg, North-east Shore SAC (002241) – 13 47 km north-west
- Redwood Bog SAC (002353) – 13 9 km north-west

There is clear recognition that the River Brosna acts as a hydrological corridor connecting sites and many of these sites are connected functionally as a shared eco-system. The Applicant has chosen to screen IN this river as a perimeter to their development and for the river itself to act as buffer to the adjoining, shared waterbody dependent SAC.

This section of the River Brosna (The Little Brosna_40) which would receive all construction run-off from Turbines T1-T9 is classified as Poor ecological status for the 2019-2024 WFD monitoring cycle and is formally at RISK of failing to meet 2027 objectives. This classification is a deterioration of previous classifications.

The cumulative effect is significant at a time when NPWS in their report "The Status of EU Protected Habitats and Species in Ireland 2025" conclude that *"90% of habitats remain in Unfavourable status, with half showing ongoing declines."* They argue that this is not a neutral baseline. It is a national conservation deficit. In that context, any additional long-term pressure placed on SAC-related systems—particularly those dependent on stable hydrology and ecological function—must be evaluated with heightened precaution.

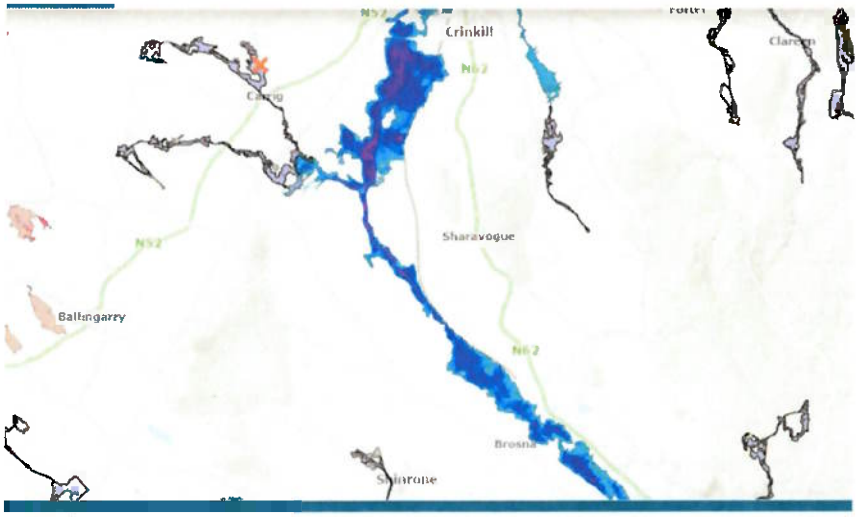
Offaly County Council considered these impacts and concluded that this area requires special protection and is therefore not suitable for windfarm development. Chapter 3, Chapter 5 and Chapter 6 will address these issues in more detail.

2.2.6 Flooding

The Wind Energy strategy does not include directly the propensity to flood in its sieve-mapping exercise but it is worth noting that this site is part of a year-round flood plain as evidenced by the map in Figure 2.9 below.

The Applicant proposes construction of T1, T2, T8 and T9 in areas classified as Flood Zone A/B even though PSFRM Guidelines classify windfarms as infrastructure appropriate ONLY in Flood Zone C areas. See Chapter 3 for further analysis.

Figure 2.9 Flood Data River Brosna – Development Site



2.2.7 Ancillary Effects

Additional factors were taken into consideration when designating areas suitable for wind development across the County including: population density, heritage sites, tourism initiatives and local transport infrastructure. In local terms the following additional factors are considerable and unique determinants in the unsuitability of this site:

1. **Population Density :** The proposed site has 216 households within 2km and 312 within 3km. A number of large towns and villages are in close proximity; Birr, Shinrone, Carrig and Riverstown. Given the topography of the area (high elevation above and around the proposed development) there is an absence of existing and potential screening such that the full development is visible from the higher population centres of Birr and Carrig and partially visible from the village of Shinrone. This results in a disproportionate landscape and visual impact. See Chapter 7.
2. **Birr Castle and Demesne Observatory:** On 18 April 2025 the Irish Government added the Birr Castle and Demesne Observatory as part of the *Historic Astronomical Observatories of Ireland* to its UNESCO Tentative List, marking the first formal step towards full World Heritage nomination. The Minister for Housing, Local Government and Heritage described the designation as a significant milestone in recognising Ireland's contribution to global scientific heritage, consistent with the Government's *Strategy for World Heritage in Ireland 2025–2035.* In addition to its historic significance, Birr Castle Demesne hosts an I-LOFAR station, forming part of the wider European LOFAR radio astronomy network. Funded in part by Science Foundation Ireland, the facility is located at Birr in recognition of the demesne's relatively radio-quiet environment, a critical requirement for sensitive radio astronomy observations, further reinforcing the site's contemporary scientific importance alongside its heritage value and the need to protect the area from noise interference. The Birr Local Area Plan 2023–2029 identifies Birr Castle and the UNESCO status as a key strategic objective. The County Development plan recommends protection from interference within a 5km radius of the Castle. This development sits at the edge of this radius.
3. **Birr Airfield**: ACP in pre-planning consultation noted twice the potential impact and effect of a Windfarm on the local IAA licensed Airfield in this location. Birr Aerodrome is an Irish Aviation Authority approved Designated Training Organisation delivering Private Pilot Licence training to EASA standards. The proposed development overlaps directly with the Airfield and Flying club activities. See Chapter 11.

4. **The River Brosna** is presented in the application as a buffer or perimeter to the development. This fundamentally undermines and misrepresents the importance and sensitivity of this river corridor. The River Brosna is a highly protected hydrological and ecological system supporting aquatic habitats, bird movement and feeding corridors, and wider biodiversity connectivity across the landscape. It is also a major recreational and community amenity relied upon by angling groups from Templemore, Shinrone, and Birr. It serves as a unique resource to the local Outdoor Education Centre whose programmes and activities depend directly on access to this environment. The extent to which the development threatens not only ecological integrity, but also the established recreational, educational, and social value of the river corridor cannot be overstated. See Chapter 3, 11.

2.3 RWE Site Selection Process

The Applicant RWE in an online brochure designed to communicate and promote their scoping process with local communities described the steps they take to identify appropriate sites for their wind energy developments (2025/6). See Figure 2.10 below taken directly from the RWE website/castlegarden brochure as part of their consultation programme. This information is still active on the website as of May 2026.

Figure 2.10



https://ie.rwe.com/-/media/RWE/RWE-Ireland/downloads/castlegarden/castlegarden-brochure.pdfhey

The Applicant acknowledges the centrality of the Local development plan and the requirement to protect or shield Natura 2000 sites in the following points;

Point 2: *Review the County Development Plan to clarify those areas which have been zoned strategically for wind development by the County Council/local planning authority in conjunction with the plan prepare an evaluation of the landscape and its sensitivity for wind energy developments.*

Point 4: *Any Natura 2000 Sites or national environmentally designated sites in the area are identified and avoided.*

Further, the Applicant early in their consultation process were cautioned by the ACP Planning Inspector about the designated status of the site. At a meeting between An Bord Pleanála and the Applicant, representatives for the Board noted that "*It would appear from the Wind Energy Policy pertaining to the site that the proposed development may constitute*

a material contravention of both development plans. (Offaly & Tipperary) and advised the applicant to provide a detailed planning statement addressing this consideration." In further correspondence, the Inspectors Report ABO 318666-23, dated 15th September 2025, Page 9 states that "*The site appears to be in an area identified as not suitable for wind energy development in both the Offaly and Tipperary County Development Plans. This may represent a significant issue, considering recent legal case law regarding the primacy of the Development Plan.*"

2.3.1 Alternative Site Analysis

In their Submission the Applicant reveals the rationale underpinning their site selection and the process they followed in determining Ballincor as a suitable development site.

The screening exercise was conducted **in 2018** —eight years before this planning application was submitted. No update, refresh, or re-run of the screening is documented. There is no statement that the 2018 data or outputs remain valid at the time of application. Across the 8 years many aspects of the Site and its environs have changed or evolved. The area has become subject to a range of restoration and rehabitliation programmes from various government programmes and agencies.

Notwithstanding, the Applicant identifies the following screening criteria:

1. Available wind resource
2. Environmental constraints, including potential impacts on Natura 2000 and nationally designated sites (SAC, SPA, NHA, pNHA)
3. Population density
4. Proximity to dwellings
5. Planning policy compliance
6. Archaeological features
7. Landscape and visual constraints
8. Proximity and access to the national electricity grid
9. Access route availability
10. Land ownership and title constraints

11. Availability of sufficient unconstrained land to accommodate turbine spacing and overall wind farm layout requirements

A credible and transparent site selection exercise should involve a structured comparative assessment similar to the matrix illustrated below in Figure 2.11 (taken from another developer application for demonstrative purposes).

Figure 2.11: Sample Site Selection Matrix

Table 4.1: Alternative Sites Environmental & Policy Comparison

Environmental/Policy Criteria	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Landscape & Visual Effects	3 – Flat site - No landscape designation	2 – Upland Secondary Amenity Area	1 – Upland Primary Amenity Area	2 - Secondary Amenity Area	1 – Upland Primary Amenity Area	1 – Upland Primary Amenity Area
Wind Speed	3 – Good average wind speed	5 – High average wind speed	4 – good average wind speed varying across the site	5 – high average wind speed	2 – low average wind speed varying across the site	4 – good average wind speed varying across the site
Habitat Sensitivity	5 – No sensitive habitat identified	3 – Some sensitive habitat identified – Alpine heath	2 - Sensitive habitat identified – Alpine & wet heath	4 - Some sensitive habitat identified – Alpine heath	4 – Some sensitive habitat identified – Alpine heath	3 - Sensitive habitat identified – Dry heath
Proximity to Designated Sites	4 - In proximity to Lower River Suir SAC	3 - In proximity to Kilduff Devilsbit Mountain SAC	4 – Proximity to Lough Derg SPA	4 – Proximity to Slievefelim to Silvermines Mountains SPA	4 – In proximity to Lower River Suir SAC	1 – Adjacent Galtee Mountain SAC
Proximity to National Grid	5 – Close proximity to Thurles 110kV substation	4 - Medium proximity to Ikerrin 110kV substation	4 - Medium proximity to Nenagh 110kV substation	4 – Medium proximity to Nenagh 110kV substation	4 - Medium proximity to Doon 110kV substation	5 – Close proximity to Cahir 110kV substation
Wind Energy Policy	5 – Open to consideration	1 - Unsuitable for new wind energy development	1 - Unsuitable for new wind energy development	1 - Unsuitable for new wind energy development	1 - Unsuitable for new wind energy development	1 - Unsuitable for new wind energy development
Heritage & Tourism Effects	5 – No significant heritage or tourism receptors	4 – Amenity Trails on site	1 – Amenity Trail on site and proximity to Lough Derg	4 - Amenity Trails on site	5 - No significant heritage or tourism receptors	3 – Amenity Trail on site and proximity to Galtee Mountains
Flooding	2 – Flooding identified on site	5 – No flooding identified on site	5 – No flooding identified on site	5 – No flooding identified on site	5 – No flooding identified on site	5 – No flooding identified on site
Delivery Access	5 – Close proximity to national road network	4 – Medium proximity to national road network	2 – Constrained access to regional road network	5 – close proximity to regional road network	4 - Medium proximity to regional road network	5 - Close proximity to national road network
Aviation	5 – No airports in proximity	3 – Within military restriction zone	3 – Within military restriction zone	4 – Partly in military restriction zone	5 - No airports in proximity	3 – Within military restriction zone
TOTAL SCORE	42	34	27	38	35	31

Such an approach establishes a logical and evidence-based framework through the use of weighting, scoring, and comparative ranking to objectively justify the selection of one site over another.

By contrast, the approach presented by the Applicant amounts to little more than a generic checklist comprised largely of developer-led considerations relating to commercial viability and technical deliverability, supplemented by a broad environmental constraint filter.

There is no scoring matrix, no weighting system, no disclosure of how a site that performed well on criterion 1 but poorly on criterion 3 was assessed relative to another site. The eleven criteria are presented as a list with no methodology for how they interacted or determined outcomes. Although four alternative sites are named there is no comparative analysis and no ranking process. In fact the Applicant has pursed ALL available sites:

Fahybeg, County Clare — planning application submitted and granted

Shancloon, County Galway — planning application submitted

Muingmore, County Mayo — planning application submitted

Clooncunny, County Sligo — active pre-planning stages with ACP.

The EIAR does not present an alternative site analysis in any meaningful sense. What the Applicant describes as a site selection process is, in substance, a portfolio development exercise: the 2018 screening identified a number of sites across Ireland, and rather than selecting one preferred location over others, the Applicant has pursued all of them.

The EIAR effectively concedes this, noting that the alternatives comparison for each site "is provided in the EIAR accompanying the planning application for each project." There is therefore no exercise in which Ballincor was weighed against and preferred over alternative locations, all viable sites were pursued simultaneously. The logical consequence is that Ballincor was not chosen because it was the best option; it was chosen because it was available. This is a commercial land-banking strategy, not a reasoned selection of a preferred site and it cannot satisfy the requirement under the EIA Directive and EPA Guidelines to demonstrate that the chosen option was selected on the basis of a comparative assessment of its environmental effects relative to reasonable alternatives.

By contrast, Offaly County Council undertook a far more rigorous and transparent assessment process through the preparation of its Wind Energy Strategy and associated sieve mapping exercise. That process systematically evaluated constraints and sensitivities across the county in order to objectively determine which areas were suitable, less suitable, or unsuitable for wind energy development. The County Development Plan designation therefore represents the outcome of a strategic, evidence-based planning exercise carried out in the public interest, rather than a developer-led site selection exercise driven primarily by project deliverability.

2.4 ACP Precedent and Position

2.4.1 CDP primacy in Application assessment

An Comisiun Pleanala has heretofore respected and protected the role of the County Development Plan. On January 15th 2025 An Bord Pleanála made a statement on renewable energy decisions:

"In 2023 and 2024, 30 decisions were made on normal planning appeals relating to wind farm applications..... 15 of these were refused, nine of which were refused for multiple reasons while six were refused for a single reason relating to local Development Plan policy".

Appendix 2-2 sets out the inspector recommendations in three of those refusals as it pertains to CDP. Three features of those decisions establish a consistent pattern of reasoning that is directly applicable to the Ballincor application.

In each refusal the planning authority's spatial designation — whether expressed as an Exclusion Zone on a Wind Energy Strategy map (Waterford) or as a High Value Landscape under a Landscape Character Assessment (Cork) — was treated as determinative of site suitability. The Offaly and Tipperary County Development Plans designate Ballincor as Not Suitable through the equivalent statutory mechanism: a Wind Energy Strategy and sieve-mapping exercise.

In each decision the Inspector expressly weighed the renewable energy benefits and found them insufficient to displace the plan-led designation; the Coumnagappul and Dyrick Hill recommendations are explicit on this point — "notwithstanding the benefits of renewable energy proposals and the policy support otherwise."

Each refusal was grounded in the statutory test under section 34(2)(a) of the Planning and Development Act 2000 — that the development was "contrary to the proper planning and sustainable development of the area", which is the same test An Coimisiún Pleanála must apply to the Ballincor application.

On the facts, the Ballincor application is a stronger case for refusal than each of the three precedents. It contravenes not one County Development Plan but two, Offaly and Tipperary. It engages not a single constraint such as an Exclusion Zone or a High Value Landscape, but the full spectrum of the Wind Energy Strategy sieve criteria and it has been flagged by An Coimisiún Pleanála's own Inspector at the pre-application stage as raising a material

Chapter 3: Hydrology, Hydrogeology, Peat Stability and Flood Risk

Appendix 3-1 Dr Pamela Bartley – Hydro G Report

Appendix 3-2 : Hydro G Appendix, supporting documentation

3.0 Introduction

When RWE proposed a windfarm on this site the local community were most concerned by the hydrological challenges it would present. This is a floodplain, bordered by a river in documented decline, lying within ten metres of a Special Area of Conservation, and dependent on a fragile and actively recovering water-table system. The Little Brosna River and Sharavogue Bog SAC are both within or immediately adjacent to the development, and both are in active, State-funded restoration.

Local knowledge confirms what the modelling only partly captures. While the flood maps describe 1-in-100 and 1-in-1000-year events, the lived reality is that this floodplain inundates extensively every winter, from November to March, with depths exceeding a metre in places and large areas left impassable for five months of the year. The flooding is not a remote probability; it is an annual certainty.

Large-scale construction, deep piled foundations and extensive peat excavation in this setting will inevitably bear on groundwater levels and flow, river hydromorphology and the ecology of the SAC. The constraints of the site are not merely difficult, they are mutually irreconcilable. An engineered solution to one problem creates a different problem elsewhere. That is itself significant. In *Coolglass Wind Farm Limited v An Coimisiún Pleanála* [2026] IESC 5 (paras 103–105), the Supreme Court recognised that a consenting body may not be required to act consistently with its statutory objectives "*where it is not practicable to do so*" — "**practicable**" meaning capable of being carried into action having regard to the practical difficulties that exist. The difficulties on this site go to the heart of whether consent is practicable at all.

The hydrological and hydrogeological effects of this proposal bear on an extraordinary concentration of sensitive receptors: the Little Brosna, Sharavogue Bog SAC and its lagg zone, the Shinrone Groundwater Body, the six European sites downstream — including the Callows SPAs and the River Shannon Callows SAC and, beyond them, Lough Derg as a strategic drinking-water source. Few sites place so many vulnerable systems within reach of a single construction footprint. Given that, and the technical complexity of the proposal the Greater Birr Wind Action Group commissioned independent expert review.

This chapter is informed throughout by the expertise of Dr Pamela Bartley (Hydro-G), a chartered hydrogeologist and water-focused civil engineer with over 25 years of field practice in borehole drilling, groundwater monitoring and the assessment of construction impacts on hydrology, IOSH-certified as Project Supervisor for the Design and Construction Stage. Her

full report is appended as Appendix 3-1, with supporting scientific literature at Appendix 3-2. The Inspector is asked to read Appendix 3-1 in full before the grounds below.

This review addresses hydrology, hydrogeology, peat stability, flood risk, and compliance with the Water Framework Directive (WFD) and the Habitats Directive. All evidence cited is drawn exclusively from the applicant's own Environmental Impact Assessment Report (EIAR), Natura Impact Statement (NIS), WFD Compliance Assessment (Appendix 9-1), and supporting appendices. Every page and section reference is to those documents.

This matters because the applicant has expressly waived both derogation pathways. The WFD Assessment (Appendix 9-1, p.28) confirms the project "does not require assessment under Article 4.7"; the NIS (p.4) confirms "no reliance" is placed on Article 6(4) IROPI. There is no flexibility and no fallback. Full, unqualified compliance with Article 4(1)(a) of the WFD and Article 6(3) of the Habitats Directive must be demonstrated on the application exactly as filed. This chapter demonstrates that it cannot be.

Twelve grounds of objection follow. They are evidentially independent — each would justify refusal on its own — but they also compound one another, and their combined effect is greater than the sum of its parts.

3.1 Summary of Grounds

Ground 1 — The Wrong Baseline: WFD Poor Status and the Weser Prohibition.
The applicant's entire water-quality assessment rests on a classification its own documents contradict. EIAR Chapter 9 treats the receiving waters as *Moderate*; the applicant's own WFD specialist (Appendix 9-1) records the sub-basin that actually contains the development as having deteriorated from *Moderate* to *Poor*, At Risk, confirmed by Poor monitoring results at Riverstown Bridge. Under the *Weser* judgment (C-461/13), any deterioration of any quality element in a Poor-status water is prohibited outright, and the applicant has waived the only legal route around that prohibition. A compliance case built on a baseline the applicant's own evidence disproves cannot stand.

Ground 2 — The AFA Programme of Measures: A Legal Test Set Up, Then Abandoned.
The site sits inside the Little Brosna Area for Action, a State-led restoration programme established to reduce the very pressures — peat disturbance, drainage, nutrients — that this development would add. The applicant's own assessment correctly identifies the WFD test for compatibility with that programme, recites every relevant fact, and then simply stops without applying it. A separate assertion that the site will not cause local deterioration answers a different question and cannot discharge this one. A test identified, populated with facts, and left unanswered is the precise lacuna *Holohan* (C-461/17) prohibits.

Ground 3 — Phosphorus and Iron: The Pollutants That Matter Most Were Not Measured or Cannot Be Removed.
The EIAR names phosphorus as the main issue for water quality in this catchment, then fails to measure it: phosphate was dropped from the reported results despite being part of the laboratory method actually run. Iron ochre is visible in the applicant's own site-investigation photographs, yet iron appears nowhere in the baseline or the monitoring triggers. The omission is decisive because the proposed mitigation cannot address it — settlement ponds remove solids by settling, but phosphorus and iron travel in dissolved form, which settling does not capture. The applicant has neither characterised the two pollutants that govern this catchment nor proposed controls capable of stopping them.

Ground 4 — The Tributaries: The Real Discharge Pathway, Largely Unassessed.
Construction runoff does not reach the Little Brosna directly; it reaches it through a network of smaller streams that cross the site — the true first link to every downstream European site. The applicant's own ecologist rates one of these, the Pallas Kylenamuck, as *Bad / Seriously Polluted*, one step from the floor of the scale, with no assessment of further deterioration. Five other named tributaries, including the site's primary discharge pathway,

were never sampled at all. A no-adverse-effect conclusion cannot rest on baselines that were either never measured or recorded as Bad and then ignored.

Ground 5 — Construction in Flood Zone A/B and the Failure of the Justification Test.
Four turbines sit in Flood Zone A/B on the applicant's own mapping, with T9 three-quarters inundated under the climate scenario the applicant itself adopts. The Justification Test fails on every criterion. The contradictions are on the face of the documents: the SWMP requires an environmental clerk of works on site during the very rainstorms the FRA says make the access roads unusable; the drainage features cannot work under flood; and the principal stormwater structure is drawn below the FRA's own mandatory flood level. The mitigation cannot function under the conditions that define the site.

Ground 6 — Access Tracks in Flood Zone A/B: No Investigation, No Design, No Mitigation.
The applicant claims ground investigation informed the access-track design in the critical eastern corridor. It did not: no trial pit or borehole was placed along that alignment, where the peat is deepest and the SAC closest. The three investigation points nearby found no stable founding layer — two collapsed, and the third recorded nearly thirteen metres of near-liquid silt. Neither of the applicant's two design options is workable on that data, and the track design is openly deferred to a specialist who has not been appointed. The infrastructure in the most sensitive zone on the site has not, in substance, been designed.

Ground 7 — Construction Loading on the Floodplain: A Flood-Risk Mechanism Never Assessed.
Four turbines and much of the access network sit on a working floodplain whose value lies in its capacity to absorb floodwater. Compacting saturated peat destroys that capacity, and the same flows then rise higher. The application contains no ground-pressure assessment, no compaction analysis, and no study of this effect at all. The Flood Risk Assessment, by its own terms, considers only the risk to the developer's infrastructure — never the flood risk the development creates for the adjacent SAC, whose modelled flood extent already reaches the site boundary. A mechanism capable of raising flood levels against a Priority Habitat in active restoration has simply not been characterised.

Ground 8 — Peat Stability: Contradicted Data, Deferred Mitigation, and the Meenbog Precedent.
Nine of twelve peat trial pits collapsed during investigation. The applicant describes the peat as low in moisture and easy to manage; its own laboratory data records moisture content up to 946%, with a median near saturation. The "Negligible" risk rating at the three worst locations depends entirely on a "specific temporary works design" that does not exist — and

that the applicant's own assessor says cannot be prepared until further investigation, not yet carried out, is done. Meenbog (2020) is the direct precedent: an EIAR that rated peat failure "trivial and tolerable," before roughly 86,000 m^3 of peat slid into protected sites. The same conditional template is relied on here.

Ground 9 — Karst and the Shinrone Groundwater Body: A Single-Sentence Assessment.

Part of the site overlies a Regionally Important Karstified Aquifer hydraulically connected to the SAC, yet the entire karst assessment is one sentence: no karst was seen during the walkover. The applicant concedes elsewhere that karst beneath the peat could not be detected by a walkover. The "low vulnerability" rating it relies on is itself a product of the protective peat layer — the very material the project is designed to excavate. Unlined borrow pits dug through peat into a karst substrate, in the gradient toward the SAC, are precisely the scenario left unassessed.

Ground 10 — Hydrogeological Connectivity to the SAC: An Unbridged Lacuna.

The threshold question for the SAC is whether a hydrogeological pathway exists. The applicant's own NIS answers both ways: one table records a groundwater connection to Sharavogue Bog and identifies a potential for adverse effect; the next declares no pathway and no potential effect — with nothing in between to explain the reversal. Two physical pathways are documented in the applicant's own file: near-surface upwelling evidenced at the eastern margin, and a mapped gravel-and-esker "window" lying inside the red line that the applicant has drawn around and excluded. Neither has been characterised. A no-adverse-effect finding reached without resolving connectivity is the lacuna *Holohan* forbids.

Ground 11 — The Gravels-and-Esker "Window" Excluded by the Red Line.

The applicant has drawn its boundary to circle out a GSI-mapped pocket of gravels and a connected esker lying within the application area, presenting it as separate from the development. It is not separable. The same cut-over peat subsoil is mapped on both banks of the Little Brosna, so the river links identical subsurface systems; a peat-to-gravel boundary is a recognised setting for high-volume groundwater discharge; the gravels form a "window" through which groundwater emerges from the underlying bedrock; and the mapped end of the esker coincides with the start of a surface-water system — a probable spring. Turbines T1–T4 will impose construction and crane loads at the margin of this feature, yet its hydrogeological function and its potential as a preferential pathway toward Sharavogue Bog SAC have not been characterised, because the feature has been defined out of the assessment. A no-adverse-effect conclusion reached without assessing a mapped

groundwater conduit inside the application lands is the lacuna *Holohan* prohibits, and cannot be cured by condition.

Ground 12 — Construction Dewatering and Drawdown: The Quantitative Assessment Is Absent.

Eleven foundations, three borrow pits, a substation and a battery compound will be dewatered through saturated peat with the water table near surface — yet the application contains no drawdown calculation, no groundwater model, no permeability testing, and no monitoring point inside the SAC. The 100-metre zone of influence asserted in a single sentence is contradicted by peer-reviewed Irish field evidence from a comparable raised bog, where drawdown reached 150–250 metres and subsidence was detectable at 900. The certainty *Waddenvereniging* and *Sweetman* require cannot come from analysis that was never done.

Ground 13 — Stepping Back: Maladaptation and the Absence of Alternatives.

A project that excavates tens of thousands of cubic metres of carbon-storing peat, compacts a floodplain, undermines a State-funded restoration programme and adds pressure to a Poor-status waterbody is, on its face, in tension with the maladaptation principle national climate policy requires consenting authorities to weigh — yet the application offers no carbon accounting and no floodplain-function analysis. Nor does it carry out the alternatives assessment the EIA Directive requires: the applicant calls this site "the most suitable," but "most suitable" is a ranking, not a finding of suitability, and it is pursuing all its identified alternatives at once. *Coolglass* asks whether consent here is even practicable. The application never answers.

3.2 The Site and Its Hydrological Context

The hydrological context of this site is the most significant environmental factor in this application and must be understood before the individual grounds are assessed.

The Little Brosna River flows along the eastern boundary of the wind farm site from south to north before joining the River Shannon approximately 20km to the northwest (Appendix 9-1, p.7). The river Shannon is the largest river system in Ireland and is an important cultural, biodiversity habitat and drinking water source. See Figure 3.1 below highlighting the overlap between river and perimeter. This is not a distant receptor. The river Brosna is chosen in places to be the actual boundary line of the development, it is immediately adjacent to Turbines T8 and T9, and within the active floodplain of T1, T2, T8 and T9 as established by the applicant's own Flood Risk Assessment (Appendix 9-3). Access tracks are proposed directly adjacent to the river at the Southern end. See map below.

Figure 3.1 Map of Access Tracks and River



The magnified view of the Access Tracks area below shows that at several points the distance between river and proposed access track is negligible. No planning drawing states that distance. This is in and of itself a material omission Given the proximity highlighted below it is likely less than 20m.

Figure 3.2 Magnified view: Ma of Access Tracks and River

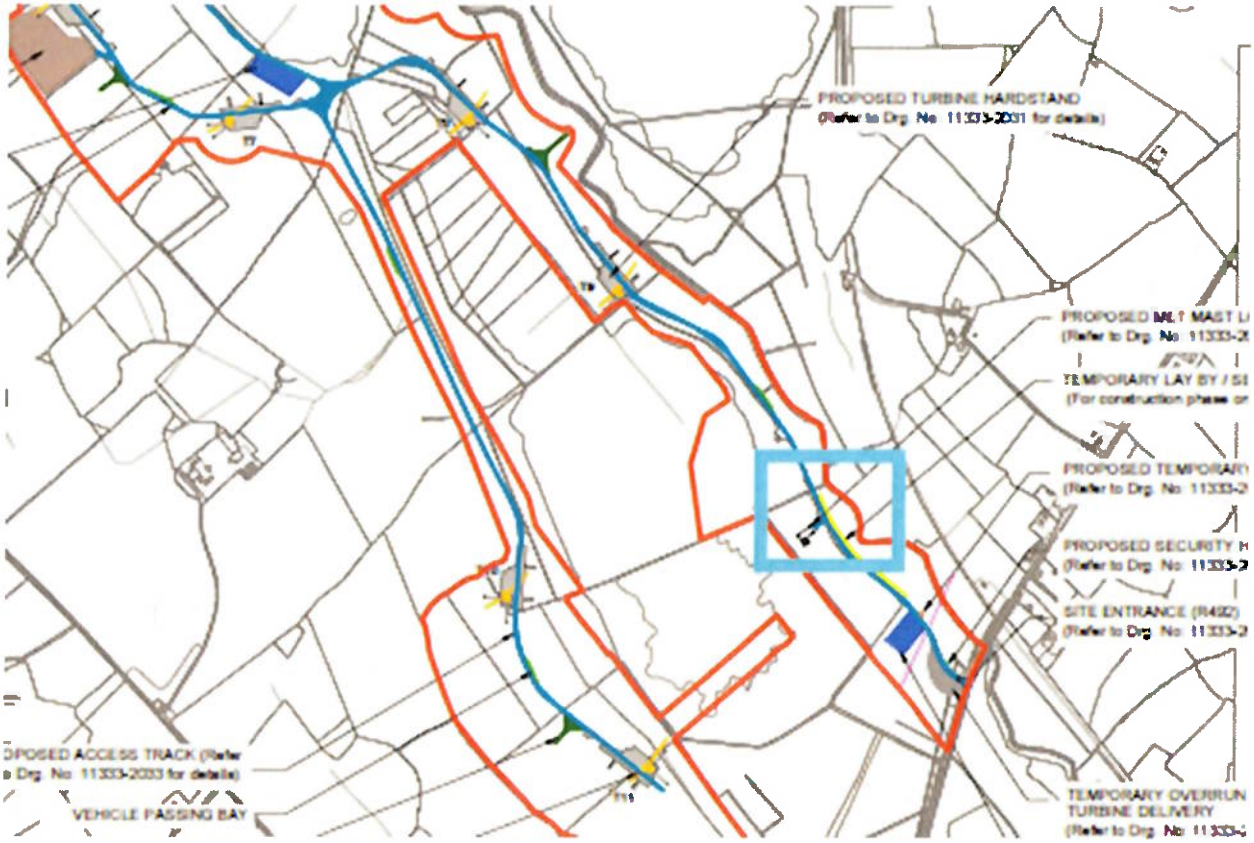
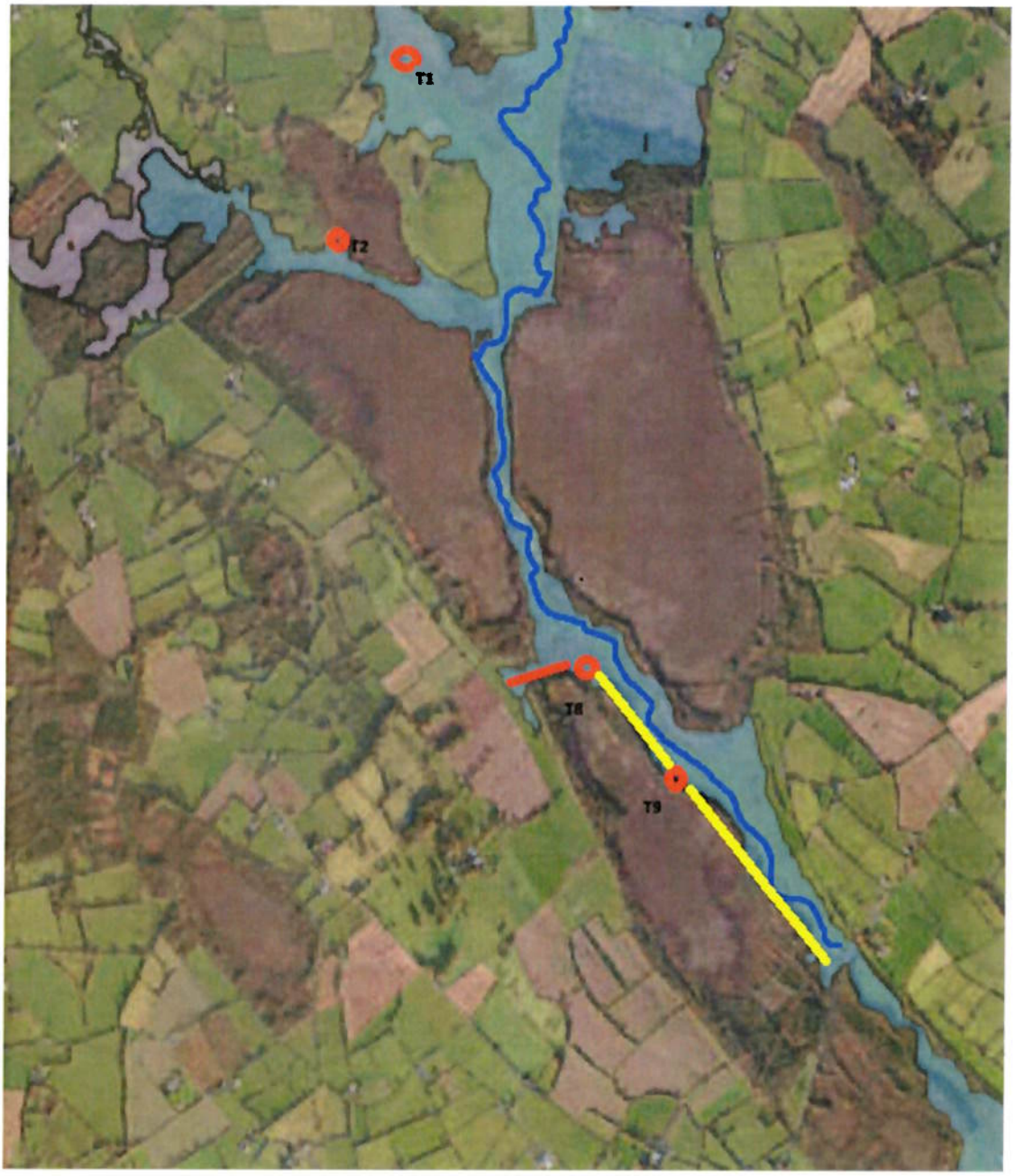


Figure 3.3 below shows the access tracks, and T1,T8, T9 in the flood plain and T2 in very close proximity in regular flooding activity

Figure 3.3 Flood Plain and proposed Infrastructure



3.2.1 WHAT these maps look life in the real world – November to March

Images below are taken from Aeriel footage captured in November 2025. The images mirror the Access tracks blue box identified in Site map above and follow the river/Access tracks from Site access near Sharavogue Bridge to T8. This is a real-world view of the floodplain and hydrological connectivity. While the Submission and the CFRAM maps refer to 1in100/ 1in1000 year events this aeriel footage represents the reality of the river from early November to late March **every** year. This river floods frequently across the year so this

floodplain is very active but will flood extensively EVERY winter. The flood depths reach well beyond 1metre in places and any pedestrian access to the river is impossible for at least 5 months every year.

In the poorly edited images below BLUE represents the river and YELLOW represents the proposed access tracks. The images illustrate the negligible distance between river and access track, that both sides of the river are inextricably linked and the corresponding hydrological connectivity above ground level and may explain in real terms why there are no trial pits or Boreholes in this area across any of the Applicants maps.



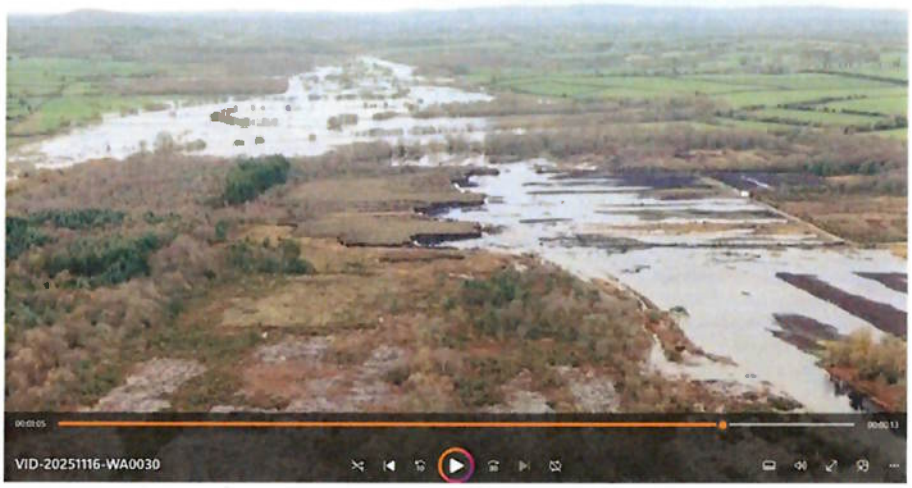

T9
T8


T8
T9
VID-20251116-WA0033


T9
VID-20251116-WA0033


VID-20251116-WA0033







Finally and perhaps most crucially it is evident that the river functions not as a barrier between the construction zone and the SAC but as a conduit. This is further corroborated by Dr Bartley who presents the GSI maps which show the subsoil on both banks of the Little Brosna as the same material — "Cut over raised peat". This confirms that the river hydrologically links identical subsurface systems on either side, binding the development lands and Sharavogue Bog SAC into one connected unit (Hydro-G Report, Appendix 3-1, S1, S4.4). See below, extracted from Hydro G Report Appendix 3-1.

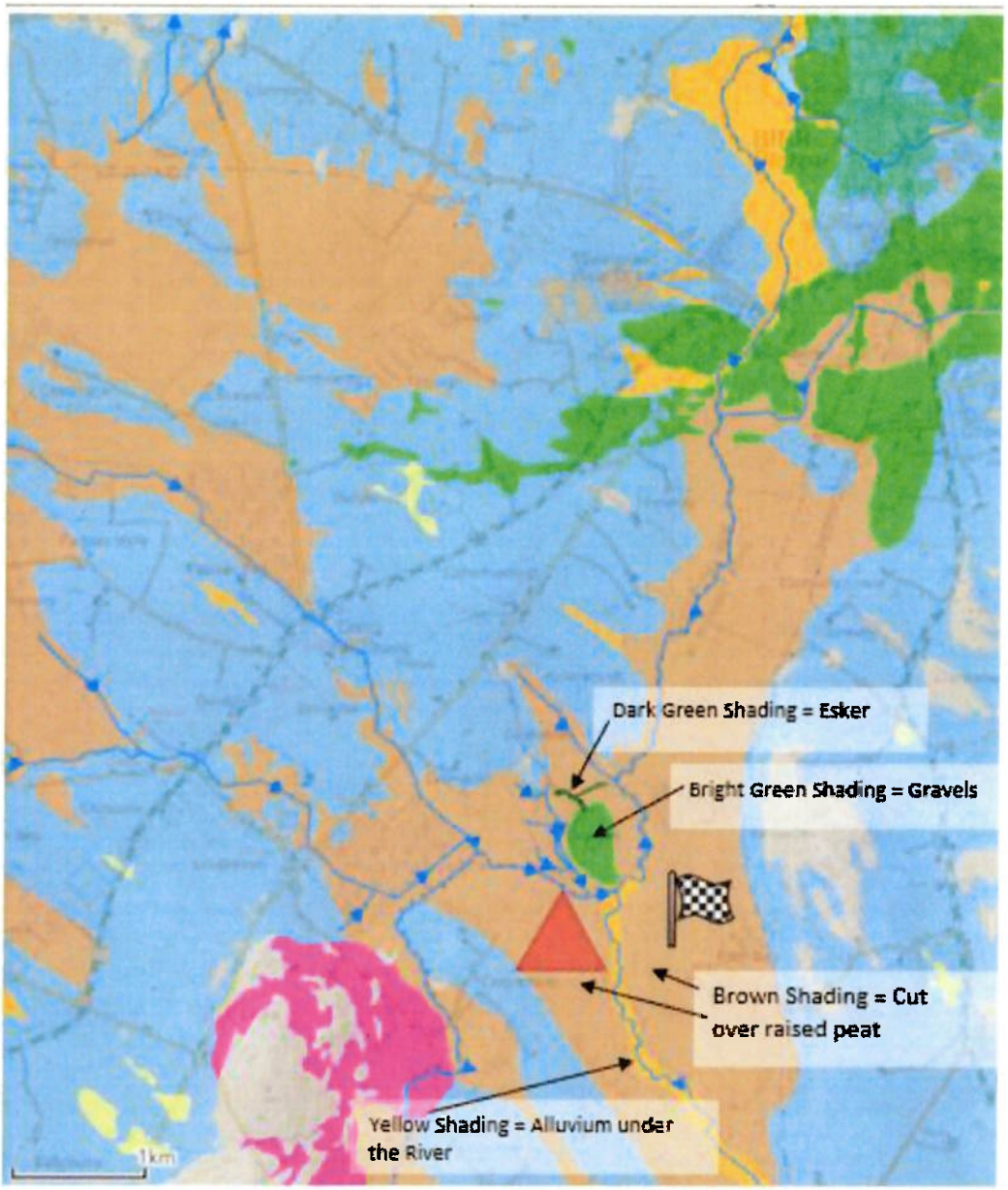


Plate A *GSI Subsoil Mapping for the general area with Hydro-G annotations : On the west side of the LittleBrosna River the general centre of the proposed application area is shown by Hydro-G with a Red Triangle and on the east side of the river the Sharavogue Bog is shown with a Checkered Flag.*

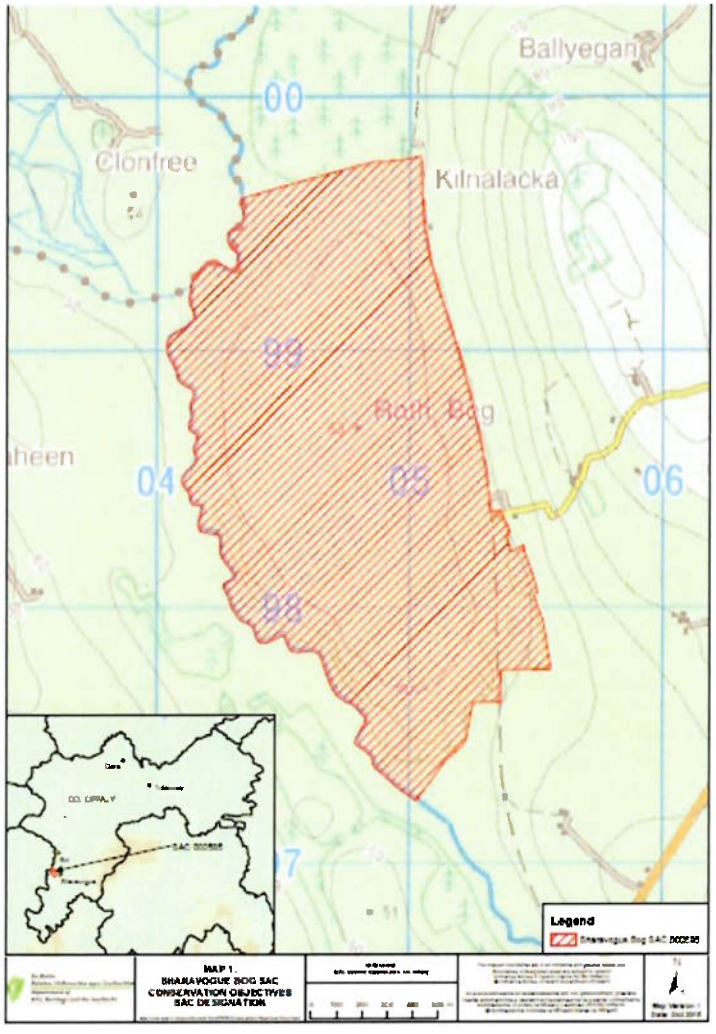
The scale of catchment alteration is itself substantial. The proposal entails 9.7 km of internal access roads widened to a 5.5 m clearance — approximately 5.3 ha of altered catchment — together with eleven excavated crane hardstandings of approximately 7 ha, giving on the order of 12 ha of cut-over peat stripped and compressed on one bank of a river hydraulically connected to the SAC (Hydro-G Report, Appendix 3-1, S2). To this is added 12.23 km of grid trenching, 17 joint bays, three borrow pits, a peat deposition area, 90 BESS container units, 7.2 ha of tree felling and 1.1 km of hedgerow removal. The areal extent of catchment

alteration on a connected floodplain is not quantified as a hydrological pressure anywhere in the applicant's own assessment.

3.2.2 Sharavogue Bog SAC

Figure 3.4 below shows the relationship between Sharavogue Bog SAC (site code 000585) and the River Brosna. Sharavogue Bog sits immediately east of the wind farm site, with its western boundary defined by the River Little Brosna — the same watercourse that forms the eastern boundary of the development. As previously shown the Proposed development site will use the river as its eastern boundary so a direct overlap is presented. The SAC boundary is classified in the Applicants documents as less than 10 metres from the wind farm perimeter at its closest point, adjacent to T8 and T9.

Figure 3.4 Sharavogue Bog – River is Boundary



Sharavogue Bog SAC is one of the few remaining raised bogs in Ireland situated on a floodplain, a characteristic the NPWS identifies as an exceptional rarity.

> ***Sharavogue Bog is one of the few remaining raised bogs in Ireland situated on a floodplain. This is a characteristic of exceptional rarity. The bog displays a well-developed dome of uncut peat which is long and relatively narrow, representative of the classic Atlantic raised bog form.***
>
> (extract Site Synopsis Dept of Arts, Heritage and the Gaeltacht, pg 1).

Active Raised Bog (Habitat 7110) carries priority status under the Habitats Directive, attracting the highest level of protection in EU law. The site is not in a stable or robust condition. Its survival is itself the result of a grassroots rescue: in 1990 two local farmers purchased the freehold to protect the bog from drainage and extraction, later entering a management agreement with the NPWS, supported over decades by Dutch academic conservation effort (Hydro-G Report, Appendix 3-1, S4.2). A restoration programme completed in 2021 installed over 400 rewetting dams and blocked 26.4 km of drains — 90% of those identified as requisite — expanding Active Raised Bog toward a target of over 40 ha across the full 223 ha extent of the bog. The site is at its most hydrologically sensitive phase, with water tables higher than at any previous point in the restoration programme and peat-forming conditions being actively re-established.

This is the context in which the present application falls to be assessed. Any disruption to the hydrology of the interface zone does not merely affect the bog as it exists today, it threatens the trajectory of a decades-long, State-funded restoration programme.

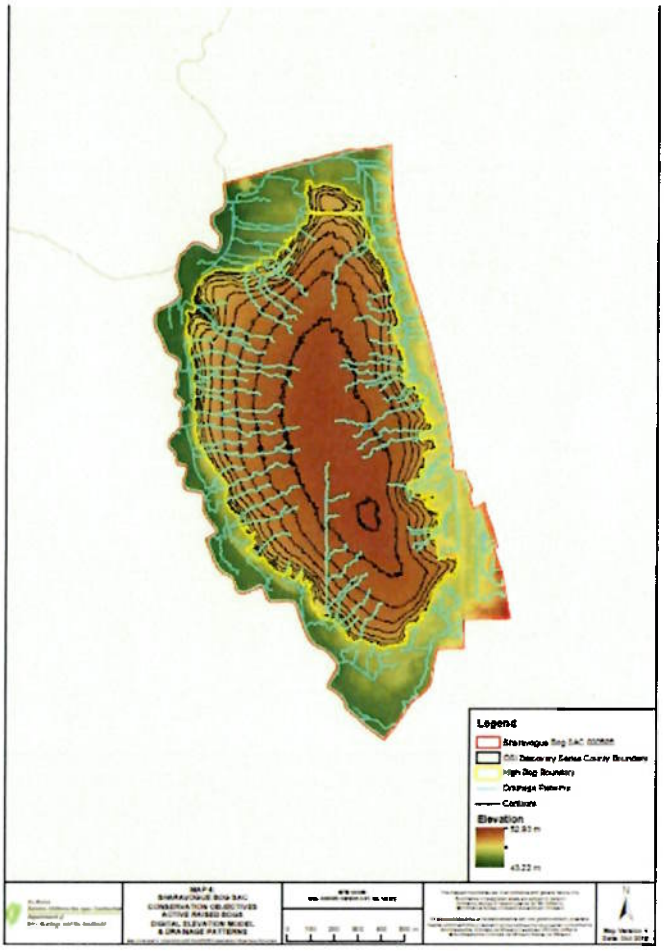
The ecological significance of the site is concentrated in its lagg zone — a fringe of upwelling base-rich groundwater along the eastern margin supporting carr woodland and calcareous fen vegetation. The NPWS records this as one of the best developed lagg systems in the country and unique in the context of Irish raised bogs. Areas of wet lagg vegetation of this character are described as very rare in Western Europe. It is the primary element of local distinctiveness formally recognised for the site. The lagg is inherently sensitive to external hydrological disturbance because it depends entirely on the interaction between groundwater, surface water, and adjacent land use.

Within the lagg, *Slender Cottongrass* (*Eriophorum gracile*), a species protected under the Flora (Protection) Order 2015, has been recorded in the Applicants documents, a species that occurs only where a stable base-rich water supply is maintained. Atmospheric nitrogen

deposition at the site already stands at approximately 13.2 kg N/ha/yr against a conservation target of no more than 5 kg N/ha/yr — an existing exceedance of 163% above the upper critical load threshold, leaving no margin for any additional loading.

The River Little Brosna does not function as a buffer between the construction zone and Sharavogue Bog. The river forms the boundary on the Western side and acts as a conduit as illustrated below in Figure 3.5.

Figure 3.5 Sharavogue Bog Hydrological Connectivity



The applicant acknowledges the hydorological connectivity in the NIS in two separate references ;

1. Table 6-1 (p.118) identifies hydrological connectivity to the SAC via the Little Brosna_040 and drainage ditches. Further the documents record a groundwater pathway via the Shinrone groundwater body.
2. NIS (Pg 56) *"The Little Brosna_040 RWB is located within the Sharavogue Bog SAC (000585). The proposed project is hydrologically connected to the Sharavogue Bog SAC via drainage ditches and the Little Brosna_040 RWB."*

The applicant's EIAR (Ch.9, p.9-34) records calcareous fen upwelling at the eastern margin of the wind farm site, the direct interface with the SAC, physical evidence that the near-surface groundwater system is active and connected across that boundary. How the NIS then handles — or fails to handle — these acknowledged connections is addressed in Ground X below.

Beyond its conservation designation, the active raised bog at Sharavogue functions as a carbon store and active carbon sink. Peatland restoration forms part of Ireland's land-use carbon accounting under the EU Climate Law (Regulation (EU) 2021/1119) and the LULUCF Regulation (Regulation (EU) 2018/841, as amended by Regulation (EU) 2023/839), and is relied upon in the national Climate Action Plan to meet binding emissions-reduction commitments. The independent literature in Appendix 3-2 reinforces the point: degraded Irish raised bogs are now net CO_2 emitters, with peat extraction approximately 70% more extensive than the National Inventory reports (Habib et al., 2024, Hydro-G Report, Appendix 3-2), and the maintenance and restoration of intact peatland hydrology is identified as the single most important action for carbon and water security (Locke et al., 2026, Appendix 3-2)

The restoration programme now underway is intended to return the site from a degraded, carbon-emitting state to net sequestration. This is not merely a site-level conservation matter. Excavation of between 59,000 and 87,600 m^3 of peat, together with drainage modification and water-table drawdown across a bog in active rewetting would re-expose stored carbon to oxidation and reverse the sequestration gains the State has invested in. The application contains no carbon-loss assessment and no quantification of the emissions consequences of disturbing this peat body. A development that undermines a State-funded carbon sink, in direct tension with Ireland's statutory climate obligations, cannot be assessed as though the only receptor at risk were the habitat in isolation.

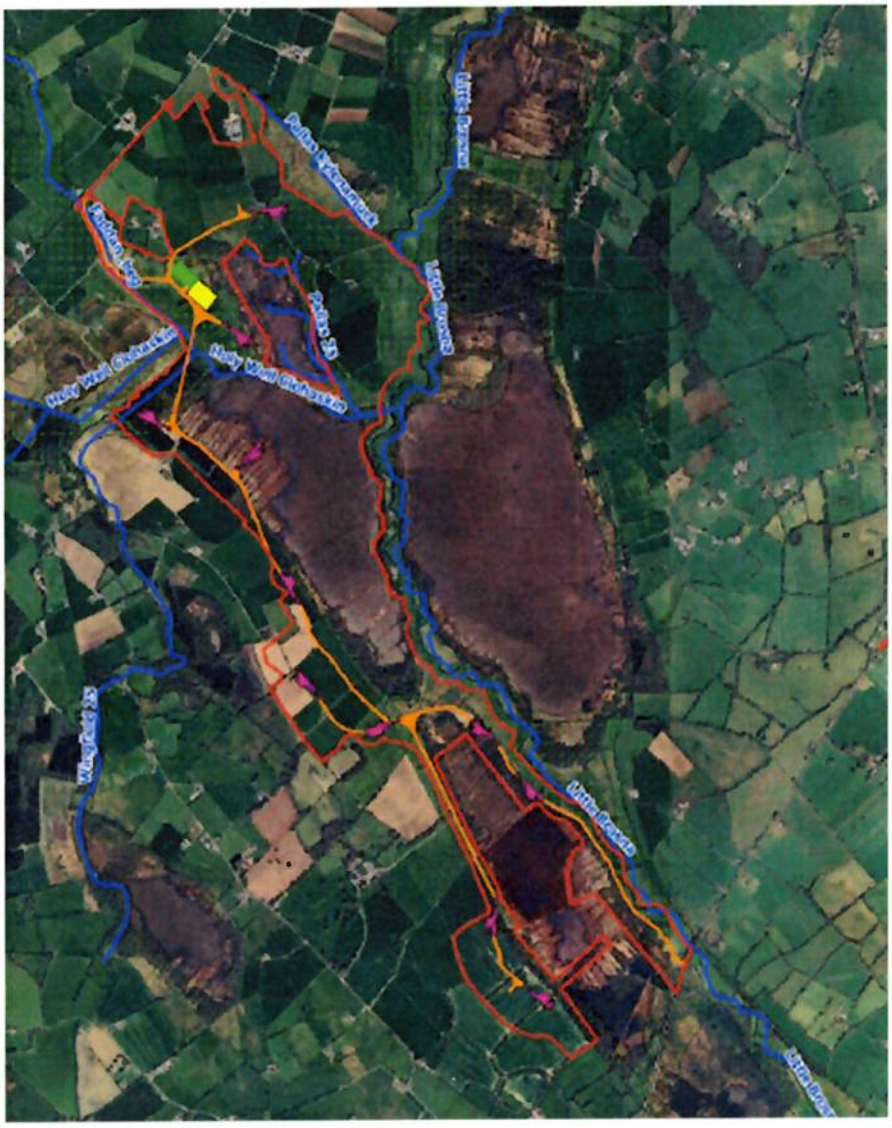
Source: NPWS Site Synopsis); NPWS Conservation Objectives (2015); NPWS Conservation Measures (2025); NIS Section 6.1, p.117; NIS Table 6-1, p.118; EIAR Ch.9, Table 9-13, p.9-35; EIAR Ch.9, p.9-34; Appendix 9-1, p.22

3.2.3 Multiple tributaries cross the site.

The Wingfield 25 and Faddan Beg streams converge and flow into the Holy Well Clohaskin River, which meets the Little Brosna at the site's northeast corner. The Pallas Kylenamuck

stream, a first-order watercourse, traverses the northeast of the site before discharging to the Little Brosna approximately 25 metres downstream of the survey point (Appendix 9-1, p.7). Fourteen internal drain crossings are proposed, mostly peat drains, along with a crossing of the Holy Well Clohaskin River between T2 and T3.

Figure 3.6 Tributary Network on the Proposed Site



Purple hubs represent T1-t11

3.2.4 The downstream European sites

The Little Brosna and its tributaries are hydrologically connected to six European sites protected under the Habitats Directive and Birds Directive. The NIS (Section 6.1, p.117) acknowledges that, in the absence of mitigation, indirect adverse effects on all six from water quality degradation cannot be excluded:

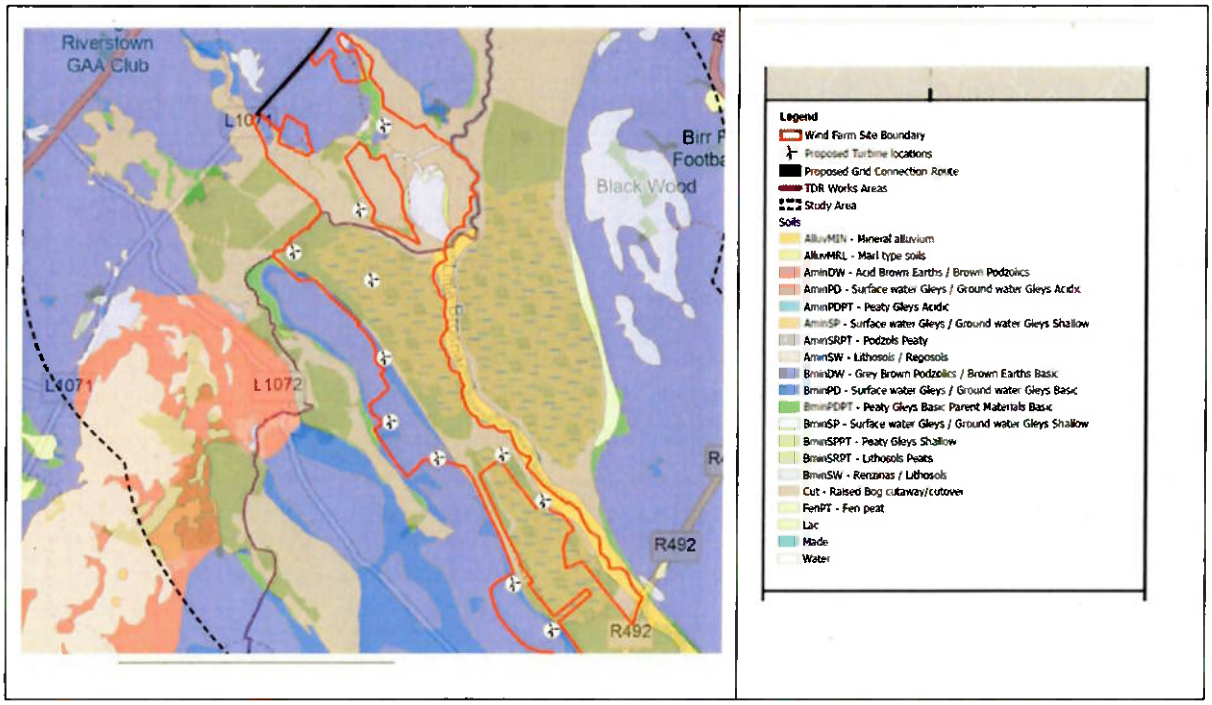
- Sharavogue Bog SAC (Site Code 000585) — a Priority Habitat raised bog, SAC boundary 10 metres from the wind farm site, in active restoration following installation of over 400 rewetting dams in 2021
- River Shannon Callows SAC
- River Little Brosna Callows SPA (004086)
- Middle Shannon Callows SPA (004096)
- Dovegrove Callows SPA
- Lough Derg (Shannon) SPA

Source: NIS Section 6.1, p.117; NIS Table 5-1, p.87; Appendix 9-1, p.22

3.2.5 The Flood Context

SI soil survey mapping presented above shows a continuous belt of AlluvMIN (mineral alluvium) flanking the Little Brosna corridor — an extensive active and historic floodplain with direct river connectivity. Source: FRA App.9-3, pp.11–15; OPW floodinfo.ie; GSI Soils Map

Figure 3.7 Soil Survey Map (RWE application)



An analysis of this map suggests :

1. **Floodplain extent**: The width of the AlluvMIN belt indicates a significant active floodplain. The Little Brosna is a major tributary of the Shannon and is known to flood extensively — this is consistent with the broad alluvial deposits shown. Any

infrastructure within or crossing this zone is at direct flood risk, and works could alter flood conveyance upstream and downstream.

2. **Floodplain connectivity:** The alluvial soils indicate the river maintains strong lateral connectivity with its floodplain. This is ecologically and hydrologically critical — it supports nutrient cycling, fish spawning habitat, and natural flood attenuation. Construction disturbance here could disrupt this connectivity permanently.
3. **Surface water drainage:** The prevalence of gley soils across the wider site (BminPD, BminSP, AminPD, AminSPPT categories) indicates widespread poor drainage and high water tables across the site generally — not just near the river. This means construction-phase runoff will be difficult to manage, with high silt and sediment risk to the Little Brosna.
4. **Peat and cutover bog:** The Cut (raised bog cutaway/cutover) and FenPT categories visible on the wider map indicate peat and modified bog soils. Disturbed peat is one of the most serious hydrological risks in wind farm construction — it can liquefy, generate acidic and discoloured runoff, and block watercourses.

The applicant's Flood Risk Assessment (Appendix 9-3) establishes that T1, T2, T8 and T9 and large parts of the access tracks lie within Flood Zone A or B. The High Probability / **Flood Zone A** designation is more typical for this area — the lived experience of farmers with adjoining lands unable to access lands near the river from November to March every year, yet the applicant defaults to a Medium probability / *Flood Zone B* analysis using the Mid-Range Future Scenario, and at no point engages the +30% High-End Future Scenario. The probability of annual exceedance is presented in the Applicants Table 2.1 below.

Table 2.1: Decision Matrix for Determining the Appropriateness of a Development

Flood Zone: (Probability)	Annual Exceedance Probability (AEP)	Highly Vulnerable	Less Vulnerable	Water Compatible
A (High)	Coastal Flooding More frequent than 0.5% AEP	Justification Test Required	Justification Test Required	Appropriate
	Fluvial & Pluvial Flooding More frequent than 1% AEP			
B (Medium)	Coastal Flooding 0.1% to 0.5% to AEP	Justification Test Required	Appropriate	Appropriate
	Fluvial & Pluvial Flooding 0.1% to 1% AEP			
C (Low)	Fluvial, Pluvial & Coastal Flooding Less frequent than 0.1% AEP	Appropriate	Appropriate	Appropriate

On the applicant's own data, under the existing 1-in-100-year (1% AEP) event T9 is 50% inundated and T1 25% inundated; under the Mid-Range Future Scenario (+20% peak flows for climate change), T9 rises to 75% and T1 to 40%. The site access track from the R492 along the river corridor is fully submerged under MRFS conditions, and access tracks to T1 and T2 are also inundated. This analysis is supported by the Applicant's Appendix 9-3 which maps the fluvial flood activity and shows the impact for T1, T2, T8 T9 and access tracks throughout the site.

Figure 3.8 CFRAM MRFS Fluvial Flood Extents T 8 & T9

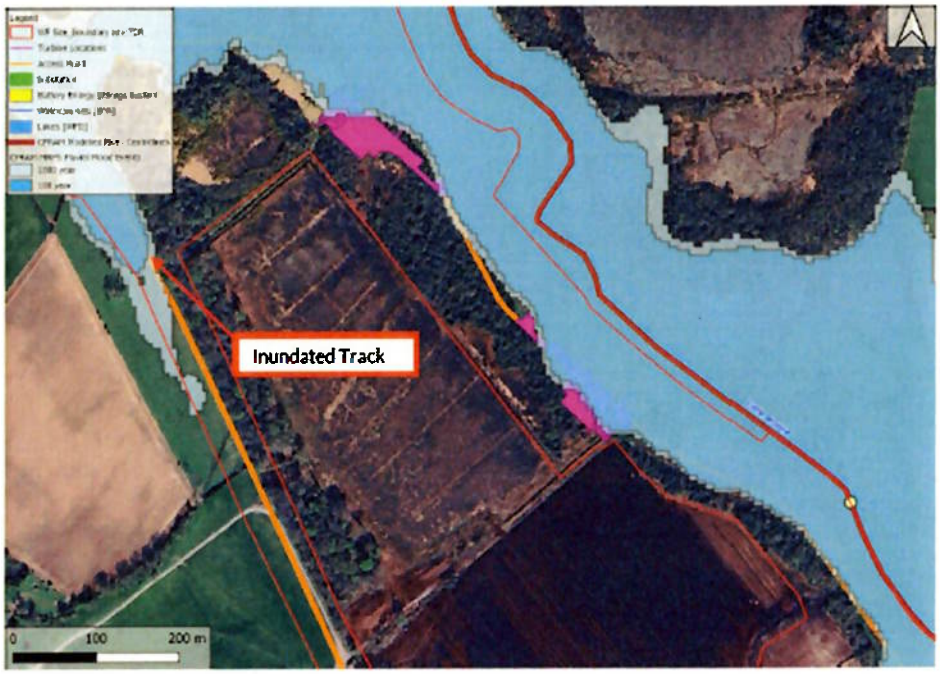


Figure 3-9: CFRAM MRFS Fluvial Flood Extents - Turbines 8 & 9

Figure 3.9 CFRAM MRFS Fluvial Flood Extents T 1 & T2

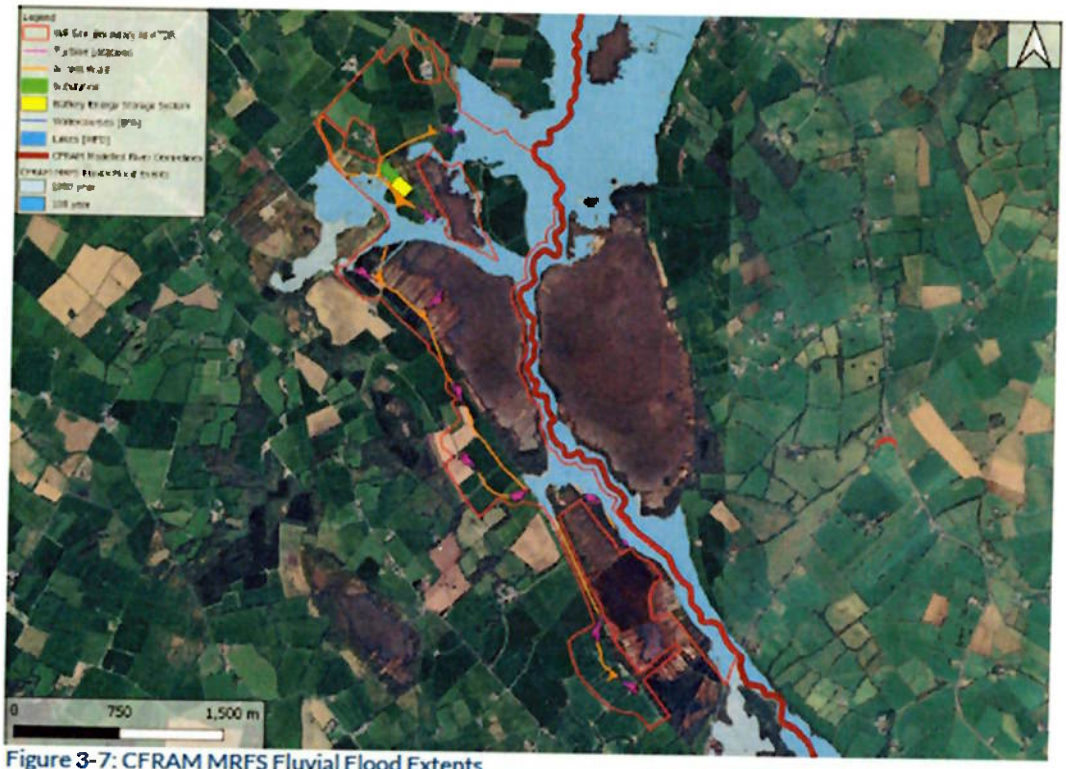


Figure 3-7: CFRAM MRFS Fluvial Flood Extents

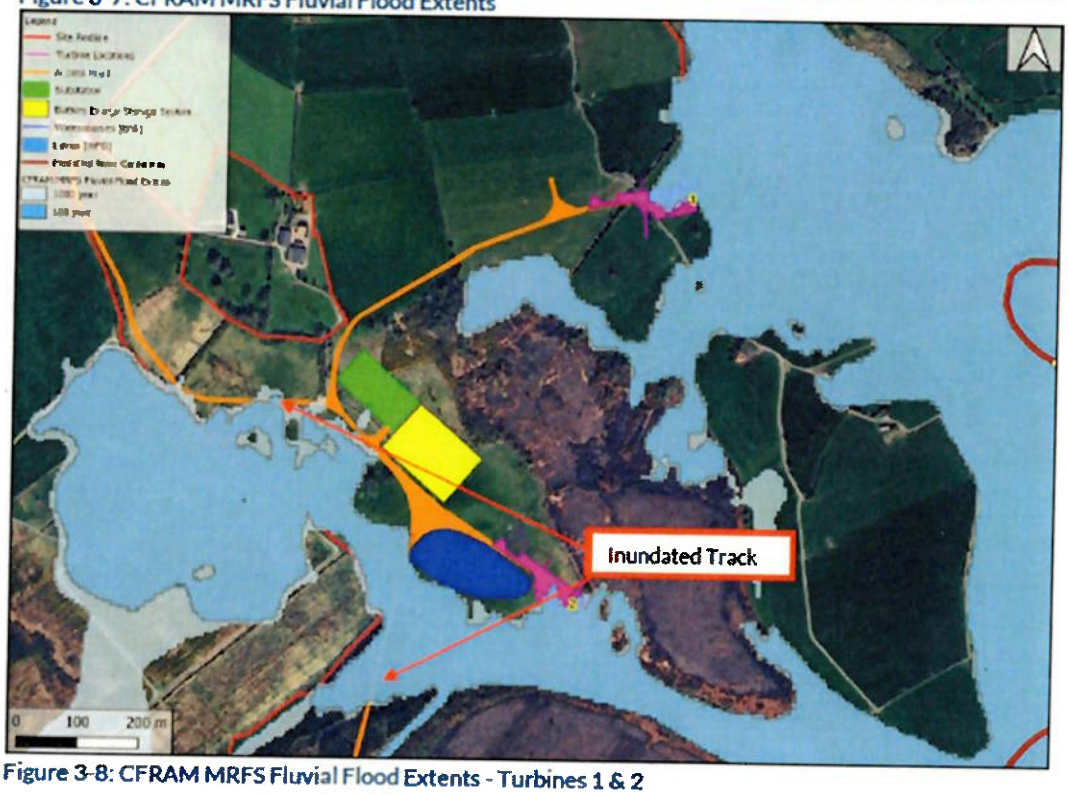


Figure 3-8: CFRAM MRFS Fluvial Flood Extents - Turbines 1 & 2

Two aspects to the Applicants submission are notable.

Existing Conditions (current CFRAM baseline)

Data App 9-3, Page 17

Turbine	1% AEP (1-in-100yr)	0.1% AEP (1-in-1000yr)
T1	25%	~35%
T2	5%	~25%
T8	5%	slightly larger
T9	**50%**	**slightly larger**

Mid-Range Future Scenario (MRFS, +20% peak flows for climate change)

Data: App 9-3, Page 18

Turbine	1% AEP (1-in-100yr)	0.1% AEP (1-in-1000yr)
T1	40%	slightly larger
T2	25%	slightly larger
T8	15%	slightly larger
T9	**75%**	**slightly larger**

The MRFS applies a +20% uplift to peak flows to model the effect of climate change over the lifetime of the wind farm. The data shows that because the Little Brosna floodplain is flat, even a modest increase in peak flow translates to a significant expansion of the flood extent hence T9 jumping from 50% to 75% inundated at the same 1% AEP event. Further, note in an expanded Figure 3.6 below where and how the extended flooding travels. It moves closer to the SAC on the East side. Also note that the high end "+30% High end future scenario" although more likely in Flood Zone A is never engaged and in that scenario the water will travel closer again towards the SAC.

Figure 3.10 Magnified : CFRAM MRFS Fluvial Flood Extents T 8 & T9



This tendency to flood to the East and approaching the heavily protected Sharavogue Bog SAC (which the Applicant claims less than 10m from the boundary of the development) must be noted and becomes critical across many aspects discussed across this and subsequent chapters.

3.2.6 The WFD baseline

The WFD Compliance Assessment (Appendix 9-1, Table 2-2 see below) records the Little Brosna_040 sub-basin — which contains all nine turbines, the GCR and TDR — as having deteriorated from Moderate (2016–2021) to **Poor** for the 2019–2024 monitoring cycle, with an At Risk designation.

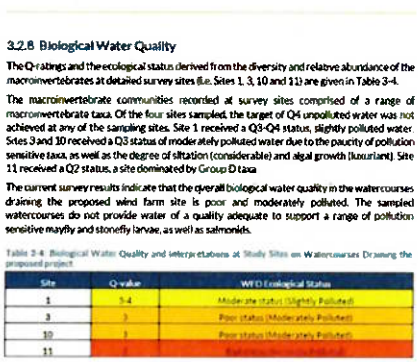
Table 2-2 Water River Body Status in the study area

Catchment	Sub-Catchment	River Sub-Basins (RWB_CD)	Waterbody Name	EPA Name	WFD Status 2016-2021	WFD Status 2019-2024	Risk	Application Site within WFD subbasin
Lower Shannon 25B	Little Brosna_SC_020	IE_SH_25L020600	Little brosna_030	Aghadouglas 25 Glasderry Beg Little Brosna	Good	Good	Not at Risk	T10, T11
		IE_SH_25L020700	Little brosna_040	Arragh Beg Arragh More Faddan More Faddan_Beg Holy Well Clohaskin Kylenamuck Little Brosna Loughkeen North Cloonaheen Pallas 25 Pallas Kylenamuck Rath Beg Rock [Birr] Wingfield 25	Moderate	Poor	At Risk	T1-T9, GCR, TDR
	Shannon[Lower]_SC_060	IE_SH_25L020800	Little brosna_050	Camcor Little Brosna Unknown	Good	Moderate	At Risk	GCR
		IE_SH_25L021000	Little brosna_060	Little Brosna Ross 25 Tullynisk Woodfield 25	Good	Moderate	Not at Risk	GCR
		IE_SH_25l020930	Incherky_010	Cloghan 25	Unassigned	Good	Review	N/A

The most recent Q-value at Riverstown Bridge (RS25L020700) was Q3 (Poor) in 2023. Appendix 9-1 (WFD Assessment), Table 2-1, p.8

Dr Pamela Bartley's expert review confirms the same EPA position: Little Brosna_040 (IE_SH_25L020700) at Poor status (2019–2024), 3rd-cycle At Risk, with significant pressures listed as Agriculture, Hydromorphology, and Peat Extraction and Drainage — the very pressure category this development would add (Hydro-G Report, Appendix 3-1, S4.1).

This *Poor* classification is separately corroborated by the applicant's own aquatic ecology survey data, which records several **on-site watercourses** as Poor and one location as Bad and seriously polluted. This will be discussed at length later.



3.2.8 Biological Water Quality

The Q-ratings and the ecological status derived from the diversity and relative abundance of the macroinvertebrates at detailed survey sites (i.e. Sites 1, 3, 10 and 11) are given in Table 3-4.

The macroinvertebrate communities recorded at survey sites comprised of a range of macroinvertebrate taxa. Of the four sites sampled, the target of Q4 unpolluted water was not achieved at any of the sampling sites. Site 1 received a Q3-Q4 status, slightly polluted water. Sites 3 and 10 received a Q3 status of moderately polluted water due to the paucity of pollution sensitive taxa, as well as the degree of siltation (considerable) and algal growth (luxuriant). Site 11 received a Q2 status, a site dominated by Group D taxa.

The current survey results indicate that the overall biological water quality in the watercourses draining the proposed wind farm site is poor and moderately polluted. The sampled watercourses do not provide water of a quality adequate to support a range of pollution sensitive mayfly and stonefly larvae, as well as salmonids.

Table 3-4 Biological Water Quality and Interpretations at Study Sites on Watercourses Draining the proposed project

Site	Q-value	WFD Ecological Status
1	3-4	Moderate status (Slightly Polluted)
3	3	Poor status (Moderately Polluted)
10	3	Poor status (Moderately Polluted)
11	2	Bad status (Seriously Polluted)

3.2.7 The Little Brosna Area for Action

Under Ireland's Water Framework Directive (WFD) governance, Areas for Action (AFAs) are catchments selected for targeted, prioritised intervention where improvements in water quality are considered achievable and where an ongoing presence is required — not just to achieve improvements but to maintain them over the longer term. The core objectives are to prevent deterioration by ensuring that the quality of all waterbodies does not decline and achieve good status by bringing all waters up to "Good" ecological and chemical conditions. They are not passive designations; they carry active resource commitments and multi-agency coordination obligations. AFA designation reflects the EPA's judgement that it is both impacted and potentially recoverable with targeted action.

The proposed wind farm falls entirely within the Little Brosna WFD Area for Action (AFA), designated under the River Basin Management Plan Cycle 2 (2018–2021) and continuing under the Water Action Plan 2024 as an Area for Restoration.

The Hydro-G review confirms the AFA is a LAWPRO-led restoration programme covering 11 waterbodies, established precisely to address the pressures - nutrients, peat workings, hydromorphology, driving Poor status in this catchment (Hydro-G Report, Appendix 3-1, S4.1). Construction on peat, road-building, turbine foundations, cable trenching and drainage alteration, directly replicates and compounds the same pressure categories already driving this water body's failure. This designation is not historical context; concrete restoration activity is already underway in the wider peat landscape.

3.3 The Legal Framework

3.3.1 Water Framework Directive (Directive 2000/60/EC)

Article 4(1)(a) of the WFD imposes three obligations relevant to this application: to prevent deterioration of surface water status; to protect, enhance and restore waterbodies toward good status; and to implement the programme of measures established under the River Basin Management Plan.

The CJEU interpreted the scope of these obligations definitively in Case C-461/13 (*Weser*, 2015). The Court held that the obligation to prevent deterioration is binding; that authorisation must be refused where a project is liable to cause deterioration of status; and that deterioration occurs as soon as the status of at least one quality element falls by one class. Where the quality element is already at the lowest class, any further deterioration constitutes a breach of the non-deterioration obligation.

Poor status is the second-lowest WFD classification, one step above Bad. The legal consequence is absolute: any construction-phase reduction in any biological, physico-chemical or hydromorphological quality element is prohibited, regardless of overall class change and regardless of whether it is temporary. This is not a balancing exercise. The applicant has waived Article 4.7. There is no flexibility.

3.3.2 The Habitats Directive (Directive 92/43/EEC)

Article 6(3) requires that any plan or project likely to have a significant effect on a European site must undergo Appropriate Assessment. The competent authority may only agree to the plan or project after ascertaining that it will not adversely affect the integrity of the site.

The standard of certainty is unequivocal. In Case C-127/02 (*Waddenvereniging*, 2004), the CJEU held that authorisation may only be given if the competent authority is certain beyond all reasonable scientific doubt that the project will not adversely affect site integrity. In Case C-258/11 (*Sweetman*, 2013), the Court confirmed that a project adversely affects integrity if it is liable to prevent the lasting preservation of the constitutive characteristics of the site. In Case C-461/17 (*Holohan*, 2018), the Court confirmed that the assessment must contain complete, precise and definitive findings free of lacunae. In Case C-323/17 (*People Over Wind*, 2018), the Court confirmed that mitigation measures must be assessed in full in the NIS itself, not assumed to work.

Article 6(4) derogation is expressly not relied upon by the applicant (NIS, p.4). Article 4.7 WFD derogation is expressly not relied upon (Appendix 9-1, p.28). Full compliance must be demonstrated on the basis of the application as submitted.

3.4 Ground 1 — WFD Poor Status Baseline and the Weser Prohibition

3.4.1 The Wrong Baseline

The entire hydrological impact assessment in EIAR Chapter 9 was conducted against the wrong WFD classification. Table 3.1 below shows the different interpretation of the data as presented in the Application. This is not a matter of interpretation — it is a factual discrepancy between two documents filed as part of the same application.

Table 3.1 Cross Comparison of Application WFD Assessment Tables

Table 9-5

EIAR Chapter 9, p.9-15

(Waterbodies within study area)

River network (segment code)	WFD status 2019–2024	WFD risk 2019–2024
Catchment: Lower Shannon 25B | Sub-catchment: Little Brosna_SC_020		
Little Brosna (25_3572)	**Moderate**	**At risk**
Little Brosna (25_13147)	**Moderate**	**At risk**
Pallas Kylenamuck (25_634)	**Moderate**	**At risk**
Pallas 25 (25_3279) (25_3772) (25_739) (25_3692)	**Moderate**	**At risk**
Holy Well Clohaskin (25_3277) (25_3276) (25_21)	**Moderate**	**At risk**
Rath Beg (25_3278)	**Moderate**	**At risk**

Table 2-2

WFD Assessment, Appendix 9-1, p.10

(Water river body status in the study area)

Waterbody name (RWB_CD)	WFD status 2016–2021	WFD status 2019–2024	Risk 2019–2024
Catchment: Lower Shannon 25B | Sub-catchment: Little Brosna_SC_020 | Turbines: T1–T9, GCR, TDR			
Little Brosna_030 (IE_SH_25L020600)	**Good**	**Good**	**Not at risk**
Little Brosna_040 (IE_SH_25L020700) *Includes: Faddan Beg, Holy Well Clohaskin, Wingfield 25, Pallas Kylenamuck, N. Cloonaheen…*	**Mod**	**POOR**	**At risk**
Little Brosna_050 (IE_SH_25L020800)	**Good**	**Mod**	**At risk**
Little Brosna_060 (IE_SH_25L021000)	**Good**	**Mod**	**Not at risk**

North Cloonaheen (25_20)	**Moderate**	**At risk**
Faddan Beg (25_3669)	**Moderate**	**At risk**
Wingfield 25 (25_1084)	**Moderate**	**At risk**

The two tables above are both filed as part of the same application yet record materially different WFD ecological status classifications for the same receiving waterbody. Dr Bartley's independent review identifies the same contradiction as the central WFD defect.

Table 9-5 in EIAR Chapter 9 (p.9-15) presents all waterbodies within the wind farm study area under a single grouped entry for the Little Brosna_SC_020 sub-catchment, carrying a **WFD status of Moderate and a risk designation of At Risk**. This grouped entry includes, by name, every tributary that will directly receive construction runoff from the turbine foundations and access tracks: the Holy Well Clohaskin River, Faddan Beg, Wingfield 25, Pallas Kylenamuck and North Cloonaheen streams. The Moderate status assigned in Table 9-5 is accordingly the de facto WFD baseline against which Chapter 9 of the EIAR assesses construction-phase water quality impacts for all of those watercourses.

When Table 2-2 in the WFD Compliance Assessment (Appendix 9-1, p.10), disaggregates the same sub-catchment into its component sub-basins it records a materially different classification.

Table 2-2 Water River Body Status in the study area

Catchment	Sub-Catchment	River Sub-Basins (RWB_CD)	Waterbody Name	EPA Name	WFD Status 2016-2021	WFD Status 2019-2024	Risk	Application Site within WFD subbasin
Lower Shannon 25B		IE_SH_25L020600	Little brosna_030	Aghadouglas 25 Glasderry Beg Little Brosna	Good	Good	Not at Risk	T10, T11
	Little Brosna_SC_020	IE_SH_25L020700	Little brosna_040	Arragh Beg Arragh More Faddan More Faddan_Beg Holy Well Clohaskin Kylenamuck Little Brosna Loughkeen North Cloonaheen Pallas 25 Pallas Kylenamuck Rath Beg Rock [Barr] Wingfield 25	Moderate	Poor	At Risk	T1-T9 GCR TDR
	Shannon[Lower]_SC_060	IE_SH_25L020800	Little brosna_050	Camcor Little Brosna Unknown	Good	Moderate	At Risk	GCR
		IE_SH_25L021000	Little brosna_060	Little Brosna Ross 25 Tullynisk Woodfield 25	Good	Moderate	Not at Risk	GCR
		IE_SH_25I020930	Incherky_010	Cloghan 25	Unassigned	Good	Review	N/A

The excerpt below is taken from Section 9.3.2.3 Surface Water Quality page 9-22

> The rivers and tributaries, associated with the proposed wind farm site and proposed GCR have been reviewed in terms of their respective WFD Status 2019-2024. The Little Brosna _030, the Little Brosna _040 and the Little Brosna_050 are classified as having moderate status. The Little Brosna_060 is classified as having good status.

The windfarm development falls within the **Little Brosna_040** sub-basin and contains Turbines: T1–T9, GCR, TDR as recognised in Table 2-2 WFD Assessment, (Appendix 9-1, p.10) and which includes as named constituent waters the Holy Well Clohaskin, Faddan Beg, Wingfield 25, Pallas Kylenamuck and North Cloonaheen streams — is recorded in Table 2-2 as **deteriorating from Moderate (2016–2021) to Poor (2019–2024)**, with an At Risk designation. This Poor status classification is corroborated by the Q3 (Poor) value recorded at Riverstown Bridge (RS25L020700) in 2023, the most recent biological survey data at the monitoring station closest to the proposed development within that sub-basin.

The selection of the aggregated "Moderate" classification over the applicant's own "Poor" sub-basin figure operates to mask the true status of the receiving environment. Whether by design or by omission the result is the same: the assessment is built on a baseline the applicant's own documents contradict. As Dr Bartley puts it, the Inspector cannot resolve the inconsistency by preferring Chapter 9 over Appendix 9-1, because Appendix 9-1 is the specialist document and Table 2-2 is the correct disaggregated classification (Hydro-G Report, Appendix 3-1).

Figure 3.11 below presents a map that clarifies the issue.

Figure 3.11 The Little Brosna 040 sub-basin



The Application acknowledges that multiple smaller streams traverse the site.

The applicant states in 9.4.3 pg 39 :

> The streams surrounding the wind farm site do not indicate a reduction in water quality since the 1990s. The Shannon, Nore and Suir catchments in the south and southeast had the highest

However the issue of water quality was studied and data presented in Appendix 6-3 the Aquatic Ecology Survey which contradicts this position entirely. Table 3.4 pg 30 shows the Applicant's own analysis and it concludes that in many sites the water quality is classified as *POOR*.

3.2.8 Biological Water Quality

The Q-ratings and the ecological status derived from the diversity and relative abundance of the macroinvertebrates at detailed survey sites (i.e. Sites 1, 3, 10 and 11) are given in Table 3-4.

The macroinvertebrate communities recorded at survey sites comprised of a range of macroinvertebrate taxa. Of the four sites sampled, the target of Q4 unpolluted water was not achieved at any of the sampling sites. Site 1 received a Q3-Q4 status, slightly polluted water. Sites 3 and 10 received a Q3 status of moderately polluted water due to the paucity of pollution sensitive taxa, as well as the degree of siltation (considerable) and algal growth (luxuriant). Site 11 received a Q2 status, a site dominated by Group D taxa.

The current survey results indicate that the overall biological water quality in the watercourses draining the proposed wind farm site is poor and moderately polluted. The sampled watercourses do not provide water of a quality adequate to support a range of pollution sensitive mayfly and stonefly larvae, as well as salmonids.

Table 3-4. Biological Water Quality and Interpretations at Study Sites on Watercourses Draining the proposed project.

Site	Q-value	WFD Ecological Status
1	3-4	Moderate status (Slightly Polluted)
3	3	**Poor status** (Moderately Polluted)
10	3	Poor status (Moderately Polluted)
11	2	Bad status (Seriously Polluted)

Site 11, the Pallas Kylenamuck stream (EPA Code 25P56), is recorded as **Bad status, Seriously Polluted**. It is a first-order stream that runs through the northeast of the wind farm site and joins the Little Brosna River approximately 25 metres from the survey point (Appendix 6-3, Section 3.2.3.11, p.22).

The consequence of this discrepancy is specific and significant. Chapter 9 of the EIAR, the chapter that assesses hydrological impacts, characterises the receiving environment and evaluates the adequacy of the proposed Surface Water Management Plan — **applies a *Moderate* baseline to every construction-phase receiving tributary**, because Table 9-5 presents them all as Moderate. We have established that this grouped entry is a false classification. The legal standard that applies under CJEU Case C-461/13 (Weser, 2015) is determined by the **actual** classification of the waterbody, not the classification presented in any particular chapter of the EIAR. The Little Brosna_040 is at Poor status. The impact assessment in Chapter 9 has been conducted against a baseline One classification level more favourable than the figure in the applicant's own WFD Assessment.

-

3.4.2 Material consequence for WFD compliance

The entire WFD impact assessment in EIAR Chapter 9, and the adequacy conclusions drawn from the SWMP (Appendix 9-4), have been developed against a Moderate baseline rather than a Poor baseline.

App.9-1 The WFD Assessment **explicitly delegates its own impact and residual effects analysis back to Chapter 9,** stating its conclusions are "the residual effects identified in

Chapter 9." Chapter 9 used the Moderate baseline. Therefore App.9-1's compliance conclusion is built entirely on Chapter 9's Moderate-baseline impact assessment. An impact assessment premised on the wrong baseline status cannot satisfy the Weser obligation (Hydro-G Report, Appendix 3-1, S4.1).

3.4.3 Legal consequence of Poor status

Under CJEU Case C-461/13 (*Bund für Umwelt und Naturschutz Deutschland v Bundesrepublik Deutschland*, the Weser judgment, 2015), the obligation to prevent deterioration of surface water status is binding on planning authorities. The Court held at paragraph 67 that deterioration occurs as soon as the status of at least one quality element falls by one class; and at paragraph 69 that, if the quality element concerned is already at the lowest class, any further deterioration of that element constitutes a deterioration of the waterbody's status. Poor status is the second-lowest WFD classification, one class above Bad. Any construction-phase reduction in any biological, physico-chemical or hydromorphological quality element — including a temporary reduction — is therefore legally prohibited.

This is not a balancing exercise. As noted above, the applicant has waived the Article 4.7 derogation. Compliance with the baseline non-deterioration obligation must be demonstrated in full.

Source: CJEU C-461/13 (Weser, 2015), paras 67–69; WFD Art.4(1)(a); S.I. No.272/2009

The compliance case has not been demonstrated in full on the application as submitted. It has been demonstrated against the wrong classification. That, on its own, is sufficient to refuse consent on this ground. The further failures in respect of the AFA programme of measures, phosphorus and iron baselines, the Pallas Kylenamuck Q2 receptor, and the flood-condition mitigation, are addressed in the grounds that follow.

Source: EIAR Ch.9 p.9-15; Appendix 9-1, Table 2-1 p.8, Table 2-2 p.10, Stage 3 p.17, p.11, p.28; Appendix 6-3 S3.2.3.11 p.22; CJEU C-461/13 (Weser, 2015) paras 67, 69; WFD Art.4(1)(a)(i); S.I. No.272/2009; Hydro-G Report, Appendix 3-1, S4.1.

3.5 Ground 2 — The AFA Programme of Measures: A Legal Test Set-Up then Abandoned

The WFD imposes two distinct obligations on the consenting authority, both at Article 4(1)(a). The first, addressed in Ground 1, is non-deterioration of waterbody status. The second is implementation of the programme of measures established under the River Basin Management Plan (Article 4(1)(a)(iii)). The two obligations must not be conflated. The first asks whether the project will cause harm. The second asks whether the project is consistent with the active restoration programme Ireland has already committed to for this catchment. The applicant's WFD Assessment correctly identifies the second test as applicable, recites every fact required to apply it, and then declines to complete it. That self-authored lacuna is the subject of this ground.

3.5.1 The Test Is Identified

Section 3.3 of Appendix 9-1, headed *"Assessment of Proposed Project Against Programme of Measures,"* opens by correctly identifying the test: to determine *"whether the proposed wind farm can support their implementation or if there is potential to hinder their delivery."*

Section 3.3 then sets out every relevant fact:

- The Little Brosna_040 is a designated AFA — an Area for Action under the River Basin Management Plan and continuing under the Water Action Plan 2024 as an Area for Restoration;
- The AFA is led by the Local Authority Waters Programme (LAWPRO) and covers eleven waterbodies;
- The significant pressures driving failure include peat workings and drainage (hydromorphology);
- Sharavogue Bog's restoration programme is active, with over 400 rewetting dams installed in 2021 and 26.4 km of drains blocked.

After setting out those facts, Section 3.3 ends. The section does not ask whether introducing 59,000–87,600 m³ of peat disturbance and 14 internal drain crossings — the exact pressure categories the AFA programme targets — into this catchment is compatible with or would hinder RBMP delivery. It identifies the obligation and stops.

3.5.2 The Conflation That Cannot Discharge the Test

The applicant's Table 3-1 compliance conclusion (Appendix 9-1, p.26) addresses only the site-level non-deterioration test: it asserts that CEMP and SWMP mitigation will ensure compliance with non-deterioration. These are different legal questions. The site-level test asks whether harm will occur. The programme of measures test asks whether the development is compatible with State-committed restoration measures already in train. The Inspector cannot be satisfied on the second test from information that only addresses the first. An assertion that site-level controls will prevent deterioration cannot release the State or the published national Programme of Measures from their separate obligation; nor can it answer whether a proposal to disturb the AFA-target pressure category is consistent with the programme designed to reduce it.

The independent review reaches the same conclusion on the same documents and treats the two obligations as legally distinct (Hydro-G Report, Appendix 3-1, S4.1). Dr Bartley characterises the applicant's Section 3.3 as identifying the test, acknowledging every fact required to apply it — the AFA designation, the LAWPRO-led restoration programme covering eleven waterbodies, and the peat-disturbance pressure category — and then declining to complete it, ending instead on Sharavogue's rewetting without analysing whether disturbing the proposed volume of peat is compatible with, or would hinder, RBMP delivery.

3.5.3 Why the Lacuna Cannot Be Cured by Condition

The Article 4(1)(a)(iii) test is a determination required at the point of consent. A development that introduces large-scale peat disturbance and drainage modification — the exact pressure categories the AFA was established to reduce — into the priority AFA sub-basin cannot claim compatibility with the RBMP programme of measures without any analysis of that question. The Inspector cannot supply the missing analysis: the obligation is on the applicant, the relevant primary information has not been provided, and the receiving programme of measures is administered by a different agency (LAWPRO) operating across a wider catchment than the applicant's specialist team has assessed. An Coimisiún Pleanála cannot be satisfied that the Article 4(1)(a)(iii) test has been met on the basis of an assessment that sets out the test, acknowledges every relevant fact, and contains no analysis of compatibility with the programme of measures.

This is the structural defect that CJEU C-461/17 (*Holohan*, 2018, para.44) prohibits: the assessment must contain complete, precise and definitive findings, free of lacunae. A test identified, populated with facts and then left unanswered is precisely such a lacuna. It is also

the form of lacuna that cannot be saved by post-consent monitoring or by the deferred mitigation framework on which much of the rest of the application relies: the question is whether the project should be authorised in this catchment at all, given the restoration programme already underway. That question has not been answered. The applicant has waived the Article 4.7 derogation; the obligation must be discharged on the application as submitted, and it has not been.

Source: Appendix 9-1 S3.3 (p.22), p.11, p.26 (Table 3-1), p.28; SPMP App.8-3 p.7; EIAR Ch.8 Table 8-5; Water Action Plan 2024; WFD Article 4(1)(a)(iii); CJEU C-461/17 (Holohan, 2018) para.44; Hydro-G Report, Appendix 3-1, S4.1.

3.6 Ground 3 — Phosphorus, Iron and Other Key Pollutants: No Baseline, No Effective Mitigation

The receiving waterbody is at Poor status driven principally by nutrient and hydromorphological pressures. The proposed development will excavate between 59,000 m³ and 87,600 m³ of peat — the exact pressure category identified as a driver of failure. Three pollutant pathways follow from that disturbance: phosphorus, iron, and a wider category of peat-derived pollutants (suspended sediments, dissolved organic carbon, ammonium, low pH). The applicant has not established a pre-construction baseline for the first two, has not modelled loading for any, and proposes a mitigation system — settlement ponds calibrated to suspended solids removal — that does not address the dominant chemical form of the pollutants concerned. The construction-phase monitoring framework for the very pollutants the application identifies as critical is calibrated against baseline values that were never measured.

Each of phosphorus, iron and the wider pollutant category is also a regulated parameter under Irish and EU water law. Phosphate (as ortho-phosphate) and biochemical oxygen demand (BOD) carry binding Environmental Quality Objectives under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009). Dr Pamela Bartley makes the regulatory framing explicit: both BOD and ortho-phosphate are Surface Water Regulation parameters with EQOs, and iron-rich peat leachate contributes to BOD as it oxidises and precipitates (Hydro-G Report, Appendix 3-1, S4.1). The application has not characterised loading against either EQO. In a Poor-status waterbody where any deterioration of any quality element is prohibited under Weser, that is determinative.

3.6.1 Phosphorus: A Circular Monitoring Framework

The applicant's own EIAR (Chapter 9, p.9-22) identifies phosphorus and nitrogen as *"the main issue which impacts on the quality of our waters and their biological health"* in this catchment. The WFD Assessment lists peat workings as a significant pressure driving Poor status (Appendix 9-1, p.11). The proposed development will excavate between 59,000 m³ and 87,600 m³ of peat (SPMP, Appendix 8-3, p.7; EIAR Ch.8, Table 8-5). Those two facts together create an obvious question: how much additional phosphorus will be released into a Poor-status waterbody, and can the proposed mitigation prevent it?

The application contains no answer. There is no phosphorus export model. There is no nutrient loading calculation. There is no peat leachate characterisation. The independent review confirms the same omission: there is no quantification of ortho-phosphate loading from the proposed disturbed-peat excavation areas, a Surface Water Regulation parameter with a binding Environmental Quality Objective (Hydro-G Report, Appendix 3-1, S4.1).

The pre-construction sampling is inadequate to establish a baseline on its face. The applicant relies on just eight surface water samples — four taken on 23 August 2024 and four on 11 November 2024 (Eurofins Chemtest reports 24-27480 and 24-29120) — and reports only eight determinands: pH, electrical conductivity, suspended solids, chemical oxygen demand, chloride, nitrate (as NO_3), mineral oil and total TPH. Eight samples across a single late-summer-to-autumn window is not a sufficient temporal record to characterise water quality in a catchment of this sensitivity, and the reported suite omits determinands central to the waterbody's documented impairment — phosphorus foremost among them.

The omission of phosphorus is not a gap in what was tested, but in what was reported. The certificates confirm that the laboratory ran method SOP 1220 ("Anions, Alkalinity & Ammonium in Waters"), and that this method's parameter suite expressly includes Phosphate — together with Nitrite, Total Oxidisable Nitrogen, Sulfate, Alkalinity and Ammonium. Nitrate and chloride, both determinands of that same SOP 1220 run, are reported in the results tables; Phosphate is not. The determinand was within the analytical method actually performed and was simply left out of the reported data.

The result is that the pollutant the EIAR itself identifies as the main pressure on water quality and biological health in this catchment has no pre-construction baseline at all — not because it could not be measured, but because the result, if generated, was not carried into the application. The same is true of ammonium, a parameter the applicant's own assessment of peat-derived pollutants identifies as toxic to fish and aquatic life.

Compounding both failures, an established long-term reference dataset was available and went unused. An EPA national monitoring station is located on the Little Brosna immediately upstream of the site at the road bridge on Black Bull Road. This station provides an established, multi-year record against which the applicant's eight pre-construction samples

could and should have been benchmarked, both to validate their representativeness and to characterise the parameters the applicant omitted, phosphorus foremost among them. The failure to reference or compare against this station means the applicant has disregarded the most authoritative available baseline for the very waterbody at issue.

The SWMP (Appendix 9-4, Table 4-2) proposes Molybdate Reactive Phosphorus (MRP) as a construction-phase monitoring trigger at 0.035 mg/l annual average. This trigger is calibrated against *"pre-construction values"* that were never established. The trigger framework is therefore internally circular: the SWMP sets a standard against a baseline it never measured. A construction-phase exceedance cannot be calculated, detected or attributed against a baseline that does not exist.

The proposed mitigation — 19 settlement ponds — does not address the problem. Settlement ponds remove suspended solids by settling. Dissolved Reactive Phosphorus, the dominant form in peat leachate, is fully soluble and passes through settlement ponds without removal. The SWMP's own 25 mg/l total suspended solids trigger (Table 4-3) was drawn from guidance for mineral construction sites (CIRIA C648); it was not calibrated for dissolved-phase phosphorus export from lowland Irish peat. There is no engineering mitigation anywhere in the submitted documents capable of intercepting dissolved-phase phosphorus before it enters the receiving watercourse.

The vulnerability of the receiving waterbody to exactly this category of impact is confirmed by the EPA's own Pollution Impact Potential (PIP) mapping. The PIP map (Figure 3.12 below) shows the spatial concentration of phosphorus and sediment pathway risk across the site's drainage network. The Little Brosna sub-catchment is ranked at susceptibility category 2 under the Water Framework Directive, reflecting the combination of pathway susceptibility and existing pressures already identified for the waterbody, which has been retained at Poor status across both the second and third WFD monitoring cycles. Introducing large-scale peat excavation and drainage works into a catchment the EPA has already mapped as susceptible to nutrient and sediment loading, and which is failing on those very parameters, runs directly counter to the State's own evidence base for this waterbody.

Figure 3.12: EPA Catchments / PIP mapping, Little Brosna sub-catchment.



The application cannot demonstrate, and has not attempted to demonstrate, that excavating between 59,000 and 87,600 m³ of peat in a nutrient-impaired catchment will not cause further deterioration of a waterbody already at Poor status, where any further deterioration is absolutely prohibited.

While maintenance and cleaning of silt traps and ponds are referenced in the planning documents, the regime of cleaning and checking is referred to only as "at least weekly." That frequency may not be adequate, and the maintenance of these structures post-construction is not outlined.

3.6.2 Iron Ochre: Photographic Evidence on Site, Absent from Monitoring

Direct photographic evidence of groundwater conditions encountered on site is provided by Trial Pit TP17 below(Appendix 8-1, image 69/111)

.Figure 3.13: Trial Pit TP17



The pit demonstrates vivid ferrous iron precipitation — iron ochre — in standing groundwater at shallow depth. The immediate groundwater ingress confirms the water table is at or near surface in the peat profile: this is not accumulated rainfall but groundwater influx. The independent review draws attention to the same evidence, noting that the iron content of the waters in the trial-pit photographs is not evaluated in the context of its effect on biochemical oxygen demand in the nutrient-impaired receiving waterbody, both BOD and ortho-phosphate being Surface Water Regulation parameters with Environmental Quality Objectives (Hydro-G Report, Appendix 3-1, S4.1).

Iron is absent from both the pre-construction water chemistry sampling (Appendix 9-2) and the construction-phase monitoring trigger framework (SWMP Appendix 9-4, Table 4-2). No iron trigger value is proposed anywhere in the submitted documents. The framework reproduces the same circular failure identified above for phosphorus: a parameter known from the applicant's own ground investigation to be present in mobilisable form is not baselined and is not monitored, so any construction-phase exceedance cannot be calculated, detected or attributed.

Iron ochre (ferric hydroxide precipitate) released to watercourses coats and suffocates macroinvertebrate substrates, damages salmonid gills, smothers spawning gravels and directly suppresses Q-values. The Little Brosna_040 is at Q3 — Poor status. Any further suppression of the benthic macroinvertebrate community from iron ochre deposition would constitute deterioration of a quality element already near the floor of the classification scale, directly triggering the Weser prohibition.

The omission engages the Surface Water Regulations directly. Biochemical oxygen demand is a regulated physico-chemical parameter under S.I. No. 272 of 2009, carrying a prescribed Environmental Quality Objective. The iron evidenced in the TP17 groundwater is not a neutral observation: ferrous iron exerts an oxygen demand as it oxidises and precipitates, and iron-rich peat leachate entering the watercourse contributes to BOD as well as to the direct smothering of macroinvertebrate substrates. The applicant has neither baselined iron nor assessed its contribution to a regulated parameter with a binding objective, in a waterbody whose Poor status leaves no headroom for any deterioration of any quality element.

The same engineering point made above for dissolved phosphorus applies: settlement ponds remove suspended solids by settling and do not treat dissolved-phase pollutants. Iron

mobilised from peat groundwater enters the receiving system in both particulate and dissolved forms; the dissolved fraction passes through settlement ponds without removal. There is no engineering mitigation anywhere in the submitted documents capable of intercepting either dissolved-phase iron or dissolved-phase phosphorus before it reaches the watercourse.

The risk pathway is direct and proximate. Foundation excavations at T3, T4, T8 and T9 are anticipated to 4.5 m bgl (CEMP, Appendix 2-3, p.11), through saturated peat columns of up to 3.2 m depth with groundwater at 0.4–1.5 m bgl (EIAR Ch.9, p.9-29). Any excavation through this profile will mobilise iron-laden water. The suggestion that limited dewatering may be required at T8 and T9 due to low-permeability clays does not reduce the risk: low-permeability clays cause iron-rich peat groundwater to be perched and concentrated above the clay horizon, increasing the iron load in the water that excavation will release.

3.6.3 Other Peat-Derived Pollutants and the Downstream Drinking-Water Pathway

Several further pollutant pathways arise from large-scale peat disturbance, each compounding the loading risk addressed above:

- **Suspended peat sediments (siltation).** Large volumes of loose peat enter the water, causing extreme turbidity. Silt settles on the riverbed, smothering spawning grounds for salmon and trout, blocking sunlight, and destroying the habitat of aquatic macroinvertebrates.
- **Dissolved organic carbon (DOC).** The breakdown of sphagnum moss and organic materials leaches heavily into the stream, turning the water a dark yellow-brown colour. While natural at background levels, excess DOC strips oxygen from the water as it degrades, and reacts aggressively with chlorine at water treatment plants to form carcinogenic trihalomethanes (THMs), making downstream water difficult and expensive to treat for human consumption.
- **Ammonium (NH_4^+) and ammonia (NH_3).** The microbial breakdown of bog organic matter releases high levels of ammonium. When it enters watercourses with a higher pH, it converts into un-ionised ammonia, which is highly toxic to fish and aquatic life. Ammonium is also a parameter run under the SOP 1220 method on the applicant's own pre-construction samples but absent from the reported results — the same omission identified at G3.1 above.

- **Low pH (humic acidification).** Natural humic acids within the bog lower the pH of the receiving watercourse. Sudden acidification can shock fish, disrupt respiratory function, and cause toxic heavy metals (aluminium, lead) naturally bound in nearby soils to leach into the water column.

Monitoring of some of these parameters is referenced in the SWMP but the frequency for each individual measure is not specified; the framework relies on wider monitoring within the workzone rather than parameter-specific triggers.

The significance of these pollutant pathways is heightened by the site's hydrological connectivity to public water supply. While the site does not lie within a drinking-water abstraction protection zone, it drains via the Little Brosna and the Shannon to Lough Derg — a strategic drinking-water source serving abstractions including Coolbawn and the Limerick supply. Pollutant loading that would be serious in any watercourse carries an additional public-health dimension. DOC is the particular concern in this respect: increased DOC loading from peat disturbance translates directly into increased THM formation at downstream treatment works, with implications for public-health compliance that the application does not address.

3.6.4 The Volume Discrepancy Compounds the Loading Risk

The SPMP (Appendix 8-3, p.7) gives total peat excavation as 59,000 m^3. EIAR Chapter 8 (Table 8-5) records total peat excavated as 87,600 m^3 (91,950 m^3 bulked). This discrepancy of approximately 50% has not been reconciled anywhere in the submitted documents. The phosphorus, iron and DOC loading risks calculated against the lower figure understate the actual loading by approximately the same proportion. The application cannot demonstrate non-deterioration against a loading figure that is itself uncertain by 50%.

3.6.5 Legal Consequence

The Weser prohibition applies to each quality element of the receiving waterbody. Phosphorus, ammonium and BOD are physico-chemical quality elements with binding EQOs under S.I. No. 272 of 2009. Macroinvertebrate community condition is a biological quality element directly suppressed by iron ochre, suspended peat sediment and low pH. The Little Brosna_040 is at Poor status across both the biological and the physico-chemical limbs. Any construction-phase reduction in any of those elements — including a temporary reduction — is prohibited under CJEU C-461/13 (*Weser*, 2015), paras 67 and 69.

The application has not baselined phosphorus. It has not baselined iron. It has not modelled loading for either, nor for DOC, ammonium or low pH. It proposes a treatment system that cannot remove the dissolved-phase forms in which the dominant pollutant load will arrive. It calibrates its monitoring triggers against baseline values that were never measured. The Weser obligation cannot be discharged on the application as submitted. The applicant has waived the Article 4.7 derogation. Full compliance must be demonstrated; on the water-quality limb, it has not been.

Source: EIAR Ch.9 p.9-22, p.9-29; Appendix 9-1 p.11; Appendix 9-2 (Eurofins Chemtest reports 24-27480, 24-29120); Appendix 8-1 TP17 image 69/111; Appendix 8-3 (SPMP) p.7; EIAR Ch.8 Table 8-5; CEMP App.2-3 p.11; SWMP App.9-4 Table 4-2, Table 4-3; CIRIA C648; EPA Pollution Impact Potential mapping (Little Brosna sub-catchment); S.I. No. 272 of 2009 (European Communities Environmental Objectives (Surface Waters) Regulations); CJEU C-461/13 (Weser, 2015) paras 67, 69; Hydro-G Report, Appendix 3-1, S4.1.

3.7 Ground 4 — Tributary Network: Unassessed First-Link Receptors

3.7.1 The Tributaries Are the Actual Discharge Pathway

The EIAR and WFD Assessment treat the Little Brosna_040 main channel as the primary receptor for construction-phase water quality impacts. This framing is incorrect. The Little Brosna does not receive construction runoff directly, it receives it via the network of tributary streams that cross and drain the wind farm site: the Holy Well Clohaskin, Wingfield 25, Faddan Beg, North Cloonaheen, Rath Beg, Pallas 25, Kylenamuck and Pallas Kylenamuck streams. These tributaries are the first link between the development and every downstream European site.

Figure 3.14: The Tributary Network within and around the Site



The image above captures a map of the tributary network crossing the wind farm site, showing confluence points with the Little Brosna and locations of aquatic survey sites.

3.7.2 The Pallas Kylenamuck — Bad Status Within the Construction Footprint

The applicant's own aquatic ecologist surveyed a selection of these tributaries and recorded results in the aquatic ecology survey (Appendix 6-3 to the NIS). The ecologist's summary conclusion is unambiguous: "the overall biological water quality in the watercourses draining the proposed wind farm site is poor and moderately polluted. The sampled watercourses do not provide water of a quality adequate to support a range of pollution sensitive mayfly and stonefly larvae, as well as salmonids." (Appendix 6-3, Section 3.2.8, p.30).

Table 3-4: Biological Water Quality and Interpretations at Study Sites on Watercourses Draining the proposed project.

Site	Q-value	WFD Ecological Status
1	3-4	Moderate status (Slightly Polluted)
3	3	Poor status (Moderately Polluted)
10	3	Poor status (Moderately Polluted)
11	2	Bad status (Seriously Polluted)

Not one surveyed in-site tributary achieved Q4 Good status. Three were rated Q3 — Poor. The fourth — the Pallas Kylenamuck stream (Site 11, EPA Code 25P56) was rated Q2: Bad/Seriously Polluted. It is a first-order stream that runs through the northeast of the wind farm site and discharges to the Little Brosna River approximately 25 metres downstream of the survey point (Appendix 6-3, Section 3.2.3.11, p.22).

At Q2, the Pallas Kylenamuck is one step from the absolute floor of the WFD classification scale. Under the Weser obligation (CJEU C-461/13, para.69), any further deterioration of a quality element already at or near the lowest class constitutes a breach of the non-deterioration obligation. The construction footprint — peat excavation, access road drainage, hardstand runoff, concrete risk and fuel management — sits directly within this stream's catchment. Its Q2 status is recorded by the applicant's own ecologist. The risk of further deterioration during construction is self-evident and unassessed. No response to this finding appears anywhere in EIAR Chapter 9, Appendix 9-1, or the NIS.

3.7.3 Five Tributaries Have No Baseline

Five further named tributaries within or adjacent to the wind farm site — the Holy Well Clohaskin, North Cloonaheen, Rath Beg, Pallas 25 and Kylenamuck streams — received no

biological water quality sampling. The survey report acknowledges this as a constraint due to access limitations (Appendix 6-3, Section 2.2.11, p.14). The Holy Well Clohaskin is one of the primary discharge pathways from the site and is listed as monitoring point SM4 in the SWMP. A monitoring programme cannot detect deterioration in a watercourse for which no pre-construction biological condition has been established.

The NIS pathway analysis to the River Shannon Callows SAC and associated SPAs proceeds as if the Little Brosna main channel is the pathway. It is not. Any degradation generated during construction reaches the Little Brosna through these tributaries first. A conclusion that no adverse effects on European site integrity will occur cannot be sustained where the pre-construction biological condition of the most direct discharge pathways has not been established, and where the one tributary that has been assessed is at Q2 Bad/Seriously Polluted with no assessment of further deterioration risk. This is precisely the lacuna that CJEU C-461/17 (Holohan, 2018, para.44) prohibits.

Source: Appendix 6-3, Section 3.2.3.11 p.22, Section 3.2.8 p.30, Section 2.2.11 p.14; Appendix 9-1, p.7; SWMP App.9-4; CJEU C-461/13 (Weser, 2015) para.69; CJEU C-461/17 (Holohan, 2018) para.44

3.8 Ground 5 — Construction in Flood Zone A/B and the Justification Test

3.8.1 The Flood Zone Context

At the outset it is important to say that the High Probability / Flood Zone A designation is more typical for this area. That is never considered anywhere in the document. The Applicant moves to an analysis based only on Medium probability – Flood Zone B in their analysis using Mid-Range future scenarios. At no point do they engage the +30% High end future scenario. Given that failure, the following review will consider only what the Applicant presents as the Mid-range scenario +20%.

The applicant's FRA (Appendix 9-3) uses CFRAM modelling to confirm that four turbines are in Flood Zone A or B under existing conditions. The data is as follows:

Table 3.2 : Existing Conditions (1% AEP — 1-in-100 year event)

Turbine	Hardstand inundated	Notes
T1	~25%	Access roads within flood envelope
T2	~5%	Peat depth 0.3–1.2m; foundation to 4.5m bgl
T8	~5%	50m from Little Brosna and SAC boundary
T9	~50%	Deepest peat on site; closest to SAC

Table 3.3: Mid-Range Future Scenario (MRFS, +20% peak flows)

Turbine	Hardstand inundated at 1% AEP
T1	~40%
T2	~25%
T8	~15%
T9	~75%

Source: FRA App.9-3, pp.11–12 and pp.17–18

3.8.2 The Justification Test

The applicant acknowledges that the Justification Test under the Planning System and Flood Risk Management Guidelines (OPW/DoEHLG, 2009) is required for T1, T2, T8 and T9. Wind farms are classified as essential infrastructure, appropriate **only** in Flood Zone C. The following analysis demonstrates that the Justification Test is not met on any of the stated criteria.

Figure 3.15 The Justification Test

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan

Refer to section 5.28 in relation to minor and infill developments

Figure 2-1: Criteria of the Justification Test

3.8.2.1 Criteria 1 — The subject lands have been zoned or designated : The Land Is Not Designated for This Form of Development

Discussed at length previously, Offaly County Council's Wind Energy Strategy, produced under SEA, AA and OPR oversight, identified the Ballincor area as unsuitable for wind farm development. This site is not designated or zoned for wind energy infrastructure. The

applicant addresses this criterion with a single sentence about site selection. That is not a demonstration of designation.

The Supreme Court in Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5 was explicit that developments must not be assessed in isolation from their broader county and regional context. Climate action obligations can be met in lower-risk, designated locations. A site carrying flood risk to four turbines, a Poor-status receiving waterbody and an active Natura 2000 restoration catchment within 10m of the perimeter does not satisfy Criteria 1 simply because a developer has chosen it.

Source: Offaly County Council Wind Energy Strategy; Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5

3.8.2.2 Criteria 2 — The proposal has been subject to an appropriate flood risk assessment – and will reduce not add to flood risk

Criteria 2 requires confirmation that the development will be safe throughout its lifetime and will not increase flood risk elsewhere. The applicant proposes raised platform levels and an emergency management protocol as the primary response. Six specific failures, each demonstrated from within the submitted documents and drawings, establish that this confirmation has not been made.

1. The SWMP/FRA irreconcilable contradiction. The SWMP (Appendix 9-4, pp.19–20) requires an ECoW to be on-site during major rainfall events (15mm in 6 hours) and gives the Environmental Manager Stop Works Authority. The FRA (Appendix 9-3, p.23) states: "Access roads are only used to provide maintenance to the turbines and are therefore not to be used after any heavy rainfall." These two commitments cannot be honoured simultaneously. The same rainfall events that require ECoW presence on site are the events during which the access roads are impassable. This is not a detail — it is the core enforcement mechanism of the WFD compliance case failing under precisely the conditions when it is most needed.
2. The SuDS system cannot function under flood conditions. The mitigation proposed is designed for construction site runoff and is generic in its presentation (swales, check dams, silt fences, settlement ponds). It provides no protection against fluvial inundation, which is the mechanism confirmed by the applicant's

own FRA. When floodwater arrives from the Little Brosna and its tributaries across the site, swales become conduits for floodwater rather than drainage control features; check dams, bearing on saturated peat subsoils, are vulnerable to undermining and blowout; silt fences, designed for slow sheet flow, are inundated, undermined or physically destroyed; and settlement ponds are submerged and reversed, with accumulated sediment — including construction contaminants concentrated through the system over weeks of works — re-mobilised and discharged directly into the Little Brosna at peak flow. The SWMP itself states that maintenance must not take place during periods of extended heavy rain; the ponds will therefore be at or near sediment capacity when the next flood arrives.

3. The discharge quality standard the applicant relies upon is both inadequately set and operationally unverifiable. The SWMP applies a turbidity limit of 50 NTU, whereas a limit of the order of 10 NTU is the conventional standard for discharge to a sensitive watercourse, and any such limit should properly be referenced to the measured baseline turbidity in the Little Brosna rather than to a value that is meaningful only in dry-weather conditions. Under flood conditions, the very scenario the applicant's own FRA confirms, the 50 NTU limit cannot be verified at all: once the SuDS features are inundated by fluvial floodwater, there is no defined discharge point at which compliance can be measured. Compounding this, the application proposes no control mechanism by which runoff or discharge would be halted in the event that the 50 NTU limit is exceeded. There is no shut-off, no containment-on-exceedance, and no defined intervention. A discharge standard that cannot be measured under the conditions that matter, and that triggers no action when breached, provides no protection to the receiving waterbody.
4. The engineering drawings confirm that this failure is structural, not contingent. Drawing 11333-2034 (Track Swales, Drains and Settlement Pond Details) shows settlement pond embankments constructed from "suitable excavated materials" with a permanent water level of approximately 0.5m and a top water level at 1–1.5m depth. The embankments are temporary earthwork structures with no specification for resistance to lateral flood pressure from the river side, no flood bypass arrangement, and no minimum base level defined relative to the CFRAM flood envelope. The drainage layout plans (11333-2061 to 11333-2065) confirm that pond sizes "depend on catchment area served" — not one of the nineteen proposed settlement ponds is individually sized anywhere in the submitted

application. No controls on how run-off would be halted if discharge limits exceed the applicants limit of 50 NTU is proposed.

5. The buffer zone prohibition is undesignable in the T8/T9 corridor. Every drainage layout plan (Drawings 11333-2061 to 11333-2065) carries an identical Note 5: "Surface water will not be allowed to discharge directly into existing watercourses." Drawing 11333-2034 (Section D-D) shows the mechanism for honouring this: the pond outfall discharges via a flow control device to "an area of intact vegetation" that acts as a secondary filter before any watercourse is reached. The SWMP (p.18) confirms a buffer zone between the pond outfall and any existing watercourse is required. No drawing specifies the minimum width of this buffer. In the T8/T9 corridor, where the drainage layout plans show settlement ponds positioned within metres of the Little Brosna floodplain and its tributary network, that buffer zone cannot exist. The prohibition is stated on every drawing; no drawing demonstrates how it is achievable at the locations where it matters most.
6. The primary stormwater structure is designed below its own mandatory flood level. Drawing 11333-2036 (Attenuation Tank Details) shows the underground concrete attenuation tank — the primary stormwater management structure for the substation compound — with a Finished Ground Level (FGL) of 46.35mOD. The FRA (Section 4.5, p.22 and Section 5, Conclusions) requires that all critical infrastructure be constructed to a minimum level of 46.5mOD — at least 300mm above the 1,000-year MRFS fluvial flood level. The tank's FGL of 46.35mOD is 150mm below that mandatory minimum. There is no note on the drawing explaining this discrepancy, no dispensation, and no hydraulic justification. This is a direct engineering conflict on the face of the submitted documents: the drainage drawing and the FRA contradict each other on the most basic design datum for the structure on which WFD compliance is predicated.

Three additional modelling failures are present:

- The FRA contains an unresolved internal inconsistency on flood compensation storage. Section 4.1 (p.20) describes compensation storage with "an area of approximately 14,000m²" at approximately 1m depth; Section 4.5 states "an additional 14,000m³ of compensation storage will be provided." The same figure is applied as both area (m²) and volume (m³) in different sections. At 1m depth, 14,000m² of storage gives a volume of 14,000m³ — nearly five times the 3,000m³ claimed to be removed from the floodplain. No hydraulic model resolves this.

- Separately, the CFRAM study modelled the Little Brosna main channel only; the Holy Well Clohaskin, Rath Beg and Pallas 25 streams — the watercourses most directly flanking T1 and T2 — were not modelled, leaving the adequacy of the 46.5mOD design level unverified for those turbines.
- Finally, the applicant applied a +20% MRFS uplift to derive design levels but did not assess the +30% High-End Future Scenario (HEFS). The 300mm freeboard above MRFS flood levels may be entirely consumed by the gap between MRFS and HEFS over a 35-year operational lifetime.

Source: Appendix 9-1, p.17; SWMP App.9-4, pp.19–20; FRA App.9-3, p.23, Section 4.1 p.20, Section 4.5 p.22, Section 5; Drawings 11333-2034, 11333-2036, 11333-2061 to 11333-2065; NIS Appendix C; CJEU C-323/17 (People Over Wind, 2018)

3.8.2.3 Criteria 2(iv)— Compatibility with Wider Planning Objectives

The proposed wind farm falls within the Little Brosna AFA designated for restoration, with peat workings and drainage identified as the primary drivers of failure. Introducing a major peat excavation project into an active State restoration catchment is not compatible with the programme of measures that defines the relevant wider planning objective for this waterbody under the RBMP. The applicant presents no analysis of this compatibility. Criteria 2 (iv) is not met.Source: Appendix 9-1, Section 3.3; Water Action Plan 2024

3.8.3 The Consequence for the Habitats Directive Assessment

The Justification Test failure does not stand alone in the consenting framework. The Surface Water Management Plan whose structural failure under flood conditions is documented at above is the same SWMP appended to the NIS as Appendix C and relied on by the NIS as the sole mechanism for excluding indirect adverse effects on the six connected European sites. The NIS conclusion at p.213 confirms this dependency:

> *"Through the careful design of the proposed project, in combination with the detailed avoidance and mitigation measures outlined in Section 6.2, the potential for significant adverse effects on any European sites in view of their conservation objectives will be fully avoided."*

The conditional construction of that sentence — *"in combination with the detailed avoidance and mitigation measures"* — is not incidental. The NIS itself acknowledges at S6.1 (p.117) that, in the absence of those measures, indirect adverse effects on all six European sites

cannot be excluded. The SWMP's own conclusion (NIS Appendix C, p.24) goes further: it states the plan *"will ensure that all water within the construction works will be collected and treated before being released to the downstream watercourses."* That claim has been tested against the applicant's own FRA and submitted drawings at SG5.2 above and it fails. The SWMP cannot function during fluvial flood events at T1, T2, T8 and T9; the discharge standard cannot be measured once the SuDS features are inundated; the prohibited direct-to-watercourse buffer cannot be designated in the T8/T9 corridor; and the primary attenuation structure is constructed below its own mandatory flood level on the face of the submitted drawings.

An Appropriate Assessment conclusion of no adverse effect on integrity, premised entirely on a mitigation document that fails structurally during the foreseeable site conditions that define the receiving environment, does not satisfy Article 6(3) of the Habitats Directive. Under CJEU Case C-323/17 (*People Over Wind*, 2018), mitigation measures must be assessed in full in the NIS itself, not assumed to operate as intended. That assessment has been carried out here, on the applicant's own submitted documents and drawings, and the central mitigation mechanism fails. Under CJEU Case C-461/17 (*Holohan*, 2018, para.44), an Appropriate Assessment must contain complete, precise and definitive findings free of lacunae. A finding of "fully avoided" indirect adverse effect, dependent on a mitigation system that is shown to be inoperable under the conditions in which it would be required to operate, is precisely the form of finding that *Holohan* prohibits.

3.8.4 Legal Standard and Conclusion

This ground fails simultaneously on three legal limbs:

- **The Planning System and Flood Risk Management Guidelines (OPW/DoEHLG, 2009).** The Justification Test is not met on any of Criteria 1, 2 or 2(iv). The subject lands are not designated for wind energy infrastructure (Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5). The proposal does not demonstrate that flood risk will not be increased elsewhere; on the applicant's own documents, the proposed mitigation cannot function during the flood events the FRA confirms will occur. The proposal is not compatible with the wider planning objective for this waterbody under the Water Action Plan 2024 and the AFA restoration programme.
- **WFD Article 4(1)(a)(i) — non-deterioration.** The SWMP is the engineering mechanism on which the applicant's WFD compliance case at Appendix 9-1

ultimately depends. A SWMP that cannot function under the foreseeable flood conditions confirmed by the FRA cannot demonstrate non-deterioration of a waterbody already at Poor status (Ground 1 above) under the Weser standard (CJEU C-461/13, paras 67, 69).

- **Habitats Directive Article 6(3).** The NIS conclusion of no adverse effect on integrity is conditional on the SWMP. The SWMP fails on the applicant's own documents during foreseeable site conditions. *People Over Wind* (C-323/17) prohibits reliance on unassessed mitigation; *Holohan* (C-461/17, para.44) prohibits an assessment containing lacunae of this kind. The applicant has waived the Article 6(4) IROPI derogation (NIS p.4). Full Article 6(3) compliance must be demonstrated on the application as submitted. On the flood-condition limb, it is not.

The cumulative effect across the three legal limbs is decisive for refusal on this ground alone, independently of the other grounds in this chapter.

Source: NIS p.117, p.213, Appendix C p.24; SWMP App.9-4 pp.19–20; FRA App.9-3 p.23, S4.1 p.20, S4.5 p.22, S5; Drawings 11333-2034, 11333-2036, 11333-2061 to 11333-2065; PSFRM Guidelines (OPW/DoEHLG, 2009); Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5; Water Action Plan 2024; CJEU C-461/13 (Weser, 2015) paras 67, 69; C-323/17 (People Over Wind, 2018); C-461/17 (Holohan, 2018) para.44.

3.9 Ground 6 — Access Tracks in Flood Zone A/B: No Investigation, No Design, No Mitigation

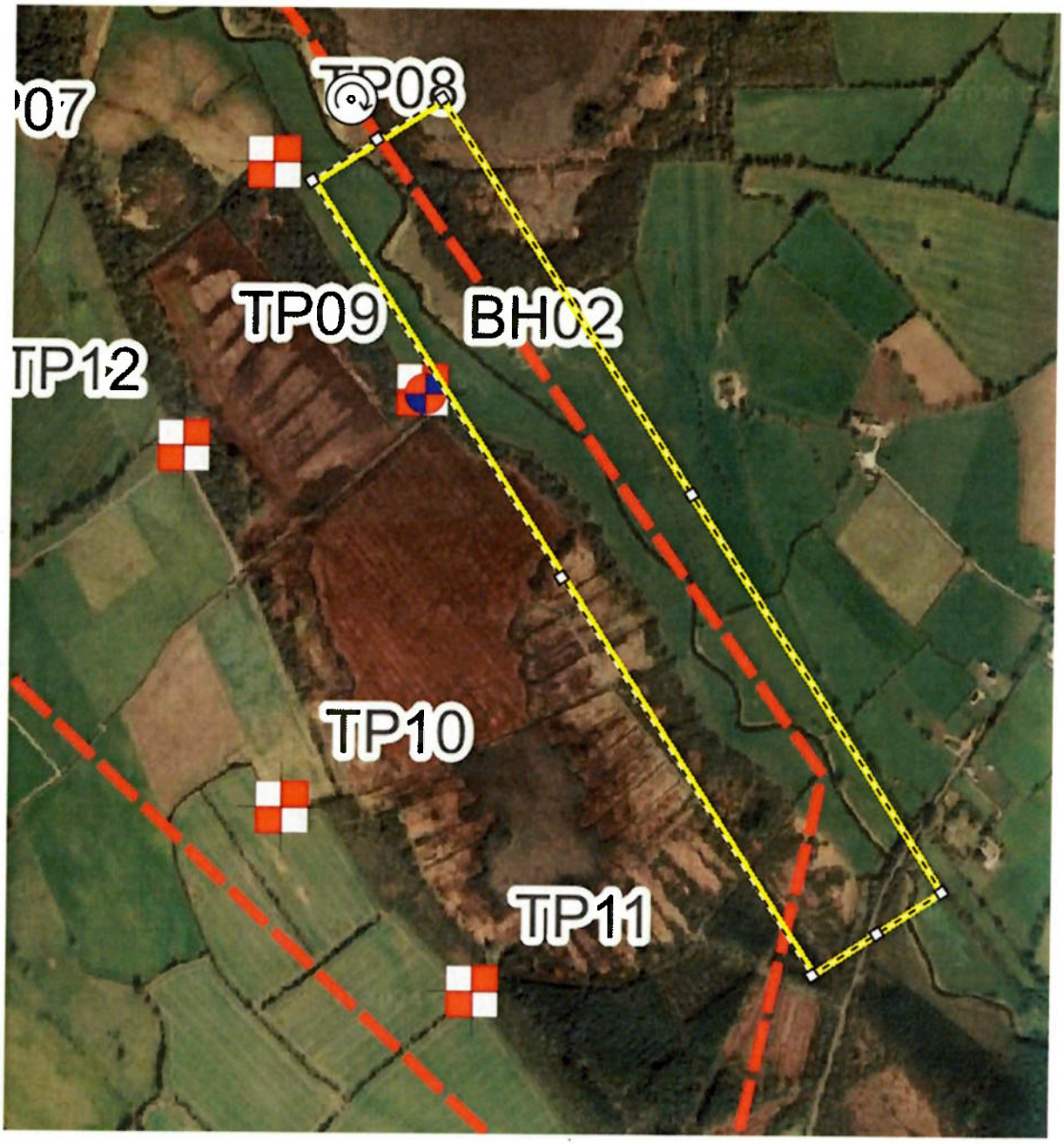
This ground addresses three compounding failures in the access track proposals for the T8/T9 eastern corridor, the most sensitive zone on the development site. Each failure is serious individually. Together they establish that the track infrastructure in the highest-risk zone of this application has not been investigated, has not been designed, and has no adequate flood mitigation. That is not a matter that can be resolved by condition.

3.9.1 No Ground Investigation Along the Track Alignment

The SPMP (Appendix 8-3, p.9) asserts: *"Ground investigations in the form of peat probing and trial pitting has been carried out along the proposed access routes to inform the depth of excavation and upfill required for the access tracks."* This statement does not withstand scrutiny when the submitted investigation data is examined.

The ground investigation comprised 23 trial pits and 3 boreholes across the entire site. In the T8/T9 zone — the valley floor in Flood Zone A/B, closest to the river and the SAC — the investigation points are TP08, TP09 and BH02. All three are located at or near the turbine hardstand positions. See Figure 3.14 below. Not one trial pit or borehole was positioned along the access track alignment in this corridor. Peat probes in this area were located at turbine positions only. The claim that ground investigation has informed track design in this zone is not supported by the ground investigation data submitted.

Figure 3.16: Trial Pits/Boreholes from RWE Application



This matters because the peat depth map (EIAR Figure 8-6, Appendix 8-2 PSRA page 40) shows the deepest peat on the site concentrated in precisely this corridor — 2.1–3.9m depths clustered around T4, T8 and T9 (EIAR Ch.8, p.8-22). The zone with the deepest peat, the highest flood risk and the greatest proximity to the river and SAC is the zone with the least investigation along the route where tracks will actually be built.

3.9.2 No Founding Stratum — and No Viable Alternative

The data from the three investigation points closest to the track corridor reveals the following:

- **TP08** (Appendix 8-1): Peat to 2.1m; soft peaty silt to 3.1m; soft sandy silt to 3.70m. Trial pit terminated by sidewall collapse. Competent stratum not reached.
- **TP09** (Appendix 8-1): Peat to 2.7m; soft peaty silt to 3.70m. Trial pit terminated by sidewall collapse. Competent stratum not reached.
- **BH02** (Appendix 8-1): 2.3m of peat, then a continuous column of very soft silt and clay from 2.3m to 12.80m. Every Standard Penetration Test from 2.30m to 12.80m returned SPT N=0 — zero resistance, the sampler penetrating under its own weight. The first material with any measurable resistance (N=7, still very soft) appeared at 12.80m. Dense gravel did not appear until 15.80–18.80m. This Borehole is the closest ground investigation site to the proposed access tracks in this area.

The SPMP (Appendix 8-3, pp.9–11, Table 2-2) sets out a binary design approach: founded tracks are excavated to competent stratum and constructed upward from it; floating tracks are used where peat exceeds 1m depth. The SPMP states that *"the majority of the tracks are likely to be constructed as founded tracks"* and that excavation will proceed *"to a competent geological stratum with adequate cross drainage."* Neither option is viable in the T8/T9 corridor as the investigation data stands.

There is no competent stratum within any excavation depth achievable by construction plant. TP08 and TP09 both collapsed before reaching competent material. BH02 shows 12m of SPT N=0 material below the peat — not peaty subsoil, but near-liquid silt. A founded track cannot be built to a stratum that was not found.

The floating track option does not resolve this. The PSRA (Appendix 8-2, Appendix 3, Assessment Areas 8 and 9) assesses the characteristic undrained shear strength of the peat at this location as **10 kPa** — the lowest value used across the site, with the T9 factor of safety under undrained conditions assessed at only 3.4, the lowest on the site. The SPMP (Appendix 8-3, p.13) acknowledges that in deeper peat areas it *"may be deemed necessary"* to install pressure berms of 2–5m width on each side of the floating track to prevent bearing failure beneath it. Whether these berms are needed at T8/T9 is unresolved because the detailed design has not been done. The finished track width itself — *"approximately 5-6m (to be confirmed by the designer)"* (SPMP, p.13) — remains unconfirmed. A floating track with

an unconfirmed width, an undesigned geogrid specification, and a conditional pressure berm requirement, on peat with a 10 kPa characteristic shear strength and SPT N=0 material to 12.8m below, is not a designed solution. It is a placeholder.

The SPMP explicitly defers the only design element that would make a floating track structurally meaningful: *"Details of geogrid arrangement will be provided by the specialist geogrid provider/designer"* (Appendix 8-3, p.12). The specialist has not been appointed. This is confirmed by the applicant's own PSRA consultant, who recommended *"specification of additional site investigations inclusive of in situ testing and laboratory testing in specific risk areas on the site"* before detailed design can proceed (Appendix 8-2, Section 7.1). That investigation has not been done. The planning authority is being asked to grant permission before it has been carried out.

3.9.3 The Mitigation Matrix Excludes the Access Track Corridor

Ch 2 Table 2-6 (Surface Water Mitigation Matrix, p.2-37) confirms that the >50m buffer and settlement pond measures are not applied to access tracks or the GCR. The applicant's own mitigation matrix records that the primary water quality controls do not extend to the linear infrastructure running through Flood Zone A/B. Every category in the matrix is also marked "Weather dependent."

Table 2-6 Surface water mitigation matrix

	Turbines	Substation and compounds	Deposition areas	Access tracks	Borrow Pits	GCR
Utilise existing bridges and access roads	-	-	-	‡‡	-	‡‡
>50m Buffer	‡‡	‡‡	‡‡		‡‡	
Interceptor drains	‡‡	‡‡	‡‡	‡‡	‡‡	
Check Dams or similar	‡‡	‡‡	‡‡	‡‡	‡‡	‡‡
Swales	‡‡			‡‡	‡‡	
Sediment traps	‡‡		‡‡			‡‡
Settlement Ponds	‡‡	‡‡	‡‡		‡‡	
Proprietary Settlement tanks	+	+			‡‡	
Weather dependant	‡‡	‡‡	‡‡	‡‡	‡‡	‡‡
Silt Fences	‡‡		‡‡	‡‡		‡‡
Clear Span Bridge				‡‡		
Concrete washout control measures	‡‡	‡‡				‡‡
Chemical/fuel bunds	‡‡	‡‡	‡‡		‡‡	‡‡

The CEMP (App 2-3, 4.1.3.2) describes the silt/SuDS programme in generic terms only, with no site-specific application to the T8/T9 corridor or any of the four turbines confirmed by the FRA to lie in Flood Zone A/B.

3.9.4 Generic, Flood-Blind Drainage Design

Drawing 11333-2033 (Track Construction Details) shows three standard track types applicable across the whole site. Type 1 is the excavate-and-replace section; Type 2 is the floating track on geogrid; Type 3 is widening of an existing track. The drawing is a generic planning-stage cross-section. It contains no specification, notation or dimension that has been modified for Flood Zone A/B conditions. No flood level is shown. No outfall elevation is specified. No scour protection is detailed. The drainage design — swales, 300mm cross drains, check dams — is identical to what would be prepared for a Flood Zone C location anywhere in Ireland. The specific deficiencies on Drawing 11333-2033 compound the ground investigation failures directly:

- The Type 2 floating track detail carries the note *"SUITABLE GEOGRID / GEOTEXTILE IF REQUIRED (DESIGNED TO ACCOMMODATE GROUND CONDITIONS)"* — not a specification, but an instruction that a specification is required. No geogrid strength, stiffness, or aperture is given. No bearing pressure calculation is referenced. There is no acknowledgement of the SPT N=0 conditions at T8/T9 confirmed by BH02.
- The swale on the floating track cross-section (Type 2) is shown running at the same level as the track surface, immediately alongside it. In the T8/T9 flood corridor, this swale would be within the flood envelope at the 1% AEP event alongside the hardstand itself. The drawing contains no flood bypass arrangement, no outfall elevation check relative to CFRAM levels, and no scour protection at any outfall point.
- The drainage design is also missing elements that would be expected as a minimum for any linear infrastructure in Flood Zone A/B: no hydrostatic uplift specification beneath geogrid layers under inundation; no confirmation of settlement pond base levels relative to CFRAM flood extents; no flood bypass provision on any settlement pond.

The drainage layout plans (Drawings 11333-2061 to 11333-2065) carry Note 5 on every sheet: *"Surface water will not be allowed to discharge directly into existing watercourses."* Drawing 11333-2034 shows the mechanism for this: the pond outfall discharges via a flow control device to an area of intact vegetation acting as a secondary filter buffer before any

watercourse. The SWMP (p.18) confirms a buffer zone between the pond outfall and any watercourse is required. No drawing specifies the minimum width of this buffer. In the T8/T9 corridor, where settlement ponds sit within metres of the Little Brosna floodplain, that buffer does not exist. As stated under Ground 2, the SWMP and FRA are irreconcilable on whether site access is even possible during the rainfall events when these controls are most needed: the SWMP (Appendix 9-4, pp.19–20) requires an ECoW on site during 15mm/6-hour events; the FRA (Appendix 9-3, p.23) states access roads must not be used after heavy rainfall. The ECoW cannot access the site at the moment environmental controls most need activation.

At a 1-in-100-year event — when T9 hardstand is 50% inundated and the access corridor is submerged — every element of this drainage system fails: swales are within the flood envelope; check dams are submerged; settlement ponds reverse and discharge accumulated sediment; and no ECoW can reach the site. The drainage drawings do not acknowledge this. They present a standard construction drainage system as if the site were on dry, Flood Zone C ground.

3.9.5 Legal Consequence

The EIA Directive (Article 5, Annex IV, transposed by s.172 Planning and Development Act 2000) requires the EIAR to contain the information necessary to assess the significant effects of the development. Three requirements follow from this in the T8/T9 corridor: a ground investigation adequate to establish founding conditions along the track alignment; a structural design for the track appropriate to those conditions; and a drainage design that accounts for the confirmed flood regime. None of the three has been provided.

The SPMP asserts that investigation has informed track design in this corridor. The submitted investigation data shows it has not. The track design is explicitly deferred to a specialist who has not been appointed. The drainage drawings are generic and flood-blind. An EIAR that contains these gaps for the most sensitive zone of the development does not meet the legal standard. This is a failure of substance, not detail, and it cannot be cured by condition.

Source: Appendix 8-1A (TP08, TP09); Appendix 8-1C (BH02); Appendix 8-2, Appendix 3 (Assessment Areas 8 and 9), Section 7.1; Appendix 8-3, pp.9–13, Table 2-2; FRA App.9-3, p.23; SWMP App.9-4, pp.19–20; Drawings 11333-2033, 11333-2034, 11333-2061 to 11333-2065

3.10 Ground 7 — Construction Loading and Floodplain Compaction: An Unassessed Effect

The proposed development sits on the active floodplain of the Little Brosna for four of its eleven turbines (T1, T2, T8, T9) and for much of the associated access track network. The construction of those turbines and the tracks that serve them will impose large, sustained loads on saturated floodplain peat and peat-over-soft-silt sequences: turbine cranes and their counterweights during erection, hardstand loadings during construction and operation, founded-road embankments excavated through peat to a competent stratum, floating-road sections supported by geogrid on the peat itself, and excavated material temporarily mounded in the peat deposition area pending reuse. None of those loads has been assessed for its effect on the absorptive function of the floodplain on which they sit. The Flood Risk Assessment is, as per the Hydro-G expert report, "site-specific" in the narrow sense that it considers risk to the developer's own infrastructure and does not categorically assess flood risk to the adjacent Sharavogue Bog SAC (Hydro-G Report, Appendix 3-1, S5). The construction-induced mechanism by which floodplain compaction increases flood risk to third-party lands and to the designated site — distinct from the fluvial flood risk to the development assessed at Ground 5 above — is therefore wholly absent from the application.

This is not a complaint about specific load figures or specific compaction magnitudes. The Hydro-G report offers indicative loadings for the Inspector's consideration; the applicant has provided no lift study, no ground-pressure assessment and no compaction modelling of any kind, so the specific magnitudes cannot be verified from the application and are not relied upon here. What can be stated without qualification is that the loads have not been assessed, and that the FRA does not address them. The ground is an EIA assessment-gap ground, not a quantitative-impact ground.

3.10.1 Floodplain Function Depends on the Compressibility of Saturated Peat

The hydrological function of a floodplain in absorbing peak fluvial flows depends on the pore space and storage capacity of the saturated material that comprises it. On the Ballincor site, that material is recorded by the applicant's own investigation as soft to very soft peat overlying very soft organic silts and clays. The PSRA (Appendix 8-2, p.21) records a median peat moisture content of 774% and 9 of 12 trial pits collapsing during investigation; BH02 records 12.8 m of SPT N=0 silt and clay beneath the peat at T9, with the sampler penetrating under

its own weight throughout that column (Appendix 8-1 C, BH02). Saturated peat of this kind is highly compressible: it absorbs water during flood inundation and releases it as inundation recedes, and its compressibility is the property that allows it to provide floodplain storage.

That property is lost under sustained construction loading. Compaction of saturated peat reduces pore space and destroys storage capacity; once compacted, peat does not recover its original structure on the timescale of the development's operational life. The hydrological consequence is a reduction in the absorptive capacity of the floodplain along the loaded corridors, which in turn translates into higher peak flood levels for the same fluvial flow — the inundation modelled by the FRA at the 1% AEP and MRFS scenarios is calculated against the floodplain's *uncompacted* hydrological function. The applicant has not modelled the post-construction floodplain function. It has not modelled the construction-phase compaction. It has not modelled the consequent change to flood extent at T1, T2, T8, T9 or downstream.

3.10.2 The Cranes, the Hardstands and the Access Tracks

The loading sources are not theoretical and not optional. The construction of turbines of the proposed scale requires heavy lift cranes and their counterweights, operating from hardstands constructed to support those loads. The independent review notes that hardstanding for the crane is likely to require thicker crushed stone, possibly geotextile and timber or steel mats to distribute loads, and that the crane's outriggers (or tracks, if crawler) will impose high ground pressure on the hardstand surface (Hydro-G Report, Appendix 3-1, S5). In a flood-zone wetland setting, those works require a full engineering lift study, enhanced ground-bearing provision and load-distribution measures designed for the specific saturated-substrate conditions on this site.

The application contains none of those documents. There is no lift study. There is no ground-pressure assessment. There is no load-distribution specification at T1, T2, T8 or T9 — the four turbines in Flood Zone A/B — beyond a generic hardstand detail applied uniformly across the site. The independent review confirms the same omission: the facts of how crane and ballast weights will impact the drainage systems are not assessed, and the omission presents a health hazard and risk to the public and to the WFD objectives for waterbodies in the catchment (Hydro-G Report, Appendix 3-1, S5).

The access track network compounds the loading footprint. The SPMP (Appendix 8-3, pp.9–13) describes founded tracks excavated to competent stratum, with floating tracks used where peat exceeds 1 m. Both options impose construction loading on the floodplain peat: founded tracks through excavation and embankment construction, floating tracks through direct geogrid loading of the peat surface. The published evidence on wind-farm hydrological impact identifies the access road network — not the turbine bases — as the dominant hydrological pressure on peat (Lindsay 2010, 2016; Chico et al. 2023, *Scientific Reports* 13:4540). The applicant's own SPMP describes both founded and floating road typologies but does not assess the compaction signature of either against the floodplain function on which the FRA modelling depends.

3.10.3 Piles Driven into a Stratum That Was Not Identified

The compaction issue compounds with a related ground-conditions failure that the application leaves unassessed: the piles on which the turbine foundations in this corridor depend are designed against a founding stratum that the site investigation did not confirm.

Drawing 11333-2043 (Turbine Foundation Details — Piled) shows the piled foundation in section. The pile cap/foundation depth is shown as 3.6–4.0 m below the turbine base platform. The drawing note states *"Top of foundation level varies."* With platform levels raised to 46.5 mOD and the surrounding ground at approximately 44–46 mOD in the T8/T9 valley floor (as shown on the drainage layout contours), the actual excavation from existing ground level to the base of the pile cap would reach 5–6 m+ depth before the piles themselves begin.

Fifty to seventy 300 × 300 mm precast concrete square piles are specified around the perimeter of a 24–26 m diameter base. Each pile must be driven or bored through the full peat column and then through the 12 m+ of SPT N=0 silt and clay confirmed in BH02 to reach the dense gravel at 15.80–18.80 m below ground level. The drawing carries no specification of pile length, no statement of load-bearing stratum depth, and no note that the founding conditions have been confirmed by the site investigation. Drawing notes 1 and 2 state that *"orientation varies as multiple instances on site"* and *"top of foundation level varies"* — indicating a single generic detail applied to all eleven turbine locations regardless of the dramatically different subsoil profiles between, for example, T10 (which has competent material near surface) and T9 (SPT N=0 to 12.80 m).

The hydrological significance of this is not the structural risk to the turbine itself — that is addressed at Ground 6 (Access Tracks) and Ground 8 (Peat Stability). The hydrological significance is that the pile-driving and load-transfer process disturbs the entire vertical column of saturated peat and underlying soft silt at each of the eleven turbine locations, and that the cumulative footprint of this disturbance across the four floodplain turbines has not been modelled for its effect on either the floodplain function or the downstream water table. Each pile creates a vertical pathway through the peat and into the underlying silt; piling-induced consolidation alters the pore pressure regime in the surrounding saturated material; and the construction loads applied to the pile-supported platform compress the surrounding ground over a wider footprint than the pile group itself. None of those effects has been characterised.

3.10.4 The FRA's Site-Specific Framing Does Not Reach the SAC

The Flood Risk Assessment (Appendix 9-3) models risk to the developer's own infrastructure under existing and Mid-Range Future Scenario conditions. It does not model the effect of the development on the floodplain. The Hydro-G report identifies the framing failure expressly: as is the case with most renewable energy projects, the FRA is site-specific in the sense that it considers the risk posed to the developer's own infrastructure and does not categorically assess flood risk to the Conservation Objective Sharavogue Bog SAC site adjacent (Hydro-G Report, Appendix 3-1, S5).

The asymmetry matters because the floodplain on which the development is proposed drains, in flood conditions, toward Sharavogue Bog SAC and the lagg zone at the eastern margin of the wind farm site. Ground 5 above establishes that under the Mid-Range Future Scenario T9 is 75% inundated, T1 is 40% inundated, and the R492 access track along the river is fully submerged. The same modelling does not address how the floodplain delivers that water to its downstream destinations once the compaction footprint of eleven turbine pads, three borrow pits, nineteen settlement ponds, the substation, the BESS, the peat deposition area and the access track network has reduced the absorptive capacity of the corridors through which the water moves.

A construction-induced mechanism capable of increasing flood risk to third-party lands, public roads and a Priority Habitat SAC, on a site whose own modelled flood extent already reaches the SAC interface, is a credible pathway of effect on a European site within the meaning of Article 6(3). That pathway has not been assessed.

3.10.5 Legal Standard and Conclusion

The EIA Directive (2014/52/EU) requires that an EIAR identify, describe and assess the likely significant effects of a project on the environment, including effects from construction. Construction loading on a floodplain that causes compaction of saturated peat and a consequent reduction in floodplain capacity is, on the published evidence, a foreseeable effect of a project of this type and scale on a substrate of this character. An EIAR that does not assess such an effect on a site within Flood Zone A/B, adjacent to a Priority Habitat SAC, does not discharge the competent authority's EIA duty.

The Habitats Directive Article 6(3) duty is engaged in addition. Under CJEU Case C-461/17 (*Holohan*, 2018, para.44), the Appropriate Assessment must contain complete, precise and definitive findings, free of lacunae, on every credible pathway of effect on the qualifying interests of every European site potentially affected. Sharavogue Bog SAC has been identified by the applicant's own NIS Table 6-1 (p.118) as connected to the proposed development by hydrological pathways. Construction-phase floodplain compaction is a credible pathway of effect on the hydrology of the SAC's interface zone, distinct from the dewatering and direct-drainage effects addressed at Grounds 10 and 11 below. It has not been assessed. Under CJEU Case C-323/17 (*People Over Wind*, 2018), the absence of assessment cannot be cured by assumption that mitigation will operate to prevent the effect; the mitigation must be assessed in the NIS itself, and it has not been.

This is a gap to be filled before consent, not a matter that can be remedied by post-consent condition. The construction loadings, the compaction mechanism, the pile-foundation impact and the floodplain-function consequence are all design-stage matters that bear directly on whether the project should be authorised in this location. An assessment that does not address them does not contain the information necessary to support a no-adverse-effect conclusion under Article 6(3), nor to discharge the competent authority's EIA duty under the EIA Directive.

Source: FRA App.9-3; EIAR Ch.9; SPMP App.8-3 pp.9–13; PSRA App.8-2 p.21 and Appendix 3-1 C (BH02); CEMP App.2-3 p.11; Planning Drawings 11333-2043 (Turbine Foundation Details — Piled), 11333-2033 (Track Construction Details); NIS Table 6-1 p.118; Lindsay (2010, 2016); Chico et al. (2023) Scientific Reports 13:4540; EIA Directive 2014/52/EU; CJEU C-461/17 (Holohan, 2018) para.44; C-323/17 (People Over Wind, 2018); Hydro-G Report, Appendix 3-1, S5.

3.11 Ground 8 — Peat Stability: Contradicted Data, Deferred Mitigation, and the Meenbog Precedent

The peat stability assessment on which the application relies is internally contradictory, structurally incomplete, and depends for its headline "Negligible" rating on a temporary works design that has not been prepared. The applicant's own peat stability assessor states on the face of the document that further site investigation, in situ testing and laboratory testing are required before detailed design can proceed (PSRA Appendix 8-2 S7.1). The peat slide contingency plan is conditional in its operative language. And the EIAR conclusion that significant effects are not anticipated, conditional on construction in accordance with best practice and mitigation, is precisely the form of conclusion that failed at Meenbog in November 2020.

Under CJEU C-258/11 (Sweetman, 2013, para.43), reinforced by Holohan (C-461/17) and 'People Over Wind' (C-323/17), mitigation must be sufficiently identified and assessed at the point of consent, not deferred to detailed design or to a specialist who has not been appointed. An assessment that defers its primary control measure to post-consent design, on a site whose own raw data records 9 of 12 peat trial pits collapsing during investigation, does not discharge that obligation. Each strand of the failure is addressed in turn below.

3.11.1 What the Raw Data Shows

The ground investigation (Appendix 8-1) encountered peat at 12 of the 23 trial pit locations, from near-surface to 3.80 m below ground level, with groundwater struck in the majority of pits at 1.50–3.10 m bgl. Most significantly, sidewall collapse or spalling was encountered in 9 of the 12 trial pits where peat was present (PSRA, Appendix 8-2, p.19), and multiple pits were physically terminated before reaching target depth. The investigation is therefore incomplete at the locations of greatest concern.

The applicant's own PSRA acknowledges the implication of this finding directly: "*this suggests that peat excavations at the site will likely be unstable in the short term and the likelihood of an excavation collapsing during construction is generally in the range 'likely' to 'probable' in the absence of mitigation*" (Appendix 8-2, p.22). "Likely to probable" is not a residual or marginal risk profile. It is the baseline against which the post-mitigation Negligible rating addressed below must be tested.

Source: Appendix 8-1 (TP-series logs); Appendix 8-2 (PSRA) pp.19, 22.

3.11.2 The SPMP Contradicts the Site Investigation Data

The SPMP (Appendix 8-3, S1.2.1, p.4) characterises the peat as having "a relatively low moisture content and high shear vane values", "fibrous and relatively easy to manage," with no evidence of instability noted on the site. The PSRA's own laboratory data directly contradicts this. Ten moisture content tests were carried out on peat samples. The moisture content ranged from 44% to 946%, with a median of 774% (Appendix 8-2, p.21). A median moisture content of 774% is not low by any geotechnical standard — it is the characteristic of saturated, near-fluid peat. The PSRA's narrative confirms 9 of 12 peat trial pits collapsed during testing. The SPMP's characterisation of the peat as "easy to manage" is directly contradicted by the geotechnical data in the sister document filed as part of the same application.

EIAR Chapter 8 (S8.3.1.8, p.21) similarly states there are "no known peat instability issues within the proposed wind farm site" and characterises the effects as "slight/not significant" (S8.4.2.5, p.35). These statements are directly contradicted by the PSRA's raw data. Three documents in the same application disagree with the fourth on the same basic factual question. The reader is left without a single, coherent account of the material the application proposes to excavate, load, and build on.

Source: SPMP Appendix 8-3 S1.2.1 (p.4); PSRA Appendix 8-2 (pp.19, 21); EIAR Ch.8 S8.3.1.8 (p.21), S8.4.2.5 (p.35).

3.11.3 The Negligible Rating Depends on Mitigation That Does Not Exist

The PSRA summary table (Appendix 8-2, Table 7) records eight assessment areas at "low" risk before mitigation and all areas at "negligible" after. The post-mitigation Negligible rating is the basis on which the application proceeds. It does not survive close reading.

T4, T8 and T9 carry the three highest raw hazard scores on the site — 107, 91 and 105 respectively (PSRA Appendix 3, Risk Registers, Areas 4, 8 and 9). The position at T9 is particularly significant for the receiving environment. The PSRA's quantitative stability outputs (Appendix 8-2, Appendix 3-2) return an undrained factor of safety (ODF Case 2) of 3.4, (the second-lowest on the site after T4's 1.8) on 12.8 m of soft material (BH02 records SPT N=0 to 12.8 m). T9's position 50–100 m from the Little Brosna and the Sharavogue Bog SAC places it in the worst combination of stability risk and receptor proximity on the site. The Hydro-G report identifies the same vulnerability from the field-vane data and confirms T9 as a focal point of concern (Appendix 3-1, S4.3).

The post-mitigation Negligible rating for each of T4, T8 and T9 depends on a single identical control measure (PSRA Appendix 3, Risk Registers, item 4): *"Due to size of excavation and likelihood it will be open for a long time, specific temporary works design required including temporary slope stability measures, e.g. rock berm, shallow slope angles, daily inspections."*

That specific temporary works design does not exist in the application. The Chapter 20 Schedule of Mitigation Measures contains no such design — Measure 24 commits to a geotechnical risk register, a generic granular berm or sheet piles, backfilling to ground level, and a prohibition on excavating in severe weather. That is the committed peat stability framework, in full, for a site where 9 of 12 peat trial pits collapsed during investigation.

The applicant's own technical team confirms on the face of the documents that the framework is incomplete. PSRA S7.1 recommends *"additional site investigations inclusive of in situ testing and laboratory testing in specific risk areas on the site"* before detailed design can proceed. The SWMP (Appendix 9-4, p.1) describes itself as *"a Planning Stage document … subject to further revision following Planning Permission and the Detailed Design Stage."* Consent is being sought on documents the applicant's own assessors say are not yet sufficient to support the design.

The Scottish Government (2017) framework adopted by the PSRA defines Negligible as meaning a project should *"proceed with monitoring and mitigation as appropriate"* — a designation that presupposes the mitigation has been identified and is capable of implementation. On the application as submitted, the mitigation that delivers the Negligible rating has not been identified, and the applicant's own assessors say it cannot yet be designed. Under CJEU C-258/11 (*Sweetman*, 2013, para.43), reinforced by *Holohan* (C-461/17) and by domestic authority including *Kelly v An Bord Pleanála* and *Eco Advocacy v An Bord Pleanála*, mitigation must be sufficiently identified and assessed at the point of consent. A deferred temporary works design, conditional on further investigation that has not been carried out and on a specialist who has not been appointed, cannot underpin a Negligible classification.

Source: PSRA Appendix 8-2 S7.1, Table 7, Appendix 3-2 (stability outputs), Appendix 3 (Risk Registers Areas 4, 8, 9); SWMP Appendix 9-4 p.1; EIAR Ch.20 Schedule of Mitigation Measures (Measure 24); Scottish Government (2017) Peat Landslide Hazard and Risk Assessments, Best Practice Guide; Hydro-G Report, Appendix 3-1, S4.3; CJEU C-258/11 (Sweetman, 2013) para.43; C-461/17 (Holohan, 2018) para.44.

3.11.4 The Peat Slide Contingency Plan Is Inadequate

The SPMP (Appendix 8-3, S4, p.18) responds to a peat slide event by stating that "where considered possible" action will be taken to prevent a slide reaching a watercourse, in the form of check barrages on land. There is no engineering specification for the barrages, no defined response time, no pre-positioned equipment, and no assessment of whether a barrage can be constructed in the T8/T9 flood zone — 50–100 m from the Little Brosna — before a slide reaches the river. The phrase "where considered possible" places the primary obligation on a contingency condition rather than a guaranteed measure.

For a site where T9 carries a pre-control hazard score of 105, is 75% inundated under the MRFS climate uplift adopted in the applicant's own FRA, and sits 50–100 m from the SAC boundary, a conditional "where considered possible" response is not an adequate contingency. The mechanism that would actually need to function — emergency barrage installation in the flood corridor, in conditions where the river itself is likely to be approaching or exceeding bank-full — is not designed, not specified and not tested. The plan is an aspiration, not an engineering response.

Source: SPMP Appendix 8-3 S4 (p.18); FRA Appendix 9-3; Hydro-G Report, Appendix 3-1, S4.3, S5.*

3.11.5 The Meenbog Precedent: "Trivial and Tolerable," Proven Wrong

The Hydro-G report supplies a recent and directly instructive precedent on the unreliability of best-practice assurances of peat stability (Appendix 3-1, S6). At the Meenbog wind farm in Co. Donegal, the 2017 EIAR concluded that *"No significant impacts on the soil and geology of the site of proposed development will occur,"* qualified by the further statement that *"A peat stability assessment undertaken for the site shows that the risk of peat failure is designated trivial and tolerable and that the site has an acceptable margin of safety."* In November 2020 the land slid: a civil and environmental engineering report to the EPA estimated that approximately 86,240 m^3 of peat moved, of which approximately 65,740 m^3 entered a river and reached European-protected sites, causing significant environmental damage. Donegal County Council secured an order prohibiting further works, and in April 2024 Mr Justice Holland restrained the developers from completing the "largely complete" 19-turbine project, finding that the integrity of the planning and environmental law system weighed heaviest and that the public interest in wind energy weighed "much at all" little in the balance (Irish Times, 11 April 2024; Donegal Daily, 12 April 2024; ABP Case 300460). Hydro-G further records, applying the National Trust for Scotland (2024) factor of 172 kg

CO_2eq per cubic metre of peat, that the 86,240 m^3 slide equates to the destruction of a carbon sequestration asset equivalent to approximately 14.8 million kg of CO_2 — a figure that bears directly on the Maladaptation ground later but stands here as a measure of scale.

The lesson is directly applicable. The Meenbog EIAR's central conclusion — that, *conditional on construction in accordance with the design, best practice and mitigation described in the application documents, significant individual or cumulative effects on ecology are not anticipated* — is the standard template used in EIARs for wind turbine plantations on Irish peat. It is the same *conditional-best-practice* template used in the Ballincor EIAR. The Meenbog outcome demonstrates that the conditional template cannot be relied upon: best practice and mitigation as described in the application did not protect the receiving European-protected sites.

The position, that one cannot rely on best construction practice and mitigation to protect Conservation Sites, is consistent with the most recent Irish case law on the point (Hydro-G Report, Appendix 3-1, S6). Deep excavations in saturated cutover peat adjacent to an active drainage network and a Poor-status river require a detailed, site-specific contingency, not a conditional aspiration.

Source: Hydro-G Report, Appendix 3-1, S6; ABP Case 300460 (Meenbog Windfarm); Irish Times (11 April 2024); Donegal Daily (12 April 2024); National Trust for Scotland (2024); CJEU C-261/18 Commission v Ireland (12 November 2019); Lindsay & Bragg (2005).

3.11.6 Legal Standard and Conclusion

Under Article 6(3) of the Habitats Directive, the competent authority may grant consent only after ascertaining, beyond reasonable scientific doubt, that the project will not adversely affect the integrity of the European site (Case C-127/02 Waddenvereniging, 2004). Adverse effect on integrity includes any impact that prevents the lasting preservation of the site's constitutive characteristics (Case C-258/11 Sweetman, 2013, para.43). The assessment must contain complete, precise and definitive findings free of lacunae (Case C-461/17 Holohan, 2018, para.44). Mitigation measures must be sufficiently identified and assessed within the assessment itself; they cannot be assumed to work and cannot be deferred to post-consent design (Case C-323/17 *People Over Wind*, 2018). Domestic authority — including Kelly v An Bord Pleanála and Eco Advocacy v An Bord Pleanála — applies the same standard.

The Ballincor peat stability case fails each limb of that test. The raw site investigation data records short-term excavation instability as "likely to probable" in the absence of mitigation. The SPMP characterisation of the peat as "easy to manage" is contradicted by the PSRA's own moisture-content and collapse data and by EIAR Chapter 8's parallel "no instability" assertion. The post-mitigation Negligible rating at the three highest-scoring turbine locations (T4, T8, T9) turns on a single deferred control measure — a "specific temporary works design" that does not exist in the application — and the PSRA itself states at S7.1 that further site investigation, in situ and laboratory testing are required before detailed design can proceed. The peat slide contingency plan is conditional in its operative language ("where considered possible") and contains no engineering specification capable of being assessed. And the closest factual precedent in Irish wind-on-peat development — Meenbog, with an EIAR conclusion of "trivial and tolerable" risk that the ground proved wrong in November 2020 — establishes that a conditional-best-practice assurance is not a substitute for designed mitigation in an Article 6(3) assessment.

An Article 6(3) determination of no adverse effect on integrity, in respect of a priority habitat SAC immediately adjacent to a site where 9 of 12 peat trial pits collapsed during investigation and the highest-scoring turbines rely on an undesigned temporary works specification, does not satisfy the standard set by Waddenvereniging, Sweetman, Holohan and People Over Wind. The applicant has waived Article 6(4) IROPI (NIS p.4). Full Article 6(3) compliance must be demonstrated on the application as submitted. On the peat stability question, it is not.

Source: CJEU C-127/02 (Waddenvereniging, 2004); C-258/11 (Sweetman, 2013) para.43; C-461/17 (Holohan, 2018) para.44; C-323/17 (People Over Wind, 2018); Kelly v An Bord Pleanála; Eco Advocacy v An Bord Pleanála; PSRA Appendix 8-2 S7.1, Tables 3 and 7, Appendices 2 and 3; SPMP Appendix 8-3 S1.2.1, S4; EIAR Ch.8 S8.3.1.8, S8.4.2.5; EIAR Ch.20 (Measure 24); Hydro-G Report, Appendix 3-1, S4.3, S6; full reference list at Appendix [X] of this submission.

3.12 Ground 9 — The Shinrone Groundwater Body and Karst Risk

The proposed wind farm site is located predominantly within the Shinrone Groundwater Body (GWB, code IE_SH_G_205). Appendix 9-1 (p.12) records that a limited area of Pure Bedded Limestone in the northern part of the GWB is classified as Rkd — a Regionally Important Karstified Aquifer dominated by diffuse flow. EIAR Chapter 9 (Table 9-12) confirms the same Rkd classification for the Terryglass Formation and Visean Limestones underlying part of the site.

Karst limestone is characterised by dissolution features — sinkholes, solution pipes and conduits — that can be concealed beneath peat and glacial deposits. Their significance here is twofold: open excavations that penetrate through peat into the karst substrate create a direct vertical pathway between surface contamination and the aquifer; and the Shinrone GWB connects hydraulically to Sharavogue Bog SAC, which is designated for groundwater-dependent habitats.

The entirety of the karst risk assessment in the submitted application is a single sentence in EIAR Chapter 8 (p.8-35): "No karst was identified during the site walkovers." A walkover survey over peat and cutover bog cannot identify sub-peat dissolution features.
In EIAR Chapter 8, Section 8.3.1.7 Geohazards, page 8-21, the applicant acknowledges "While karst features have not been encountered within the proposed wind farm site boundary, it is possible that karst features (highly weathered zones) are located below the proposed wind farm site extents which have not been identified due to the thick cover of peat and subsoils." No geophysical investigation or no specialist dissolution feature assessment was carried out.

The applicant relies on the GSI groundwater vulnerability classification, under which the site is mapped as predominantly "low vulnerability." That classification is misleading in this context. The low-vulnerability rating is a direct function of the depth of peat overlying the bedrock — it is the peat itself that provides the protective barrier. Critically, vulnerability under the GSI methodology is assessed against a surface-level pollution event percolating downward through an intact soil profile. It is not assessed against the scenario this development creates. The installation of access tracks, turbine foundations and cable trenching will excavate through that protective peat layer, removing the very material on which the low-vulnerability classification depends. Once the peat is cut, foundations are piled and trenches are opened, a direct vertical pathway is created from the works into a Regionally Important Karstified Aquifer, bypassing the natural attenuation the classification

assumes. The assessment therefore applies a protective rating to a site condition that the project is designed to destroy.

This analysis is supported by the independent hydrogeological review prepared by Dr Pamela Bartley (Hydro-G, June 2026), whose doctorate is in karst groundwater impact and whose field practice is built on the Source–Pathway–Receptor risk-assessment model — the same framework the applicant purports to apply in EIAR Chapter 9. Dr Bartley's review identifies the GSI-mapped pocket of gravels and the connected esker within the application area as a hydrogeological "window" through which groundwater more readily emerges from the underlying bedrock, noting that a peat-to-gravel boundary is a recognised setting for groundwater emergence and that the mapped terminus of the esker coincides with the commencement of a surface-water system. Her reasoning reinforces the central objection advanced here: that the protective function on which the GSI low-vulnerability rating depends is a property of the intact subsoil profile, and that the development is designed to remove precisely that profile at the points of greatest hydrogeological sensitivity. Where the applicant's vulnerability assessment treats the mapped subsoil cover as a fixed protective barrier, Dr Bartley's review confirms that the construction works — excavation through peat and subsoil, and the imposition of construction loads at the margin of the gravel/esker feature near T1 to T4 — will alter the very subsurface conditions the classification assumes to be stable.

An independent specialist in karst hydrogeology has therefore reached the same conclusion as this submission: the application applies a protective rating to a site condition that the proposed works are designed to destroy, in a setting where a regionally important karstified aquifer (Rkd) lies beneath, and does so without the dissolution-feature or connectivity assessment that the setting requires.

Source: Bartley, P. (Hydro-G, Appendix 3-1), EIAR Ch.8 Section 8.3.1.3 (p.8-13), Section 8.3.1.7 (p.8-21); EIAR Ch.9 Table 9-12; Appendix 9-1 (p.12).

3.13 Ground 10 — Hydrogeological Connectivity to Sharavogue Bog SAC: Unbridged Lacuna in the Appropriate Assessment

Sharavogue Bog SAC sits approximately 10 m from the proposed wind farm boundary at its closest point. The site is a Priority Habitat (7110* Active Raised Bog) SAC currently in the most hydrologically sensitive phase of a State-funded restoration programme. The fundamental threshold question for the Article 6(3) determination is whether there is a hydrogeological pathway between the development and the SAC. If such a pathway exists, the source–pathway–receptor chain is established, the construction works become potential drivers of effect on integrity, and the certainty required by *Waddenzee* / Waddenvereniging cannot be reached without quantitative engagement with that pathway.

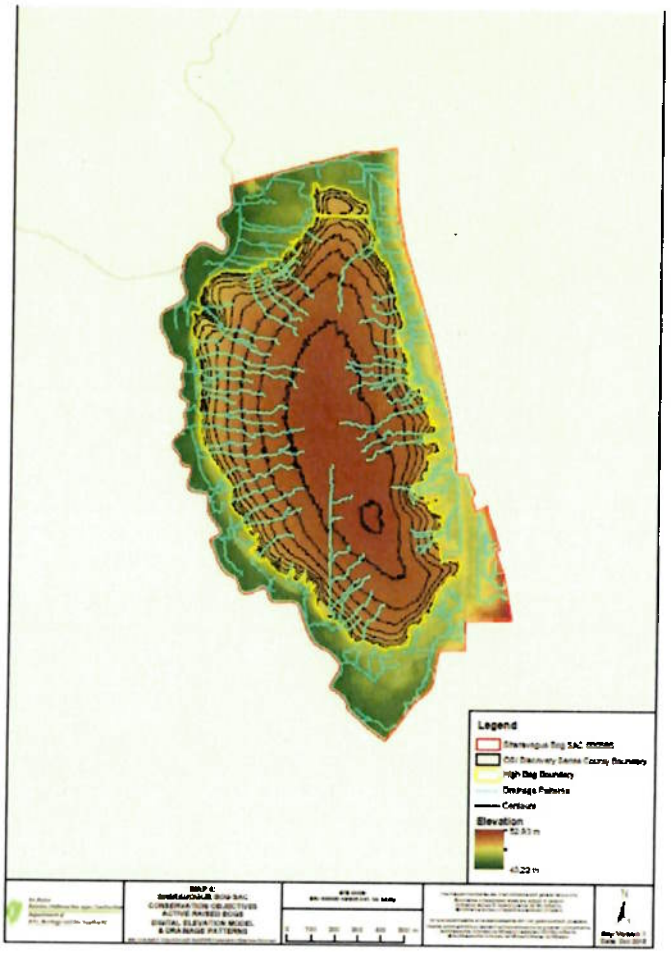
The applicant concludes there is "no hydrogeological connection" to the SAC. That finding is presented at Appendix 9-1 S2.2, supported by the assertion that the Shinrone GWB is only a Locally Important Aquifer (Ll) and that flow paths are short, and reproduced in NIS Table 6-2 (p.120) as the basis on which "no potential for adverse effects" was identified.

The "no connection" finding is not supported by the evidence on the applicant's own submission file. It is contradicted by the NIS's own connectivity assessment (Table 6-1), by the applicant's own EIAR record of physical evidence at the eastern margin, and by the GSI subsoil mapping inside the applicant's own red line. Two distinct hydrogeological pathways are documented in the application file. Neither has been characterised in the assessment. All are reviewed below. The applicant's conclusion of "no adverse effect on integrity" therefore rests on an unbridged lacuna of the kind that CJEU C-461/17 (*Holohan*, 2018, para.44) expressly prohibits.

3.13.1 The Vanishing Pathway: Table 6-1 to Table 6-2

NIS Table 6-1 (p.118) explicitly identifies hydrological connectivity to Sharavogue Bog SAC via the Little Brosna_040 and drainage ditches and records a groundwater pathway via the Shinrone groundwater body to a SAC designated for groundwater-dependent habitats: "a potential for adverse effect was therefore identified." This conclusion is strongly supported by the image below.

Figure 3.17: Sharavogue Bog Hydrological Connectivity



NIS Table 6-2 (p.120) then states under Water Quality: "No pathway to impact on these parameters was identified from the proposed project and so there is no potential for adverse effects."

No mitigation measure, engineering control, or changed hydrogeological assumption bridges these two conclusions. The groundwater pathway identified in Table 6-1 disappears in Table 6-2 without explanation. This is the lacuna that CJEU C-461/17 (*Holohan*, 2018, para.44) prohibits: an Appropriate Assessment must contain complete, precise and definitive findings free of gaps. The independent review reaches the same conclusion, identifying the source–pathway–receptor chain as established and the information before the Commission as contradictory (Hydro-G Report, Appendix 3-1, S4.2).

A further inconsistency arises within EIAR Chapter 9 itself. Table 9-13 (p.9-35) records Sharavogue Bog SAC — immediately adjacent at 0.1 km — as having "limited" hydrological connectivity, while confirming full hydrological connectivity to the downstream SPAs and

SACs via the same watercourse. The qualifier "limited" applied to the closest site but not to sites 9–20 km downstream is unexplained and unsupported.

The gap between Table 6-1 and Table 6-2 is not merely a logical inconsistency on the page. On the ground, two distinct hydrogeological pathways physically connect the wind farm site to Sharavogue Bog SAC. The first is the near-surface acrotelm pathway, evidenced by the applicant's own record of calcareous fen upwelling at the eastern margin — a pathway the applicant has failed to characterise (S3.10.2 below). The second is the mapped gravel-and-esker window lying within the proposed red-line application area, which the applicant has circled out and excluded from the assessment area (S3.10.3 below). For Table 6-2 to stand, both pathways would have had to be characterised and ruled out. Neither has been.

Source: NIS Table 6-1 (p.118); NIS Table 6-2 (p.120); EIAR Ch.9 Table 9-13 (p.9-35); CJEU C-461/17 (Holohan, 2018) para.44; Hydro-G Report, Appendix 3-1, S4.2.

3.13.2 First Unassessed Pathway: The Near-Surface Acrotelm

The applicant's case for "no connection" relies on the bedrock aquifer being a Locally Important Aquifer with low transmissivity (Appendix 9-1 S2.2). The bedrock aquifer is not the dominant pathway. Surface and near-surface flow within the cutover/lagg fringe of Sharavogue Bog — the precise zone where the wind farm site meets the SAC — is the realistic pathway. It is governed by acrotelm hydraulic conductivity, not bedrock permeability.

Direct physical evidence of this pathway is in the applicant's own submission. EIAR Chapter 9 (p.9-34) records calcareous fen vegetation on the eastern margin of the wind farm site — the interface zone between the site and Sharavogue Bog SAC: "...along the eastern margin of the proposed wind farm site, fen peat is present and there is upwelling of base rich water that supports carr woodland and calcareous fen vegetation."

Calcareous fen occurs only where base-rich groundwater upwells at or near the surface. Its presence at the interface between the wind farm footprint and the SAC is direct physical evidence of near-surface groundwater connectivity flowing from the wind farm area toward the SAC. The evidence is in the applicant's own submission. It was not engaged with in the NIS integrity assessment.

What that calcareous fen connects to on the eastern margin of Sharavogue Bog is the central reason this matters. The NPWS documentation records the lagg zone at Sharavogue

— the transitional fringe of upwelling base-rich groundwater supporting carr woodland and calcareous fen vegetation — as one of the best developed in the country, and unique in the context of Irish raised bogs. Areas of wet lagg vegetation of this character are described as very rare in Western Europe. This is not a peripheral feature of the SAC. It is the primary element of local distinctiveness formally identified in the NPWS Site Synopsis. It is entirely dependent on the interactions between groundwater, surface water, and adjacent land use — making it inherently sensitive to precisely the kind of near-surface hydrological disturbance that the applicant's own EIAR records as present at the site boundary.

The Hydro-G report (Appendix 3-1) provides further geological corroboration that the near-surface system is connected across the boundary. The GSI subsoil mapping records the same material — "Cut over raised peat" — on both banks of the Little Brosna, so the river hydrologically links identical subsurface systems on either side rather than separating them, binding the development lands and Sharavogue Bog SAC into one connected unit (Hydro-G Report, Appendix 3-1, S1, S4.4). The river is not a flow boundary; it is a conduit through a single connected acrotelm system.

The applicant's own Spoil and Peat Management Plan (Appendix 8-3, S1.2) describes the upper peat profile as acrotelm — the living layer, generally of high permeability, in which the water table fluctuates and through which the dominant lateral water movement in raised bogs occurs. The applicant's description of the acrotelm is correct; it is then ignored. The hydrogeological assessment proceeds as if the bedrock aquifer were the only pathway and concludes "no connection" on that basis.

The 100 m Zone of Influence used by the NIS (S5.2.1.3) is derived from bedrock aquifer modelling. This is the wrong model for the near-surface peat water table system responsible for the upwelling. Peat water tables are shallow, laterally mobile, and directly responsive to drainage modification. A ZoI derived from bedrock aquifer behaviour cannot assess near-surface peat water table effects in this interface zone. (The independent contradiction of the 100 m ZoI value itself by the published Irish field evidence is addressed at Ground 8 S3.11.3 below.)

Source: EIAR Ch.9 p.9-34; Appendix 9-1 S2.2; Appendix 8-3 S1.2; NPWS Site Synopsis: Sharavogue Bog SAC 000585 (2017); NIS Table 6-1 and Table 6-2; NIS S5.2.1.3; Hydro-G Report, Appendix 3-1, S1, S4.4, S4.2.

3.13.3 Second Unassessed Pathway: The Excluded Gravels and Esker

The Hydro-G report (Appendix 3-1) identifies a second documented pathway; a mapped granular hydrogeological feature, a pocket of Gravels and a connected Esker lying within the proposed red-line application area, which the applicant has circled out and treated as excluded. This represents a distinct, qualified hydrogeological pathway. Its significance is hydrogeological, not cartographic: a peat-to-gravel boundary is a recognised setting for groundwater emergence, and the applicant's own cited authority (GSI, 2003b) identifies the Birr gravels as capable of focusing flow and influencing the location of springs. This feature is sufficiently distinct, and the failure to assess it sufficiently serious, that it is addressed as a separate ground at **S3.14** below.

For the purposes of this ground, the point is narrow but decisive: for the Table 6-2 conclusion of no hydrogeological connection to stand, **both** documented pathways — the near-surface acrotelm pathway evidenced at the eastern margin (§3.13.2 above) and the excluded gravel-and-esker window (§3.14 below) — would have had to be characterised and ruled out. Neither has been. The conclusion of "no adverse effect on integrity" therefore rests on an unbridged lacuna of the kind that CJEU C-461/17 (*Holohan*, 2018, para.44) expressly prohibits.

3.13.4 Receptor Sensitivity: Sharavogue Bog in Active Restoration

The connectivity question takes on particular force because of the state of the receptor. Sharavogue Bog SAC is not a static system in stable condition. The site is in the most hydrologically sensitive phase of a State-funded restoration programme. Over 400 rewetting dams were installed in 2021. 26.4 km of drains — 90% of those identified as requisite — have been blocked. Water tables across the SAC are higher than at any point since restoration began. Peat-forming conditions are being actively re-established.

The formal conservation objective is to restore Active Raised Bog from 25.8 ha to 40.9 ha — a target that remains unmet. Slender Cottongrass (*Eriophorum gracile*), a Flora (Protection) Order 2015 species, is recorded in the lagg, occurring only where a stable base-rich water supply is maintained. Atmospheric nitrogen deposition at the site already stands at approximately 13.2 kg N/ha/yr against a conservation target of 5 kg N/ha/yr — an existing exceedance of 163% above critical load.

The lagg zone is the specific feature most directly exposed by the connectivity failure. The acrotelm pathway evidenced at the eastern margin (S3.10.2 above) discharges into precisely

this transitional fringe. The Conservation Objectives for habitat 7110* set quantitative targets in centimetres for water level and define the lagg/transitional area as a specific protected attribute (NPWS, 2015). The hydrogeological pathway that has not been characterised discharges to the very attribute that the Conservation Objectives are designed to protect.

In a system with these characteristics, the level of certainty required to demonstrate no adverse effect on integrity is correspondingly higher, not lower. An assessment that cannot even establish whether the connecting pathways exist cannot discharge the Article 6(3) burden in respect of a priority habitat SAC in active restoration.

Source: NPWS (2015) Conservation Objectives: Sharavogue Bog SAC 000585; NPWS Site Synopsis (2017); App.6-1 S4.2.4; EIAR Ch.10 S10.5.2.

3.13.5 Legal Standard and Conclusion

Under Article 6(3) of the Habitats Directive, the competent authority may grant consent only after ascertaining, beyond reasonable scientific doubt, that the project will not adversely affect the integrity of the European site (Case C-127/02 *Waddenvereniging*, 2004). Adverse effect on integrity includes any impact that prevents the lasting preservation of the site's constitutive characteristics (Case C-258/11 *Sweetman*, 2013, para.43). The assessment must contain complete, precise and definitive findings, free of lacunae, and must dispel all reasonable scientific doubt (Case C-461/17 *Holohan*, 2018, para.44). Mitigation measures cannot be assumed to work; they must be assessed in full within the NIS itself (Case C-323/17 *People Over Wind*, 2018).

The constitutive characteristic of habitat 7110* at Sharavogue Bog SAC is its hydrology, and the lagg zone is the formally identified element of local distinctiveness. Both depend on the maintenance of the near-surface groundwater regime at the site boundary. Whether the proposed development is hydrogeologically connected to that regime is the threshold question for the Article 6(3) determination.

The applicant has answered that question by reproducing a "no connection" finding from a single sentence in Appendix 9-1 S2.2 into NIS Table 6-2, while the applicant's own NIS Table 6-1 records a connecting pathway, the applicant's own EIAR Chapter 9 records physical evidence of upwelling at the eastern margin, and the applicant's own subsoil mapping records a granular hydrogeological window within the red line. Two distinct physical pathways are documented in the application file. One has been failed to characterise; the

other has been excluded from the assessment area by being circled out. The "no connection" finding has been reached without either pathway being assessed.

An Article 6(3) determination of no adverse effect on integrity, in respect of a priority habitat SAC in active restoration, reached without the threshold question of hydrogeological connectivity having been properly addressed, contains the lacuna that *Holohan* prohibits. The applicant has waived Article 6(4) IROPI (NIS p.4). Full Article 6(3) compliance must be demonstrated on the application as submitted. On the connectivity question alone, it is not.

Source: CJEU C-127/02 (Waddenvereniging, 2004); C-258/11 (Sweetman, 2013) para.43; C-461/17 (Holohan, 2018) para.44; C-323/17 (People Over Wind, 2018); NPWS (2015) Conservation Objectives: Sharavogue Bog SAC 000585; Hydro-G Report, Appendix 3-1.

3.14 Ground 11 — The Excluded Gravels-and-Esker Window: A Mapped Groundwater Conduit Left Unassessed

This ground is taken directly from the Hydro-G report (Appendix 3-1). It concerns a hydrogeological feature that the applicant has mapped within its own submission, placed the heaviest construction loading of the project beside, and then removed from the assessment altogether. It is independent of the connectivity contradiction at Ground 10 above: even setting aside the Table 6-1 / Table 6-2 inconsistency, the application contains a mapped granular pathway toward the SAC that has never been characterised, modelled, or ruled out.

3.14.1 The Feature and Its Significance

The independent review identifies a pocket of mapped Gravels and a connected Esker lying within the proposed red-line application area, which the applicant has circled out and treated as excluded (Hydro-G Report, Appendix 1, S1, S4.4, S8(3)). The significance is hydrogeological, not cartographic. Sands and gravels provide a window in the subsoil through which groundwater can more readily emerge from the underlying bedrock; a peat-to-gravel boundary is a recognised setting for substantial groundwater emergence; and the mapped terminus of the esker coincides with the commencement of a surface-water system, which may be a groundwater spring.

The hydrogeological significance of this feature is not a matter of inference. It is stated by the applicant. EIAR Chapter 8 (S8.3.1.3, p.8-13) records that a section in the northeast of the proposed wind farm, approximately 0.4 km east of Turbine 2, comprises glaciofluvial sands and gravels and esker sands and gravels. The same section confirms the subsoil units present include gravels derived from limestones (GLs) and eskers comprised of gravels of basic reaction (BasEsk), described as a pocket of gravels derived from limestone and esker sands and gravels in the northeast of the proposed wind farm. This is a mapped granular deposit set within an otherwise peat- and till-dominated subsoil sequence.

EIAR Chapter 9 (S9.3.3.3, p.9-30) then records, citing GSI (2003b), that the Birr gravels can contribute storage to the bedrock aquifers and can also focus flow and influence the locations of springs in some cases. A body of sands and gravels in this setting is a recognised hydrogeological window: a higher-permeability pathway through which groundwater stored in, or transmitted by, the bedrock can emerge at or near the surface.

The applicant's own text identifies eskers and gravels as features capable of focusing flow and controlling spring locations.

3.14.2 Three Points Specific to This Application

First, the feature is granular, not low-permeability. The entire "no connection" case rests on the assertion of deep low-permeability soils and a single, untested hydraulic conductivity of $<1 \times 10^{-8}$ m/s (addressed at Ground 8, §3.11.2(a)–(b)). Sands and gravels are, by definition, not low-permeability material. Their presence within the red-line area is a direct, mapped exception to the uniform low-permeability assumption on which the entire hydrogeological conclusion depends. The applicant cannot apply a site-wide low-permeability conceptual model while its own subsoil mapping records a granular aquifer-type deposit within that same site.

Second, the feature sits at the T1–T4 cluster, where the heaviest construction loading and the highest groundwater vulnerability coincide. The NIS records groundwater vulnerability as High and Extreme, particularly to the north of the wind farm site in the vicinity of T1 (Appendix 1, S4.1.2.3), reflecting bedrock at or within 1 m of the surface. T1–T4 are the turbines on which piling is anticipated through deep peat (Ground 8, §3.11.2(d)), and the borrow pits and turbine foundations in this part of the site will impose construction loads and excavation at the margin of this granular feature. The applicant proposes to load and excavate at the boundary of a mapped higher-permeability deposit, in the zone of highest mapped groundwater vulnerability, without assessing the hydrogeological behaviour of that deposit.

Third, and most directly relevant to the Article 6(3) determination, the esker and gravel pocket lies on the northeast side of the site, the side that drains toward the Little Brosna River and the Sharavogue Bog SAC interface. The applicant's WFD Assessment (Appendix 9-1, S2.1) confirms that the streams in the northeast portion of the site traverse that portion before merging with the Little Brosna River at the site's northeast corner. A higher-permeability pathway in precisely this location is capable of providing the connectivity that the bedrock-only conceptual model assumes away.

3.14.3 Legal Standard and Conclusion

The applicant has mapped, within its own submission, a granular hydrogeological feature that its own cited authority (GSI, 2003b) identifies as capable of focusing flow and controlling the location of springs; has placed the heaviest construction loading of the project at its margin; and has not subjected it to any hydrogeological assessment. The feature does not appear in the source–pathway–receptor analysis. It is not addressed in the NIS connectivity assessment. The drawdown and dewatering analysis does not consider it. The conclusion of no hydrogeological connection in NIS Table 6-2 is reached without the granular pathway recorded in the applicant's own subsoil mapping ever having been characterised, modelled, or ruled out.

Under CJEU C-461/17 (*Holohan*, 2018, para.44), an Appropriate Assessment must contain complete, precise and definitive findings, free of lacunae. A mapped granular deposit, of recognised hydrogeological significance, situated at the loaded margin of the development and on the drainage side facing the SAC, left entirely unassessed, is precisely such a lacuna. The applicant has waived the Article 6(4) IROPI derogation (NIS p.4); full Article 6(3) compliance must be demonstrated on the application as submitted, and on this pathway it has not been.

Source: EIAR Ch.8 S8.3.1.3 (p.8-13); EIAR Ch.9 S9.3.3.3 (p.9-30) citing GSI (2003b); Appendix 9-1 S2.1; NIS Appendix 1 S4.1.2.3; NIS Table 6-1, Table 6-2; Hydro-G Report, Appendix 1, S1, S4.4, S8(3); CJEU C-461/17 (Holohan, 2018) para.44.

3.15 Ground 12 —Construction Dewatering and the Water Table Supporting Sharavogue Bog SAC: Quantitative Assessment Absent

This ground is independent of Ground 10. Even assuming that no hydrogeological connection exists between the wind farm site and Sharavogue Bog SAC, the assessment of construction-phase dewatering and drawdown is independently deficient: the analytical work required to dispel reasonable scientific doubt has not been carried out.

The dewatering programme is substantial; 11 turbine foundations to 4–5 m bgl, three borrow pits to 4 m bgl, a 110 kV substation and BESS, plus cut-off drains, watercourse crossings and cable trenches, against a measured peat water table of 0.4–1.5 m bgl (EIAR S9.3.3.3). Excavations will therefore operate 2.5–4.6 m below the water table, simultaneously, across a multi-season construction programme. Dewatering is acknowledged as necessary for turbine foundations and borrow pits (EIAR S9.4.4.3).

The "no significant effect" conclusion rests on two assertions: a <5 m drawdown at T8/T9 from "low permeability material" with hydraulic conductivity <1 × 10^{-8} m/s (EIAR S9.4.4.3), and a 100 m groundwater Zone of Influence applied project-wide (NIS S5.2.1.3). Neither is supported by quantitative analysis.

3.15.1 No Quantitative Dewatering or Drawdown Modelling

The submission contains no drawdown calculation, no numerical groundwater model, no pumping-test or slug-test data, no hydraulic conductivity tests on the peat, and no piezometric baseline at the receptor. The seven rounds of groundwater monitoring (EIAR S9.2.4, S9.3.3.3) record peat water table elevations on the wind farm site only; there is no monitoring point inside the SAC, the lagg, or any transect toward it.

The three rotary boreholes best placed to characterise vertical connectivity — BH02 at T9, BH03 near T4, BH04 near the central infrastructure — were drilled with water flush and backfilled on completion, each log carrying the standard "unable to determine groundwater strikes due to drilling techniques used" remark (Appendix 8-1 C). The opportunity to install nested piezometers — standard EIA practice for a peatland site adjacent to a raised bog SAC — was not taken.

CIRIA C750 (2016), cited by the applicant at EIAR S9.9, requires drawdown calculation for each open excavation, combined into a cumulative drawdown footprint, validated against site-specific permeability and storage parameters. None of that work has been done. The conclusion that the SAC is hydrologically unaffected — the single most consequential finding

in the NIS for habitat 7110* — has been reached without the quantitative work the applicant's own cited guidance requires.

Source: EIAR Ch.9 S9.2.4, S9.3.3.3, S9.4.4.3, S9.9; NIS S5.2.1.3; Appendix 9-1 S2.2; Appendix 8-1 C (BH02–BH04); CIRIA C750 (2016).

3.15.2 The Five-Fold Flaw in EIAR S9.4.4.3

Section 9.4.4.3 appears to carry the entire "no significant effect on groundwater flow" conclusion. Beyond the 100 m ZoI (S3.11.3 below) and the connectivity question (Ground 10), it contains five further assertions, none supported by the data on file.

1. **"Deep low permeability soils occur at T1 to T11" is contradicted by the applicant's own ground investigation.** The PSRA (Appendix 8-2) records peat at T2 (0.45 m), T3 (>2.1 m, cutover bog), T4 (4.2 m peat / 5.3 m very soft in BH03), T5 (1.2 m), T8 (3.2 m peat / 3.1 m peaty silt) and T9 (3.2 m peat / >3.7 m peaty silt / 12 m of SPT N=0 material in BH02). The BESS substation is 0.85 m peat over clay, gravel and sand (TP14/TP15/GA16). Borrow Pit C (BH04) is firm CLAY, SAND. Sand and gravel are not low permeability; peat is not low permeability — the applicant's own Peat Management Plan (Appendix 8-3, S1.2) describes acrotelm peat as "generally of high permeability." The gravel-and-esker pocket within the red-line area (Ground 7 S3.10.3) is a further direct contradiction.
2. **The "<1 × 10^{-8} m/s" value is never tested and is applied to the wrong layer.** No falling-head, rising-head, slug or pumping test result is presented anywhere in Chapter 9, Appendices 9-1, 9-2 or the Site Investigation Report (Appendix 8-1). The figure is a bare assertion. Even taken at face value for the silty clay, it does not characterise the pathway that matters — the lateral acrotelm/catotelm pathway through the peat itself. Reported hydraulic conductivity values for Irish raised bog peat span approximately five orders of magnitude (Regan et al. 2019, *Water Resources Research* 55(7): median 2.22 × 10^{-3} m/day across 46 piezometers at Clara Bog).
3. **">50 m to the west of the Little Brosna and Sharavogue Bog SAC" is a geometry statement, not a hydrogeological one.** The peat acrotelm does not respect a watercourse as a flow boundary. GSI subsoil mapping records the same material ("Cut over raised peat") on both banks of the Little Brosna, so the river hydrologically links identical subsurface systems on either side rather than separating them (Hydro-G Report, Appendix 3-1, S1, S4.4).
4. **The conclusion that piling produces "no likely significant effects" ignores the design specified elsewhere in the submission.** EIAR Ch.2 S2.6.3 and

Planning Drawings 11333-2042/2043 specify, per piled turbine, up to 60 × 300 mm driven concrete piles or up to 16 × 1,200–1,600 mm bored piles to ~20 m depth. Piling is anticipated at T3, T4, T8 and T9 — the four turbines on deep peat. At T9, a 20 m pile will penetrate the full 12 m of SPT N=0 material in BH02 and into the underlying gravels. CIRIA C750 treats piling through compressible soils as requiring quantitative assessment of effects on the surrounding hydraulic regime. That assessment has not been done.

5. **The "temporary decrease in water levels" is undefined and is not exempt from the *Weser* obligation.** Open turbine excavations typically remain dewatered for 4–8 weeks. Across 11 turbines, three borrow pits, a substation and a BESS sequenced through the CEMP construction programme, cumulative active dewatering is likely to extend 12–18 months. Under Case C-461/13 *Weser* (2015) paras 67, 69, deterioration of a quality element is prohibited even where short-lived; "temporary" is not a defence. Case C-461/17 *Holohan* (2018) para.44 requires duration and magnitude to be characterised, not asserted.

Source: EIAR Ch.9 S9.4.4.3; EIAR Ch.2 S2.6.3, S3.1.1; Planning Drawings 11333-2042/2043; PSRA App.8-2 S5; Appendix 8-1 (TP02–TP20, BH02–BH04); SPMP App.8-3 S1.2, S2.1; App.6-1 S4.2.4; CIRIA C750 (2016); Regan et al. (2019); Hydro-G Report App.1; CJEU C-461/13 (Weser) paras 67, 69; C-461/17 (Holohan) para.44.

3.15.3 The 100 m Zone of Influence Is Contradicted by the Peer-Reviewed Irish Evidence

The 100 m groundwater ZoI is asserted in a single sentence at NIS S5.2.1.3 and applied to all attributes of all qualifying interests. Where dewatering and drainage effects on Irish raised bogs have been measured, impact distances are consistently well beyond 100 m.

Regan, Flynn, Gill, Naughton & Johnston (2019), *Water Resources Research* 55(7): 6153–6168, on Clara Bog (Co. Offaly, ~35 km north of Sharavogue), the directly comparable case, measured water-table drawdown at ~50 m from a marginal drain, piezometric-head drawdown reaching **150–250 m** into the high bog where peat overlies a till mound, and subsidence detectable over **900 m** from the drain. Where peat sits on more permeable substrate, drawdown propagates substantially further than a simple permeability argument predicts.This is reinforced by

- Lensen (1991), the Irish–Dutch Raised Bog Study at Clara and Raheenmore, which recorded peripheral subsidence of ~5 cm/yr in the first 100–200 m from marginal drains;

- Lindsay (2010, IUCN UK Peatland Programme Briefing Note 3), which warns that the assumption drainage effects are confined to drain margins is one of the field's standard misconceptions, and notes that a 15 cm fall in water table can shift an entire vegetation assemblage out of its zone — directly material because the NPWS Conservation Objective for water levels at Sharavogue is set in centimetres;
- Holden (2005), *Phil. Trans. R. Soc. A* 363: 2891–2912, on lateral peat pipe-flow networks propagating signals over hundreds of metres.

None of this is engaged with anywhere in the applicant's submission. The 100 m figure is not consistent with the published Irish field data and is in any event derived from bedrock aquifer reasoning rather than from the near-surface peat water table system within which Sharavogue's lagg sits (see Ground 7 S3.10.2).

Source: NIS S5.2.1.3; Regan et al. (2019); Lensen (1991); Lindsay (2010); Holden (2005); NPWS (2015) Conservation Objectives: Sharavogue Bog SAC 000585.

3.15.4 Cumulative Dewatering Is Not Modelled

The applicant treats the <5 m drawdown at T8/T9 as if those were the only open excavations. They are not. The simultaneous open-excavation footprint includes 11 turbine foundations (4–5 m bgl), 3 borrow pits (4 m bgl, drawings 11333-2071/2072/2073), the 110 kV substation and BESS foundations, the cut-off drains flanking founded and floating road sections (App.8-3 S2.2), and watercourse crossings and cable trenches. The cumulative drawdown signature is not calculated anywhere.

Sharavogue Bog SAC will not be assessed against one turbine. It will receive the integrated hydrological signature of the entire construction programme, operating simultaneously, over multiple seasons. That signature has not been calculated.

3.15.5 The Applicant's Own Cited Guidance Requires More

Four documents cited in the applicant's own submission argue for substantially more rigorous assessment than has been carried out:

- **Kilroy et al. (2008)**, *A Framework for the Assessment of GWDTEs under the WFD*, EPA Report Series No. 12 (cited at EIAR S9.9). Raised bogs are expressly identified as GWDTEs. The framework requires identification of the supporting groundwater body, quantitative pressure assessment, and demonstration that water-level and water-chemistry needs are met. None has been done for Sharavogue.

- **NatureScot/SNH (2019, updated 2024)**, *Good Practice during Wind Farm Construction* (cited in CEMP App.2-3). Requires the EIA to demonstrate that wind farm design has taken into account site hydrology and GWDTE identification, and that hydrological connectivity be maintained. Peat depth surveys at <100 m centres are recommended; the applicant's probing density does not meet this at the interface zone.
- **CIRIA C750 (2016)** (cited at EIAR S9.9), discussed above.
- **Mackin et al. (2017)**, *Best Practice in Raised Bog Restoration in Ireland*, NPWS Irish Wildlife Manuals No. 99 (cited at App.6-1 S4.2.4). Identifies the lagg/transition zone as the critical hydrological buffer for the high bog. The applicant proposes ~5 ha of raised bog enhancement under this reference, then proposes to dewater turbine foundations and borrow pits within the same zone. Mackin et al. is selectively invoked for enhancement and ignored for impact.

Each of these is cited in support of the applicant's case. Each, read properly, undermines it.
Source: EIAR Ch.9 S9.9; CEMP App.2-3; App.6-1 S4.2.4; Kilroy et al. (2008); NatureScot/SNH (2019, 2024); CIRIA C750 (2016); Mackin et al. (2017).

3.15.6 Legal Standard and Conclusion

Ballincor is not Derrybrien — the settings are materially different — but Case C-261/18 *Commission v Ireland* (CJEU, 12 November 2019) is a reminder that EIA of wind farms on Irish peat must be carried out to the EIA Directive standard before construction, on pain of substantial penalty.

Under Article 6(3), the competent authority may grant consent only after ascertaining, beyond reasonable scientific doubt, that the project will not adversely affect site integrity (Case C-127/02 *Waddenvereniging*, 2004). Adverse effect on integrity includes any impact preventing lasting preservation of constitutive characteristics (Case C-258/11 *Sweetman*, 2013, para.43). The assessment must contain complete, precise and definitive findings free of lacunae (Case C-461/17 *Holohan*, 2018, para.44). Mitigation cannot be assumed; it must be assessed in full within the NIS itself (Case C-323/17 *People Over Wind*, 2018). Short-term deterioration is not exempted (Case C-461/13 *Weser*, 2015, paras 67, 69).

The constitutive characteristic of habitat 7110* at Sharavogue is its hydrology — specifically, the centimetre-scale water-level regime and flow-pattern attributes defined in the NPWS Conservation Objectives. The proposed development will excavate to 4–5 m bgl at multiple locations within and adjacent to the lagg/transitional zone, dewater simultaneously across 11 turbine bases, 3 borrow pits, a substation and a BESS, and install a drainage network around an access road system that the published evidence identifies as the dominant

hydrological pressure of wind farms on peat. The cumulative effect of those works on the centimetre-scale water-level regime of the SAC has not been calculated.

The certainty required by *Waddenvereniging* and *Sweetman* is not certainty in the abstract. It is certainty produced by quantitative analysis applied to the receptor in question. An Article 6(3) determination of no adverse effect on integrity, reached without quantitative drawdown modelling, without piezometric baseline data at the receptor, without cumulative dewatering analysis, without engagement with the peer-reviewed Irish raised-bog hydrology literature, and on the basis of a single load-bearing paragraph (EIAR S9.4.4.3) that fails on five separate factual grounds, does not produce that certainty. The applicant has waived Article 6(4) IROPI (NIS p.4). Full Article 6(3) compliance must be demonstrated on the application as submitted. On the dewatering and drawdown question, it is not.

Source: CJEU C-127/02 (Waddenvereniging, 2004); C-258/11 (Sweetman, 2013) para.43; C-461/17 (Holohan, 2018) para.44; C-323/17 (People Over Wind, 2018); C-461/13 (Weser, 2015) paras 67, 69; C-261/18 (Commission v Ireland, 2019); Lindsay & Bragg (2005); NPWS (2015) Conservation Objectives: Sharavogue Bog SAC 000585; CIRIA C750 (2016).

3.16 Ground 13- Maladaptation

The grounds set out across this chapter address specific technical and legal failures in the application as submitted. This closing ground steps back from that detail to identify three framing failures that go to whether the project should be authorised in this location at all. Each is a distinct legal point with its own authority. Together they answer a different question from the per-ground critiques: not "has this assessment been carried out correctly?" but "has the application demonstrated that this project, in this catchment, on this floodplain, is the right answer to the questions the consenting framework asks?"

3.16.1 A Peat-Destroying, Floodplain-Compacting Project in the Name of Climate Action

The proposed development is presented as a renewable energy project that contributes to Ireland's climate response. The application contains no analysis of whether the project, as proposed, conflicts with the State's broader climate adaptation framework — specifically, the duty under the National Adaptation Framework (NAF) and the successive National Adaptation Plans to avoid *maladaptation* in the consenting of major infrastructure.

Maladaptation is a recognised category in climate policy. It captures actions that, while ostensibly addressing climate goals, in fact increase the vulnerability of receptors, lock in unsustainable pathways, or transfer harm to other systems. The Hydro-G report raised the maladaptation question directly (Appendix 3-1, S7). The project would, on the application's own documents:

- Excavate between 59,000 m^3 and 87,600 m^3 of peat — a carbon sink whose destruction releases stored carbon to the atmosphere. The National Trust for Scotland (2024) factor of 172 kg CO_2eq per cubic metre, applied to the upper-bound figure on a conservative effective-destruction basis, would equate to a carbon release of the order of millions of kilogrammes of CO_2eq from peat destruction alone, before accounting for the ongoing oxidation of drained peat over the operational life. The application does not quantify the carbon liability of the peat destruction anywhere.
- Compact the active floodplain of the Little Brosna along the access track corridors and turbine pads (Ground 7 above), reducing the natural flood-attenuation capacity of the floodplain at exactly the moment when the climate adaptation imperative is to increase that capacity. The Mid-Range Future Scenario climate uplift adopted in the

applicant's own FRA already shows T9 75% inundated and T1 40% inundated; the project then proposes to compact the floodplain through which those waters disperse.

- Disturb the priority habitat 7110 *Active Raised Bog at Sharavogue, which is itself the subject of active State-funded restoration under the AFA programme (Ground 2 above) — a programme one of whose principal climate-adaptation purposes is the re-establishment of carbon-sequestering, water-storing peatland.*
- Add construction-phase loading, drainage and dewatering pressures (Grounds 7, 11) to a waterbody at Poor status (Ground 1) where the Weser obligation prevents any further deterioration of the quality elements on which downstream ecological resilience to climate change depends.

The wind farm's operational carbon benefit, real as it is, is not the only side of the climate-adaptation balance sheet. A project that destroys a peat carbon sink, compacts a floodplain, undermines an active raised-bog restoration programme and adds pressure to a Poor-status nutrient-impaired waterbody is, on its face, in tension with the maladaptation principle. The application does not engage that tension. It does not present a comparative carbon accounting. It does not address the floodplain function loss. It does not assess its interaction with the LAWPRO-led restoration programme. And it does not characterise the operational-life carbon trajectory of the disturbed peat. An adaptation duty acknowledged in national policy but unengaged in the application cannot discharge the consenting authority's obligation to consider climate adaptation as part of its statutory function.

3.16.2 Consideration of Alternatives: "Most Suitable" Is Not "Suitable"

The EIA Directive (2014/52/EU) at Article 5(1)(d) requires the EIAR to describe *"the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment."* Annex IV (1) requires substantive treatment of those alternatives.

As addressed in Chapter 2 previously the Applicant has not chosen Ballincor in preference to alternatives. It has simultaneously pursued all five 'alternatives' identified in its own scoping exercise. This is a portfolio strategy, not a reasoned site selection. The approach presented by the Applicant amounts to little more than a generic checklist comprised largely of developer-led considerations relating to commercial viability and technical deliverability supplemented by a broad environmental constraint filter.

The developer does not answer the substantive Annex IV question, which is whether reasonable alternatives exist that would avoid the significant adverse environmental effects identified in the grounds above arise principally from:

- The location of four turbines (T1, T2, T8, T9) within Flood Zone A/B (Ground 5);
- The location of the wind farm site immediately adjacent to Sharavogue Bog SAC, a Priority Habitat in active restoration (Grounds 10, 11);
- The location of the construction footprint within a Poor-status WFD waterbody driven by peat-disturbance and hydromorphology pressures (Grounds 1, 3);
- The deep saturated peat and SPT N=0 substrate that drives both the peat-stability and access-track risks (Grounds 6, 8).

Each of these is a *location-specific* environmental sensitivity. A "reasonable alternative" within the meaning of Annex IV is therefore not an alternative turbine layout on the same site, an alternative borrow pit configuration, or an alternative grid connection route. It is an alternative site that does not carry the relevant sensitivity. The application's Consideration of Alternatives does not present that analysis.

The decision of the Supreme Court in *Coolglass Wind Farm Limited v An Coimisiún Pleanála* [2026] IESC 5 reinforces the point in a related but distinct legal frame. The Court addressed the meaning of *"practicability"* holding at paragraphs 103–105 that "practicable" in this context means more than physically possible. Applied to Ballincor, the practicability test invites the same question as the Annex IV alternatives test: do practicable alternative locations exist that would avoid placing four turbines in Flood Zone A/B, immediately adjacent to a Priority Habitat SAC, in a Poor-status WFD catchment driven by the exact pressure categories the project will generate? The application does not engage this question but the Inspector and the Board is invited to do so.

3.17 Conclusion

This submission has presented twelve evidence-based grounds of objection, each supported exclusively by the applicant's own submitted documents. Before summarising, the most important structural point must be restated: the applicant has expressly waived both derogation pathways. There is no flexibility and no fallback. Full compliance with Article 4(1)(a) WFD and Article 6(3) of the Habitats Directive must be demonstrated on the basis of this application as filed.

The twelve grounds address different parts of the application, but they are not isolated faults; the same four failures recur and it is the pattern that should concern the Inspector.

- The first is that the case for refusal is built entirely from the applicant's own documents; Chapter 9 calling the waterbody Moderate when its WFD classification is Poor and At Risk, the SPMP calling the peat easy to manage where nine of twelve trial pits collapsed, one NIS table finding a groundwater pathway to the SAC and the next denying it, the FRA barring road use in heavy rain while the SWMP requires staff on site in exactly those conditions.
- The second is omission at the centre rather than the margins: phosphorus, named as the main water-quality issue, was never reported; iron, visible in the applicant's own photographs, is neither baselined nor monitored; the deepest peat and highest flood risk closest to the SAC is the corridor with no ground investigation; and the one flood risk the FRA never assesses is the flood risk to the SAC.
- The third is mitigation that is deferred, undesigned, or incapable of working when needed — a "Negligible" peat rating resting on a temporary works design that does not yet exist, a track design handed to an unappointed specialist, and a pollution-control system built as though the site were dry, when it floods extensively every winter
- The fourth is assertion in place of analysis, with the conclusions that matter most resting on bare numbers and no working behind them, when certainty under EU law comes only from calculation applied to the receptor, and that calculation has not been done.

This proposed development is advanced as climate action, yet on the applicant's own documents it would excavate tens of thousands of cubic metres of carbon-storing peat, compact an active floodplain at the very moment adaptation demands such capacity be protected, undermine a State-funded raised-bog restoration, and add construction pressure to a Poor-status catchment. This is the definition of maladaptation: environmental harm done

in the name of environmental good. A development that works against the State's own climate, water and restoration commitments cannot be assessed as though its renewable output were the only entry on the ledger.

Each of these failures would give An Coimisiún Pleanála cause for concern individually. Together, they establish a position from which the pre-consent certainty required by EU law, "no reasonable scientific doubt that the project will not adversely affect the integrity of the downstream European sites", cannot be reached on the basis of this application as submitted. Further, it is important to briefly revisit the *Coolglass* judgment. The previous chapter engages the deeper argument; the aspect more relevant here is the Supreme Court's treatment of "in so far as is practicable." At paragraphs 103–105 the Court held "...that there may be circumstances in which the relevant body may *not be required* to perform its functions in a manner consistent with the s.15 objectives *where it is not practicable to do so*" ... "*practicable*... means *capable of being carried into action... having regard to such practical difficulties as exist.*"

In essence, even where a site is designated as appropriate, **Ballincor is not,** there are cases where it is not practicable to grant permission consistent with s.15 obligations. A development in Flood Zone A/B is inherently constrained in a way that limits what is practicable. A development in Flood Zone A/B, buffered from a Priority Habitat SAC only by a hydrological corridor that links onward to an SPA and a wider regional network of SACs, is doubly so. This site is neither designated nor practicable. On the hydrological and hydrogeological evidence, all of it the applicant's own, consent cannot lawfully be granted.

Chapter 4 Ornithology

Appendix 4-1: Dawn and Dusk Suvey Coverage Analysis and Assessment

Appendix 4-2: CRM Limitations – a List

Appendix 4-3 : Species by Species Schedule

Appendix 4-4: The Survey Effort

Appendix 4-5: Cumulative Register

Appendix 4-6: Dr Pat Moran Expert Ornithological report

Preliminary Statement on the Absence of Primary Ornithological Survey Data and the Basis of the Appendices

The ornithological assessment in Chapter 7, and the Collision Risk Model on which it depends, are the critical drivers of the entire Appropriate Assessment and impact conclusions for birds. The integrity of those conclusions rests entirely on the quality, coverage and conduct of the underlying Vantage Point (VP) surveys.

As a baseline it is important to present the following detail from Chapter 7 EIAR.

7.2.7.1.1.1 TOBIN Vantage Point Surveys

Vantage Point Surveys were carried out by TOBIN during the Winter Season 2025/2026 between (October to February), at five vantage point locations (VP1 to VP5), to further strengthen the data for the Collision Risk Model. The VP methodology followed guidelines issued by the SNH (2017). The minimum requirement of 36 hours per VP per season was achieved, totalling 222 hours of VP surveys during the Winter Season 2025/2026.

The timing of watches was tailored to the ecology of the target species present on site, including dawn, day and dusk surveys, to include the full coverage from before sunrise to after sunset. Field information recorded included: dates, VP location, weather, survey start and end time, species observed, time of observation, number of individuals per observation, height of flight (at five bands: 0-25 m, 26-50 m, 51-150 m, 151-200 m, and > 201 m, duration of flight (in seconds).

reference number to flight line. All flight lines of target species were mapped on field sheets. Behavioural observations were also recorded.

7.2.8 Survey Limitation

Access was granted in all areas of the proposed project site, which were subsequently surveyed by a team of third-party ornithologists under the guidance of Ecology Ireland as well as follow up visits by TOBIN Ecologist to conduct habitat and botanical surveys. However, the following limitations were identified over the survey period:

- The methodology used by the Ecology Ireland survey team for the vantage point surveys in this project is provided in Appendix 7-2. In summary, flight activity was not systematically classified by height band and a proportion of records lacked complete flight height, flight duration and/or mapped flightline data. In addition, some records included mixed flight and non-flight behaviour or were recorded at higher taxonomic groupings, requiring interpretation and standardisation of the dataset prior to collision risk modelling.

  To address the potential impacts of these methodological differences, a number of conservative assumptions were applied within the collision risk model. These included treating all flights with incomplete or uncertain height data as occurring at potential collision height; applying standard precautionary avoidance rates in line with NatureScot guidance; applying precautionary flight height distributions where site-specific height band data were incomplete; and applying no reductions to account for potential over-recording or spatial uncertainty.

  Each of these assumptions acts to increase predicted collision risk relative to a central or best-estimate scenario. The modelling approach therefore biases the assessment towards over-prediction of mortality rather than under-prediction.

- On that basis, while methodological differences are acknowledged, they have been addressed through the systematic application of conservative assumptions at each stage of the modelling process, each of which operates in the direction of overstating rather than understating collision risk, the assessment conclusions are considered robust and, likely to overestimate rather than underestimate predicted mortality.
- The viewshed analysis was based on shapefiles of vantage point locations and viewshed arcs provided by Ecology Ireland, but the original arcs did not align precisely with the recorded vantage points. To improve spatial accuracy, new arcs were generated using the directional angles of the original arc boundaries, and a 10m buffer was applied to smooth the viewshed edges and maintain coverage (detailed description included in Appendix 7-2). These refinements were technical corrections to ensure spatial consistency between vantage point locations and mapped visibility. The revised viewsheds maintain, and in places marginally extend, the original coverage and do not reduce the surveyed area or bias the assessment towards lower activity estimates. The resulting viewsheds are therefore considered a reasonable and spatially robust representation of visibility from each vantage point.

- Barn Owl is known to occur in the wider surroundings of the proposed project, based on consultation with the DAU, a review of the NBDC and a report by Lusby et al. (2022), however limited evidence of breeding or regular use of the project site was identified during field surveys conducted by Ecology Ireland. This absence of direct observations during the original surveys means that some aspects of the species' use of the site may not be fully captured.
- To address the limited survey records, additional consultation was carried out with BirdWatch Ireland (via Dr John Lusby), who provided information on known barn owl breeding sites in the wider area surrounding the proposed project site. This information, together with a review of available desk-study sources, habitat appraisal of the site and surrounding lands, and published literature on barn owl ecology and sensitivity to disturbance, informed the assessment. While some inherent uncertainty is associated with assessing a predominantly nocturnal species, the combination of consultation, desk study and habitat evaluation provides a sufficient and proportionate basis for the conclusions reached; crucially, the conservative assumptions applied throughout the assessment ensure that this uncertainty has not been resolved in favour of the project.

1. The absence of the independently verifiable methodological information is, in itself, a material deficiency in the EIAR

The survey effort spans two contractors and nine survey seasons. The substantial majority of it, eight of the nine seasons, between April 2020 and September 2024 — was carried out by **Ecology Ireland** across five vantage points (VP1–VP5), with two further points (VPA/VPB) added from November 2022. A single ninth season, Winter 2025/2026, was carried out by **TOBIN**. The Ecology Ireland dataset is therefore the principal source of the flight-activity data that drives the CRM.

The EIAR discloses only the *outputs* and *summary characterisations* of that survey effort. It states that VP surveys were undertaken, identifies the seasons covered, and describes in general terms the field information that "was recorded". The EIAR asserts that this information was recorded. **It does not, however, contain it.** No VP survey log is reproduced for either contractor. No individual watch is recorded with its date, start and end time, observer, and prevailing environmental conditions. No raw flight-line dataset is provided.

This is a material deficiency. A bare assertion that adequate survey effort was undertaken is not the same as evidence that it was. Without the primary survey log, neither the public, An Comisiun Pleanala nor an independent ecologist can verify:

- that the stated survey hours were actually achieved, and distributed appropriately across seasons, times of day, and weather conditions;

- that coverage included the dawn and dusk periods critical to crepuscular and nocturnal species such as Barn Owl;
- that the VP locations afforded the viewsheds claimed;
- that the flight-line records underpinning the CRM are complete and accurately transcribed; or
- that survey conditions were such that target species would have been detectable when present.

This deficiency is compounded because the EIAR itself concedes that the principal dataset is incomplete. At Section 7.2.8 (Survey Limitations), the EIAR acknowledges that the Ecology Ireland surveys did not systematically classify flight activity by height band, and that "a proportion of records lacked complete flight height, flight duration and/or mapped flightline data," with some records containing mixed flight and non-flight behaviour or recorded at higher taxonomic groupings, "requiring interpretation and standardisation of the dataset prior to collision risk modelling." The CRM report likewise records that the survey methodology "deviated in a number of respects from the recommended methodology." These are the Applicant's own admissions that the primary dataset is incomplete and required substantial interpretation before it could be used. That admission makes the disclosure of the primary records more important, not less, for only against the primary data can the adequacy of that interpretation be tested.

Under the EIA Directive, an EIAR must present its analysis in a form that allows the competent authority and the public to scrutinise and test it. Survey conclusions that cannot be checked against the primary data are not robust; the reviewability of the assessment is compromised at its foundation.

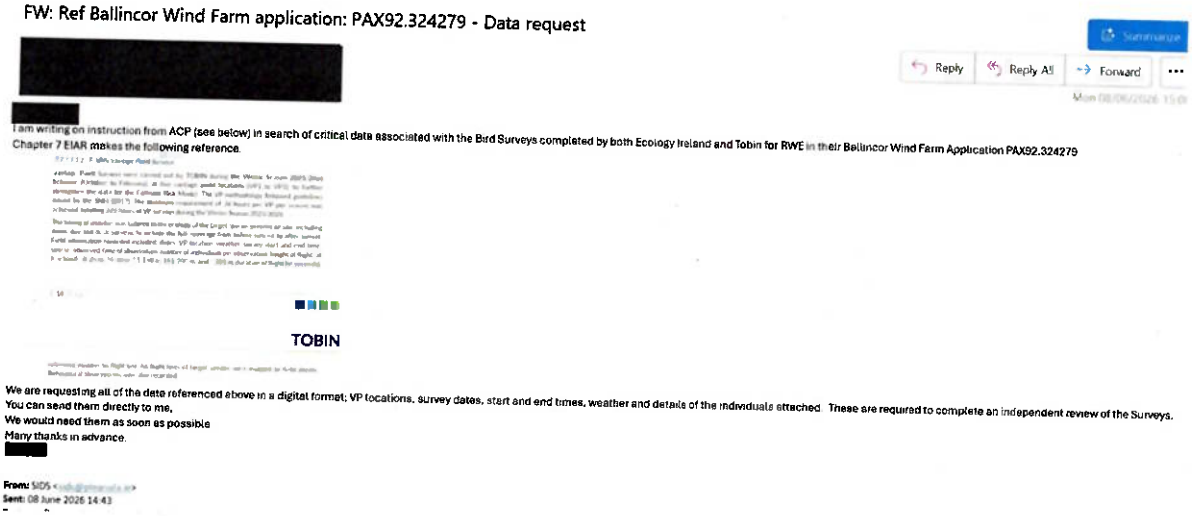
This deficiency has been confirmed on independent peer review. Dr Patrick Moran (Appendix 4-6) records that there is a complete absence, both within the Ornithology Chapter and Appendix 7-1, of the summary table required by Annex 3 of the NatureScot guidelines, and that there are no details presented with regard to each Vantage Point survey as to the observer, the start time, the finish time or the prevailing weather conditions. He confirms that this information was requested from An Coimisiún Pleanála, and subsequently directly from Tobin, precisely in order to permit an independent assessment of the viewshed analysis, and that it was not provided. The deficiency is therefore not a matter of interpretation: the primary

record required by the developer's own stated standard is absent, and its absence has been independently verified.

2. The Group's efforts to obtain the primary data

The Greater Birr Wind Action Group (GBWAG) did not treat this gap as a matter for inference in the first instance. We sought the source data directly.

The missing information was identified on 19th May, less than a week after the files became publicly available, and a series of phone calls and emails to ACP followed. A written request was sent to ACP Case Officer who pursued it on our behalf. No data arrived. A second request, under the instruction of the ACP Case Officer, was sent via email on June 8th directly to the Tobin Consultants. See below.



FW: Ref Ballincor Wind Farm application: PAX92.324279 - Data request

[redacted]

Reply | Reply All | Forward | ...

[redacted]

I am writing on instruction from ACP (see below) in search of critical data associated with the Bird Surveys completed by both Ecology Ireland and Tobin for RWE in their Ballincor Wind Farm Application PAX92.324279

Chapter 7 EIAR makes the following reference.

[redacted]

TOBIN

We are requesting all of the date referenced above in a digital format; VP locations, survey dates, start and end times, weather and details of the individuals attached. These are required to complete an independent review of the Surveys.

You can send them directly to me,

We would need them as soon as possible

Many thanks in advance.

[redacted]

From: SIDS <[redacted]>

Sent: 08 June 2026 14:43

The request for all of the primary survey material expressly referenced in Chapter 7 was lodged; VP locations, survey dates, start and end times, weather conditions, and the details of the individual surveyors, for the legitimate purpose of completing an independent review of the surveys.

The information sought is neither onerous nor unusual. It is the ordinary record of survey effort that any competent ecological contractor generates and retains as a matter of course, and which is, by the EIAR's own account, already in the Applicant's possession. A request of this kind is straightforward to satisfy.

Despite this, and despite the passage of more than four weeks, the primary survey data had not been provided. Given a 7 week window of observation timeliness was critical. At the time of writing that information has still not been produced.

The Group draws the Inspector's attention to this both as a fact bearing on the weight to be afforded the Applicant's unverified survey conclusions, and as a reinforcement of the deficiency identified at Section 1: the data is not merely undisclosed in the EIAR, it has not been made available for independent review even when expressly requested through two separate channels.

3. The Group's response: the basis and purpose of the derived Appendices

In the absence of the primary data, GBWAG has not abandoned the question. We have instead reconstructed, so far as the available material permits, the survey methodology and coverage from the records that *are* contained in the document set — principally the bird observation records in Appendix 7-1 and the CRM outputs in Appendix 7-2.

Appendices 4-1 to 4-5 attached to this chapter are the product of that exercise. They are not presented as the Applicant's data. They are a good-faith, transparent reconstruction, a working-backwards from the disclosed outputs to recover the survey effort, coverage and assumptions that must have underlain them. Where a value, date or parameter has been inferred rather than stated, it is identified as such, and the basis of the inference is given. The full set of Appendices are listed below and explained later in this chapter.

Appendix 4-1 — Dawn and Dusk Survey Coverage: Analysis and Assessment

Appendix 4-2 — CRM Self-Identified Limitations: Full Catalogue

Appendix 4-3 — Protected Species: Full Status Schedule and Conservation Context

Appendix 4-4 — Vantage Point Survey Effort by Season

Appendix 4-5 — Cumulative Developments: Register and Shared Population Analysis

Appendix 4-6 – Dr Patrick Moran – Expert Ecologist

This approach is both legitimate and necessary:

- It is **necessary** because the Applicant has not supplied the primary material, and the assessment cannot be tested in any other way.

- It is **legitimate** because it draws only on information the Applicant itself has placed on the file, and reasons from it conservatively and explicitly.
- It is **consistent with the Applicant's own methodology**, which — as Section 7.2.8 records, itself required the interpretation, standardisation and reconstruction of an incomplete dataset.
- It is **fair** because, had the primary data been provided, any error in our reconstruction could have been corrected against it. The Applicant retains the data that would resolve any dispute about our derived figures; its choice not to produce that data cannot now be relied upon to dismiss a reconstruction made necessary by that very non-disclosure.

4. Independent Ecological Peer Review

Alongside the Group's own reconstruction set out above and given the technical complexity of the avifaunal assessment, made all the harder to test by the absence of the primary survey data described above, GBWAG engaged an independent professional ecologist, Dr Patrick Moran, to undertake a peer review of the ecological aspects of the application. Dr Moran's completed report is included at Appendix 4-6 and we strongly urge the Inspector to read his report in advance of this chapter.

Dr Moran holds a first-class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA Management (UCD), an M.Sc. in Geographical Information Systems (Ulster University, Coleraine), a Higher Diploma in Environmental and Planning Law (King's Inns), and an M.Sc. in Environmental and Climate Change Law (UCD). He has over 25 years' experience conducting ecological surveys on both an academic and a professional basis, and has peer-reviewed Environmental Impact Assessment Reports and Natura Impact Statements for a range of public bodies — including An Bord Pleanála, the Office of Public Works and local authorities — as well as private clients, across a wide variety of planning proposals.

Dr Moran's brief was to provide an independent peer review of the ecological aspects of the proposed development, focusing on its potential impact on avifauna and in particular on the potential for likely significant effects on the conservation objectives of the Special Protection Areas in proximity to the site. His terms of reference were directed to the adequacy of the survey methodology and data presented in the Ornithology Chapter of the EIAR and associated documents; the sufficiency of that material to support the conclusions of the

Collision Risk Model and the Natura Impact Statement; and the identification of any gaps or deficiencies bearing on the assessment of impacts on protected bird species and designated sites.

His conclusion is unequivocal. Dr Moran finds that the conclusions of both the EIAR and the NIS are "fundamentally and critically flawed owing to the wholly inadequate methodologies utilised to undertake the surveys of the avifaunal resource occurring," and that the documents as provided cannot sufficiently inform either an Environmental Impact Assessment or an Appropriate Assessment of the proposed development by the competent authority. He identifies, among other matters, the absence of the methodological information required by the NatureScot guidance; the conduct of vantage point surveys concurrently with other fieldwork; the concentration of the dominant survey effort in the middle of the day; the absence of any disclosed vantage point coordinates and the consequent inability to test the viewshed analysis on which the Collision Risk Model depends; the failure to assess post-sunset use of the site by qualifying interest species; and the failure to assess in-combination effects. His findings are set out in full in Appendix 4-6 and are relied upon by the Group in support of the grounds that follow.

4.1 Introduction

This chapter is submitted pursuant to Article 6(3) of the Habitats Directive (92/43/EEC) and the European Communities (Birds and Natural Habitats) Regulations 2011. It addresses the ornithological component of the Environmental Impact Assessment Report, the Natura Impact Statement, and the Collision Risk Model (Appendix 7-2 to the EIAR) submitted with the application.

It is structured so that An Coimisiún Pleanála, as the competent authority conducting the Appropriate Assessment under Article 6(3), can identify with precision that adverse effects on European site integrity cannot be excluded on the evidence presented and the reason why, given the derogation waivers entered by the developer, refusal is the only lawful outcome available to An Coimisiún Pleanála if that conclusion stands.

4.1.1 Five Principal Failures

This objection is long because the failures it identifies are numerous, each requiring specific evidence from specific documents. There are five principal failures which underpin this chapter.

1. Survey methodology. Eight of the nine survey seasons were conducted by Ecology Ireland with surveys concentrated in the middle of the day. The developer's own Collision Risk Model author acknowledges this directly — zero dawn coverage in summer, 16 total minutes at sunset across all vantage points and all four Ecology Ireland winter seasons combined. Turbine T5 lies outside every viewshed at every height in every season. Summer 2022 is absent without explanation. No nocturnal surveys, no acoustic monitoring, no radar were deployed across any of the nine seasons. The Brosna North Corridor — the zone of highest bird activity for four SPA qualifying interest species, with densities 4.7 to 8.0 times higher than the modelled zone — was excluded from the CRM without any commuting flight analysis. 4 seasons ran 5 Vantage Points, 4 seasons added two more – raising legitimate concerns about the preceding data. Finally one additional season was surveyed by TOBIN and delivered what the CRM author acknowledges is improved data. 1 strong season cannot correct eight deficient ones. Section 2 and Appendices 4-1, 4-2, and 4-4 document this in full.

2. Baseline completeness. Several SPA qualifying interest species — including pintail, curlew, teal, shoveler, kingfisher and Greenland white-fronted goose — received CRM modelling but were then excluded from individual population-level significance assessment. The exclusion rests on a 'fewer-than-ten-records' threshold that is itself a direct consequence of the survey methodology failures above, and which is not applied consistently. Black-tailed

godwit, with 'fewer than ten records', was retained because its single large-flock observation produced high estimates; Pintail, with two nationally important counts at the same location in the same month of different years, was dismissed without individual assessment. BirdWatch Ireland confirmed breeding merlin and curlew presence on the adjacent Ballyduff/Clonfinnane SAC in May and June 2025 — evidence that was available before this application was completed and which directly contradicts the developer's assessment of these species as 'rarely recorded'. Sections 2.4 and 3.1 address this.

3. Analytical credibility. The avoidance rate applied for golden plover (99.6%) has been explicitly challenged by the NPWS/DAU across different wind farm submissions as inapplicable to turbines of this scale in this type of landscape. The 1% annual mortality threshold is repeatedly invoked to dismiss near-threshold findings for a species already in unfavourable conservation condition at the SPA without addressing whether the development undermines the population's *recovery potential*, which is the question the precautionary principle requires. A nationally important Pintail flock is dismissed as a one-off event using reasoning inconsistent with how the same type of evidence is treated for black-tailed godwit in the same CRM (where a single large-flock record is retained as reflecting real recurring site use that surveys missed). Section 3 works through these in detail.

4. Species assessment. The collision risk methodology used in this application relies on a threshold requiring predicted collisions to exceed 1% of a species' annual background mortality before the impact is considered significant. The Collision Risk Model's own author acknowledges in Appendix 7-2 that this threshold is "biologically implausible" for small populations with low mortality rates. Despite this explicit caveat, the assessment excluded five species, the White-tailed Eagle, Hen Harrier, Merlin, Peregrine and Curlew, from any population-level significance calculation. No population data was assembled for Hen Harrier, Merlin, Peregrine or Curlew in the CRM's own population table (Table 2.7). The threshold was not applied to them, they were removed from consideration before reaching it. This matters because each of these species has a national population so small that the loss of even a single individual over the wind farm's operational lifetime is ecologically significant:

- Hen Harrier is an Annex I species with a severely contracted Irish breeding range and in continuing decline; the developer assembled no population data for it in Appendix 7-2 Table 2.7, making it impossible to have applied the 1% threshold even had the developer tried.

- Merlin is an Annex I species confirmed breeding on the immediately adjacent Ballyduff/Clonfinnane Bog SAC in May and June 2025 by BirdWatch Ireland, with the nest subsequently located.
- Curlew has approximately 105 breeding pairs nationally: the loss of one breeding pair equates to roughly 1% of the national population.
- The White-tailed Eagle, a regular visitor to the Ballincor site, has a total population of 150 across the country.

The appropriate question for all five species is not whether the annual collision rate clears a threshold calibrated for abundant stable populations, it is what the predicted lifetime toll means for a population where every breeding adult lost reduces the probability of recovery. That question was never asked. Section 4 and Appendix 4-3 address each species in turn.

5. Cumulative impact. The in-combination assessment in the NIS is, in substance, absent. No developer in the Zone of Influence has calculated combined collision mortality from the four primary developments on the shared SPA populations. Each developer assessed only their own project in isolation, concluded it caused no significant effect, and then — without ever calculating the combined total — treated the sum of those individual "no significant effect" conclusions as itself proof that there was no significant cumulative effect, which is the logical equivalent of arguing that because no single raindrop is responsible for a flood, there can be no flood. Based on the Developers own data (which we do not accept) the combined additive collision mortality from three developments — Derrinlough, Ballincor and Cush — amounts to 46.8–118.3 golden plover collisions per year on a population already 50% below its SPA baseline. This figure has never been presented in a single document to any competent authority. The NPWS/DAU stated in March 2024 that in-combination effects across this area have not been assessed. Section 5 and Appendix 4-5 document the structural gap.

These five failures are not independent. They compound one another. Surveys that are haphazard, that evolve in a reactive manner over time, that miss dawn and dusk, exclude the highest-density activity zone, and deploy no nocturnal tools produce a dataset that cannot reliably characterise the species most at risk. A dataset that cannot characterise those species produces a CRM that cannot reliably exclude adverse effects. A CRM that cannot exclude adverse effects from one development, applied without correction across four developments in the same Zone of Influence with no independent cumulative assessment, cannot discharge the burden of proof that Article 6(3) places on the applicant.

4.1.2 Principal Grounds of Objection

- **Ground 1 — Survey Methodology.** The dominant eight-season Ecology Ireland dataset cannot support a complete and definitive Appropriate Assessment. Surveys were concentrated in the middle of the day, with zero dawn and dusk coverage in summer, near-zero dusk coverage in winter, absent height band classification, non-compliant watch durations, and concurrent watches violating the statistical independence assumptions of the NatureScot model. No nocturnal surveys, acoustic monitoring or radar were conducted in any season. The CRM author acknowledges methodology deviation in Section 1.5 and the inability to calculate recording rates for dawn and dusk periods in Section 3.4.3. Tobin Dataset represents 1 season. The addition of one high-quality season does not retrospectively validate eight deficient seasons. Dr Pat Moran has also identified a separate breach of the NatureScot requirement that "VP survey must not take place simultaneously with any other fieldwork on the site, as it may cause disturbance and invalidate the VP survey results." Dr Moran (Appendix 4-6) establishes that, on 27 June 2023, a minimum of three vantage point surveys were undertaken at the same time as aquatic surveys were being conducted on the site. The absence of a survey schedule for either programme prevents the Group from establishing how systematically this occurred; but the developer's own records confirm it occurred at least once, on a date when three of the vantage points were affected. On the NatureScot standard, the affected watches — and any Collision Risk Modelling derived from them — are liable to be invalidated.

- **Ground 2 — The Highest-Density Activity Zone & Spatial Coverage.** The Brosna North Corridor, where bird densities for four SPA qualifying interest species are 4.7 to 8.0 times higher than the modelled zone, was excluded from the Collision Risk Model with no commuting flight analysis to replace it. Turbine T5 falls outside every viewshed at every height in every season. There is no empirical flight activity data at collision height for this turbine location anywhere in the survey programme. The two places in this landscape where collision risk is most concentrated are the two places the assessment does not reach.

- **Ground 3 — Nocturnal, Acoustic and Radar Surveys: Total absence.** No nocturnal surveys. No acoustic monitoring. No radar. Not in any season, for any species, at any point in a nine-season programme. The regulatory authority has stated explicitly that the full impact of a development of this kind cannot be assessed

without this information. The only methodology that would have detected confirmed Annex I breeding within the foraging range of the development was never deployed. Seven species in the CRM have their nocturnal activity estimated from literature values because no site data exists. This is not a gap — it is a void.

- **Ground 4 — Curlew and Merlin: Collective Assessment of Nationally Critical Species Alongside Common Species is Not Lawful.** BirdWatch Ireland 2025 confirmed breeding merlin — an Annex I species — on the SAC 2.8km from the proposed turbines in May and June 2025. The nest was located. The confirmed breeding pair forages across a range that overlaps the turbine zone directly. Curlew, a Red-listed species with approximately 105 breeding pairs nationally, was confirmed present on the same SAC during the breeding season. The loss of one pair is almost 1% of the national population, the regulatory authority has said so explicitly, for this location. Merlin is an Annex I species confirmed breeding within the foraging range of the development. Both are assessed collectively alongside coot, common gull and herring gull. No individual collision risk assessment. No targeted breeding survey. No breeding disturbance analysis. No population-level significance assessment. The inference of limited site use from low record counts is directly contradicted by the survey methodology failures and by the 2025 breeding confirmation. This collective treatment has no legal or ecological justification.

- **Ground 5 — Small-Population Species: The 1% Annual Mortality Threshold Cannot Lawfully be Applied to a National Wild Population of 150 Individuals.** The entire wild Irish white-tailed eagle population is approximately 150 individuals. The CRM's own author acknowledges the 1% threshold may be biologically implausible for small populations with low mortality rates. White-tailed eagle was excluded from any population-level significance assessment before the threshold was even reached. One dead eagle over the operational lifetime of this wind farm represents a meaningful fraction of the entire national population of a species recovering from functional extinction. A threshold designed for abundant, stable populations is not a complete or definitive assessment tool for a species in this position. The same structural failure applies to hen harrier, for which no population data was assembled in the CRM at all.

- **Ground 6 — Golden Plover: Inapplicable Avoidance Rate; Unfavourable Conservation Condition; Recovery Trajectory Not Assessed.** The 99.6% avoidance rate applied for golden plover has been explicitly challenged by the

regulatory authority as derived from turbines half the size of those proposed, in landscapes entirely unlike this one. The SPA population is already in unfavourable conservation condition — 50% below its baseline reference values. The upper uncertainty range of the developer's own collision estimate already exceeds the 1% local SPA population mortality threshold. The assessment addresses only whether the central estimate at the preferred rate clears a threshold the CRM itself describes as precautionary. It never asks whether the development undermines the population's potential for recovery to favourable conservation status. That is the question the conservation objectives require to be answered. It was not asked.

- **Ground 7 — Whooper Swan: CRM Admits Potential Under-Estimation; Established Flightline Through the Development Zone Unassessed.** The CRM's own author acknowledges that uneven diel coverage may have caused under-estimation of whooper swan collision risk. An established communal roost connected to the SPA by a documented flightline through the development Zone of Influence generates pre-dawn commuting traffic that is entirely unrecorded across all nine seasons. Physical evidence of repeated collision on this flightline exists — bird strike deflectors were installed by ESB Networks on powerlines in the area. Having acknowledged potential under-estimation and confirmed an unassessed roost flightline, the EIAR concludes negligible impact. That step from acknowledged under-estimation to negligible conclusion is asserted, not demonstrated. Adverse effects on an Annex I SPA qualifying interest cannot be excluded on this basis.

- **Ground 8 — Pintail and Analytical Inconsistency: Nationally Important Counts Dismissed Using Reasoning the Same CRM Refused to Apply to Black-tailed Godwit.** Two nationally important pintail counts — at the same location, in the same month, in different years — were dismissed as a one-off event with no individual CRM modelling. Pintail is a SPA qualifying interest. The CRM's own logic, applied elsewhere to black-tailed godwit, holds that a large-flock record observed during surveys covering 1.5–2% of daylight hours may reflect regular use systematically missed. That logic was used to retain black-tailed godwit in the model. It was not applied to pintail. The asymmetry is unexplained. No lawful exclusion of adverse effects on a SPA qualifying interest species can rest on a dismissal that contradicts the developer's own internal reasoning.

- **Ground 9 — No Operational Bird Mitigation and No Lawful Pathway to Adaptive Management.** No dedicated mitigation measures exist for the operational phase. None. The entire no-adverse-effects conclusion rests on the adequacy of the pre-consent assessment — which this submission demonstrates is structurally inadequate. For species where post-construction mortality is irreversible, post-consent discovery through monitoring is not a recoverable position. The bird monitoring programme contains an adaptive management trigger, but the regulatory authority has stated directly that it cannot approve changes or conditions after consent is granted. The trigger has nowhere to go. The mechanism to act on monitoring findings does not exist. There is no backstop.

- **Ground 10 — Cumulative Impact: The In-Combination Assessment is Absent, Not Merely Inadequate.** Each developer accepted the previous developer's nil-effects conclusion as a settled baseline and concluded that nil plus nil equals nil. European Commission guidance explicitly states this is insufficient. The combined golden plover collision mortality from three developments in this Zone of Influence is 46.8 to 118.3 birds per year on a population already 50% below its SPA baseline — between nine and thirty-nine times the threshold each developer individually dismissed as precautionary. This figure has never been presented to any competent authority in a single document. The regulatory authority stated in March 2024 that in-combination effects across this area have not been assessed. That statement remains true of this application.

- **Ground 11 — IROPI Waiver.** Both derogation pathways under Article 6(4) of the Habitats Directive have been expressly waived by the developer. If adverse effects on site integrity cannot be excluded following a complete and legally compliant assessment, refusal is the only lawful outcome available to An Coimisiún Pleanála.

4.1.3 The document is structured sequentially.

The chapter is organised in six sections, each building on the last and each serving a distinct function in building the overall position.

Section 1: 4.2 Context - establishes the regulatory benchmark against which the entire application is tested. It sets out the NPWS scoping requirements, NatureScot 2024 survey standards, the qualifying interests of all European sites within the Zone of Influence, and the precedent established by the DAU in its Carrig and Cush submissions. It addresses the

shared ecological landscape and the legal consequence of the derogation waiver. Every subsequent section measures the developer's assessment against this benchmark.

Section 2: 4.3 Survey Methodology - is the forensic core of the chapter. It works through the survey programme systematically — vantage point spatial coverage, the Brosna Corridor density exclusion and commuting flight gap, dawn and dusk coverage gaps quantified from the developer's own CRM Tables 3.8 and 3.9, the absence of summer 2022, the environmental condition data required by the NPWS scoping response but not submitted, the complete absence of nocturnal, acoustic and radar surveys, and the 2025 BirdWatch Ireland breeding merlin evidence. It closes with a 22-row summary table and a conclusion on the cumulative and directional effect of the methodology failures. It cross-references Appendices 4-1, 4-2, 4-3, 4-4 throughout.

Section 3: 4.4 Analysis of Data - accepts the surveys as delivered and asks whether the analysis constructed from them holds up. It examines baseline completeness, the dominant dataset problem, population denominators, avoidance rate selection, displacement distances and ex-situ SPA connectivity. Section 3.6 addresses five specific logical steps in the developer's reasoning that the objection challenges — the pintail dismissal, the repeated use of the 1% threshold mechanism, the black-tailed godwit selective application of large-flock caution, the whooper swan diel gap acknowledgement without consequence, and the height overestimation argument. Section 3.7 addresses the mitigation framework — or more precisely, its complete absence from the operational phase. It cross-references Appendix 4-2 throughout.

Section 4: 4.5 Species analysis - provides a species-by-species assessment. Priority 1 species — whooper swan, curlew, merlin and white-tailed eagle — receive full sub-sections. Priority 2 species — golden plover, Greenland white-fronted goose, hen harrier and pintail — receive focused treatment. Priority 3 covers SPA waterbirds and other species of concern. Section 4.11 addresses habitat connectivity and the SAC corridor. It cross-references Appendix 4-3 throughout.

Section 5: 4.6 Cumulative effect - makes the structural gap argument on cumulative impact. It sets out the Article 6(3) legal framework, identifies one shared ecosystem being addressed by four separate applications each arguing only their own case, presents the combined collision mortality figure that no developer has ever calculated, and addresses additive displacement and corridor fragmentation. It exposes the circular nil-effects

methodology that results when each application treats the others as pre-existing background. It cross-references Appendix 4-5 throughout.

Section 6: 4.7 Summary - summarises the five principal failures and sets out the grounds for refusal. It addresses the IROPI waiver and closes with the precautionary principle statement.

4.1.4 Appendices

All data submitted by the developer was interrogated. Data from the Applicant's Appendix 7-1, 7-2 and 7-3 and the AA NIS was used to verify and corroborate every position taken in this submission. That audit exercise is presented across the five appendices. Each addresses a specific aspect of the evidential record that is too detailed for the main chapter sections but too important to omit. Every finding in the main chapter that depends on primary data is cross-referenced to the relevant appendix. The appendices are the foundation on which this chapter was drawn. Any contested factual claim is addressed with the underlying data, verbatim CRM extracts, and species-by-species analysis in the appendices.

Appendix 4-1 — Dawn and Dusk Survey Coverage: Analysis and Assessment. Reproduces and annotates the developer's own diel effort tables in full, quantifying the structural absence of dawn and dusk coverage across all eight Ecology Ireland seasons and setting out the species-specific consequences for whooper swan, curlew, golden plover, Greenland white-fronted goose, hen harrier and merlin.

Appendix 4-2 — CRM Self-Identified Limitations: Full Catalogue. A catalogue of 25 limitations, caveats and species exclusions drawn entirely from the developer's own Collision Risk Model, each with its CRM page reference and a cross-reference to the section of this chapter where it is challenged.

Appendix 4-3 — Protected Species: Full Status Schedule and Conservation Context. Eleven sub-sections, one per species group. Each provides a compact status block covering all protection designations, population estimates, recorded presence in the Zone of Influence, the developer's own assessment summary, and the specific basis on which that assessment is challenged.

Appendix 4-4 — Vantage Point Survey Effort by Season. Four tables examining 1. Survey hours per VP per season against the NatureScot minimum; 2. a side-by-side methodology comparison across eleven criteria for Ecology Ireland and TOBIN; 3. turbine-by-turbine

viewshed spatial coverage including VP arc compliance rates; and 4. the Brosna Corridor spatial structure analysis.

Appendix 4-5 — Cumulative Developments: Register and Shared Population Analysis. Four-part analysis of the absent cumulative assessment. The development register covers the four major projects within the 20km radius. The assessment uses figures from the developers' own documents and delivers combined collision mortality figures not previously calculated — 46.8–118.3 golden plover collisions per year across three developments — alongside verbatim NIS language from each developer with challenge responses, and an exposure of the circular nil-effects methodology that results when each application treats the others as pre-existing background.

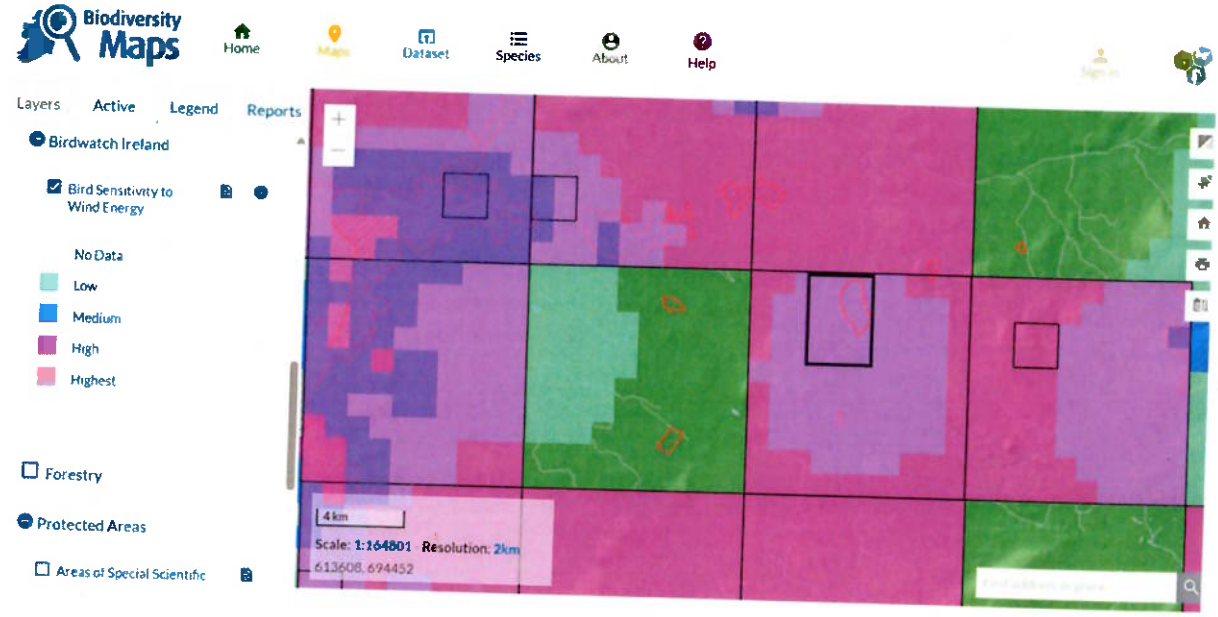
Appendix 4-6 – Dr Pat Moran Expert Ecologist – Ballincor Windfarm Observation

Demonstrating that the burden of proof has not been discharged requires engaging with each layer of the developer's assessment so although this chapter is long the underlying legal proposition is simple.

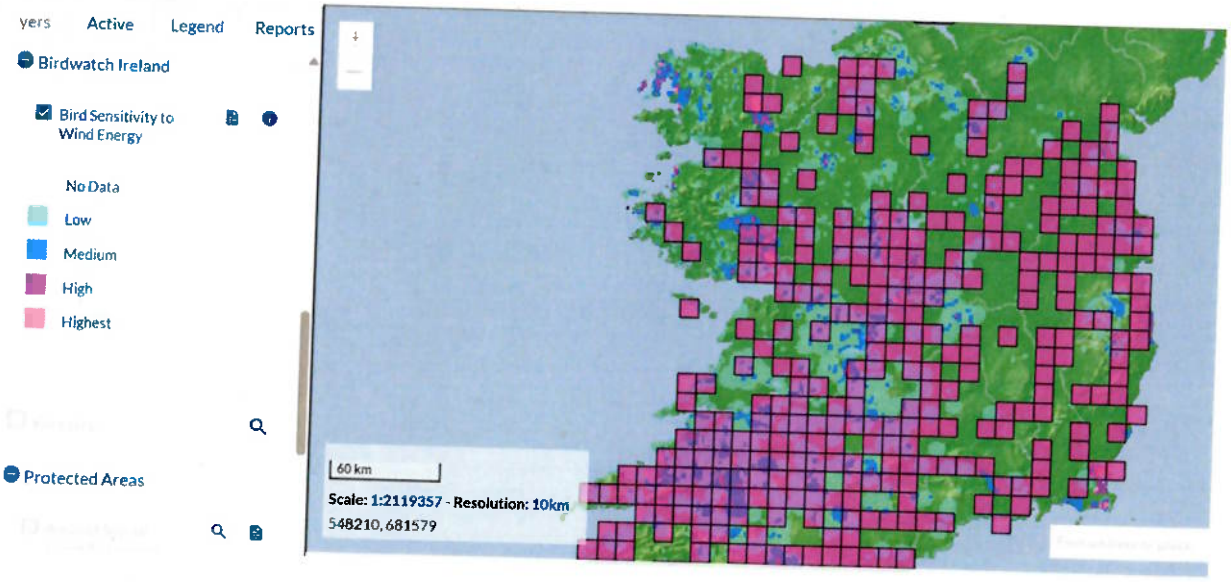
Under Article 6(3) of the Habitats Directive, An Coimisiún Pleanála can grant consent only after having ascertained, not merely suspected, but ascertained, that the proposed development will not adversely affect the integrity of any European site. Where the AA cannot exclude adverse effects on SPA qualifying interest species, consent cannot lawfully be granted.

4.2 Context

The map below is taken from the National Biodiversity Data Centre's (NBDC) online mapping portal. The specific layer displayed is BirdWatch Ireland's "Bird Sensitivity to Wind Energy" dataset (shown active in the left-hand Layers panel), with the five-class sensitivity scale: No Data / Low / Medium / High / Highest. The area highlighted shows the S09 and the black rectangle broadly captures the Windfarm development area and is identified in the legend as an area with the 'HIGHEST' Bird sensitivity to Wind Energy.



The map below assesses bird sensitivity to Wind Energy across Ireland and notice the vast tracks of land with No, Low or Medium impact. This triggers the Coolglass Supreme Court judgement discussed in the previous chapters.



4.2.1 The Shared Ecological Landscape — Zone of Influence

The developer's NIS defines the Zone of Influence (ZoI) for bird species with reference to a 5km core range. This is the central spatial assumption of the assessment. It determines which species are treated as connected to the adjacent SPAs, how displacement is assessed, and which cumulative developments are considered materially relevant. The assumption cannot stand.

The NPWS Development Applications Unit, in its formal submission on the previous Carrig Wind Farm application — at 3.9 km from Ballincor, in the same shared ecosystem — stated explicitly: 'The Department does not accept the findings of the EIAR/NIS in relation to a 5km core range for bird species.' The DAU continued: 'The Department considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA.' The NPWS scoping response for Ballincor itself confirmed that 'where bird flight paths or ex-situ habitats are involved the impact may be on a Special Protection Area (SPA) more than 15 km away.'

For mobile species — migratory waterbirds, large waders, wildfowl — the ecologically relevant Zone of Influence is defined not by a fixed radius but by the movement ecology of the species. Whooper swans commuting between the Sharragh NPWS roost and the River Little Brosna Callows SPA pass through the development zone regardless of what administrative radius a developer draws around it. Golden plover flocks of 3,500 birds recorded within 500m of the site boundary are SPA qualifying interest birds by precautionary default — the DAU Cush letter (March 2024) makes this explicit. A tagged Greenland white-fronted goose was recorded within 6km of the Cush site during migration from the Wexford Slobs.

On any ecologically credible definition of the Zone of Influence, Carrig Wind Farm (3.9km) falls within it. On the developer's own figures, Cush (10km) and Derrinlough (13km) are acknowledged as relevant cumulative developments. The River Little Brosna Callows SPA — with eleven qualifying interest species including three of international importance — lies 7km from the site boundary, connected by the River Brosna corridor that runs through the development zone. The operative Zone of Influence for this assessment is the shared

SPA/SAC catchment and the movement ecology of the species that use it. This document treats it as such throughout.

4.2.2 The Derogation Waiver — Its Legal Consequence Is Determinative

The NIS (p.4) states: *'the project proponent places no reliance upon' Article 6(4) imperative reasons of overriding public interest."* The WFD Assessment (Appendix 9-1 to the application, p.28) states the project does not require assessment under Article 4.7 of the Water Framework Directive. Both derogation pathways that would otherwise allow a project to proceed notwithstanding adverse effects on European site integrity have been expressly and voluntarily waived by the developer.

The legal consequence of both waivers is absolute and requires no interpretation. Under Article 6(3) of the Habitats Directive as interpreted by the CJEU in Waddenzee (C-127/02) and Sweetman (C-258/11), an Appropriate Assessment must be complete, precise and definitive. The competent authority 'can agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site.' If it cannot ascertain this — if reasonable scientific doubt remains after a complete assessment — it cannot grant consent.

4.2.3 Regulatory Standards and Qualifying Interests – The benchmark

This section sets out the regulatory and scientific standards that applied to the Ballincor Wind Farm application at the time of survey design and submission. It identifies the specific requirements placed on the applicant by the NPWS scoping process, the qualifying interests of the European sites within the Zone of Influence, the survey standards established by NatureScot (2024), and the regulatory precedent set by the DAU in its submissions on the comparable Cush and Carrig applications. It closes with a conservation status summary establishing the ecological stakes before any assessment of survey adequacy or impact magnitude begins. This section establishes the benchmark against which the survey effort and analysis are tested in every subsequent section of this objection.

4.2.4 NPWS Scoping Response — Requirements Placed on the Applicant

The National Parks and Wildlife Service (NPWS) Development Applications Unit issued a scoping response to RWE in respect of the proposed Ballincor Wind Farm. That response

set out the specific ecological survey and assessment requirements the Department expected the applicant to address. The following requirements are relevant to ornithology and are extracted from the scoping response document.

4.2.4.1 Bird surveys — minimum standard

The NPWS scoping response states explicitly: 'Two full years of Bird Surveys is considered to be the minimum required. However, data must be sufficient to support conclusions and this may require substantially more survey work over longer periods of time.'

The scoping response further requires that bird survey results 'need to be referenced back to the overall local, regional, national and European populations and their dynamics as, in some cases even a small risk to a population of a species could be considered significant.'

This last requirement is of particular importance. It establishes that the NPWS expected population-level assessment, not merely a site-level count, for every species at risk. For a species such as curlew with approximately 105 breeding pairs nationally, or white-tailed eagle with approximately 150 individuals nationally, the NPWS requirement that even a small population-level risk be treated as significant sets a standard that individual-level mortality cannot be dismissed.

4.2.4.2 Survey methodology and data presentation

The scoping response requires that 'the full survey methodology as well as raw data, including dates and times are detailed.' It specifies that records must be supported by 'basic environmental data such as hourly estimates of visibility, glare arcs, cloud cover and precipitation during Vantage Point (VP) and Walkover Survey periods.'

These requirements establish that the NPWS expected surveys to be documented to a standard that allows independent verification of survey conditions. The identification of reduced-visibility watches in the CRM (11% of Ecology Ireland watches; 7% of TOBIN watches) is an acknowledgement that not all surveys met this standard.

4.2.4.3 Barn owl — specific requirement

The scoping response identifies the site as being in an area of high sensitivity for barn owls, citing BirdWatch Ireland's Bird Sensitivity to Wind Energy mapping tool, and states: 'Detailed and specific surveys on barn owls should be completed and mitigation included if impacts are identified.' An NPWS officer confirmed a breeding nest site approximately 75 metres from the wind farm site boundary in July 2023.

4.2.4.4 European sites, ex-situ habitats and bird flight paths

The scoping response notes that the study area for ecological assessment must include all European sites and designated areas potentially connected with the proposed development,and specifies that 'where bird flight paths or ex-situ habitats are involved the impact may be on a Special Protection Area (SPA) more than 15 km away.' This establishes that the NPWS did not accept a restrictive Zone of Influence for mobile species from the outset.

4.2.4.5 Lighting

The scoping response requires that 'consideration should be given to increased levels of artificial lighting required and the potential impact on all wildlife, particularly nocturnal animals, during construction and operation.' The NPWS/DAU Carrig submission notes the absence of any reference to turbine lighting in the ornithological impact assessment of that application. The same absence applies to Ballincor.

4.2.5 Qualifying Interests — European Sites in the Zone of Influence

The following European sites have been identified in the Ballincor NIS and EIAR as being within the Zone of Influence of the proposed development. For each, the qualifying interests or features and their associated conservation objectives are set out. These are the species and habitats that any complete and definitive Appropriate Assessment must address.

4.2.5.1 River Little Brosna Callows SPA (Site Code 004086)

Located approximately 7–8.5km north of the proposed wind farm site. The SPA follows the River Brosna from its confluence with the River Shannon for approximately 9km. The main habitat is extensive low-lying callow grassland subject to prolonged winter flooding. The SPA is of international importance for three species — golden plover, black-tailed godwit, and

Greenland white-fronted goose — and of national importance for a further seven species. The SPA also supports a nationally significant assemblage of over 20,000 wintering waterbirds.

Qualifying Interest / Feature	Code	First Order Conservation Objective
Whooper Swan (Cygnus cygnus)	A038	To maintain the favourable conservation condition
Wigeon (Mareca penelope)	A050/A855	To restore the favourable conservation condition
Teal (Anas crecca)	A052	To maintain the favourable conservation condition
Pintail (Anas acuta)	A054	To maintain the favourable conservation condition
Shoveler (Spatula clypeata)	A056/A857	To maintain the favourable conservation condition
Golden Plover (Pluvialis apricaria)	A140	To maintain the favourable conservation condition
Lapwing (Vanellus vanellus)	A142	To maintain the favourable conservation condition
Black-tailed Godwit (Limosa limosa)	A156	To maintain the favourable conservation condition
Black-headed Gull (Chroicocephalus ridibundus)	A179	To maintain the favourable conservation condition
Greenland White-fronted Goose (Anser albifrons flavirostris)	A395	To restore the favourable conservation condition
Wetland and Waterbirds	A999	To maintain the favourable conservation condition

Three of these qualifying interests — whooper swan, golden plover and Greenland white-fronted goose — are also listed on Annex I of the EU Birds Directive, conferring an additional layer of legal protection. The conservation objective for Greenland white-fronted goose is notably to restore, not merely maintain, favourable condition — indicating that the population is already in an unfavourable state at baseline.

4.2.5.2 Middle Shannon Callows SPA (Site Code 004096)

Located approximately 10–12km downstream of the proposed project site, connected via the Little Brosna tributary and the River Shannon. The site is of international importance for whooper swan, black-tailed godwit, and the total waterbird assemblage (over 20,000 wintering birds).

Qualifying Interest / Feature	Code	First Order Conservation Objective
Whooper Swan (Cygnus cygnus)	A038	To maintain the favourable conservation condition
Corncrake (Crex crex)	A122	To maintain the favourable conservation condition
Golden Plover (Pluvialis apricaria)	A140	To maintain the favourable conservation condition
Lapwing (Vanellus vanellus)	A142	To restore the favourable conservation condition
Black-tailed Godwit (Limosa limosa)	A156	To restore the favourable conservation condition
Black-headed Gull	A179	To restore the favourable conservation condition
Wigeon (Mareca penelope)	A855	To restore the favourable conservation condition
Wetland and Waterbirds	A999	To maintain the favourable conservation condition

4.2.5.3 Sharavogue Bog SAC (Site Code 000585)

The SAC boundary lies at its nearest point approximately 10 metres from the proposed wind farm site boundary. This proximity is not incidental — the SAC is immediately adjacent to the development and the hydrological, physical, and ecological connectivity between the site and the SAC has been confirmed in the EIAR. The SAC is designated for three Annex I habitats.

Qualifying Interest / Feature	Code	First Order Conservation Objective
Active Raised Bogs [7110*]	Priority	To restore the favourable conservation condition — target: restore active raised bog area to 40.9ha
Degraded Raised Bogs still capable of natural regeneration [7120]	Annex I	Conservation objective linked to and dependent on achievement of 7110 objective
Depressions on peat substrates of the Rhynchosporion [7150]	Annex I	Conservation objective integral to Active Raised Bog — no separate target set

4.2.5.4 Ballyduff/Clonfinnane Bog SAC (Site Code 000641)

Located approximately 2.8km northwest of the proposed wind farm site. Designated for the same raised bog habitat suite as Sharavogue Bog SAC: Active Raised Bogs [7110*], Degraded Raised Bogs [7120], Depressions on peat substrates [7150], and additionally Bog

Woodland [91D0*] — another priority habitat. The developer's EIAR concludes no viable pathway exists between the proposed project and this SAC in ornithological terms.

The 2025 BirdWatch Ireland breeding bird survey, conducted on Ballyduff/Clonfinnane SAC in May and June 2025 using six passive acoustic recording units. That survey confirmed the presence of breeding merlin (*Falco columbarius*) on the SAC, with the nest subsequently located. Curlew (*Numenius arquata*) was also confirmed present during the breeding season. Merlin typically forages 2–3km from the nest during the breeding season. At 2.8km from the proposed turbine zone, the Ballyduff/Clonfinnane SAC sits at the inner edge of that foraging range — meaning the confirmed breeding pair may regularly hunt over land within or immediately adjacent to the proposed development site. The EIAR dismissed this pathway.

4.2.5.5 Adjacent and connected sites

Additional European sites within the broader Zone of Influence noted in the EIAR include All Saints Bog SPA (004103) and All Saints Bog and Esker SAC (000566), for which Greenland white-fronted goose is a qualifying interest; Dovegrove Callows SPA, also designated for Greenland white-fronted goose; Redwood Bog SAC (002353); and Arragh More (Derrybreen) Bog SAC (002207), approximately 5.2km west of the site. The midland bog SAC network — including these sites together with Sharavogue and Ballyduff/Clonfinnane — functions as an ecological corridor for breeding raptors and waders moving between raised bog habitats. The cumulative barrier effect of the proposed development on this corridor is addressed in Section 5 and Appendix 4-5.

4.2.6 NatureScot 2024 Survey Standards

NatureScot (formerly Scottish Natural Heritage) publishes the survey guidance that is adopted as best practice in Irish wind energy ornithological assessments, including by the NPWS/DAU. The relevant guidance for this application is NatureScot (2024/2025a): 'Recommended bird survey methods to inform impact assessment of onshore wind farms.' The Ballincor CRM itself is modelled on this guidance, making it **the developer's own stated standard**. The following requirements are directly relevant to this objection.

4.2.6.1 Vantage point survey duration and seasonal coverage

- Minimum coverage: two complete winter seasons and two complete summer seasons of vantage point surveys. This is a minimum, not an optimum. Additional seasons are expected where data from the minimum does not support reliable conclusions.

- Survey watches: continuous three-hour watches with a 30-minute break between watches, in good visibility conditions. Continuous six-hour watches without the required break are non-compliant.
- Temporal coverage within each survey day: surveys should cover the full daylight period from before sunrise to after sunset. For waterfowl species specifically, the guidance requires coverage of the hour before sunrise and the hour after sunset, as these periods are 'potentially important for commuting swans and geese' (NatureScot 2025a, cited in Ballincor CRM Section2.3).
- Height band classification: flight activity must be recorded in five NatureScot-compliant height bands (0–25m, 25–50m, 50–150m, 150–200m, >200m above ground level) to allow accurate assessment of the proportion of flight activity at collision height.

4.2.6.2 Nocturnal surveys

- NatureScot 2024 requires that the potential for nocturnal flight activity is considered and, where relevant, quantified. For waterfowl — including whooper swan, wigeon, and golden plover — the guidance explicitly requires coverage of the hour before sunrise and after sunset to capture crepuscular commuting movements.
- The NatureScot collision risk model itself acknowledges (via the nocturnal activity ranking system) that curlew, golden plover, lapwing, black-tailed godwit, wigeon, teal, and mallard are all partially active at night.

4.2.6.2 Acoustic monitoring and nocmig

- NatureScot 2024 recommends the use of acoustic monitoring, including passive nocturnal migration (nocmig) recording, to indicate bird usage of the Zone of Influence during hours when vantage point surveys are not conducted. This technology is now widely available and routinely deployed. The 2025 BirdWatch Ireland survey on Ballyduff/Clonfinnane SAC used exactly this methodology — Autonomous Recording Units deployed over five days — and detected breeding merlin that would not have been identified by conventional vantage point surveys.

4.2.7 DAU/ABP Precedent — Requirements from Comparable Applications

The NPWS Development Applications Unit has made detailed submissions on two wind farm applications in the same Zone of Influence that are directly relevant as regulatory precedent. Both applications involved comparable turbine scales, the same SPA qualifying interest

species, and the same landscape context. What the DAU required of those applicants represents the regulatory standard that this application must also meet.

4.2.7.1 Carrig Wind Farm (ABP 318689) — NPWS/DAU submission

The DAU submission on the Carrig Wind Farm application (within 5km of Ballincor, in the shared ecosystem) set out the following specific requirements. These are extracted from the DAU submission as documented in the ABP Inspector's Report (ABP-318689-23):

Zone of Influence and SPA connectivity:

> *"The Department's view is that protected SPA birds may range far more widely and can therefore be affected by windfarms outside the SPA boundaries, particularly on transit to other feeding and/or roosting sites outside the SPA. The Department does not accept the findings of the EIAR/NIS in relation to a 5km core range for bird species. The Department considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA."*

Significance for this application: The Ballincor NIS applies a 5km core range for bird species. The DAU has explicitly stated it does not accept this approach. The same challenge applies to Ballincor. The DAU's view — that SPA birds may range far more widely and that ex-situ usage of the ZoI cannot be excluded — sets the standard for connectivity assessment that Ballincor has not met.

Nocturnal surveys and nocmig:

> *"Bird surveys [were] carried out during daylight hours and some limited nocturnal surveys for limited species. No nocturnal surveys of migration or nocturnal commuting movements of wildfowl over or in the zone of influence of the site. A range of wildfowl known to carry out movements at night, which the daylight surveys would have missed. Acoustic recording of calls from migrating birds over fixed points at night (nocmig) is now widely used and should be used to indicate bird usage in the zone of influence of the proposed development. Also, radar could be used to quantify bird movements above a certain height. The Department's view is that the full impact of the development cannot be assessed without this information."*

Significance for this application: No nocturnal surveys, nocmig, or radar were deployed in the Ballincor ornithological programme across any of the nine survey seasons. The DAU's stated position — that the full impact cannot be assessed without nocmig and radar — applies directly and unchanged to this application.

Whooper swan flightlines and collision risk:

> *"Only bird sightings from daytime vantage point surveys were included, but surveyors did note nighttime movement of whoopers on at least one occasion. No nighttime collision risk analysis carried out despite significant potential for nighttime movements of birds. It is proposed to locate the turbines within a pre-existing regularly used whooper swan flight line. These birds could be displaced or if they maintain current usage be at greater than normal collision risk."*

Significance for this application: A confirmed whooper swan roost at NPWS-owned land at Sharragh — between the Carrig and Ballincor development zones — uses a flightline toward the Little Brosna SPA that passes through or adjacent to the Ballincor Zone of Influence. The DAU's concern about locating turbines on a pre-existing whooper swan flightline applies here with equal or greater force.

Curlew — 1% national population significance:

> *"Collision mortality or displacement could be considerable for species which are already in serious decline, e.g. there are c.105 breeding pairs of curlew left in Ireland, therefore the loss of one pair would equate to almost 1% of the national breeding population."*

Significance for this application: This statement — made by the DAU in respect of the Carrig application — establishes the regulatory precedent that curlew cannot be assessed as a low-significance species at this location. With approximately 105 breeding pairs nationally, the DAU holds that individual-level mortality or displacement must be treated as significant. Ballincor assesses curlew collectively in the 'rarely recorded' group with no individual assessment. This is inconsistent with the regulatory standard set by the DAU for an application in the same shared ecosystem.

In-combination assessment:

> *"No reference in ornithological impact assessment to the proposed lighting of the turbines or site... The full impact of the development cannot be assessed without [nocmig and radar] information."*

Significance for this application: The DAU's finding that Carrig's assessment was incomplete for failure to address nocturnal movements applies to Ballincor. Both omissions — nocmig/radar and turbine lighting — are present in the Ballincor EIAR.

4.2.7.2 Cush Wind Farm (ABP 318816-24) — NPWS/DAU submission, 1 March 2024

The DAU's formal submission on the Cush Wind Farm application — granted in November 2024 — is the most recent and authoritative regulatory statement on ornithological survey and assessment standards for wind farms in this Zone of Influence. Key requirements are extracted below.

Golden plover — SPA connectivity and assessment standard:

> *"Due to the proximity of the SPAs to the project site and a lack of any scientific evidence to the contrary, and in accordance with the precautionary principle, the Department considers that it must be assumed that these birds are part of the SPA populations and therefore there is ecological connectivity to these sites."*

Significance for this application: The Ballincor NIS does not assume SPA connectivity as the default. It requires evidence of connectivity before treating birds on the site as SPA birds. The

DAU's position — that the precautionary principle requires the opposite assumption — sets the standard that Ballincor has not applied.

Avoidance rate applicability:

> *"The Department notes that these rates are based at wind farms with maximum turbine diameters of 92m. The proposed wind farm has a rotor/turbine diameter of 172m. The data used is from six wind farms in the UK, which appear to be in a lowland intensive agricultural setting (tillage). This is very different from the landscape surrounding the currently proposed windfarm which is a mixture of cutaway and cutover bog, conifer plantation and pasture."*

Significance for this application: Ballincor applies avoidance rates of 99.6% for golden plover — the same rates challenged by the DAU for Cush. The Ballincor turbines have rotor diameters of 149–163m. The DAU challenge is directly applicable: avoidance rates derived from 92m-diameter turbines in UK tillage landscapes cannot be assumed to apply to 149–163m machines in midland Irish bog and pasture.

In-combination assessment — explicit statement of failure:

> *"The Department considers that the risk to birds on migration of being involved in collisions with the proposed wind farm in its operational phase has not been satisfactorily evaluated by the applicant. Additionally, in-combination effects of several wind farms across this area on migrating birds has not been assessed."*

Significance for this application: This is the DAU's clearest statement on cumulative assessment failure in this landscape. It was made in March 2024 — after the Ballincor survey programme was already underway and before the Ballincor application was submitted. The in-combination assessment gap identified for Cush is present, unchanged, in the Ballincor NIS (see Section 5 and Appendix 4-5).

4.2.8 Conservation Status

Before any assessment of survey adequacy or impact magnitude, it is necessary to establish the conservation context within which this application falls. Several of the species most at risk from the proposed development are already in unfavourable conservation condition or at critical national population levels. This context is not background information — it is directly relevant to the legal test under Article 6(3), which requires assessment of whether a project would adversely affect the integrity of a European site. For a species already in unfavourable condition, the question is not merely whether the development accelerates decline, but whether it undermines the potential for recovery.

4.2.8.1 Golden plover — unfavourable condition at the SPA

The River Little Brosna Callows SPA conservation objectives document (NPWS, January 2025) confirms that the national population of wintering golden plover in Ireland has declined by 54% from 1994/95 to 2019/20 as monitored via IWeBS. The NPWS/DAU Cush letter (March 2024) states that golden plover is considered to be in unfavourable condition, with mean peak counts between 2016/17 and 2020/21 standing at 50% below the baseline reference values. National declines exceeding 20% have been recorded.

The first order conservation objective for golden plover at the SPA is to maintain the long-term winter population trend as stable or increasing. A development that adds annual collision mortality to a population already 50% below its baseline, in an area where the existing trajectory is one of continuing decline, does not merely add to a population — it undermines the realistic possibility of recovery to favourable conservation status. This framing — whether the project undermines recovery — is the standard the DAU applies and the standard this objection adopts.

4.2.8.2 Curlew — approximately 105 breeding pairs nationally

The Eurasian curlew is one of Ireland's most critically threatened breeding birds. The national breeding population stands at approximately 105 breeding pairs (NPWS data, confirmed in the DAU Carrig submission). The DAU's own statement in that submission makes the mathematics unambiguous: the loss of a single breeding pair equates to approximately 1% of the national breeding population.

The NPWS has designated curlew conservation a national priority. The species is Red-listed in Ireland and on Annex I of the EU Birds Directive. It was confirmed breeding in the region of the Arragh More Bog NHA to the southwest of Sharragh in the 2021 national breeding curlew survey — within the shared Zone of Influence. The 2025 BirdWatch Ireland survey on Ballyduff/Clonfinnane SAC confirmed its presence during the 2025 breeding season. The developer's assessment of curlew as a rarely recorded species subject only to collective evaluation cannot be reconciled with a national population of 105 breeding pairs.

4.2.8.3 Merlin — confirmed breeding on the adjacent SAC

Merlin is an Annex I species and a rare breeding raptor in Ireland. BirdWatch Ireland confirmed breeding merlin on Ballyduff/Clonfinnane SAC in May and June 2025, with the

nest subsequently located. This is the most current field evidence available, postdating the developer's survey programme. A breeding pair at this location will forage across an area that overlaps the proposed turbine zone. Disturbance during breeding, displacement from foraging habitat, and collision mortality risk to breeding adults are all directly relevant impact pathways that the EIAR does not adequately assess.

4.2.8.4 White-tailed eagle — approximately 150 individuals nationally

The entire wild white-tailed eagle population of Ireland comprises approximately 150 individuals (NPWS, 2025). The species was extinct in Ireland for over a century before reintroduction from Norway. A single confirmed collision fatality represents a loss of approximately 0.67% of the national population. The CRM produces a central estimate of 0.02–0.04 collisions per year — equivalent to 0.6–1.2 birds over the 30-year operational life of the wind farm. For a population of 150, individual-level irreplaceability makes the standard statistical thresholds designed for common species entirely inappropriate as an assessment tool.

4.2.9 Conclusion

The regulatory standards set out in this section — NPWS scoping requirements, NatureScot 2024 guidance, and DAU precedent from Carrig and Cush — establish a clear and demanding benchmark. The conservation status of the key species at risk establishes that the stakes are not ordinary. These are not common species at comfortable population levels where moderate uncertainty about survey methodology can be absorbed. They are species where individual-level losses carry national-level significance, where populations are already in unfavourable condition, and where the legal question is not 'how much harm is acceptable' but 'can adverse effects be excluded beyond reasonable scientific doubt.' Section 2 of this objection tests the survey programme against the benchmark established here.

4.3: Survey Methodology: Effort, Coverage, and Gaps

This section is the forensic core of this chapter. It tests the survey programme against the benchmark established in the previous section. Detailed data in Appendices 4-1, 4-2 and 4-4 are relied upon. References to CRM are to Appendix 7-2 of the EIAR (Ballincor CRM, Gittings, 2025).

4.3.1 The Survey Dataset — A Critical Distinction

Before examining individual gaps, it is necessary to query both the stability and reliability of the survey dataset.

Ecology Ireland began survey efforts with five VPs (EI1–EI5) across the first four seasons. Ttwo additional VPs were added mid-programme — EI6 and EI7 — covering the final four Ecology Ireland seasons. 2022 was absent from all surveys. An entirely separate and differently configured network (TB1–TB5) was deployed for the ninth season.



The stated reason for adding EI6 and EI7 is a change to the site boundary, but their positioning — oriented toward the River Brosna corridor and the wetland fields to the north

and west, reveals that they disproportionately capture wetland bird movement along a corridor the original five-VP network was not covering; the assessment does not address the obvious question this raises, namely why additional corridor-facing VPs were needed if the original network was adequate. The chronology gives the appearance of a survey adapting as ecological gaps were progressively recognised rather than executing a pre-designed standardised strategy. A programme that modifies its network in response to identified deficiencies cannot credibly claim to have delivered a consistent, comparably structured dataset across all seasons.

The same rationale may explain the introduction of Tobin for an additional season. Although the Tobin survey effort was considered an improvement on previous efforts, Tobin did not include a Vantage Point from the Eastern side – Eis VP5 is not covered at all.

The CRM pools records from three distinct VP configurations as though they represent a coherent nine-season programme; they do not. They represent three phases of a programme that evolved, and that evolution is itself evidence that the earlier phases were not adequate standing alone. They are not equivalent. Understanding the difference and why the difference matters is essential to evaluating every finding that follows.

4.3.1.1 The Ecology Ireland dataset: 8 seasons, 2020–2024

The CRM states explicitly: 'The Ecology Ireland vantage point surveys were concentrated in the middle of the day.' Surveys did not classify flight activity by height bands, using instead four informal height ranges. No dawn or dusk coverage was achieved in summer. At sunset in winter, only 16 total minutes of survey effort were recorded across four seasons and all VPs. The methodology deviated from NatureScot guidance in multiple respects (CRM Section 1.5, Section 2.4.3.1).

4.3.1.2 The TOBIN dataset: 1 season, winter 2025/26

TOBIN conducted vantage point surveys across five VPs (TB1–TB5) during winter 2025/26 (October to February). The methodology followed NatureScot (2017/2025a) guidelines. Surveys covered full daylight hours from sunrise to sunset and additionally covered the hours before sunrise and after sunset as required for waterfowl. Flight activity was classified into five NatureScot-compliant height bands. VPs were surveyed on separate days to preserve statistical independence between observations. The CRM acknowledges that TOBIN

coverage 'was more evenly distributed' with 'good coverage of the early morning and evening.'

4.3.1.3 Why the distinction is decisive

The TOBIN season represents **one** single winter. It contributes one of nine seasons to the combined dataset — approximately 11% of the total seasonal data. The remaining eight seasons, which form the overwhelming majority of the CRM's data inputs, are the Ecology Ireland seasons with their acknowledged methodological deficiencies. When the CRM draws on the combined dataset to calculate collision risk, flight activity densities, and population-level mortality estimates, it is drawing primarily on a dataset the CRM's own author describes as concentrated in the middle of the day, non-compliant in methodology, and insufficient to calculate recording rates for the dawn and dusk periods. → *Appendix 4-4: VP Effort by Season*

The addition of one high-quality season does not retrospectively validate eight deficient seasons. It cannot fill the seasonal gaps (summer 2022 is absent entirely). It cannot provide breeding season dawn/dusk data. It cannot supply nocturnal coverage. It cannot provide radar or nocmig data. The TOBIN season improves one winter's data input. The remaining gaps are structural and cannot be corrected by the presence of one compliant season. → *Appendix 4-1: Dawn and Dusk Survey Coverage; Appendix 4-4: VP Effort by Season*

4.3.2 Vantage Point Spatial Coverage: CRITICAL Gap

4.3.2.1 Portion of the proposed development was never within sight of any survey station

A review of the vantage point viewshed mapping reveals a problem that predates any question of survey hours or methodology: a meaningful portion of the proposed development was never within sight of any survey station. No amount of additional survey time can compensate for a vantage point that cannot see the turbine it is supposed to be monitoring.

The CRM (Section3.1.1.1) quantifies the scale of this problem. The Ecology Ireland 17m viewshed — mapped at the minimum turbine ground clearance height, the altitude most relevant to birds in the rotor-swept zone — covered only 62% of the 500m turbine buffer. At 30m, coverage improved to 85%. Three turbine locations presented specific and material problems: *Appendix 4-4, Spatial Coverage (Turbine-Level Coverage)*

1. T4: outside the Ecology Ireland 17m viewshed by approximately 40m. Covered at 30m only.
2. T5: outside both the 17m viewshed (by approximately 25m) and the 30m viewshed (by approximately 25m) in the Ecology Ireland dataset. Also outside the TOBIN 17m viewshed (by approximately 35m) and the TOBIN 30m viewshed (by approximately 10m). T5 is the only turbine outside all viewsheds at all heights across all nine survey seasons. Disturbance, displacement and collision mortality assessment at T5 is based entirely on modelling assumptions, with no direct empirical data at any height.
3. T6: approximately 200m from the Ecology Ireland 17m viewshed boundary — a substantial gap, not a marginal one. Approximately 25m from the 30m viewshed boundary. T6 falls within the TOBIN viewsheds, but TOBIN represents one winter season only.

The CRM responds to this by stating: 'the gaps in coverage are small and there are not any significant areas lacking coverage.' This characterisation is inconsistent with T6 being 200m outside the 17m viewshed and T5 being outside all viewsheds at all heights across the entire survey period. These are not marginal edge effects — they represent turbine locations for which the dominant dataset (Ecology Ireland, 8 seasons) provides no direct flight activity data at minimum turbine ground clearance height. → *Appendix 4-4, Sheet 3 — Part B: Turbine-Level Coverage*

A further spatial issue is identified in CRM Table 3.1: the proportion of total flight durations recorded within viewshed arcs at Ecology Ireland VPs varied from 40% at VP6 to 92% at VP7. At VP2, only 44% of recorded flight durations fell within the arc. At VP6, only 40% — meaning 60% of VP6's survey time was spent watching an area facing north, away from the wind farm site and the flooded River Brosna grasslands. The headline survey hours therefore significantly overstate effective coverage of the turbine buffer. → *Appendix 4-4: Flightlines Within vs Outside Arcs (Table of VP arc compliance).*

4.3.2.2 Vantage Point Coordinates and the Integrity of the Viewshed Analysis

The Collision Risk Model is built on viewsheds — the areas visible from each vantage point — and the entire model is only as reliable as those viewsheds are accurate. A viewshed is determined by three inputs above all others: the precise coordinates of the vantage point, the height of the observer's eye, and the flight height being assessed. If any of these is wrong, or simply unknown, the area the surveyor is assumed to have been able to see does not correspond to the area actually watched, and every figure derived from it — flight-line

densities, collision estimates, the proportion of activity at rotor height — is compromised at source.

The vantage point coordinates have not been disclosed. As set out above, the survey logs were requested and not provided; but the omission goes further than the watch records. At no point in the Biodiversity Chapter, the Ornithology Chapter, Appendix 7-1, or the Collision Risk Model are the coordinates of the vantage points themselves presented. This matters because the NatureScot guidance is explicit that it is critical that the spatial coordinates of VP positions are measured to the highest level of accuracy using a GPS, and that the VP locations and associated viewsheds referred to in the environmental statement must be those used in the field. Without the coordinates, the viewsheds cannot be independently reproduced, and the competent authority is asked to accept the model's spatial foundation on trust.

The viewsheds appear to have been reverse-engineered rather than surveyed. The Collision Risk Model author records that the vantage point locations and initial viewshed arcs were supplied by Ecology Ireland and TOBIN, that the Ecology Ireland arcs did not align precisely with the VP coordinates, and that revised arcs were therefore generated to force geometric alignment. The model further records that the Ecology Ireland viewsheds had large overlaps, that watches were frequently carried out concurrently at overlapping viewsheds — duplicating spatial coverage and risking the same flight-lines being recorded at more than one point — and that many mapped flight-lines fell outside the arcs entirely, with more or less 360° distributions of flight-lines around some vantage points, against a NatureScot recommendation to scan an arc of no more than 180°. These are not the characteristics of vantage points sited by a prior viewshed analysis; they are the characteristics of viewsheds fitted to vantage points after the fact.

Independent GIS analysis demonstrates how sensitive the result is to these unrecorded inputs. Dr Moran (Appendix 4-6) undertook viewshed analysis in ArcMap using a 25 cm photogrammetric digital surface model, and demonstrated three points directly relevant to this application. First, on position: three vantage points separated by less than 50 metres — the order of error that arises where a location is taken from a map or from a smartphone rather than a survey-grade GPS — produce materially different viewsheds with all other variables held constant, so an undisclosed or imprecise coordinate changes the area the surveyor is assumed to have seen. Second, on observer height: the visible area differs substantially between an observer eye-height of, for example, 135 cm and 185 cm — the

difference between a short and a tall surveyor, exacerbated where an observer sits or lies during a long watch — and there is no indication that observer height was standardised or accounted for, notwithstanding that some Ecology Ireland watches extended over a six-hour period during which the observer would have had to remain motionless at a fixed height. Third, on flight height: when the viewshed is generated for a flight height of 10 metres — a common commuting height for Whooper Swan — large areas of the site over which birds pass at or below that height fall outside the visible area altogether, so birds commuting low through the development zone would not reliably have been seen, would not have been recorded, and do not appear in the model.

The consequence is specific. The viewshed analysis purported to assess birds flying within the potential rotor-sweep, but it did not generate viewsheds for the low commuting heights at which Whooper Swan in particular habitually move between roosting and foraging sites. Combined with the near-absence of surveys at the low-light periods when these movements occur, this is likely to have produced a material under-estimate of the number of birds of this Annex I qualifying interest commuting through the proposed wind farm.

This is a survey-design failure, not a data-quality quibble. The distinction is important. A data-quality challenge can, in principle, be met by the developer's standard answer that conservative assumptions were applied. A defect in the spatial design of the survey cannot be cured that way: if the vantage points were not sited, recorded and reproduced to the required standard, the viewsheds do not describe what was actually watched, and no downstream assumption — however conservative — can reconstruct activity in areas that were never visible to the surveyor in the first place. As Dr Moran concludes, the Collision Risk Model, although it applies precautionary assumptions, is based on fundamentally flawed ornithological surveys and as such cannot be considered to be a scientifically robust assessment of the potential impact of the proposed wind farm on the local avifaunal resource.

The detection assumptions built into the viewshed analysis are also undermined by the published work of the Collision Risk Model's own author. A 2 km viewshed radius was used for the Ecology Ireland analysis. Dr Gittings, who prepared the Collision Risk Model, has himself published (Gittings, 2024, In Practice 126, 40–44) that the largest declines in detection rates occur at distances of more than 1000 m from the vantage point, and that 1 km viewsheds are likely to produce much more accurate vantage point survey results than the current industry standard of 2 km viewsheds. The model therefore relies, for a substantial

part of its assumed coverage, on a viewshed radius that its own author has identified in the peer-reviewed literature as materially less accurate than the alternative. Activity recorded — or, more importantly, missed — in the outer reaches of a 2 km viewshed cannot be assumed to have been detected at the rates the model implies.

4.3.3 Dawn and Dusk Coverage: CRITICAL Gap

Dawn and dusk coverage is structurally absent from summer; near-zero at dusk in winter.

The CRM (Section3.4.3 and Tables 3.8–3.9) provides the diel distribution of survey effort. This data — the developer's own — demonstrates a structural absence of coverage during the periods most ecologically significant for the SPA qualifying interest species. The figures below are drawn directly from CRM Tables 3.8 and 3.9 and are examined in full in Appendix 4-1. → *Appendix 4-1, Tables A.1 and A.2: Summer and Winter Diel Effort (from CRM Tables 3.8 and 3.9)*

Summer (Ecology Ireland, 4 seasons combined)

- At sunrise: 0 survey minutes across all VPs and all four summer seasons.
- In the hour after sunrise: 15 total minutes across all VPs and all four seasons — an average of less than 1 minute per VP per season.
- At sunset and in the two hours before sunset: 0 survey minutes.
- At two hours before sunset: 0 survey minutes.

CRM conclusion on this data: 'In summer there was no survey coverage during the first hour after sunrise or the two hours before sunset, and only 15 minutes of survey effort (across all vantage points and survey seasons) in the 1–2 hour period after sunrise.' → *Appendix 4-1, Table A.1: Summer Survey Effort by Time Period*

Winter (Ecology Ireland, 4 seasons combined vs TOBIN 1 season)

- Ecology Ireland — pre-dawn (hour before sunrise): 152 total minutes across 4 winters. TOBIN — 612 minutes in one winter alone. TOBIN's single season captures four times the pre-dawn effort of four Ecology Ireland winters combined. → *Appendix 4-1, Table A.2: Winter Survey Effort — Ecology Ireland vs TOBIN*
- Ecology Ireland — at sunset: 16 total minutes across 4 winters (approximately 0.1 minutes per daylight hour). TOBIN — 869 minutes in one winter. → *Appendix 4-1, Table A.2: Winter Survey Effort (row: Sunset)*

- Ecology Ireland — post-dusk (hour after sunset): 0 minutes across all 4 winters. TOBIN — 538 minutes in one winter. → *Appendix 4-1, Table A.2: Winter Survey Effort (row: Sunset − 1 / post-dusk)*

CRM conclusion: 'There was not sufficient survey effort to calculate recording rates for the AM1 period in summer or for the PM1 period in both seasons.' This is a self-admission that the model cannot assess crepuscular activity from the dominant dataset. → *Appendix 4-1, Section 5: Conclusions (Conclusion 1 and 2); Appendix 4-2, Entry A6.*

The significance of these absences is not merely methodological. The CRM itself notes (Figure 3.6) that Whooper Swan and Mute Swan showed higher recording rates in the early morning in the Ecology Ireland winter dataset — 'which could have been due to birds commuting from nocturnal roost sites.' The CRM further acknowledges (Section4.7.2.5) that 'uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk.' The dawn and dusk periods are not optional survey windows — they are the peak activity periods for the species at greatest risk. → *Appendix 4-1, Table A.4: Dawn and Dusk Significance by Priority Species (rows: Whooper Swan, Golden Plover)*

For curlew, the dawn period covers peak territorial display by breeding males — the very behaviour that would confirm breeding presence. For golden plover, pre-roost flocking and roost departure are crepuscular events involving the largest aggregations — the events most relevant to collision mortality risk. For Greenland white-fronted goose, roost commuting in pre-dawn darkness is the primary movement pattern. None of these activity periods are captured in the Ecology Ireland dataset, which provides the dominant data input to the CRM. → *Appendix 4-1, Table A.4: Dawn and Dusk Significance by Priority Species (rows: Curlew, Golden Plover)*

4.3.4 The Brosna Corridor: Highest Bird Densities Excluded from the CRM — CRITICAL Gap

The CRM (Section3.3.2 and Table 3.4) identifies a structural feature of bird use at the Ballincor site that is of direct relevance to the collision risk assessment: the River Brosna corridor divides into a northern section and a southern section, with markedly different bird activity densities. The northern section — the Brosna North Corridor — has the highest flight activity densities for multiple SPA qualifying interest species anywhere in the survey area. The CRM then excludes those densities from the collision risk model. The consequence is

that the CRM modelling collision risk for the turbines is built on data from the lowest-activity zone, while the highest-activity zone is set aside.

4.3.4.1 What the CRM's own data shows

CRM Table 3.4 provides flight activity densities at potential collision height (birds/km²/month) for the North Corridor, South Corridor and the remainder of the survey area. The following figures are drawn directly from that table at the 17m viewshed height — the minimum turbine ground clearance, most relevant to collision risk:

- Whooper Swan: North Corridor 901 birds/km²/month — 4.7× the remainder density of 191
- Wigeon: North Corridor 8,434 — 8.0× the remainder of 1,058
- Lapwing: North Corridor 7,845 — 5.8× the remainder of 1,363
- Black-tailed Godwit: North Corridor 10,573 — 3.1× the remainder of 3,377

All four of these species are SPA qualifying interests of the River Little Brosna Callows SPA. For three of them — Whooper Swan, Wigeon and Lapwing — the CRM explicitly states that densities in the South Corridor "were not higher than elsewhere in the survey area." This means for those species, the CRM models collision risk from the remainder category — the lowest density zone — while excluding both the highest-density zone (North Corridor) and the medium-density zone (South Corridor) from the core calculation.

4.3.4.2 The CRM's rationale and why it is insufficient

The CRM modeller excluded the Brosna North Corridor from the spatially-structured models on the stated basis that "there are no turbine locations within, or close to, the northern part of the Brosna corridor" (CRM Section2.5.3). Birds feeding in the North Corridor do not remain there. They commute south — through or over the wind farm footprint — to reach the South Corridor feeding grounds, the wider landscape, and their roost sites. Those commuting flights, in a zone where eleven turbines will be operating, generate collision risk. The in-situ North Corridor density figures are excluded from the CRM; the commuting flight activity those densities imply is not separately modelled. No commuting flight analysis was conducted for birds moving between the North Corridor and the turbine zone. The exclusion of the North Corridor therefore removes the most ecologically active part of the site from the collision risk

assessment without replacing it with any equivalent analysis of commuting flight exposure. → *CRM Section2.5.3 and Table 3.4; Appendix 4-4, Sheet 3 — Part A: Spatial Structure.*

4.3.4.3 The annual flooding variability problem

A further consequence of the North Corridor exclusion is identified by the CRM itself (Section4.7.2.3): "*for several waterbird species, there may be large annual variation driven by flooding patterns associated with water levels in the Little Brosna River.*" In good flooding years — when the North Corridor fields are extensively inundated — bird concentrations in that zone will peak well above the mean densities in Table 3.4. The exclusion of the North Corridor from the CRM means that peak-year densities in the highest-activity zone do not appear in the collision risk calculations. The CRM's central estimates therefore reflect average conditions in the lowest-activity zone and do not capture the elevated risk in peak flooding years. → *CRM Section4.7.2.3; Appendix4-2,: North Corridor exclusion — annual variability.*

4.3.4.4 The South Corridor: a separate concern

For Whooper Swan, Wigeon and Lapwing, the South Corridor densities are not treated separately in the spatially-structured models because the CRM found them similar to the remainder. However, the South Corridor contains two turbine locations and is the section of the River Brosna closest to the proposed structures. For those two turbine locations, birds moving along the river at collision height are directly exposed. The CRM modelling for these species treats the South Corridor and the rest of the site as a single uniform density zone, based on the remainder figure — which, for Wigeon at 17m, is 1,058 birds/km²/month, compared to 8,434 in the North Corridor a short distance upstream. The modelling does not distinguish between the different species composition or flight behaviour of birds in the South Corridor versus the remainder of the site. For a species such as Wigeon — a nocturnal feeder with peak flight activity at dawn and dusk, and with the highest density concentration upstream of the turbine zone — this conflation understates the specific exposure at the river corridor turbine locations. → *CRM Table 3.4; Appendix 4-2, South Corridor spatial treatment.*

4.3.4.5 The combined effect

The combined consequence of the North Corridor exclusion, the South Corridor conflation, and the absence of a commuting flight analysis is that the CRM for Whooper Swan, Wigeon, Lapwing and Black-tailed Godwit — all SPA qualifying interests — is built on flight activity data from the survey area's lowest-density zone, while the area of highest density is

excluded, the intermediate zone is not separately treated for three of the four species, and the commuting movements that connect the high-density feeding area to the turbine zone are unquantified. This is not a marginal methodological point.

For the species most concentrated in the North Corridor, the collision risk estimates in CRM Table 4.1 may be substantially lower than estimates based on the actual movement patterns of the birds using the site. That conclusion is supported by the CRM's own distance correction factors: at 1.52–1.80× for Whooper Swan and 2.65–2.88× for Wigeon (CRM Table 4.6), the CRM modeller acknowledges that the current central estimates already understate collision risk by those factors without applying the under-detection correction. The corridor exclusion compounds this further. → *Appendix 4-2, A10: CRM Limitations*

The raw data in Appendix 7-1 shows that a substantial proportion of wetland bird records along the River Brosna corridor are at very low altitudes — 2.5m, 5m, 10m and 15m — including Whooper Swan, Mallard and Grey Heron, consistent with birds commuting low along drainage features and riverbanks between feeding areas and roost sites. This matters for detectability: a bird flying at 2.5m above a watercourse at 800–1,000m range from a VP is substantially harder to detect than a bird flying at 100m in open airspace at the same range, yet the CRM's distance correction factors are derived from general distance-decay analyses across the full viewshed and are not calibrated to the low-altitude corridor flights that dominate the North Corridor records. The species most concentrated in the corridor are therefore flying at precisely the altitudes most subject to detectability limitation at range, meaning the under-detection problem the CRM acknowledges but excludes from its central estimates is likely to be greatest for the species that matter most. Combined with the North Corridor exclusion from the CRM and the absence of dawn and dusk coverage, the true collision exposure for corridor-associated species is underestimated in three compounding and directionally consistent ways. → CRM Section 5.3 and Table 4.6; Appendix 7-1 A and C.

4.3.5 Breeding Bird Coverage — Merlin and Curlew: CRITICAL Gap

The Ecology Ireland breeding surveys (2020, 2021, 2023, 2024) recorded merlin in breeding seasons 2023 and 2024 and in all four winter seasons. Curlew was recorded in breeding season 2023 and in winter 2020/21. Both species had fewer than 10 records across the survey period and were assessed collectively with other rarely recorded species at 'local importance (higher value).' No targeted breeding surveys using appropriate methodology were conducted for either species. The EIAR notes no confirmed breeding for either species within the development zone. → *Appendix 4-3, SectionC4.3: Merlin (recorded presence in ZoI); SectionC4.2: Curlew (recorded presence in ZoI)*

4.3.5.1 BirdWatch Ireland findings — Ballyduff/Clonfinnane SAC, May and June 2025

BirdWatch Ireland undertook breeding bird surveys on Ballyduff/Clonfinnane Bog SAC in May and June 2025, using passive acoustic monitoring (ARUs) deployed around the perimeter of the SAC. The surveys ran for five days (31 May, 1, 2, 3, and 4 June 2025). All recordings were analysed using RavenPro 2.0. The findings are unambiguous:

- Breeding Merlin (Falco columbarius) confirmed. The nest was subsequently located.
- Curlew (Numenius arquata) confirmed present during the breeding season.
- Kestrel (Falco tinnunculus) confirmed present.
- A wide range of other species recorded.

Ballyduff/Clonfinnane Bog SAC is located approximately 2.8km northwest of the proposed Ballincor wind farm site. The confirmed breeding pair of merlin on the SAC will forage across a range that extends 2–3km from the nest during the breeding season, placing the proposed turbine zone directly within the foraging range of breeding adults. → *Appendix 4-3, SectionC4.3: Merlin — recorded presence in Zone of Influence (foraging range analysis)*

4.3.5.2 The significance of this evidence

The survey methodology used passive acoustic monitoring with ARU deployment which is precisely the technology NatureScot 2024 recommends and the NPWS/DAU required for the Ballncor submission. Its absence from the Ballincor programme meant that equivalent evidence was not gathered.

The developer's inference that low recording rates during VP surveys indicate 'limited reliance on the area' for merlin is directly contradicted by confirmed active breeding within the foraging range of the development zone, detected using appropriate methodology.

For curlew — with approximately 105 breeding pairs nationally — confirmed presence during breeding season on a SAC within 3km of the development constitutes evidence of a potential breeding pair in the Zone of Influence. The developer's collective assessment at 'rarely recorded' level is inadequate for a species at this national population level.

Neither the EIAR nor the NIS provides a breeding disturbance assessment for merlin or curlew at turbine-zone distances. Research documents avoidance distances of up to 800m for curlew from operational turbines and sensitivity of merlin to disturbance during incubation

and chick-rearing. These assessments are absent. → *Appendix 4-3, SectionC4.2: Curlew — developer assessment and gaps (displacement distances); SectionC4.3: Merlin*

The most current field evidence available to An Coimisiún Pleanála — the May/June 2025 BirdWatch Ireland breeding bird survey — confirms active breeding of Annex I species (merlin) and a Red-listed nationally critical species (curlew) on the SAC immediately adjacent to the Ballincor development. A breeding merlin pair nesting on the adjacent SAC, with a foraging range overlapping the turbine zone, engages the Article 6(3) disturbance and displacement pathway directly. The developer's treatment of merlin as a rarely recorded species subject only to collective assessment is not tenable.

4.3,6 Absence of Nocturnal Surveys: CRITICAL Gap

Nocturnal surveys — entirely absent across all nine seasons for all species

No nocturnal surveys were conducted at any point across the nine-season Ballincor ornithological programme. This is an absolute absence, not a partial gap. The NPWS/DAU submission on the Carrig application — in the same shared ecosystem — stated explicitly: 'No nocturnal surveys of migration or nocturnal commuting movements of wildfowl over or in the zone of influence of the site. A range of wildfowl known to carry out movements at night, which the daylight surveys would have missed... The Department's view is that the full impact of the development cannot be assessed without this information.' → *Appendix 4-2, Entry A6: CRM admission — insufficient effort for PM1/AM1; Entry E1: Nocturnal activity rankings*

This statement applies without qualification to Ballincor. The species for which nocturnal movements are most relevant include:

- Whooper swan — commutes between nocturnal roost sites and feeding grounds in pre-dawn darkness. The Sharragh NPWS roost (confirmed by the Oran Ecology / Hoctor submission) lies within the shared Zone of Influence. Pre-dawn departure from this roost on the flightline toward the River Little Brosna SPA is entirely unrecorded across all nine seasons. → *Appendix 4-1, Table A.4: Whooper Swan — crepuscular/nocturnal activity pattern and survey gap*
- Golden plover — large winter flocks exhibit nocturnal and crepuscular movements between feeding and roosting areas. The CRM applies a nocturnal activity ranking of 2 (25% nocturnal activity rate) using literature values, not site data. → *Appendix 4-1, Table A.4: Golden Plover — nocturnal activity pattern; Appendix 4-2, Entry E1*

- Greenland white-fronted goose — roost commuting occurs in pre-dawn darkness. The tagged individual recorded by a University of Saskatchewan PhD researcher passing within 6km of the Cush Wind Farm site during migration demonstrates connectivity between the known GWfG roost sites and the Zone of Influence — a movement that would occur at night.
- Curlew, lapwing, black-tailed godwit, wigeon, teal, mallard — all assigned nocturnal activity corrections in the CRM, all based on literature values because no nocturnal site data exists.

The CRM applies nocturnal activity corrections to seven species as a modelling substitute for empirical nocturnal data. These corrections necessarily introduce assumed values where measured values are required. NatureScot 2024 guidance recommends nocturnal survey effort where nocturnal activity is relevant. The DAU's explicit requirement that nocturnal surveys be conducted for this landscape type has not been met. *→ Appendix 4-2, Entry E1: CRM nocturnal ranking limitations (CRM Section2.6.7.3)*

4.3..7 Absence of Acoustic Monitoring and Nocmig - ABSENT

Acoustic monitoring / nocmig — not conducted across all nine seasons

No acoustic monitoring — either passive daytime recording or nocturnal migration (nocmig) monitoring — was conducted across any of the nine survey seasons. The NPWS/DAU Carrig submission states: 'Acoustic recording of calls from migrating birds over fixed points at night (nocmig) is now widely used and should be used to indicate bird usage in the zone of influence of the proposed development.' NatureScot 2024 recommends nocmig deployment as a tool for quantifying bird activity during the periods not covered by vantage point surveys. *→ Appendix 4-2, Entry A6: diel coverage self-admission; Appendix 4-3, SectionC4.3: Merlin — acoustic methodology gap*

The relevance of this absence was demonstrated by the 2025 BirdWatch Ireland breeding bird survey on Ballyduff/Clonfinnane SAC. That survey deployed six Autonomous Recording Units (ARUs — Song Meter Micro 2, Wildlife Acoustics) around the perimeter of the SAC for five days in May and June 2025. Analysis of the recordings using RavenPro 2.0 confirmed the presence of breeding merlin, with the nest subsequently located. The same methodology also confirmed curlew and kestrel presence. This is precisely what acoustic monitoring was designed to detect — species that are active at times or in habitats where vantage point surveys are insufficient. The absence of this technology from the Ballincor survey programme means that equivalent findings on or adjacent to the Ballincor development zone were not and could not be made.

4.3.8 Temporal Effort — Hours per VP per Season: SIGNIFICANT Gap

The analysis reveals a Significant Gap with Temporal effort below NatureScot minimum in three summer seasons and entirely absent in 2022.

The CRM (Table 2.1) shows that in six of the eight Ecology Ireland seasons, 36 hours of watches were completed at each VP, while in the other two seasons 30 hours were completed. NatureScot 2024 requires a minimum of 36 hours per VP per season. EI1–EI5 therefore fell below this minimum in summer 2020, summer 2021, and summer 2024 (30 hours each). Summer 2023 achieved 36–37 hours at EI1 and 36 hours at EI2–EI7. → *Appendix 4-4, VP Effort by Season (Table of hours per VP per season, Section B: NatureScot comparison)*

More seriously, summer 2022 is entirely absent from the dataset. The CRM states (Section2.3.1): 'The flight activity data used for the collision risk model comprised a nine-season vantage point survey carried out between summer 2020 and summer 2024, with the exception of summer 2022.' No explanation is provided for this omission. An entire breeding season — four months of curlew territorial behaviour, merlin breeding, and breeding wader activity — is absent from the dataset without explanation. → **Appendix 4-4: VP Effort by Season**

A further issue with temporal effort concerns concurrent watches. The CRM (Section3.2.1) states that over 50% of Ecology Ireland survey days included concurrent watches at all VPs, with a further 20% at all but one. Given the large overlaps between Ecology Ireland viewsheds, the predominance of concurrent watches 'created significant issues for the statistical independence of the flight activity sampled at each vantage point.' The CRM acknowledges this directly. TOBIN in its ONE season surveys VPs on separate days, preserving independence. → **Appendix 4-2, Entry A9: Concurrent watches — statistical independence (CRM Section3.2.1)**

Expert review by Dr Pat Moran Appendix 4-6 has identified a separate breach of the NatureScot requirement that VP survey must not take place simultaneously with any other fieldwork on the site, as it may cause disturbance and invalidate the VP survey results. Dr Moran establishes that, on 27 June 2023, a minimum of three vantage point surveys were undertaken at the same time as aquatic surveys were being conducted on the site. The absence of a survey schedule for either programme prevents the Group from establishing

how systematically this occurred; but the developer's own records confirm it occurred at least once, on a date when three of the vantage points were affected. On the NatureScot standard, the affected watches — and any Collision Risk Modelling derived from them — are liable to be invalidated. This is a distinct defect from the concurrent-watch issue addressed above: there, the concurrency is between vantage points; here, it is between the vantage point surveys and unrelated fieldwork that the guidance states must not run alongside them.

4.3.9 Survey Seasonality — Whooper Swan and Curlew Breeding Gaps - SIGNIFICANT Gap

4.3.9.1 Whooper Swan — winter coverage and seasonal absence

Whooper swan is a winter visitor to Ireland, present from October to March. All surveys outside winter seasons therefore cannot record whooper swan. Of the nine seasons: four Ecology Ireland breeding seasons and one TOBIN winter provide coverage. The four Ecology Ireland breeding seasons record no whooper swans — the species is simply absent. The four Ecology Ireland winter seasons record the species but with the dawn and dusk coverage gaps documented in Section 2.4. The TOBIN winter season provides the only dawn/dusk-compliant data for whooper swan — one season.

The CRM applies a nocturnal activity correction for whooper swan (waterfowl correction adding 2 hours to the daylight period). This correction is based on literature values, not site data, because the Ecology Ireland surveys did not capture the periods during which nocturnal and crepuscular activity would have been recorded. The TOBIN season did not show higher recording rates in the early morning — but this is interpreted by the CRM as suggesting lower crepuscular activity, not as confirmation that such activity is absent. One season cannot be definitive on this point. → *Appendix 4-1, Table A.4: Priority Species — Whooper Swan (nocturnal activity pattern and survey gap)*

4.3.9.2 Curlew — breeding season coverage and the 2022 gap

Curlew breeding season runs from approximately March to July. Breeding territories are established from March and territorial calling begins at dawn. Four Ecology Ireland breeding seasons (2020, 2021, 2023, 2024) provide some coverage but with zero dawn coverage in summer — precisely the period when territorial curlew activity is most detectable. Summer 2022 is entirely absent, removing one complete breeding season from the record. → *Appendix 4-1, Table A.3: Season-by-Season Summary (EI Summer rows — dawn/dusk coverage ~0%)*

The national breeding curlew survey (NPWS, 2021) recorded a probable breeding curlew in the region of the Arragh More Bog NHA and Kilcarren-Firville Bog SAC to the southwest of Sharragh — within the shared Zone of Influence.

4.3.10 Environmental Condition Data — The Scoping Requirement That Was Not Met SIGNIFICANT GAP

The NPWS scoping response placed a specific and itemised requirement on the applicant: records must be supported by "basic environmental data such as hourly estimates of visibility, glare arcs, cloud cover and precipitation during Vantage Point (VP)/Walkover Survey periods." This requirement exists so that survey data can be independently verified against the conditions in which it was collected. It is not a presentational standard — it is an evidential one. Without it, the competent authority cannot assess whether detections or non-detections during any given watch reflect actual bird activity or the conditions in which the survey was conducted.

Chapter 7 and its appendices do not contain this data. A review of Appendix 7-1 — the raw vantage point data submitted with the application — confirms that the data columns present are: date, time, species, abundance, duration of observation, initial flight height, duration within application site, and off-site duration. There is no column for visibility, cloud cover, precipitation or glare arc. These data were either not recorded or not submitted. Either outcome fails to meet the scoping requirement.

This presents 3 practical consequences:

1. The 11% of Ecology Ireland watches conducted in reduced visibility cannot be independently verified. The CRM author (App 7-2, Section3.2.3) acknowledges that "both sets of vantage point surveys included some watches with reduced visibility where the full 2km viewsheds at potential collision height were not fully visible. These comprised 11% of the Ecology Ireland watches and 7% of the TOBIN watches." The CRM modeller excluded these watches from one version of the dataset. But because no watch-by-watch visibility record was submitted, the decision about which watches to exclude is not auditable from the submitted data. An Coimisiún Pleanála cannot verify how those 11% were identified, which watches they correspond to, or whether the identification was consistent and complete. The raw condition data that would allow this verification does not exist in the submitted application.

2. Glare arc data is absent — a gap of particular significance for dawn and dusk coverage. Glare arcs define the periods within each survey day when low sun angle renders part or all of the viewshed unusable for detection. Their absence means it is impossible to assess what proportion of the limited dawn and dusk coverage that did occur — identified in this objection as the most ecologically significant periods for the priority species — was conducted in conditions where detection of flying birds was actually possible. In the absence of glare arc records, the survey effort tables in CRM Tables 3.8 and 3.9 cannot be read as reliable measures of usable observation time during the critical early morning and late evening windows. → *Appendix 4-1, Tables A.1 and A.2: Diel Survey Effort Distribution.*
3. Precipitation and cloud cover data were not submitted, removing the ability to quantify independently the proportion of survey time conducted in conditions of reduced avoidance capacity. This is not a theoretical concern. The NPWS/DAU submission on the Carrig Wind Farm application — in the same shared ecosystem — stated directly: "The Department can find no detailed reference in the assessment, quantifying the likely number of nights of fog, low cloud ceiling or precipitation at the site based on previous weather patterns." The DAU identified this as material because, as that submission continued, "low visibility events — such as fog or heavy rain — are likely to greatly reduce the ability of species to avoid danger areas." A survey programme from which precipitation and cloud cover data are absent cannot provide the basis for quantifying that risk.

The NPWS scoping response set these requirements in advance of the survey programme. The developer was aware of them. Their absence from the submitted application is not a minor presentational shortfall — it means that the quality of the survey data on which the entire CRM rests cannot be independently audited against the environmental conditions in which it was gathered. The CRM's own treatment of non-compliant watches depends entirely on the CRM author's internal assessment of conditions that were not systematically recorded. That is not a standard that meets the NPWS's explicit requirement for data capable of independent verification.

4.3.11 CRM Self-Identified Gaps

The CRM document itself acknowledges a significant number of limitations, caveats, and uncertainties in the survey dataset and the model built from it. These are not minor qualifications — they include statements that the model cannot calculate recording rates for key time periods, that survey methodology deviated from guidance in multiple respects, that

distance under-detection would increase collision estimates by factors of 1.5–3 if included, and that uncertainty due to avoidance rate uncertainty is excluded from the reported ranges. A full catalogue of 25 such entries — each with CRM section and page reference — is provided in Appendix 4-2 of this objection. The following are the most significant: → *Appendix 4-2: CRM Self-Identified Limitations — Full Catalogue (25 entries with CRM page references)*

- CRM Section1.5: 'The methodology of most of the vantage point surveys carried out for this project deviated in a number of respects from the recommended methodology (NatureScot, 2025a).'
- CRM Section3.4.3: 'There was not sufficient survey effort to calculate recording rates for the AM1 period in summer or for the PM1 period in both seasons [Ecology Ireland dataset].'
- CRM Section4.7.2.5: 'Uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk.'
- CRM Section5.3: 'The uncertainty ranges did not take account of potential under-detection of distant flightlines. Inclusion of this factor would raise the mortality increases by factors of around 1.5–3 times.'
- CRM Section5.3: 'The uncertainty ranges also did not take account of uncertainty due to limited knowledge of avoidance rates.'

These admissions are the developer's own. They establish that the CRM outputs are not complete, precise, and definitive as required by Article 6(3) of the Habitats Directive and the legal standard in Case C-127/02 (Waddenzee). See Appendix 4-2 for the complete catalogue with cross-references to the sections of this chapter where each admission is challenged. → *Appendix 4-2: Cross-Reference Summary table*

Deeper investigation of Appendix 7-1 reveals real issues with the raw data

- Height estimation was collapsed into category midpoints. The value 62.5m appears as the recorded flight height across dozens of records spanning multiple species, seasons and VPs. It is not a plausible product of independent estimation — it is a category midpoint. The same applies to 2.5m, which recurs across Whooper Swan, Mallard and Grey Heron records at multiple VPs and seasons. Where height recording has defaulted systematically to a small number of repeated values, the altitude distribution inputs to the CRM cannot be considered reliable. The CRM is

highly sensitive to this variable: the proportion of flight time assigned to the collision risk zone is directly determined by these records.

- Duration fields are missing or anomalous in a non-trivial number of records. Examples include the Golden Plover record at VP5 on 14/03/2022 (450 birds, 25m, off-site duration "Unknown"); Mallard WT45-24 at VP1 on 31/05/2024 (duration of observation and duration within application site both "Unknown" at 2.5m); and two consecutive Buzzard entries at VP1 on 23/09/2024 carrying a dash in the duration field and "Unknown" in the height field. These records contribute neither flight time nor altitude data to the CRM, yet their existence is not accounted for in the uncertainty ranges and the proportion of observed flight activity that could not be quantified is not disclosed.
- Extreme duration records are not accounted for in the CRM methodology. The appendices contain records of 750 seconds (Buzzard, RP189-24), 840 seconds (Golden Plover, WD23-20/21, 28 birds), 900 seconds (Mallard, WT31-24, entirely within site at 2.5m) and 1,200 seconds (Mallard, WT127-23, entirely within site at 0m). Fifteen to twenty minutes of continuous observation is not consistent with a bird transiting the survey area — it represents feeding, loafing or circling within the VP envelope. For a 28-bird golden plover flock observed for 840 seconds, the treatment decision is material to the aggregate collision estimate.

The precision implied by the CRM's outputs is not supported by the underlying data. Decimal-place collision estimates built on height records systematically rounded to category midpoints, unknown duration fields, and extreme observations of undisclosed treatment do not constitute the complete, precise and definitive evidence base that Article 6(3) requires. This is a further dimension of the uncertainty that CRM Section 5.3 acknowledges is not fully reflected in the reported ranges. → Appendix 7-1 A, B and C; CRM Sections 2.4.1 and 5.3.

These admissions are the developer's own.

4.3.12 Conclusion

The survey programme has a cumulative effect that goes beyond the sum of its individual gaps. Every major deficiency presented shares a common characteristic: it removes or suppresses data from the periods and places where bird activity is highest and collision risk is greatest. Dawn and dusk surveys are absent across eight summers and near-absent across four winters — precisely when whooper swan, golden plover, curlew and Greenland white-fronted goose are most active. The North Corridor, with densities four to eight times

higher than the modelled zone for four SPA qualifying species, is excluded from the CRM entirely. Nocturnal surveys, acoustic monitoring and radar are absent across all nine seasons. Turbine T5 has no empirical data at any height across any season. Summer 2022 is missing without explanation. The only methodology that would have detected confirmed Annex I breeding within the foraging range of the development was never deployed.

The pattern is consistent and directional. Taken together, the gaps produce a dataset that systematically under-samples the highest-risk scenarios and oversamples the lowest: mid-day, dispersed flight activity in the lowest-density zone of the survey area. The CRM then uses those suppressed figures as inputs, produces estimates that fall below the 1% annual mortality threshold, characterises the threshold as highly precautionary, and concludes that adverse effects are negligible. The circularity is complete: a dataset structured to undersample peak risk produces low collision estimates; low collision estimates are used to demonstrate safety; the assessment is described as conservative.

This circularity is compounded by the progressive complexity the CRM is required to deploy to compensate for the dataset's instability — spatially structured models for three different VP configurations, distance correction factors of 1.52–2.88×, diel corrections for missing dawn and dusk periods, and literature-derived nocturnal rankings for seven species in the absence of any site-specific nocturnal data. Each analytical step is defensible in isolation. Together they reveal a modelling framework that is not processing a coherent dataset but actively reconstructing an unstable one. The complexity is not confirmation of rigour — it is a measure of how much analytical ground the model is being asked to cover for a dataset that did not deliver it.

The CRM's own author makes the consequence explicit: applying the distance under-detection corrections he excluded from the central estimates would raise collision mortality figures by factors of 1.5 to 3 times across all species — sufficient, for several species, to breach the 1% threshold the developer uses as its primary demonstration of safety. He further acknowledges potential under-estimation of whooper swan collision risk, exclusion of avoidance rate uncertainty from the reported ranges, and that the black-tailed godwit assessment is "not robust."

The Habitats Directive requires the competent authority to ascertain — not merely suspect — that adverse effects can be excluded, and ascertainment requires complete, precise and definitive data. The survey programme delivered what nine seasons of mid-day concentrated surveys, with no nocturnal component, no acoustic monitoring and no dawn or dusk coverage in summer, could reasonably be expected to deliver: a reliable characterisation of bird activity during the lowest-risk period of each day, in the lowest-density zone of the site, for species detectable by conventional daylight observation. That is a partial picture. The picture must be complete. It is not.

4.4 Analysis, Reasoning and Conclusions — Credibility

Section 4.3 demonstrated that the survey programme fails to meet the standards established in Section 4.2 across a host of identified gaps, many of them critical. The conclusion of Section 2 is that the dataset cannot support ascertainment. Despite the unacceptable survey effort, the surveys delivered what they delivered and this section accepts that dataset as delivered and asks a different question: does the analysis itself hold up? Does the reasoning from data to conclusion follow? Where the CRM and EIAR acknowledge limitations, are those limitations honestly carried through to the conclusions? And does the developer's mitigation framework provide any backstop against the gaps in the assessment?

The answer to each question is, in material respects, no.

4.4.1 Baseline Completeness — Species Missing Without Justification

The River Little Brosna Callows SPA has eleven qualifying interest species. The CRM excludes several from individual assessment on the basis of 'fewer than ten records' during the survey period. The principal exclusions are set out in full in Appendix 4-3 (Table C1) and addressed species by species in Section 4. The key structural point here is narrower: the exclusion threshold is not applied consistently.

CRM Table 3.7 acknowledges that black-tailed godwit had fewer than ten records in the dataset. The CRM modeller included it anyway, stating that the records generated such large collision risk estimates that exclusion was not appropriate. This exception is directly documented in the CRM's own text. The threshold — fewer than ten records — is therefore not a rule. It is a filter that is applied where it produces lower estimates and set aside where a small number of records happen to generate high ones. For pintail, a nationally important flock of 200 birds was recorded and dismissed as a one-off. For black-tailed godwit, a single flock of 1,750 birds drove 95% of the CRM estimate and was retained. The asymmetry is not explained and is not consistent with any neutral scientific principle. → Appendix 4-2, Entry D4: black-tailed godwit exception to the fewer-than-ten-records rule; Section 3.5.3 below.

The underlying cause of the low record counts — dawn and dusk survey gaps established in Section 2.3, the Brosna North Corridor exclusion established in Section 2.4, and the summer 2022 absence established in Section 2.8 — is not addressed in any of the species exclusion justifications. The developer infers limited site use from low records; the correct inference is limited survey coverage of the periods when the excluded species are most active.

4.4.2 The Dominant Dataset Problem — Within-Season Variability

Section 2.1 (The Survey Dataset) established that the Ecology Ireland dataset provides 88% of the seasonal data and is methodologically deficient in multiple respects acknowledged by the CRM author. One further analytical point from the CRM itself is worth isolating here because it carries a specific implication not drawn out in Section 2.

CRM Section4.7.2.1 analyses how uncertainty reduces as survey seasons are added. It concludes: "Uncertainty decreased substantially when the number of survey seasons increased from one to two, with smaller reductions as additional seasons were added. This suggests that the principal source of uncertainty arises from within-season sampling variability rather than the number of seasons."

This is a critical admission. The CRM's own analysis shows that the dominant source of uncertainty is not how many seasons were surveyed but the quality of data within each season. The Ballincor survey has nine seasons. Eight of them replicate the same within-season variability caused by mid-day concentration, non-compliant watches, and the absence of dawn and dusk coverage. Adding more Ecology Ireland seasons does not reduce this uncertainty — it replicates it. The TOBIN season reduces it for one winter. For the other eight seasons, additional survey seasons have delivered diminishing returns on a structurally deficient baseline. → Appendix 4-2, Entry C3: CRM self-identified limitation on within-season uncertainty.

4.4.3 Population Denominators — Scale and the Recovery Trajectory Question

The CRM assesses mortality at three scales for golden plover: national, county and local SPA. At national scale, the central collision estimate generates a percentage so small it is statistically indistinguishable from zero. The developer uses this national figure to contextualise the local SPA figure as modest. The NPWS/DAU Cush letter is explicit on why this is wrong: birds at the site must be assumed to be part of the SPA population in the absence of evidence to the contrary. The SPA scale is the legally relevant denominator — not national. At SPA scale, the upper uncertainty range of the central golden plover estimate

already exceeds the 1% threshold. → Appendix 4-3, SectionC4.5: Golden Plover — population denominator analysis.

The more fundamental population question is not asked at all. The NPWS/DAU requires that for a species in unfavourable conservation condition — and golden plover at the River Little Brosna Callows SPA is confirmed at 50% below its baseline reference values — the assessment must address whether the development undermines the potential for halting decline and allowing recovery to favourable conservation status. This is a different question from whether the central collision estimate at the preferred avoidance rate falls below a threshold characterised as precautionary. The first question is required by the precautionary principle and by the conservation objectives of the SPA. The second question is what the developer answered. The two are not the same.

4.4.4 Avoidance Rates — Challenged by the Regulatory Authority

The NPWS/DAU submission on the Cush Wind Farm — a development with 172m rotor diameter turbines in the same Zone of Influence — explicitly and on the record challenged the 99.6% avoidance rate applied for golden plover, on three grounds: the rate was derived from UK wind farms with maximum turbine diameters of 92m; the source data is from lowland intensive agricultural settings (tillage) very different from the midland Irish bog and pasture landscape; and NatureScot guidance acknowledges the rates will be updated when robust new information becomes available. Ballincor's turbines have rotor diameters of 149–163m. The DAU's challenge applies unchanged. → Appendix 4-2, Entry C2; Section 4.5 (Golden Plover).

The sensitivity of the assessment to this single variable is documented in CRM Table 4.9. Moving from 99.6% to 98% — the default avoidance rate when site-specific behaviour is unknown — increases the predicted collision estimate by an order of magnitude. The CRM acknowledges (Section5.3) that avoidance rate uncertainty is excluded from the reported uncertainty ranges entirely. The assessment therefore presents outputs whose sensitivity to the most contested input variable is acknowledged but not reflected in the figures placed before An Coimisiún Pleanála.

4.4.5 Displacement Distances and Ex-Situ SPA Connectivity

The EIAR and NIS apply displacement and disturbance distances derived from studies at turbines substantially smaller than those proposed. For curlew, the EIAR applies a 300m disturbance zone; published research documents avoidance distances of up to 800m, with breeding density reductions of up to 42% within 500m. The developer does not address this discrepancy. The Carrig DAU submission identifies the same problem for all species assessed using McGuinness 2015 guidance, noting that the turbines proposed are approximately twice the height of those in the studies on which the displacement distances are based. The DAU considers it likely that displacement distances for the larger turbines will be correspondingly greater. → Appendix 4-3, SectionC4.2: Curlew; Appendix 4-3, SectionC4.5: Golden Plover.

This also raises the connectivity question, whether birds recorded on the development site are part of SPA populations — is resolved by the DAU Cush letter as a matter of principle: SPA connectivity must be assumed in the absence of positive evidence to the contrary. The NIS requires positive evidence of connectivity before treating birds as SPA population members. This inverts the precautionary principle. The absence of connectivity evidence from surveys that systematically missed the periods when commuting movements would be observed is not evidence of absence of connectivity. → Appendix 4-2, Entry D3; Section 3.6 below.

4.4.6 Five Specific Leaps in Logic

This section identifies five instances where the developer's analysis moves from data to conclusion in a way the data does not support, or where an ecologically significant finding is dismissed using reasoning inconsistent with how equivalent evidence is treated elsewhere in the same assessment.

4.4.6.1 The Pintail Flock

On 27 March 2024, a flock of approximately 200 pintail — ten times the national importance threshold of 20 birds — was recorded foraging in flooded fields adjacent to the site. Pintail is a SPA qualifying interest. A further flock of 34 birds exceeding the national importance threshold was recorded in March 2026, at the same location. The developer characterised the 2024 flock as "a one-off event" that "does not alter the overall assessment."

The CRM's own text (Section5.2) acknowledges that VP surveys sample only 1.5–2% of daylight hours and that a large flock observed during that window may reflect genuinely infrequent occurrence or systematic under-sampling of regular events — and that "this uncertainty cannot be resolved from the available data." The CRM applies this reasoning as a caution against over-relying on the black-tailed godwit large-flock record. It does not apply it to dismiss that record. Two nationally important pintail counts in the same location in the same month of different years are not consistent with characterisation as a one-off. They point to regular use of that habitat in March — exactly what surveys concentrated in other months would miss. The appropriate response was individual CRM analysis and a specific disturbance and displacement assessment. Neither was conducted. → Appendix 4-2, Entry C8; Appendix 4-3, SectionC4.8.

4.4.6.2 The 1% Threshold — Repeated Invocation

The phrase "the 1% threshold is likely to be very precautionary" appears in the CRM summary and is repeated in Chapter 7 assessments of golden plover, black-tailed godwit, grey heron, kestrel and mallard — consistently as the mechanism by which a near-threshold finding is characterised as not significant. The NPWS/DAU requires instead that for species in unfavourable conservation condition, the question is whether the development undermines recovery potential — not whether the central estimate at the preferred avoidance rate clears a threshold described as precautionary. The repeated invocation of the threshold characterisation as a blanket dismissal tool does not engage with this requirement. → Appendix 4-2, Entry E4.

4.4.6.3 Black-Tailed Godwit — Selective Application of Large-Flock Caution

The CRM (Section5.2) acknowledges that the black-tailed godwit collision estimate was driven by a single record of 1,750 birds, accounting for 95% of the flight activity included in the model, and recommends it "should be interpreted with caution" as "a plausible worst-case scenario rather than a reliable estimate." Despite this, the estimate is carried into Chapter 7 and assessed — and then dismissed as negligible because the local SPA mortality of 2.2% annual increase is described as precautionary. The large-flock caution argument simultaneously weakens the estimate and fails to reduce it below the threshold it was supposed to breach. The pintail large-flock record generates no CRM entry at all and is dismissed as anomalous. The same type of evidence — a single large-flock observation — is precautionarily retained for one species and precautionarily dismissed for another,

depending entirely on which outcome the data would otherwise produce. → Appendix 4-2, Entry D4.

4.4.6.4 Whooper Swan — Diel Gap Acknowledged, Conclusion Unchanged

CRM Section4.7.2.5 states: "Uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk." CRM Figure 3.6 shows higher whooper swan recording rates in the early morning in the Ecology Ireland winter dataset, consistent with roost commuting. The CRM cannot calculate recording rates for the dawn period from the dominant dataset. An independently confirmed communal roost at Sharragh — documented by the NPWS Regional Manager, confirmed by ESB Networks' installation of bird strike deflectors on the flightline — uses a route passing through the Zone of Influence. Having acknowledged potential under-estimation, noted evidence of elevated early morning activity, and confirmed an unrecorded roost flightline, the EIAR concludes that whooper swan impact is negligible. The step from acknowledged under-estimation to negligible conclusion is not demonstrated. It is asserted. → Appendix 4-1, Table A.4: Whooper Swan; Appendix 4-2, Entry B4.

4.4.6.5 Height Overestimation Used to Downplay Results

CRM Section4.7.2.5 states that "precautionary approaches to the assignment of flight heights may have caused general overestimation of collision risks." This statement appears in Chapter 7 as a reason to treat collision estimates that approach significance thresholds as likely over-estimates. The precautionary height assumption was adopted because the Ecology Ireland surveys did not use NatureScot-compliant height bands — making it necessary to assume all flight duration above minimum ground clearance was at collision height. The developer therefore created a survey deficiency, applied a precautionary assumption to fill it, produced higher collision estimates, and then used those estimates' precautionary character as a reason to discount them. A developer cannot use the consequences of their own survey gap to argue against the significance of the findings that gap produced. → Appendix 4-2, Entry E3.

4.4.7 The Mitigation Framework — No Operational Mitigation Exists

The most significant finding from reading Chapter 20 alongside Chapter 7 is one that the assessment does not acknowledge as a problem. Chapter 7 Section7.7.2 states explicitly: "no dedicated mitigation measures are considered necessary for the operational phase."

Chapter 20 confirms this: there is no scheduled mitigation measure reference number for bird collision mortality or displacement during turbine operation. The only operational intervention in Chapter 7 is the Bird Monitoring Programme in Appendix 7-3, with an adaptive management trigger that activates only "if unexpected ornithological issues arise."

This matters because the no-adverse-effects conclusion in the Appropriate Assessment does not rest on mitigation that closes identified risks. It rests entirely on the adequacy of the pre-consent assessment — on the proposition that the surveys were sufficient to demonstrate that no significant effects will occur. Sections 1 and 2 of this objection have demonstrated at length that they were not. There is no backstop. The structure is circular: because the surveys concluded no significant effects, no mitigation was designed; because no mitigation was designed, any effects that do materialise can only be addressed after they have occurred.

The adaptive management trigger — "if unexpected ornithological issues arise" — does not satisfy Article 6(3). Ascertainment must be achieved before consent is granted, not monitored for after turbines are operational. For species where post-construction collision mortality would be irreversible — white-tailed eagle (150 individuals nationally), whooper swan (SPA qualifying interest on a confirmed flightline through the Zone of Influence), merlin (confirmed breeding pair within foraging range) — discovering adverse effects through post-construction monitoring is not a recoverable situation. The bird is dead. The adaptive management arrives too late.

The NPWS/DAU Cush submission addressed the post-consent mechanism directly: "The Department cannot agree or approve changes or alterations to the project, or associated conditions or mitigation measures, after approval by An Coimisiún Pleanála." Turbine curtailment or shutdown — the only operational tools available if monitoring reveals adverse effects — require DAU agreement. The DAU has stated it cannot provide that agreement after consent is granted. The monitoring programme proposed in Appendix 7-3 therefore has no lawful pathway to the adaptive management it anticipates. The mechanism to act on its findings does not exist. → DAU Cush submission, p.1; Appendix 7-3 Section7.8.2.

4.4.8 The Legal Standard — Lacunae That Cannot Be Closed

The analytical failures identified in this section — taken individually and in combination with the survey methodology failures in Section 2 — produce the following catalogue of gaps in the Appropriate Assessment as presented:

- Baseline incomplete, with exclusions driven by survey gaps not species rarity, applied inconsistently against the developer's own CRM rules.
- Dominant dataset deficient, with within-season variability — the CRM's own primary source of uncertainty — replicated across eight seasons rather than reduced.
- Population denominators applied at scales that understate SPA-level mortality significance, without addressing the conservation trajectory question the DAU requires.
- Avoidance rates challenged by the regulatory authority as inapplicable to this turbine scale and landscape type, with sensitivity excluded from reported uncertainty ranges.
- Displacement distances based on smaller turbines in different landscapes, with connectivity assessed by inverting the precautionary principle.
- Logical inconsistencies in the treatment of large-flock events, the 1% threshold mechanism, whooper swan diel gap acknowledgements, and the height overestimation argument.
- No dedicated operational bird mitigation, leaving the assessment resting entirely on its own adequacy — which Sections 1 and 2 have demonstrated is insufficient — with a post-consent adaptive management mechanism that the DAU has stated it cannot approve.

The legal standard is established in Case C-127/02 (Waddenzee) and confirmed in the European Commission Guidance (2019, Section4.7.3): the Appropriate Assessment must be "complete, precise and definitive" and "may not have lacunae or gaps." The assessment presented has lacunae in each of the categories above. These are not peripheral — they include the central question of whether the development undermines the recovery trajectory of a SPA population already at 50% of its baseline, operating alongside three other developments in the same Zone of Influence with no independent cumulative assessment.

The IROPI constraint is absolute: RWE has expressly waived both derogation pathways. The NIS (p.4) places no reliance on Article 6(4). The WFD Assessment (Appendix 9-1, p.28) confirms no Article 4.7 reliance. With both routes waived, if adverse effects on the integrity of any European site cannot be excluded on the basis of a complete and definitive Appropriate Assessment, An Coimisiún Pleanála has no lawful basis on which to grant consent. The gaps in Sections 2 and 3 mean that adverse effects cannot be excluded. Refusal is the only available lawful outcome.

4.5: Protected Species — Ranked Assessment

The sections that precede this one have established, in forensic detail, *what* the survey programme failed to record and *why* the model built on it cannot be relied upon. This section asks a different question: what does any of that mean for the birds themselves?

Protected species do not recognise planning application boundaries. They do not observe the distinction between the Zone of Influence as drawn on a map and the wider landscape they have used for generations. A whooper swan commuting from its roost at Sharragh before dawn, a curlew calling from its breeding territory on the bog in the first light of a June morning, a merlin hunting across the SAC at first light — none of these birds adjusted their behaviour to coincide with a six-hour mid-day survey window. They were simply not there to be counted when the counters arrived, and they were gone before the counters left. The absence of records is not evidence of absence. It is evidence of a methodology that was not designed to find them.

Dr Pat Moran completed a species review to demonstrate the methodological failures discussed previously. His stated criterion is the mismatch between a species' behavioural ecology and the survey design adopted. On that basis he prioritises species "to which survey design has not taken into account behavioural ecology," The four chosen — Golden Plover, Greenland White-fronted Goose, Lapwing and Whooper Swan — are therefore worked examples of the same underlying defect rather than a catalogue of the avifauna, and each is an Annex I species or a qualifying interest of a proximate SPA.

The four make a single argument from two directions. Golden Plover, Lapwing and Whooper Swan demonstrate the survey's timing and flight-height blindness: all are nocturnal or crepuscular movers whose daytime distribution cannot predict night-time habitat use (Gillings et al., 2005), and Whooper Swan in particular commutes at low light and at heights often below 15 metres (Brazil, 1981; Rees et al., 2005), yet no multi-year post-sunset surveying or low-flight viewshed analysis was undertaken. Greenland White-fronted Goose and Whooper Swan demonstrate a parallel valuation failure: the goose, barely recorded on site and classed by the EIAR as of "local importance (higher value)," in fact occurred at the Little Brosna in the third-highest national count in 2024/25, while a single Swan Census peak of 176 Whooper Swan at the connected Ballingarry subsite exceeds 50% of the Collision Risk Model's own "Local" population figure.

Dr Moran is explicit that these are a representative sample rather than an exhaustive treatment. The force of the selection lies in its implication: if the survey methodology fails to characterise four flagged qualifying-interest species — failing on timing, on flight height, and on valuation — no confidence can be placed in its treatment of the wider avifaunal resource, and the deficiency carries through to the EIAR, the Collision Risk Model and the NIS alike.

This section reviews each protected species or species group first in the order presented by Dr Pat Moran and subsequently in order of conservation priority, applying the same four-part structure throughout: protection status, recorded presence in the Zone of Influence, the specific inadequacy of the developer's assessment, and the consequence under Article 6(3) if adverse effects cannot be excluded.

Where the developer's assessment focuses exclusively on collision mortality, a structural limitation of the methodology, this review will follow a three-impact framework — disturbance, displacement and collision mortality/ Each is applied to each species.

4.5.1 Whooper Swan *(Cygnus cygnus)* PRIORITY 1

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086); Middle Shannon Callows SPA (004096)
National wintering population	Approximately 19,111 individuals (Burke et al., 2021)
Developer's assessment	Local importance (higher value); impact: negligible — see Appendix 4-3 SectionC4.1

Recorded presence in the Zone of Influence

Whooper swan is the most regularly recorded large waterbird in the Ballincor survey dataset. A total of 85 observations involving 744 individuals were made across the survey period, with flocks ranging from 2 to 55 birds. Records were concentrated along the Little Brosna River and adjacent flooded agricultural fields — the same corridor that connects the site to the River Little Brosna Callows SPA approximately 7km downstream. The species was recorded in all four Ecology Ireland winter seasons and in the TOBIN winter 2025/26 season.

The confirmed communal roost at NPWS-owned lands at Sharragh — documented in the Oran Ecology / Hoctor submission (2023) and confirmed by the NPWS Regional Manager — lies within the shared Zone of Influence between the Carrig and Ballincor development sites. ESB Networks previously installed bird strike deflectors on powerlines in the Sharragh and Lissernane area as a result of repeated whooper swan collisions, providing physical evidence of a long-established flightline through this landscape.

Inadequacy of the developer's assessment

- Disturbance and displacement: The NIS concludes that no adverse effects on whooper swan are anticipated because no evidence was found that birds recorded on site are part of the SPA population. This inversion of the precautionary principle is directly challenged by the DAU Cush letter, which requires that SPA connectivity be assumed in the absence of evidence to the contrary.

- Collision mortality: CRM produces a central estimate of 0.02–0.05 collisions per year (EIAR Table 7-20). The CRM itself acknowledges (Section4.7.2.5) that 'uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk.' This admission — that the dominant dataset may have under-estimated the figure — is not reflected in the assessment conclusion of negligible impact. → Appendix 4-2, Entry B4; Appendix 4-1, Table A.4: Whooper Swan.
- Nocturnal movement: The CRM notes higher recording rates of whooper swan in the early morning 'which could have been due to birds commuting from nocturnal roost sites.' No nocturnal surveys were conducted. The Sharragh roost — confirmed by multiple independent sources — uses a flightline toward the SPA that crosses the development Zone of Influence. Pre-dawn commuting on this line is entirely unrecorded. → Appendix4-1, Table A.2: Winter Survey Effort.

The developer's negligible impact finding cannot be sustained where: (a) the assessment relies on absence of connectivity evidence from surveys that systematically missed the periods when connectivity evidence would be observed; (b) the CRM's own author acknowledges potential under-estimation of whooper swan collision risk; and (c) an independently confirmed roost site with documented flightline through the Zone of Influence receives no quantitative displacement or collision mortality assessment. Adverse effects on the SPA qualifying interest cannot be excluded. → Appendix 4-3, SectionC4.1.

Dr Moran concluded that the site's importance for Whooper Swan is materially greater than the EIAR's characterisation of local importance (higher value) allows, and the Collision Risk Model's own population figures demonstrate why. Lough Nahinch, identified in Figure 7-6 of the Ornithology Chapter as an I-WeBS site, is a subsite of the Ballingarry (OJS03) Swan Census complex. As Dr Moran sets out (Appendix 4-6), the 2014/15 International Swan Census recorded a peak of 176 Whooper Swan at the Ballingarry subsite at Gurteen Agricultural College, and a peak of 80 at the Munlusk subsite. The Collision Risk Model assesses Whooper Swan against population figures of 337 (Local), 1,506 (County) and 19,111 (National). The Gurteen peak of 176 birds therefore represents in excess of 50% of the Local population figure and in excess of 10% of the County figure used in the developer's own model — recorded at a single subsite within the network to which the development is connected by the established flightline addressed above. A single census count on this scale, set against the model's own denominators, is incompatible with an assessment of merely local importance, and indicates a significant source–pathway–receptor link between the proposed development and the Ballingarry site that the EIAR has not assessed.

4.5.2 Golden Plover (Pluvialis apricaria) PRIORITY 2

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
Local SPA population (IWeBS 5-yr mean)	Approximately 9,247 individuals (2018/19–2022/23); national 90,770
Conservation condition	Unfavourable — 50% below SPA baseline reference values (NPWS/DAU Cush letter, 2024)
Developer's assessment	Individual CRM assessment conducted; impact assessed as negligible — Appendix 4-3 SectionC4.5

Golden plover is the primary SPA qualifying interest species for which a quantified collision risk has been modelled at Ballincor. It is also the species for which the regulatory context is most clearly defined by the NPWS/DAU Cush submission (March 2024). The key analytical failings are set out in full in Sections 3.4 and 3.7 of this objection and in Appendix 4-2, Entries C2, E2 and E4. The following summarises the position.

- Recorded presence: 85 observations involving 6,607 individual birds across the survey period. Peak count approximately 3,500 birds within 500m of the site boundary (NIS, p.11). Regularly recorded in all nine seasons. The CRM uses the Little Brosna Callows IWeBS five-year mean peak of 9,247 birds as the local SPA population denominator. → Appendix4-4, Sheet 1: VP Effort (EI dataset — golden plover dominant in mid-day records).
- Collision mortality: Central estimate 7.9–9.4 collisions per year (N163, 99.6% avoidance). Upper uncertainty range 1.0–1.3% annual mortality at local SPA population scale — exceeding the 1% threshold. The developer dismisses this on the basis that the 1% threshold is 'highly precautionary.' The DAU requires instead that the assessment ask whether the development undermines the potential for recovery of a population already 50% below baseline. That question has not been answered. → Appendix 4-2, Entries C2, E4.
- Avoidance rate: 99.6% applied. The DAU Cush letter explicitly challenges this as inapplicable to 149–163m rotor diameter turbines in bog/pasture landscape — derived from farms with maximum 92m rotor diameter in UK tillage. At 98% avoidance, the

predicted collision rate increases by an order of magnitude. → Section 3.4 of this objection.

- Disturbance and displacement: The EIAR applies a 175–200m disturbance zone based on Hötker et al. (2006) and Pearce-Higgins et al. (2009). These studies were conducted at turbines substantially smaller than those proposed. No assessment of disturbance impact on a population already in unfavourable conservation condition.

Golden plover is a SPA qualifying interest in unfavourable conservation condition. *The* regulatory authority has explicitly stated that the assessment must address recovery potential — not merely whether the central collision estimate exceeds a threshold characterised as precautionary. The Ballincor assessment does not meet this standard. Combined with the additive collision mortality from Cush, Derrinlough and Carrig — none of which is assessed in combination — the aggregate burden on the SPA population has never been calculated by any developer or regulatory body. → Appendix 4-3, SectionC4.5; Appendix4-5, Table E2: Combined collision mortality.

The inadequacy of daytime survey effort for Golden Plover — and equally for Lapwing — is not merely a matter of hours missed; it is that daytime data cannot scientifically be used as a proxy for night-time use. Dr Moran (Appendix 4-6) draws on the peer-reviewed work of Gillings, Fuller and Sutherland (2005, The Auk 122(4):1249–1260), which establishes that diurnal studies do not predict nocturnal habitat choice and site selection in European Golden Plover and Northern Lapwing. Both species typically forage across farmland at night, and the NatureScot guidance correspondingly requires that for species which are active at dawn and dusk, or at night, other methods of recording or assessing activity — including night-vision or infra-red equipment and survey on moonlit nights — need to be employed. No such methods were deployed. The day-time distribution recorded for Golden Plover and Lapwing therefore cannot be relied upon to characterise their post-sunset use of the site and environs — a failure of particular consequence given that both are qualifying interests of proximate SPAs, recorded at this site in nationally significant numbers against a background of steep national decline.

4.5.3 Greenland White-fronted Goose (Anser albifrons flavirostris)

PRIORITY 2

EU Birds Directive Annex I — special protection measures required

Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA; All Saints Bog SPA; Dovegrove Callows SPA
World population	Approximately 22,000–27,000 — entire world population winters in Ireland and Scotland
Developer's assessment	Grouped in 'rarely recorded target species' — Appendix 4-3 SectionC4.6

Greenland white-fronted goose was recorded in winter 2022/23 (two records, single bird each) and in the TOBIN winter 2025/26 season. The species is listed as a rarely recorded target species. The entire world population of this subspecies winters in Ireland and Scotland, Ireland therefore holds unique and absolute conservation responsibility. The species is among the most disturbance-sensitive in the Irish wintering assemblage, flushing at several hundred metres from human activity, with repeated disturbance preventing access to feeding grounds and affecting body condition and survival.

A tagged Greenland white-fronted goose was recorded by a University of Saskatchewan PhD researcher passing within 6km of the Cush Wind Farm site during migration from the Wexford Slobs — directly cited in the NPWS/DAU Cush letter as evidence of migratory connectivity through the Zone of Influence. The Ballincor site lies within the same Zone of Influence. The NIS does not address this evidence. Pre-dawn and post-dusk roost commuting — the primary movement period for this species — is absent from the Ecology Ireland dataset across all four winter seasons. → Appendix 4-1, Table A.4: Greenland White-fronted Goose; Appendix 4-3, SectionC4.6.

A species whose entire world population winters in Ireland and Scotland cannot be assessed collectively with common and widespread species. The tagged bird evidence demonstrates migration connectivity through the Zone of Influence. The absence of pre-dawn and post-dusk survey coverage means the primary risk period for this species is uncharacterised. For a subspecies of this global significance, the precautionary principle demands individual treatment and explicit exclusion — beyond reasonable scientific doubt — of adverse effects. That standard has not been met.

The EIAR's classification of Greenland White-fronted Goose as being of local importance (higher value) further understates the status of the population connected to this site. Dr

Moran (Appendix 4-6) records that, during the 2024/25 season, the River Little Brosna Callows held the third-highest population of Greenland White-fronted Geese in Ireland, as reported in the 2024/25 international census of the species. As the Little Brosna Callows lies within the Zone of Influence and supports an internationally important population of this Annex I qualifying interest — for which the SPA conservation objective is to restore, not merely maintain, favourable condition — the species must be assessed as of international importance, and the low number of on-site records cannot be taken to reflect a correspondingly low ecological significance.

4.5.4 Hen Harrier (Circus cyaneus) PRIORITY 2

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Slieve Bloom Mountains SPA — within potential range
Irish breeding population	Approximately 108–130 pairs nationally
Developer's assessment	Individual assessment conducted; TOBIN roost surveys Winter 2025/26 — Appendix 4-3 SectionC4.7

Hen harrier was recorded in breeding season 2023 and in all four Ecology Ireland winter seasons and the TOBIN winter. TOBIN conducted roost surveys at two designated harrier VP locations (HHVP1 and HHVP2) during winter 2025/26. Woodcock records from the HHVP2 roost survey (9 March 2026, 19:18, 4 birds roding — Appendix 7-1-C, P00765) confirm that the roost area is ecologically active at dusk. Hen harrier roost departure typically occurs in pre-dawn darkness; the TOBIN roost surveys covered this period for one winter.

The roost survey programme is an improvement on the Ecology Ireland methodology but represents one winter season. The breeding season record in 2023 — which occurred in the transition period between breeding and wintering — has not been followed with a targeted breeding disturbance assessment. Research documents avoidance of wind turbines by breeding hen harriers at distances of up to 750m. → Appendix 4-3, SectionC4.7.

One season of roost surveys cannot be considered an adequate basis for concluding that roost site and movement patterns are sufficiently characterised for an Annex I species. The confirmed breeding season record and the adjacent bog SAC network — confirmed as active

raptor breeding habitat in 2025 — indicate a broader raptor assemblage that the survey programme has not fully characterised.

The Appropriate Assessment screening also discounted a connected European site for this species on a demonstrably flawed basis. The screening process found no source–pathway–receptor linkage between the proposed development and the Slieve Bloom Mountains SPA (004160) on the ground that the site lies approximately 10 km away and therefore outside the foraging range of the relevant species. As Dr Moran sets out (Appendix 4-6), that reasoning applies a summer breeding-season foraging range to screen out a species whose wintering distribution is materially more dispersed: the Hen Harrier Threat Response Plan records that wintering Hen Harrier range widely across both uplands and lowlands, roosting communally in heath and bog habitats and foraging over prey-rich grassland and winter stubble — precisely the habitat mosaic present in the vicinity of this site. The National Biodiversity Data Centre records confirm Hen Harrier in the vicinity, and the site's own winter survey results recorded the species using the site and environs across all five winter seasons. To discount the linkage to the Slieve Bloom Mountains SPA on the basis of a summer foraging limit, when the relevant exposure is during winter and when Hen Harrier is in fact recorded locally throughout the winter, is a significant omission in the screening exercise.

4.5.5 Eurasian Curlew (Numenius arquata) PRIORITY 1

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List — critical decline
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs; present in callows assemblage
Irish breeding population	Approximately 105–130 breeding pairs nationally (NPWS)
Developer's assessment	Grouped in 'rarely recorded target species' collective — see Appendix 4-3 SectionC4.2

Recorded presence in the Zone of Influence

Curlew was recorded during breeding season 2023 (Appendix 7-1-C: WD1-23, VP A/3/4, 27 June 2023, one bird at 80m, 200 seconds on-site) and in winter 2020/21 (one record). A total of two records across nine seasons. Both are daytime, mid-period observations: the summer

record was made at 11:15 — outside any dawn or dusk window. The species is Red-listed and is known to be predominantly active at dawn and dusk. The low record count is a direct consequence of the survey methodology, not evidence of limited site use.

The 2021 NPWS national breeding curlew survey recorded a probable breeding curlew in the Arragh More Bog NHA / Kilcarren-Firville Bog SAC area, southwest of Sharragh — within the shared Zone of Influence of the Ballincor and Carrig developments. In May and June 2025, BirdWatch Ireland confirmed curlew presence during the breeding season on Ballyduff/Clonfinnane Bog SAC, approximately 2.8km northwest of the Ballincor site, using passive acoustic monitoring. → Section 2.9 of this chapter.

Inadequacy of the developer's assessment

- Collective assessment: Curlew is assessed collectively in the 'rarely recorded target species' group alongside common gull, coot, herring gull and tufted duck. A species with 105 breeding pairs nationally cannot be assessed at the same level of analysis as abundant common species. The DAU Carrig submission states explicitly: 'the loss of one pair would equate to almost 1% of the national breeding population.' → Appendix 4-3, SectionC4.2.
- No individual breeding survey: The NPWS scoping response required targeted surveys for sensitive species. No targeted curlew breeding survey using appropriate methodology (territory mapping, dawn calling surveys) was conducted. The BirdWatch Ireland 2025 Autonomous Recording Unit survey on the adjacent SAC demonstrates what such a survey would have found. → Appendix 4-2, Entry B3: summer 2022 absent; Section 2.9.
- Displacement distances: The EIAR applies a 300m disturbance zone for curlew from operational turbines. Published research documents avoidance distances of up to 800m, with breeding density reductions of up to 42% within 500m. The developer does not address this discrepancy.
- Dawn coverage: The breeding season record (June 2023) was made at 11:15. Zero dawn coverage in summer means that territorial behaviour and early-morning movements — the primary evidence of breeding activity — were never recorded. → Appendix 4-1, Table A.1: Summer Survey Effort (row: Sunrise and Sunrise+1: 0 minutes).

The collective assessment of curlew is legally indefensible given its national population size and the DAU's explicit statement on individual-level significance. The inference that low recording rates indicate limited site use is directly contradicted by the dawn survey gap and

by the 2025 BirdWatch Ireland findings on the adjacent SAC. No breeding disturbance assessment has been provided for a Red-listed species with confirmed presence in the Zone of Influence and known sensitivity to turbine disturbance during breeding. Adverse effects on this nationally critical species cannot be excluded. → Appendix 4-3, SectionC4.2.

4.5.6 Merlin (Falco columbarius) PRIORITY 1

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish breeding population	Approximately 130–170 pairs nationally; concentrated on bog habitats
Developer's assessment	Grouped in 'rarely recorded target species' — see Appendix 4-3 SectionC4.3



Image : Merlin within Development site

Recorded presence in the Zone of Influence

Merlin was recorded in breeding seasons 2023 and 2024 and in all four Ecology Ireland winter seasons and the TOBIN winter 2025/26. The EIAR records the species as a 'rarely recorded target species' with fewer than ten observations. The most recent and significant evidence, however, is external to the developer's programme: BirdWatch Ireland confirmed breeding merlin on Ballyduff/Clonfinnane Bog SAC in May and June 2025, using six ARUs deployed around the SAC perimeter. The nest was subsequently located. This SAC lies approximately 2.8km northwest of the proposed Ballincor development site.

A breeding merlin pair on the SAC will forage across a range of 2–3km from the nest during the breeding season. The nearest proposed turbine locations are approximately 1–2km from the SAC boundary, placing them within the foraging range of the confirmed breeding pair. Merlin hunt actively at dawn — the period entirely absent from the Ecology Ireland summer dataset. The four breeding season surveys conducted without dawn coverage could not have detected the dawn hunting behaviour that would be the primary evidence of breeding-season site use. → Appendix 4-1, Table A.1: Sunrise row — 0 minutes across all four summer seasons.

Inadequacy of the developer's assessment

- Collective assessment: Merlin is grouped in the rarely recorded collective and receives no individual collision risk assessment and no breeding disturbance assessment. An Annex I species with a confirmed breeding pair within the foraging range of the development cannot be collectively assessed. → Appendix 4-3, SectionC4.3.
- Methodology gap: The survey programme did not deploy acoustic monitoring — the technology that detected the breeding pair in 2025. The 2025 BirdWatch Ireland survey demonstrates that appropriate methodology at the appropriate season would have identified breeding merlin as a material consideration before the application was submitted.
- Post-submission evidence: The 2025 breeding confirmation postdates the EIAR. It is new material evidence before An Coimisiún Pleanála that the developer's Appropriate Assessment did not and could not address. It changes the assessment context fundamentally.
- No breeding disturbance assessment: Merlin is sensitive to nest disturbance during incubation and early chick-rearing. Construction activity within the foraging range of a breeding pair — during the breeding season that overlaps the proposed construction programme — has not been assessed.

The confirmed breeding of merlin on the adjacent SAC in 2025 is material evidence that was not addressed in the developer's assessment and cannot be remedied by post-consent monitoring. A breeding pair of an Annex I species with a foraging range overlapping the turbine zone engages the Article 6(3) disturbance and displacement pathway directly. No assessment of breeding season disturbance, displacement from foraging habitat, or collision mortality risk to breeding adults has been provided. Adverse effects cannot be excluded. → Appendix 4-3, SectionC4.3.

4.5.7 White-tailed Eagle (Haliaeetus albicilla) PRIORITY 1

EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish wild population	Approximately 150 individuals — entire Irish wild population (NPWS, 2025)
Developer's assessment	County importance (higher value); grouped in 'rarely recorded target species'

Midland Tribune

White-tailed eagles spotted in the Little Brosna Callows

By Derek Fanning



Magnificent birds of prey have wing span of 8 feet

A PAIR of white-tailed eagles were spotted by birdwatchers in the Little Brosna Callows near Birr and Banagher last week

Why 150 individuals changes every calculation

This is not a species where statistical thresholds designed for abundant or common populations can be applied without qualification. The entire wild population of white-tailed eagle in Ireland is approximately 150 individuals (NPWS, 2025 — cited in EIAR Section7.4.2.1.35). The species was extinct in Ireland for over a century before reintroduction from Norway. The NPWS White-tailed Eagle Reintroduction Programme has been described

by the NPWS as among the most significant nature conservation undertakings in the state's history.

With 150 individuals, one dead white-tailed eagle represents 0.67% of the national population. The CRM produces a central estimate of 0.02–0.04 collisions per year. Over a 30-year operational lifetime, this equates to an expected 0.6–1.2 birds. The developer assesses this as below the 1% annual mortality threshold for the national population — approximately 1.5 birds per year — and therefore negligible. But the 1% threshold was designed for populations where individual losses are statistically insignificant and where compensatory mortality mechanisms operate. Neither condition applies to a population of 150 individuals undergoing fragile recovery from functional extinction. A single collision fatality over the 30-year operational life of the Ballincor wind farm is individually irreplaceable. This is not a statistical argument — it is a biological one. → Appendix 4-3, SectionC4.4: White-tailed Eagle special note.

Recorded presence in the Zone of Influence

White-tailed eagle was recorded twice during the TOBIN winter 2025/26 season — the first and only season in which this species was specifically looked for at dawn and dusk. A single bird was recorded in flight in the southern section of the proposed project site in December 2025 (TOBIN VP5, 19 November 2025, Appendix 7-1-C, F00068). Two birds were observed within the 10km buffer at the River Little Brosna Callows SPA during IWeBS surveys in November 2025. The EIAR states the site 'may provide suitable foraging habitat for the White-tailed Eagle, especially during the winter months.' The species is found only in the TOBIN season — one winter.

This recording pattern is directly attributable to methodology. White-tailed eagles are active early in the morning and in the late afternoon. The Ecology Ireland surveys — eight seasons, covering four breeding and four winter periods — have zero dawn coverage in summer and 16 total minutes at sunset across four winters. It is not possible to conclude from the absence of white-tailed eagle records in those eight seasons that the species does not use the site. → Appendix 4-4, Sheet 2: Methodology Comparison.

Inadequacy of the developer's assessment

- Collective assessment: White-tailed eagle is grouped in the 'rarely recorded target species' collective alongside common gull, coot, kingfisher, jack snipe and green sandpiper. A species with 150 individuals nationally — Annex I, Red-listed — cannot be

assessed at the same level of analysis as common and widespread species. The juxtaposition is indefensible.

- The 1% threshold: The CRM central estimate of 0.02–0.04 collisions per year is assessed against the 1% annual threshold for the national population (150 × 1% = 1.5 birds/year). The central estimate falls below this. But the threshold was not designed for populations this small. The CRM itself acknowledges (Section2.7, Table 2.7) that the 1% threshold 'may be biologically implausible' for 'small populations with low mortality rates.' White-tailed eagle is exactly this case. → Appendix 4-2, Entry C2: avoidance rate and 1% threshold limitations.
- No displacement or disturbance assessment: White-tailed eagles are sensitive to human disturbance and may avoid wind farms. No assessment of displacement from foraging habitat or disturbance during the breeding season has been provided for a confirmed on-site species.
- One-season detection: Two records from one winter season cannot support any conclusion about the frequency or pattern of white-tailed eagle use of the development zone. Eight prior seasons provided no dawn or dusk coverage — the periods most relevant to this species' daily movements.

With approximately 150 individuals in the wild, white-tailed eagle is a species where no individual can be treated as statistically insignificant. The 1% annual mortality threshold — acknowledged by the CRM itself as potentially biologically implausible for small populations with low mortality rates — is not an appropriate assessment tool for a population of this size. The collective assessment alongside common species is not justified by any ecological or legal standard. On-site records during the one methodologically adequate season confirm the species uses the Zone of Influence. Adverse effects cannot be excluded on the evidence presented. → *Appendix* 4-3, *SectionC4.4.*

4.5.8 Pintail (Anas acuta) PRIORITY 2

EU Birds Directive	Annex II/1, III/1 — but SPA qualifying interest
Irish Wildlife Acts	Schedule 1 — protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
National importance threshold	20 birds (1% of estimated Irish wintering population of approximately 2,000)
Developer's assessment	Grouped in 'rarely recorded target species'; nationally important flock dismissed — Appendix 4-3 SectionC4.8

Pintail is treated in detail in Section 3.7.1 of this objection as the most acute single instance of a logical leap in the developer's analysis. The key facts are as follows. Pintail was recorded on six occasions within the proposed development site across the survey period. In March 2024, a flock of approximately 200 birds was recorded foraging in flooded fields to the northeast of the site — ten times the national importance threshold of 20 birds. In March 2026, a further flock of 34 birds was recorded at the same location — also above the national importance threshold. Both records are during the same month of different years in the same habitat. The developer describes the March 2024 flock as 'a one-off event' and concludes it does not alter the overall assessment. → Section 3.7.1; Appendix 4-3, SectionC4.8.

The pintail is a SPA qualifying interest of the River Little Brosna Callows SPA. The SPA conservation objective requires maintenance of the population in favourable condition. The SPA site synopsis records a baseline mean peak of 130 pintail. A flock of 200 birds using the development zone represents the SPA population's ex-situ feeding habitat — precisely the type of usage that the conservation objectives require to be protected. The application of the 'one-off' characterisation to dismiss a nationally important flock of a SPA qualifying interest species is not consistent with the precautionary principle or with the standard required by Article 6(3). → Appendix 4-2, Entries D3 and C8.

4.5.9 SPA Qualifying Interest Waterbirds (Lapwing, Wigeon, Teal, Shoveler, Black-tailed Godwit) PRIORITY 3

Lapwing	BoCCI Red List; SPA qualifying interest — Little Brosna Callows SPA and Middle Shannon Callows SPA
Wigeon	BoCCI Amber List; SPA qualifying interest — River Little Brosna Callows SPA
Teal	BoCCI Amber List; SPA qualifying interest — River Little Brosna Callows SPA
Shoveler	BoCCI Red List; SPA qualifying interest — River Little Brosna Callows SPA
Black-tailed Godwit	BoCCI Red List; SPA qualifying interest — River Little Brosna Callows SPA and Middle Shannon Callows SPA
Developer's assessment	Individual CRM assessments for lapwing, wigeon and godwit; shoveler and teal excluded — Appendix 4-3 SectionC4.9

All five species are SPA qualifying interests of the River Little Brosna Callows SPA. The BirdWatch Ireland IWeBS data submitted in these proceedings shows that the SPA supports mean peak counts of: lapwing 4,787 / wigeon 4,935 / teal 2,683 / shoveler 358 (with single survey peaks approaching or exceeding 1% international thresholds) / black-tailed godwit 3,553. The following notes apply to each:

- Lapwing (Red List): Recorded in breeding season 2023, suggesting possible breeding activity. This has not been followed with a specific breeding disturbance assessment. CRM central estimate 1.4–1.6 collisions per year (local population 0.1% annual mortality increase). The upper uncertainty range is 0.3% — below the 1% threshold, but additive with other developments on the same SPA population. → Appendix 4-3, SectionC4.9; Appendix 4-5, SectionE4.
- Wigeon (Amber List): Nocturnal feeder. The CRM applies a nocturnal activity correction (ranking 2, 25% nocturnal rate) using literature values — no site-specific nocturnal data exists. Central estimate 1.4–2.4 collisions per year (local SPA population 0.0% — IWeBS denominator for wigeon at the SPA is 6,452). The wigeon population at the SPA is in unfavourable condition (conservation objective: to restore favourable condition). → Appendix 4-2, Entry E1: nocturnal ranking limitations.

- Teal (Amber List): Excluded from CRM on fewer-than-10-records basis. Teal is recorded in winters 2021/22, 2023/24 and 2025/26. Nocturnal feeder — the mid-day survey concentration would systematically under-record this species. The SPA conservation objective is to maintain favourable condition. No individual disturbance, displacement or collision assessment. → Appendix 4-2, Entry D3: <10 records exclusion.
- Shoveler (Red List): Excluded from CRM. Recorded in winters 2023/24 and 2025/26. Red-listed. The IWeBS SPA data records single-survey peaks of 592 birds approaching the 1% international threshold of 600. No individual assessment. → Appendix 4-2, Entry D3; Appendix 4-3, SectionC4.9.
- Black-tailed godwit (Red List): The highest per-species collision risk in the CRM. Central estimate 3.3–4.7 collisions per year (local SPA population 1.6–2.2% annual mortality increase — exceeding the 1% threshold). The developer dismisses this because the estimate is 'driven by a single large flock event.' The CRM itself acknowledges this uncertainty cannot be resolved from available data — meaning additional survey effort was required, not dismissal of the finding. → Section 3.7.3; Appendix 4-2, Entry D4.

The aggregate collision mortality across these five SPA qualifying interest species — when added to the estimates for golden plover, whooper swan and Greenland white-fronted goose — represents a significant combined burden on the SPA populations. No developer has presented a combined species-level assessment. → Appendix 4-5, SectionE4 and Table E2.

4.5.10 Other Species of Concern (Barn Owl, Kingfisher, Woodcock, Snipe, Peregrine) PRIORITY 3

Barn Owl	BoCCI Red List; confirmed breeding nest approximately 75m from site (NPWS, July 2023)
Kingfisher	Annex I; BoCCI Amber List; recorded in winters 2020/21 and 2025/26
Woodcock	BoCCI Red List; records of drumming males — probable breeding; recorded in TOBIN season
Snipe	BoCCI Red List; excluded from CRM (VP surveys ineffective); recorded across multiple seasons
Peregrine	Annex I; BoCCI Green List; recorded in multiple breeding and winter seasons
Developer's assessment	All grouped in 'rarely recorded target species' collective — Appendix 4-3 SectionC4.10

Five species of significant individual protection status — two Annex I, three Red-listed — are assessed collectively in the rarely recorded group. Individual notes:

- Barn owl: See separate dedicated Barn Owl Chapter Chapter 4B but for consistency we offer a summary here: NPWS personnel confirmed a breeding nest site approximately 75 metres from the wind farm site boundary in July 2023 (cited in Carrig Ch.7 notes; EIAR acknowledges a confirmed breeding territory 75m from the site on p.7-45). This is an extraordinary proximity for a Red-listed species. The EIAR states no barn owl flight activity was recorded during VP surveys and concludes collision risk is negligible — acknowledging that the species is 'largely nocturnal and therefore standard VP surveys are likely to have missed this species.' With a confirmed active breeding site at 75m, and the developer's own acknowledgement that surveys could not detect this species, a species-specific nocturnal survey was required. It was not conducted. → Appendix 4-3, SectionC4.10.
- Kingfisher: Annex I species. Recorded in winter 2020/21 and winter 2025/26. The River Brosna corridor through the site is classic kingfisher habitat. Grouped in collectively assessed rarely recorded group with no Annex I-specific treatment. → Appendix 4-3, SectionC4.10.
- Woodcock: Red-listed. Records of drumming males indicate probable breeding. Woodcock is a crepuscular and nocturnal species — entirely missed by mid-day survey methodology. TOBIN winter records (Appendix 7-1-C, P00763: roding males observed at HHVP2 roost, 9 March 2026, 19:18) confirm crepuscular activity at the site during the one methodologically adequate season. → Appendix 4-1, Table A.4: species significance at dawn and dusk.
- Snipe: Red-listed. Excluded from the CRM because 'vantage point surveys are not an effective method of sampling their flight activity.' This is the developer's own statement — a methodological limitation acknowledged for one species. The absence of alternative assessment (acoustic monitoring, targeted snipe surveys) is a gap not addressed. → Appendix 4-2, Entry D1: snipe exclusion.
- Peregrine: Annex I. Recorded in multiple breeding and winter seasons, including two breeding season observations involving an adult and juvenile pair — consistent with breeding nearby. No individual collision risk assessment despite confirmed multi-season presence. → Appendix 4-3, SectionC4.10.

The assessment of five species of significant individual protection status as a 'collective' is not justified by any ecological or legal standard. The barn owl situation is the most acute: a confirmed active breeding nest at 75m from the site boundary, the developer's own acknowledgement that surveys could not detect the species, and the absence of any

nocturnal survey to address this. The NPWS scoping response specifically identified barn owls as requiring 'detailed and specific surveys.' That requirement has not been met. → Appendix 4-3, SectionC4.10.

4.5.11 Habitat Connectivity and the SAC Network (Raised bog corridor function)

PRIORITY 3

Sharavogue Bog SAC	000585 — immediately adjacent; Active Raised Bog [7110*] priority habitat
Ballyduff/Clonfinnane Bog SAC	000641 — approximately 2.8km northwest; confirmed 2025 breeding merlin and curlew
Arragh More (Derrybreen) Bog SAC	002207 — approximately 5.2km west; within shared Zone of Influence
Kilcarren-Firville Bog SAC	000647 — within shared Zone of Influence; high quality active raised bog
Redwood Bog SAC	002353 — within Zone of Influence
Article 10 obligation	Habitats Directive Article 10: member states required to manage landscape features important for Natura 2000 coherence

The midland bog network as an ecological corridor

The raised bog SACs in the midlands form a network of high-quality habitats that function as an ecological corridor for species that breed on or move between bog habitats. Merlin, curlew and hen harrier use multiple sites within this network during breeding and non-breeding seasons. The network includes Sharavogue Bog SAC (immediately adjacent to the Ballincor site), Ballyduff/Clonfinnane Bog SAC (2.8km northwest — confirmed 2025 breeding Annex I species), Arragh More Bog SAC (5.2km west, within the Carrig Zone of Influence), Kilcarren-Firville Bog SAC, and Redwood Bog SAC. Together these sites form a corridor approximately 15km in extent across the Offaly/Tipperary border region.

The barrier effect of wind turbines on the corridor

The proposed Ballincor turbines — 11 structures up to 200m tip height — would be sited at the northern end of this corridor, between Sharavogue Bog SAC and the bog SACs to the south and west. The Carrig Wind Farm (7 turbines, granted June 2025), approximately 4km to the southeast, would close the southern end of the same corridor. Together, the two

developments create a turbine presence across the principal movement routes connecting the bog SAC network.

For species such as merlin and curlew — which move between the bog habitats for breeding and foraging — the barrier effect is not theoretical. The 2025 BirdWatch Ireland survey confirms active breeding on Ballyduff/Clonfinnane SAC. The foraging range of that breeding pair overlaps the proposed turbine zone. For a breeding merlin pair, repeated passage through a turbine zone during the breeding season represents both a disturbance risk (if the pair alters its foraging behaviour to avoid the zone) and a displacement risk (if the zone becomes effectively inaccessible as foraging habitat). Both outcomes would reduce breeding success.

Article 10 — the missing assessment

Article 10 of the Habitats Directive requires member states to manage landscape features of major importance for the coherence of the Natura 2000 network — including ecological corridors, stepping stones, and other features that promote dispersal and genetic exchange. The bog SAC network in the midlands is precisely such a feature: a network of designated sites connected by movement of mobile species that depend on the availability of multiple bog habitats across the region.

Neither the EIAR nor the NIS addresses Article 10 corridor function as a distinct assessment requirement. The NIS assesses each European site individually in terms of its qualifying interests, but does not address the network-level function of the corridor as a whole. The cumulative barrier effect of Ballincor and Carrig across the corridor has not been assessed in any document submitted with either application. → Appendix 4-5, SectionE5: Additive displacement and barrier effect; Appendix 4-3, SectionC4.11.

The midland bog SAC network provides ecological corridor function that is legally relevant to the integrity of each designated site within it. A development that places 11 turbines up to 200m at the northern terminus of this corridor — combined with the recently consented Carrig development to the southeast — creates a cumulative barrier effect that has never been assessed by any developer but is a required commitment from this Developer given that this is the latest in a string of applications.

The 2025 BirdWatch Ireland breeding survey confirms that this corridor is actively used by breeding Annex I species. Disturbance to breeding populations that depend on corridor connectivity, and displacement from the foraging areas that sustain them, are impact pathways that engage Article 6(3) directly and have not been adequately addressed in the Appropriate Assessment submitted with this application.

4.6 : Cumulative Impact — The Absent Assessment

4.6.1 The Legal Requirement — Article 6(3) and In-Combination Assessment

This section demonstrates that no developer in the Zone of Influence has conducted a true in-combination assessment. Detailed development data is available n Appendix 4-5: Cumulative Developments Register. CRM references to Appendix 7-2 of the EIAR.

The in-combination assessment obligation is not a secondary or supplementary requirement of the Habitats Directive. It is written into the text of Article 6(3) itself. The provision states that any plan or project 'likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives.' The words 'or in combination' are not qualified. They apply to every Appropriate Assessment. They applied to Derrinlough when it was consented in 2021, to Cush in 2024, to Carrig in 2025, and they apply to Ballincor now.

The obligation is transposed into Irish law by Section 177U(4) of the Planning and Development Act 2000 (as amended), which requires that an AA is required if it cannot be excluded 'on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant adverse effect on a European Site.' The Ballincor NIS acknowledges this obligation in its methodology section (Section1.3.1) and in its screening conclusion (Section5.5), which correctly identifies likely significant effects in combination for the River Little Brosna Callows SPA and five other European sites. The NIS then proceeds to Stage 2 Appropriate Assessment, where the in-combination assessment is provided in Section6.3. It is the adequacy of that Stage 2 in-combination assessment that this section challenges.

Two further omissions in the Appropriate Assessment process are identified on independent peer review. First, the screening exercise does not appear to have consulted the Natura 2000 standard data forms for the relevant sites in order to identify the existing pressures, threats and activities affecting them, notwithstanding that European Commission guidance identifies the information in those forms as the starting point for identifying the features that could be affected by a plan or project. As Dr Moran sets out (Appendix 4-6), the failure to consult these forms and to consider the threats, pressures and activities they record is a deficiency in the screening process. Second, the assessment gives no consideration to the

potential effect of climate change on the conservation objectives of the relevant sites — including climate-driven changes in water levels, habitat availability, and the distribution and flight paths of the wintering bird populations for which the SPAs are designated — despite EU guidance that potential modifications to Natura 2000 sites linked to climate change should be assessed on a case-by-case basis. For a development advanced as a climate measure, the absence of any assessment of climate-driven change to the very sites it may affect is a notable gap in the assessment.

4.6.1.1 Relevant CJEU jurisprudence

The Court of Justice of the European Union has addressed the standard for in-combination assessment in several cases relevant to this objection.

- Case C-127/02 (Waddenzee, 2004): The Court established that an Appropriate Assessment must be 'complete, precise and definitive' and cannot authorise a plan or project where there is any reasonable scientific doubt about adverse effects on site integrity. This standard applies to the in-combination assessment as much as to the individual project assessment.
- Case C-258/11 (Sweetman v An Bord Pleanála, 2013): The Court confirmed that the in-combination assessment must be carried out before consent is granted. A competent authority 'can agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned.' This means the assessment must be complete at the decision stage — not adaptive thereafter.
- Case C-323/17 (People over Wind, 2018): The Court established that mitigation measures cannot be taken into account at the screening stage for AA — they must be assessed at the full AA stage, meaning that mitigation reliance cannot substitute for a complete assessment of adverse effects.

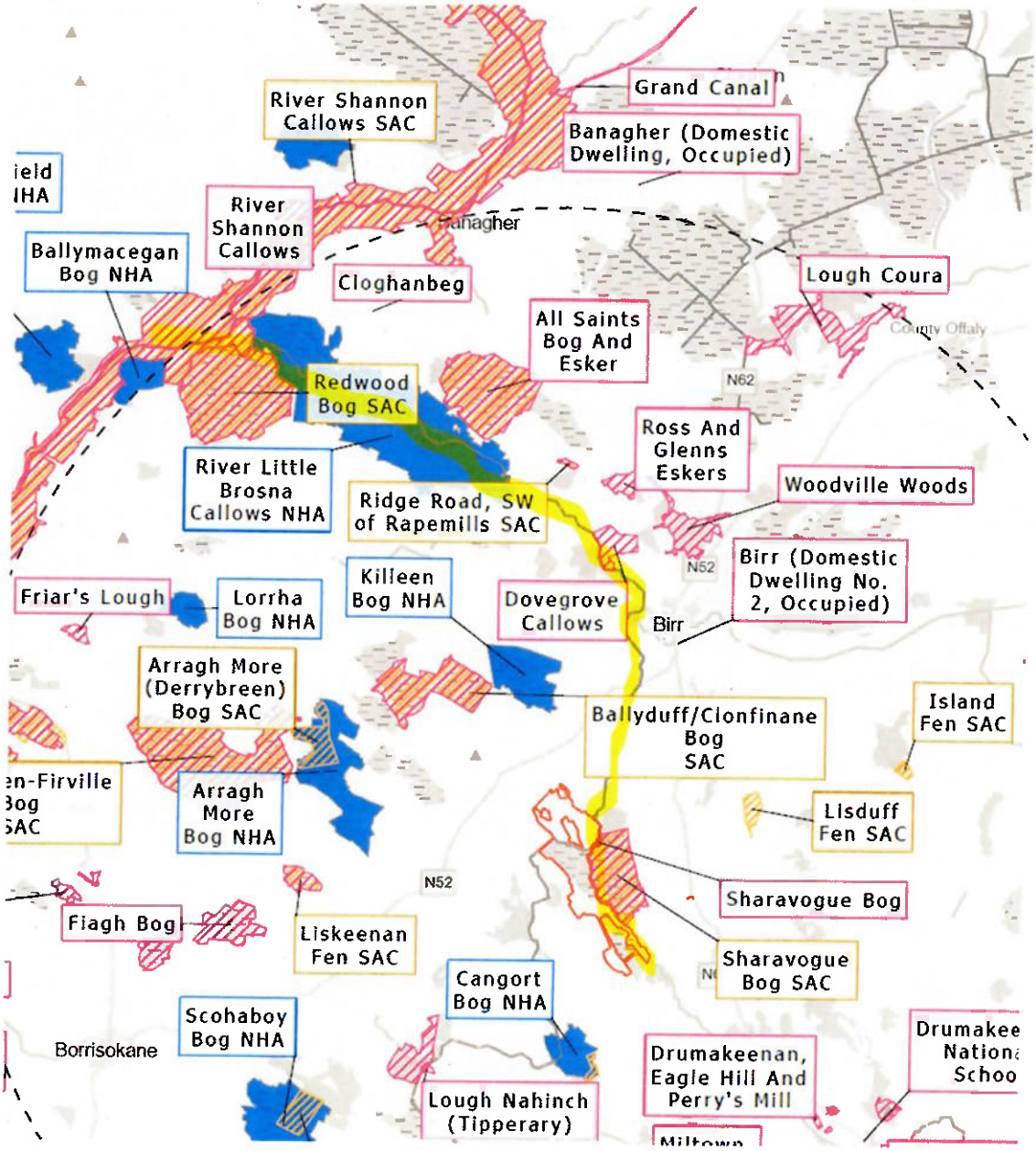
European Commission Guidance (2019, Section4.7.3): 'The in-combination assessment should include all plans and projects that could in combination with the project under assessment affect the integrity of the Natura 2000 site, regardless of whether those other plans and projects have already been assessed and consented.' A prior nil-effects conclusion from another developer does not remove a development from the scope of in-combination assessment.

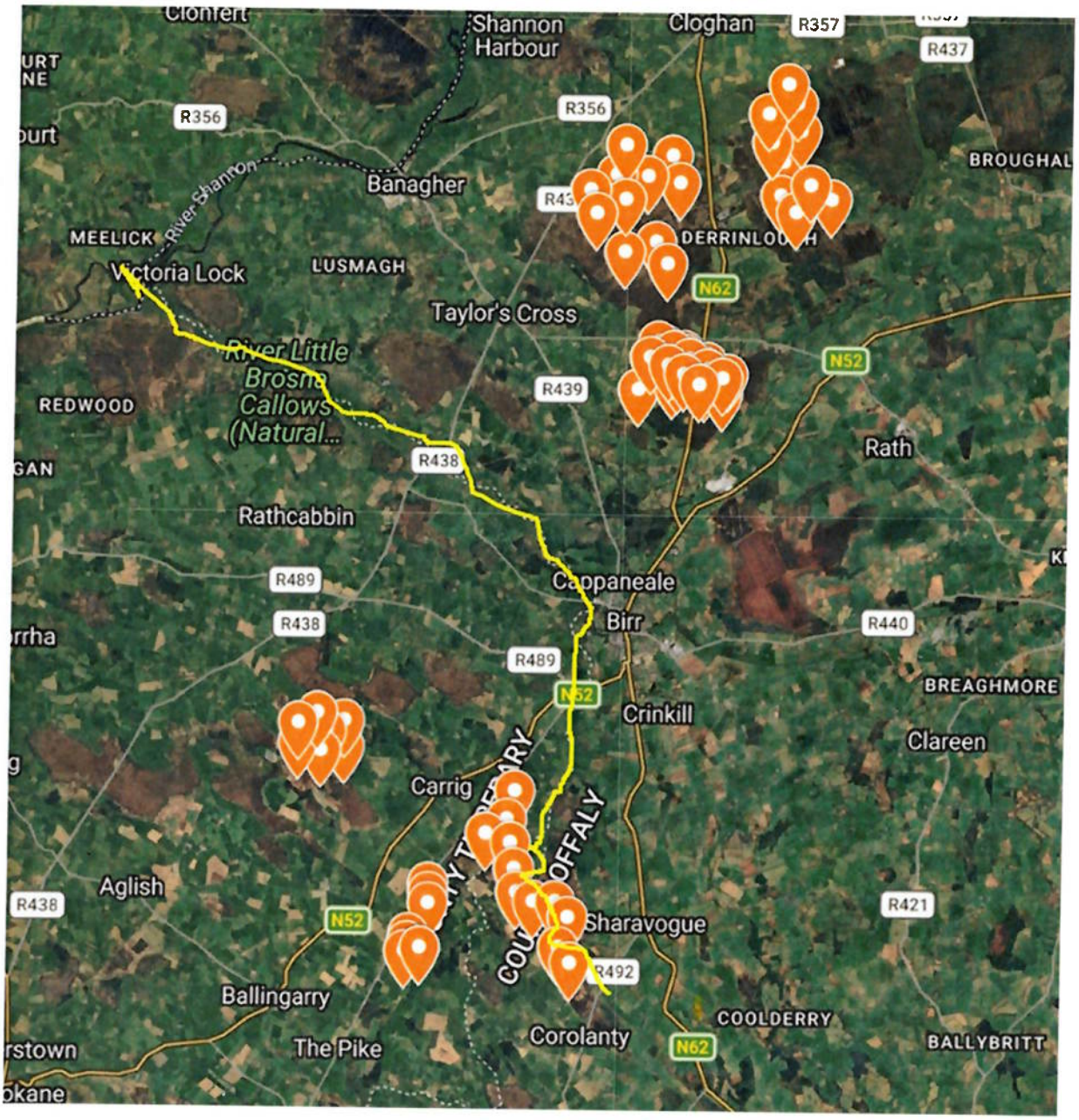
The last point from the Commission Guidance is critical for Ballincor. In this instance the developer's approach is to cite the other development's own NIS conclusion of nil residual effects and on that basis conclude that, added together, the combination also produces nil

effects which is the logical equivalent of arguing that because no single raindrop is responsible for a flood, there can be no flood.

The Commission's guidance explicitly states that this approach is insufficient — the in-combination assessment must be independent and must address cumulative effects even where each individual project has concluded it has no residual effects.

4.6.2 One Shared Ecosystem — Four Applications Each Arguing Only Their Own Case





This is the core structural argument. Ballincor, Carrig, Cush and Derrinlough are not four independent developments with separate ecological footprints. They are four applications within a shared ecosystem, drawing on the same finite populations of the same SPA qualifying interest species, assessed by four different consultants instructed by four different developers, each concluding that only their own project has any ecological consequence. → See Appendix 4-5, Part 1: Development Register.

The shared characteristics of this ecosystem are:

- The same finite SPA populations: Every golden plover, whooper swan, wigeon, lapwing, black-tailed godwit, teal, shoveler, pintail and Greenland white-fronted goose that uses

the River Little Brosna Callows SPA draws on a population that is subject to collision mortality risk, disturbance and displacement from all four operational developments simultaneously.

- The same flightlines and movement corridors: The River Brosna corridor connects the site to the SPA. The midland bog SAC network links Sharavogue Bog SAC, Ballyduff/Clonfinnane SAC, Arragh More SAC and Kilcarren-Firville SAC. Birds moving along these corridors do not encounter one development — they encounter all of them.
- The same Zone of Influence: The developer's own NIS Table 6-13 places Carrig at 1.5km, Cush at 10km and Derrinlough at 13km. Each of these developments acknowledged in its own NIS that the River Little Brosna Callows SPA is within the Zone of Influence. They share the same Zone of Influence because they share the same SPA.
- The same NPWS regulatory concerns: The DAU has made materially identical submissions on Carrig and Cush — raising the same issues about nocturnal surveys, in-combination effects, whooper swan flightlines, curlew individual significance, SPA connectivity defaults, and avoidance rates. These concerns were not project-specific. They reflect the DAU's view of the entire Zone of Influence.

Despite all of this, each application has been assessed in isolation. Each developer's cumulative assessment consists of a review of other developers' NIS conclusions. No developer has calculated the combined collision mortality across the Zone of Influence. No developer has assessed the additive displacement and barrier effects across the shared corridor. No developer has presented a combined disturbance and fragmentation assessment for the SAC network. This section does what no developer has done: it presents the combined picture. → See Appendix 4-5, Part 2: Combined Collision Mortality and Part 4: The Structural Gap.

4.6.3 Additive Collision Mortality — The Combined Figure No Developer Has Calculated

Every figure in this section is drawn directly from the developers' own formally submitted CRM documents. This is deliberate — the intention is to demonstrate that even accepting the developers' own numbers at face value (for reasons presented previously – we do not), the combined picture is incompatible with the conservation objectives of the River Little Brosna Callows SPA. These figures are not generated by this objection. They are the developers' own preferred central estimates, extracted from documents placed before competent authorities and individually described, in each case, as negligible.

The figures that follow are therefore minimum baseline estimates derived from datasets that are themselves likely to understate actual flight activity and actual collision risk. The true combined collision mortality is higher — potentially substantially higher — than the arithmetic below suggests. This is the floor, not the ceiling. It is presented as such.

→ Appendix 4-5, Table E2: Combined collision mortality tables.

4.6.3.1 Golden Plover — SPA Qualifying Interest, Unfavourable Conservation Condition, Combined Mortality Exceeds Recovery Threshold

The River Little Brosna Callows SPA I-WeBS five-year mean peak count for golden plover is 9,247 birds (2018/19–2022/23, Burke et al., 2026). The conservation condition is already unfavourable. The conservation objective does not merely require that this decline be arrested — it requires a stable or increasing long-term population trend, meaning the population must recover toward its baseline.

- **Derrinlough Wind Farm** 14.9 collisions per year at 98% avoidance (Derrinlough NIS, 2020). Assessed against the county population of 15,898 birds — not against the SPA local population of 9,247. Had it been assessed against the SPA population, the annual mortality increase would be approximately 0.6% — above the level Derrinlough itself described as the threshold of concern, and nearly double the figure its own assessment presented. Described as negligible.
- **Ballincor Wind Farm** 7.9–9.4 collisions per year at 99.6% avoidance (Ballincor CRM, Table 4.1). The developer's own upper uncertainty range exceeds the 1% local SPA population mortality threshold. This exceedance was acknowledged and dismissed. Described as negligible.
- **Cush Wind Farm** 24.27–93.90 collisions per year at 98% avoidance (Cush NIS figures cited in NPWS/DAU Cush letter, March 2024). The NPWS/DAU calculated that this represents an annual mortality increase of 1.76%–6.81% on the local SPA population of 5,110 birds — already breaching the 1% threshold at the central estimate before a single other development is considered. Described as negligible.
- **Carrig Wind Farm** 1.17–2.35 collisions per year at 99.6–99.8% avoidance. No population-level significance assessment was conducted in the Carrig application. The figure was placed in the CRM and not carried forward to any threshold test. Described as negligible.

Applied to the SPA local population of 9,247 birds, this represents an annual mortality increase of approximately **3.6–8.7%**. Applied to the lower I-WeBS count of 5,110 birds used in the NPWS/DAU Cush letter, the annual mortality increase is **6.4–15.5%**. The lower bound of this range — 3.6% annual mortality increase on a population already 50% below its designated baseline — is nine times the 1% threshold that each developer individually described as highly precautionary before dismissing it. The upper bound is thirty-nine times that threshold.

This figure has never appeared in a single document submitted to any competent authority. Each developer calculated their own number, described it as negligible, and submitted it. No developer, no planning authority, and no statutory consultee has placed all four numbers in the same column and added them up. This section does that for the first time.

The structural absurdity of the current approach is most clearly visible in the avoidance rate asymmetry. Derrinlough used the 98% default avoidance rate, which the same CRM author — appointed by Ballincor — subsequently argued in the Ballincor and Carrig CRMs should be replaced by 99.6–99.8% on the basis of post-construction monitoring evidence from UK wind farms. If the 99.6% rate is scientifically correct — and it is the rate applied in both the Ballincor and Carrig CRMs — then Derrinlough's figure of 14.9 collisions per year is a significant overestimate and the true Derrinlough contribution may be closer to 3–5 collisions per year. But if the 98% rate is applied consistently across all four developments — as Derrinlough's own assessment implies it should be — then Ballincor and Carrig's figures of 7.9–9.4 and 1.17–2.35 respectively would be replaced by figures five to ten times higher, and the combined total would not be 48–121 collisions per year but **200–400 or more**. The developers have been permitted to choose whichever avoidance rate produces the lowest number for their own site, with no requirement for methodological consistency across the cluster. The combined figures above are the arithmetic result of accepting each developer's own preferred assumption. They are the most generous interpretation of the available evidence. They are still incompatible with the SPA conservation objectives.

For a species already in unfavourable conservation condition, 50% below its SPA designation baseline, with a conservation objective that legally requires population recovery, an additive annual mortality of between 3.6% and 15.5% from four adjacent developments is not a marginal or borderline concern. It is a structural obstacle to the achievement of the conservation objective. No developer has assessed it as such. No competent authority has been presented with it as such. This submission presents it now.→ Appendix 4-5, Table E2.

4.6.3.2 Whooper Swan — A Corridor of Four Developments Across a Single Established Flightline

The structural problem for whooper swan is geographic rather than arithmetic. Each of the four developments lies along or adjacent to the River Brosna corridor that connects the NPWS-managed Sharragh roost — 63 hectares of managed wetland directly adjacent to both Ballincor and Carrig, documented as a regular nighttime roosting site for whooper swan — to the River Little Brosna Callows SPA 7–8km to the north. A bird roosting at Sharragh and feeding on the SPA callows does not choose which wind farm to fly past. It flies the corridor. Ballincor and Carrig sit at the southern end, 1.5km apart. Derrinlough lies further north. Cush lies to the northwest. The corridor is not a metaphor — it is the documented movement route for an Annex I species that is a qualifying interest of the SPA, and it now contains four wind energy developments at various stages of consent.

The Ballincor CRM central estimate for whooper swan is 0.02–0.05 collisions per year. The Carrig CRM (Table 7-5-5, Scenario 1, 99.5% avoidance) produces a central estimate **of 0.07 collisions per year** — three times Ballincor's figure, reflecting Carrig's substantially higher recorded whooper swan flight activity of 7,652 bird-seconds at potential collision height compared to Ballincor's lower recorded activity. This difference is itself informative: the two sites are 1.5km apart and surveyed the same population of birds, yet their recorded flight activity differs significantly, suggesting that the spatial distribution of whooper swan movement is highly localised and that VP coverage gaps at either site are likely to have produced material underestimates.

From Ballincor and Carrig alone — the two southernmost developments, forming a paired obstacle across the Sharragh–SPA corridor — the combined annual whooper swan collision estimate is **0.09–0.12 collisions per year**, or approximately one bird every eight to eleven years. For a species whose entire Little Brosna Callows SPA local wintering population is 337 individuals, a combined mortality rate of one bird per decade from two adjacent developments represents approximately 0.3% of the local population per year — approaching the 1% threshold when uncertainty ranges and nocturnal under-detection are applied.

Comparable CRM figures for Cush and Derrinlough are not fully available in the reviewed documents. But both applications identified whooper swan disturbance and displacement pathways to the SPA in their NIS. Adding even conservative estimates for those two

developments — each of which surveyed the same population using the same daytime-only methodology — would push the combined figure further. More importantly, displacement and barrier effects compound in a way that collision risk arithmetic cannot fully capture: a bird diverted around one wind farm arrives at the next. A species habituated to a flightline that now contains four turbine clusters does not simply recalculate its route. The evidence from across Europe is that repeated displacement from established flightlines causes population-level shifts in site use over time, and that the Little Brosna Callows SPA local population — already at 337 individuals — has no margin for further attrition of any kind.

The diel coverage gap compounds catastrophically in this cumulative context. All four assessments are missing the same nocturnal and crepuscular periods during which whooper swan movement between roost and feeding grounds is most concentrated. It is not one dataset with a gap. It is four assessments with the same gap, stacked across the same flightline. The combined effect of that shared omission is not additive — it is multiplicative. The more developments share a flightline and the more all their datasets share the same structural absence, the further the combined collision risk estimate is from reality.

4.6.3.3 Other SPA Qualifying Interest Species — The Unassessed Aggregate

The picture that emerges is consistent: every species for which both a Ballincor and a Carrig figure is available shows a combined mortality that is higher — in some cases substantially higher — than either developer acknowledged individually.

Lapwing is a qualifying interest of the Little Brosna Callows SPA. The Carrig CRM predicts 2.94 collisions per year at 98% avoidance (Scenario 1, Table 7-5-5). The Ballincor CRM predicts 1.4–1.6 collisions per year at the same avoidance rate. Combined from these two adjacent developments alone: **4.3–4.5 lapwing collisions per year**, before Derrinlough — which explicitly identifies lapwing disturbance pathways to the SPA in its NIS — or Cush is considered. The local Little Brosna Callows SPA lapwing population is 5,637 birds (I-WeBS data, Burke et al., 2026). The two-development combined figure represents approximately 0.08% annual mortality on the local SPA population — modest in isolation, but this is again the floor figure, before two further developments, before nocturnal under-detection correction, and before the species' already declining national trend is weighted.

Curlew — an Annex I species with approximately 105 breeding pairs remaining nationally — appears in both CRMs. The Carrig CRM predicts 0.003–0.006 collisions per year. The

Ballincor CRM predicts 0.02 collisions per year. These figures appear small. They are not. With 105 breeding pairs, approximately 210–250 individuals, the loss of a single curlew from the Irish breeding population represents approximately 0.4–0.5% of the national total. The combined Ballincor–Carrig figure of 0.02–0.03 curlew collisions per year means a statistically expected curlew death from these two developments alone every 30–50 years. Over a 30-year operational lifetime, one curlew death from this paired development is the central expected outcome. One curlew death is 0.4–0.5% of the entire Irish breeding population, from two wind farms in the same townland. No cumulative assessment has placed this in a national population context. Neither Derrinlough nor Cush CRM figures for curlew are available in the reviewed documents, but both identified curlew as a species present in the survey area.

Black-tailed godwit — a qualifying interest of the Little Brosna Callows SPA, with a local population of 3,553 and a national population of 24,790 — is predicted by the Ballincor CRM to incur 3.3–4.7 collisions per year at the central estimate, which already exceeds the 1% local SPA population mortality threshold. The Carrig CRM does not present a godwit figure because the species was not recorded at potential collision height during the Carrig survey. This absence is not reassuring — it is another data gap. The two sites are 1.5km apart. A species that breaches the 1% mortality threshold in the Ballincor CRM, whose SPA foraging habitat lies between the two sites, and which was simply not observed in the Carrig survey at collision height, is not demonstrably absent from Carrig's collision zone. It is undetected in Carrig's survey. The combined figure for black-tailed godwit therefore cannot be calculated from the available evidence — but the Ballincor figure alone already exceeds the threshold before any other development is added.

Wigeon, teal, shoveler, and Greenland white-fronted goose remain entirely unquantified in the cumulative context. All four are qualifying interests of the Little Brosna Callows SPA. All four are identified in multiple NIS documents across the four applications as species for which disturbance and displacement pathways to the SPA exist. Each developer concluded that its own mitigation blocked those pathways. No developer has modelled what happens when four sets of mitigation are simultaneously in place across the same corridor — whether a species displaced from one site by operational turbines arrives at the next site's turbines, is displaced again, and has nowhere left within its foraging range that is free of operational wind energy infrastructure. For Greenland white-fronted goose — 180 birds in the Little Brosna/Dovegrove flock, down 66% from the designation baseline, subject to a restoration conservation objective — this is not a theoretical question. It is the defining conservation

challenge for this population, and it has not been addressed by any of the four developers, individually or in combination.

The cumulative picture across all species and all four developments is therefore this: on the developers' own minimum-estimate figures, the combined collision mortality for golden plover alone is incompatible with SPA population recovery. For whooper swan, lapwing, curlew, and black-tailed godwit, the combined figures — where they can be assembled — consistently exceed what any individual developer acknowledged. For wigeon, teal, shoveler, and Greenland white-fronted goose, the combined figure has never been calculated by anyone. And all of this rests on survey data that is structurally incomplete in the same way, across all four applications, for the same species, at the same times of day. The floor is already broken. The ceiling has not been examined.

The in-combination assessment also omits a major non-wind development immediately adjacent to the site. Dr Moran (Appendix 4-6) records that a query of the EIA portal identifies a Strategic Infrastructure Development for which Uisce Éireann has given notice of intention to apply to An Coimisiún Pleanála (competent authority reference PA92.323980), comprising a raw water intake and pumping station, a water treatment plant, and associated infrastructure, together with approximately 172 km of pipeline and associated electricity works, running between County Tipperary and County Dublin. The potential impact of that project on proximate SPAs, including the River Little Brosna Callows SPA, has itself been identified in its own EIAR and NIS. The Ballincor Ornithology Chapter and NIS contain no consideration of cumulative or in-combination effects with this development. The failure even to identify, let alone assess, a Strategic Infrastructure Development of this scale affecting the same SPA must be construed as a fundamental deficiency in the in-combination assessment — one that is independent of, and additional to, the absent cumulative assessment of the four wind energy developments set out above.

4.6.4 Construction Phase Cumulative Impacts

The cumulative assessment problem is not limited to the operational phase. The Ballincor construction programme (estimated January 2027 onward, based on EIAR Chapter 4) overlaps with the Carrig construction programme for a significant period. Both sites are within 5km of each other, both involve heavy vehicle movements across the River Brosna corridor, and both will generate construction-phase disturbance to breeding birds on and around the shared SAC network.

For a species such as curlew — with confirmed breeding in the shared Zone of Influence in 2021 and 2025, and approximately 105 breeding pairs nationally — the cumulative construction disturbance from two wind farms within 5km, during the same breeding season, may represent the most significant individual threat to that breeding population from any single event in many years. This has not been assessed by either developer. → Appendix 4-3, SectionC4.2: Curlew — construction phase disturbance.

Similarly, merlin — confirmed breeding on Ballyduff/Clonfinnane SAC in 2025, with a foraging range overlapping both development zones — faces simultaneous construction disturbance from two directions during the breeding season. Neither the Ballincor nor the Carrig EIAR addresses this combined breeding-season pressure. → Appendix 4-3, SectionC4.3: Merlin.

4.6.5 Additive Displacement and Barrier Effect — The Corridor Under Pressure

Displacement and barrier effects differ from collision mortality in an important respect: they are not additive in a simple arithmetic sense — they are spatially compounding. A species displaced from a feeding site by one development may fly into the zone of influence of the next. A migratory species deflected from its flightline by one turbine cluster may be deflected into another. A breeding pair driven from its foraging range by construction at one site may find that the alternative foraging range is within the construction zone of the neighbouring development.

The River Brosna corridor illustrates this precisely. From south to north, it passes through: the Carrig/Ballincor combined turbine zone (18 turbines within 5km), then open callows and farmland, then the Cush development (8 turbines, 10km further). A species using this corridor — whooper swans commuting from the Sharragh roost to the SPA, golden plover flocks moving between feeding areas, Greenland white-fronted geese passing on migration — encounters turbine infrastructure at both ends of the corridor. The combined barrier and displacement effect on species using this corridor is greater than the sum of each individual development's effect, because the alternative routes become progressively narrower as each development is added.

No developer has modelled this spatially compounding displacement effect. Each NIS concludes that alternative habitat is available in the wider landscape — but as the cluster of

developments grows, the area of undisturbed alternative habitat shrinks. Derrinlough (21 turbines) took its share of the alternative landscape in 2021. Cush (8 turbines) took more in 2024. Carrig (7 turbines) took more in 2025. Ballincor proposes 11 more. The landscape absorbs each development individually as though the others did not exist. → Appendix 4-5, SectionE3: Cumulative structure failure; Appendix 4-5, SectionE4: Summary — The Structural Gap.

4.6.5.1 The SAC network corridor

The midland bog SAC network — Sharavogue Bog SAC, Ballyduff/Clonfinnane SAC, Arragh More SAC, Kilcarren-Firville SAC and Redwood SAC — forms an ecological corridor approximately 15km in length through the Offaly/Tipperary border region. The Ballincor turbines would be sited at the northern end of this corridor, between Sharavogue SAC and the SACs to the south. Carrig lies 5km to the southeast. Together they create a turbine presence across both ends of the corridor's northern section.

For merlin, curlew and hen harrier — species that breed on or move between the bog habitats within this network — the cumulative barrier effect of Ballincor and Carrig is qualitatively different from either development alone. A single 11-turbine wind farm is a barrier. An 18-turbine combined infrastructure across the corridor is a fragmentation. The difference matters ecologically. Neither developer has assessed the combined corridor fragmentation effect. → Appendix 4-3, SectionC4.11: Habitat Connectivity; Section 4.11 of this chapter.

4.6.6 The Regulatory Authority's Own Statement — DAU Verbatim

This section presents the statements of the NPWS Development Applications Unit, in its own words, on the adequacy of cumulative and in-combination assessment for wind farm developments in this Zone of Influence. These are not interpretations of the DAU's position — they are direct quotations from formal submissions to An Coimisiún Pleanála on applications within the same shared ecosystem. They constitute the most authoritative available statement of the regulatory standard that applies.

NPWS/DAU submission on Cush Wind Farm (ABP-318816-24, 1 March 2024) — on in-combination effects:

> *"The Department considers that the risk to birds on migration of being involved in collisions with the proposed wind farm in its operational phase has not been satisfactorily evaluated by the applicant. Additionally, in-combination effects of several wind farms across this area on migrating birds has not been assessed."*

Significance for this application: This statement was made in March 2024 — after the Ballincor survey programme was underway and before the Ballincor application was submitted. The in-combination gap identified for Cush was not closed before Ballincor was submitted. The gap the DAU identified exists, unchanged, in the Ballincor NIS. When the DAU states that in-combination effects 'have not been assessed,' that statement applies to the entire Zone of Influence — including Ballincor.

NPWS/DAU submission on Cush Wind Farm — on SPA connectivity:

> *"Due to the proximity of the SPAs to the project site and a lack of any scientific evidence to the contrary, and in accordance with the precautionary principle, the Department considers that it must be assumed that these birds are part of the SPA populations and therefore there is ecological connectivity to these sites."*

Significance for this application: The Ballincor NIS does not adopt this default. It requires evidence of connectivity before treating birds on the site as SPA birds. The DAU's instruction — that the precautionary principle requires the opposite assumption — applies to Ballincor with identical force. The developer's cumulative assessment cannot stand on a connectivity assumption that the regulatory authority has explicitly rejected.

NPWS/DAU submission on Carrig Wind Farm (ABP-318689-23) — on the Zone of Influence:

> *"The Department does not accept the findings of the EIAR/NIS in relation to a 5km core range for bird species. The Department considers it entirely possible that there may be movement between the sites, constituting ex-situ usage of the development zone of influence by qualifying interest species from the SPA."*

Significance for this application: The Carrig submission was made in respect of a development at 1.5km from Ballincor. The DAU's rejection of the 5km core range assumption applies directly to Ballincor — a development at the same location in the same shared ecosystem. The cumulative assessment in the Ballincor NIS is premised on a Zone of Influence assumption the DAU has stated it does not accept for this precise area.

NPWS/DAU submission on Carrig Wind Farm — on whooper swan and the flightline:

> *"It is proposed to locate the turbines within a pre-existing regularly used whooper swan flight line. These birds could be displaced or if they maintain current usage be at greater than normal collision*

> *risk. The Dept. also notes extensive flight observations of other protected bird species in the proposed turbine area."*

Significance for this application: The established whooper swan flightline identified by the DAU in its Carrig submission passes through the Ballincor Zone of Influence. The Sharragh roost — NPWS-owned land, cited by the DAU in the same submission — is shared between the Carrig and Ballincor development zones. The cumulative displacement and collision risk on this flightline from both developments combined has not been assessed.

NPWS/DAU submission on Carrig Wind Farm — on curlew individual significance:

> *"Collision mortality or displacement could be considerable for species which are already in serious decline, e.g. there are c.105 breeding pairs of curlew left in Ireland, therefore the loss of one pair would equate to almost 1% of the national breeding population."*

Significance for this application: This statement on curlew individual significance was made by the DAU in the context of the Carrig application — 1.5km from Ballincor. The same species, the same population, the same DAU position. The cumulative risk to curlew breeding in the corridor between and around the two developments has never been assessed.

The DAU statements above span both the Carrig and Cush applications, covering the full geographic range of the Zone of Influence within which Ballincor sits. They consistently identify: inadequate survey methodology; rejected Zone of Influence assumptions; inverted SPA connectivity defaults; unassessed in-combination effects; and individual species significance requirements not met by collective assessment. None of these concerns has been closed in the Ballincor application.

4.6.7 The Circular Structure of Developer Cumulative Assessment

The Ballincor NIS cumulative assessment follows a consistent structure for each development reviewed. The structure is:

- Step 1: Identify the other development in the 20km cumulative assessment radius.
- Step 2: Note that the other development's own NIS concluded no significant residual effects.
- Step 3: Conclude that since neither the other development nor Ballincor has residual effects individually, the combination also has no residual effects.
- Step 4: Proceed to the next development and repeat.

The exact language used in the Ballincor NIS for each development entry follows the same template. For Carrig (NIS Section6.3.1.1):

Ballincor NIS Section6.3.1.1 — on Carrig:

> *"...since the Carrig Wind Farm has no residual effects, its presence does not increase baseline pressures. Consequently, even with temporal overlap, the combination of the two projects does not result in additive or synergistic effects that would compromise site integrity."*

The structural problem: This statement assumes as a baseline fact what the DAU challenged in its Carrig submission — that Carrig has no residual effects. The NPWS/DAU submitted detailed ornithological objections to the Carrig application on the grounds that its assessment was inadequate. A development whose assessment was challenged by the regulatory authority as incomplete and inadequate has not been assessed as having 'no residual effects' in any meaningful regulatory sense. The Ballincor cumulative assessment treats the Carrig nil-effects conclusion as a settled fact; it is not.

For Cush (NIS Section6.3.1.4):

Ballincor NIS Section6.3.1.4 — on Cush:

> *"...since the Cush Wind Farm has no residual effects, its presence does not increase baseline pressures."*

The structural problem: Cush was consented in November 2024, after the NPWS/DAU submitted a formal objection in March 2024 stating that the collision risk assessment for migrating birds 'has not been satisfactorily evaluated' and that in-combination effects 'have not been assessed.' Consent was granted notwithstanding these objections. But the grant of consent does not convert an inadequate assessment into an adequate one. It means the inadequacy now exists within the consented development baseline. The Ballincor developer treats Cush's consented status as equivalent to validated nil effects. It is not.

For Derrinlough (NIS Section6.3.1.5):

Ballincor NIS Section6.3.1.5 — on Derrinlough:

> *"...since the Derrinlough Wind Farm has no residual effects, its presence does not increase baseline pressures. Spatially, the two projects are sufficiently separated, so there is no overlap in the areas of potential disturbance, displacement, or barrier effects."*

The structural problem: The Derrinlough NIS (2020) itself acknowledged disturbance and displacement pathways to the River Little Brosna Callows SPA and Middle Shannon Callows SPA for golden plover, whooper swan, wigeon, lapwing, black-tailed godwit, teal and shoveler. It then concluded that mitigation blocked these pathways. The claim of 'no overlap in areas of potential disturbance, displacement, or barrier effects' is inconsistent with Derrinlough's own acknowledgement of pathways to the same SPA.

The cumulative consequence of this circular structure is that each developer's nil-effects conclusion becomes the next developer's baseline. The cumulative burden on the SPA grows with each consented development, but the baseline against which each new

application measures its incremental effect remains at nil — because each predecessor claimed nil. This is circular by construction. It guarantees nil cumulative impact regardless of the actual aggregate burden. → Appendix 4-5, Part 4: Summary — The Structural Gap.

4.6.8 Conclusion — Absent, Not Merely Inadequate

Section 4.6 has demonstrated the following:

- The legal requirement for in-combination assessment under Article 6(3) is not satisfied by accepting each other developer's nil-effects conclusion as a baseline fact. The European Commission's guidance explicitly states that in-combination assessment must be independent and must address cumulative effects even where each individual project has concluded it has no residual effects.
- Ballincor, Carrig, Cush and Derrinlough draw on the same finite SPA populations. The combined additive collision mortality across three of these developments (Derrinlough, Ballincor, Cush — excluding Carrig) is 46.8–118.3 golden plover collisions per year on a population already 50% below its SPA baseline reference values. This figure has never been presented to any competent authority in a single document.
- The additive displacement and barrier effect on the River Brosna corridor and the midland bog SAC network is qualitatively different from — and greater than — the sum of each individual development's displacement impact. No developer has modelled this spatially compounding effect.
- The NPWS/DAU has explicitly stated, in formal submissions on two applications within the same Zone of Influence, that in-combination effects 'have not been assessed.' This is not a finding specific to Cush or Carrig — it is the DAU's assessment of the entire Zone of Influence.
- The developer's cumulative assessment methodology — accepting each predecessor's nil-effects conclusion as a settled baseline — is circular by construction and produces nil cumulative impact regardless of the actual aggregate burden.

The cumulative assessment is absent, not inadequate. What the NIS offers is a template paragraph, repeated for each development, asserting that because every predecessor claimed nil effects the combination must also be nil. That is not an assessment; it is the assumption of its own conclusion. No independent calculation of the matters set out above has been performed, and the DAU's express finding that in-combination effects "have not been assessed" stands unanswered. On this material, An Coimisiún Pleanála cannot discharge its obligation under Article 6(3) of the Habitats Directive.

4.7 Conclusions and Grounds for Refusal

There is a final observation that needs to be made. The developer's own raw survey data — the records in Appendix 7-1 when read on their own terms, before any modelling or analytical step is applied, present a picture of an active, heavily used wetland bird landscape. The appendices record golden plover flocks of 450 birds, Wigeon flocks of 600, repeated large-scale wintering waterbird activity across multiple seasons, records of species using the survey area for durations measured in hundreds and in some cases thousands of seconds, and extensive low-altitude movement along the River Brosna corridor by multiple SPA qualifying interest species. The North Corridor densities in CRM Table 3.4 are 4.7 to 8.0 times higher than the modelled remainder zone for four SPA qualifying interests.

This data is not the product of modelling assumptions. but the product of counting what the VP observers actually recorded. The overall ecological impression created by the raw data is not of a landscape with occasional, incidental waterbird usage. It is of an actively used wetland flight landscape with recurring large-scale wintering bird activity concentrated along a river corridor that passes directly through the proposed development zone. The assessment built on that same raw data concludes that adverse effects are negligible and can be excluded. The gap between what the raw data shows, despite the many deficiencies, and what the assessment concludes is itself a signal for scrutiny.

An Coimisiún Pleanála, as the competent authority required to ascertain — not merely suspect — that adverse effects can be excluded, should weigh the raw ecological record as the primary evidential baseline, and ask whether the analytical steps taken between that record and the assessment conclusion are complete, precise and definitive as Article 6(3) and Waddenzee require.

4.7.1 Summary of Principal Failures

This objection has examined the ornithological assessment submitted with the Ballincor Wind Farm application across five categories: survey methodology and effort; baseline species data; analysis and reasoning; protected species assessment; and cumulative impact. In each category, material and significant deficiencies have been identified — not from external sources, but from the developer's own documents, the developer's own CRM author's own admissions, and the NPWS/DAU's own submissions on comparable applications in the same Zone of Influence. The five categories are briefly summarised here before the numbered grounds are set out.

1. **Methodology.** Eight of nine survey seasons were conducted with surveys concentrated in the middle of the day, no dawn or dusk coverage in summer, near-zero dusk coverage in winter, no height band classification, non-compliant watch durations, concurrent watches violating statistical independence, and no nocturnal surveys, acoustic monitoring or radar across any season. Turbine T5 falls outside all viewsheds at all heights in all nine seasons. Summer 2022 is entirely absent. The Brosna North Corridor — the zone of highest bird activity for four SPA qualifying interest species, with densities 4.7 to 8.0 times higher than the remainder zone — was excluded from the CRM without any commuting flight analysis to fill the gap. These are not peripheral shortfalls — they are structural characteristics of the dataset on which the entire CRM is built, all of which consistently suppress data from the periods and places where bird activity is highest. → *Section 2; Appendices 4-1, 4-2, 4-4.*
2. **Baseline.** Several SPA qualifying interest species received CRM modelling but were then excluded from any population-level significance assessment on a fewer-than-ten-records threshold that is itself a direct consequence of the survey methodology failures described above. The threshold is not applied consistently — black-tailed godwit, with fewer than ten records, was retained in the CRM because its single large-flock observation produced high estimates; pintail, with two nationally important counts at the same location in the same month of different years, was dismissed without individual assessment. The 2025 BirdWatch Ireland breeding survey on the adjacent SAC confirmed breeding Annex I species that the developer's programme — which deployed no acoustic monitoring — failed to detect. → *Section 2.5; Section 3.1; Appendix* 4-3.
3. **Analysis.** The CRM's conclusions rest on an avoidance rate challenged by the regulatory authority as inapplicable to this turbine scale and landscape type; a population denominator assessed at national rather than SPA scale in ways that understate significance; displacement distances derived from smaller turbines in different landscapes; a connectivity default that inverts the precautionary principle; a 1% mortality threshold repeatedly invoked to dismiss near-threshold findings for a species already in unfavourable conservation condition; and five specific logical inconsistencies where acknowledged data gaps are carried to no-impact conclusions without supporting analysis. The CRM identifies 25 separate limitations, caveats and uncertainties in its own dataset and model. → *Section 3; Appendix* 4-2.
4. **Species assessment.** Priority species — whooper swan, curlew, merlin, white-tailed eagle and golden plover — each receive assessments this objection has demonstrated are inadequate. For curlew and merlin, post-submission field evidence directly contradicts the developer's assessment conclusion. For white-tailed eagle,

the 1% annual mortality threshold was applied to a national wild population of 150 individuals — precisely the category the CRM's own author identified as the class of case where the threshold is biologically implausible. For golden plover, the assessment does not ask whether the development undermines recovery potential for a population already at 50% of its baseline reference value. A further seven species of significant conservation status are assessed in ways inconsistent with their national population sizes or regulatory status. → *Section 4; Appendix* 4-3.

5. **Cumulative impact.** The in-combination assessment in the NIS is not inadequate — it is absent. No developer in the Zone of Influence has calculated combined collision mortality from the four primary developments on the shared SPA populations. The combined figure from three developments alone — 46.8–118.3 golden plover collisions per year on a population already 50% below its SPA baseline — has never appeared in a single document submitted to any competent authority. The NPWS/DAU has stated directly that in-combination effects across this area have not been assessed. → *Section 5; Appendix* 4-5.

4.7.2 Eleven Grounds for Refusal

- **Ground 1 — Survey Methodology.** The dominant eight-season Ecology Ireland dataset cannot support a complete and definitive Appropriate Assessment. Surveys were concentrated in the middle of the day, with zero dawn and dusk coverage in summer, near-zero dusk coverage in winter, absent height band classification, non-compliant watch durations, and concurrent watches violating the statistical independence assumptions of the NatureScot model. No nocturnal surveys, acoustic monitoring or radar were conducted in any season. The CRM author acknowledges methodology deviation in Section 1.5 and the inability to calculate recording rates for dawn and dusk periods in Section 3.4.3. Tobin Dataset represents 1 season. The addition of one high-quality season does not retrospectively validate eight deficient seasons.

- **Ground 2 — The Highest-Density Activity Zone & Spatial Coverage.** The Brosna North Corridor — where bird densities for four SPA qualifying interest species are 4.7 to 8.0 times higher than the modelled zone — was excluded from the Collision Risk Model with no commuting flight analysis to replace it. Turbine T5 falls outside every viewshed at every height in every season. There is no empirical flight activity data at collision height for this turbine location anywhere in the survey programme. The two

places in this landscape where collision risk is most concentrated are the two places the assessment does not reach.

- **Ground 3 — Nocturnal, Acoustic and Radar Surveys: Total absence.** No nocturnal surveys. No acoustic monitoring. No radar. Not in any season, for any species, at any point in a nine-season programme. The regulatory authority has stated explicitly that the full impact of a development of this kind cannot be assessed without this information. The only methodology that would have detected confirmed Annex I breeding within the foraging range of the development was never deployed. Seven species in the CRM have their nocturnal activity estimated from literature values because no site data exists. This is not a gap — it is a void.

- **Ground 4 — Curlew and Merlin: Collective Assessment of Nationally Critical Species Alongside Common Species is Not Lawful.** BirdWatch Ireland 2025 confirmed breeding merlin — an Annex I species — on the SAC 2.8km from the proposed turbines in May and June 2025. The nest was located. The confirmed breeding pair forages across a range that overlaps the turbine zone directly. Curlew, a Red-listed species with approximately 105 breeding pairs nationally, was confirmed present on the same SAC during the breeding season. The loss of one pair is almost 1% of the national population, the regulatory authority has said so explicitly, for this location. Merlin is an Annex I species confirmed breeding within the foraging range of the development. Both are assessed collectively alongside coot, common gull and herring gull. No individual collision risk assessment. No targeted breeding survey. No breeding disturbance analysis. No population-level significance assessment. The inference of limited site use from low record counts is directly contradicted by the survey methodology failures and by the 2025 breeding confirmation. This collective treatment has no legal or ecological justification.

- **Ground 5 — Small-Population Species: The 1% Annual Mortality Threshold Cannot Lawfully be Applied to a National Wild Population of 150 Individuals.** The entire wild Irish white-tailed eagle population is approximately 150 individuals. The CRM's own author acknowledges the 1% threshold may be biologically implausible for small populations with low mortality rates. White-tailed eagle was excluded from any population-level significance assessment before the threshold was even reached. One dead eagle over the operational lifetime of this wind farm represents a meaningful fraction of the entire national population of a species recovering from functional extinction. A threshold designed for abundant, stable

populations is not a complete or definitive assessment tool for a species in this position. The same structural failure applies to hen harrier, for which no population data was assembled in the CRM at all.

- **Ground 6 — Golden Plover: Inapplicable Avoidance Rate; Unfavourable Conservation Condition; Recovery Trajectory Not Assessed.** The 99.6% avoidance rate applied for golden plover has been explicitly challenged by the regulatory authority as derived from turbines half the size of those proposed, in landscapes entirely unlike this one. The SPA population is already in unfavourable conservation condition — 50% below its baseline reference values. The upper uncertainty range of the developer's own collision estimate already exceeds the 1% local SPA population mortality threshold. The assessment addresses only whether the central estimate at the preferred rate clears a threshold the CRM itself describes as precautionary. It never asks whether the development undermines the population's potential for recovery to favourable conservation status. That is the question the conservation objectives require to be answered. It was not asked.

- **Ground 7 — Whooper Swan: CRM Admits Potential Under-Estimation; Established Flightline Through the Development Zone Unassessed.** The CRM's own author acknowledges that uneven diel coverage may have caused under-estimation of whooper swan collision risk. An established communal roost connected to the SPA by a documented flightline through the development Zone of Influence generates pre-dawn commuting traffic that is entirely unrecorded across all nine seasons. Physical evidence of repeated collision on this flightline exists — bird strike deflectors were installed by ESB Networks on powerlines in the area. Having acknowledged potential under-estimation and confirmed an unassessed roost flightline, the EIAR concludes negligible impact. That step from acknowledged under-estimation to negligible conclusion is asserted, not demonstrated. Adverse effects on an Annex I SPA qualifying interest cannot be excluded on this basis.

- **Ground 8 — Pintail and Analytical Inconsistency: Nationally Important Counts Dismissed Using Reasoning the Same CRM Refused to Apply to Black-tailed Godwit.** Two nationally important pintail counts — at the same location, in the same month, in different years — were dismissed as a one-off event with no individual CRM modelling. Pintail is a SPA qualifying interest. The CRM's own logic, applied elsewhere to black-tailed godwit, holds that a large-flock record observed during

surveys covering 1.5–2% of daylight hours may reflect regular use systematically missed. That logic was used to retain black-tailed godwit in the model. It was not applied to pintail. The asymmetry is unexplained. No lawful exclusion of adverse effects on a SPA qualifying interest species can rest on a dismissal that contradicts the developer's own internal reasoning.

- **Ground 9 — No Operational Bird Mitigation and No Lawful Pathway to Adaptive Management.** No dedicated mitigation measures exist for the operational phase. None. The entire no-adverse-effects conclusion rests on the adequacy of the pre-consent assessment — which this submission demonstrates is structurally inadequate. For species where post-construction mortality is irreversible, post-consent discovery through monitoring is not a recoverable position. The bird monitoring programme contains an adaptive management trigger, but the regulatory authority has stated directly that it cannot approve changes or conditions after consent is granted. The trigger has nowhere to go. The mechanism to act on monitoring findings does not exist. There is no backstop.

- **Ground 10 — Cumulative Impact: The In-Combination Assessment is Absent, Not Merely Inadequate.** Each developer accepted the previous developer's nil-effects conclusion as a settled baseline and concluded that nil plus nil equals nil. European Commission guidance explicitly states this is insufficient. The combined golden plover collision mortality from three developments in this Zone of Influence is 46.8 to 118.3 birds per year on a population already 50% below its SPA baseline — between nine and thirty-nine times the threshold each developer individually dismissed as precautionary. This figure has never been presented to any competent authority in a single document. The regulatory authority stated in March 2024 that in-combination effects across this area have not been assessed. That statement remains true of this application.

- **Ground 11 — IROPI Waiver.** Both derogation pathways under Article 6(4) of the Habitats Directive have been expressly waived by the developer. If adverse effects on site integrity cannot be excluded following a complete and legally compliant assessment, refusal is the only lawful outcome available to An Coimisiún Pleanála.

4.7.3 The burden of proof has not been discharged.

Under Article 6(3) of the Habitats Directive as interpreted by the Court of Justice in Waddenzee (C-127/02) and confirmed in Sweetman (C-258/11), the burden of proof in an Appropriate Assessment lies entirely with the applicant. An Coimisiún Pleanála can agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site. The precautionary principle applies: where scientific doubt remains after a complete assessment, that doubt must resolve in favour of conservation. The applicant must demonstrate — not merely assert — that adverse effects can be excluded. The survey programme submitted with this application is structurally incapable of providing that demonstration for the dawn and dusk periods when the priority species in this landscape are most active. The CRM built on it contains 25 acknowledged limitations and uncertainties. Species with national populations so small that no individual can be treated as statistically insignificant were excluded from population-level assessment before the 1% threshold was applied. New evidence confirms breeding Annex I species in the Zone of Influence that the developer's surveys failed to detect. No operational bird mitigation exists. The cumulative impact has never been calculated. The burden of proof has not been discharged. Refusal is the only available lawful outcome.

Chapter 5 : The Barn Owl

5.0 Introduction

This chapter addresses Barn Owls as a discrete concern, separate from the general ornithological assessment, for three reasons:

- First, separate treatment is what the NPWS required in its scoping response. It identified the site as falling within a BirdWatch Ireland sensitivity zone for Barn Owl and called specifically for detailed and species-specific Barn Owl survey, with mitigation to follow if impacts were identified. The regulatory expectation was therefore a dedicated Barn Owl assessment in its own right. An objection that mirrors that structure tests the application against the standard actually set for it.
- Second, the ecological context demands it. West County Offaly has been identified by Lusby et al. (2022) as holding the highest density of breeding Barn Owls in Ireland, and the 10km square containing the majority of this site falls within the highest sensitivity band for Barn Owl on the national wind energy sensitivity mapping. A species that is nationally scarce, an estimated 562 to 702 breeding pairs across the entire country, but locally concentrated at exceptional density cannot be adequately assessed as a line item within a general bird survey. The site sits at the centre of one of the most important Barn Owl landscapes in the State. An independent review reflects that.
- Third, throughout this process and within the community no other bird has been raised as consistently, or as personally, as the Barn Owl. That is no accident: people see these birds around their own homes, roosting in their sheds, nesting in their outbuildings, hunting across their yards and fields at dusk. For the community here, the Barn Owl is not just an entry on a conservation list; it is a familiar presence in daily life, and its protection is felt as a personal matter rather than a technical one. The EIAR's own incidental records in Appendix 7-1, each generated when a suitable structure near the site boundary happened to be inspected, confirm what residents already know: that this is occupied Barn Owl country. The depth and consistency of local concern for this one species is itself a meaningful indicator of how present, and how valued, the Barn Owl is in this landscape.

The review is structured to directly address and rebut key assertions made in the Environmental Impact Assessment and Review (EIAR) Chapter 7 (Ornithology). It specifically addresses the sensitivity of Barn Owl to wind energy developments, drawing on

the most current available peer-reviewed science, national agency guidance, and established best-practice survey methodology.

The objection is advanced on six grounds.

- **Ground 1 — Failure to comply with NPWS scoping requirement.** The NPWS/DAU explicitly required detailed and specific Barn Owl surveys as a condition of the scoping process. None were conducted; the applicant substituted desk study and third-party consultation, which do not satisfy the regulatory requirement.
- **Ground 2 — Structurally inadequate survey methodology.** The applicant's own EIAR acknowledges that daytime VP surveys are incapable of detecting a predominantly nocturnal species, yet no nocturnal surveys, acoustic monitoring or dusk/dawn transects were conducted across a six-year survey period. The absence of data this produced was then used to conclude negligible collision risk — a circular argument that is methodologically untenable.
- **Ground 3 — No survey in the critical June/July window.** Absence of survey deems it impossible to detect calling juveniles and confirming whether breeding pairs have been successful. Breeding success is a prerequisite for any meaningful assessment of population-level impact, and its absence from the evidence base renders the impact assessment structurally incomplete.
- **Ground 4 — Collision risk assessment relies on incomplete and superseded evidence.** The EIAR's dismissal of Barn Owl collision risk rests almost entirely on hunting flight height — the 3–4m figure drawn from a 2015 charity position paper (Barn Owl Trust, 2015) — set against the 17m lowest blade sweep. In doing so it ignores the CIEEM best-practice guidance (Shawyer, 2012), which identifies elevated commuting flight between nest and foraging habitat, not low hunting flight, as the primary collision risk vector; and the peer-reviewed USGS/Ecosphere study (Diffendorfer et al., 2021), which identifies Barn Owl as among the five raptor species with the highest potential for population-level impacts from turbine collisions. A non-peer-reviewed source is relied upon for a single behavioural figure while the published guidance addressing the actual risk pathway is omitted..
- **Ground 5 — Internal contradiction between National importance finding and "not significant" conclusion.** The EIAR's own narrative concludes the local Barn Owl population is of National importance yet the impact matrices apply County importance and Medium sensitivity throughout, producing conclusions of not

significant and imperceptible that the applicant's own framework cannot sustain from a National importance starting point.

- **Ground 6 — Mitigation and monitoring incapable of detecting or responding to impacts.** MM90, the sole operational ornithology mitigation measure, names no species, sets no trigger threshold and specifies no adaptive management response; the Bird Monitoring Programme contains no Barn Owl content; and post-construction fatality monitoring relies on daytime dog searches without predator-proof fencing, meaning the adaptive management mechanism is contingent on detecting events the monitoring programme is structurally incapable of reliably generating.

5.1 Conservation Status of Barn Owl in Ireland

5.1.1 Legal Protection

Barn Owl (Tyto alba) is afforded the highest level of protection under Irish and European law:

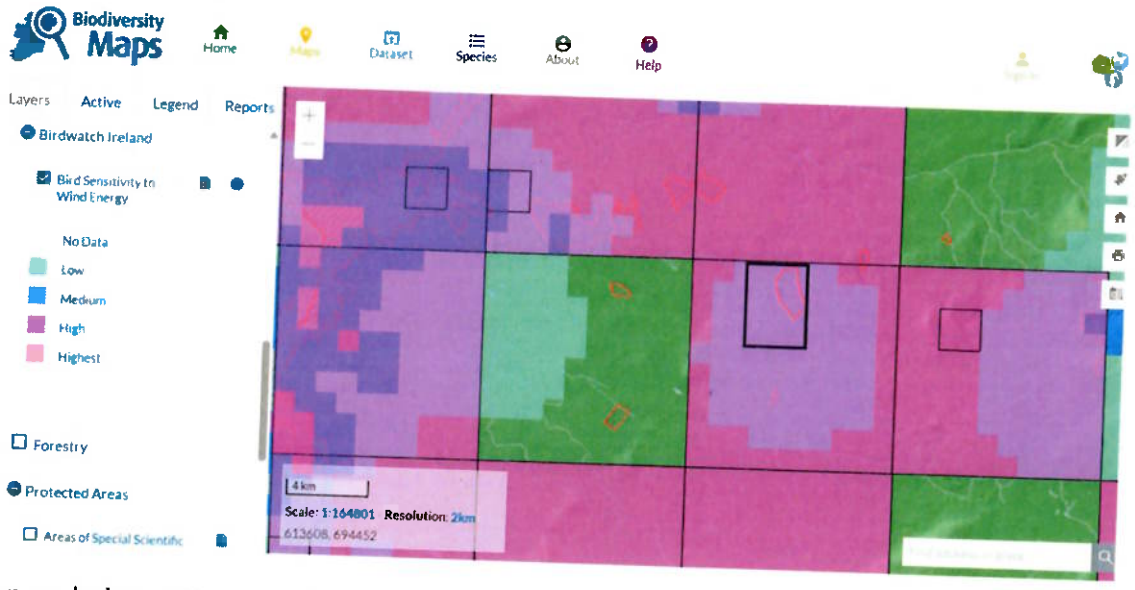
- Protected under the Wildlife Acts 1976-2019 (as amended)
- Protected under Article 5 of the EU Birds Directive (2009/147/EC), which prohibits deliberate killing, disturbance, or destruction of nests and eggs of all wild birds
- Red Listed on the Birds of Conservation Concern Ireland (BoCCI) 2020-2026 list (Gilbert et al., 2021), indicating a species of the highest conservation concern in Ireland

5.1.2 Population Status

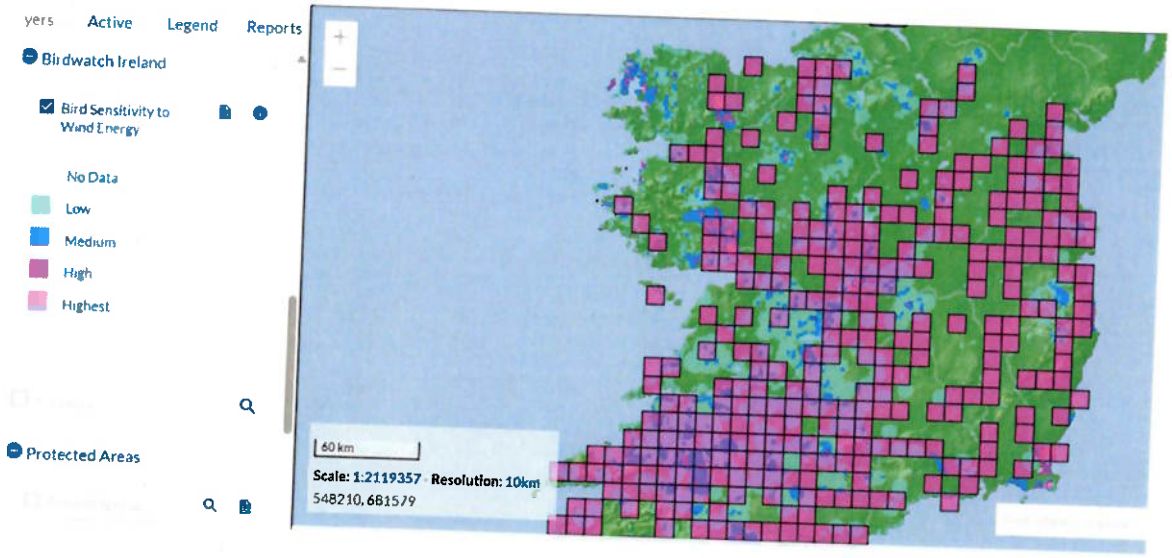
The Irish Barn Owl population is critically small. Expert opinion from BirdWatch Ireland and NPWS (2019) estimates only 562 to 702 breeding pairs exist in the entire country. This is one of the smallest national populations of any regularly breeding raptor in Ireland.

West County Offaly has been identified by Lusby et al. (2022) as containing the **highest density of breeding Barn Owls in Ireland**. The 10km Irish Grid square containing the majority of the Ballincor proposed project site (S09) contains at least six confirmed breeding pairs — an exceptional local concentration given the national population size.

For context the map below shows the S09, the black box broadly referencing the Windfarm development area and identifies in the legend on the left as having the 'HIGHEST' Bird sensitivity to Wind Energy.



The map below assesses bird sensitivity to Wind Energy across Ireland and notice the vast tracks of land with No, Low or Medium impact triggering the Coolglass Supreme Court arguments discussed earlier.



The Irish population has undergone both long-term and short-term decline over the past 25 years (Gilbert et al., 2021). Any additional anthropogenic mortality pressure — including that from wind turbine collisions — must be assessed against this baseline.

5.2 Flight Behaviour and the Collision Risk Misconception

5. 2.1 The Low-Flight Assumption and Why It Is Wrong

A commonly cited argument in wind farm assessments is that Barn Owls hunt predominantly close to the ground (typically cited as 3-4m), and that because modern turbine blade sweep starts well above this height, collision risk is negligible. This argument is explicitly deployed in the Ballincor EIAR Chapter 7.

This assumption is directly contradicted by authoritative guidance. The CIEEM Barn Owl Survey Methodology (Shawyer, 2012) — the recognised best-practice standard referenced by the applicant's own assessment — states explicitly:

> *"While [the Barn Owl] typically hunts within a few metres of the ground and is unlikely to encounter the area swept by turbine blades, in reality this bird will fly at considerable height on fixed flight trajectories, when moving from its nest or roost site to outlying feeding habitat or when ferrying prey back to the nest. Potentially, this flight behaviour places barn owls, like many other birds of prey, at significant risk of collision with wind turbines."*
>
> *Source: Shawyer, C. (2012). Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. CIEEM.*

The critical point is the distinction between hunting flight (low, quartering) and commuting/transfer flight (elevated, directional). Any wind turbine situated between a nest site and foraging habitat will be encountered by owls flying at altitude on predictable, fixed routes. Where confirmed nest sites exist within 160m and 600m of proposed turbines, as is the case at Ballincor, commuting flight at rotor height is not merely possible — it is highly probable.

5.2.2 Nocturnal Activity as a Specific Risk Factor

Barn Owl is a predominantly nocturnal species. The standard vantage point (VP) surveys conducted at Ballincor were daytime surveys. The EIAR itself acknowledges this fundamental methodological limitation.

Current peer-reviewed research has specifically identified nocturnal flight activity as a key driver of collision risk. The Barn Owl's silent flight — a key evolutionary adaptation for nocturnal hunting — means it has no auditory cue to avoid turbine blades.

This nocturnal vulnerability was not assessed at Ballincor. No acoustic monitoring, no call logger deployment, and no dusk/dawn transect surveys were conducted. The collision risk assessment for Barn Owl therefore rests on zero species-specific night-time data.

5.3 Peer-Reviewed Evidence: Population-Level Risk

5.3.1 USGS/Oklahoma State University Study (Ecosphere, 2021)

The most authoritative recent peer-reviewed assessment of raptor collision risk from wind turbines was published in the journal Ecosphere by the United States Geological Survey (USGS) in collaboration with Oklahoma State University (Diffendorfer et al., 2021). This study examined 14 raptor species and assessed their vulnerability to population-level impacts from wind turbine collisions.

The study found that Barn Owl was identified as one of only five species with the highest potential for population-level impacts from wind turbine collisions. The five high-risk species were: Barn Owl, Ferruginous Hawk, Golden Eagle, American Kestrel, and Red-tailed Hawk.

The study concluded that for these species, additional turbine-caused fatalities could cause population growth rates to go from positive to negative or for already declining species (such as Barn Owl), to become even more negative. The researchers explicitly stated that turbine collisions could contribute to population declines.

USGS specifically highlighted the life-history characteristics of raptors as a key vulnerability factor: raptors live longer than most birds, take longer to reach adulthood, and have fewer offspring. This makes populations more reliant on adult survival, and the impact of turbine-caused adult mortality proportionally greater.

Applied to the Irish context: with only 562–702 breeding pairs nationally, and the Ballincor site located within the highest-density Barn Owl area in Ireland, the loss of even a small number of breeding adults represents a significant and disproportionate impact on the national population.

5.4 Displacement, Disturbance and Territory Abandonment: A Parallel Impact Pathway

The EIAR's assessment of operational impact on Barn Owl is directed almost entirely at collision risk, which it concludes to be negligible. This framing is itself a material deficiency, because collision is not the only, or even the primary, mechanism by which a wind farm of this scale degrades a resident raptor population. Displacement and disturbance operate independently of collision, are not contingent on a single bird ever striking a blade and can drive population-level decline even where collision mortality is low. An assessment that resolves collision risk to "imperceptible" and treats that finding as disposing of operational impact has addressed one pathway while leaving a second, equally consequential pathway substantively unassessed.

Three distinct mechanisms apply at Ballincor:

- **Displacement from established territories.** Barn Owl is a territorial, site-faithful species whose breeding and roosting sites — including the structures recorded at approximately 50m, 160m and 600m from proposed turbines — represent established, multi-year territories. Construction and operational disturbance (habitat loss, noise, lighting, human activity, and the physical presence of turbine infrastructure) can render established territories unviable, displacing breeding adults from sites they would otherwise occupy. The loss of a confirmed or potential nest site to displacement is a permanent reduction in the breeding resource of a nationally important population.
- **Interruption of hunting patterns.** Barn Owl foraging depends on continuous access to open, low-disturbance lowland habitat and on predictable commuting routes between nest and feeding grounds. The introduction of turbine infrastructure across the foraging landscape fragments that habitat and interrupts established hunting patterns, reducing foraging efficiency precisely in the area the EIAR's own incidental records show to be in active use. Reduced foraging efficiency during the breeding season translates directly into reduced provisioning of young and lower breeding success.
- **Long-term avoidance and reduced reproductive success.** The cumulative effect of displacement and disturbance is long-term avoidance of the affected area, leading over successive seasons to territory abandonment, reduced reproductive success, and local population decline. For a species with the life-history characteristics identified by Diffendorfer et al. (2021) — long-lived, slow to reach maturity, low fecundity, and therefore reliant on sustained adult survival and breeding output —

chronic suppression of reproductive success is a population-level impact in its own right, distinct from and additional to any collision mortality.

These mechanisms are not speculative. They are the established basis on which the NPWS/DAU and independent raptor specialists have objected to comparable developments. In her objection to the Garrane Green Energy wind farm (County Limerick), Susan Kerwin, a National Parks and Wildlife Service-licensed raptor rehabilitation specialist and board member of The Barn Owl Project, identified the same three-mechanism displacement pathway, warning that for species reliant on quiet, open lowland for foraging and nesting, the compounded environmental stress of wind farm development can lead to territory abandonment, reduced breeding success, and long-term population decline. That the identical pathway has been independently identified by a licensed specialist at a separate Irish site reinforces, rather than isolates, its application here.

The EIAR engages this pathway only through Table 7-18 (disturbance/displacement), which it resolves to "not significant" on the same evidential foundation that produced the collision-risk conclusion: an assessment conducted without a single nocturnal survey, without confirmed occupancy status for the structures nearest the turbines, and without any established baseline of breeding territories, hunting ranges or commuting routes against which displacement could be measured. A displacement finding of "not significant" is only as reliable as the baseline that underpins it. Where no such baseline exists, the conclusion is not a finding — it is an assumption.

5.5 Survey Methodology: Critical Deficiencies

5.5.1 The NPWS Scoping Requirement

The NPWS Development Application Unit (DAU) explicitly stated in its scoping response that the Ballincor site falls within a BirdWatch Ireland-identified sensitivity zone for Barn Owls, and that detailed and specific surveys on Barn Owls should be completed, with mitigation included if impacts are identified. This was a clear, species-specific regulatory requirement.

5.5.2 Required Survey Standards Not Met

Three authoritative guidance documents set clear minimum standards for Barn Owl survey at wind farm developments. None were met at Ballincor:

Guidance Source	Required Standard	What Was Done at Ballincor
CIEEM / Shawyer (2012) Barn Owl Survey Methodology	Dedicated targeted barn owl surveys extending 1.5km from the wind farm boundary. Surveys must include dusk/dawn watches, nest site checks, and nocturnal assessments.	No dedicated Barn Owl surveys conducted. All records are incidental observations during daytime multidisciplinary surveys. No nocturnal survey of any kind undertaken.
NatureScot Recommended Bird Survey Methods for Onshore Windfarms (SNH, 2017; updated 2024)	Breeding surveys for owl species must extend at least 1km beyond the proposed site boundary, using published owl survey methods. Late evening surveys between May and July are essential to detect calling juveniles and confirm successful breeding pairs. Surveys should include documentation of physical evidence such as moulted feathers and pellets.	No dedicated owl survey to any distance was conducted. The 1km requirement was not acknowledged or applied. No evening or nocturnal surveys were conducted during the critical June–July juvenile calling period. No systematic search for physical evidence of occupancy was carried out at any point during the six-year survey period.

Guidance Source	Required Standard	What Was Done at Ballincor
BirdWatch Ireland / Transport Infrastructure Ireland (2017 & 2021) Barn Owl Survey Methodology — the established Irish standard, used by Lusby et al. (2022) in the County Offaly Barn Owl Survey that identified the nationally important population in the area surrounding this site	All potentially suitable structures must be identified and systematically inspected for signs of Barn Owl occupancy, including pellets, whitewash and moulted feathers. Where sign-searching is inconclusive or where sites are inaccessible, nocturnal surveys must be conducted to confirm presence or absence.	No systematic identification of suitable structures within or around the site was carried out. No structured sign-searching protocol was applied. No nocturnal follow-up surveys were conducted at any location.

5.5.3 What the Incidental Evidence Reveals About Survey Adequacy

The inadequacy of the survey effort is demonstrated not only by what was omitted, but by what was found when even cursory inspections happened to take place. The EIAR's own Appendix 7-1 records the following incidental observations, none of which arose from dedicated Barn Owl survey, but all of which were generated by multidisciplinary field visits that happened to inspect suitable structures near the site boundary:

- On 10 June 2022, an adult Barn Owl was flushed from an old barn in a farmyard 20 metres from the redline boundary. Down feathers were noted. This was recorded during a multidisciplinary survey, not a barn owl survey.
- On 9 July 2025, a building approximately 50 metres from the redline boundary was found to contain fresh whitewash, feathers and pellets — indicators the EIAR's own note describes as "very suitable for breeding," with sections of ceiling missing where a nest could be located. This too was recorded during a multidisciplinary survey.
- On 10 March 2026, evidence of Barn Owl potentially breeding was recorded at two locations: one at approximately 50 metres from the site boundary (feathers, pellets, audio recording of calls from a voice recording device, and calls heard from a nearby dusk VP survey), and a second at approximately 450 metres, where a species-

specific nest box in a derelict round tower was reported by the landowner to have held a breeding pair in previous years.

- Additionally, a Barn Owl carcass had been found at the first location in October 2025.

Two conclusions follow from this timeline:

1. Every occasion on which someone inspected a suitable structure near the site boundary produced positive evidence of Barn Owl presence. That evidence was found incidentally, in daylight, without specialist methodology. A dedicated survey which systematically identifies all potentially suitable structures and inspects them for precisely these signs would have almost certainly have generated positive results from the outset of the survey period in 2020. The evidence was always there; it was simply never sought.
2. The NatureScot guidance identifies Owl surveys in the June/July window as the essential window for detecting calling juveniles and confirming whether breeding pairs have been successful. None happened in any year of the six-year survey period means. Without surveys in this period, the EIAR could never have determined whether breeding was occurring, let alone whether it was successful. Breeding success is a prerequisite for any meaningful assessment of population-level impact, and its absence from the evidence base renders the impact assessment structurally incomplete.

5.5.4 The Consequence of Survey Failure

The failure to conduct dedicated Barn Owl surveys has created a self-fulfilling assessment gap. Because no nocturnal surveys were done, no nocturnal flight data exists. Because no nocturnal flight data exists, no collision risk could be modelled. The applicant then used the absence of modelled collision risk as evidence that collision risk is negligible — a circular and methodologically untenable conclusion.

At a minimum there are baseline parameters required to assess whether additional turbine-caused mortality would have a population-level effect. The USGS/Ecosphere study (Diffendorfer et al., 2021) identifies Barn Owl as among the five raptor species most sensitive to population-level impacts from wind turbine collisions — but applying that finding requires knowing the size and productivity of the local breeding population. At Ballincor, neither was established.

A dead Barn Owl was recorded at a location approximately 50 metres from the site boundary in October 2025. This is direct evidence of owl mortality in the immediate vicinity of the

proposed development. The carcass was not examined, the cause of death was not determined, the event was not reported to NPWS, and it did not trigger any reassessment of collision risk or survey requirements in the EIAR.

5.6 Correct Reading of the Barn Owl Trust Position

The applicant cites the Barn Owl Trust Wind Turbine Position Statement (2015) as supporting the conclusion that Barn Owls can breed successfully near turbines with minimal mortality. This citation requires careful qualification.

The Barn Owl Trust statement was produced in 2015 and has not been updated. It predates the USGS Ecosphere study (2021) which specifically identified Barn Owl as a high population-level risk species. The Trust's own online guidance states that without consistent monitoring, mortality may be under-recorded, and that the probability of finding dead birds is reduced by scavenger removal.

Critically, the Barn Owl Trust recommends that new major wind farm developments be surrounded by predator-proof fencing to prevent scavenging of carcasses, positioned at a distance no less than the height of the mast plus the length of one blade. No such infrastructure has been proposed or committed to at Ballincor. Without it, post-construction mortality monitoring will systematically under-record Barn Owl fatalities.

The applicant has therefore selectively cited the Trust's conclusion while ignoring the Trust's own recommended mitigation measures that are preconditions for that conclusion to be valid.

5.7 Internal Contradictions in the Ballincor EIAR Assessment

The Ballincor EIAR contains a fundamental internal contradiction on the Barn Owl issue that is material to the validity of the assessment:

- The EIAR records potential nest sites at 160m and confirmed nest site at 600m from turbines respectively and 8 known nest sites within 5km, noting that west County Offaly contains the highest density of breeding Barn Owls in Ireland (Lusby et al. 2022)
- "The EIAR's narrative assessment (Section 7.4.2.1.1, p.7-67) concludes the local Barn Owl population is of National importance, while Table 7-14 (p.7-84) simultaneously assigns a lower NRA evaluation of County importance — an internal inconsistency that undermines the validity of every impact calculation that follows.
- The EIAR assigns Barn Owl a sensitivity of Medium (Table 7-14, p.7-84), justified in the Rationale column solely by reference to the species' Red List status. However, the same framework — Table 7-6 of Chapter 7 — provides that species present in ***nationally*** important numbers should attract High sensitivity, not Medium. Having concluded in Section 7.4.2.1.1 that the local population is of National importance, the applicant was required by its own framework to apply High sensitivity throughout the impact matrices. It did not do so. The Medium sensitivity classification is therefore not a neutral finding — it is the point at which the internal contradiction between the narrative assessment and the impact tables first takes effect, and from which every subsequent underestimate of significance flows.
- Despite all of the above, the EIAR concludes that operational impacts are not significant in EIA terms in Table 7-18 (disturbance/displacement) and the collision risk magnitude is **negligible** and the significance **imperceptible**.

This conclusion cannot be upheld. A nationally important population, in the highest-density area in the country, with confirmed breeding within 160m of a turbine, assessed on the basis of zero nocturnal survey data, cannot rationally be concluded to face impacts that are not significant/negligible/imperceptible. The conclusion is unsupported by the evidence base the applicant itself presents.

5.8 Adequacy of Mitigation and Monitoring

The sole Barn Owl mitigation provision in the EIAR is Mitigation Measure MM90 (Chapter 20, p.20-54), which states in its entirety: *"A precautionary approach will be maintained. If unexpected ornithological issues arise during the operational phase, such as evidence of collision risk to sensitive species, an adaptive management strategy will be implemented."*

For the construction phase, Table 7-22 (p.7-168) records the Mitigation Measures column for Barn Owl as *"No Mitigation Required"*, noting only that seasonal restrictions on site clearance and the appointment of an Ecological Clerk of Works will incidentally reduce impact magnitude.

No nest site protection buffer is proposed around the barn 50 metres from the site boundary. No pre-construction nocturnal verification of occupancy is required. No predator-proof fencing is proposed at any turbine. No Barn Owl-specific carcass search protocol is included in the Bird Monitoring Programme. The word "owl" does not appear in Appendix 7-3. There is no defined mortality threshold, no species-specific curtailment trigger, and no NPWS reporting obligation tied to Barn Owl fatalities. MM90 names no species, identifies no trigger condition, and specifies no measurable adaptive management response.

Even if MM90 were considered adequate in principle, it cannot function in practice, because the baseline survey against which it is supposed to operate does not exist. Adaptive management of any credibility requires a known pre-construction baseline — established occupancy data, documented flight lines, confirmed breeding status — against which post-construction observations can be compared to identify whether effects are materially exceeding predictions. At Ballincor, no such baseline was generated.

The applicant acknowledges in Table 7-21 that VP surveys are incapable of detecting a nocturnal species, no nocturnal flight data was produced, and the occupancy status of the barn 160 metres from a turbine was never resolved. The predicted Barn Owl collision risk is therefore Imperceptible — effectively zero — and MM90's trigger phrase, *"if unexpected ornithological issues arise"*, sets a threshold that can only be crossed if the post-construction monitoring programme detects a fatality. That monitoring programme consists of daytime surveys and interval dog searches without predator-proof fencing, in conditions where the Barn Owl Trust itself warns that carcass removal by scavengers will systematically undercount mortality. The adaptive management mechanism is therefore contingent on

detecting events that the monitoring programme is structurally incapable of reliably detecting. A mitigation measure that can only be activated by evidence it has no reliable means of generating is not a mitigation measure. It is the absence of one.

5.9 Summary of Key Objection Points

The site lies within the highest-density Barn Owl area ever documented in Ireland, with a nationally important population, confirmed breeding activity 160 metres from a proposed turbine, and a pre-construction mortality event at the site boundary. The assessment was conducted without a single nocturnal survey, relies on a decade-old charity position paper while ignoring contrary peer-reviewed science, contains an irreconcilable internal contradiction between its narrative and its impact matrices, and proposes mitigation that cannot function in the absence of the baseline data that should have been generated before this application was submitted..

The objection is advanced on six grounds.

Ground 1 — Failure to comply with NPWS scoping requirement. The NPWS/DAU explicitly required detailed and specific Barn Owl surveys as a condition of the scoping process. None were conducted; the applicant substituted desk study and third-party consultation, which do not satisfy the regulatory requirement.

Ground 2 — Structurally inadequate survey methodology. The applicant's own EIAR acknowledges that daytime VP surveys are incapable of detecting a predominantly nocturnal species, yet no nocturnal surveys, acoustic monitoring or dusk/dawn transects were conducted across a six-year survey period. The absence of data this produced was then used to conclude negligible collision risk — a circular argument that is methodologically untenable.

Ground 3 — No survey in the critical June/July window. Absence of survey deems it impossible to detect calling juveniles and confirming whether breeding pairs have been successful. Breeding success is a prerequisite for any meaningful assessment of population-level impact, and its absence from the evidence base renders the impact assessment structurally incomplete.

Ground 4 — Collision risk assessment relies on incomplete and superseded evidence. The EIAR's dismissal of Barn Owl collision risk rests almost entirely on hunting flight height — the 3–4m figure drawn from a 2015 charity position paper (Barn Owl Trust, 2015) — set

against the 17m lowest blade sweep. In doing so it ignores the CIEEM best-practice guidance (Shawyer, 2012), which identifies elevated commuting flight between nest and foraging habitat, not low hunting flight, as the primary collision risk vector; and the peer-reviewed USGS/Ecosphere study (Diffendorfer et al., 2021), which identifies Barn Owl as among the five raptor species with the highest potential for population-level impacts from turbine collisions. A non-peer-reviewed source is relied upon for a single behavioural figure while the published guidance addressing the actual risk pathway is omitted..

Ground 5 — Internal contradiction between National importance finding and "not significant" conclusion. The EIAR's own narrative concludes the local Barn Owl population is of National importance yet the impact matrices apply County importance and Medium sensitivity throughout, producing conclusions of not significant and imperceptible that the applicant's own framework cannot sustain from a National importance starting point.

Ground 6 — Mitigation and monitoring incapable of detecting or responding to impacts. MM90, the sole operational ornithology mitigation measure, names no species, sets no trigger threshold and specifies no adaptive management response; the Bird Monitoring Programme contains no Barn Owl content; and post-construction fatality monitoring relies on daytime dog searches without predator-proof fencing, meaning the adaptive management mechanism is contingent on detecting events the monitoring programme is structurally incapable of reliably generating.

5.10 Key References

Diffendorfer, J.E. et al. (2021). Demographic and Potential Biological Removal Models Identify Raptor Species Sensitive to Current and Future Wind Energy. Ecosphere, USGS/Oklahoma State University.

Gilbert, G. et al. (2021). Birds of Conservation Concern Ireland 2020-2026 (BoCCI). BirdWatch Ireland / NPWS.

Lusby, J. et al. (2022). Barn Owl Survey of County Offaly. BirdWatch Ireland.

NatureScot (2017, updated 2024). Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms. Scottish Natural Heritage Research Report 909.

NPWS/DAU (2024). Scoping Response to RWE/Ballincor Wind Farm Application. Department of Housing, Local Government and Heritage.

Shawyer, C. (2012). Barn Owl Tyto alba Survey Methodology and Techniques for use in Ecological Assessment. CIEEM, Winchester.

Barn Owl Trust (2015). Wind Turbine Position Statement. Barn Owl Trust, Ashburton, Devon. [Note: pre-dates USGS 2021 findings; should not be relied upon as current best-practice evidence.]

BirdWatch Ireland / NPWS (2019). Expert Opinion on Irish Barn Owl Population Estimate. Cited in Ballincor EIAR Chapter 7.

Chapter 6 Biodiversity

Appendix 6-1: Croneen Trout Little Brosna 2021

Appendix 6-2: Wild Trout Trust – letter of concern

6.1: Approach and Methodology

This chapter addresses the biodiversity and ecological aspects of the Ballincor Wind Farm application. Six Key Ecological Receptors (KERs) are addressed. The chapter is built entirely from the developer's own submitted documents and the statutory and scientific material against which those documents are assessed. No independent survey data is introduced. Where a deficiency is identified it is demonstrated by reference to specific paragraphs, tables, and pages within the application or by reference to a requirement placed on the developer by the NPWS, Inland Fisheries Ireland, or applicable guidance that the submitted material fails to meet. This report is long because the issues are complex and numerous.

6.1.1 The Legal Context

The proposed development requires Appropriate Assessment under Article 6(3) of the EU Habitats Directive. An Coimisiún Pleanála can only grant consent after it has ascertained, beyond reasonable scientific doubt, that the development will not adversely affect the integrity of any European site. Two features of this application make that standard especially exacting. First, the developer has expressly waived both available derogation pathways. Article 4.7 of the Water Framework Directive and IROPI. If adverse effects on any European site cannot be excluded on the evidence submitted, refusal is the only lawful outcome.

Second, the developer's own EIAR acknowledges, in respect of more than one KER, impacts of potentially fatal magnitude to the ecological feature concerned and then proposes mitigation to bridge that gap. The CJEU held in People Over Wind (C-323/17, 2018) that mitigation measures cannot simply be assumed to work — they must be assessed in full within the Appropriate Assessment. Where the mitigation is speculative, unproven, or dependent on conditions outside the developer's control, it cannot carry the legal weight placed on it.

6.1.2 The Five-Phase Analytical Framework

To full examine each KER a consistent five-phase analytical approach was undertaken.:

- **Phase A — What was required:** the legal baseline, NPWS and IFI scoping requirements, and methodologies the developer committed to follow.
- **Phase B — What did they do** – the survey effort: whether surveys were conducted at the right time, by the right methods, with adequate coverage, and over a sufficient period.
- **Phase C — Data analysis**: whether the data collected was correctly interpreted and whether the developer's own conclusions are internally consistent.
- **Phase D — Mitigation**: whether the proposed mitigation measures are capable of achieving the claimed residual effect, tested against the People Over Wind standard.
- **Phase E — Grounds for objection**: the specific, referenced deficiencies arising from the foregoing analysis, with the legal standard engaged and what the developer would need to demonstrate to cure each ground.

6.1.3 Legal Standards Applied

The following standards are applied throughout. They are stated here once and are not repeated in full in each KER section.

- Habitats Directive Article 6(3): no consent unless adverse effects on European site integrity are excluded beyond reasonable scientific doubt.
- Waddenzee (C-127/02): precautionary principle applies; the burden lies on the developer to demonstrate no adverse effect, not on the objector to prove one.
- Sweetman (C-258/11): a project adversely affects integrity if it prevents lasting preservation of the site's constitutive characteristics.
- Holohan (C-461/17): the Appropriate Assessment must be complete, precise and definitive, free of lacunae.
- People Over Wind (C-323/17): mitigation measures cannot be assumed to work; they must be assessed in full within the AA.
- Hellfire Massey (ECLI:EU:C:2023:545): where a derogation licence under Regulation 54 is necessary, it must be obtained before the grant of planning permission.
- Weser (C-461/13): the WFD non-deterioration obligation prohibits any fall in waterbody status class.
- Inland Fisheries Ireland and NPWS Scoping Responses: establishes the species-specific and site-specific requirements against which survey adequacy is assessed.

6.2 KER 1 — Marsh Fritillary (Euphydryas aurinia)

6.2.1 Legal Status

Marsh Fritillary is listed on Annex II of the EU Habitats Directive, requiring designation of SACs for its habitat. It is also listed on Appendix II of the Bern Convention, which strictly prohibits deliberate disturbance during breeding, rearing, and hibernation wherever the species is found — not only within designated sites. The developer acknowledges both designations in EIAR Chapter 6.

The national conservation status of Marsh Fritillary is recorded as "inadequate" overall with "inadequate" future prospects in the NPWS 2019 Article 17 report, cited by the developer. The NPWS 2025 status assessment confirms this position is unchanged. Both legal frameworks were active on this site and required engagement.

6.2.2 What Was Required

The NPWS scoping response does not contain a species-specific Marsh Fritillary section. The developer elected to meet the general survey obligation by reference to three external documents that thereby became the primary benchmarks for adequacy:

- NRA (2008) — Ecological Surveying Techniques for Protected Flora and Fauna: required targeted survey during the adult flight period and fencing of retained habitat during construction.
- NBDC Marsh Fritillary Monitoring Scheme (2021): specified late August to early September as the optimal larval web survey window; recommended repeated annual surveys due to interannual population variability.
- Phelan et al. (2021) — Ireland's Butterfly Series: established that adults are active from the second week of May to early June, are largely sedentary (rarely exceeding 100 m dispersal), and require at least three well-developed Devil's-bit scabious plants per m^2 over more than 20% of the habitat for breeding.

By committing to these documents, the developer accepted their standards as its own benchmark. Failure to meet them is a failure against the developer's own stated methodology.

The CEMP (Appendix 2-3) and EIAR Chapter 6 also committed to three pre-construction surveys — including an updated larval web survey and adult monitoring in May–June — which implicitly acknowledge that the 2023 baseline did not reflect construction-time conditions.

6.2.3 Survey Effort

The developer conducted a single targeted Marsh Fritillary survey in September 2023. This is the entirety of dedicated survey effort for an Annex II species across a five-year survey programme (2020–2025). Seven larval webs were found at two discrete locations.

The most significant gap is the complete absence of any adult butterfly survey. The developer conducted multidisciplinary walkover visits in May 2022, May/June 2023, and April 2024, during or adjacent to the adult flight period but none included a targeted adult survey. No transect counts, timed adult searches, or flight activity monitoring were undertaken in any year. This gap is not acknowledged or explained in the EIAR.

The baseline also rests on a single season. The NBDC Monitoring Scheme (the developer's own cited guidance) recommends annual surveys because single-year counts are unreliable. The developer acknowledges at EIAR Section 6.6.3.3.1 that "the exact positions of larval webs in future years cannot be anticipated at this time", a direct admission that the 2023 data may not reflect conditions at construction. Despite the time and opportunity no repeat survey was conducted in 2024 or 2025.

6.2.4 Data Analysis — The Developer's Own Conclusion of Total Population Loss

The pivotal passage in the assessment is EIAR Section 6.6.3.3.3, which states:

> *"The cumulative effects of the direct habitat loss combined with indirect habitat degradation are likely to be profoundly negative and permanent, leading to the total loss of the local breeding population of Marsh Fritillary as well as the total loss of 0.32 ha of suitable Marsh Fritillary habitat, within the proposed wind farm site."*

This conclusion is reached by two independent and cumulative routes: 69% of Marsh Fritillary habitat is directly destroyed; the remaining 31% (0.1 ha) falls entirely within the developer's own 30-metre NatureScot peatland drainage buffer and is characterised as "likely to be permanently and profoundly degraded." Neither route is disputed anywhere in the submitted documents.

This same section then refers, in the residual effects assessment, to "the retained Marsh Fritillary population" colonising the receiving site. A population cannot simultaneously be totally lost and retained for colonisation. This contradiction is not resolved.

Receiving site figures are also internally inconsistent: EIAR Chapter 20 MM51 commits to 4.8 ha; BEMP Appendix 6-1 states 2 ha, The NIS residual effects assessment uses 4.8 ha. The actual commitment is indeterminate on the face of the submitted documents.

6.2.5 Mitigation Assessment

Both derogation pathways have been waived, making the mitigation the sole legal mechanism available. The developer proposes four mitigation measures. None meets the People Over Wind standard.

- MM50 (pre-construction vegetation cutting) is designed to disperse adults. The developer simultaneously states that adults "are largely sedentary and rarely fly more than 100 m" and that Devil's-bit scabious was absent from all areas of the site other than the two mapped locations. Adults displaced by cutting have nowhere viable to go within their dispersal range.
- MM48 (larval web translocation) directs larvae into the same 0.1 ha the developer has concluded will be permanently degraded. The developer's own cited authority — Butterfly Conservation (2023) — states that "translocations to permit the destruction of sites occupied by rare and threatened species is unacceptable." No demonstrated evidence base for the method in Irish wet grassland conditions is provided.
- MM51 (receiving site management) proposes to restore a site the developer describes as "species-poor" and devoid of Devil's-bit scabious. No timeline for achieving the required foodplant density is provided. No legally enforceable management agreement is evidenced. The 30-metre drainage buffer — applied to condemn the retained habitat — is not applied to assess whether the receiving site's own hydrology will be disrupted.
- The monitoring programme reports without requiring response. No trigger point mandates corrective action. No lawful post-consent remedial mechanism exists.

6.2.6 Grounds for Objection

Ground 1 — Inadequate baseline — no adult butterfly survey conducted : No targeted adult Marsh Fritillary survey was conducted during the May to June flight period in any year. EIAR Table 6-3 records a single Marsh Fritillary survey entry: September 2023. The omission is not acknowledged or explained anywhere in the submitted documents. Without adult survey data, population size, site distribution, dispersal patterns, and flight activity are all unknown. Holohan (C-461/17, para.44): the Appropriate Assessment must contain

complete, precise and definitive findings; an assessment excluding all adult-stage data cannot be complete.

Ground 2 — Inadequate baseline — single-season larval web data acknowledged as insufficient by the developer: The larval web baseline rests on one survey visit in September 2023. The developer states at EIAR Section 6.6.3.3.1 that "the exact positions of larval webs in future years cannot be anticipated at this time" — a direct admission that the 2023 data may not reflect construction-time conditions. No repeat survey was conducted in 2024 or 2025. NBDC Marsh Fritillary Monitoring Scheme (developer's committed methodology): recommends repeated annual surveys because single-year counts are unreliable for this species. Holohan (C-461/17, para.44): the assessment must be free of gaps. A baseline the developer itself acknowledges may not reflect construction-time conditions is a gap of the first order.

Ground 3 — Developer's own logic leads to total probable population loss — the impact conclusion is not resolved : EIAR Section 6.6.3.3.3 concludes that "the cumulative effects of the direct habitat loss combined with indirect habitat degradation are likely to be profoundly negative and permanent, leading to the total loss of the local breeding population." This conclusion is the developer's own, reached by two independent routes — direct destruction of 69% of habitat and hydrological degradation of the remaining 31% within the developer's own 30-metre drainage buffer. Neither route is disputed in the submitted documents. Sweetman (C-258/11, para.48): a project adversely affects site integrity if it prevents lasting preservation of the constitutive characteristics of the site. Bern Convention Appendix II (acknowledged by developer at EIAR Section 6.6.3.3): prohibits deliberate disturbance during breeding. The destruction of 100% of occupied habitat during the larval stage is disturbance during breeding in its most direct form.

Ground 4 — Internal contradiction — "retained population" and "total population loss" used simultaneously EIAR Section 6.8.3 refers to "the retained Marsh Fritillary population" colonising the receiving site after mitigation. EIAR Section 6.6.3.3.3 concludes that total loss of the local breeding population is the likely cumulative outcome. A population cannot be simultaneously totally lost and retained for colonisation. The contradiction is not acknowledged or resolved anywhere in the submitted documents. Holohan (C-461/17, para.44): the assessment must contain complete, precise and definitive findings free of lacunae. An assessment that reaches contradictory conclusions on the central factual question — whether the local population survives — contains a lacuna of the most fundamental kind.

Ground 5 — Inconsistent receiving site figures across submitted documents — 4.8 ha vs 2 ha EIAR Chapter 20 MM51 commits to managing 4.8 ha as receiving site. BEMP Appendix 6-1 Section 4.2.3 states 2 ha. The NIS and residual effects assessment use 4.8 ha. The documents are irreconcilable. The competent authority cannot determine what area is actually committed to management or whether the residual effect calculation in the NIS is built on the correct figure. Holohan (C-461/17, para.44): the assessment must be complete, precise and definitive. A key mitigation commitment stated differently in two submitted documents is neither precise nor definitive

Ground 6 — MM50 — pre-construction vegetation management is self-defeating given the developer's own account of the species' biology MM50 proposes cutting habitat to below 12 cm to encourage adults to disperse. The developer states in the same measure that adults "are largely sedentary and rarely fly more than 100 m" and records Devil's-bit scabious as absent from all areas of the site other than the two mapped Marsh Fritillary locations. No suitable habitat exists within effective dispersal range. The measure displaces a sedentary species into a landscape the developer confirms has no suitable dispersal destination. People Over Wind (C-323/17, 2018): mitigation cannot be assumed to work. The developer has not demonstrated that MM50 can work because, on its own account of the species' biology and surrounding habitat, it cannot.

Ground 7 — MM48 — translocation proceeds against the developer's own cited authority, directed at habitat already condemned as permanently degraded EIAR Section 6.7.1.5.6.4 quotes directly from Butterfly Conservation (2023): "Butterfly Conservation considers that translocations to permit the destruction of sites occupied by rare and threatened species is unacceptable." The developer proceeds regardless, without reasoning why this position does not apply. The translocation destination — the retained 0.1 ha — is the same habitat the developer has concluded will be permanently and profoundly degraded. Translocating larvae into condemned habitat does not protect them. People Over Wind (C-323/17, 2018): mitigation must be assessed in full. A protocol proposed against the explicit position of the principal specialist body, directed at a destination already characterised as permanently degraded, has not been assessed as capable of working

Ground 8 — MM51 — receiving site lacks the larval foodplant and has no enforceable management agreement The receiving site is described at MM51 as "species-poor." EIAR Section 6.7.1.5.6.10 confirms "no records of Devil's-bit scabious were recorded during the field surveys outside of the donor sites." The receiving site lacks the essential larval

foodplant. The timeframe for achieving the required density (at least three well-developed plants per m² over more than 20% of the habitat) following turve translocation into Molinia-dominated grassland is not stated. No legally enforceable management agreement binding any landowner to the 15-60 year regime is evidenced. People Over Wind (C-323/17, 2018): mitigation must be assessed in full. A receiving site without the required foodplant, without a demonstrated establishment timeline, and without an enforceable management commitment has not been assessed as capable of delivering the claimed residual effect.

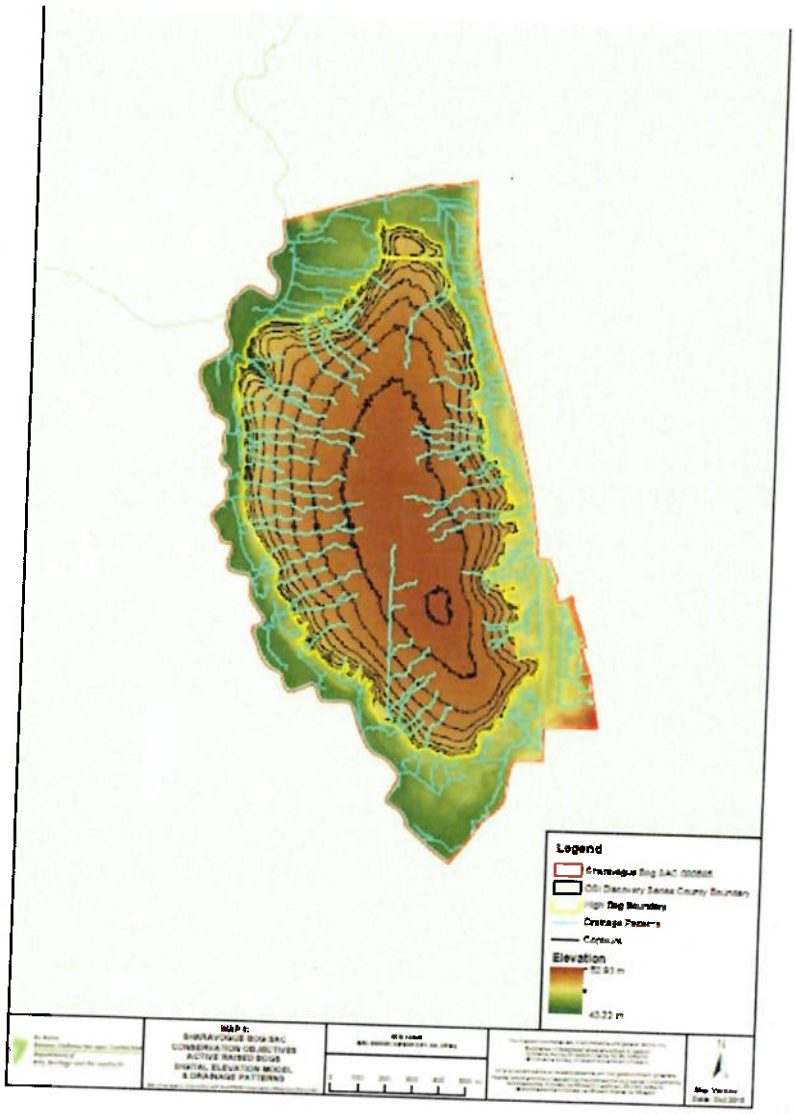
6.2.7 Conclusion — KER 1 Marsh Fritillary

The developer's own assessment concludes that the cumulative effect of direct habitat destruction and indirect hydrological degradation is likely total loss of the local Marsh Fritillary breeding population. The mitigation measures offered cannot bridge that conclusion to a no-adverse-effect finding: they are collectively directed at an impact characterised as catastrophic, using a receiving site devoid of the larval foodplant, without an enforceable management agreement, against the explicit position of the principal UK invertebrate conservation body, and with contradictory assumptions about whether any population survives to be displaced. With both derogation pathways waived, refusal is the only lawful outcome on KER 1 as submitted.

6.3: KER 2 — Sharavogue Bog SAC (Site Code 000585)

6.3.1 Legal Status and Site Description

Sharavogue Bog SAC is designated for three Annex I habitat types, one of which is a priority habitat: Active Raised Bog [7110*], Degraded Raised Bog still capable of natural regeneration [7120], and Depressions on peat substrates of the Rhynchosporion [7150]. The SAC boundary is located at its nearest point approximately 10 metres from the proposed wind farm site boundary. Turbine T8 is approximately 0.1 km from the SAC boundary. Sharavogue Bog and its hydrological context is presented below. The River Brosna acts as its eastern boundary and the map below shows the complex nature of its hydrological drainage system and its relationship with the river. Given that similar raised bog and extensive drainage patterns exist within the windfarm site it is not unreasonable to assume a hydrological connection. This is before we consider the Floodzone A/B context of the proposed site and all that it suggests.



Critically, the conservation objective for Active Raised Bog at this site is restoration, not maintenance. Active Raised Bog has increased from 25.8 ha toward a target of 40.9 ha through a programme of drain-blocking that was 90% complete at the time of application. This is a site in active, State-funded ecological recovery. The Article 6(3) test must be applied to a receptor that is hydrologically sensitive, actively recovering, and dependent on stable groundwater conditions to achieve its statutory restoration targets.

6.3.2 What Was Required

A pre-planning Consultation between the Applicant and ACP was held in May 2025. See below.



An Bord Pleanála

Record of 2nd Meeting
ABP-318666-23 (PC)

Case Reference / Description	ABP-318666-23 - Proposed development of 11 Wind Turbines, Ballincor Wind Farm County Tipperary and County Offaly		
Case Type	Pre Application Consultation		
1st / 2nd / 3rd / 4th Meeting	2nd Meeting		
Date	07/05/2025	**Start Time**	11:00am
Location	MS Teams	**End Time**	12.00pm

The following point of discussion was raised:

- Following on, the Board's representatives noted the proximate Special Area of Conservation to the site and advised the prospective applicant to undertake comprehensive surveys and provide detailed examination of same to facilitate the consideration of the proposed development.
- The Board's representatives advised the prospective applicant to robustly address other environmental considerations as they relate to groundwater, surface water and soil, as a portion of the site is included within the Geological Survey Ireland (GSI) mapping database as susceptible to landslides.

This was a full year before the Application was made.

The NPWS scoping response named Sharavogue Bog SAC by site code and required a full hydrogeological assessment of the connectivity between the proposed development and the SAC. It specified the hydrological parameters that must be protected: mean water level at or near the surface of bog lawns for most of the year; seasonal fluctuations not exceeding 20

cm and only 10 cm below surface except for very short periods. These parameters define the conservation objective standard. Any assessment of groundwater impact must be measured against them. The scoping response also stated that there can be no lacunae in the NIS and that mitigation details must be available before the planning decision, not agreed post-consent.

6.3.3 Survey Effort

No groundwater monitoring was conducted at or near the SAC boundary at any point during the application period. All seven months of groundwater level monitoring (June 2024 to April 2025) were confined within the wind farm site boundary. No ecological or botanical survey of the SAC lagg zone was conducted. No geotechnical investigation was conducted in the transitional zone between the site and the SAC. The assessment of potential groundwater impact on the SAC was made entirely from within the site boundary, without any measurement at the receptor end of the identified pathway.

6.3.4 Data Analysis

6.3.4.1 The NIS Internal Contradiction and the 100-Metre Zone of Influence

NIS Table 6-1 (p.118) records: "a potential for adverse effect was therefore identified" and "Yes — A viable pathway for effect (via physical and hydrogeological connectivity) was identified between the proposed project site and this SAC. There is potential for likely significant effects on this SAC." NIS Table 6-2 (p.120) then dismisses all potential for adverse effects on the hydrological regime, water quality, transitional areas, and all other attributes of the Active Raised Bog qualifying interest without any intervening mitigation measure, engineering change, or new hydrogeological analysis. The groundwater pathway confirmed in Table 6-1 simply does not appear in Table 6-2 for those attributes. That is a lacuna under Holohan (C-461/17, para.44) irrespective of the invasive species row. There is no explanation in any submitted document for how a confirmed pathway ceases to exist between one table and the next.

NIS Table 6-2 (p.120) relies exclusively on the 100-metre groundwater Zone of Influence to dismiss all potential adverse effects on every attribute of the Active Raised Bog qualifying interest. The reasoning given in the submitted NIS is simply: the nearest mapped Active Raised Bog is approximately 400 m from construction activities, and since the ZoI has been identified as 100 m, the habitat falls outside it — therefore no potential for adverse effects

exists on any attribute, including habitat area, hydrological regime water levels, and hydrological regime flow patterns.

First there is no map that determines the '400m from construction activities' claim. Scanning the many chapters in EIAR, the AA NIS report finds the following references to the SAC and its relationship to the windfarm development site:

- **SAC boundary: ca. 10m** from the proposed project boundary (NIS, p.117–118)
- **The Sharavogue Bog SAC is within 20 m of the wind farm site boundary**
- **Active Raised Bog habitat [7110*]: 280m** from the project boundary (within the centre of the SAC)
- **Degraded Raised Bog [7120]: ~50m** from the project boundary
- **Table 9-13 (EIAR Ch.9):** quotes **0.1 km** from the wind farm boundary
- **WFD Assessment Table 2-5:** quotes **0.1 km**
- **Nearest active raised bog habitat to construction activity** (e.g. turbine foundation excavations): **~400m** straight-line
- **Nearest active raised bog to dust-generating activities** (e.g. access roads): **~220m**
- The **groundwater Zone of Influence** is defined as 100m; the SAC is acknowledged to fall within this ZoI

A full review of the Site maps and planning drawings still doesn't answer this most fundamental question. As is consistent across this submission no clarity on the most important facts is available. Without this information we are all blind to the real impact. Surely this is unacceptable.

Working with what has been presented, the 100m ZOI figure has no derivation, citation, methodology, or site-specific validation behind it. It is stated as a given and applied directly. No source document, no GSI guidance, no peer-reviewed standard, and no modelling output is cited anywhere in the EIAR or NIS to justify it.

It appears that the ZoI is derived from a bedrock aquifer vulnerability framework. The relevant pathway, confirmed in NIS Table 6-1, operates through the near-surface peat water table — a completely different system governed by shallow, laterally mobile hydrology that responds directly and rapidly to drainage modification. Bedrock aquifer behaviour does not model near-surface peat water table dynamics. Peat hydraulic conductivity, water table

depth, and drainage response characteristics are not captured by bedrock aquifer ZoI methodology.

EIAR Chapter 9 (p.9-34) records in the applicant's own text that along the eastern margin of the wind farm site, "fen peat is present and there is upwelling of base rich water that supports carr woodland and calcareous fen vegetation." Calcareous fen is an obligate groundwater-dependent vegetation type that occurs only where base-rich groundwater upwells at or near the surface. This is physical, in-situ evidence of an active near-surface groundwater pathway operating across the interface between the construction zone and the SAC boundary — recorded in the applicant's own EIAR and not referenced anywhere in the NIS integrity assessment.

The applicant presents their own characterisation of the Shinrone Groundwater Body, sourced from GSI (2003a). *"Groundwater flow paths are generally short, on the order of 30-300 m, with groundwater discharging to the streams and rivers that traverse the aquifer."*

The T8/T9 turbine foundations are proposed at 4.5 m depth below ground level. BH02, the nearest borehole, records 2.3 m of peat over a continuous column of very soft silt and clay to 12.8 m, with SPT N=0 throughout — meaning the excavation will penetrate through peat into a saturated, low-resistance substrate in the direct hydraulic gradient toward the SAC boundary and the Little Brosna. The minimum travel distance from those excavations to the SAC boundary sits within the 30–300 m range the applicant's own EIAR applies to this groundwater body.

Under *Holohan* (C-461/17, para.44), this constitutes a gap of the most fundamental kind in the Appropriate Assessment.

6.3.4.2 No review of atmospheric Nitrogen Deposition at Sharavogue Bog SAC

NPWS Conservation Objectives Sharavogue Bog SAC 000585 establishes that atmospheric nitrogen deposition at Sharavogue Bog SAC stands at 13.2 kg N/ha/yr against a conservation objective of 5 kg N/ha/yr, 163% above threshold. The NIS contains no modelling of additional nitrogen loading from construction traffic and machinery over a two-year programme.

In Chapter 10 Air Quality there is a single reference to Sharavogue Bog SAC in the entire chapter. It appears in Section 10.5.2 (Sensitivity of the Receiving Environment), p.10-16, in the context of the IAQM construction dust ecological sensitivity assessment:

"The Sharavogue Bog SAC is within 20 m of the wind farm site boundary and the Woodville Woods pNHA is within 20 m of the proposed GCR, therefore the sensitivity of the area to ecological impacts from construction dust is considered high."

Beyond this single reference there is no attempt to model or estimate the additional nitrogen loading that would arise from two years of construction traffic — HGV movements, diesel plant, concrete pours — passing along routes in the immediate vicinity of a European site already in severe exceedance

- **There is no critical load assessment... The traffic assessment is scoped out,** entirely on the grounds that neither AADT nor HDV AADT will increase by the TII threshold values. The TII PE-ENV-01106 scoping criteria are designed to identify road links requiring detailed dispersion modelling for roadside NO_2 and PM compliance — they are not designed to assess incremental nitrogen deposition to sensitive habitats below those thresholds.
- **The dust mitigation measures are not directed at nitrogen deposition.** Table 10.10 sets out standard construction dust management — water suppression, wheel washing, covered vehicles, visual inspections. These address particulate dust soiling. They do not reduce vehicular NO_x or NH_3 emissions, which are the drivers of atmospheric nitrogen deposition to sensitive habitats. There is no measure in Table 10.10 that would reduce nitrogen loading to the SAC.
- **The residual effects conclusion does not engage with the SAC.** Section 10.8.1 concludes the residual construction phase effect will be "not significant with respect to human health and ecology." That conclusion is reached without any assessment of nitrogen deposition to Sharavogue Bog SAC — the one ecological receptor the chapter itself identifies as a high sensitivity site within 20 m of the works.

Chapter 10 explicitly acknowledges at p.10-16 that Sharavogue Bog SAC is a high-sensitivity ecological receptor within 20 m of the wind farm site boundary. It then assesses only construction dust soiling and deposition against that receptor, using standard IAQM particulate matter guidance. It does not consider the atmospheric nitrogen deposition pathway at all. The conclusion that residual effects on ecology are "not significant" is

therefore reached without assessing the most ecologically relevant atmospheric pathway to the designated receptor that the chapter itself has identified.

6.3.4.3 The physical habitat buffer between the wind farm site and Sharavogue Bog SAC is eliminated without assessment as an adverse effect on site integrity

The SAC boundary is approximately 10 m from the proposed wind farm site (Table 6-1). Between that 10-metre gap and the SAC qualifying interest habitat sits a sequence of transitional habitats that perform a direct physical buffering function. EIAR Chapter 6 Table 6-17 confirms that the following habitats are present in the southern section of the wind farm site adjacent to the SAC and are proposed to be permanently lost:

- **PB4 Cutover Bog — 0.62 ha** permanently lost. Assessed by the developer as Moderate Effect on the basis that it is degraded.
- **WN7 Bog Woodland — 2.82 ha** permanently lost. Assessed as Significant Effect at local scale.
- **WS1 Scrub — 1.06 ha** permanently lost (including areas in the southern section). Assessed as Moderate Effect.

EIAR Chapter 6 also records that WS1 Scrub is described as largely established on areas of PB4 Cutover Bog, with some WS1 transitioning to WN7 Bog Woodland — confirming these three habitats form a continuous successional sequence from cutover bog outward to the SAC boundary.

Three distinct buffering functions are lost:

1. **Surface hydrological buffering.** PB4 Cutover Bog and WN7 Bog Woodland in the southern section retain and moderate surface water flow from the construction zone toward the SAC boundary. They intercept, slow, and filter surface runoff before it reaches the SAC. Their permanent removal exposes the SAC boundary directly to surface drainage from construction hardstanding, including during the 1% AEP flood events that the developer's own FRA confirms affect T8 and T9. The SWMP and CEMP address sediment and water quality in watercourses — they do not replace the physical surface hydrological buffering function of the vegetation being removed.
2. **Ecological connectivity and lagg zone integrity.** The NPWS Conservation Objectives document identifies the eastern lagg zone as the primary element of local distinctiveness at Sharavogue Bog SAC — *"one of the best developed lagg systems in the country"*. The lagg is supported by base-rich groundwater upwelling along the

eastern margin, which EIAR Chapter 9 (p.9-34) records directly at the interface between the wind farm site and the SAC. The WN7 Bog Woodland and PB4 Cutover Bog in the southern section currently sustain the ecological transition between the mineral-influenced zone of the wind farm site and the lagg. Their permanent removal eliminates the successional mosaic that connects those systems and exposes the lagg microhabitat — including the *Eriophorum gracile* Slender Cottongrass population — to direct edge effects: altered evapotranspiration, increased insolation, wind exposure, and changed drainage gradients.

3. **Dust and particulate buffering.** EIAR Chapter 10 (Section 10.5.2) confirms that Sharavogue Bog SAC is within 20 metres of the wind farm site boundary and that ecological sensitivity to dust is assessed as high. The removal of PB4, WN7, and WS1 from the interface zone eliminates any vegetation screening function for dust and particulate deposition reaching the SAC during construction. This interaction — removal of the dust buffer concurrent with the generation of high-risk dust at 10 metres from the SAC — is not assessed anywhere in the submitted documents.

6.3.4.4 Additional compounding problems recorded in the Applicants documents:

- **Restoration trajectory not assessed.** Sharavogue Bog is in active NPWS-funded restoration: over 400 rewetting dams installed in 2021, 26.4 km of drains blocked, and a formal conservation objective to increase Active Raised Bog from 25.8 ha to 40.9 ha — a target not yet met. The NIS applies distance-based metrics to static habitat maps. It does not assess whether any disruption to the near-surface peat water table could arrest or reverse the post-2021 rewetting trajectory, which is the constitutive process being actively managed at the site.
- **No mitigation exists for the identified pathway.** Because NIS Table 6-2 concludes no adverse effects, no mitigation has been designed for the groundwater pathway to the SAC. The SWMP and CEMP address surface water quality in watercourses, not near-surface groundwater dynamics. No SAC-boundary trigger threshold is defined. No corrective mechanism exists.
- **SWMP irreconcilability at T8/T9.** The developer's own Flood Risk Assessment confirms T8 and T9 are in Flood Zone A/B and liable to fluvial flooding at 1% AEP events, and that access roads cannot be used after heavy rainfall. The SWMP commits to ECoW presence during rainfall events of 15 mm in 6 hours — the same conditions under which the FRA confirms access is lost. T8 and T9 are the

excavations closest to the SAC boundary. These two commitments are irreconcilable.

6.3.5 How the Applicant addresses these deficiencies : NIS – Table 6-2 The Architecture of the Table

Table 6-2 from the NIS is the overarching assessment of Adverse Effects on the Conservation Objectives of the Sharavogue Bog SAC. Across the board the conclusion is nil effect.

Table 6-2: Assessment of Adverse Effects on the Conservation Objectives of the Sharavogue Bog SAC as a Result of the Proposed Project

Attributes	Measures	Target	Potential for Adverse Effects
[7110] Active raised bogs *			
Habitat area	Hectares	Restore area of active raised bog to 40.9ha, subject to natural processes.	No - The nearest mapped location of this QI habitat is approximately 400 m [straight-line distance] from the areas where construction activities with the potential to cause groundwater impacts may occur [e.g. turbine foundation excavations]. As the ZoI for such impacts associated with the proposed project has been identified as 100m, there is no potential for adverse effects on this attribute. The ZoI for potential dust impacts during the construction phase has been identified as 50 m. The nearest mapped location of this QI habitat is approximately 220 m [straight-line distance] from areas where construction activities with the potential to generate dust may occur [e.g. internal access roads]. Therefore, there is no potential for adverse effects on this attribute. On this basis, there is no potential for adverse effects on the attributes of this habitat, and consequently no adverse effects on the integrity of the site.
Habitat distribution	Occurrence	Restore the distribution and variability of active raised bog across the SAC	
High bog area	Hectares	No decline in extent of high bog necessary to support the development and maintenance of active raised bog	
Hydrological regime: water levels	Centimetres	Restore appropriate water levels throughout the SAC	
Hydrological regime: flow patterns	Flow direction; slope	Restore, where possible, appropriate high bog topography, flow directions and slopes.	
Transitional areas between high bog and adjacent mineral soils (including cutover areas)	Hectares; distribution	Restore adequate transitional areas to support / protect the raised bog ecosystem and the services it provides.	
Vegetation quality: central cottop; active flush, soaks, bog woodland	Hectares	Restore 20.5ha of central cottop/active flush/soaks/bog woodland as appropriate.	
Vegetation quality: micro-topographical features	Hectares	Restore adequate cover of high quality micro-topographical features	

TOBIN

Attributes	Measures	Target	Potential for Adverse Effects
Vegetation quality: bog moss (Sphagnum) species	Percentage cover	Restore adequate cover of bog moss (Sphagnum) species to ensure peat forming capacity	
Typical ARB species: flora	Occurrence	Restore, where appropriate, typical active raised bog flora	
Typical ARB species: fauna	Occurrence	Restore, where appropriate, typical active raised bog fauna	
Elements of local distinctiveness	Occurrence	Maintain features of local distinctiveness, subject to natural processes	
Negative physical indicators	Percentage cover	Negative physical features absent or insignificant	
Vegetation composition: native negative indicator species	Percentage cover	Native negative indicator species at insignificant levels	
Vegetation composition: non-native invasive species	Percentage cover	Non-native invasive species at insignificant levels and not more than 1% cover	No - Although non-native invasive species were recorded within the site, as no works will be located within the boundary of the SAC and there is no hydrological connection to the SAC, there is no potential for the spread of non-native invasive species.
Air quality: nitrogen deposition	kg N/ha/year	Air quality surrounding bog close to natural reference conditions. The total N deposition should not exceed 5kg N/ha/yr	No - Change in air quality can result from fertiliser drift; quarry activities; or other atmospheric inputs. In the case of the proposed project, excavation activities and vehicle movement may increase dust generation. However, nitrogen will not be contained in such dust and so not cause

The entire Appropriate Assessment for Sharavogue Bog SAC rests on a single block of reasoning. That block is applied once to the [7110] Active Raised Bog attributes and then cascaded to [7120] Degraded Raised Bog and [7150] Rhynchosporion by a single sentence each. It applies one unjustified distance metric — a 100 m groundwater Zone of Influence — to one wrongly selected reference point: 400 m to the interior of the Active Raised Bog, rather than the 10 m SAC boundary or the 20 m lagg zone that the developer's own documents identify.

Active Raised Bog — all twelve attributes are resolved with a single shared block ending: *"On this basis, there is no potential for adverse effects on the attributes of this habitat, and consequently no adverse effects on the integrity of the site."*

[7120] Degraded Raised Bog is resolved: *"there is no potential for adverse effects of degraded raised bogs still capable of natural regeneration habitat, and consequently no adverse effects on the integrity of the site."*

[7150] Depressions on peat substrates of the Rhynchosporion is resolved: *"there is no potential for adverse effects on the attributes of this habitat, and consequently no adverse effects on the integrity of the site."*

This is not a conclusion of "minor effect, manageable by mitigation," not "uncertain, requires monitoring," but a flat finding that no potential for adverse effects exists on any attribute of the only SAC adjacent to the development. That nil conclusion is reached through reasoning that:

- Uses a reference point (400m to the Active Raised Bog interior) that is not the SAC boundary or the ecologically sensitive lagg zone receptor, which the developer's own documents place at 10m and 20m respectively.
- Applies a 100m ZoI that has no derivation, no citation, and is applied to a near-surface peat water table system using bedrock aquifer methodology — the wrong model for the pathway the developer confirmed in Table 6-1.
- States in the invasive species row that "there is no hydrological connection to the SAC" and applies it to all attributes - in the same document where Table 6-1 confirmed "a viable pathway for effect (via physical and hydrogeological connectivity) was identified" and "there is potential for likely significant effects on this SAC."
- Dismisses water quality impacts including lagg zone hydrochemistry with "no pathway to impact on these parameters was identified" — while the developer's own EIAR records base-rich groundwater upwelling at the site boundary feeding calcareous fen vegetation, which is physical evidence of that pathway operating now.

The best example of this tactic is the reference in Table 6.2 to The "Elements of local distinctiveness" - an attribute which shares the same single dismissal block as habitat area, hydrology, water levels, and all other attributes

Elements of local distinctiveness	Occurrence	Maintain features of local distinctiveness, subject to natural processes

The lagg zone is formally identified in the NPWS documentation as the primary element of local distinctiveness at Sharavogue and *Eriophorum gracile* is recorded in the lagg. The table dismisses any potential adverse effect on the "elements of local distinctiveness" attribute using exactly the same 400m/100m ZoI reasoning. Yet the lagg is at the boundary, not 400m away.

Similarly the table applies the same dismissal to *"Vegetation quality: central ecotope, active flush, soaks, bog woodland"* and *"Vegetation quality: micro-topographical features."* The bog woodland (WN7) and scrub being removed from between the site boundary and the SAC have been discussed here but are dismissed in Table 6-2 using the 400m/100m ZoI — without acknowledging that 2.82 ha of WN7 Bog Woodland immediately adjacent to the SAC boundary is being permanently removed from the transitional zone.

Further, the "Hydrological regime: water levels" and "Hydrological regime: flow patterns" are both dismissed under the same single block. These are the attributes most directly threatened by any near-surface groundwater disturbance, and the NPWS Conservation Objectives set specific centimetre-level water table requirements for these. The table dismisses both using the 400m/100m reasoning. the hydrological regime attributes — the ones with the most specific quantitative conservation targets — are dismissed on a distance metric that is applied to the wrong reference point.

The developer's conclusion is total. There is no attribute across any qualifying interest where any potential for adverse effect is acknowledged. The word "No" appears as the operative answer to every row. This demonstrates that a single flawed analytical block written once, applying a single unjustified distance metric to a single wrongly selected reference point, dismisses all potential adverse effects on all three qualifying interests of a Priority Habitat SAC in active State-funded restoration — without any SAC-specific survey, any measurement at the receptor end of the confirmed pathway, any nitrogen modelling, any

assessment of the restoration trajectory, and any engagement with the calcareous fen evidence at the boundary.

6.3.6 Mitigation Assessment

Because NIS Table 6-2 concludes no potential for adverse effects, no mitigation has been designed for the protection or preservation of the SAC:

- **No groundwater monitoring is directed at the SAC.** The groundwater monitoring programme described in EIAR Chapter 9 and carried forward into Chapter 20 targets the Ballyloughane public water supply boreholes. No piezometer is proposed at or near the SAC boundary. No SAC water table trigger threshold is defined anywhere in any submitted document. The monitoring column in the Chapter 20 mitigation table for groundwater reads only "existing monitoring boreholes" — all of which are within the wind farm site boundary, not at the receptor end of the confirmed pathway.
- **The SWMP and CEMP are not directed at the SAC.** The Chapter 20 mitigation measures addressing surface water (MM3, MM60, and associated measures) concern erosion and sediment control, settlement ponds, silt fencing, and surface water quality in watercourses. They are designed to protect the Little Brosna_040 water quality. None is formulated to protect the near-surface peat water table that constitutes the confirmed pathway to Sharavogue Bog SAC.
- **No SAC-specific corrective mechanism exists .** We know the SWMP will fail under the foreseeable flood regime at T8 and T9 when under flood conditions swales are submerged, settlement ponds reverse, and ECoW access to site is lost. T8 and T9 are the excavation locations closest to the SAC boundary. There is no contingency protocol in Chapter 20, the CEMP, or the SWMP that would trigger intervention if near-surface groundwater conditions at the SAC boundary were disturbed. There is no threshold, no alarm level, no defined response.
- Finally because no atmospheric Nitrogen Deposition review was conducted no mitigation measures are proposed to protect Sharavogue Bog SAC

6.3.7 Grounds for Objection

Ground 1 — The NIS contains an irreconcilable internal contradiction between Tables 6-1 and 6-2 NIS Table 6-1 (p.118) records in unequivocal terms that a viable hydrogeological pathway exists and that there is "potential for likely significant effects on this SAC." NIS Table 6-2 (p.120) dismisses all potential adverse effects on every qualifying interest attribute without any intervening engineering change, mitigation measure, or new

hydrogeological analysis. No explanation is provided for why a confirmed pathway disappears between one table and the next. Holohan (C-461/17, para.44): no lacunae; complete, precise and definitive findings. A pathway confirmed in one table dismissed without explanation in the next is a lacuna of the most fundamental kind. Waddenzee (C-127/02): the competent authority cannot ascertain no adverse effect where the developer's own NIS acknowledges potential likely significant effects without resolving them.

Ground 2 — The "400m from Construction activities" is not verifiable. No detail exists on any drawing across the full submission. The NIS itself (Table 6-1, p.117–118) records that the SAC boundary is located at its nearest **10m** from the project boundary, and that the SAC falls within the Zone of Influence for potential groundwater impacts. The nearest ecologically sensitive receptor is the SAC boundary and lagg zone. *Holohan* (C-461/17, para. 44):An Appropriate Assessment must be based on the best scientific knowledge and must be complete, precise and definitive. A distance figure that is unexplained in its derivation, measured to a self-selected reference point rather than the nearest sensitive receptor, and never verified by field measurement at any location between the excavations and the SAC, does not meet this standard. The absence of any explanation of methodology means the figure cannot be independently scrutinised or verified, which is itself a failure of the precision and definitiveness requirements.

Ground 3 - 100-metre groundwater Zone of Influence is unjustified, unexplained, and applied to the wrong hydrogeological model No derivation, citation, methodology, or site-specific validation for the 100-metre Zone of Influence figure is provided anywhere in any submitted document. It is applied using bedrock aquifer vulnerability assessment — the wrong model for a near-surface peat water table pathway. EIAR Chapter 9 (p.9-29) records groundwater flow path distances in the Shinrone Groundwater Body of 30–300 m — a range within which the T8/T9 excavations sit relative to the SAC boundary. Holohan (C-461/17, para.44): the assessment must be free of gaps. An assessment resting on an unjustified Zone of Influence figure applied to the wrong hydrogeological model contains a gap where the analysis of the most important pathway should be. NPWS Scoping Response: specific requirement to assess hydrogeological connectivity, including precise water table parameters.

Ground 4 — No investigation was conducted at or near the SAC boundary — the receptor end of the confirmed pathway was not characterised : All groundwater monitoring was confined within the wind farm site boundary. No piezometric data exists for the SAC lagg zone or transitional interface zone. The 100-metre Zone of Influence — the

figure that determines the entire SAC integrity assessment — was applied as a desktop assumption without site-specific measurement at any location between the proposed excavations and the SAC boundary.

Ground 5 — Physical evidence of near-surface groundwater connectivity at the SAC boundary was recorded in EIAR Chapter 9 and not engaged with in the NIS

EIAR Chapter 9 (p.9-34) records calcareous fen vegetation — an obligate groundwater-dependent community occurring only where base-rich groundwater upwells at or near the surface — at the interface between the wind farm site and the SAC. This is physical evidence, in the developer's own submitted documents, of active near-surface groundwater connectivity at the boundary zone. The same paragraph then concludes "there is no hydrogeological connection to the Sharavogue Bog SAC" — a conclusion the calcareous fen evidence directly contradicts. This evidence is not referenced anywhere in the NIS. Holohan (C-461/17, para.44): no lacunae. Physical evidence of the pathway was in the developer's own submission. Its absence from the NIS renders the assessment incomplete. Waddenzee (C-127/02): adverse effects cannot be excluded where the developer has recorded evidence of connectivity and ignored it.

Ground 6 — The NIS assessed a site in active ecological restoration as a static receptor — the risk to the restoration trajectory is not addressed: Sharavogue Bog SAC is in active State-funded restoration: over 400 rewetting dams installed in 2021, 90% of requisite drains blocked. The conservation objective requires restoration of Active Raised Bog from 25.8 ha to 40.9 ha — a target that remains unmet. The NIS integrity assessment applies distance-based metrics to mapped habitat polygons. It does not assess whether construction activities on the adjacent site could disrupt the near-surface groundwater system driving the rewetting trajectory, or whether any such disruption could arrest recovery before the restoration target is achieved. Sweetman (C-258/11, para.48): a project adversely affects site integrity if it prevents lasting preservation of the constitutive characteristics of the site. The restoration trajectory is the constitutive process being actively managed. Any risk of arresting that trajectory constitutes a potential adverse effect. The NPWS Conservation Objectives set specific hydrological parameters that the assessment must protect.

Ground 7 - The physical habitat buffer between the wind farm site and Sharavogue Bog SAC is eliminated without assessment as an adverse effect on site integrity This raises real concerns around 3 critical buffering functions played by that habitat in protection and preservation of the SAC . The habitat acts as a surface hydrological buffering zone, it supports and protects current ecological connectivity and lagg zone integrity and may act as

a dust and particulate buffer especially in the context of heavy scale construction in very close proximity to the SAC. No assessment and no mitigation proposed.

Ground 8 - No review of atmospheric Nitrogen Deposition at Sharavogue Bog SAC Chapter 10 explicitly acknowledges that Sharavogue Bog SAC is a high-sensitivity ecological receptor within 20 m of the wind farm site boundary. It does not consider the atmospheric nitrogen deposition pathway at all. Current atmospheric nitrogen deposition at Sharavogue Bog SAC is approximately 13.2 kg N/ha/yr against a conservation objective target of 5 kg N/ha/yr so Nitrogen deposition is already 163% above the conservation objective target. The NIS integrity assessment contains no modelling of additional atmospheric nitrogen loading from construction traffic, HGV movements, and plant operations across a two-year construction programme. In a system already exceeding its critical load by 163%, no additional increment can be treated as de minimis without modelling demonstrating it is below the margin of detection. Holohan (C-461/17, para.44): the assessment must be complete. Sweetman (C-258/11, para.48): adverse effect includes any disruption to constitutive characteristics — nitrogen deposition is a named attribute of the conservation objectives. Any increment above an already-exceeded threshold is a potential adverse effect that requires quantification. The conclusion that residual effects on ecology are "not significant" is therefore reached without assessing the most ecologically relevant atmospheric pathway to the designated receptor that the chapter itself has identified. No mitigation measures proposed.

Ground 9 — No mitigation has been designed for the identified hydrogeological pathway to the SAC Because NIS Table 6-2 concludes no potential for adverse effects, no mitigation is proposed for Sharavogue Bog SAC. The SWMP and CEMP address surface water quality in watercourses — not the near-surface groundwater pathway confirmed in Table 6-1. Groundwater monitoring targets public water supply boreholes, not SAC water table levels. No SAC-boundary trigger threshold is defined. No corrective mechanism exists. People Over Wind (C-323/17, 2018): mitigation must be assessed in full before consent. NPWS Scoping Response: "it is not appropriate for the details of proposed mitigation measures to be agreed post consent." The absence of any mitigation for the identified pathway means there is nothing to assess — the no-adverse-effect conclusion cannot be based on mitigation that does not exist.

Ground 10 — The SWMP fails under foreseeable flood conditions at the most sensitive locations The developer's own FRA (Appendix 9-3, p.23) confirms that T1, T2, T8

and T9, and sections of site access roads, are liable to fluvial flooding during 1% AEP events, and that access roads must not be used after heavy rainfall. The SWMP commits to ECoW presence during major rainfall of 15 mm in 6 hours. These commitments are irreconcilable: the conditions requiring ECoW presence are the same conditions under which access is lost. T8 and T9 — adjacent to the SAC boundary and with the deepest excavations — are among the flood-affected locations. People Over Wind (C-323/17, 2018): mitigation must be assessed in full. The SWMP fails against the developer's own flood data. A no-adverse-effect conclusion resting on surface water mitigation that fails under foreseeable site conditions does not satisfy Article 6(3).

6.3.8 Conclusion — KER 2 Sharavogue Bog SAC

The developer's own NIS confirmed a viable hydrogeological pathway to a priority habitat SAC in active State-funded restoration — and then dismissed it without explanation, on the basis of an unjustified Zone of Influence figure applied to the wrong hydrogeological model, while ignoring physical evidence of groundwater connectivity recorded in its own EIAR, without any measurement at the receptor end of the pathway, and without designing any mitigation for the pathway it had confirmed. The SWMP, which is the only surface water protection in the application, fails under the flood regime confirmed for the most sensitive construction locations. With both derogation pathways waived, refusal is the only lawful outcome on KER 2 as submitted.

6.4 KER 3 — Aquatic Ecology

Species covered: Atlantic Salmon (Salmo salar) · Brown Trout (Salmo trutta) including the Croneen sub-population · River Lamprey (Lampetra fluviatilis) · Brook Lamprey (Lampetra planeri) · Sea Lamprey (Petromyzon marinus) · European Eel (Anguilla anguilla) · White-clawed Crayfish (Austropotamobius pallipes).

6.4.1 What Was Required

Inland Fisheries Ireland submitted a detailed scoping input to the developer. That input is summarised in EIAR Chapter 6, Table 6-1 (p.6-6) and replicated in NIS Table 2-2. It required the following specific deliverables:

- Detailed assessments of all watercourses affected by construction.
- Aquatic biodiversity surveys.
- Electrofishing surveys to identify sensitive species.
- Soil stability assessment and expert evaluation to prevent landslides.
- Hydrology and drainage management during construction and operation to avoid erosion and pollution.
- Risks of sediment release from road construction specifically highlighted.
- Proper waste and pollutant containment.
- Careful planning of all watercourse crossings — with consultation with IFI on crossing designs.

The NPWS scoping response required all watercourses within the development area to be surveyed for Annex II and Annex IV species, explicitly naming salmon, lamprey species, and white-clawed crayfish.

6.4.2 Legal Status

Atlantic Salmon and lamprey species are listed on Annex II of the Habitats Directive and require designation of SACs. European Eel is Critically Endangered on the IUCN Red List. White-clawed Crayfish is listed on Annex II and Annex V. The Croneen population of Brown Trout has been identified by the Wild Trout Trust and Inland Fisheries Ireland as a genetically distinct sub-population of national conservation significance.

6.4.3 The WFD Baseline

The Little Brosna_040 River Waterbody runs along the eastern boundary of the proposed wind farm site and receives all nine turbine drainage areas. Its WFD ecological status for 2019–2024 is Poor, at Risk of not achieving Good status by 2027. Appendix 6-3 records Site 11 on the Pallas Kylenamuck tributary (joining the Little Brosna 25 m from the survey point) as Bad status, Seriously Polluted.

EIAR Chapter 9 Table 9-5 presents all tributaries in the Little Brosna_SC_020 sub-catchment as having Moderate WFD status. The entire Chapter 9 impact assessment and all SWMP adequacy conclusions are built on this Moderate baseline. Appendix 9-1 (WFD Assessment) Table 2-2 correctly records the Little Brosna_040 RWB as having deteriorated to Poor status for 2019–2024. Appendix 9-1 explicitly delegates its WFD compliance conclusions back to Chapter 9. The WFD compliance assessment for all aquatic species is therefore built on a Moderate baseline for a waterbody at Poor status. No assessment of whether construction-phase impacts would cause deterioration from Poor has been conducted.

6.4.4 Survey Effort

All aquatic surveys were conducted in summer base-flow conditions (August 2022, June 2023, July 2024). Atlantic Salmon return migration and spawning (October–January), Sea Lamprey migration and spawning (spring), and Silver Eel downstream migration (autumn) fall entirely outside the survey period. The main Little Brosna_040 channel — the migration corridor — was accessible for electrofishing at one site only.

Species	Critical Period	Surveyed?	Assessment?
Atlantic Salmon (Annex II)	Migration & spawning: October – January	No	None (summer absence cited as justification)
River Lamprey (Annex II)	Upstream migration: autumn/winter	No	Not seasonally assessed
Sea Lamprey	Upstream migration: April – June	No	Not seasonally assessed
European Eel (Crit. Endangered)	Downstream migration: September – November	No	No targeted survey conducted
Brown Trout (Annex V)	Spawning: October – January	Partial (summer only)	No spawning season assessment

This timing failure is not merely an oversight. The survey report lists every one of these species as a species of conservation concern at Section 4 in Appendix 6-3, pp.34-39, and acknowledges their seasonal biology. Yet every conclusion about their absence or limited significance is drawn from surveys conducted outside their critical ecological windows. The report does not acknowledge this disconnect. The conclusion that Atlantic Salmon are not significantly affected by construction because none were found during July electrofishing is not a scientific inference — it is a conclusion predetermined by the choice of survey date.

Five electrofishing sites (Sites 4, 6, 7, 8, 9) cover the tributary network within the wind farm boundary. The main Little Brosna_040 channel — the primary migration corridor for all diadromous species — was electrofished at Site 1 only, which is located downstream of the wind farm boundary (Appendix 6-3, Section 2.2.7, p.12). No electrofishing was carried out within the main channel section adjacent to T8 and T9 — the section most directly at risk from construction-phase sedimentation. This was not a consequence of physical inaccessibility: the main channel was accessible and was surveyed at Site 1. It was a survey design choice that left the most critical corridor section without any baseline biological data

White-clawed crayfish were assessed by daytime visual and hand search — the lowest-sensitivity method for a predominantly nocturnal species. No night-time torchlight survey and no systematic refuge-lifting survey was conducted. NBDC records two White-clawed Crayfish at a site 4 km downstream on the same waterbody (2021). The conclusion of absence is based on a survey method inadequate for reliable detection of a nocturnal species with recent nearby records.

6.4.5 Species-by-Species Analysis

6.4.5.1 Atlantic Salmon (Salmo salar) — Annex II, Habitats Directive

Atlantic Salmon is an Annex II species requiring designation of SACs for its habitat. It undertakes return migration and spawning between October and January — the high-flow, high-flood-risk season.

No Atlantic Salmon were recorded at any of the six electrofishing sites. The developer attributes this to channel modification, agricultural and forestry influences, and limited suitable nursery and spawning habitat (Appendix 6-3, Section 4.1, p.35). The assessment

acknowledges the species' Annex II status and assigns it Local Importance (Higher value) with downstream effects considered (Appendix 6-3, p.35). The final conclusion in EIAR Section 6.6 is that, with SWMP mitigation in place, residual impacts on salmon will not be significant.

The summer base-flow survey window (July 2024) has virtually no probability of detecting migratory adults passing through the system. Atlantic Salmon return to freshwater between October and January — the period of highest runoff and greatest construction-sediment mobilisation risk on this site. The main Little Brosna_040 main channel, acknowledged as the likely migration corridor (Appendix 6-3, Section 4.1, p.35), was sampled at one site only, downstream of the wind farm boundary (Site 1, Appendix 6-3, Table B-2, p.42). The channel sections adjacent to T8 and T9 — the locations where SWMP failure under flood conditions is confirmed by the FRA — received no electrofishing effort.

The FRA (Appendix 9-3, p.11) confirms T9 is 50% inundated at the 1-in-100-year event and rises to 75% under the MRFS climate scenario. Under these flood conditions, settlement ponds in the T8/T9 corridor are submerged and reversed. Accumulated construction sediment is discharged directly into the Little Brosna at peak flood flow — precisely when Atlantic Salmon are migrating and spawning. No assessment of this interaction exists in any submitted document. The no-adverse-effect conclusion for Atlantic Salmon cannot stand.

6.4.5.2 Brown Trout (Salmo trutta) — Annex V, and the Croneen Sub-Population

Brown Trout is listed on Annex V of the Habitats Directive. In this catchment a genetically distinct sub-population in the Croneen tributary carries additional significance.

6.4.5.2.1 The Croneen Population and Why It Matters See Appendix 6-1, Appendix 6-2

The Croneen is a tributary of the Little Brosna River, within the Little Brosna_040 River Waterbody — the primary aquatic receptor for all nine turbine drainage areas in the proposed development. Its brown trout population has been identified through genetic analysis as a distinct sub-population, separate from the general Little Brosna stock, and designated by Inland Fisheries Ireland as a specific survey reach within the National Electrofishing Programme (NFEP), with its own fish stock dataset and priority management status. Brown Trout is listed on Annex V of the Habitats Directive. A genetically distinct sub-population is an irreplaceable genetic lineage: if it is lost, it cannot be reconstituted from the general catchment stock.

This population is not obscure. It is documented in each of the following sources, all of which were available to the developer before the survey programme was designed:

Source	Status and relevance
IFI Little Brosna Catchment Factsheet (2021) ***See Appendix 6-1***	Freely accessible via the IFI website. Identifies the Croneen as a specific NFEP reach and the brown trout population as a distinct management priority.
IFI National Electrofishing Programme records	Held by IFI; routinely disclosed in response to pre-application data requests. The Croneen is a designated NFEP reach with its own longitudinal dataset.
IFI scoping input (NIS Table 6-1)	Required the developer to identify sensitive aquatic species. Raised specific concerns about the Little Brosna and its tributaries. The Croneen is a named IFI management tributary in this catchment.
NPWS scoping response	Directed the developer to consult IFI on fish species impacts — specifically to obtain catchment-level data before finalising the survey design.

6.4.5.2.2 An inadequate desktop review

The desktop review in Appendix 6-3 does not reference the IFI catchment factsheet series, the NFEP dataset for the Croneen reach, or any IFI-held catchment-level fish stock data beyond generalised WFD status records. The word "Croneen" does not appear in EIAR Chapter 6, Appendix 6-3, or the NIS. This is not a species that requires specialist detection to locate, it is documented in freely accessible, statutory-body publications that any competent aquatic ecology desk study for this catchment would consult as a first step.

The same failure is visible across the aquatic KER: the wrong WFD baseline was used for the primary receiving waterbody; European Eel confirmed in the IFI factsheet received no targeted survey; White-clawed Crayfish with downstream NBDC records were assessed using a daytime method inadequate for a nocturnal species. In each case the data was

accessible and was not acted upon. The Croneen is the most unambiguous example because the IFI's own documentation names both the tributary and the population explicitly.

Because the Croneen population was not identified in the baseline, every subsequent stage of the assessment fails for this receptor:

- No electrofishing site was placed on the Croneen. The population's current status — size, age structure, recruitment success — is entirely unknown.
- The southern site — T8, T9, borrow pits, and access tracks — drains into the tributary network feeding the Croneen corridor. Construction-phase sedimentation reaching this network was never assessed against this population.
- No mitigation measures were designed for the Croneen. IFI Guidelines (2016), required by the IFI scoping input, mandate specific protection for sensitive fish populations. None was provided.
- The NIS treats all brown trout in the catchment as equivalent. The distinction between the genetically generic Little Brosna stock and the irreplaceable Croneen sub-population is never drawn.

Under the SWMP failure mode at T8/T9 under flood conditions, construction sediment can reach the Croneen network without interception. The genetic distinctiveness of this sub-population means that a significant mortality event cannot be compensated by recolonisation from the general Little Brosna stock.

The Wild Trout Trust, a UK registered conservation charity with direct prior experience of the River Shannon system including the Little Brosna, has submitted a letter of concern regarding the Ballincor development. See Appendix 6-2. Its key points are:

- The Little Brosna supports a distinct, locally adapted trout population — the Croneen Trout — whose genetics and population structuring have been the subject of dedicated study by Queen's University Belfast and citizen scientists, underlining its conservation importance. The catchment also holds Atlantic salmon, now internationally designated as endangered.
- The Trust identifies fine sediment escapement — both during construction and subsequent operation — as the recurring mechanism by which wind farm developments degrade water quality and spawning substrate, harming fish and

invertebrate populations. It attributes this to poor site selection, inadequate screening, and poor management.

- It cites a track record of catastrophic failures at comparable Irish and British developments — Derrybrien (Co. Galway), Tullynamoyle (Co. Leitrim), Meenbog (Co. Donegal), and Viking Wind Farm (Shetland) — where bog slides and sediment runoff to watercourses were a common theme.
- It notes that the impact of shadow flicker on fish and other wildlife at watercourse-adjacent developments of this type remains unquantified and should be assessed.
- While recognising the need for renewable energy, the Trust holds that energy can only be considered "green" if obtained without environmental detriment and concludes that an industry with such a poor track record poses serious cause for concern when sited this close to a watercourse supporting locally unique and internationally endangered fish.

6.4.5.3 Lamprey Species — River Lamprey (Annex II), Brook Lamprey (Annex II), Sea Lamprey

Two lamprey ammocoetes (larval stage) were captured at Site 7 (Holy Well Clohaskin, EPA code 25H28) during the July 2024 electrofishing survey, measuring 7cm and 14cm. They could not be differentiated to species level on site (Appendix 6-3, Table B-3, p.43; p.24). Appendix 6-3 records these at Table B-3 as 'Brook lamprey' (Fish IDs 25H28_a_00004 and 25H28_a_00005), though the text notes the difficulty of on-site differentiation. Four lamprey ammocoete burial areas were identified within the study area at Sites 1, 6, 7, and 9 (Appendix 6-3, p.24). Suitable silt habitat for larval lamprey was recorded throughout the main Little Brosna_040 channel. Sea Lamprey was not recorded.

The deficiencies for lamprey mirror those for Atlantic Salmon. River Lamprey undertakes its upstream spawning migration in autumn and winter — entirely outside the July survey window. Sea Lamprey migrates upstream in spring. No survey effort was directed at the main migration corridor during either period. The low recruitment evident from the survey — only two ammocoetes across three suitable sites — may reflect barriers to upstream migration, poor spawning grounds, or unsuitable silt conditions, any of which are potential construction-impact pathways that have not been assessed seasonally.

The development proposes 14 drain crossings using culverts within the wind farm boundary (EIAR Chapter 9, Table 9-14, p.9-40). No assessment of any culvert design against the migration requirements of lamprey has been conducted in any submitted document. No fish pass is proposed at any crossing. IFI specifically required 'careful planning of watercourse crossings' — this requirement is acknowledged in EIAR Table 6-1 but is not implemented. For the Holy Well Clohaskin main channel crossing between T2 and T3, a clear-span bridge avoids in-stream works. However, the 14 drainage ditch culverts receive no individual passage analysis whatsoever.

6.4.5.4 European Eel (Anguilla anguilla) — Critically Endangered, EC Recovery Regulation

No targeted eel survey was conducted. The assessment comprises a habitat suitability evaluation only (Appendix 6-3, Section 4.2, pp.36-37). No electrofishing site yielded European Eel. The developer notes that the main Little Brosna_040 channel 'likely serves more as a migratory pathway for European Eel than as a foraging or nursery habitat, and that even small channels with limited overall fisheries value can function as eel migratory pathways' (Appendix 6-3, p.37). All watercourses in the study area are assessed as having the potential to support European Eel.

Having acknowledged that European Eel almost certainly uses every watercourse in the study area as a migration pathway, the assessment provides no survey data for the species, no assessment of whether the proposed 14 drainage culvert crossings obstruct eel passage, and no mitigation specific to eel. European Eel receives no assessment in the NIS and no specific mitigation anywhere in the submitted application. The Silver Eel (adult, seaward-migrating phase) undertakes its downstream migration typically from September/October onwards — entirely outside the July survey window. This is also the onset of the flood season.

Given the species' Critically Endangered status and its independent legal protection under Council Regulation (EC) No. 1100/2007, the complete absence of targeted survey data, passage assessment, and mitigation is an unambiguous and serious gap. It is all the more troubling that the developer simultaneously acknowledges the species uses every watercourse on the site and then fails to assess any of those watercourses for eel passage under the proposed culvert designs.

6.4.5.5 White-clawed Crayfish (Austropotamobius pallipes) — Annex II and Annex V

Sites 1, 4, and 10 were identified as having potential crayfish habitat during the surveys. The assessment method used was daytime visual inspection and hand search at each site (Appendix 6-3, Section 2.2.9, p.13). No crayfish were recorded. The developer concludes at Appendix 6-3, Section 4.3.2 (p.34) that 'the streams located within the proposed project did not have potential habitat for white-clawed crayfish' and that crayfish 'have not been recorded in any of the watercourses within or downstream of the proposed project.'

The statement that crayfish have not been recorded 'within or downstream' of the proposed project is factually incorrect on the face of the developer's own supporting data. The National Biodiversity Data Centre (NBDC) records two White-clawed Crayfish observations from 2021 on the Little Brosna waterbody, approximately 4km downstream of the development site on the same connected waterbody. These records are referenced in Appendix 6-3 (Section 3.2.3.4, p.16, Site 1) but then characterised as 'not expected to occur' within the project area. The leap from 'not found during a daytime visual search' to 'not expected to occur' is not a scientific conclusion — it is a consequence of an inappropriate survey method.

White-clawed Crayfish is predominantly nocturnal and is most effectively detected by night-time torchlight survey combined with systematic lifting of submerged refuges. No night-time torchlight survey was conducted. No systematic refuge-lifting protocol was followed. The method referenced is Peay (2002) — the standard protocol — but the field effort described in Appendix 6-3 does not meet that protocol's requirements for a nocturnal species. The conclusion of absence cannot be treated as equivalent to a reliable absence determination for an Annex II species with recent downstream records on the same connected waterbody. Under Holohan (C-461/17), the assessment of an Annex II species must be complete and precise.

6.4.5.6 Alpine Newt (Ichthyosaura alpestris) — Invasive Non-Native Species

Alpine Newt eDNA was detected at four of the five eDNA sampling sites: Sites 12 (bog drain), 7 and 6 (Holy Well Clohaskin), and 8 (Pallas 25). Only Site 3 returned a negative result (Appendix 6-3, Section 4.4, p.38). Alpine Newt is listed under the Third Schedule of S.I. 477/2011 as an invasive non-native species. It carries the disease chytridiomycosis, which can cause significant harm to native amphibian populations.

The developer acknowledges the biosecurity risks and commits to biosecurity protocols. However, the extent of eDNA-positive detections — four of five sites, including multiple watercourses within the development footprint — means that any in-stream or near-stream construction work carries a risk of further spread. The CEMP (Appendix 23) commits to biosecurity measures but these are framework commitments to be developed post-consent. Under People Over Wind (C-323/17), mitigation must be assessed in full before consent, not deferred to contractor method statements.

6.4.6 Grounds for Objection

Ground 1 — The aquatic species impact assessment was conducted against the wrong WFD baseline — Moderate instead of Poor EIAR Chapter 9 Table 9-5 presents the Little Brosna sub-catchment tributaries as Moderate WFD status. All Chapter 9 impact assessment conclusions, and the SWMP adequacy conclusions, use this Moderate baseline. Appendix 9-1 Table 2-2 correctly records the Little Brosna_040 RWB — which receives all nine turbine drainage areas — as Poor status, At Risk of not achieving Good by 2027. Appendix 9-1 explicitly delegates its WFD compliance conclusions back to Chapter 9. The entire WFD compliance assessment for aquatic species is built on the wrong status class. **Legal standard:** Weser (C-461/13, 2015): the WFD non-deterioration obligation prohibits any deterioration in waterbody status class. For a waterbody at Poor status, any further deterioration — even marginal — is a WFD breach. No assessment of whether construction-phase impacts would cause deterioration from Poor has been made. Holohan (C-461/17, para.44): a WFD compliance assessment built on the wrong baseline is not complete.

Ground 2 — All aquatic surveys were conducted in summer base-flow conditions No assessment of migratory salmonid and eel passage during the migration and spawning seasons:. Atlantic Salmon return migration and spawning (October–January), Sea Lamprey migration and spawning (spring), and Silver Eel downstream migration (autumn) all fall outside the survey period. The main Little Brosna_040 — the migration corridor — was accessible for electrofishing at one site only. No assessment of construction-phase impacts on migratory species during migration seasons was conducted. These are also the high-flow seasons when SWMP failure is most probable. NPWS Scoping: surveys must identify all sensitive species present. IFI Scoping: identification of sensitive aquatic species was specifically required. Holohan (C-461/17, para.44): the assessment must be complete.

Ground 3 — Failure to identify a sensitive aquatic species, Croneen Trout and unassessed construction-phase impact on the Croneen sub-population from southern site drainage:

The IFI scoping input required the developer to identify sensitive aquatic species in the catchment. The NPWS scoping response directed consultation with IFI on fish species impacts. The IFI Little Brosna Catchment Factsheet (2021) — freely available via the IFI website — identifies the Croneen as a priority management reach containing a genetically distinct brown trout sub-population. No reference to the Croneen, its fish stock data, or its population significance appears anywhere in the submitted application. No mitigation presented.

Ground 4 — White-clawed crayfish were assessed using a method with low detection probability — the conclusion of absence is unreliable: Two NBDC records of White-clawed Crayfish exist 4 km downstream on the same waterbody (2021). Sites 1, 4, and 10 were recorded as having potential crayfish habitat. The survey method — daytime visual and hand search — is the lowest-sensitivity method for a predominantly nocturnal species. No night-time torchlight survey was conducted. No systematic refuge-lifting survey was conducted. On the basis of this survey the developer concludes crayfish are not expected to occur, and the species receives no NIS assessment and no mitigation. NPWS Scoping requiresd watercourses to be surveyed for Annex II species using appropriate methods. An Annex II species with confirmed nearby records, excluded from further assessment on the basis of a survey with low detection probability, represents a gap under Holohan. If crayfish are present and undetected, there is no mitigation for a species acutely vulnerable to sedimentation.

Ground 5 — The SWMP fails under flood conditions at T8 and T9 — highest sediment release coincides with migration and spawning seasons: The FRA confirms T9 has a 50% probability of fluvial inundation at 1% AEP, rising to 75% under the climate change scenario. T8 has 5% inundation probability at 1% AEP. Under flood conditions the SWMP settlement pond system is reversed and accumulated construction sediment is discharged directly to the Little Brosna at peak flow. The highest sediment release risk coincides with autumn/winter — the migration and spawning seasons for Atlantic Salmon, Brown Trout, Lamprey, and European Eel. People Over Wind (C-323/17, 2018): mitigation must be assessed in full. A no-adverse-effect conclusion for Annex II aquatic species resting on mitigation that fails under foreseeable site conditions does not satisfy Article 6(3). Weser (C-461/13): for a waterbody already at Poor status, any flood-condition sediment pulse from construction areas would represent further deterioration.

Ground 6 — No fish pass or eel pass provision at 14 drain crossings — potential migration barriers not assessed: The proposed development includes 14 drain crossings using culverts. No assessment of culvert design against migration requirements for lamprey, eel, or Brown Trout is included in any submitted document. No fish pass or eel pass provision is proposed. IFI specifically required careful design of watercourse crossings; that requirement is acknowledged in the submitted documents but not implemented. IFI Scoping: careful design of watercourse crossings was specifically required. Holohan (C-461/17, para.44): the assessment must be complete. For Annex II lamprey species confirmed at Site 7 on the Holy Well Clohaskin — which involves one of the proposed crossings — the absence of any passage assessment is a lacuna in the integrity assessment.

6.4.7 Conclusion — KER 4 Acquatic Ecology

The aquatic species assessment was conducted against the wrong WFD baseline for the primary receiving waterbody; excluded the migration and spawning seasons of the migratory species it purported to assess; omitted the most ecologically sensitive sub-population in the catchment; concluded absence of an Annex II species using a detection method inadequate for that species; relies on surface water mitigation that fails at peak flood conditions coinciding with peak ecological sensitivity; and proposes 14 infrastructure crossings without fish passage assessment. These are individually and cumulatively fatal to the no-adverse-effect conclusion.

6.5 KER 4 — BATS

6.5.1 Legal Status

All Irish bat species are listed on Annex IV of the Habitats Directive and subject to strict protection under Article 12 (transposed by Regulation 51 of S.I. No. 477 of 2011). The Wildlife Act 1976 (as amended) independently prohibits intentional disturbance, injury, or killing of any bat or interference with roosting places. Lesser Horseshoe Bat carries additional Annex II protection. A grant of planning permission does not constitute, and cannot substitute for, the required derogation licence.

The key legal principles governing this assessment are:

- **Article 12 strict protection** applies wherever Annex IV species are found — not only within European site boundaries. It prohibits deliberate capture or killing, deliberate disturbance during breeding, rearing, hibernation and migration, and deterioration or destruction of roosting sites.
- **The Drumakilla line of authority** (Namur-Est Environnement C-463/20; Hellfire Massy C-166/22; AG Opinion in Drumakilla C-58/24, September 2025) clarifies the interaction between the Article 12 prohibition and planning consent. Where a developer accepts that bat mortality from turbine operation is likely, this constitutes deliberate killing since the developer accepts the possibility of such killing. Because the deliberate killing of individual specimens is prohibited under Article 12, such a development entails a significant environmental effect. A derogation decision must form part of the development consent procedure. A planning authority cannot grant permission until a valid derogation licence is obtained, with supporting information published to allow public participation.
- **Hellfire Massey** (ECLI:EU:C:2023:545) — cited by name in the NPWS scoping response for this application — establishes that any Regulation 54 derogation must be secured before the grant of planning permission. **People Over Wind** (C-323/17) requires that mitigation measures be assessed in full within the Appropriate Assessment, not assumed to work. **Holohan** (C-461/17) requires complete, precise and definitive findings free of lacunae. **Waddenzee** (C-127/02) requires the competent authority to ascertain beyond reasonable scientific doubt that consent will not adversely affect protected interests.
- **The National Biodiversity Action Plan 2023–2030** sets out Government policy on nature conservation. Objective 1 requires all public authorities to move towards no net loss of biodiversity.

- **The Wildlife (Amendment) Act 2023** introduced a statutory public sector duty on biodiversity, requiring every public body to have regard to the Plan's objectives and targets.

The developer has expressly waived both Article 6(4) of the Habitats Directive and Article 4.7 of the Water Framework Directive derogation pathways. If adverse effects on Annex IV bat species cannot be excluded, there is no fallback available. Refusal is the only lawful outcome.

6.5.2 What Was Required

The NPWS Development Applications Unit scoping response set the following bat-specific requirements:

a. Detailed information on survey types, methods, and bat roosting potential following best practice guidelines — specifically referencing Collins (2023) 4th Edition.
b. Consideration of commuting and foraging routes for local bat species, particularly in relation to potential collision risk from turbines.
c. Post-construction monitoring of bat strikes/fatalities, explicitly including the impact of carcass removal by scavengers on monitoring accuracy. The scoping response stated: *'A plan of action needs to be agreed at planning stage with the Planning Authority if the results in future show a significant mortality of birds and/or bat species.'*
d. A Lighting Plan incorporating EUROBATS 8 Guidelines for Consideration of Bats in Lighting Projects and Dark Sky Ireland recommendations.
e. Pre-consent engagement with NPWS on derogation requirements. The scoping response stated: *'where bridges require strengthening this may involve grouting of crevices which may function as bat roosts.'* It explicitly cited Hellfire Massey and required that derogation licences be applied for in advance of planning to avoid delays.
f. The scoping response noted that hedgerows *'form important wildlife corridors'* and required that *'the connectivity of routes for the movement of these species is not compromised should any hedgerows have to be removed.'* It warned that *'adverse impacts from the removal of hedgerows could result in the natural range for bat species being reduced, thus impacting on their favourable conservation status.'*

Additionally, the Marnell et al. (2022) Bat Mitigation Guidelines for Ireland (NPWS IWM No.134), cited in the developer's own reference list, establishes operational curtailment as the standard mitigation for sites with confirmed high collision-risk species at moderate-to-

high activity. NatureScot (2021), the developer's stated framework requires the collision risk assessment to consider the size and proximity of turbines in the surrounding landscape, including other wind farms.

The NPWS scoping response also stated in the context of bird surveys but applying with equal force to Annex IV bat species that *'results need to be referenced back to the overall local, regional, national and European populations and their dynamics as, in some cases even a small risk to a population of a species could be considered significant.'*

6.5.3 Survey Effort

The Bat Survey Report (Appendix 6-2, O'Donnell Environmental, April 2026) describes a multi-method survey programme. Eight species were confirmed (possibly nine, as Whiskered and Brandt's Bats are indistinguishable by echolocation):

- **Common Pipistrelle** — 50.5% of all registrations; HIGH collision risk; activity classified 'high' at six locations in summer and autumn 2024.
- **Soprano Pipistrelle** — 35.1%; HIGH collision risk; 'high' at three locations in summer 2024.
- **Leisler's Bat** — 9.5%; HIGH collision risk; Ireland's largest bat; acknowledged in the report as having 'a somewhat greater mortality risk at wind farms.' Moderate activity across all seasons with notable peaks: T1 averaged 168.6/night in autumn (peak 633); T11 averaged 176/night in spring (peak 801).
- **Nathusius' Pipistrelle** — 0.05%; HIGH collision risk; recorded in spring and autumn at multiple locations.
- **Natterer's Bat** — 1.82%; LOW collision risk.
- **Brown Long-eared Bat** — 1.53%; LOW collision risk; likely under-recorded due to low call volume; elevated activity at T11 linked by the report to a known roost within 1.6km.
- **Daubenton's Bat** — 0.69%; LOW collision risk; waterway specialist recorded at T9.
- **Whiskered Bat** — 0.84%; concentrated at T3 with spring peak of 187 nightly registrations.

Activity levels were deemed 'exceptionally high'. The summer 2024 site-wide nightly average was 3,675 registrations. Autumn 2024 exceeded this at 3,775. Single-turbine peaks included 1,319 Common Pipistrelle at T8 (12 August), 1,939 Soprano Pipistrelle at T5 (9 September), and 633 Leisler's Bat at T1 (15 September). T5 averaged 1,179 Common Pipistrelle registrations per night across the entire autumn season. These are not incidental passage records — they demonstrate sustained, high-intensity use of proposed turbine locations throughout all survey seasons.

Roost features were uncovered. Confirmed non-significant roosts at S02 (200m from T6: Common Pipistrelle, Brown Long-eared Bat, Soprano Pipistrelle — three Brown Long-eared Bats found roosting on internal inspection) and S05 (>600m from T7: Common Pipistrelle, Soprano Pipistrelle, Natterer's Bat). Bridge B08 on the GCR held DNA-confirmed Brown Long-eared Bat droppings (SureScreen Scientifics DNA analysis, April 2025). Twelve PRF-I trees fall within bat-buffer clearance zones and will be removed. Nine BCI roost records have core sustenance zones overlapping the site. A major multi-species private roost within the BCI 30km search radius records eight species including all four high-collision-risk species.

6.5.4 Data Analysis

The analysis concluded that Site risk is scored as 'Medium' (score 3), overall collision risk is rated Medium for Common Pipistrelle and Soprano Pipistrelle (score 12) and Leisler's Bat (score 9) across all three seasons, and Low for Nathusius' Pipistrelle (score 3). Pre-mitigation residual impact is described as 'permanent, slight, negative' at local scale. With mitigation, the conclusion is 'imperceptible, negative.'

Five analytical deficiencies are identified:

1. **The 'slight' conclusion contradicts the data and a comparable contemporary assessment.** A comparable Irish wind farm bat survey submitted in 2025 — same four high-risk species, eight species recorded, comparable activity levels, same NatureScot (2021) guidance concluded: *'without mitigation there will be a high level of impact at all turbine locations for either Leisler, Common or Soprano Pipistrelle.'* All turbines at that site were classified High Risk. The Ballincor data show comparable or higher nightly activity, yet the conclusion is reversed. No quantitative collision modelling is presented. No predicted annual bat mortality figure is calculated. No population-level assessment is conducted for any species. The report's own acknowledgement of 'knowledge gaps in relation to bats and wind farms, particularly in an Irish context' cannot coexist with a confident low-impact conclusion. The assessment permits reassuring conclusions from data that, on its face, demonstrates

high-risk species intensively using turbine zones. Without quantitative modelling, the step from high activity to 'slight' effect is asserted, not demonstrated.

2. Nathusius' Pipistrelle is incorrectly classified as 'Low' risk. The developer's own vulnerability matrix (Table 4.3) places this species in the red zone — 'Rarest' population (<10,000) with 'High' collision risk. Yet low median activity washes the overall score to 3 (Low). This conflates frequency with population-level risk.
There are no dedicated surveys for this highly migratory species in Ireland and therefore data is very limited. The NPWS Article 17 Report (2019) states that it is unclear what range extent is required for the long-term survival of the species. Recent European research (Kruszynski et al. 2022) identifies Nathusius' Pipistrelle as the second-ranked species for wind turbine fatality in Germany, with juveniles disproportionately affected. The comparable Irish application classified Nathusius' Pipistrelle as high collision-risk and applied curtailment. When national baseline data is this poor, concluding 'low impact' on a species consistently present across the survey area is subjective and scientifically unsupported. For a migratory species, maximum-percentile risk classification is the appropriate metric, not the median.

3. No species-specific analysis for Leisler's Bat despite acknowledged greatest risk. The report states Leisler's Bat has 'a somewhat greater mortality risk at wind farms' and 'typically does not follow landscape features such as treelines or woodland edges.' These two facts together mean the vegetation buffer mitigation offers no protection to the species most at risk — a fundamental contradiction the assessment does not address. Ireland holds the global stronghold population (63,000–113,000; NPWS Article 17, 2019). Therefore we have an international responsibility for its protection.' The species is listed as 'Near Threatened' in Ireland; its rarity across the rest of Europe makes the Irish population of exceptional international conservation importance. This international responsibility is entirely absent from the Ballincor documentation. No population-level mortality assessment is conducted. No species-specific curtailment is proposed.

4. The Ecobat tool was rejected without reproducible Irish replacement. NatureScot (2021) recommends the Ecobat online tool to provide standardised, comparative activity classification. The report explicitly rejects the use of ECOBAT, the standard tool for benchmarking bat activity against comparator sites. The stated rationale is that ECOBAT's database is UK-weighted and therefore unreliable for Irish conditions. Instead, activity categorisation (Low, Moderate, Moderate-High, High) relies entirely on "the expertise and experience of the authors." The report provides average nightly registrations and peak counts per detector per season but offers no quantified percentile analysis, no statistical

framework, and no transparently documented thresholds for how activity categories were assigned. The activity classification underpinning the entire collision risk assessment is therefore non-reproducible and unfalsifiable. An Coimisiún Pleanála has no way to independently verify whether 'Moderate' activity at Ballincor is comparable to or higher than other Irish wind farm sites.

5. The cumulative assessment is circular and substantively absent. The proposed development will create a 23-turbine cluster within 3km (Skehanagh 5 turbines at 1.5km; Carrig 7 turbines at 1.5–3.9km; Ballincor 11 turbines). The assessment treats each neighbouring farm as 'existing baseline' or relies on the other developer's self-assessed nil-residual-effects conclusion. No combined collision mortality figure is produced. No post-construction bat data from 20 years of Skehanagh operation was sought. No assessment of cumulative commuting habitat fragmentation across the cluster is provided. No assessment of additive collision pressure on roost populations whose core sustenance zones overlap multiple sites is presented. The EIAR's claim of 'absence of important shared/geographically connected KERs' between Ballincor and Carrig is contradicted by shared species assemblages, shared habitats, and shared roost catchments. This structural gap, where nil plus nil is treated as proof of nil cumulative effect in no way represents a legitimate or cumulative impact assessment nor can it be accepted as such.

6.5.5 Mitigation Assessment

The Bat Survey Report proposes two operational mitigation categories: vegetation buffers (80–104m radius per turbine, requiring clearance of 0.12 ha of treelines/hedgerows and 5.76 ha of woodland/scrub) and feathering of idling blades. The report states: 'No additional control measures to avoid/reduce collision related bat fatalities are considered warranted in this instance.' MM89 in Chapter 20 defers any curtailment to post-construction monitoring: 'Recommendations will be made in relation to a curtailment strategy if required.'

Absence of operational curtailment. This is the most significant mitigation failure. The Ballincor approach is to defer the curtailment decision to post-construction monitoring. This is the "monitor-and-hope" approach.

Operational curtailment is the international standard, with published evidence demonstrating 50–90% fatality reductions (Arnett et al. 2011; Adams et al. 2021; Baerwald et al. 2009). Ballincor's approach, where curtailment is a possibility that may never materialise, is fundamentally different. Feathering addresses only turbines not generating power; the risk

period for bats (low-to-moderate wind speeds of 3–6 m/s) is when turbines are actively generating and feathering does not apply.

Ballincor, with opaquely categorised "moderate to high" activity and Medium collision risk scores, proposes no curtailment at all unless post-construction monitoring reveals a problem. This means the developer is proposing to operate 11 turbines with 180m tip heights in a landscape with confirmed moderate-to-high pipistrelle and Leisler's activity, confirmed roosts within the search area (Common Pipistrelle and Brown Long-eared at S02), a tree with maternity colony potential (T716), and proximity to waterways, without any operational restriction on turbine rotation during peak bat activity conditions.

The first bat killed at this site under the proposed mitigation package would constitute a foreseeable and avoidable mortality that the developer chose not to prevent, even though the industry standard is to implement precautionary curtailment from Day 1 at sites with Medium or higher collision risk.

Buffer clearance creates unassessed additional harm. Implementing buffers destroys the primary commuting and foraging habitat for Pipistrelle species (85.6% of all registrations). The report cites Altringham and Kerth (2016) confirming that gaps under 5m interrupt commuting bats; the clearance creates 80–104m breaks. Replacement features will take 5–7 years to reach functional height — the highest-risk period for collision, unassessed. No net assessment — collision risk reduction versus corridor destruction — has been conducted. No operational method statement for buffer maintenance is provided. The NPWS scoping response specifically warned that 'adverse impacts from the removal of hedgerows could result in the natural range for bat species being reduced.'

Monitoring falls below NPWS requirements. The scoping response explicitly required scavenger correction. The programme does not commit to scent-detection dogs (73–95% vs 20% detection — Mathews et al. 2013), does not specify search radius or interval, does not commit to necropsy for barotrauma (25–50% of bat fatalities show no external injury — Mathews et al. 2016), and covers only 5 monitoring years versus 10years as standard in the sector. There are no pre-defined fatality thresholds triggering binding curtailment. A monitoring programme that can detect mortality but has no mechanism to act on findings is not mitigation.

Regulation 54 / Article 12 unresolved. The report concludes no derogation is required. However, 12 PRF-I trees in clearance zones may support transitory roosting (Kaňuch et al. 2022, cited in the report). Bridge B08 holds a DNA-confirmed roost; the directional drill vibration profile at the roost is unquantified. Critically, the developer's own acknowledgement of predicted permanent negative effects on Annex IV species engages the Drumakilla analysis: accepted likelihood of mortality constitutes deliberate killing under Article 12, requiring pre-consent derogation.

6.5.6 Grounds for Objection

Ground 1 — Internal inconsistency and opaque activity categorisation. The 'slight' pre-mitigation conclusion cannot be reconciled with site-wide nightly averages exceeding 3,675 registrations and four high collision-risk species at Moderate-to-High activity. No quantitative collision modelling, no predicted annual mortality, and no population-level assessment is provided. The activity categories underpinning the collision risk assessment cannot be independently verified: the report rejects ECOBAT as unsuitable for Ireland but provides no equivalent quantified benchmarking framework, relying instead on unspecified professional judgment. Ballincor's raw data — with peaks exceeding 1,000 registrations per night at multiple locations — could plausibly yield High activity categories under any reproducible benchmarking, which would push collision risk scores to 15 and trigger mandatory curtailment under NatureScot guidance. Board cannot satisfy itself that the risk has been properly characterised when the categorisation methodology is opaque. This is a lacuna under *Holohan*.

We do not dispute that professional judgment may inform activity categorisation, but require that the Board be provided with the documented thresholds, comparator datasets, or percentile methodology by which each category was assigned, such that the categorisation can be independently verified. In the absence of this documentation, the Board is asked to treat the activity categories as unverified.

Ground 2 — No operational curtailment despite Medium collision risk. The primary evidence-based mitigation for bat collision at wind farms — operational curtailment of cut-in speeds — is explicitly absent. Curtailment is deferred to a post-construction 'recommendation if required' with no trigger thresholds, no algorithm, and no enforcement mechanism. Feathering alone does not operate during the risk period when turbines are generating above cut-in speed. This reverses the precautionary principle: curtail from Day 1, then relax restrictions if monitoring confirms low post-construction activity — is the

precautionary approach; the Ballincor approach — operate unrestricted, then impose restrictions if monitoring reveals mortality, treats bat deaths as an acceptable data-gathering exercise. Under *People Over Wind*, hypothetical future mitigation cannot carry the weight of an AA conclusion.

We ask that the developer be required to specify to the Inspector (a) the number of bat fatalities per turbine per year that would trigger curtailment; (b) the cut-in speed, temperature threshold, and temporal window that would apply; (c) the body responsible for the decision; and (d) the enforcement mechanism ensuring implementation. In the absence of these specifications, the curtailment commitment is not a mitigation measure — it is an aspiration.

Ground 3 — Unassessed net harm from buffer clearance. The primary spatial mitigation destroys commuting habitat, creating 80–104m breaks where 5m interrupts bat movement. No net mortality assessment. No method statement. The NPWS scoping response warned against exactly this impact on hedgerow connectivity. The replacement planting will take a minimum of 10–15 years to reach functional hedgerow height. During this period, the bat-buffer clearance zones will function as barriers to commuting bats. No assessment has been provided of the additional collision risk created by displacing commuting bats from their established routes into open airspace at rotor height during this interim period. The Altringham et al. (2011) 5m gap threshold cited in the developer's own report applies to these cleared zones.

Ground 4 — Nathusius' Pipistrelle misclassification. A data-deficient, high-collision-risk Annex IV species in the red zone of the developer's own matrix is washed to 'Low' by conflating low median activity with low population risk. The precautionary principle requires the opposite conclusion for a species with no known Irish roosts and unknown Favourable Reference Range.

Ground 5 — Cumulative assessment absent. A 23-turbine cluster within 3km, no combined mortality estimate, no Skehanagh post-construction data, no cumulative habitat fragmentation assessment, no additive pressure analysis on shared roosts. The circular nil-effects methodology applied across this full submission, also applied to bats is wholly unacceptable.

Ground 6 — No Leisler's Bat species-specific mitigation. The report acknowledges Leisler's Bat has the greatest mortality risk and does not follow landscape features. The buffer mitigation cannot protect it. Ireland holds the global stronghold population. No curtailment, no population-level assessment, no acknowledgement of international

responsibility. The buffer mitigation cannot protect the species that the report identifies as having the greatest mortality risk. This is not a marginal gap — it is a structural failure of the mitigation framework for the species for which Ireland holds the international stronghold population."

Ground 7 — Monitoring below NPWS and industry standard. No scavenger correction despite explicit scoping requirement. No search dogs. No necropsy. No binding fatality thresholds that would trigger additional mitigation. The monitoring schedule (years 1, 2, 3, 5 and 10) covers less than a third of the operational lifespan. For a 30+ year wind farm with confirmed bat populations and Medium collision risk, the Ballincor schedule is insufficient to detect long-term population-level effects or to adapt the curtailment strategy that has itself been deferred to this monitoring programme.

Ground 8 — Article 12 / Regulation 54 unresolved. The developer acknowledges predicted permanent negative effects on Annex IV species but concludes no derogation is required. The developer's own collision risk assessment yields Medium scores (9 and 12) for three high-risk species, the report concludes the operational phase will have 'permanent, slight, negative' effects on bats, and the standard operational mitigation (curtailment) that would reduce foreseeable mortality by 50–90% has been explicitly omitted. To 'design to avoid' while omitting the primary avoidance tool is a contradiction. Under *Drumakilla*, accepted likelihood of mortality constitutes deliberate killing under Article 12. The survey confirmed Common Pipistrelle and Brown Long-eared Bat roosting at derelict building S02 and identified a potential maternity colony feature on tree T716, both within the zone of influence of proposed turbines. The mitigation response to these confirmed ecological features — feathering only, no curtailment — is disproportionate to the risk they represent and does not discharge the protective obligations that arise from their confirmed presence. Bridge B08 and 12 PRF-I trees raise pre-consent derogation obligations under *Hellfire Massey*. Neither has been discharged.

6.5.7 Conclusion

The bat assessment fails on eight grounds. Each constitutes a lacuna under Holohan or a failure of proof under Waddenzee. Taken together, they prevent An Coimisiún Pleanála from ascertaining beyond reasonable scientific doubt that the development will not adversely affect the Article 12 strict protection obligations owed to all Irish bat species.

The critical failures are: no quantitative collision modelling; no pre-consent curtailment despite four high collision-risk species at Moderate-to-High activity; unassessed net harm from buffer clearance; misclassification of a data-deficient migratory species; absent cumulative assessment across a 23-turbine cluster; no species-specific mitigation for Leisler's Bat despite Ireland's global stronghold responsibility; monitoring below NPWS scoping requirements; and unresolved Article 12 derogation obligations.

The developer has expressly waived both derogation pathways. With no fallback available, refusal is the only outcome consistent with the precautionary principle, the lacunae standard, and Ireland's obligations under the Habitats Directive.

6.6 KER 5 — Flora and Fauna

6.6.1 Slender Cottongrass (Eriophorum gracile)

The NIS (p.55) states:

"A review of the NPWS Flora Protection Map (NPWS, 2025a) show record of Slender Cottongrass (Eriophorum gracile), a plant species listed under the Flora Protection Order (FPO) within the 10km grid squares encompassing the study area. This plant species was recorded in 2015 and 1997, within the raised bog and degraded raised bog habitat, 1.1km east of the proposed wind farm site and within the Sharavogue Bog SAC. Data obtained from NPWS from a sensitive data request also included the above record. No other protected flora species have previously been recorded within the 10km grid squares N00 and S09 or within the proposed project site over the past 20 years."

The NPWS Site Synopsis states:

"The rare semi-aquatic plant species Slender Cottongrass (Eriophorum gracile) has been recently discovered growing in fen vegetation at this site. This species is legally protected under the Flora (Protection) Order, 2015."

And more precisely, the Site Synopsis locates it in the **eastern lagg zone** — not in the central high bog — specifically in the calcareous fen and carr woodland habitat supported by upwelling base-rich groundwater along the eastern margin. The raisedbogs.ie document confirms it occurs in the southern zone of the lagg where minerotrophic influence is dominant, associated with *Schoenus nigricans* fen vegetation in pools and mosaic woodland.

6.6.2 Grounds for Objection

Ground 1 — The species is recorded in the wrong location and no survey of the lagg zone or the species' supporting habitat was undertaken

The NIS describes the record as being "1.1km east of the proposed wind farm site and within the Sharavogue Bog SAC." The Site Synopsis and the raisedbogs.ie flora document both place *E. gracile* firmly in the **eastern lagg zone** of Sharavogue Bog — the narrow transitional fringe of upwelling groundwater immediately adjacent to the wind farm boundary. The eastern lagg is the very feature that is closest to the proposed construction activities, not some distant location in the bog interior. The NIS's use of the 1.1 km figure to characterise the species' distance from the works is therefore misleading. No botanical survey of the SAC lagg zone was conducted at any point in the application process. The applicant's surveys searched the wind farm site itself for FPO species but conducted no survey of the

interface zone, the lagg fen, or the calcareous fen vegetation where *E. gracile* is recorded and on public record as such.

Ground 2 — No assessment of the pathway from near-surface groundwater disturbance to *E. gracile*'s supporting hydrology

Eriophorum gracile is a semi-aquatic species that occurs exclusively in base-rich, spring-fed or groundwater-fed fen conditions. It is not a generalist wetland plant. Its presence at Sharavogue is explicitly linked to the upwelling of base-rich water in the eastern lagg — the same near-surface groundwater system that EIAR Chapter 9 records operating at the interface between the wind farm site and the SAC. This species cannot persist if that base-rich upwelling is disrupted, lowered, or chemically altered.

The NIS records the species, notes its Flora Protection Order status, and then performs no assessment of the pathway from the confirmed near-surface groundwater disturbance to the species' supporting hydrology. It is mentioned, catalogued, and dropped. There is no analysis of what effect altered drainage, peat excavation at T8/T9, or near-surface water table drawdown during construction would have on the fen conditions in the lagg where the species is recorded.

Ground 3 — The Flora Protection Order creates an independent statutory obligation not addressed

Eriophorum gracile is protected under the Flora Protection Order 2015 (and confirmed under FPO 2022). This creates a direct, free-standing statutory prohibition on wilful cutting, uprooting, or destruction. Where a project may affect a FPO-listed species or its habitat — including through indirect hydrological disturbance — the EIAR must demonstrate avoidance, assess the pathway, propose mitigation, and address the question of whether an NPWS licence would be required. None of this appears in the submitted documents. The species is noted as existing in the SAC 1.1 km away and the analysis stops there entirely. There is no assessment of indirect effect, no mitigation proposed, and no licence application referenced.

6.6.3 Conclusion

This species is the single most ecologically significant flora record in the entire application area. Its presence in the lagg zone is confirmation that the base-rich groundwater upwelling system documented in EIAR Chapter 9 is functioning and biologically productive right at the interface between the construction zone and the SAC. A species of this rarity and hydrological specificity does not persist in degraded conditions — its presence is direct ecological evidence that the near-surface groundwater system is actively delivering base-rich water to the lagg at the present time. Disruption of that system is therefore not a theoretical risk: it is a risk to a confirmed, legally protected species at a confirmed location within the receptor site.

The *E. gracile* record reinforces and compounds the Article 6(3) gap

Under *Sweetman* (C-258/11, para.48), adverse effect on integrity includes any disruption to the constitutive characteristics of a site. The lagg zone — including the *E. gracile* population — is formally identified in the NPWS documentation as the primary element of local distinctiveness at Sharavogue Bog, described as one of the best developed lagg systems in the country and unique in the context of Irish raised bogs. Any risk to the hydrology sustaining that feature is a risk to the constitutive characteristics of the site. That risk has not been assessed. The NIS's conclusion of no adverse effect cannot stand in the face of a confirmed FPO species whose entire ecological support system is directly connected to the groundwater pathway the NIS itself identified in Table 6-1 and then failed to trace to its receptor.

6.7 KER 6 — Otter (Lutra lutra)

6.7.1 Legal Status

Otter is listed on both Annex II and Annex IV of the Habitats Directive. The Annex IV listing places the species under Article 12 strict protection wherever it is found, whether or not within a designated site. Otter holts and couches are protected under Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations 2011-2021. Damage to any holt or couch requires a derogation under Regulation 54. Otter is also a qualifying interest of the River Shannon Callows SAC (000216), approximately 14 km north of the site.

6.7.2 What Was Required

The NPWS scoping response cited the Hellfire Massey judgment by name and stated its requirement directly: where a derogation licence is necessary, it must be obtained in advance of the grant of planning permission. This is the most unambiguous species-specific pre-consent obligation in the scoping document. The scoping response also required maintenance of a 10-metre riparian buffer on both banks of any waterway as part of otter habitat, and stated that the development must be located at least 10 metres from any watercourses.

6.7.3 Survey Effort

Otter surveys were conducted during multidisciplinary walkover visits integrated with habitat mapping, flora, badger, and other mammal surveys. No individual survey dates, durations, or reach lengths are recorded for any otter survey visit. No surveyor qualifications are stated for otter surveys. One potential holt was identified on a drainage ditch approximately 80 m from construction compound 3 near T7. It was recorded as inactive across four survey years.

Appendix 6-3 acknowledges access constraints in the drainage ditch network: "Due to the topography of the site, high density of bog land and deep drainage ditches, there was limited access to drains within the proposed wind farm site boundary." The one potential holt identified is located on this network. The access constraints that limited the aquatic survey programme applied equally to the holt search. This limitation is not acknowledged in EIAR Chapter 6 or the NIS as affecting the completeness of the holt baseline.

The survey buffer was 150 metres from waterbodies. The developer acknowledges that natal dens can be located as far as 1 km from waterbodies. No survey was conducted in the zone between 150 m and 1 km that includes woodland and scrub along the eastern site boundary.

6.7.4 Data Analysis

NIS Table 6-4 records two potential adverse effects on the otter qualifying interest of the River Shannon Callows SAC: disturbance and degradation of feeding resources, and potential degradation of water quality in the Little Brosna_040, reducing fish biomass. Both are resolved in the NIS by reference to the SWMP. As established in KER 2 (Ground 8), the SWMP fails under flood conditions at T8 and T9 — the turbine locations closest to the Little Brosna, the primary otter foraging corridor. The SWMP failure mode directly undermines the SAC otter qualifying interest mitigation.

6.7.5 Mitigation Assessment

The timing restriction (MM42 — daytime working within 150 m of watercourses) does not address disturbance to holts during daylight hours. All construction activity other than civil twilight working proceeds during the day regardless of holt proximity. No exclusion zone is defined around the identified potential holt. The pre-construction survey commitment (Section 6.7.1.5.3.2.2) is a post-consent measure. If it discovers an active holt, the response protocol refers to "consultation with NPWS" but provides no lawful mechanism for proceeding without a Regulation 54 licence.

6.7.6 Grounds for Objection

Ground 1 — No pre-consent determination has been made as to whether a Regulation 54 derogation licence is required — the Hellfire Massey obligation has not been discharged: Otter is an Annex IV species. One potential holt was identified within the development footprint and acknowledged as potentially capable of reoccupation (EIAR Chapter 6, Section 6.6.3.2.2.2). Hellfire Massey (ECLI:EU:C:2023:545): where a derogation licence is necessary, it must be obtained before planning permission is granted (NPWS Scoping Response p.9). Regulation 51: the protection applies to the feature, not the occupant — an inactive holt that is reoccupied is protected from the moment of reoccupation. No derogation licence application has been submitted. No determination has been made — by the developer or by NPWS — as to whether Regulation 54 is engaged. The EIAR and CEMP defer this question to the pre-construction phase.

Ground 2 — The holt survey is incomplete — access constraints in the drainage ditch network are not acknowledged as limiting the Annex IV baseline: Appendix 6-3 records

that access constraints in the drainage ditch network limited the aquatic survey programme. The one potential holt identified is located on that same network. These constraints are not acknowledged as limiting the completeness of the holt baseline. The conclusion that only one potential holt exists within the works corridor cannot be stated with confidence.

Ground 3 — The survey effort cannot be independently verified — no individual dates, durations, or reach lengths are recorded: EIAR Chapter 6 and the NIS state that otter surveys were conducted during various dates between 2022 and 2025, integrated into multidisciplinary walkovers. No individual otter survey dates are stated. No survey durations per visit are stated. No watercourse reach lengths searched per visit are stated. No surveyor qualifications are documented. NPWS Scoping Response: "details of survey methodology should also be provided." For an Annex IV species where the survey forms the foundation of a pre-consent Regulation 54 determination, the survey record must be capable of independent verification

Ground 4 — The NIS confirms potential adverse effects on the otter qualifying interest of the River Shannon Callows SAC and relies on mitigation that fails under foreseeable site conditions: NIS Table 6-4 records potential adverse effects on the SAC otter qualifying interest — disturbance and water quality degradation — resolved entirely by the SWMP. As established previously, the SWMP fails under 1% AEP flood conditions at T8 and T9, which are the construction locations closest to the Little Brosna. Under flood conditions, untreated construction sediment is discharged to the main otter foraging corridor without interception. This is the confirmed flood regime at the most critical locations. People Over Wind (C-323/17, 2018): mitigation must be assessed in full. Waddenzee (C-127/02): the competent authority cannot approve a project if adverse effects on European site integrity cannot be excluded. Both derogation pathways are waived. A no-adverse-effect conclusion for the SAC otter qualifying interest resting on mitigation that fails under foreseeable site conditions does not satisfy Article 6(3).

Ground 5 — The disturbance assessment is conditional on a pre-construction survey that cannot cure a pre-consent Annex IV deficiency: EIAR Section 6.6.3.2.2.2 concludes that disturbance without mitigation is "a likely short-term, significant negative effect." The residual effects table resolves this to "not significant" after mitigation. The mitigation relied upon for this resolution includes a pre-construction survey — a post-consent commitment. If that survey discovers an active holt, the response protocol defers to "consultation with

NPWS" but provides no lawful mechanism for proceeding without a Regulation 54 licence. The no-adverse-effect conclusion for disturbance is contingent on outcomes that cannot be verified at planning application stage

Chapter 7: Noise

Appendix 7-1 Allegro Acoustics Consultant report

Appendix 7-2 Independent Regression Analysis of the Background Noise Survey

Appendix7-3 IoA GPG 4.3.9 Valley Correction — Full JOULE Formula Workings

7.0 Introduction

Noise is the single greatest day-to-day impact a wind farm imposes on the community that lives around it. Operational noise is the impact that enters the bedroom at night, that determines whether a garden can be enjoyed on a still afternoon, and that defines for the next thirty-five years, whether a home remains a home. Of all the chapters in the Applicant's EIAR, the noise chapter is the one on which An Coimisiún Pleanála's determination bears most directly on the lived environment of the people who will experience this development.

The legal context has shifted. In Webster & Rollo v Meenacloghspar (Wind) Limited [2024] IEHC 136, Ms Justice Emily Egan held that noise from a wind farm in Co. Wexford amounted to an unreasonable interference with the enjoyment of neighbouring properties and that compliance with specific decibel limits in a planning permission is not a complete answer to a nuisance claim where the permission regulated noise only by reference to numerical levels, without engaging with the full range of matters that determine whether residents can in fact live in their homes. That judgment does not stand alone. The Supreme Court's earlier decision in Balz v An Bord Pleanála [2019] IESC 90 quashed a planning permission for a Cork wind farm on related grounds. A pattern is emerging in which the courts are signalling that questions of residential amenity and noise nuisance ought to be resolved with rigour at the planning stage, rather than left to be litigated, property by property, after a development is built and operating.

The point is straightforward: noise is not a peripheral environmental matter. It is a determinant of health and of whether a home is liveable, it is increasingly recognised as such by the courts and by public-health policy, and it therefore demands the highest level of scrutiny at the determination stage. The sections that follow apply that scrutiny.

Section7- 2 sets out the regulatory framework against which the assessment must be measured, including the direction of travel in Irish noise policy. Section 7-3 describes what the applicant did, the assessment as submitted and identifies the permissive choices through which headroom was built. Section 7-4 sets out what the applicant did not do: the omissions and unaddressed matters that, individually and collectively, undermine the assessment's conclusions and its demonstration of compliance. Three appendices accompany and form part of this submission, and are referenced at the relevant points.

Principal Grounds of Objection — Summary

This submission identifies a series of deficiencies in the noise assessment (EIAR Chapter 11 and Appendices 11.1–11.9) which, individually and cumulatively, mean that the assessment does not provide An Coimisiún Pleanála with a sound basis on which to determine the application on noise grounds. Each ground is established from the applicant's own documents and the methodology the applicant itself adopted as governing. They are summarised here and developed in full in the sections that follow.

1. A pattern of permissive choices that leaves no margin for error. At every stage where the governing methodology permitted a choice, the applicant selected the option most favourable to demonstrating compliance — the most permissive daytime threshold, the lowest-precaution ground and receiver-height parameters, a summer-only survey, and the scoping-out of cumulative effects. Each choice may be defensible in isolation; their uniform direction is not. The cumulative effect is an assessment operating at the very outer edge of what the standards allow, with no capacity to absorb the correction of any step that was required but not performed. *(Section 7.3)*

2. The mandatory valley correction was never performed. The IoA Good Practice Guide, adopted by the applicant as governing, requires at Section 4.3.9 a +3 dB correction (at the applicant's chosen ground factor G=0.5) wherever sound propagates across a concave or "valley" ground profile — assessed per turbine, per receptor via the JOULE formula. An exhaustive search of all nine noise documents returns no occurrence of the correction, the formula, or its defining terms. This is the precise terrain the correction exists to address: turbines on a bog platform with receptors on rising ground above them. The omission of a mandatory assessment step — independently corroborated by Allegro Acoustics (Comment 5) — is outcome-determinative: applying the correction to the applicant's own figures reverses the compliance position at properties presented as compliant, producing confirmed night-time exceedances at eleven residential properties (Appendix 7-3). (Section 7.4.1)

3. The background survey is built on data the instruments could not reliably measure. Across all six night-time monitoring locations, between 85% and 96% of recorded data points fall below the Rion NL-52's 25 dB measurement floor. The applicant's own Table 11-10 derives background levels as low as 17.8 dB — far below the level at which the instrument is specified to measure. The background curves that set every noise limit in the assessment are therefore fitted, in large part, to data the instrument was not capable of recording, producing limits more permissive than the true acoustic environment warrants. *(Section 7.4.2)*

4. Consistency with the Offaly County Development Plan (DMS-109) is not demonstrated. A substantial part of the development lies within County Offaly, where Development Management Standard DMS-109 requires demonstrated consistency with the WHO 2018 Environmental Noise

Guidelines. The assessment engages WHO 2018 only to argue against applying it, and produces no Lden calculation at any receptor. Whether or not the applicant's critique of the Lden metric has merit, DMS-109 is an adopted development-plan standard; the obligation is to assess against it, not to explain why it should not apply. On the documents submitted, the Commission cannot determine whether the development is consistent with the statutory development plan on noise grounds. *(Section 7.2.6 and 7.4)*

5. The propagation model is applied outside its validated range, in the direction of under-prediction. Every predicted level derives from ISO 9613-2, the method the applicant selected. The general method is validated for low source heights and distances to approximately 1,000 m, within which it states an accuracy of about ±3 dB; the 98.5 m hub height and the more distant receptors fall outside that envelope. The 2024 Annex D extends the method to tall turbines but does not supply the valley correction (Ground 2). Under the stable nocturnal conditions characteristic of midland raised bog — coinciding with the night-time limit period — the established literature indicates error toward under-prediction, compounded by a roughness-length value that overstates wind-speed reduction at the heights where compliance is tightest. *(Section 7.4.3)*

6. Cumulative night-time exceedances predicted by the applicant's own model were scoped out, not assessed. The applicant's model predicts night-time exceedances of the WEDG 2006 fixed limit at six non-stakeholder properties (H060, H071, H081, H100, H209 and H281), and dismisses all six under the IoA GPG Section 5.1.5 scoping rule. That rule is a scoping device applied here, wrongly, at the results stage; and it cannot discharge the planning authority's distinct statutory duty under the EIA Directive to assess the cumulative environment as residents will actually experience it. That a neighbouring wind farm is the dominant source does not make Ballincor's contribution acceptable — it means Ballincor is adding to an environment that already exceeds the limit. *(Section 7.4.5)*

7. Internal inconsistencies leave the predictions unreliable on their own terms. The assessment applies measurement uncertainty in two contradictory directions — as a +2 dB uplift said to guarantee conservative predictions, and again at the compliance-check stage to excuse near-limit results. (Section 7.4.4)

8. Specific monitoring locations setting the most critical limits are the least reliable. NML6 — which sets the limits for the most exposed western receptors — returns the weakest regression fit of any location (daytime $R^2 = 0.335$) despite the most aggressive directional filtering, including the removal of northerly sectors for which no acoustic basis is stated. At NML4, the instrument was relocated to an undocumented position with no supporting analysis. The locations most

critical to the assessment are those whose baselines are least secure. *(Sections 7.4.2.1, 7.4.2.2 and 7.4.6)*

9. Amplitude modulation, low-frequency noise, monitoring and mitigation are inadequately addressed. The site meets the recognised preconditions for excessive amplitude modulation, yet the matter is deferred to a post-commissioning complaints protocol rather than controlled by condition; no assessment against an established low-frequency criterion is provided; the curtailment relied upon at the nearest receptor is an unverified outline; and no independent Noise Compliance Monitoring Programme has been submitted. *(Sections 7.4.7 and 7.4.8)*

7.1 The Pattern That Runs Through This Assessment

Before setting out the individual findings it is important to describe the pattern that connects them because that pattern is central to this review. At every point in the assessment where the governing methodology offered a range of permissible choices, the applicant selected the option most favourable to demonstrating compliance.

The daytime noise threshold under WEDG 2006 is a range of 35 to 40 dB for low-noise environments; the applicant chose the highest option, 40 dB, without site-specific justification and despite a background survey showing the true acoustic environment is quieter than the lowest level the instruments could reliably record - the lower option 35db was more appropriate. The ground absorption value used in the noise model (G=0.5) produces lower predicted noise levels than the alternative (G=0.0); and that same choice independently doubles the magnitude of the mandatory valley correction, which was then omitted altogether. The background survey was conducted entirely in summer, the season of lowest wind speeds in Ireland, so background levels at the wind speeds where compliance is tightest are not measured at all, but extrapolated from a curve. The modelling receiver height was set at 4 metres, which reduces predicted levels relative to a realistic receptor height. Cumulative exceedances were scoped out under an acoustics rule rather than assessed.

Each of these choices is, taken alone, within the range the relevant standard permits. The significance lies in the pattern. When every available choice is made in the same direction - always more permissive, never more cautious — the cumulative effect is to consume every margin the methodology was designed to build in. The assessment is left operating at the very outer edge of what the standards allow with nothing in reserve to absorb the correction of any step that was required but not performed. As the sections below show, the assessment does contain such steps and require correction. Having taken every available advantage, the assessment leaves itself no capacity to absorb the consequence of having done so incompletely. There is no margin for error.

7-2 The Regulatory Framework

A noise assessment for a wind farm of this scale is governed by a layered framework of national guidance, international standards, and statutory development-plan policy. The applicant's own assessment cites each of the documents below as governing or relevant. They are set out here because the findings in Sections 7-3 and 7-4 are measured against them.

7.2.1 Wind Energy Development Guidelines 2006 (WEDG 2006)

The Wind Energy Development Guidelines 2006, issued under Section 28 of the Planning and Development Act 2000, are the principal national guidance governing wind farm noise in Ireland. They set a daytime noise limit in the range of 35–40 dB LA90 for low-noise environments and a fixed night-time limit of 43 dB LA90, with an alternative of background plus 5 dB where that is higher. WEDG 2006 is the framework the applicant has adopted and against which it claims compliance.

7.2.2 IoA Good Practice Guide (2013)

The Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 (2013), together with its Supplementary Guidance Notes, is the methodological standard adopted by the applicant's acoustic consultants for the background survey, noise-limit derivation, and prediction. The Guide is cited throughout Chapter 11. Two of its provisions are central to this submission: Section 2.5 which governs the conduct of the background survey, and Section 4.3.9, which requires a mandatory correction for sound propagating across a concave or "valley" ground profile. Both are addressed in Section 7-4.

7.2.3 ETSU-R-97

ETSU-R-97 (1996) is the underlying UK assessment method that the IoA Good Practice Guide exists to apply. It establishes the background-plus-margin approach to wind farm noise limits that WEDG 2006 reflects. It is relevant here principally as the source of the methodology the applicant adopted.

7.2.4 ISO 9613-2

ISO 9613-2 is the international standard for the calculation of outdoor sound propagation, and is the algorithm underlying the applicant's noise model. Its stated accuracy is approximately ±3 dB, and it was validated for source heights up to 30 metres and propagation distances up to 1,000 metres.

7.2.5 BS 4142:2014+A1:2019 and WHO Environmental Noise Guidelines (2018)

BS 4142:2014+A1:2019 provides the established framework for rating the character and impact of industrial and commercial sound, including the assessment of acoustic features such as tonality and impulsivity. The WHO Environmental Noise Guidelines for the European Region (2018) treat wind turbine noise as a distinct health stressor and recommend protective levels stricter than those in WEDG 2006. The WHO Guidelines are not merely advisory in this case: as set out below, they are given domestic planning force through the Offaly County Development Plan.

7.2.6 Offaly County Development Plan — Development Management Standard DMS-109

The Ballincor site straddles the Tipperary/Offaly county boundary, and a substantial portion of the development; turbines, noise-sensitive receptors, and associated infrastructure, lies within County Offaly. The Offaly County Development Plan 2021–2027, at Development Management Standard DMS-109, requires that wind energy development demonstrate consistency with the WHO 2018 Environmental Noise Guidelines as a condition of planning assessment. DMS-109 carries the weight of adopted development-plan policy. The applicant's assessment is therefore required to demonstrate WHO 2018 consistency for the Offaly portion of the project. As Section 7-4 sets out, no such demonstration appears anywhere in the submission.

7.2.7 The Direction of Travel — Why the Highest Scrutiny Is Warranted Now

WEDG 2006 is not a settled or future-proof standard. It was written for turbines of 60–80 m tip height and 1–2 MW capacity. The Ballincor turbines are 180 m to tip and 5.7 MW each — machines of a class that did not exist when the guidance was drafted. The Government has committed through successive Climate Action Plans to replacing WEDG 2006, and the framework is under active ministerial review.

The shape of the replacement is already known. The draft Revised Wind Energy Development Guidelines, published for public consultation in December 2019, propose a noise regime materially more stringent than WEDG 2006. The draft introduces a Relative Rated Noise Limit (RRNL) of 5 dB(A) above background within a range of 35–43 dB(A), with 43 dB(A) the maximum permitted day or night, and a 35 dB(A) floor at very quiet locations where background falls below 30 dB. The draft regime would also, for the first time, impose explicit rating penalties of up to 11 dB(A) for special audible characteristics, tonal noise and amplitude modulation, together with a fixed threshold for low-frequency noise, and would require cumulative assessment against all adjacent existing, consented, and proposed turbines rather than permitting acoustic scope-out.

These proposed Guidelines cannot be invoked as the governing standard for this application, and this submission does not ask An Coimisiún Pleanála to apply them. The point is one of context and direction. A development permitted now under WEDG 2006 will, on any realistic timetable, be commissioned and operating into a period in which the revised, stricter regime is the national standard. The features the revised regime is specifically designed to control - amplitude modulation, low-frequency noise, very low background environments, and cumulative effects — are precisely the features that arise most wh at this site. Where the courts have signalled that noise nuisance should be resolved at the planning stage, where national policy is moving decisively toward stricter protection and where local policy (Offaly CDP) has established a DMS to support it, the appropriate response is to *at a minimum* hold the present assessment to the most rigorous reading of the standards that currently govern it. That is the standard applied throughout this submission.

7.3. The Applicant's Assessment — What Was Done, and How Headroom Was Built

This section describes the assessment as submitted and identifies at each stage the methodological choices through which compliance margin was created. None of the individual choices below is, in isolation, outside the range the relevant standard permits. They are set out together because their direction is uniform and because their cumulative effect, as Section 7.1 explained, is to leave the assessment with no margin to absorb the omissions identified in Section 7-4.

7.3.1 The Background Noise Survey

Background noise levels were derived from a survey at seven monitoring locations (NML1–NML7) using Rion NL-52 Class 1 sound level meters. Several features of how the survey was conducted point in the same direction. The first is to raise the derived background, and with it the permitted limit, above what the true environment warrants. The second is that the survey generates no measured background at the wind speeds that matter most and the assessment moves from a fixed floor baseline and switches to the Background+5db baseline when necessary and convenient.

7.3.1.1 Summer-Only Survey and the High Wind Speed Gap

All seven locations were surveyed between July and September 2022 (NML7 anomalously continued until August 2023, unexplained). Summer is the season of lowest wind speeds in Ireland, and the survey accordingly captured very little data at the higher wind speeds at which the turbines are loudest and compliance is tightest. Background levels at 8 and 9 m/s appear in parentheses throughout the applicant's Table 11-10, the applicant's own notation for values extrapolated from the regression curve rather than read from measured data.

This gap is corroborated the Independent expert consultants, Allegro Acoustics (Appendix 7-1). They record in Comment 1 that the derived background levels lack data for wind speeds above 9 m/s, that the assessment provides no predicted noise levels above 9 m/s to demonstrate compliance, and that publicly available technical data for the Nordex N163 indicates cut-out wind speeds up to 26 m/s. Compliance above 9 m/s is simply not demonstrated, and the limits in that range rest on extrapolated rather than measured background. Ultimately, compliance at the worst case is assessed against an extrapolated curve not reliable available data.

7.3.1.2 Compressed Data and Consistently Low Background Readings

The Rion NL-52 has a manufacturer-specified A-weighting measurement floor of 25 dB and an inherent self-noise of 17 dB or less. In a genuinely quiet rural environment the true background can fall well below 25 dB but the instrument cannot record it accurately there. Below the floor, readings are compressed between the instrument's own self-noise and its lower measurement limit and are pulled upward toward the floor rather than reflecting the true quiet. The consequence is a regression curve that sits higher than the real acoustic environment, and, under the background-plus-5 dB framework, a noise limit more permissive than the true environment warrants.

Appendix 7-2 Independent Regression Analysis of the Background Noise Survey, based entirely on the Applicant's own data captures the scale of this issue. Across the six night-time monitoring locations, between 85% and 96% of all recorded samples fall below the 25 dB floor — at NML2, only 27 of 760 night-time samples are above it. The applicant's own Table 11-10 derives background levels as low as 17.8 dB, fully 7.2 dB below the level at which the instrument is specified to measure reliably. The background curves that set the limits are therefore fitted, in large part, to data the instrument was not capable of recording. Allegro Acoustics, independently reference records measuring background as low as 23.9 dB by day and 18.8 dB by night — themselves below the instrument floor — confirming the extreme quiet of the receiving environment on which this finding turns. The full quantification, the location-by-location breakdown, and the digitised regression analysis are set out in Section 4.3 and Appendix 7-2.

7.3.1.3 Regression Analysis and Directional Filtering

The derived background curves were produced by fitting regressions of measured noise against standardised wind speed, after directional filtering intended to remove the contribution of the neighbouring Lacka/Skehanagh wind farm. The filtering, the regression fit quality, and the unexplained exclusions are addressed in Section 4.3. The relevant point for this section is that the curve-fitting process, operating largely on sub-floor data, is the mechanism by which the permissive background levels were generated.

7.3.2 The Noise Limit Framework — Thresholds Set High Against the Lowest Background

WEDG 2006 permits a daytime limit anywhere in the 35–40 dB range for low-noise environments. The applicant selected 40 dB — the most permissive end — citing precedent at other permitted sites rather than any feature of this site. This choice sits in direct tension with the survey data: the applicant's own instruments were routinely returning derived background values of 17–19 dB, and Table 11-10 records values as low as 17.8 and 18.8 dB. A site at which the instruments cannot reliably measure the background because it is too quiet to record is, by definition, a low-noise environment at the extreme quiet end of the scale, precisely the environment for which the 35 dB option exists. Allegro Acoustics independently makes the same point: Comment 3 notes that, with measured daytime background as low as 23.9 dB, applying the lower 35 dB end of the range would be appropriate, and at its Comment 4 it observes that a fixed 43 dB night-time limit, set against measured night-time background as low as 18.8 dB, would permit operational noise far above the existing environment, and invites the planning authority to consider a lower night-time limit at the quietest locations.

7.3.3 Model Input Parameters at the Permissive End of the Range

The noise model itself was populated with input choices that consistently sit at the lower-precaution end of the available range:

- Ground factor G=0.5 rather than G=0.0. G=0.5 produces lower predicted levels.
- Receiver height of 4 m in the model, which reduces predicted levels relative to the 1.2–1.5 m height at which surveys are actually conducted.
- Roughness length z=0.05 m applied for wind-speed standardisation "regardless of what the actual roughness length seen on a site may have been" (the applicant's own words). At a site that is open raised bog published values are typically z=0.01–0.03 m.
- Atmospheric corrections applied on the basis of downward refraction under temperature inversion — a conservative assumption for standard geometry, but one that does not hold for the receptors that sit above the turbine bases, which at this site and its topographic character are the vast majority of receptors (discussed at length in Chapter 8 Visual Impact and Chapter 9 Shadow Flicker)

Each is defensible in isolation. The pattern is the point.

7.3.4 Cumulative Noise Scoped Out at This Stage

The applicant's own model identifies SIX night-time exceedances of the WEDG 2006 fixed limit at several non-stakeholder properties on a cumulative basis. Table 7.1 below presents them.

Table 7-1 Cumulative Night-Time Exceedances — Ballincor Wind Farm

Receptor	Footnote	Peak Night Excess	Wind Speeds Over Limit	Predicted Night Level (Peak)
H060	2	+2.5 dB	7, 8, 9 m/s	45.7 dB
H081	4	+2.0 dB	7, 8, 9 m/s	45.2 dB
H100	5	+1.9 dB	7, 8, 9 m/s	45.1 dB
H209	6	+1.4 dB	7, 8, 9 m/s	44.6 dB
H281	7	+1.1 dB	7, 8, 9 m/s	44.3 dB
H071	3	+0.8 dB	7, 8, 9 m/s	44.0 dB

Source: Appendix 11.6 — Predicted Noise Levels (Nordex N163 at 105 m hub height)

All six receptors are scoped out under EIAR Chapter 11 §11.6.4.1, on the basis that "the contribution from the proposed project is greater than 10 dB below the turbine noise limit values at these NSLs" (footnote in Appendix 11.6). Effectively they are set aside by invoking the IoA GPG Section 5.1.5 scoping rule. This issue will be addressed in Section 7.4.6.

Summary

Taken together, the choices in this section build headroom at every stage: a high threshold set against an artificially elevated and partly extrapolated background, modelled with input parameters at the permissive end of every range, with cumulative exceedances scoped out. The applicant has pushed every available boundary to the limit in order to demonstrate compliance. The consequence is an assessment with no remaining margin for error, no capacity to absorb any additional noise effect and no room to accommodate the correction of any step that was required but not taken. Section 7-4 sets out the steps that were required but not taken.

7.4. What the Assessment Did Not Do

This section sets out the omissions and unaddressed matters in the assessment. They are ordered by materiality, beginning with the omission of a mandatory methodological step, then the matters affecting the reliability of the underlying survey, then the treatment of cumulative noise, and finally the specific acoustic characteristics and inconsistencies left unaddressed. Where an independent expert corroborates a finding, that corroboration is identified at the relevant point.

7.4.1 The Valley Correction — A Mandatory Step That Was Never Performed

7.4.1.1 What the correction is and why it was required

The Institute of Acoustics Good Practice Guide — the methodology the applicant adopted as governing — requires, at Section 4.3.9, that a correction be added to predicted noise levels wherever the ground dips between a turbine and a receptor, forming a concave or "valley" propagation path. Standard noise propagation models, including the ISO 9613-2 model used here, do not capture the additional sound that travels across such a geometry; the Section 4.3.9 correction is the methodology's prescribed remedy for that gap. The Guide is explicit that the correction exists precisely because the standard model is insufficient for concave terrain — so the correction cannot be treated as already accounted for within the model. The technical trigger is the JOULE geometric formula, which the Guide requires to be evaluated for every turbine and every receptor individually. Where the model uses G=0.5 — as this assessment does — the prescribed correction is +3 dB.

7.4.1.2 Why it matters at this site

The Ballincor site is the geometry the correction was written to address: turbines on a flat bog platform, with noise-sensitive receptors on rising ground to the east and west, and lower ground in between. A substantial proportion of the receptors in the NML6 catchment — the location that sets the limits for the most exposed western cluster of properties — sit well above the turbine bases, with the bog platform falling away between source and receiver. This is exactly the concave path that triggers the JOULE formula.

7.4.1.3 The evidence of absence

An exhaustive text search of all nine Ballincor noise documents — Chapter 11 and all eight appendices — returns no occurrence of the correction, the JOULE formula, or any of the defining terms ("valley", "concave", "ground profile", the +3 dB correction, or the Section 4.3.9 reference) anywhere in the noise assessment. This is so despite the Good Practice Guide being cited many times elsewhere in the chapter for other provisions. The step was simply never performed. It is an omission of a mandatory assessment step, not a choice of a permissive limit.

The omission is independently corroborated. Allegro Acoustics, at its Section 3.2.1 and Comment 5, sets out the same Section 4.3.9 requirement, reproduces the JOULE criterion, and asks the applicant to submit further calculation to determine whether the topographical correction applies to the site and, if so, to incorporate it into the predicted levels and reassess the exceedances. A review of other WindFarm applications and their noise surveys shows that consistently this step is taken and this analysis is applied; its absence here is not a matter of universal practice but of a step taken elsewhere and not taken at Ballincor.

7.4.1.4 The consequence, and where it is quantified

The correction is not an abstract requirement. When it is applied to the applicant's own predicted noise levels — using the applicant's own turbine coordinates, the applicant's own receptor elevations, the applicant's own night-time criteria, and the ground factor the applicant itself selected — it reverses the compliance position at properties the assessment presented as compliant. The full receptor-by-receptor workings are set out in Appendix 7-3; the result is summarised here.

At eleven non-stakeholder residential properties, the mandatory +3 dB correction produces a confirmed night-time exceedance of the assigned limit: H053 (+1.6 dB), H089 (+1.0 dB), H270 (+0.9 dB), H271 (+1.3 dB), H039 (+0.2 dB), H139 (+0.5 dB), H186 (+1.0 dB), H202 (+1.4 dB), H218 (+0.8 dB), H250 (+1.6 dB) and H312 (+0.9 dB). Each figure is derived from the applicant's own Appendix 11.6 predicted level for that property, with the correction added and the result compared against the applicant's own Appendix 11.5 night-time criterion. Nothing has been introduced from outside the submission. A twelfth property, H093, retains a margin of 0.8 dB after the correction is applied on its own; that margin is consumed once the further matters in Section 7.4.3 are taken into account, and H093 is therefore treated here as a supporting rather than a primary case.

The analysis is deliberately conservative. The JOULE geometry depends on the ground elevation along the propagation path, and a higher assumed bog-floor elevation makes the correction harder to trigger, not easier. The workings in Appendix 7-3 adopt a bog-floor elevation of 50.0 m — at the top of the range of turbine base elevations across the site, and above the bog platform across most of it. To displace the finding, the applicant would have to demonstrate that the actual terrain between source and receiver sits higher than the highest turbine base on the site, which it does not. The eleven exceedances are therefore the minimum the correction produces, not the maximum.

One further property does not appear in the analysis because it does not appear in the applicant's predictions at all. H285 is absent from Appendix 11.6 entirely: it has been given no predicted noise level and no compliance assessment. This is not explicable on acoustic grounds, because H285 is closer to every one of the eleven turbines than H053 — a property the applicant did assess, and presented as compliant only by the 1.4 dB margin that the Section 4.3.9 correction eliminates. A property nearer to every turbine than one already shown to exceed cannot safely be left unassessed. The omission of sensitive locations from the prediction table was independently identified by Allegro Acoustics — the acoustic consultancy instructed by the Greater Birr Wind Action Group — at Comment 6 of its review. The applicant treated H285 as a sensitive receptor for the purposes of its own shadow-flicker assessment (Appendix 16-1) yet omitted it from the noise assessment, and a property the applicant treats as sensitive for one environmental effect cannot be excluded from another without explanation. A second sensitive dwelling, H082, is likewise absent: it meets the applicant's own definition of a noise-sensitive location — a property habitable without requiring planning permission — and is roofed, structurally sound and not derelict. Both are sensitive receptors that should have been assessed and were not. The applicant is required to provide a predicted level for each, apply the Section 4.3.9 correction, and report the result.

The significance of these findings is developed in Section 7.5. For present purposes the point is narrow and, on the applicant's own figures, not open to dispute: a mandatory step in the governing methodology was omitted, and performing it produces confirmed night-time exceedances at eleven homes that the assessment presented as compliant.

Quantification is set out in Appendix 7-3

It is not for the Community to apply this correction, but Appendix 7-3 conducts the receptor-by-receptor, turbine-by-turbine workings, including the conservative bog-floor assumption used throughout. Applying the JOULE formula to the applicant's own turbine coordinates, receptor elevations, predicted levels, night-time criteria and ground factor — introducing no external data — demonstrates that the correction is triggered at multiple receptors, and that applying the mandatory +3 dB correction reverses the compliance position at eleven properties the applicant presented as compliant, producing confirmed night-time exceedances on the applicant's own figures. The eleven are named and quantified at Section 7.4.1.4. The point for the determination is that a mandatory step was omitted, and that the omission is outcome-determinative rather than cosmetic.

7.4.2 Systematic Instrument Floor Compression

The most consequential survey-reliability finding is that the background measurements were taken largely below the level at which the instruments can measure reliably. An independent regression analysis — digitising the data points from the applicant's own Appendix C scatter graphs and set out in full in Appendix 7-1 to this submission — establishes the following:

Location	Period	Total points	Below 25 dB floor	% unreliable	Points > 7 m/s
NML 1	Night	647	591	91.3%	8
NML 2	Night	760	733	96.4%	31
NML 3	Night	795	686	86.3%	20
NML 4	Night	665	604	90.8%	23
NML 5	Night	393	337	85.8%	10
NML 6	Night	543	482	88.8%	19

At every one of the six night-time monitoring locations, between 85% and 96% of all recorded data points fall below the instrument's 25 dB reliable measurement floor. The vast majority of the survey data is therefore in the zone where the instrument cannot measure accurately. The regression curve fitted to those readings sits higher than the true background, and under the

background-plus-5 dB framework that produces a more permissive limit. The applicant's own Table 11-10 corroborates the finding independently: it records derived background values as low as 17.8, 17.9, 18.8 and 18.9 dB — values so far below the 25 dB floor that the readings cannot bear a reliable relationship to the true acoustic environment.

The correct characterisation is precise and defensible: the Rion NL-52 was not an appropriate instrument for the genuinely quiet conditions at these particular sites. This is not an allegation that the instrument was chosen to manipulate the data; it is that the resulting dataset cannot support the background curves and limits derived from it. Appendix 7-1 presents the location-by-location regression charts, the calibration verification for each, and the above-floor regressions that result when the sub-floor data is excluded.

A specific and independently serious defect attaches to that calibration verification. Each calibration certificate in the submission is marked "Page 1 of 2", yet only page 1 has been provided for every one of the seven instruments. Page 2 is the page that records the actual calibration measurement — the initial and adjusted indicated levels, the calibrator sound pressure level, the environmental conditions, the self-generated noise figure, and the pass or fail outcome of the check. It is absent for all seven instruments. The applicant states that all calibration drifts were within ±0.2 dB, but page 2 is the document that would demonstrate this, and it has not been submitted. The consequence is that the submission contains no evidence that any of the seven instruments was measuring accurately at the time it was deployed; every derived background level, every noise limit, and every compliance conclusion rests on that unverified calibration.

7.4.2.1 NML6 — the most filtered location shows the weakest fit

NML6 — the monitoring location that sets the limits for the most exposed western cluster of receptors — returns the lowest daytime regression R^2 of all seven locations, at 0.335, meaning wind speed explains only a third of the daytime noise variation there. NML6 is also the location to which the most extensive directional filtering was applied, with five of eight compass sectors removed. If that filtering had successfully removed the Lacka/Skehanagh contribution, NML6's fit should be comparable to or better than the less-filtered locations. Instead it is the worst. Nor is the weakness confined to NML6. The daytime regression fit is poor at three of the seven locations — R^2 = 0.328 at NML7, 0.335 at NML6 and 0.395 at NML2, all read directly from the applicant's own Appendix C scatter graphs. At each, wind speed explains less than 40% of the daytime noise variation. An R^2 below 0.5 in a clean rural dataset points to contamination by an extraneous

source, insufficient data, or both. This is a systemic reliability problem across the survey rather than an isolated feature of NML6 — and NML6, the weakest of the three, is the location that sets the limits for the most exposed western receptors.

7.4.2.2 Northerly data excluded at NML5 and NML6 without acoustic basis

At NML5 and NML6, northerly wind-direction data was removed. The stated basis for all directional filtering is the exclusion of Lacka/Skehanagh, which lies to the southwest. No wind farm exists to the north of either location, and no acoustic basis for removing northerly data is stated anywhere in the assessment. The removal of five of eight compass sectors at these locations, including sectors in which no relevant source exists, materially reduces the dataset underlying the regression without explanation.

7.4.3 Modelling Outside the Validated Range

ISO 9613-2 is is the propagation method the applicant selected. Every predicted level in Appendix 11.6 is an output of this model, so its limitations are the assessment's own. The general method is validated for receiver/source geometries of low height and distances up to approximately 1,000 m, within which it states an accuracy of about ±3 dB; a number of receptors here lie beyond that distance, and the 98.5 m hub height sits far above the heights for which the general method was derived. The 2024 edition's Annex D extends the calculation to tall wind-turbine sources, but it does not contain the empirical correction for sound propagating across a concave or "valley" ground profile — which is precisely why the IoA GPG retains §4.3.9 as a separate, mandatory step. The model the applicant chose therefore does not, by itself, capture the dominant terrain effect at this site. The direction of any resulting error is not neutral: under the stable nocturnal atmospheric conditions characteristic of midland raised bog — the conditions that coincide with the night-time limit period — the established literature on atmospheric stability and wind shear (van den Berg, 2006) indicates enhanced received levels relative to standard daytime-neutral propagation assumptions, i.e. toward under-prediction. The roughness-length choice compounds this. The applicant used z=0.05 m for wind-speed standardisation "regardless of what the actual roughness length seen on a site may have been". Over open raised bog, where published roughness values are z=0.01–0.03 m, this over-states the wind-speed reduction between hub height and 10 m, with the effect that the turbine operates at a higher point on its sound power curve than the model credits at the 6–7 m/s transition. The result is a systematic, if modest, under-prediction at the wind speeds where compliance is already tight.

7.4.4 The Uncertainty Correction Applied in Two Directions

An internal inconsistency weakens the assessment on its own terms: the uncertainty correction is used in two directions. A +2 dB uplift was applied to source sound power on the stated basis that it makes the predictions conservatively high; measurement uncertainty of ±2 dB is then invoked at the compliance-check stage to treat near-limit predicted levels as acceptable. Both cannot be true at once. If the source uplift genuinely guarantees conservative predictions, uncertainty at the compliance stage is irrelevant; if uncertainty at the compliance stage is real and material, the source uplift did not guarantee conservatism. The assessment invokes whichever reading supports compliance at each point.

7.4.5 Cumulative Noise — Lived Experience Scoped Out

As Section 7.3.4 noted, the applicant's own model predicts night-time exceedances of the WEDG 2006 fixed limit at six non-stakeholder properties - H060, H071, H081, H100, H209 and H281 — and dismisses all six by invoking the IoA GPG Section 5.1.5 scoping rule, on the basis that Ballincor's contribution is more than 10 dB below Lacka/Skehanagh's. The technical reading of the rule is correct; the conclusion drawn from it is not, for two principal reasons.

First, the rule is being applied in the wrong direction and at the wrong stage. Section 5.1.5 is a scoping device for determining, at the outset, when a small contributor need *not be modelled* cumulatively. It is being used here at the results stage, *after the fact*, to dismiss exceedances the model has already found. Second, an acoustics scoping rule cannot discharge the planning authority's distinct statutory duty under the EIA Directive and the EPA Guidelines to assess the cumulative receiving environment as it will **actually** be experienced by residents. The planning question is not which source is dominant at H081; it is whether the noise environment that resident will live in is appropriate for permission. A resident who will experience a level above the night-time limit experiences that level regardless of how a model apportions it between two wind farms. That another wind farm is the dominant source does not make Ballincor's addition acceptable, it makes the environment to which Ballincor is contributing worse.

7.4.6 Noise Monitoring Locations — NML4 and NML6

Two specific monitoring locations carry defects that go beyond the general compression finding. At NML4, the instrument was relocated by the resident to an undocumented position in an adjacent field between installation and the first battery change, and the applicant recorded that

"no significant effect" was observed without any supporting analysis. The IoA GPG required the consultant either to restore the agreed position or to seek an alternative location, to document the position photographically, and to engage with the resident to prevent exactly this; none of that is evidenced. The coordinates and photographs on record represent the original position only, so the dataset for a material portion of the NML4 deployment is from an unverified location. At NML6, the combination of the lowest R^2 of any location with the most aggressive filtering (Section 4.3.1) means the location used to set limits for the most exposed receptors is also the location whose baseline is least reliable. Both require the applicant to demonstrate, by quantitative analysis, that the limits derived from these locations are sound.

7.4.7 Low-Frequency Noise and Amplitude Modulation

The assessment does not adequately address two acoustic characteristics that are specific to large modern turbines and central to lived experience: low-frequency noise and amplitude modulation. The current WEDG 2006 framework contains no explicit treatment of either, which is one of the reasons the revised Guidelines (Section 7.2.7) introduce penalties of up to 11 dB for them. That gap in the governing standard is not a reason to leave the matter unassessed; it is a reason to address it by condition.

The assessment acknowledges amplitude modulation but defers any response to a post-commissioning complaints protocol on the basis that the excessive form cannot be reliably predicted at planning stage. That the precise occurrence cannot be predicted is not disputed; what does not follow is that no planning condition is warranted where every precondition is present. There is established precedent within County Offaly for a condition prohibiting tonal and impulsive noise. A further difficulty is that the LA90 10-minute metric on which compliance would be checked is, by its nature, insensitive to short-duration impulsive events — the very "thump" events residents would complain about — so a compliance regime resting on that metric alone offers limited protection. On low-frequency noise, no assessment against an established low-frequency criterion is provided. Both should be the subject of explicit planning conditions.

Each of those preconditions is present here, on the applicant's own data. The EPA Guidance Note NG3 identifies the conditions under which excessive amplitude modulation arises: close turbine spacing, a tower-height-to-rotor-diameter ratio below approximately 0.75, stable atmospheric conditions, and topography that presents the blades with different wind directions through a single rotation. The Nordex N163 has a tower-to-rotor ratio of 0.60, below the 0.75 threshold. The site is a midland raised bog, where the stable nocturnal inversions already discussed are a documented

feature of still nights. And the layout is exceptionally tight: calculated from the turbine coordinates in Appendix 16-1, the shortest inter-turbine distance is 455 m, only 2.79 times the 163 m rotor diameter, against a recommended minimum abreast spacing of five rotor diameters; five turbine pairs fall below 520 m. There is established precedent within County Offaly for such a condition: the Cloghan Wind Farm carries a planning condition specifying that noise shall not exceed 43 dB LA90 and that there shall be no tonal or impulsive noise — a condition prohibiting precisely the characteristics the LA90 metric alone cannot capture. A condition of that kind is the appropriate response here.

7.4.8 Mitigation and Monitoring Adequacy

The mitigation and monitoring package does not match the scale of what is at stake. The curtailment strategy proposed for the nearest receptor is described as an outline requiring verification by the turbine manufacturer, and that verification has not been obtained — the authority is asked to accept an unverified outline as mitigation for the closest home to the development. No Noise Compliance Monitoring Programme has been submitted; in its place is a draft protocol for managing complaints, which is a reactive, self-administered mechanism that places the burden of detecting non-compliance on the residents being affected and provides no independent oversight, no pre-agreed measurement methodology, no reporting to the planning authority, and no enforceable response timeline. For a development of this scale and proximity, a full, independently administered monitoring programme, approved before construction, is the appropriate standard, and should be required by condition.

7.4.9 Offaly County Development Plan — DMS-109 and WHO 2018 Consistency Not Demonstrated

A substantial part of the scheme — including turbines, noise-sensitive receptors and associated infrastructure lies within the administrative area of Offaly County Council. The Offaly County Development Plan therefore applies to the Offaly portion of the development as the statutory land-use framework against which the application falls to be assessed.

The Offaly County Development Plan, at Development Management Standard DMS-109, requires that wind energy development demonstrate consistency with the WHO Environmental Noise Guidelines for the European Region (2018) as part of the noise assessment. This is not optional or advisory guidance that an applicant may weigh and set aside according to its own preference:

it is an adopted development-plan standard, carrying the statutory weight that attaches to the development plan under the Planning and Development Acts. Where a development plan sets a noise standard, the question for the assessment is whether the development is consistent with it — not whether the applicant's acoustic consultants agree it is the right standard.

The applicant's assessment does not demonstrate that consistency. Chapter 11 (§11.3.2.6.9) addresses WHO 2018 at some length, but does so almost entirely in order to argue against applying it. It characterises the WHO Lden parameter as "a poor characterisation of wind turbine noise," notes that the 45 dB Lden recommendation is "conditional" and supported by evidence the WHO itself rates as "low," and concludes that the WHO-recommended 45 dB Lden exposure level "is not an appropriate target noise criterion for an existing or proposed wind turbine development in Ireland." Having reached that conclusion, the assessment does not calculate Lden at any noise-sensitive location, and presents no comparison of predicted Lden levels against the 45 dB WHO threshold anywhere in the chapter or its appendices. The chapter makes no reference to Offaly CDP DMS-109 at all.

Two points follow. First, the merits of the applicant's critique of Lden are beside the point for this application. An applicant is free to argue, it is not free to decline to assess against that standard because it disagrees with it. DMS-109 requires a demonstration of consistency with WHO 2018, and the proper response to that requirement is to perform the assessment, not to explain why it should not be required. Second, the absence of any Lden assessment means that, on the documents submitted, An Coimisiún Pleanála simply cannot determine whether the development is consistent with the Offaly County Development Plan on noise grounds. A material question of development-plan compliance has been left unanswered.

The applicant must provide Lden calculations for all noise-sensitive locations within the Offaly planning area, compare them against the WHO 2018 thresholds, and demonstrate consistency with Offaly CDP DMS-109, before the application can properly be determined.

7.5 Conclusion

This is the chapter on which the Inspector's decision bears most directly on the lived environment of the people who will experience this development. The courts have made clear that it must be resolved properly here, at the determination stage, not left to be fought house by house once the turbines are running. Measured against the standards the applicant itself adopted as governing, the assessment is not adequate for that purpose.

At every stage where the methodology permitted a choice, the more permissive option was taken, with the result that the assessment operates at the outer edge of what the standards allow and retains no margin for error. Against that background, the assessment omits entirely a mandatory correction step required by its own governing methodology; rests on a background survey the great majority of whose data falls below the level at which the instruments can measure reliably; applies its propagation model outside that model's validated range; scopes out cumulative exceedances its own model predicts; and leaves amplitude modulation, low-frequency noise, monitoring, and mitigation inadequately addressed. The assessment does not demonstrate the consistency with the WHO 2018 Guidelines that the Offaly County Development Plan requires at DMS-109, and produces no Lden assessment at all.

A number of these findings are independently corroborated by Allegro Acoustics, an acoustics expert consultant reaching the same conclusions from its own analysis (see Appendix 7-1).

None of the findings in this submission is introduced from outside the applicant's own documents. They are what the assessment shows when the applicant's own methodology is applied in full and read consistently. On that evidence, it cannot be established that the predicted levels are correct for the topography of the receiving environment, that the limits derived are reliable, or that the development is consistent with the statutory development plan on noise grounds.

Given the direction of Irish noise policy, the imminence of a materially stricter national standard, and the clear signal from the courts that questions of noise nuisance should be resolved at the planning stage, the appropriate course is not incremental amendment but refusal. For the reasons set out in this submission, the Greater Birr Wind Action Group respectfully requests that An Coimisiún Pleanála refuse permission for the proposed development on noise grounds

Chapter 8 Landscape and Visual Impact Assessment

Appendix 8-1:	**Receptor Assessment Software and Method**
Appendix 8-2:	**Ballincor Coordinates with Elevation**
Appendix 8-3:	**Review of Applicants Photomontage Each VP**
Appendix 8-4:	**Dataset by Receptor**

8.0 Introduction

This report presents an independent assessment of the landscape and visual effects of the proposed Ballincor Wind Farm. It responds to, and should be read alongside, Chapter 12 of the applicant's Environmental Impact Assessment Report, Appendix 12-1, Appendix 12-2 and the LVIA Photomontages. The Applicant concludes that an eleven-turbine development of 180-metre structures, with 312 dwellings within 3 kilometres, will produce no significant landscape, visual or cumulative effect at any location.

This report tests that conclusion against the facts of the receiving landscape, against the statutory and professional standards the applicant's assessment claims to follow and against the evidence of an independent receptor-level analysis that the applicant's assessment does not contain. The community group licensed Windplanner software (Appendix 8-1) for this purpose, so that the Commission would not be reliant solely on the applicant's own visual material. The imagery, mapping and receptor data generated by Windplanner are used throughout and a complete analysis is presented in Appendix 8-4: Dataset by Receptor.

The chapter is presented in three parts:

Part A — The Project in this Landscape presents the context the assessment must answer to: the statutory designations that exclude this site from wind energy development; the adopted landscape sensitivity classification; the settled, inhabited character of the receiving landscape; the topography that places the surrounding population at or above the level of the development; the distance and elevation geography of the 312 surrounding dwellings; the existing and permitted wind energy already committed to the same visual envelope; and the methodology standards — WEDG 2006, GLVIA3 and LITGN-2024-01 — against which any competent assessment falls to be measured.

Part B — The Applicant's Approach reviews Chapter 12 of the EIAR against that context and those standards: its classification of the landscape and its sensitivity; its treatment of the Development Plan designations; its Viewpoint selection; the sensitivity, magnitude, quality and duration judgements from which its findings are built; and its cumulative assessment. The critique is not that the applicant adopted the wrong framework but that it did so selectively. At each point where the stated framework met the facts of this site the assessment departed from its own principles and every departure operated in the same downward direction.

Part C — Receptor-Level Analysis presents the assessment the applicant did not carry out: a dwelling-by-dwelling analysis of all 312 receptors, grouped into 21 clusters, with turbine visibility, distance, elevation and cumulative exposure recorded for each, based on photomontages and viewshed data generated using WindPlanner licensed software in February 2026. See Appendix 8-4 for detailed analysis.

Each Part presents its issues in turn and closes with a summary of findings. The report's central submission can be stated at the outset - the applicant's conclusion of "Not Significant" is not a finding the evidence produces, it is the product of the choices made by the Applicant to reach it. A properly conducted assessment of this site using the actual landscape character assessment, from the locations where its population actually lives, produces a materially different conclusion.

We present to the Commission five principal failures in the Applicant's Landscape and Visual Impact Assessment, each giving rise to a number of discrete Grounds of Objection.

Principal Failure 1 — The assessment is built on a misstatement of the adopted statutory landscape designation

The applicant's LVIA states that the site lies within "Moderate and Low" landscape sensitivity. The adopted Offaly County Landscape Character Assessment classifies it as **High/Moderate (Red/Orange)** sensitivity, one of very few areas in the county outside the Slieve Blooms to attract that classification. This is not a contestable matter of professional judgement; it is a verifiable matter of public record. Because sensitivity is the foundational input to the applicant's own significance methodology, every sensitivity rating and therefore every significance finding in Chapter 12 is built on a baseline that misdescribes the adopted statutory position. The consequence extends beyond the individual ratings: An assessment shown to have misstated a verifiable fact at its foundation cannot expect the deference its professional judgement would otherwise command on those matters that are less readily checked.

- **Ground 1**— The LVIA misclassifies the landscape sensitivity of the site, contradicting the adopted Offaly County Landscape Character Assessment, which designates the area High/Moderate sensitivity.
- **Ground 2** — That misclassification is not marginal or boundary-dependent: the site sits squarely within the High/Moderate-shaded area, and no reading of the adopted mapping supports the "Moderate and Low" characterisation.

- **Ground 3** — Because sensitivity is the foundational input to the applicant's significance method, the error propagates through every significance finding in the chapter, which are accordingly unreliable at source.
- **Ground 4** — The demonstrated misstatement of a verifiable matter of public record undermines the reliability of the professional judgements throughout the chapter that the Commission cannot independently verify.

Principal Failure 2 — The receiving environment is materially mischaracterised, suppressing sensitivity and magnitude

The chapter characterises the landscape as a "robust" peatland-fringe landscape that is "quite flat" with "gentle undulations." Both descriptions are materially incomplete in ways that operate to suppress assessed effect. The landscape is in fact a settled, inhabited agricultural landscape of 312 dwellings within approximately 3 km, with five population centres within approximately 5 km — and residents are, on GLVIA3's own terms, among the most susceptible of all visual receptors. The terrain is not flat in the sense that matters: the site occupies a topographical bowl, and the surrounding receptors view it from level or elevated ground, increasing exposure rather than diminishing it. The receiving landscape is not capable of absorbing a development of this size, scale and layout.

- **Ground 5** — The characterisation of the landscape as "robust" peatland minimises its settled, inhabited residential character and thereby suppresses the receptor sensitivity that character requires.
- **Ground 6** — The description of the terrain as "quite flat" omits the bowl topography: 301 of 312 dwellings sit at or above turbine-base elevation, and 161 sit above the lowest point of the rotor sweep, looking into the rotor plane against open sky.
- **Ground 7** — The LVIA assesses receptors as ground-level observers of structures on level terrain, systematically understating effect in a configuration where elevated receptors see more, not less.
- **Ground 8** — The linear north–south turbine array maximises the horizontal spread of visual effect, leaving no direction from which a clear horizon is preserved — the maximal form of the "crowding and domination" of flat landscape that WEDG 2006 specifically cautions against for this very landscape type.

Principal Failure 3 — Viewpoint selection and omission suppress the visual effect the assessment was required to find

The benign result the LVIA reports is not a property of the development but of how the development was looked at. The viewpoint set is weighted towards distance, obstruction and

visually favourable conditions. The most exposed parts of the receiving environment are not assessed at all. The median viewpoint sits at 7.3 km against a receptor population whose median distance is 1.7 km; the worst-case-view requirement of WEDG 2006 is not met; and the densest receptor clusters, the principal settlements and the night-time environment have no effective representation.

- **Ground 9** — Of 31 total VPs, a total of FOUR viewpoints sit within 2km of the development with ELEVEN viewpoints sitting beyond 10 km, concentrating the assessment at distances where effect is inherently diminished and unrepresentative of the affected population (median 7.3 km vs 1.7 km).
- **Ground 10**— The selected viewpoints do not present the worst-case, most-open available view required by WEDG 2006; they repeatedly rely on intervening trees, hedgerows, terrain or oblique angles to reduce apparent magnitude, reversing the guideline's logic.
- **Ground 11** — The photomontage set was captured at its seasonal and atmospheric best — summer foliage, sunny hazy skies against which white turbines recede — with no winter or overcast condition assessed, despite overcast conditions prevailing for most of the Irish year.
- **Ground 12** — The montages lack adequate scale reference (houses, roads, known structures), denying the reader any means of judging the true scale of a 180 m turbine.
- **Ground 13** — The densest receptor clusters within the 5 km study area have no effective viewpoint representation; an assessment that misses where the affected population is concentrated cannot claim to have assessed the effect on that population.
- **Ground 14** — Birr (population approximately 5,000, on rising ground overlooking the site) is effectively unassessed, represented only by a rugby club on its southern edge and an enclosed demesne where screening is maximal; Shinrone and Riverstown are unassessed entirely.
- **Ground 15** — The night-time environment is not assessed: aviation lighting is disposed of in a single paragraph with no montage, no viewpoint, no receptor analysis and no entry in the visual-effects table, contrary to LITGN-2024-01 Cl. 8(2), in a rural low-ambient-light setting where it would introduce a new, repeated effect.

Principal Failure 4 — Significance is suppressed at every controllable input, and "Not Significant" is the product

Even where the chapter assesses, it suppresses significance through a series of internal choices each of which fails on the chapter's own stated criteria. The sensitivity input is the principal one: the assignment of "Medium-low" sensitivity to near-field residential receptors cannot be derived from the chapter's own criteria and correcting that single input carries multiple viewpoints across the applicant's own significance threshold. The proposed development is visually dominant, overbearing and incongruous with its receiving environment.

- **Ground 16** — The "Medium-low" residential sensitivity rating is unsupported by the chapter's own stated criteria and contradicts GLVIA3's express identification of residents at home as among the most susceptible receptors; corrected to High, the chapter's own findings cross its significance threshold.
- **Ground 17** — The magnitude ratings are independently suppressed, understating the proportion of the array in view and the scale relationship at the distances the population actually occupies.
- **Ground 18** — "Neutral" landscape-quality findings contradict the chapter's own default characterisation of the receiving landscape.
- **Ground 19** — "Moderate" effects are left unexamined as to significance, contrary to LITGN-2024-01 Cl. 3(5), which requires effects in the middle of the scale to be explicitly justified as significant or not.
- **Ground 20** — The chapter concedes the long duration of the effect and then fails to carry that concession into its significance conclusions.
- **Ground 21** — The significance findings rest on scoring matrices applied mechanically, without the reasoned narrative LITGN-2024-01 Cl. 3(6) requires; the matrix is permitted to dictate the judgement rather than illustrate it.

Principal Failure 5 — The cumulative assessment never reaches the receptors

Section 12.7 disposes of cumulative effect in summary terms. It does not assess the cumulative effect at the dwellings that experience it, dismisses the cumulative ZTV without evidence, and fails the WEDG cumulative test for the very landscape type the chapter claims. The receptors live within and around a triangle of three developments — Ballincor (11), Lacka/Knockshigowna (8) and Carrig (7), twenty-six turbines — and experience them not as alternatives but as accumulation from multiple directions.

- **Ground 22** — The cumulative assessment is conducted at landscape level and never reaches the individual receptors, where the cumulative effect is actually experienced.
- **Ground 23** — The permitted Carrig development (ABP-318689-23) is not properly brought into the cumulative baseline, contrary to LITGN-2024-01 Cl. 7(3), which requires existing, permitted and proposed development to be assessed together.
- **Ground 24** — The dismissal of the cumulative ZTV — which shows **all** receptors and the **principal population centres** exposed to more than 66% of turbines cumulatively — is self-serving and unevidenced.
- **Ground 25** — The WEDG cumulative test for Flat Peatland, warning against layouts that crowd and dominate the flat landscape, is failed on the chapter's own classification of the receiving landscape.
- **Ground 26** — The receptor-level cumulative analysis the chapter omits demonstrates that the addition of the neighbouring developments tips multiple clusters from the margin of significance into clear significance (e.g. SV15, VP12, SV19), raising the significant-effect proportion from 88% to 92% of dwellings.

Overall Conclusion on the Grounds

Each Principal Failure above is independently sufficient to discredit and invalidate the LVIA's conclusion of "Not Significant". Taken together they establish that the conclusion is not the product of objective visual analysis but of a chain of choices — misclassification at the foundation, mischaracterisation of the receiving environment, viewpoint selection and omission, significance suppression at every controllable input, and a cumulative assessment that never reaches the people affected — every link operating in the same direction. When the applicant's own significance matrix is applied to the full population of 312 dwellings the applicant chose not to assess, corrected only for inputs demonstrably wrong on the public record, the finding of "no significant effects" does not survive: **88% of dwellings experience a significant effect from the proposed development alone, and 92% cumulatively**. The Commission is respectfully invited to find that the proposed development would give rise to significant adverse residential visual effects, that it would materially contravene the landscape and visual protection objectives of both County Development Plans, and to refuse permission accordingly.

Part A - CONTEXT: THE PROJECT IN THIS LANDSCAPE

8.1 The Project and its Setting

The proposed Ballincor Wind Farm comprises eleven wind turbines of 179.5 to 180 metres blade-tip height, located in the townland of Ballincor, Co. Offaly, on the boundary with Co. Tipperary. Nine of the eleven turbines are sited within County Offaly; the two northernmost turbines lie just within County Tipperary. The application further includes a permanent 104-metre lattice meteorological mast in proximity to Turbine 10, a battery energy storage system (BESS) compound, and a substation. The applicant has applied a stated minimum setback of 720 metres (four times tip height) from the curtilage of sensitive property receptors, with the exception of an involved landowner.

A single fact of statutory planning policy frames everything that follows in this chapter. The site lies within an area designated "Not Deemed Suitable for Wind Energy Developments" under the Offaly County Development Plan 2021–2027 (Wind Energy Strategy, Map No. 10), a designation the Plan attributes to "significant environmental, heritage and landscape constraints and housing density." This designation is further endorsed by the Tipperary County Development Plan 2022–2028 where that portion of the site also lies within an area also classified as "Unsuitable for New Wind Energy Development".

The weight properly attaching to these designations has been addressed comprehensively in Chapter 2 of this submission, and it is not proposed to repeat that analysis here; suffice to say the Offaly Wind Energy Strategy is not, as the applicant has elsewhere contended, an outdated or broad-brush instrument: it is a current, statutory, evidence-based component of a Development Plan adopted in 2021 and operative to 2027, produced through the sieve-mapping methodology recommended by the EMRA Regional Spatial and Economic Strategy, subjected to Strategic Environmental Assessment and Appropriate Assessment, adopted by the elected members following public consultation, and reviewed by the Office of the Planning Regulator without adverse intervention. The Supreme Court in *Coolglass* [2026] IESC 5 confirmed the CDP is a relevant and legitimate consideration for the Commission, in a judgment which also affirmed that a designation of this kind is an expression of proper planning and sustainable development, not an obstacle to it, that section 37(2)(b) of the Planning and Development Act 2000 permits a grant in material contravention only in exceptional circumstances not present here; and that the Commission has itself consistently refused wind energy applications within CDP exclusion zones. For the purposes of this

chapter, the consequence is straightforward: the landscape and visual assessment that follows is conducted against a statutory designation of unsuitability that remains current, evidentially grounded and undisturbed — and any assessment, including the applicant's, must engage with that designation rather than argue around it.

Within that context the adopted Offaly County Landscape Sensitivity mapping classifies the Ballincor area as **High/Moderate Sensitivity (Red/Orange)** — one of very few areas in the county outside the Slieve Blooms to attract that classification, a rarity which heightens rather than diminishes its protective importance. That classification extends beyond the county boundary line into the Tipperary Development Plan to complete the classification of the windfarm development site.

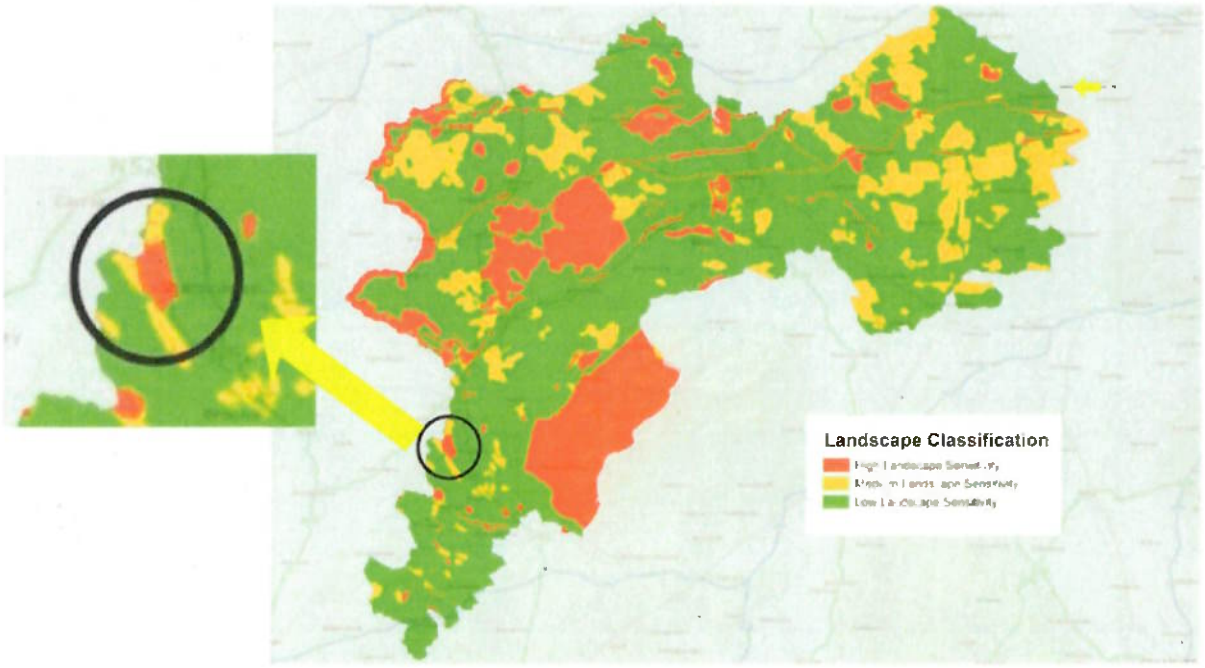


Figure 8-1: *Image from the adopted Offaly County Landscape Sensitivity map*

Chapter 12 of the EIAR asserts the contrary: that "the proposed wind farm lies within the Moderate and Low Sensitivity classifications." This is not a difference of professional opinion, nor a marginal question of where a classification boundary falls relative to the site edge: the site sits squarely within an area shaded High/Moderate Sensitivity, and no reading of the adopted mapping supports the applicant's statement.

There is no argument here although perhaps the Applicant suggests that the 'plot of landscape' is not shaded in red but neither is it shaded in green. Further, landscape is not limited to a plot of land, it captures the vista, the views, the aesthetic of an area, precisely the purpose of a Landscape and Visual Impact Assessment.

The consequence is twofold. First, sensitivity is the foundational input to the applicant's own significance methodology — every sensitivity rating and therefore every significance finding in Chapter 12, is built on a baseline that misdescribes the adopted statutory position. Second, and more fundamentally, an assessment shown to have misstated a verifiable matter of public record at its foundation cannot ask the Commission to rely on its professional judgement in matters that are not so easily checked. The discrepancy and its full consequences for the applicant's ratings are addressed later.

The receiving landscape is a settled, inhabited, agricultural landscape. There are 312 residential dwellings within approximately 3 kilometres of the proposed turbines.



Figure 8-2: *Map of Development Site and location of 312 Receptors by distance*

The towns and villages of Birr (population approximately 5,000), Carrig, Riverstown, Crinkill and Shinrone all lie within 5 kilometres of the site. This is not remote cutaway bog. The density and distribution of dwellings, and the proximity of substantial population centres, are matters of objective, mappable fact.

8.2 Drone Imagery — What this Landscape Actually Is

So that the Commission would **not** be reliant solely on the applicant's own visual material, the community group licensed Windplanner software (Appendix 8-1) an established specialist visualisation platform used internationally for wind and solar farm assessments. Its

outputs are based on georeferenced, three-dimensional modelling against surveyed photographic baselines, allowing turbine scale, location, screening and partial visibility to be tested from selected viewpoints with the higest degree of visual accuracy.

An independent body of drone imagery, photomontages and mapping for the receiving environment was produced. This section presents drone imagery captured from publicly accessible locations within 5 kilometres of the proposed site, recording the landscape from each cardinal direction. In every image the drone is hovering at an altitude well below the 180-metre tip height of the proposed turbines. The imagery serves five purposes, each addressed in turn below:

- it records the present character of the landscape;
- it demonstrates the spatial extent of the proposed array;
- it illustrates the topographic relationship between the site and its surroundings
- it presents the larger population clusters and their relationship with the development site
- it demonstrates the absence of effective screening between the proposed turbines and the surrounding receptors.

The reason drone imagery matters in this assessment is methodological. A ground-level photomontage, taken from a single point chosen by the applicant, shows one view. Aerial imagery at sub-tip-height altitude shows the relationship between the development and the entire receiving environment simultaneously — the dwellings, the roads, the settlements and the terrain — in a way no selected viewpoint can conceal or flatter. Imagery of this kind allows the Commission to test the applicant's characterisation of the landscape against the observable reality.

8.2.1 Landscape Character

Chapter 12 of the EIAR characterises the receiving environment as a "robust" productive rural landscape of peatland and peatland-fringe farmland, and on that characterisation builds its case that the landscape can absorb eleven 180-metre structures. The drone imagery demonstrates that this characterisation is materially incomplete. What the images record is a settled agricultural landscape with houses and farmsteads visible in every direction from the site boundary — a landscape of working farms, family homes, local roads, a church, a national school and GAA grounds, with the town of Birr on its northern horizon, the village of Shinrone at its southern tip and the villages of Carrig and Riverstown in close proximity.

The significance for the assessment is direct: under GLVIA3, the sensitivity of visual receptors is a function of the people who experience views, and residents at home are expressly identified as among the most susceptible receptor groups. A characterisation of the landscape that minimises its inhabited character feeds directly into suppressed sensitivity ratings as will be examined later.



Figure 8-3: *Drone view EAST to the proposed site There is no intervening terrain or vegetation of sufficient height to provide screening at 180 m tip height.*



Figure 8-4: *Drone view WEST to the proposed site There is no intervening terrain or vegetation of sufficient height to provide screening at 180 m tip height.*



Figure 8-5: *Drone view Carrig NORTH to the proposed site There is no intervening terrain or vegetation of sufficient height to provide screening at 180 m tip height*

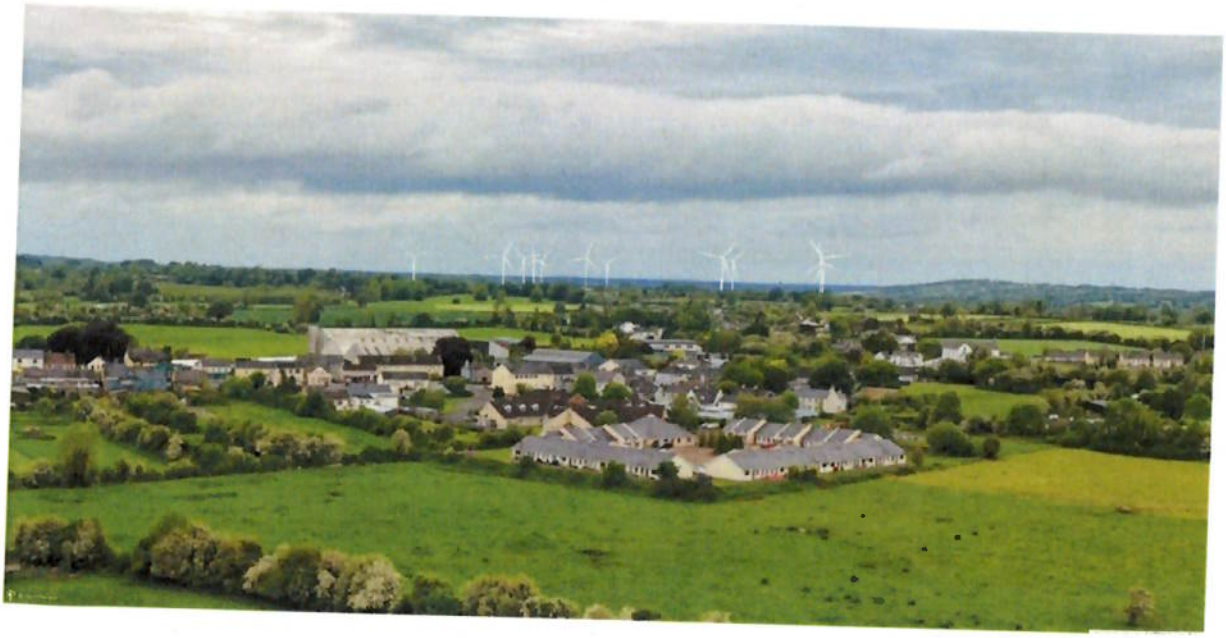


Figure 8-6: *Drone view Shinrone SOUTH West to the proposed site*

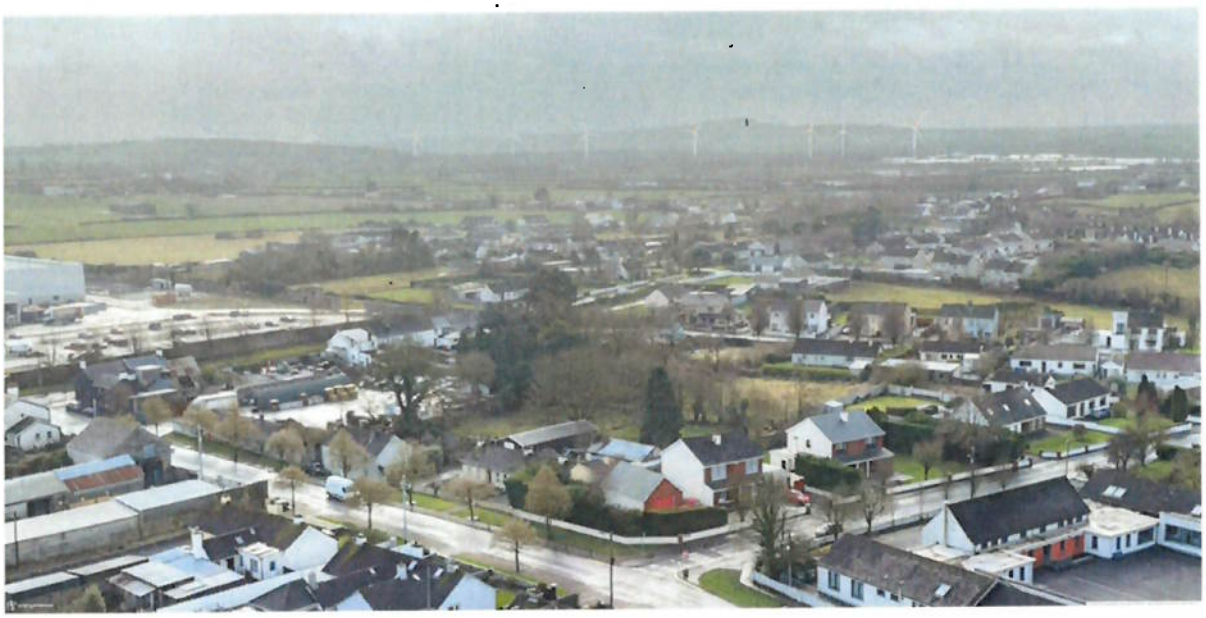


Figure 8-7: *Drone view at 45 m height near Birr. The eleven proposed turbines are clearly visible from this northern approach to the site. No screening of significance between the town and the turbines.*



Figure 8-8: *Drone view at 100 m height taken at Birr Airfield. The view demonstrates the visibility of the proposed array from the northern side of the site, immediately adjacent to the town of Birr. Birr (population approximately 5,000) does not appear as a Centre of Population assessment within the developer's LVIA, despite lying within 4 to 5 kilometres of the site.*

8.2.2 Spatial Extent, Layout and Visual Presence

The drone imagery reveals a feature of the chosen design that warrants particular emphasis: the eleven turbines are arranged in a long, broadly north–south linear "string" rather than in

a clustered or grouped configuration. From every drone vantage point, the array reads as a single continuous line occupying the lateral extent of the visible horizon.

This matters because a clustered turbine arrangement concentrates visual impact within a narrower angular extent of view; receptors positioned to one side or the other retain a partially clear horizon. The linear arrangement chosen here removes that possibility: there is no direction from which a clear horizon is preserved. The layout maximises the number of turbines that can be accommodated and in doing so, it maximises the horizontal spread of visual impact across the surrounding receptors. The Wind Energy Development Guidelines 2006, in their cumulative guidance for the very landscape character type the applicant claims for this site (Flat Peatland), warn that turbines should *not* be perceived to "crowd and dominate" the flat landscape. The chosen layout is the maximal form of crowding this site can accommodate. This point is developed later.

8.2.3 The Scale of the Proposed Turbines

The scale of wind energy development in this part of Co. Offaly has changed markedly over twenty-five years. The Lacka / Skehanagh turbines near Knockshigowna Hill, built around 2002–03, have a rotor diameter of 52 m, a hub height of approximately 50 m and a tip height of approximately 80 m. The proposed Ballincor turbines have a rotor diameter of up to 63 m, a hub height of up to 105 m and a tip height of approximately 180 m — more than twice the tip height of the operational turbines already in this landscape.

Table 8-1: Scale and Size of Modern Turbines

#	Development name	Timeframe it was developed	Hub Height	Blade Diameter	Base to blade tip height	% increase in size from Lacha/Skehanagh
1	Lacka/Skehanagh	2000's	+-50m	52m	+-80m	
2	Mountlucas	2010's	+-100m	101m	+-142m	177%
3	Ballincor *(proposed)*	2026	+-105m	160m	+-180m	**225%**

Table 1

To place 180 m in context: it is roughly twenty times the ridge height of the two-storey dwellings that predominate locally (approximately 9 m), and some 60 m taller than the Spire in Dublin (120 m). The turbines would stand in a rural agricultural landscape immediately adjacent to the Sharavogue Bog, a designated Strategic Conservation Area. This scale relationship — examined receptor by receptor in Part C — is the starting point for the assessment of magnitude.

Figure 8-9 below illustrates this.

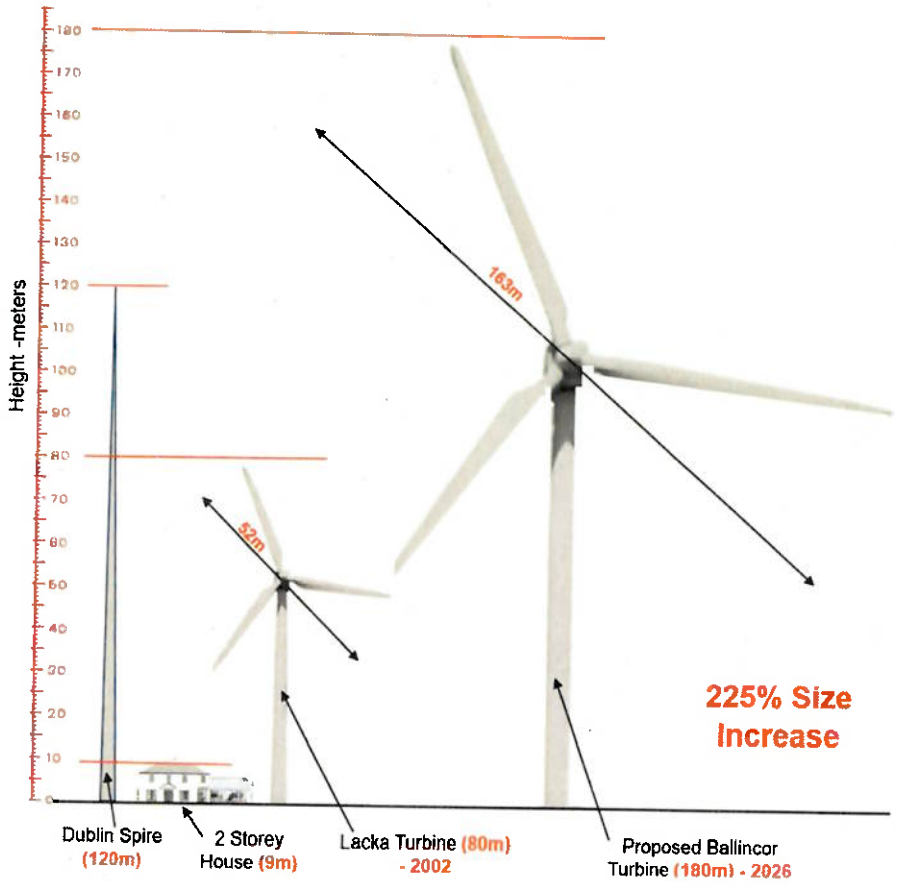


Figure 8-9: *Exponential size increase in wind turbines in Co. Offaly over 25 years*

The 20-1 scale ratio is clearly visible in the Photomontage images below.



Figure 8-10: Photomontage *Receptor 101 – Ground View*



Figure 8-11:. *Photomontage – SV19 – off Clonkelly Lane Ground View– Scale of turbines in relation to homes*



Figure 8-12: *Photomontage –SV1 Ground View Scale of overbearing wind turbines from the L1071 road*



Figure 8-13: *Photomontage - SV11B Ground View – Gortavally Road- turbines close to 3 homes*



Figure 8-14: *Photomontage- SV16- Off R492 Carrig Village Ground View - a home with the proposed turbines in the background*

8.2.4 Topography, Elevation and the Visibility of the Development

Chapter 12 describes the receiving landscape as "quite flat" with "gentle undulations." This is a misleading description. The Ballincor site itself occupies a low-lying position but within a topographical bowl — in a valley landscape drained by the Little Brosna river watercourses, which occupy the lowest ground. Within an 8 km radius of the site centre, ground levels range from approximately 46 m to 158 m AOD. The terrain rises to the east towards

Kilcolman Hill, to the west towards the Loughkeen / Carrig ridge, to the south towards the Shinrone uplands and to the north towards Birr. The larger population centres of Birr and Carrig overlook the site from elevated ground. A receptor analysis based on the Applicants elevation data proves the point; 301 of 312 dwellings sit at or above turbine-base elevation, and 161 sit above the lowest point of the rotor sweep,

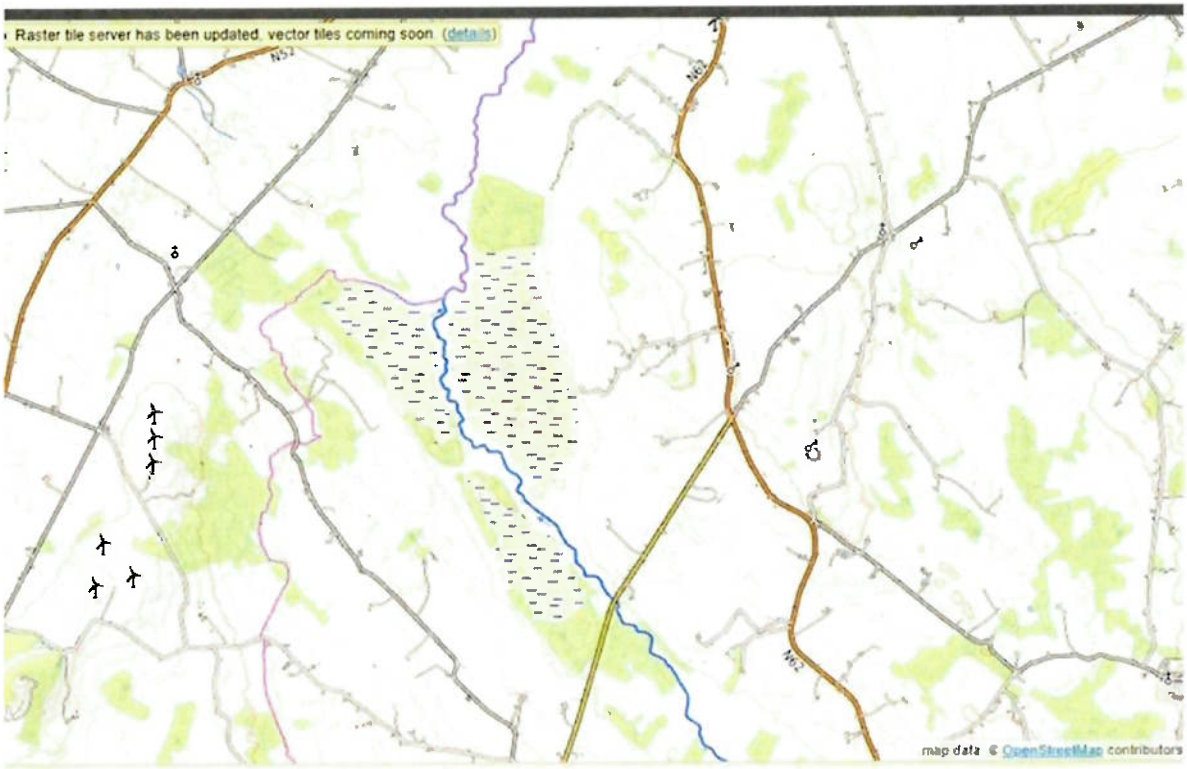


Figure 8-15: *Topographic context. The hatched zone shows the area within which the eleven turbines are arranged. Contours show the site occupying a depression, with ground rising to the east and west in particular.*

Two cross-sections make the point. North to south, from Birr through the site to Shinrone (c.16 km), levels vary only between approximately 46 m and 87 m, and between Birr and the site centre by about 10 m across some 8 km — substantially flat ground following the valley of the Little Brosna. East to west through Turbine 6 (c.16 km), levels vary between approximately 46 m and 158 m. The combined effect is that dwellings on the valley sides, such as those at Rathbeg Lane, look across and along the valley and can see most of the proposed turbines ranged along its floor, over the intervening hedgerows and trees.

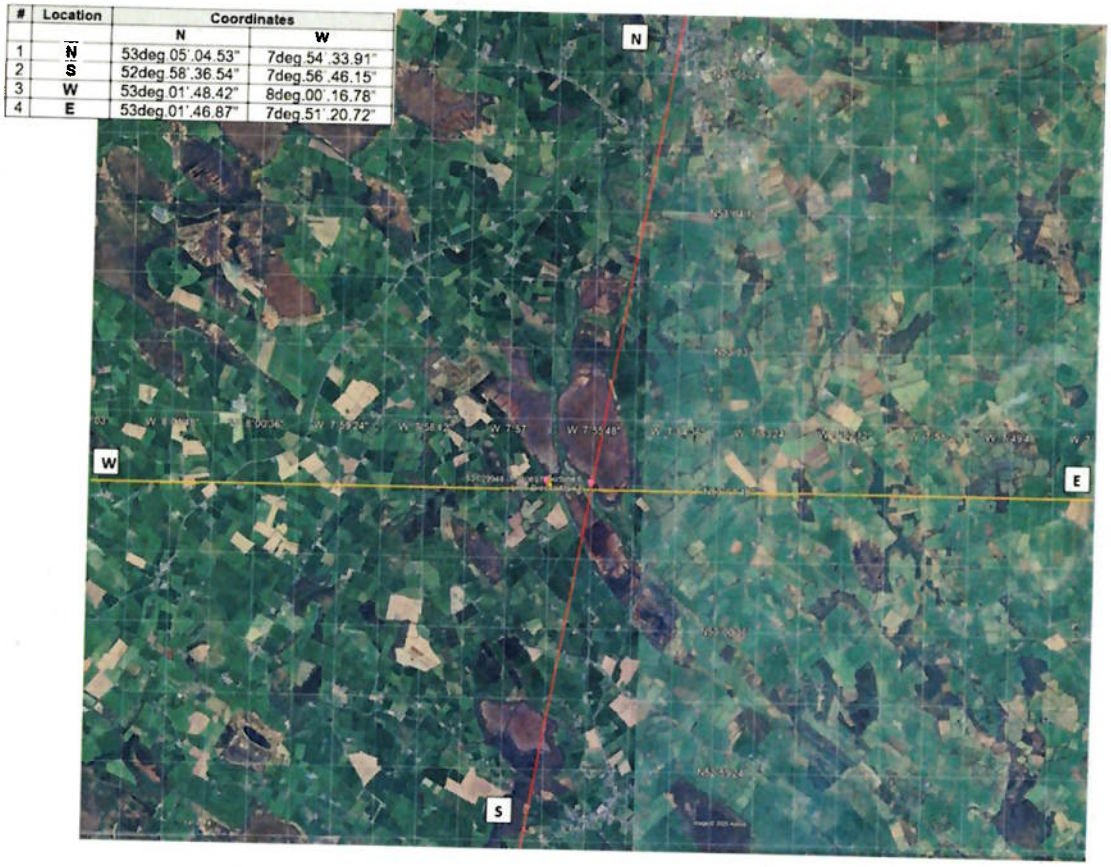


Figure 8-16: *Cross section locations*

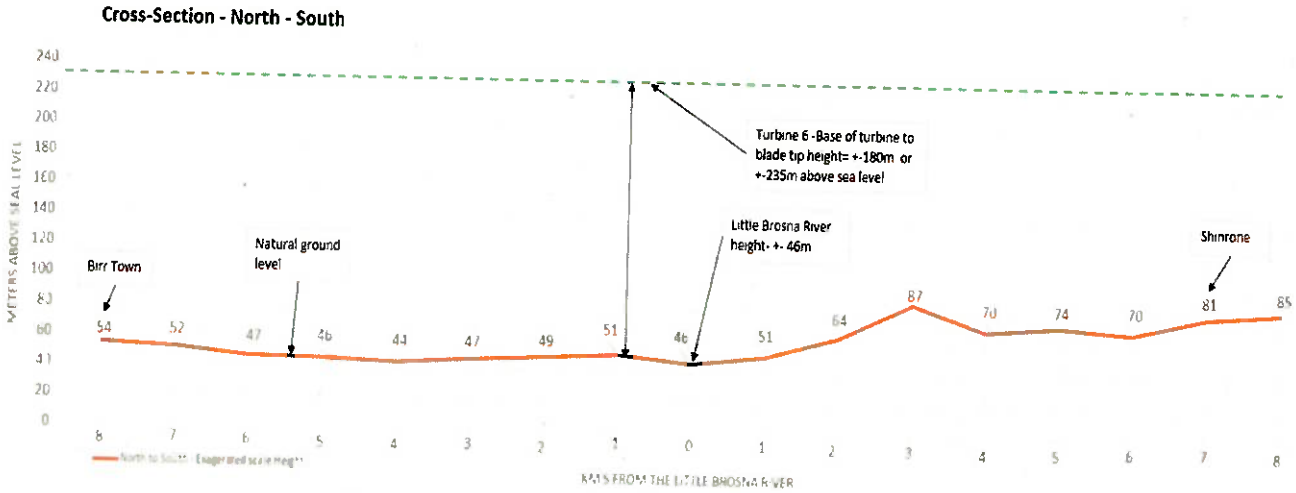


Figure 8-17: *Cross section - North to South*

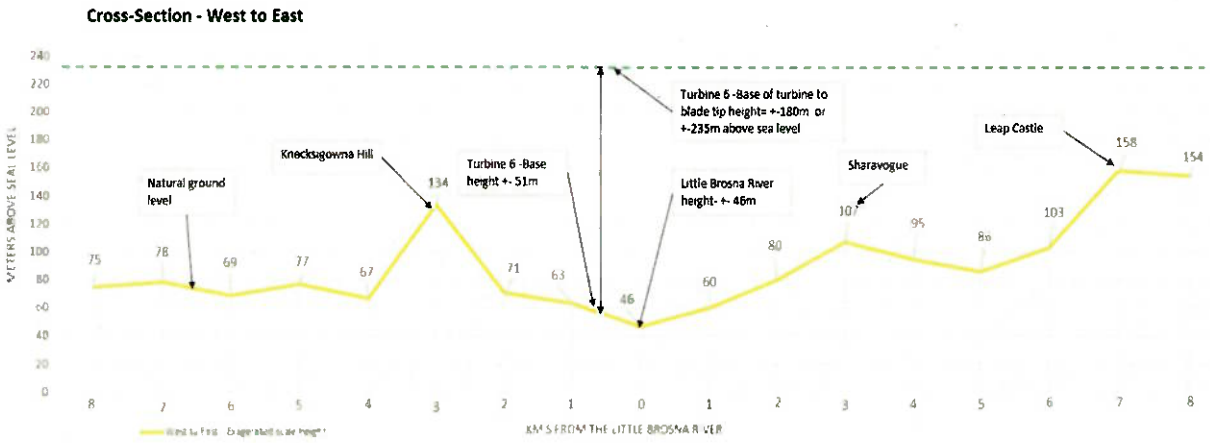
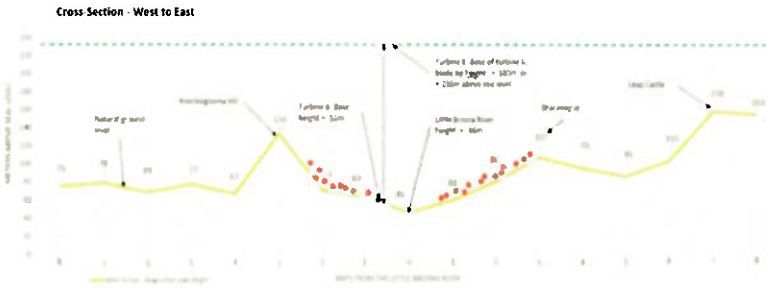


Figure 8-18: *Cross section -West to East - Cross-section with Receptor nodes in red BELOW*



The majority of the 312 receptors live on the Eastern and Western flanks of the valley and sit at elevation, in some cases significant elevation, above both the turbine base and the lowest point of the rotor sweep.

This topographic configuration matters because **elevated receptors see more, not less** and the data available in Appendi 8-2 is revealing, a summary is presented below.

Table 8-2: Receptor Elevation relative to Turbine Base and Rotor Sweep

Receptor elevation relative to the development	**Elevation band (m OD)**	**Number of receptors**	**% of total**
Below mean turbine base elevation	< 48.85	11	3.5%
Between mean turbine base and lowest blade sweep	48.85 – 65.85	140	44.9%
Above the lowest point of the rotor sweep	**≥ 65.85**	**161**	**51.6%**
TOTAL		**312**	**100.0%**

- The eleven proposed turbines are sited on the floor of the valley: their bases lie between 42.5 and 62.4m OD (median 48.3m OD)
- 301 of the 312 receptors (96.5%) sit above the base elevation of their nearest turbine. Every dwelling but eleven look down onto, or level with, the foot of the turbine nearest to it.
- The lowest point of the rotor sweep, sitting some 17m above each turbine base (between 59.5 and 79.4m OD across the eleven turbines, median 65.3m OD). Above that level a receptor sees not just the towers but the full plane of the moving rotor presented against open sky, rather than absorbed against a terrain backdrop. On an eye-level basis (taken at +2m above ground), 161 of the 312 receptors (51.6%) have a sightline above the blade bottom of their nearest turbine.
- Of these, 118 sit 10m or more above the blade bottom, 56 sit 20m or more above it, and 31 sit 30m or more above it; the highest receptor stands 61.8m above the blade-bottom level. A clear majority of the surrounding community therefore looks directly into the rotor plane of the development.

This pattern provides useful context for understanding how distance and screening can influence the level of visual impact in an area surrounding a site.

- Distance: The weakening of visual effect with distance operates most strongly where a receptor looks up at a turbine from below, against a backing of higher ground, and most weakly where the receptor looks down or across into the development, against open sky. A receptor at or above turbine base elevation has a longer, less obstructed sightline; a greater proportion of each structure, tower as well as rotor, remains in continuous view; and the turbines read against the skyline rather than being absorbed against a terrain backdrop.
- Screening: No intervening landform exists to screen turbines occupying the lowest ground, and the elevated position of the receptors sustains the exposure. This prevails almost universally.

The Photomontage image below captures that effect.



Figure 8-19:. *Photomontage-SV4A Ground View - houses on elevated slopes of Rathbeg Lane with turbines in the valley*



Figure 8-20:. *Photomontage -GroundView Residential area –Wood Lane Close- Birr Heritage Town*

8.2.5 Population Centres

The two largest settlements are the most exposed, precisely because they sit at elevations at or above the turbine base elevations but the ground between them and the site is broadly flat.

Table 8-3: Population of the main settlement areas (2022 CSO Census)

#	Settlement	Population (2022)	Designation
1	Birr	4,726	Heritage Town / ACA
2	Crinkill	795	—
3	Shinrone	707	—
4	Carrig	226	—

#	Settlement	Population (2022)	Designation
	Total	**6,454**	



Figure 8-21: *Photomontage -D3- Birr Heritage Town with Church, Castle & turbines in the distance at 150m height*



Figure 8-22: *Photomontage -VP7- Residential area –Wood Lane Close- Birr Heritage Town*



Figure 8-23: *Photomontage D6 -Residential area above School Street-Birr Heritage Town from 150m height*

Birr is a highly sensitive visual and heritage receptor, not simply a nearby town. It is formally recognised as a Georgian Heritage Town, valued for its intact 18th- and 19th-century planned streets, squares, terraces and historic townscape, and is further protected through Architectural Conservation Area and Protected Structure designations. The absence of meaningful viewpoints from Birr's residential areas, elevated approaches and historic urban setting is therefore a material gap in the LVIA, particularly given Birr's role as both a major population centre and a protected heritage town within the study area.

8.2.6 Absence of Effective Screening

Effective screening of a wind energy development depends on intervening terrain or vegetation interrupting the sightline between receptor and turbine. Where, as here, the turbines occupy the lowest ground and the receptors occupy the rising ground around them, intervening terrain by definition does not exist, a bowl cannot be screened.

The drone imagery demonstrates this directly. In each image the drone hovers well below tip height, yet the position of all eleven turbines is exposed to view, with no intervening landform or vegetation of sufficient height to interrupt the sightline. Hedgerows and treelines in this landscape typically reach 10-20 metres; mature commercial forestry perhaps 25-30 metres. A 180-metre turbine with a rotor sweep whose lowest point remains far above any vegetation in the landscape cannot be screened by any of it except at very close range where a tree immediately adjacent to a dwelling may intercept a narrow arc of view. Screening of that kind is incidental, partial, seasonal (deciduous cover is absent for roughly five months of the year) and outside the control of either the applicant or the receptor. It is not mitigation; and the absence of winter

photomontages from the applicant's assessment means that even this incidental screening has been presented at its seasonal maximum.

The Applicants ZTV maps below corroborate this position. The blue area illustrates those areas that have a potential view of 9-11 turbines in the 20km study area

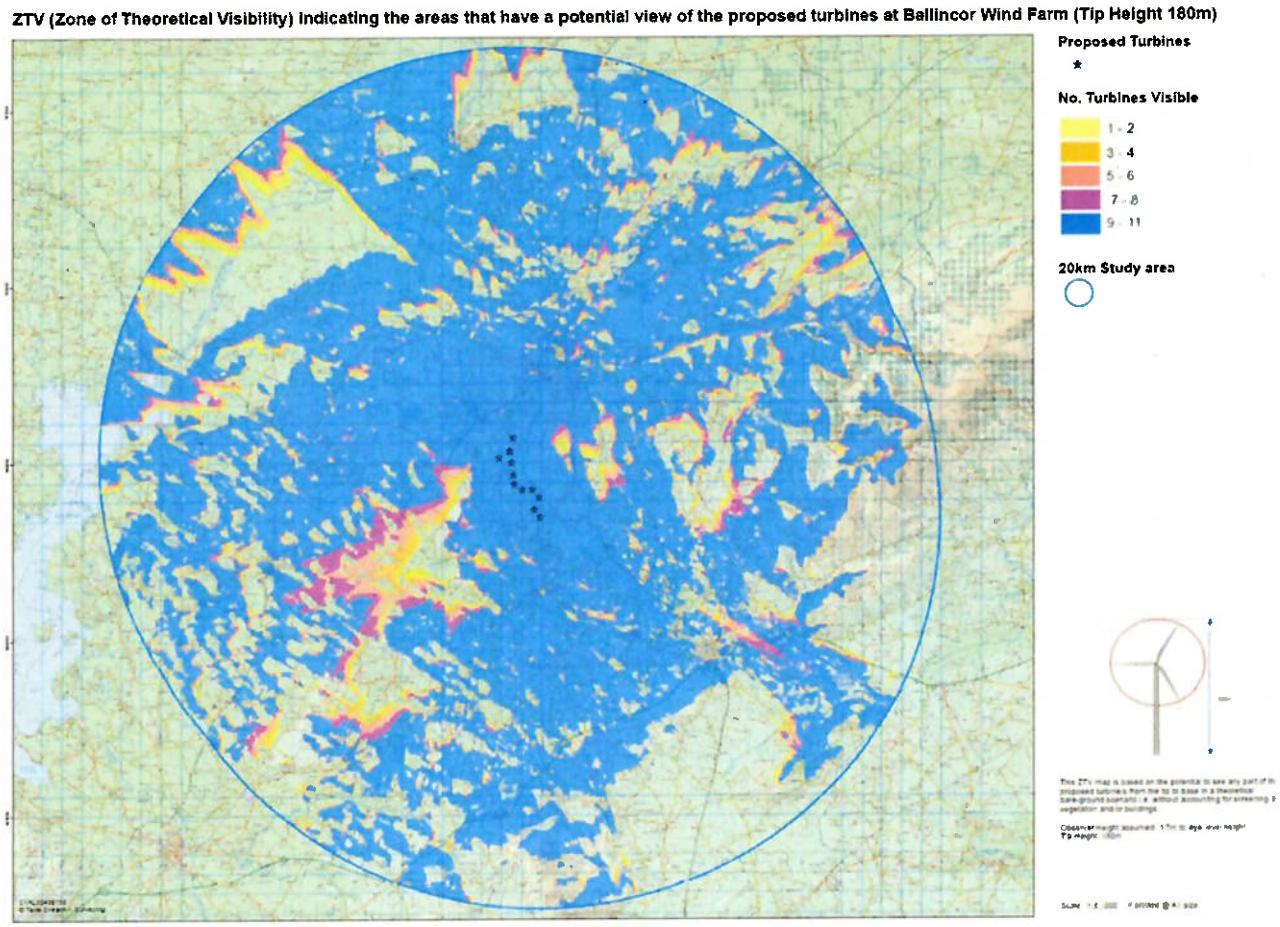


Figure 8-24: *ZTV Map View of 9-11 Turbines*

A zoomed in analysis below shows the potential view of 9-11 turbines with approximately 7km of the development site. Full exposure is the reality for almost all within this zone.

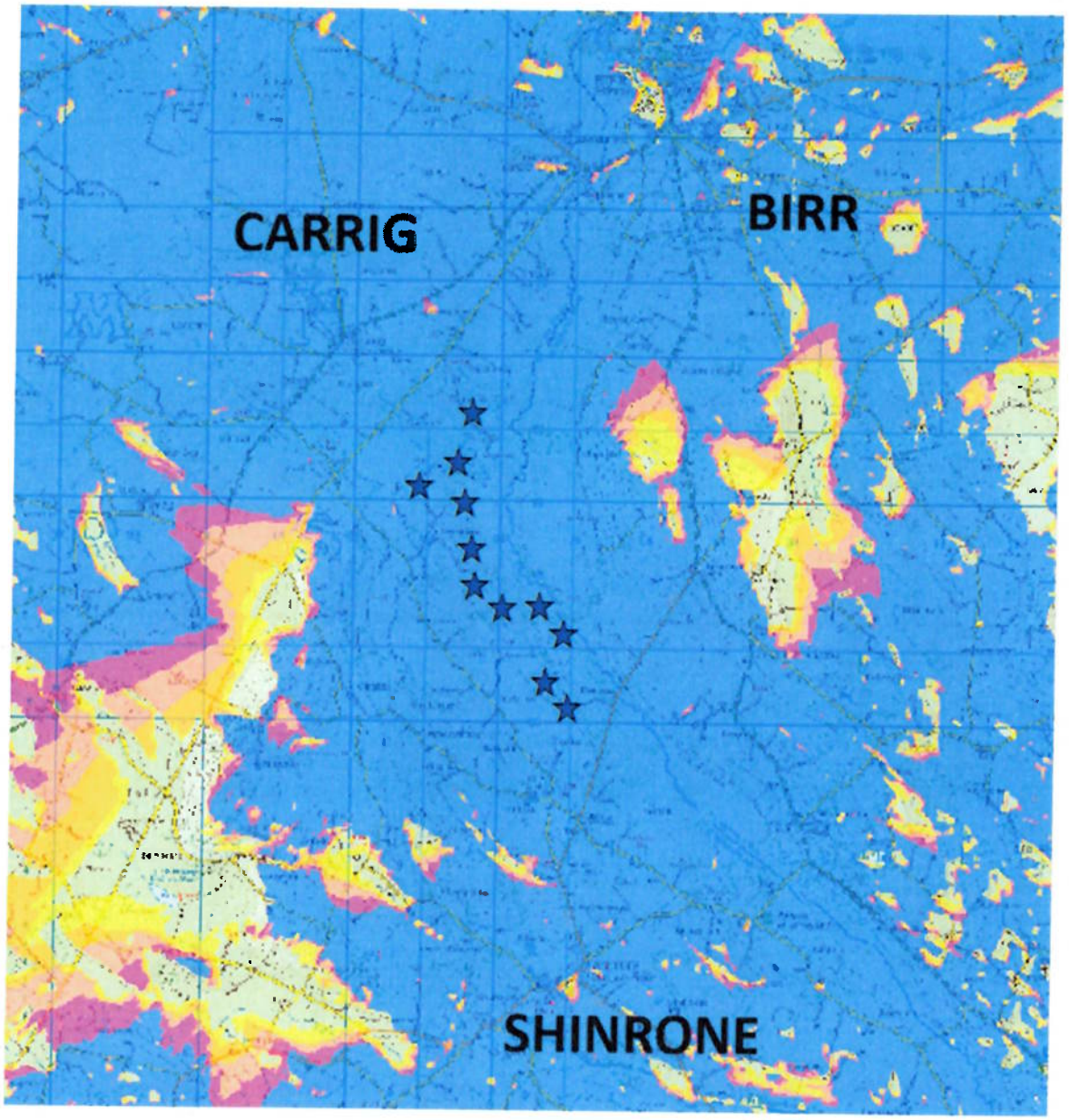


Figure 8-25: *Zoomed in View*

Part C of this report will review the ZTVs from the individual receptor perspective, a study not conducted by the Applicant.

8.3 Receptor Analysis

The fundamental question in any visual impact assessment is: who will actually experience the change, from where, and at what distance? This section answers that question with mapped, measurable data for the full population of residential receptors surrounding the site — the analysis the applicant's LVIA does not contain.

8.3.1 Distance from Turbines

A total of 312 residential dwellings have been identified and mapped within the near study area surrounding the proposed development.

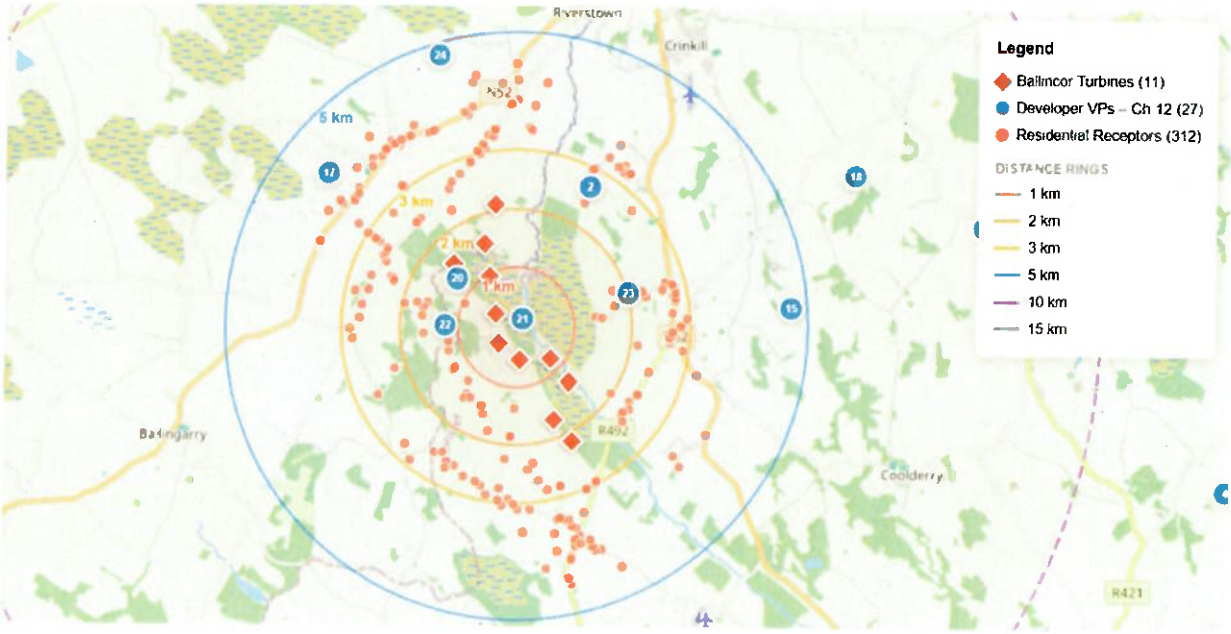


Figure 8-25: ***Map of all 312 Receptors***

Distances from each dwelling to the nearest proposed turbine were calculated from coordinates for every receptor and are presented below.

Table 8-4:

Distance band to nearest Ballincor turbine	Number of receptors	% of total
Less than 1 km	50	16.0%
1 to 2 km	166	53.2%
2 to 3 km	96	30.8%
3 to 5 km	0	0.0%

Distance band to nearest Ballincor turbine	Number of receptors	% of total
Greater than 5 km	0	0.0%
TOTAL	312	100.0%

All 312 identified receptors fall within 3 km of the nearest proposed turbine. Two hundred and sixteen receptors (69%) lie within 2 km. Fifty receptors (16%) lie within 1 km. The median distance from receptor to nearest turbine is 1.72 km.

This matters because distance is the single most powerful variable in visual impact. Magnitude of visual change weakens or lessens with distance; the applicant's own methodology acknowledges as much, and its significance findings at distant viewpoints depend upon it. It follows that the distances at which an assessment chooses to assess are determinative of what it finds. The relevant distances are by GLVIA and WEDG 2006 guidelines **not** those convenient to the assessor: they are the distances at which the affected population actually lives. In this case the median resident of this landscape experiences the proposed development from approximately 1.7 km. As will be discussed later the median viewpoint in the applicant's assessment sits at 7.3 km — more than four times further away.

8.3.2 Elevation of Receptors Relative to Turbines

For the reasons set out previously receptor elevation relative to turbine base elevation is a second critical variable. One of the turbine configurations applied for is the Nordex N163, which has a tip height of 180 m, a hub height of 98.5 m and a rotor diameter of 163 m, giving a blade clearance of approximately 17 m above the turbine base at the lowest point of the rotor sweep. The receptor data is presented against these thresholds below.

Table 8-5:

Receptor elevation relative to the development	**Elevation band (m OD)**	**Number of receptors**	**% of total**
Below mean turbine base elevation	< 48.85	11	3.5%
Between mean turbine base and lowest blade sweep	48.85 – 65.85	140	44.9%
Above the lowest point of the rotor sweep	**≥ 65.85**	**161**	**51.6%**

Receptor elevation relative to the development	Elevation band (m OD)	Number of receptors	% of total
TOTAL		**312**	**100.0%**

Of those 51% above the the rotor sweep the figures are even more concerning:

Table 8-6:

Height above lowest blade sweep	Elevation band (m OD)	Number of receptors	% of total
Up to ~9 m above sweep	65.85 – 75	51	16.3%
~9–24 m above sweep	75 – 90	74	23.7%
More than ~24 m above sweep	≥ 90	36	11.5%

Of the 312 identified receptors, only eleven sit below the mean turbine base elevation; the remaining 301 are at the same elevation or above, and 161 — more than half — sit above the level at which the lowest point of the rotor sweep passes. An assessment that treats all receptors as ground-level observers of structures on level terrain systematically understates effects in a bowl landscape. Elevation strips away the factors that normally soften turbine visibility. A dwelling sitting above the turbine bases sees a greater proportion of each structure; the turbines are more likely to stand against open sky than against a terrain backdrop and the perceived scale of the development increases accordingly. An assessment that assigns sensitivity and magnitude ratings without regard to this relationship is, to that extent, incomplete.

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8.3.3 Receptor Clustering

Presenting 312 dwellings individually would be unworkable for the Commission and is unnecessary. The receptors have been grouped into **21 clusters**, each tied to a surveyed vantage point from which representative imagery has been captured. The cluster framework, the classification system applied to it, and the resulting findings are presented in Part C of this report. For present purposes, the relevant point is that the geography of the affected population is known, mapped and quantified — and was equally knowable to the applicant.

nteractive map showing 312 receptors clustered around 28 vantage points for the Ballincor Wind Farm visual impact ıssessment

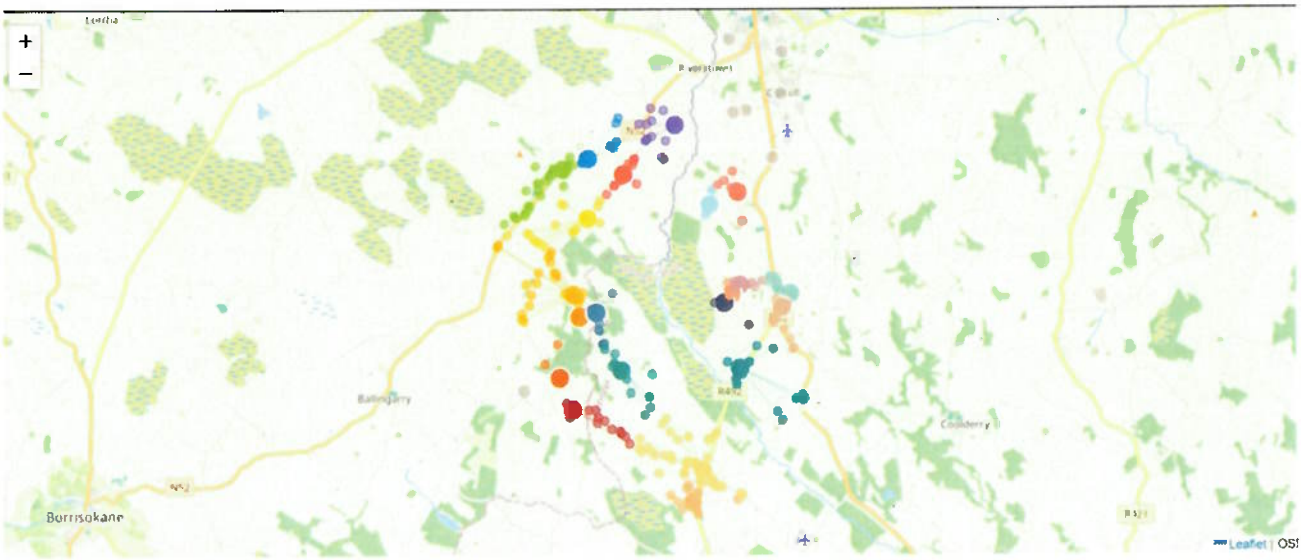


Figure 8-26: *The 21 receptor clusters, colour-coded, each linked to a surveyed vantage point.*

8.4 The Existing and Permitted Wind Energy Context

The proposed development would not enter an empty visual field. Two other wind energy developments already occupy, or will shortly occupy, the same visual envelope as the proposed turbines.

- The **Lacka Wind Farm** is operational and lies approximately 2.5 km to the west of the proposed site. Its eight turbines are already a presence in the views of the surrounding community, and the applicant's own LVIA acknowledges that it "already contributes to landscape character at a local level."
- The **Carrig Wind Farm** — seven turbines, approximately 6 km to the north-west — was granted permission in 2024 (ABP-318689-23). It is unbuilt but permitted, and as a committed development it forms part of the future baseline against which any new proposal falls to be assessed. Further afield, the recently constructed **Derrinlough and Cloghan** developments — adjacent schemes likely to be read as a single 28-turbine development occupy the northern portion of the 20 km study area.

The geometry of the three nearest developments is the critical fact. Ballincor (proposed, 11 turbines), Lacka (operational, 8) and Carrig (permitted, 7) form a triangle a few kilometres across — **twenty-six turbines in total** — and the 312 receptors identified live within and around that triangle. The consequence is directional: a dwelling between the developments does not experience them as alternatives but as accumulation. Many households would face the proposed Ballincor array from their front windows, the operational Lacka turbines from the rear, and the permitted Carrig turbines on the oblique. The map below shows Carrig in Purple, Lacka in Red and Ballincor in yellow. Receptors in Blue.

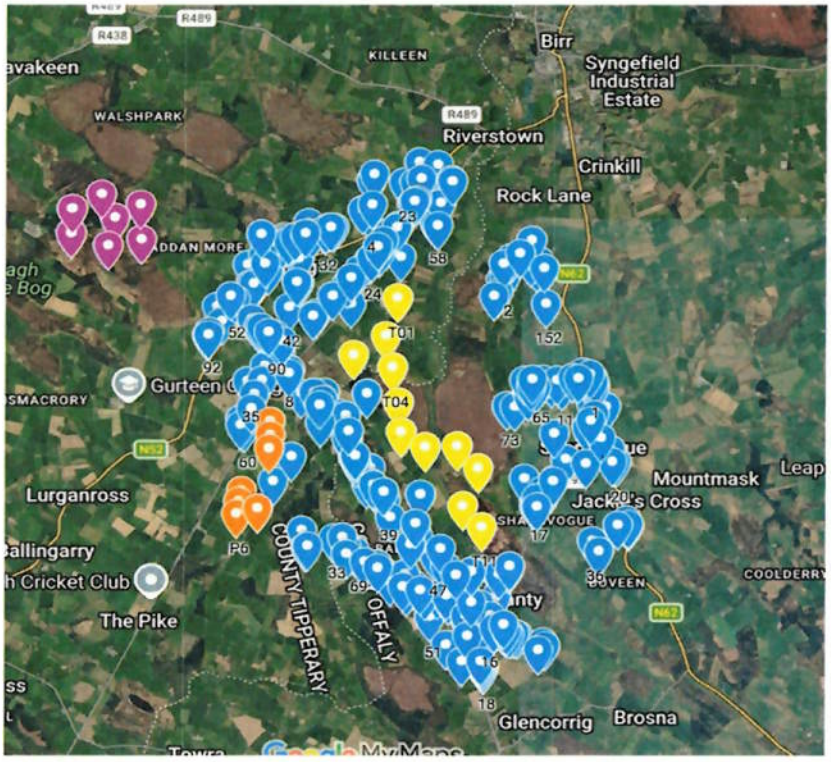


Figure 8-27

Appendix 12.2 presents the cumulative theoretical visibility of the proposed Ballincor Wind Farm in combination with all other wind farms in the study area. See image below. The purple area represents exposure to >66% of turbines.

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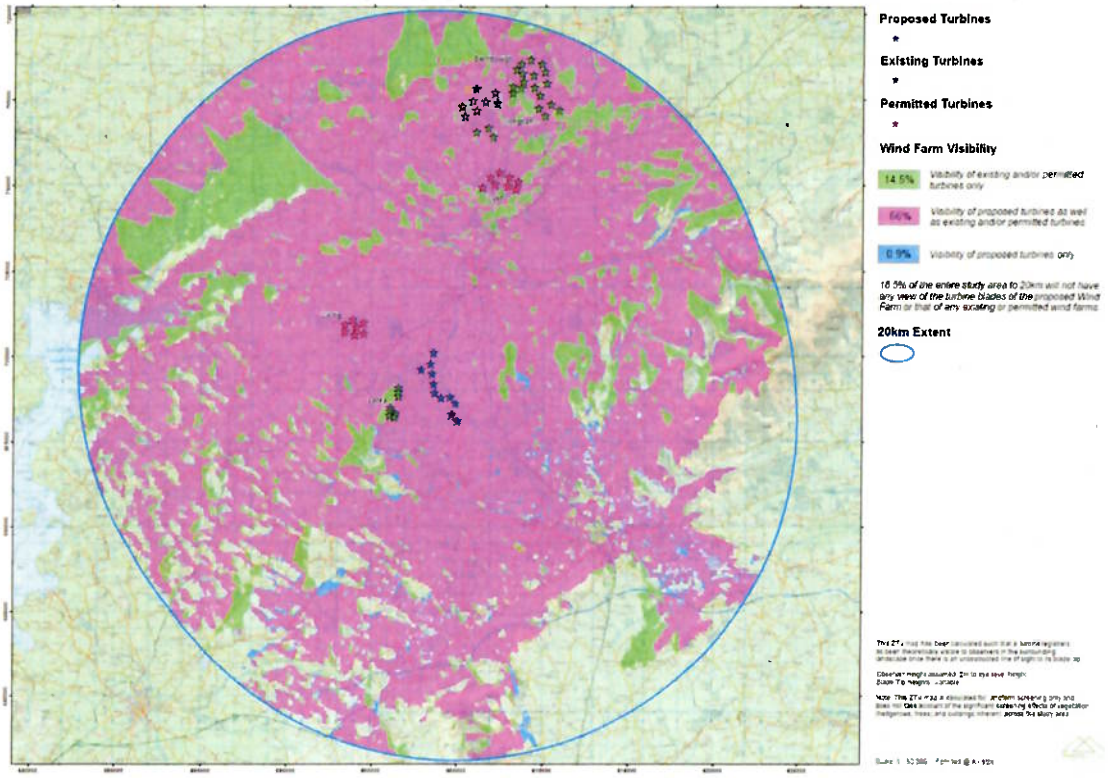


Figure 8-28

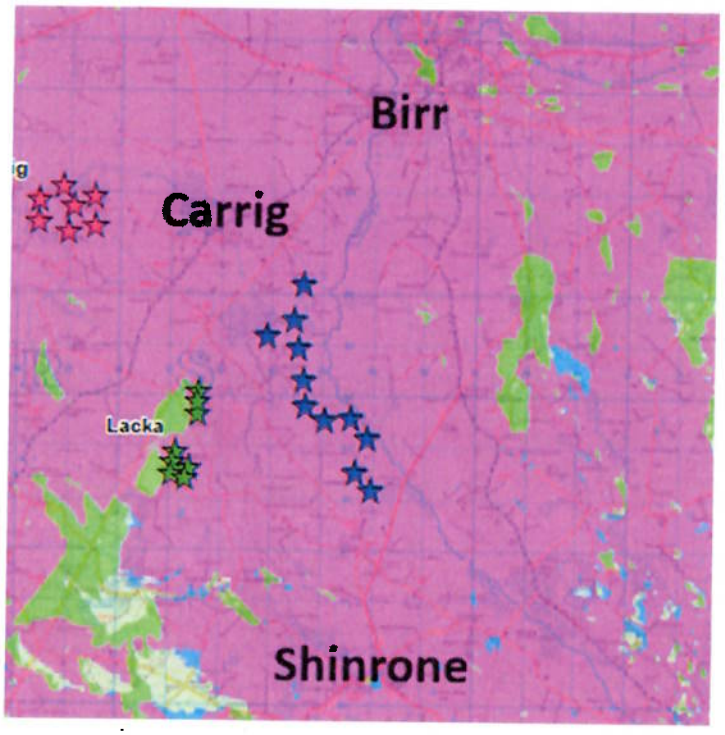


Figure 8-29

According to the Applicant, all receptors in the wider area, including the primary population centres will be exposed to >66% of turbines cumulatively. Part C of this report will review the ZTVs from the individual receptor perspective, a study not conducted by the Applicant.

8.5 Methodology Standards — What a Competent Assessment Requires

This section sets out, neutrally, the standards against which the applicant's LVIA is to be measured. Three sources are relevant: the Wind Energy Development Guidelines 2006 (WEDG), which remain the operative statutory guidance under Section 28 of the Planning and Development Act 2000; the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3, 2013), which the applicant's LVIA states it follows; and the Landscape Institute's Technical Guidance Note LITGN-2024-01 (August 2024), which clarifies the correct application of GLVIA3 and is the most current professional guidance available.

8.5.1 WEDG 2006.

The WEDG2006 Guidelines prescribe a nine-stage landscape impact assessment. Four of those stages are critical to this application, and taken directly from the Guidelines, each imposes a clear requirement:

Stage 3 — Zone of Theoretical Visibility (ZTV): For turbines exceeding 100 m to tip (these are 180 m), the Guidelines require a ZTV extending to a 20 km radius; colour-coding by the number of turbines visible and a cumulative ZTV showing other wind energy developments in the area (Completed by the Applicant) . But the Guidelines also recommend a **"reverse ZTV"** — mapping visibility *outward from sensitive locations* — as a design-stage tool. The implication is clear: sensitive nearby locations should shape the design of the wind farm, not merely be assessed after the design is fixed.

Stage 5 — Viewpoint selection: Viewshed Reference Points must reflect County Development Plan designations, be located at varying distances, affording views from all directions and always present the worst case (most open) available view from any given location.

Stage 7 — Photomontages: The photomontage guidance reinforces the worst-case rule: vegetation or structures must not be placed between the camera and the development.

Stage 8 — Estimation of impact: The visual material on which impact judgements rest must fairly represent what will actually be experienced.

In addition, the WEDG's landscape-type guidance for Flat Peatland, the very character type the applicant claims for this site, warns against cumulative layouts that "*crowd and dominate the flat landscape*".

8.5.2 GLVIA3.

Under GLVIA3, a visual effect is assessed by combining the sensitivity of the receptor with the magnitude of the change. Sensitivity depends on who is doing the viewing, and GLVIA3 is explicit that residents at home are among the most susceptible of all receptors — their exposure is constant, unchosen, and experienced in the place their daily life is anchored to. The applicant's own Chapter 12 restates this principle.

The Landscape Institute's 2024 guidance note clarifies how GLVIA3 must be applied (**LITGN-2024-01**). Seven clarifications bear directly on this assessment:

1. Scoring matrices may illustrate judgements but must not dictate them; every judgement needs reasoned narrative (Cl. 3(6)).
2. "Moderate" effects sit in the middle of the scale, so the assessor must explicitly justify whether they are significant or not (Cl. 3(5)).
3. An LVIA must not argue the case for the scheme; the planning balance is not its business (Cl. 2(4)).
4. Assessors owe a duty of impartiality under the Landscape Institute's Code of Practice (Cl. 8(1)).
5. Landscape policies — such as a "Not Suitable" designation — must feed into receptor susceptibility (Cl. 5(6)).
6. A night-time assessment is required where lighting could significantly affect visual amenity in a sensitive night-time environment (Cl. 8(2)).
7. Cumulative assessment means all development — existing, permitted and proposed — taken together (Cl. 7(3)).

The applicant's LVIA claims GLVIA3 as its own methodology.

8.6 Conclusions from Context

In summary five facts emerge from this Part, each objective, each mappable, and each of which any competent visual assessment of this site was required to engage with:

1. The site is designated 'Moderate/High Sensitivity' in the adopted Offaly Landscape Character Assessment, and is excluded from wind energy development by both County Development Plans, expressly on landscape and housing-density grounds.
2. 312 dwellings lie within the near study area, at a median distance of approximately 1.7 km from the nearest turbine, together with five population centres within approximately 5 km.
3. The site occupies a 'topographical bowl': surrounding receptors and population centres view it from level or elevated positions, increasing rather than diminishing visual exposure.
4. No effective screening is possible anywhere in the receiving landscape against structures of 180 m, and such incidental vegetation screening as exists is seasonal and was assessed only at its summer maximum.
5. Two other wind energy developments — Lacka and Carrig already occupy or will occupy the same visual envelope, such that many of the same 312 dwellings will experience turbines from multiple directions.

These are not contested matters of opinion; they are facts of public record and physical geography. A visual impact assessment that engaged honestly with these five facts would have proceeded from high receptor sensitivity, near-field assessment density proportionate to the resident population, conservative treatment of screening, explicit treatment of elevation, and receptor-level cumulative analysis. Part B demonstrates that the applicant's assessment did none of these things — and that each departure operated in the same direction: towards understatement of effect.

PART B — THE APPLICANT'S APPROACH: CRITIQUE

Chapter 12 of the EIAR comprises a desktop and field-based landscape baseline; a 20 km study area with a Zone of Theoretical Visibility; 27 Viewshed Reference Points (Table 12.6) with accompanying photomontages and viewpoint-by-viewpoint assessments (Appendix 12.1); a sensitivity/magnitude significance matrix (Table 12.4); a summary of operational visual effects (Table 12.7); and a cumulative effects section (Section 12.7) supported by a cumulative ZTV (Figure 12.12). The LVIA concludes that landscape effects, visual effects on every receptor group, and cumulative effects are all 'Not Significant'.

The critique that follows is not that the applicant adopted the wrong framework. It is that, at each point where the stated framework met the facts of this site, the assessment departed from its own stated principles and that every departure operated to reduce the assessed level of effect. When a methodology is stated correctly but applied selectively, the problem is not the method but the reliability of every conclusion built on it.

8.7 Misclassification of the Landscape and its Sensitivity

8.7.1 The landscape characterisation

The LVIA classifies the site within the WEDG "Flat Peatland" landscape character type with elements of "Hilly and Flat Farmland," and describes the receiving environment as a robust, productive rural landscape. Part A has set out why this characterisation is incomplete: the landscape is settled, the site sits in a bowl overlooked from rising ground, and 312 dwellings surround it. The "Flat Peatland" framing matters because the WEDG strategies for that landscape type presume sparse habitation and visual robustness. These presumptions do not hold here. A landscape type assigned at desk level cannot substitute for the observable facts of habitation and topography. In any event the WEDG's own Flat Peatland cumulative guidance (no crowding or domination of the flat landscape) condemns the chosen linear, maximal layout, as set out at A2.2.

8.7.2 The sensitivity classification conflict

Chapter 12 states that "the proposed wind farm lies within the Moderate and Low Sensitivity classifications" of the Offaly Landscape Sensitivity Assessment. The adopted county sensitivity mapping shows the Ballincor area within the 'Moderate to High Sensitivity' classification. This is not a difference of professional opinion; the Commission is invited to inspect both. If the applicant's statement is wrong, then a foundational input to every sensitivity judgement in the chapter is wrong, and the cascade of consequences is set out at B5.

8.7.3 Stated principles versus applied ratings

The deeper problem is internal to the chapter. The LVIA's own methodology section states that residents at home are among the most susceptible visual receptors.

Susceptibility of Visual Receptors to change

In accordance with GLVIA3 visual receptors most susceptible to changes in views and visual amenity are:

- *"Residents at home*
- *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views*
- *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience*



The chapter lists among its criteria for the value of a view:

- recognised scenic value (expressly including CDP designations, which the chapter describes as representing a public consensus arrived at through consultation)
- views from within highly sensitive landscape areas
- and intensity of use

Each of these criteria, applied honestly to this site, points upward: the CDP designations exist and are adverse to the development; the site lies within a Moderate to High Sensitivity landscape area; and 312 dwellings within the near field constitute intensive residential use of the visual resource by any rural standard.

Yet when the ratings are assigned, every near-field local community viewpoint, VP20 and VP22 at 1.0 km and VP21 at 1.3 km from the nearest turbine, receives a sensitivity of 'Medium-low' on the stated basis that the views represent "*everyday views of people who live in the local area*" comprising "*typical rural scenes of farming and forestry interspersed with peat bogs.*" Two distinct errors are embedded in that single sentence.

1. It applies a landscape-quality discount to what GLVIA3 defines as a receptor-susceptibility question: a family living within approximately 1 km of an array of 180-metre turbines has high susceptibility to changes in their view regardless of whether the field pattern around them is "typical." The ordinariness of a landscape does not diminish the susceptibility of the people who live in it; if anything, the everyday view from a home is precisely the view GLVIA3 protects most strongly.
2. It inverts the chapter's own value criteria: "*everyday views of people who live in the local area*" describes exactly the continuous, involuntary, residential exposure that

the methodology section identifies as maximally susceptible. See image below, VP20b, to illustrate the point



Figure 8-30: *VP20B L1071 at Doughkill taken within 2km of site Ballincor Windfarm Montages Book2*

VP20	L1071 at Doughkill This view is experienced by local road users and local residents and features open agricultural fields extending into the middle ground, which are defined by hedgerows and mature trees. A forest plantation then forms a flat vegetated skyline to the southeast. A cluster of farm buildings and a dwelling are glimpsed through gaps in the vegetation. In the background, a gentle hill covered with wooded patches and agricultural fields is visible	Medium-low	This is a close view of the proposed wind farm from 1km away looking along the long axis of the array. The upper profile of the structures within the proposed substation and the associated lightening rods can also be seen rising above the treeline in the near middle distance. The turbines are seen at a dominant but not overbearing scale in this broad rural context. Indeed, they are seen in a clear and legible manner with a strong sense of perspective generated between the nearest and furthest turbines due to the scale differential between them. This emphasises the depth of the array and the provides a sense of space and distance to reinforce the extent of receiving context. There is a marked increase in the scale and intensity of built development within this visual setting, but it is a broad and productive rural context that can accommodate the wind farm in terms of scale and function. Overall, the magnitude of visual impact is deemed to be High and the quality of effect, Negative	Substantial-moderate/ Negative/ Long-term	Not Significant
VP21	R492 at Shanwaane		The proposed turbines and met mast are seen at a		

LITGN-2024-01 confirms this critique: *susceptibility relates to the receptor, not to the development type or the perceived quality of the landscape (and existing county studies, whichever way they cut, are background rather than a substitute for project-specific receptor assessment* — Cl. 5(4)). The chapter states the right principles. It then assigns ratings that those principles cannot produce, and Appendix 12.1 does not supply the reasoned narrative that LITGN-2024-01 Cl. 3(6) requires to bridge the gap.

The suppressed ratings must also be read against the composition of the full viewpoint set itself. Of the 27 viewpoints selected, only 5 lie within 2 km of the nearest turbine. This in a landscape where 216 of the 312 identified dwellings (69%) lie within that distance. Were the applicant to choose vantage points to honestly assess Receptor sensitivity they would have

adopted views like the one below – using Windplanner software licensed by Greater Birr Wind Action Group.



Figure 8-31: *Image taken from R101 Windplanner software*

The residential population was therefore doubly diminished: first by a viewpoint distribution that allocated it five viewpoints out of twenty-seven, and then by the assignment of "Medium-low" sensitivity to each of the five without justification and rationale.

The two judgements compound. Had near-field residents been properly represented in the viewpoint set and correctly rated, or properly rated at the five viewpoints they were actually given, significant effects would have emerged. The combination of under-representation and under-rating is the only configuration that produces none.

An assessment in which the two discretionary judgements most consequential for residents both resolve in the developer's favour — and in which no reasoned narrative explains either — cannot be treated as an impartial application of its stated methodology.

8.8 Treatment of the Development Plan Designations

The LVIA acknowledges both exclusion designations and then argues they should be set aside. For Offaly, it asserts that "*the proposed wind farm appears to meet all of the individual criteria*" of the Wind Energy Strategy and that "*it is reasonable to consider that the project can be assessed on its own merits given the broad-brush approach to establishing wind energy deployment zones.*" For Tipperary, relying on the inspector's report in the Carrig case (ABP-318689-23), it asserts that "limited weight can be given to the Tipperary Wind Energy Strategy map." The argument fails for three reasons:

1. **This is advocacy, not assessment**: GLVIA3 paragraph 8.9, as restated by LITGN-2024-01 Cl. 2(4), is explicit that an LVIA must not include advocacy for the scheme and that conclusions on the planning balance/assessment/position, do not belong within it. A chapter that argues for the discounting of adverse designations has stepped out of the role of assessor and into the role of advocate, and its conclusions must be read accordingly.
2. **The substance of the argument fails on its own terms:** The claim by the developer that the development site "appears to meet all of the individual criteria" of the Offaly strategy is untrue and lacks any evidential substance. A full analysis of the sieve-mapping exercise conducted by Offaly CC was presented in Chapter 2 and directly refutes this assertion. Furthermore an individual application by a vested party cannot collaterally re-run the rigorous, independent and democratically representative plan-making exercise to a different conclusion.
3. **The Carrig precedent does not transfer**: The inspector in ABP-318689-23 criticised the Tipperary classification because that site's exclusion rested "solely on the fact that the site is peatland" without regard to the many unique and site-specific criteria that are inherent in the site. The Ballincor exclusions rest on entirely different and cumulative grounds. This is an attempt to extend a site-specific criticism into a general licence to disregard wind energy strategies even when nothing in the analysis supports that extension.

8.9 Viewpoint Selection and the Suppression of Visual Effect

Viewpoint selection is the single most consequential exercise of judgement in any LVIA. The viewpoints chosen determine what is photographed, what is assessed and therefore what can be found. The WEDG is explicit about how that judgement must be exercised and cites viewpoints at varying distances, reflecting Development Plan designations, and always presenting the worst-case (most open) available view. Measured against those requirements, and against the receptor geography established in Part A, the applicant's viewpoint set fails in three distinct ways, each examined in turn below:

The review attributes the benign result to a recurring set of selection choices:

- **The distance distribution (B3.1).** 11 of 31 viewpoints sit beyond 10km from the nearest turbine, where the group argues turbines become visually insignificant and, in haze or bright sun, fade out altogether. The viewpoints are concentrated at distances where effects are inherently diminished — a median of 7.3 km, against a receptor population whose median distance is 1.7 km.
- **The worst-case view requirement (B3.2).** The viewpoints that were selected do not present the worst-case views available, and the entire photomontage set was captured at its seasonal best.
- **Atmospheric conditions.(B3.3)** Most images were taken on sunny, hazy days where white turbines blend into a pale blue sky — whereas Ireland is overcast most of the year, against which white turbines would stand out.
- **Foreground screening. .(B3.4)** Several viewpoints are placed behind mature trees, hedgerows or rising ground that obscure the turbines, when a position a short distance away (up a hill, further down a road) would have revealed them.
- **Absence of scale reference.** Few montages include houses or known structures, denying the reader any way to judge the true scale of a 180m turbine.
- **What was not assessed at all .(B3.5).**The densest receptor clusters, the large population centres and the night-time environment have no effective representation in the assessment.

Each is considered and demonstrated below.

8.9.1 The distance distribution

Table 12.6 pg 42, lists the 27 selected viewpoints with their distances to the nearest turbine.

Table 8-7: Distance of the 27 Applicant Viewpoints

Distance band	Number of viewpoints	Viewpoints / details
Within 2 km	**5**	VP20 – 1.0 km; VP22 – 1.0 km; VP21 – 1.3 km; VP2 – 1.8 km; VP23 – 1.9 km
Between 2 km and 5 km	**2**	VP17 – 3.7 km; VP24 – 3.8 km
5 km or beyond	**20**	20 of the 27 selected viewpoints are located 5 km or more from the nearest turbine
Beyond 10 km	**11**	11 of the 27 selected viewpoints are located more than 10 km from the nearest turbine
Beyond 13 km	**4**	VP4 – 13.3 km; VP27 – 14.4 km; VP12 – 15.1 km; VP1 – 16.3 km

Viewpoint Locations

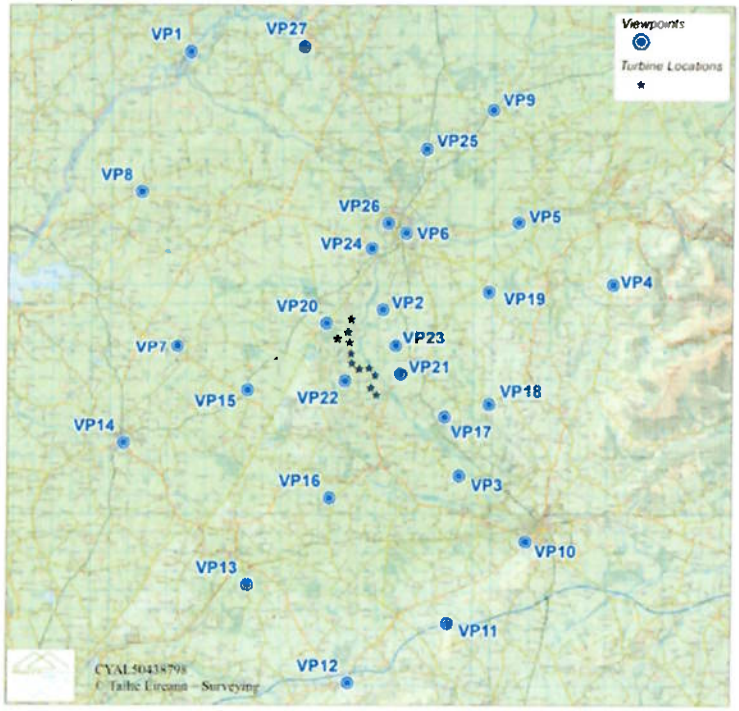


Figure 12.10 Viewpoint location map

The median viewpoint distance is 7.3 km; the mean is approximately 8.0 km. Set that against the geography of the affected population, 312 dwellings at a median distance of approximately 1.7 km. The applicant assessed this development from a median distance

more than four times greater than the median distance at which the affected community lives. Of 27 viewpoints, only 7 fall within the 5 km radius the chapter itself treats as the local community zone.

The chapter's own Table 12.7 demonstrates why the distribution matters: every "Imperceptible" and "Neutral" finding in the assessment occurs at distance, and the only finding approaching significance (VP20, Substantial-moderate) occurs at the nearest viewpoint. Distance is doing the analytical work in this LVIA. The selection of distances was therefore the selection of conclusions.

8.9.2 The worst-case view requirement

The WEDG requires that each viewpoint "should always present the worst case (most open) available view from any given location," and that photomontages must not place vegetation or structures between camera and development. Several of the near and middle-distance viewpoints rely on oblique angles or foreground vegetation, and the assessment then credits that screening in its magnitude findings

There are 2 issues evident from VP21a below. The first is the absence of the Lacka turbines in the image.



The wireframe image below clarifies the matter.



The image above is taken along the R492. 200m further on the road reveals this street view below.



Figure 8-32: *Streetview – 200m from VP21 Photomontage*

10 houses all within the 1km range are clustered at this point just 200m further down the road.

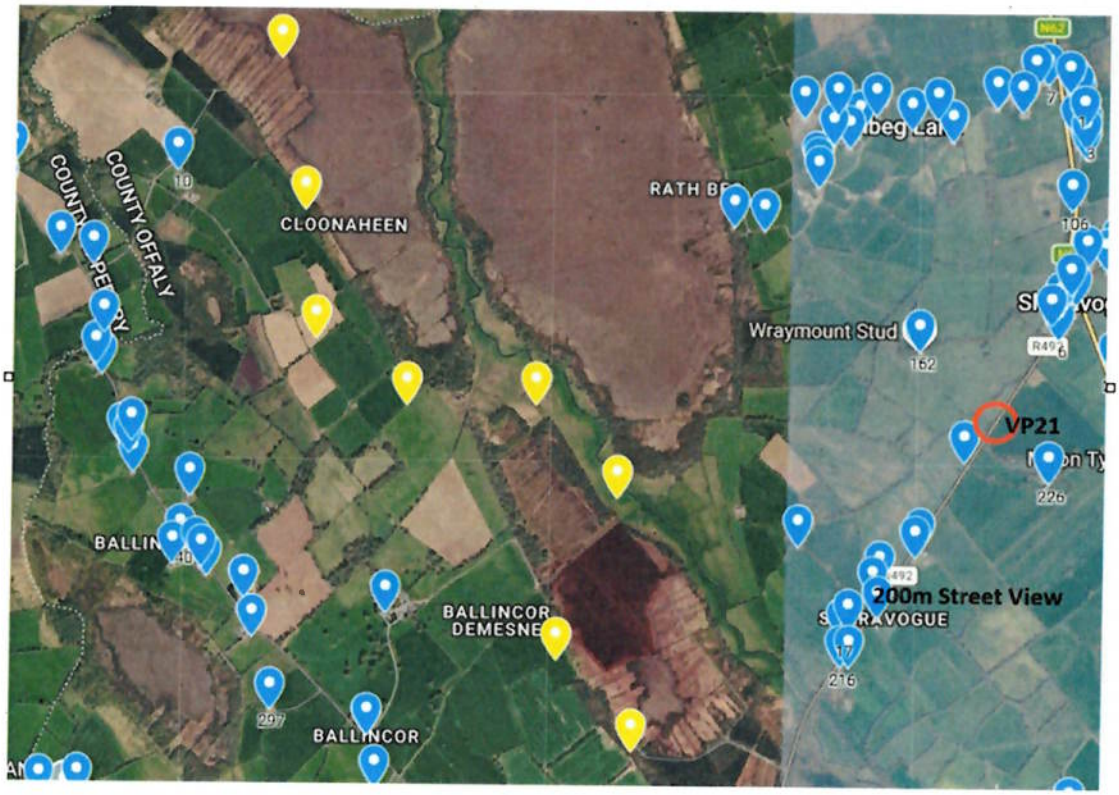


Figure 8-33: *Housing density beside VP21 – all avoided*

In a landscape where the only available screening is deciduous hedgerow and treeline, summer-only photography presents every viewpoint at its seasonal best case. The WEDG worst-case requirement is thereby inverted twice over: in viewpoint placement and in seasonal timing.

8.9.3 Atmospheric Conditions

The images below taken from Applicants Photomontage show how visual effects can impact the reality and how atmospheric conditions will screen out the visibility of Turbines (blue sky and hazy background). Compare Figure 8-34 and Figure 8-35.

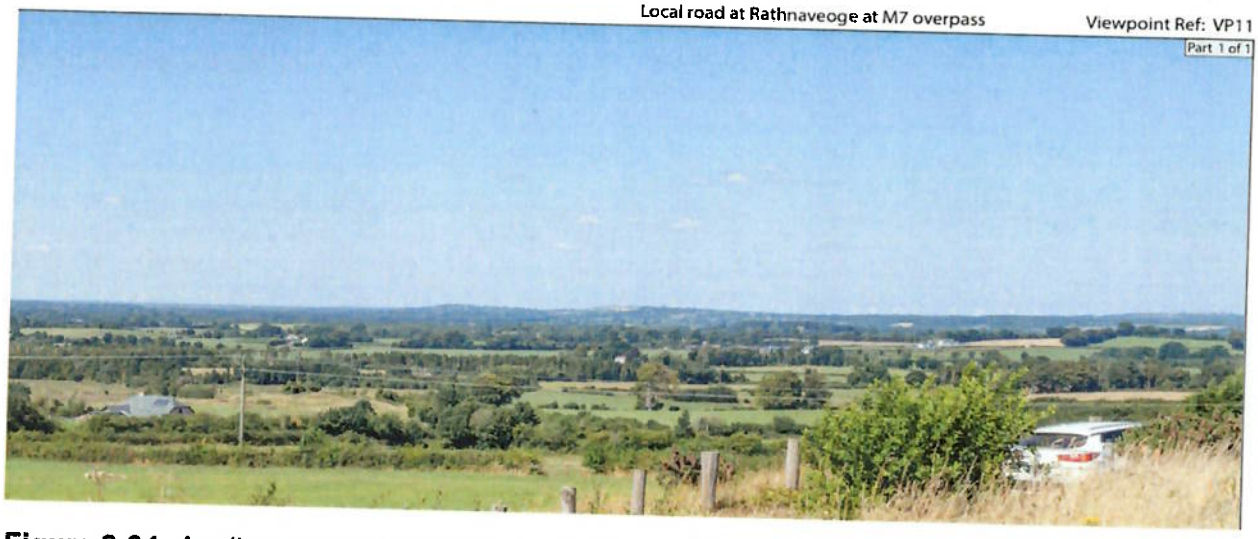


Figure 8-34. *Applicants VP11 taken from 12.5km -turbines hardly visible against the blue sky & haze in the distance*



Figure 8-35 *RWE -VP11 -Zooming in from the exact position would have provided more detail for the reader*



Figure 8-36 *Applicants VP10 R445 at Limerick Road Roundabout*

In VP10 the photomontage's wind turbines are almost not visible, at that distance, due to atmospheric conditions, they fade into light blue background. It gives the reader a false sense that views from this general VP location will provide negligible visual impact, which is incorrect.



Figure 8-37 ***Zooming in*** *from the same VP, but still using the barn and electrical pole in the foreground, the turbines now come into focus and the reader can judge the scale against the structures.*

8.9.4 Foreground Screening

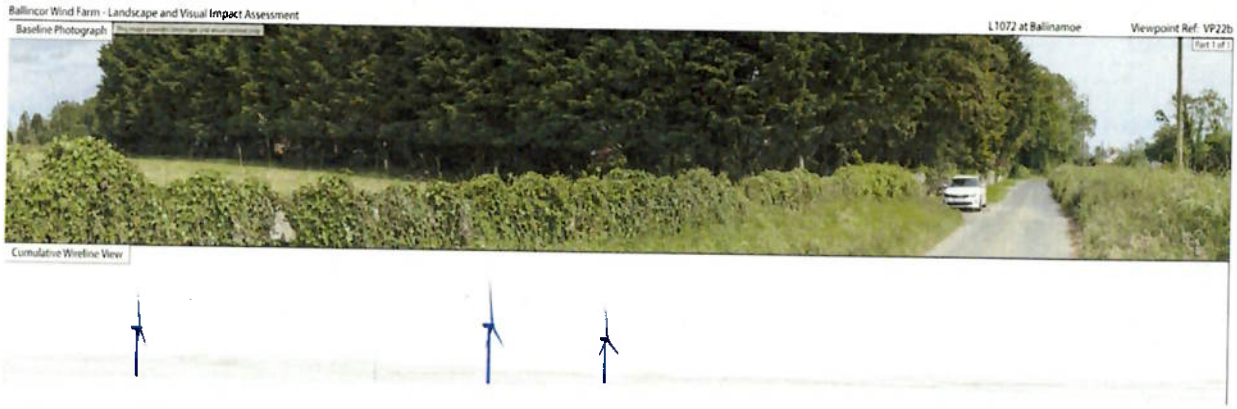


Figure 8-38a: *Applicants choice of Screening. 50 m up the road would expose 3 turbines up close and a full array across the landscape*



Figure 8-38b *-VP9 taken from the bottom of the hill moving + 200m up the hill to the crest would have made 7 turbines fully visible*

8.9.5 What was not assessed

The preceding sections examined the viewpoints the applicant chose. This section examines what **no** viewpoint was asked to see. Measured against the receptor geography established in Part A, the gaps are not incidental. The locations missing from the assessment are precisely those where the affected population is most concentrated and where effects would be greatest; the densest receptor clusters, the town of Birr and the villages of Shinrone and Riverstown, and the night-time environment experienced by every one of the 312 surrounding households. Each omission is examined in turn.

8.9.5.1 The densest receptor clusters have no viewpoint.

The map below shows all receptors within a 5km range. The black boxes represent the gaps in VPs chosen by the Applicant.

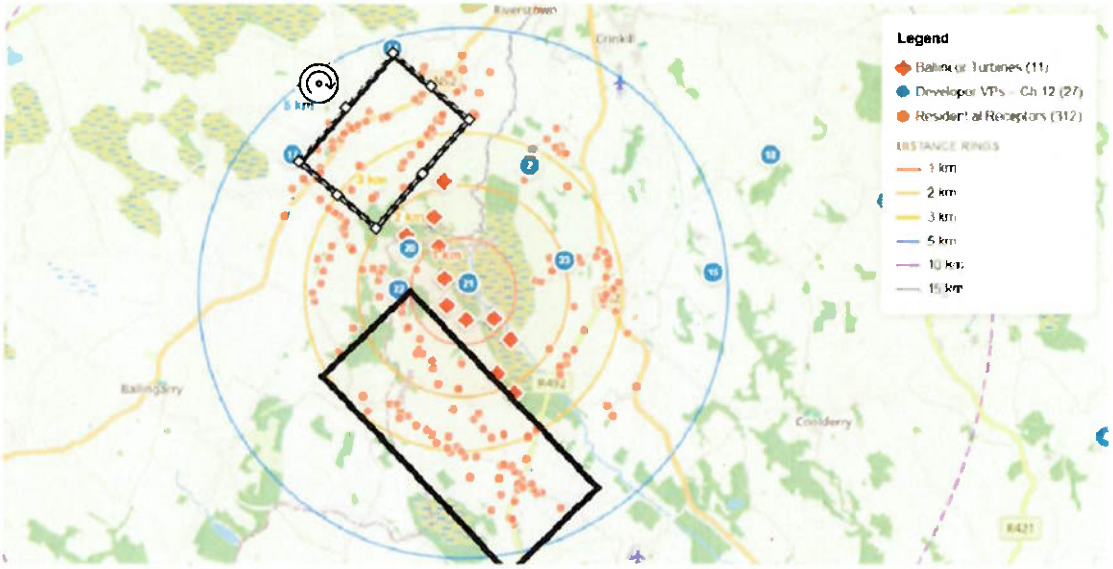


Figure 8-39

These two large clusters account for almost two thirds of receptor dwellings. An assessment whose viewpoint set misses the locations where the affected population is concentrated cannot claim to have assessed the effect on that population.

8.9.5.2 Birr is effectively unassessed. A town of approximately 5,000 people lies 4–5 km north of the site, on rising ground overlooking it. The town's representation in the viewpoint set consists of VP6 at Birr Rugby Club (5.3 km, on the town's southern edge) and VP26 within Birr Castle Demesne (5.4 km, an enclosed parkland setting where screening is at its maximum). No viewpoint addresses the residential areas, approaches or elevated southern aspect of the town itself. The result is that the largest single concentration of visual receptors in the study area is represented by a rugby pitch and a walled demesne.

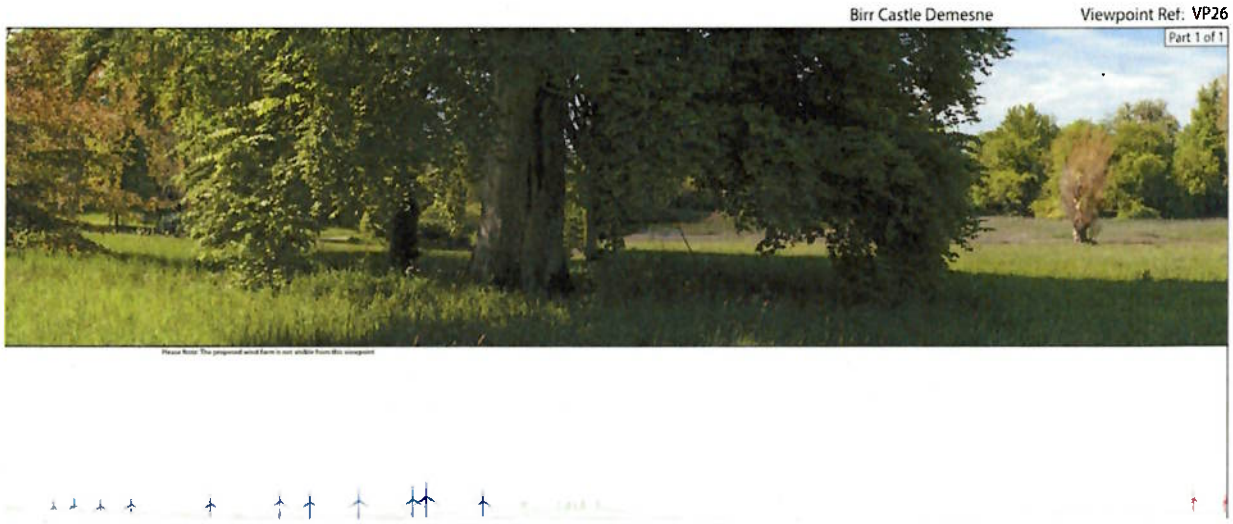


Figure 8-40 *VP26 Image representing Birr town: taken a few meters from mature trees beside Birr Castle Demesne*

Many parts of Birr town are elevated and images like those below are possible at street view level.



Figure 8-41: *Street view image from Wood Lane Close- Birr Heritage Town*

Shinrone is entirely unassessed. See below.



Figure 8-42 : *Shinrone and view of Turbines*

Riverstown is entirely unassessed. See below.



Figure 8-43: *Riverstown and view of Turbines*

8.9.5.3 The night-time assessment is superficial and misdirected.

The chapter disposes of aviation lighting in a single paragraph (Section 12.4.3.3):

Night time Visual Effects from lighting

Red aviation lighting will be provided on the hubs of outer turbines within the array. This is of a low intensity designed to be seen from distance but not to illuminate the surrounding area. It can also be baffled such that it is not readily visible from the ground below the turbines.



Although this is a rural area with relatively low levels of ambient lighting, it is not an area subject of a dark skies designation. Effects from turbine aviation lighting will be subtle and dispersed and are not considered to generate significant effects on nighttime visual amenity and enjoyment of dark skies.

No night-time photomontage or visualisation was produced; no viewpoint was assessed after dark; no receptor appears anywhere in the analysis; and Table 12.7 contains no night-time entry. Each of the three assertions offered in place of an assessment fails on inspection. The absence of a dark-skies designation is not the test: LITGN-2024-01 Cl. 8(2) directs the assessment to the sensitivity of the receiving night-time environment itself, and the chapter's own concession that this is a rural area of "*relatively low levels of ambient lighting*" is a concession that the receiving environment is sensitive. "*Can be baffled*" is conditional, not committed and baffling in any event reduces visibility only from directly beneath the turbines, which assists none of the 312 dwellings at 1–3 km and is meaningless for the elevated receptors who will view the lit hubs at or near their own eyeline. And lighting confined to the "outer turbines" of an eleven-turbine linear string means illuminated structures at each end of the array: the lights will bracket the full horizontal extent of the development, drawing its outline in red across a dark rural skyline, nightly, for 35 years. A one-paragraph dismissal resting on a designation test the guidance does not set, a mitigation that is neither proposed nor relevant to the affected receptors, and no visual evidence whatever, is not an assessment of that effect

8.9.6. Summary Conclusion: Viewpoint Selection, Omission and the Suppression of Visual Effect

Viewpoint selection is not a neutral or technical afterthought in an LVIA. It is the exercise that determines what the decision-maker is permitted to see, what is assessed, and ultimately what conclusions can be reached. In this case, the applicant's viewpoint set does not

provide a fair, representative or worst-case assessment of the likely visual effects of the proposed Ballincor turbines on the receiving community.

The review of the applicant's photomontages demonstrates that the benign conclusions reached in the LVIA are substantially driven by viewpoint selection. The selected viewpoints are weighted towards distance, obstruction and visually favourable conditions. Many are taken from locations where turbines are naturally diminished by distance, screened by trees, hedgerows or rising ground, or set against bright, hazy skies where white turbines visually recede. This is particularly significant where the affected receptor population is concentrated much closer to the proposed turbines than the median distance of the viewpoint set. The applicant has therefore assessed the development from locations that are, in many cases, materially less exposed than the places where people actually live, travel and experience the landscape.

The WEDG requirement that viewpoints should present the worst-case, most open available view has not been met. In several instances, a modest adjustment in position, moving a few hundred metres along a road, up a rise, or away from foreground vegetation, would have produced a materially different and more exposed view of the proposed turbines. Instead, the selected images frequently use intervening trees, woodland, hedgerows, terrain or oblique angles to reduce the apparent magnitude of effect. The assessment then relies on that screening to support lower visual-impact findings. This reverses the logic of the WEDG: rather than selecting the most open available representative view, the viewpoint selection repeatedly captures views where the development is softened, obscured or visually minimised.

The photomontage review also shows that the images often fail to give the reader adequate scale reference. The absence of nearby houses, roads, buildings, poles or other familiar structures makes it difficult to understand the true scale of turbines of approximately 180 metres in height. Where the same viewpoints are examined more closely, or where nearby structures are visible, the turbines become more legible and their scale, prominence and relationship to the settled landscape are materially clearer.

However, the problem is not limited to the viewpoints selected. It also lies in what the applicant chose not to assess at all. Measured against the receptor geography established in Part A, the omissions are not incidental. The locations missing from the assessment are precisely those where the affected population is most concentrated and where visual effects would be expected to be greatest. The densest receptor clusters within the 5 km study area have no effective viewpoint representation, despite accounting for a substantial proportion of the surrounding dwellings. An assessment that misses the locations where the affected population is concentrated cannot claim to have assessed the effect on that population.

The same pattern is evident in the treatment of the main settlements. Birr, the largest population centre in the study area, is effectively unassessed. A town of approximately 5,000 people, located 4–5 km north of the site on rising ground overlooking the development area, is represented only by a viewpoint at Birr Rugby Club on the town's southern edge and a viewpoint within Birr Castle Demesne, an enclosed parkland setting where screening is at its maximum. No viewpoint addresses the residential areas, approaches or elevated southern aspect of the town itself. The result is that the largest single concentration of visual receptors in the study area is represented by a rugby pitch and a walled demesne. Shinrone and Riverstown are entirely unassessed, despite being identifiable settlements within the receiving landscape.

The night-time environment is also not properly assessed. Aviation lighting is dismissed in a single paragraph, with no night-time photomontage, no night-time viewpoint, no receptor-based analysis and no entry in the visual-effects table. This is a serious omission. The absence of a formal dark-skies designation is not a substitute for assessing the sensitivity of the receiving night-time environment. The applicant's own description of the area as rural, with relatively low levels of ambient lighting, points to a sensitive receiving environment. In such a setting, red aviation lights on turbines of this scale would not be a minor technical detail; they would introduce a new and repeated night-time visual effect across the rural skyline.

Taken together, the viewpoint selection and omissions materially undermine the reliability of the LVIA. Distance reduces prominence; haze reduces contrast; foreground screening reduces visibility; the absence of scale reference reduces comprehension; and the omission of key receptor clusters, settlements and night-time views removes the most affected visual receptors from meaningful assessment altogether. The resulting LVIA findings are therefore not simply the product of objective visual analysis. They are the product of what was selected for assessment, what was visually minimised within those selections, and what was left out entirely.

8.10 Sensitivity, Magnitude and the Suppression of Significance

The preceding sections examined *Where and How* the applicant chose to assess. This section examines *What* the applicant did with the judgements themselves — the sensitivity, magnitude, quality and duration ratings from which every significance finding is built. Under the chapter's own methodology, these ratings are the inputs to its Table 12.4 matrix; if the inputs are suppressed, the conclusion of "Not Significant" follows automatically, whatever the landscape actually shows. The section first sets out the findings as the chapter made them (B4.1), and then demonstrates five respects in which those findings cannot be sustained:

- **The sensitivity input is wrong (B4.2)** — correcting the unjustified "Medium-low" rating carries multiple viewpoints across the chapter's own significance threshold.
- **The magnitude ratings are independently suppressed (B4.3)** — the near-field ratings sit below the chapter's own definitions of the situation they describe.
- **"Neutral" quality findings contradict the chapter's own default (B4.4)** — that wind energy effects are "almost always negative."
- **"Moderate" findings are left unexamined (B4.5)** — contrary to LITGN-2024-01's requirement for explicit justification.
- **Duration is conceded and then ignored (B4.6)** — a 35-year effect weighted identically to a transient one.

The common thread is the one identified at the outset of Part B: at each point of judgement, the rating assigned sits below what the chapter's own definitions and stated principles would produce, and no reasoned narrative accounts for the gap.

8.10.1 The findings as made

Table 12.7 is the summary output of the entire visual assessment. For each of the 27 viewpoints it records the four judgements from which significance is derived

1. The sensitivity of the receptor at that location
2. The magnitude of the visual change,
3. The quality of the effect (negative, neutral or positive) and
4. The duration.

Sensitivity and magnitude are then combined through the chapter's Table 12.4 matrix to produce a significance rating on a scale running from Imperceptible Slight, Moderate, Substantial to Profound. This scale matters because only effects rated **Substantial or**

above are treated as *significant* in EIA terms. Anything below that line, however adverse, is folded into a conclusion of "Not Significant" and effectively falls out of the decision.

The extract below shows the findings for the near-field viewpoints — those closest to the development and therefore those representing the surrounding community:

VP2	1 8	Medium-low	Medium	Moderate-slight/ Negative/ Long-term
VP20	1 0	Medium-low	High	Substantial-moderate/ Negative/ Long-term
VP21	1 3	Medium-low	High-medium	Moderate/ Negative/ Long-term
VP22	1 0	Medium-low	High-medium	Moderate/ Negative/ Long-term
VP23	1 9	Medium-low	High-medium	Moderate/ Negative/ Long-term

The findings in Table 12.7 sit, without exception, below that line. The highest rating anywhere in the assessment is **Substantial-moderate** — one step short of significance — and it occurs at VP20, the viewpoint nearest the turbines (1.0 km). Every other viewpoint returns Moderate or less. The result is that an eleven-turbine development of 180-metre structures, with 312 dwellings within 3 km, is assessed as producing **not a single significant visual effect at any location**, and the chapter concludes "Not Significant" for every receptor group: residents, road users, scenic designations and amenity sites alike.

Two features of this outcome should be noted before the individual ratings are examined. First, its **totality**: not one effect, anywhere, crosses the threshold. Second, its **proximity to the line**: the nearest viewpoint lands exactly one increment below significance.

A conclusion that depends on every judgement falling just short, *none* of the 27 falling the other side, is a conclusion that the following sections test against the chapter's own definitions. It does not survive the test.

8.10.2 The sensitivity input is wrong, and the conclusion falls with it

We established previously that the Medium-low sensitivity rating at the near-field viewpoints cannot be derived from the chapter's own stated criteria. Once we correct that misclassification from medium-low to medium the consequence is decisive.
Using the applicant's own Table 12.4 matrix.
At VP20 (High magnitude): Medium sensitivity yields **Substantial**; High sensitivity yields **Profound-substantial**.
At VP22 and VP21 (High-medium magnitude): Medium sensitivity yields **Substantial-moderate**; High sensitivity yields **Substantial**.

In other words, correcting the single input from 'Medium-Low' to Medium or High carries multiple viewpoints across the chapter's own significance threshold. The conclusion that visual effects are "Not Significant" is not a robust finding that survives reasonable variation in judgement; it is wholly dependent on the one rating the chapter fails to justify.

8.10.3 The magnitude ratings are independently suppressed

Table 12.3 Magnitude of Visual Effect

Criteria	Description
Very High	The proposal obstructs or intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. An extensive degree of visual change will occur within the scene completely altering its character, composition and associated visual amenity
High	The proposal obstructs or intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual change will occur within the scene substantially altering its character, composition and associated visual amenity

"High Magnitude", is defined in Chapter 12 above as "*proposal obstructs or intrudes a significant proportion of the vista, a considerable degree of visual change, substantially altering the scene*"

At VP22, 1.0 km from the nearest of eleven turbines arranged in a line across the direction of view. The two images below break down the vista into two separate arcs but should be viewed as a side by side viewpoint. Each turbine subtends an apparent height several times that of any existing landscape element, and the array occupies a wide horizontal arc of the vista.





The rating assigned is *High-medium*. The chapter's own definition of High describes this situation, conservatively; its definition of Very High ie '*intrusion into a large proportion of the vista, without question the most noticeable element* 'should be engaged. The same pattern recurs at VP21 and VP23. No reasoned narrative explains the discount.

8.10.4 "Neutral" quality findings contradict the chapter's own default

The chapter's methodology states that for wind energy development "*the quality of the landscape and visual effects will almost always be negative.*" Table 12.7 then assigns 'Neutral' or 'Neutral-Negative' quality at viewpoints where the ZTV shows open visibility at moderate range — VP15 (Knockshegowna GAA Club, 5.4 km): Imperceptible/Neutral; VP6 (Birr Rugby Club, 5.3 km): Neutral-Negative; VP19 (7.3 km): Neutral-Negative. The proposition that eleven 180-metre turbines at 5.4 km in open flat terrain produce *'no change'* in the quality of the visual environment is not explained; it is simply tabulated. Where an assessment departs from its own stated default, LITGN-2024-01 Cl. 3(6) requires the departure to be reasoned. It is not.

8.10.5 "Moderate" findings are left unexamined

LITGN-2024-01 Cl. 3(5) requires that effects falling in the middle of the significance range — exactly the "*Moderate*" findings returned at VP21, VP22 and VP23 — be the subject of explicit justification as to whether they are significant or not. The chapter provides no such justification; the 'Moderate' findings are treated as self-evidently not significant and swept into the global conclusion. Three viewpoints at 1.0–1.9 km from the development, each representing surrounding dwellings, each returning a mid-scale effect, received no individualised significance reasoning at all.

8.10.6 Duration is conceded and then ignored

The chapter classifies the effects as 'Long-term' on its own duration scale (15–60 years; the operational life sought is 35 years with permanent elements, access tracks and grid infrastructure, that will outlast decommissioning. Duration appears in every Table 12.7 cell and modifies nothing: a 35-year alteration of the daily outlook of 312 households is weighted identically to a transient effect. Treating duration as a recorded but inert label, rather than as a factor bearing on significance, is a further systematic understatement.

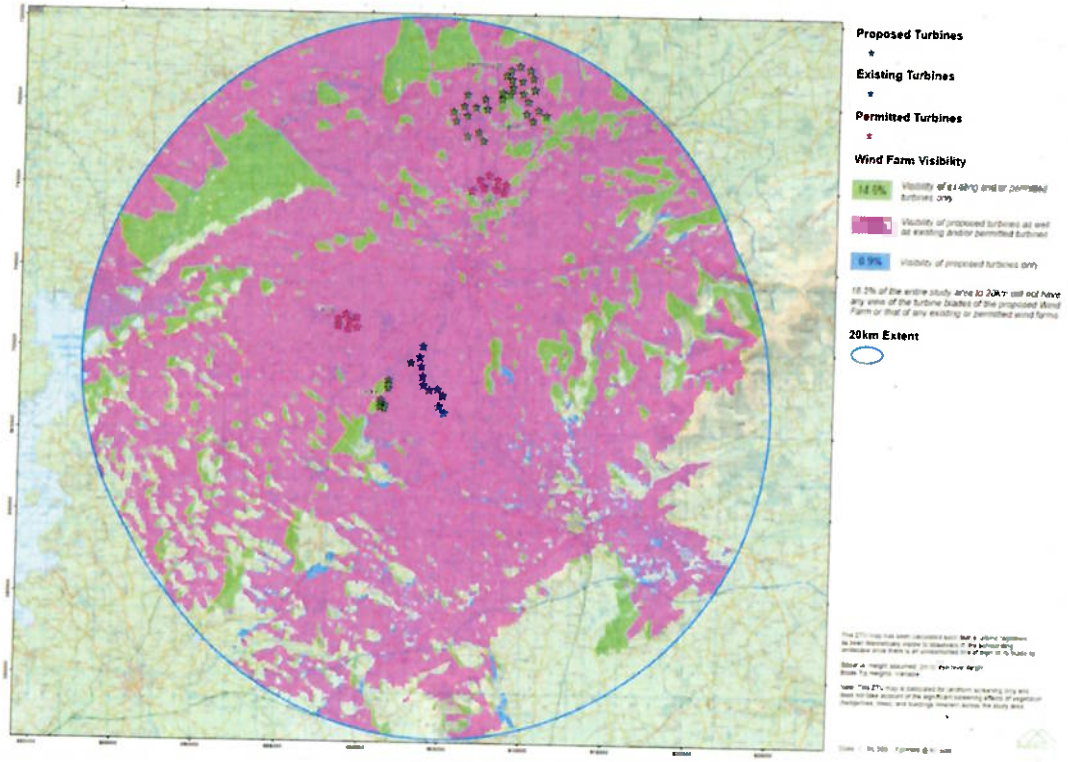
Summary

Table 12.7 is the determinative output of the entire visual assessment. Within it, every judgement that was open to discretion was resolved downward. The sensitivity ratings cannot be derived from the chapter's own criteria; the magnitude ratings sit below the chapter's own definitions of the scenes they describe; the quality findings contradict the chapter's own stated default; the Moderate findings escape the justification LITGN-2024-01 requires; and duration is recorded but never weighed. Correcting any one of these — most decisively the sensitivity input — carries the near-field viewpoints across the chapter's own significance threshold. The conclusion of "Not Significant" therefore rests not on the evidence but on a series of unexplained discounts, and it should be afforded weight accordingly.

8.11 Cumulative Assessment

Section 12.7 of the chapter disposes of cumulative effects in summary terms. It acknowledges the operational Lacka Wind Farm, describes the proposed (Ballincor) and existing (Lacka, Carrig) developments together as " *modest scale developments*" that "*do not contribute to a marked change in landscape character*," and concludes that the area "*will not become a landscape that is defined by wind energy development*." It produces a cumulative ZTV (Figure 12.12) see below, notes that it shows near-universal overlap of visibility between the proposed and existing developments and then discounts its own map as one that "*considerably overrepresents actual cumulative effects*."

Figure 8-44: *Cumulative theoretical visibility of the proposed Ballincor Wind Farm in combination with all other wind farms in the study area*



It is noted in passing that the chapter's cumulative narrative places Lacka at 2.5 km, while its own baseline description (Section 12.3.1.2) records the nearest Lacka turbine at 1.7 km from the proposed wind farm so the existing development is closer than the cumulative assessment ever acknowledges.

This treatment fails in four respects. Each is discussed below.

8.11.1 The assessment never reaches the receptors

Cumulative effects were assessed at viewpoint level only. The lived cumulative effect, however, is experienced at dwellings: a household between the developments will face Ballincor turbines from the front of the house, Lacka from the rear, with Carrig on the oblique. The receptor-level analysis presented in Part C shows that substantial numbers of the 312 dwellings will have simultaneous or sequential visibility of two, and in many cases three or more, developments — with combined totals at individual dwellings reaching the mid-twenties of turbines. Nothing in Section 12.7 engages with this at all. Every failure that follows is a consequence of this one: an assessment that never asks what any actual household will see cannot answer the cumulative question. The map below shows the cumulative reality: twenty-six turbines across three developments, with the 312 receptors of the Ballincor near field positioned between them.

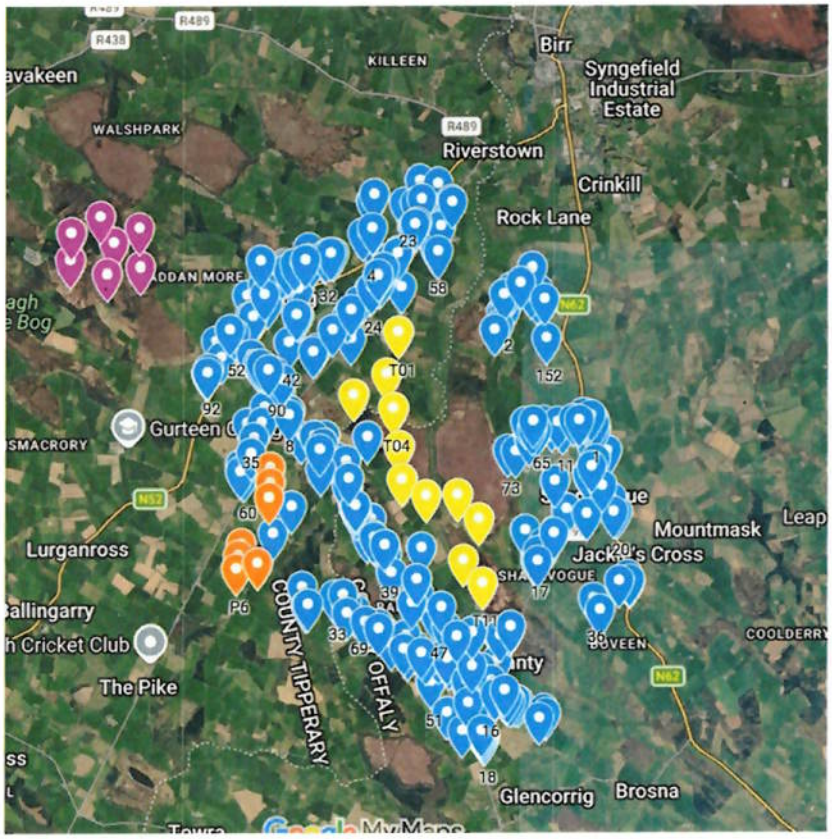


Figure 8-45: *All 3 windfarms and 312 receptors*

The cumulative reality: twenty-six turbines across three developments, with the 312 receptors of the Ballincor near field positioned between them.

8.11.2 The permitted developments: one dismissed in a paragraph, one ignored entirely

The chapter's own cumulative baseline (Section 12.3.8) lists two permitted developments. The first, Carrig (seven turbines, 6 km northwest, ABP-318689-23), the chapter itself identifies as presenting "*the greatest potential for cumulative effects from intervisibility*" of any development in the study area. It then disposes of its own concession in a single paragraph of assertion: Carrig will be "*a distant background feature*," or Ballincor will be, or the two will be seen "*in opposite viewing directions*." On that basis the global cumulative magnitude of "Low" is declared, without the reasoned narrative LITGN-2024-01 requires. The reasoning is compounded by its central premise: "*opposite viewing directions*" is offered as mitigation when, for a resident between the developments, it describes encirclement, turbines to the front and to the rear, the most severe cumulative condition, not the least. A second permitted development in the chapter's own baseline — Cush, eight turbines, 10 km north — receives no narrative assessment whatever. It appears in the baseline list and on Figure 12.12, and is never mentioned again.

8.11.3 The dismissal of the cumulative ZTV is self-serving and unevidenced

The chapter's stated ground for discounting its own Figure 12.12 — "*relatively limited intervisibility with the nearby Lacka Wind Farm*" apparent from the photomontage set, depends on the very photomontage set whose viewpoint placement and seasonal timing are critiqued at B3. A bare-ground ZTV overstates visibility in wooded or built terrain; in an open, flat, bowl-floor landscape of the kind the chapter itself describes, the divergence between theoretical and actual visibility is at its minimum. The Commission is invited to prefer the map to the commentary.

8.11.4 The WEDG cumulative test for this landscape type is failed on the chapter's own classification

Having classified the landscape as Flat Peatland, the chapter was required to apply the WEDG's cumulative guidance for that type: "*development should not be perceived to crowd and dominate the flat landscape*". The committed future baseline is thirty-four turbines across four schemes — eleven proposed at Ballincor, eight operational at Lacka, seven permitted at Carrig and eight permitted at Cush — before counting the twenty-eight operational turbines at Derrinlough and Cloghan in the northern study area. Thirty-four

turbines within and around a single visual envelope, the largest scheme among them arranged as a horizon-filling linear string, is crowding and domination by any ordinary meaning of those words. The chapter does not conduct this test.

8.12 Conclusion

The failures identified in Part B of this report are of three kinds, and they compound.

The first is **misstatement**. The chapter asserts that the site lies within the Moderate and Low Sensitivity classifications of the adopted county mapping; the adopted map shows otherwise. An assessment shown to have misdescribed a verifiable matter of public record at its foundation — and to have argued, contrary to its duty of impartiality, for the discounting of the statutory designations it found inconvenient — cannot ask the Commission to rely on its professional judgement in matters less easily checked.

The second is **suppression**. Every discretionary judgement in Table 12.7 was resolved downward: sensitivity ratings that cannot be derived from the chapter's own criteria; magnitude ratings sitting below the chapter's own definitions of the scenes they describe; quality findings that contradict the chapter's own stated default; Moderate findings exempted from the justification LITGN-2024-01 requires; and a 35-year duration recorded in every cell and weighed in none. Correcting any one of these — most decisively the sensitivity input — carries the near-field viewpoints across the chapter's own significance threshold.

The third is **omission**. The assessment contains no viewpoint within the two largest receptor clusters; no meaningful assessment of Birr and none at all of Shinrone or Riverstown; no winter photomontage; no night-time visualisation or receptor-level lighting assessment behind its one-paragraph treatment of aviation lighting; no reverse-ZTV or other evidence that sensitive near-field locations informed the design; no receptor-level distance, elevation or cumulative analysis of the 312 surrounding dwellings; no substantive assessment of the permitted Carrig development it concedes presents the greatest cumulative risk, and none whatever of the permitted Cush development; and no application of the WEDG cumulative test for its own claimed landscape type.

Each failure is independently material. Taken together, they describe an assessment constructed to be incapable of finding a significant effect: distant viewpoints, summer photography, suppressed inputs, an inert treatment of duration, and a cumulative analysis that discounts its own evidence. The conclusion "Not Significant" is the product of these choices, not of the landscape — and the Commission is invited to attach weight to it accordingly. The assessment the applicant did not carry out — near-field, receptor-based, and cumulative at the level of the individual dwelling — is presented at Part C.

PART C - The Development as the Community Will Experience It

Part A established the landscape the assessment must answer to: a settled, inhabited, low-lying valley overlooked on every side by rising ground and by the towns of Birr, villages of Shinrone, Riverstown and Carrig, in which effective screening of an eleven-turbine, 180-metre array is not feasible. Part B demonstrated that the applicant's conclusion of "Not Significant" is not a finding the evidence produces, but the product of the choices made in reaching it — the understatement of residential sensitivity, the reliance on seasonal screening, *and above all the assessment of visual effect at twenty-seven selected viewpoints in a landscape where the resident population is far larger and far closer than that sample conveys.*

Part C of the report answers the question those choices left unanswered. Of the 312 dwellings identified within the study area, 206 — two-thirds — lie within 2 km of the nearest proposed turbine, and 50 lie within 1 km. A residential community of that size and proximity is represented, in the applicant's assessment, by a handful of viewpoints, most of them at distance. Part C removes that filter. It assesses every one of the 312 dwellings directly, on its own measured distance to the nearest turbine and its own count of turbines in view, and it classifies each one on the applicant's own significance scale.(See Appendix 8-4 for all the detail)

The purpose is twofold. First, it supplies the near-field residential assessment that the Wind Energy Development Guidelines 2006 and GLVIA3 require, proportionate to the population actually exposed to the development — the assessment Chapter 12 does not contain. Second, it tests whether the applicant's central conclusion survives the application of the applicant's own method to the full receptor population rather than a sample. It does not. The finding, set out below, is that significant residential visual effect is the norm across this community, not the exception.

NOTE: Part C is partnered by 2 key Appendices that do all the work Appendix 8-1 and Appendix 8-4. The Insepctor is invited to review both in advance of Part C

Appendix 8-1: Receptor Assessment Software and Method This appendix is the audit layer of the receptor-level assessment. It sets out in full the method, master data and cluster-by-cluster analysis including associated VP images that are summarised in Part C. All 21 VP

clusters are represented individually by image and cluster analysis in this document. Every figure cited in Part C can be traced to the underlying dataset in the project workbook. It is organised in three parts: the assessment method, the aggregate findings/master cluster table and the twenty-one standardised cluster sheets , presented in order of dwelling count.

Appendix 8-4 — Dataset by Receptor (Part C)

This is the full auditable receptor-level dataset underpinning Part C — every one of the 312 dwellings assessed individually, the methodological response to RWE's reliance on selected viewpoints. For each receptor it records: receptor ID, distance to nearest turbine, nearest turbine, assigned VP cluster, distance to that VP, turbines visible from each of the three developments (Ballincor / Lacka / Carrig), combined total, and the resulting significance classification on both the **Ballincor-only** and **cumulative** twin-classification basis.

8.13 How Every Dwelling Was Assessed – The Methodology

The detailed framework — the magnitude bands, the distance modifier, the significance matrix and the cluster sheets are presented in full in Appendix 8-3. Every per-dwelling rating can be traced back to the dataset in Appendix 8-4. What follows here is a summary of how the dataset was built and how each dwelling was classified.

8.13.1 The dataset

The assessment rests on a structured dataset of all 312 residential receptors within the study area, compiled from the application's own coordinate data, from the Zone of Theoretical Visibility analysis and on-site verification described in Part A. For each dwelling the dataset records its grid position; its distance to the nearest proposed turbine, measured to the individual turbine and taken from the application's own Appendix 5-1 coordinates. Turbine by turbine, for all eleven proposed Ballincor turbines an assessment of visibility was recorded. The same exercise records visibility of the operational Lacka and permitted Carrig turbines, enabling a combined cumulative count, of twenty-six turbines in total, to be held for every dwelling.

The 312 dwellings are organised into 21 clusters, each assigned to its nearest vantage point and to the photomontage/image taken from that position. See colour coded clusters below.

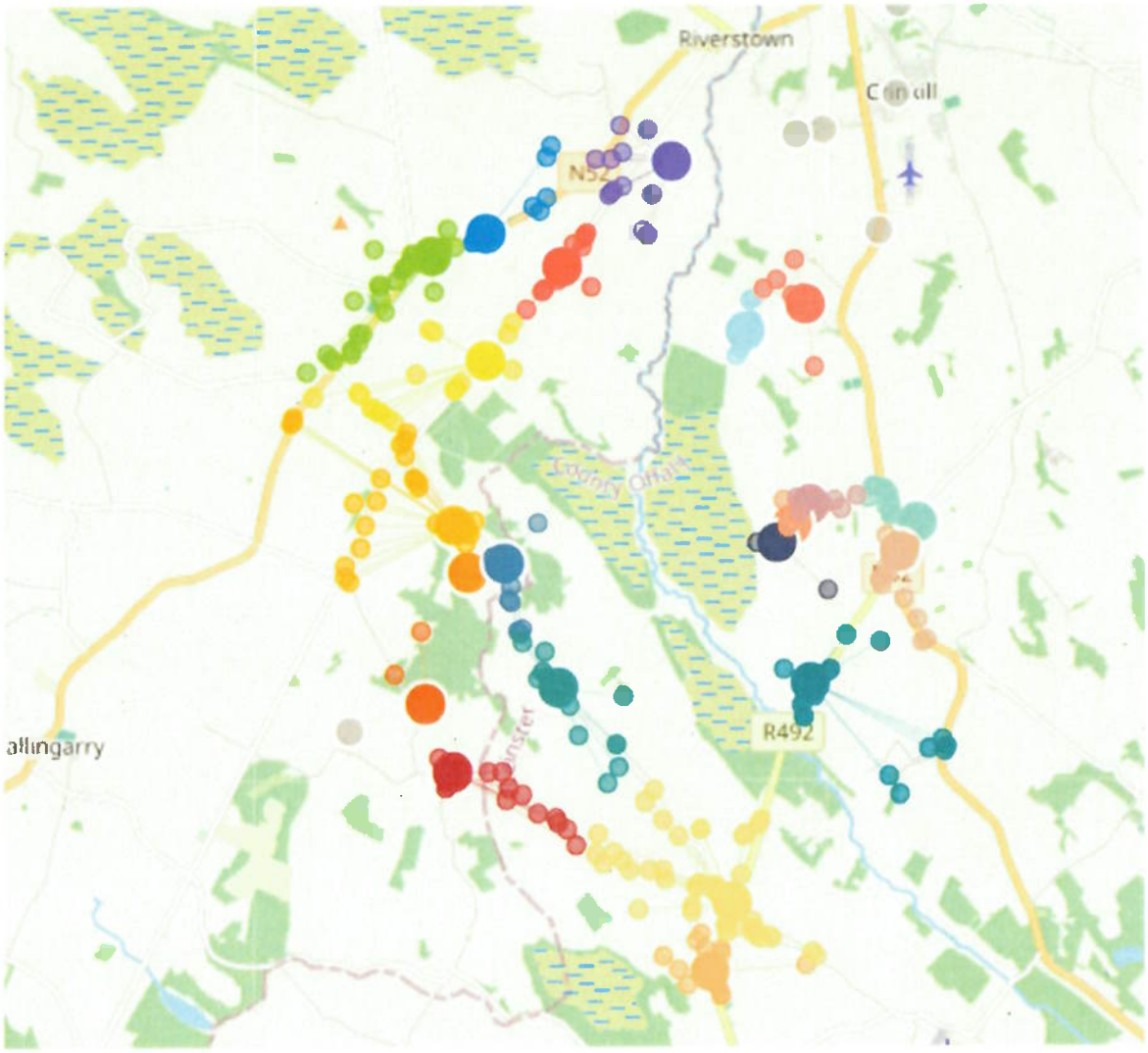


Figure 8-46

Clustering is a device for reporting and illustration, not a simplification of the data: every dwelling is assessed individually on its own turbine count and its own distance (See Appendix 8-4), and the cluster is simply the unit at which the results are presented. The progression from raw data to classification is fixed and reproducible, which means the rating of any dwelling can be checked directly by an Inspector against the dataset. There is no hidden weighting and no discretionary adjustment.

8.13.2 Receptor sensitivity: High, and why

Under GLVIA3, the sensitivity of a visual receptor is a function of who experiences the view. Residents at home are expressly among the most susceptible of all receptor groups, because their exposure is involuntary, sustained, and bound up with the amenity of the dwelling itself.

Part B demonstrated that Chapter 12's assignment of "Medium-low" sensitivity to near-field residential viewpoints cannot be derived from the chapter's own stated criteria, and that correcting that single input carries several of the applicant's own viewpoints across the significance threshold. Part C applies that correction throughout: every receptor here is a dwelling, so sensitivity is fixed at High. This is not an assumption adopted for convenience; it is the correct characterisation of a population composed entirely of residential receptors, in a landscape the adopted county mapping classifies as Moderate to High sensitivity, and it is the characterisation the applicant's own criteria produce when properly applied.

8.13.3 Two assessments, kept separate

Part C produces two distinct significance ratings for every dwelling and keeps them apart throughout. The first assesses the visual effect of the proposed Ballincor development on its own. The second assesses the cumulative effect of Ballincor together with the operational Lacka and permitted Carrig turbines. They are reported as two figures, never blended into one.

This mirrors the structure of the applicant's own chapter, which assesses the proposed development first and treats cumulative effect separately, and it is deliberate. A single combined rating would invite the objection that the effect of the proposed development had been inflated by importing the neighbouring wind farms. Keeping the two apart makes each finding clean: the Ballincor-only rating answers the applicant's project assessment directly, turbine for turbine, on the applicant's own scale; the cumulative rating answers the inadequacy of the cumulative chapter identified in Part B. Two independently defensible findings are stronger than one composite that is not.

8.13.4 How magnitude and significance were determined

For each dwelling, the magnitude of visual change is assessed from two observable quantities: the number of turbines visible — the primary variable, because it determines how much of the field of view the development occupies — and the dwelling's distance to the nearest turbine, which acts as a secondary modifier. The turbine count is mapped onto a magnitude tier using the magnitude definitions stated in Chapter 12 itself, under which a proposal that obstructs a significant proportion of the vista and substantially alters the scene is of High magnitude. A dwelling with eight or more of the eleven turbines in open view plainly meets that definition.

Distance then modifies that count-based tier by at most one step in either direction: dwellings within 1 km of the nearest turbine are raised one tier, reflecting near-field dominance; dwellings beyond 2 km are lowered one tier, as separation begins to temper the effect; dwellings between 1 and 2 km are unadjusted. Distance is treated as a modifier rather than a driver because the turbine count is recorded turbine-by-turbine and is not open to dispute, whereas distance, although measured precisely by the Applicant, varies across a narrow band in which every dwelling is comparatively close. Allowing count to lead and distance to adjust reflects the true weight of the two variables.

Magnitude is then combined with the fixed High sensitivity through the significance matrix at Chapter 12, Table 12.4 — the same matrix from which every significance finding in the applicant's assessment is derived — to return a rating on the applicant's own scale: Imperceptible, Slight, Moderate, Substantial, Profound, with Substantial and above treated as significant in EIA terms. This is the methodological core of Part C.

The cumulative assessment applies the identical method, changing only the count input to the combined twenty-six-turbine figure, with the count bands scaled proportionately so the same magnitude tiers apply on a like-for-like basis.

One discipline follows from adopting the applicant's scale. Part B criticised the Applicant's Chapter 12 for returning "Moderate" findings without the explicit justification that the 2024 guidance update requires for effects in the middle of the range. Part C does not make that mistake: any dwelling classified at Moderate, in either assessment, is accompanied by an explicit statement of whether the effect is considered significant and why. Finally, elevation is treated as an aggravating factor and never as a discount. Part A established that the majority of dwellings sit at or above the level at which the lowest point of the rotor sweep passes, and that elevated receptors see more of a turbine, not less; no dwelling's magnitude has been increased for absence of screening or reduced on an assumption of intervening screening.

8.14 What the Assessment Found

Appendix 8-1 and Appendix 8-4 provide all the data to support this analysis..

8.14.1 The headline finding

On the proposed development considered alone

- 276 of the 312 dwellings — 88 per cent — experience a visual effect of Substantial significance or greater, the threshold at and above which an effect is significant in EIA terms on the applicant's own scale.
- Of these, 120 dwellings reach the highest rating of Profound–Substantial and a further 120 reach Substantial.
- On the cumulative assessment, taking Ballincor together with the operational Lacka and permitted Carrig turbines, 286 of the 312 dwellings — 92 per cent — experience a significant effect.

This stands directly against the conclusion of the Applicant's Chapter 12, which identifies no significant residential visual effect anywhere in the study area. The divergence is not a matter of differing professional judgement at the margins. It is the difference between assessing twenty-seven selected viewpoints and assessing all 312 dwellings, using the same significance matrix in both cases. When the applicant's own method is applied to the whole receptor population rather than a sample, the great majority of dwellings record significant effects.

There is a modest gap between two key figures — 88 per cent faced significant effects on the proposed development alone, rising to 92 per cent facing significant effects on the cumulative effect of 3 windarms. This is itself instructive. It demonstrates that the significant effects identified are driven overwhelmingly by the proposed Ballincor development in its own right, not by the pre-existing presence of the neighbouring wind farms. The proposed development does not add marginally to an already-saturated baseline; it is the principal cause of significant visual effect at the great majority of these homes.

8.14.2 How much of the wind farm is in view

The number of turbines visible from a dwelling is the primary determinant of magnitude, and its distribution across the 312 receptors is heavily weighted towards high visibility. A majority of dwellings see eight or more of the eleven proposed turbines; sixty-one see all eleven; and only twenty see none at all. The modal experience is not a glimpsed or partial view but a substantial proportion of the entire wind farm in simultaneous view.

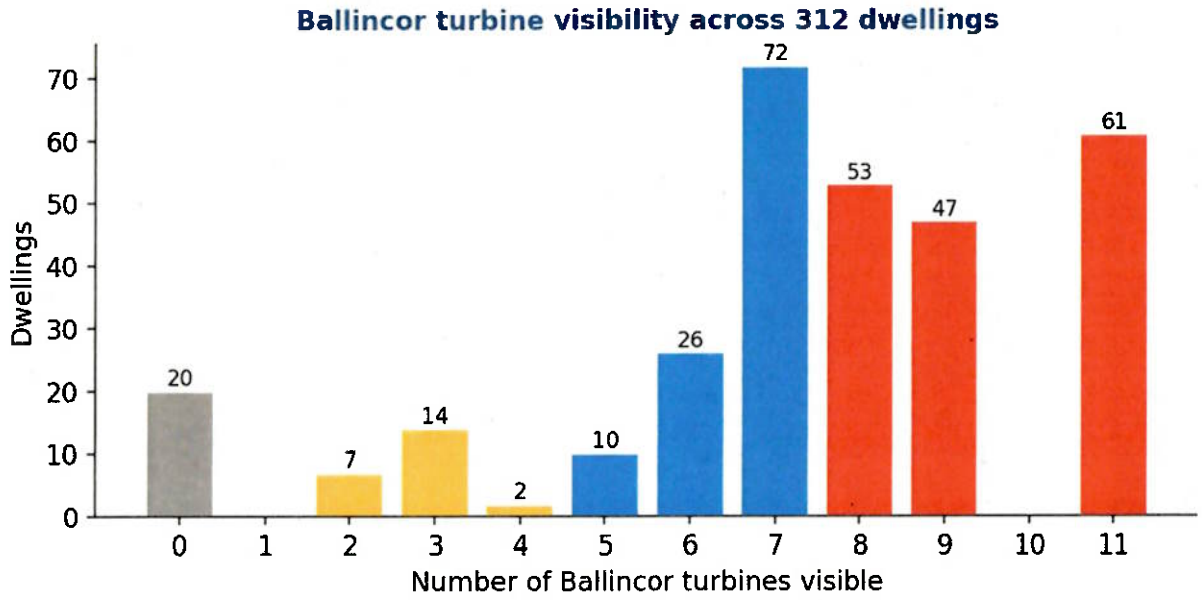


Figure 8-47: *Number of Ballincor turbines visible across the 312 dwellings. The distribution is weighted to the right: most dwellings see a majority of the eleven turbines, and the single most common count is seven.*

This distribution is the single most important corrective to Chapter 12. A viewpoint-based assessment can select locations where intervening landform or vegetation limits the count; the receptor population as a whole cannot be so selected, and when assessed in full it shows that high simultaneous turbine visibility is the norm, not the exception, among the dwellings that surround the site.

8.14.3 How close the community lives

Distance to the nearest turbine, taken from the application's own coordinates, confirms the near-field concentration of the receptor population. Fifty dwellings lie within 1 km of the nearest turbine, two-thirds lie within 2 km, and every one of the 312 dwellings lies within 2.5 km. There is no remote tail to this population: it is, in its entirety, a near-field residential community.

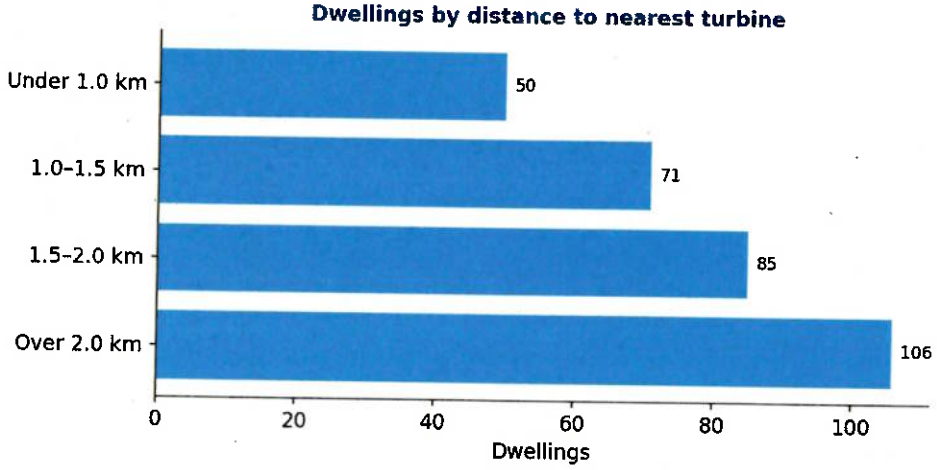


Figure C.2 —

Figure 8-48: *Dwellings by distance to the nearest proposed turbine. The entire population lies within 2.5 km; none is remote from the development.*

This is the spatial fact that the viewpoint selection in Chapter 12 does not convey. A residential community in which two-thirds of dwellings lie within 2 km of a 180-metre turbine is one in which significant visual effect is, on any orthodox application of the guidance, the expected outcome — and that is precisely what the assessment returns.

8.14.4 The significance distribution, on both assessments

The significance findings for both assessments are shown below. In each, the great majority of the population falls at or above the significance threshold, and the two distributions differ only modestly — the cumulative assessment shifting a further tranche of dwellings upward, as the combined turbine context would predict. In neither does the population resemble the 'not significant' picture presented in Chapter 12. The dwellings recording 'no significant effect' are a small minority — those screened by landform or sufficiently distant that the turbine count falls away — and they are the exception that the viewpoint-based assessment has, in effect, generalised to the whole.

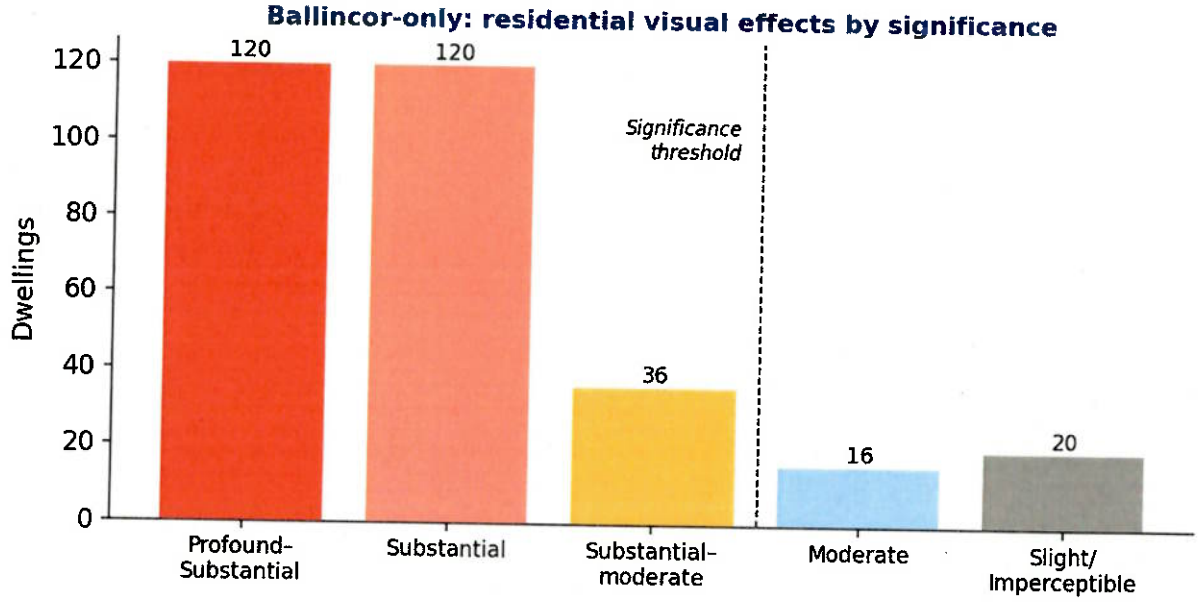


Figure 8-48:— *Ballincor-only significance distribution: 120 Profound–Substantial, 120 Substantial, 36 Substantial–moderate, 16 Moderate, 20 Slight/Imperceptible. 276 of 312 dwellings (88%) lie at or above the significance threshold.*

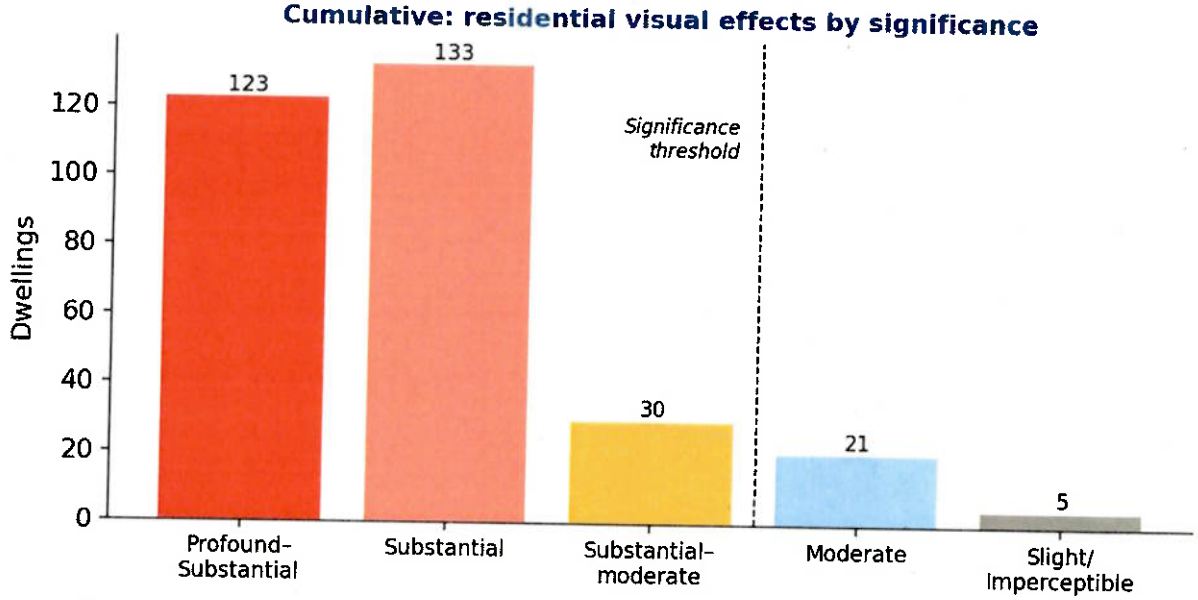


Figure 8-49: *Cumulative significance distribution: 123 Profound–Substantial, 133 Substantial, 30 Substantial–moderate, 21 Moderate, 5 Slight/Imperceptible. 286 of 312 dwellings (92%) lie at or above the significance threshold.*

8.15 The Pattern Across the Landscape

The aggregate figures are borne out, dwelling by dwelling, across the twenty-one clusters. The full per-cluster analysis — each cluster's photomontage, data, both ratings and commentary — is set out in Appendix 8-1; what follows draws out the pattern that analysis reveals. Four features of it bear directly on the applicant's conclusion.

8.15.1 The most exposed: the near-field clusters

The dwellings closest to the development record the most severe effects, and they record them uniformly. At Pallas and Cahorleigh, off the L1071 to the north, all seventeen dwellings hold nine of the eleven turbines in view at between 0.80 and 1.34 km, and every one is classified at Profound–Substantial — the only cluster of its size in which the entire population reaches the top of the applicant's scale on the proposed development alone. At Ballimanoe and Cloonheed Lanes, the closest cluster in the study area, all eight dwellings lie within 1 km of the nearest turbine, the nearest at just 0.56 km, and all eight are Profound–Substantial. At Cronekill, nineteen dwellings see nine turbines from as close as 0.76 km, eighteen of them at Profound–Substantial. These are not marginal or contestable judgements; nine or more turbines in open view at well under 1.5 km is the direct output of the magnitude definitions Chapter 12 itself sets out. The applicant's assessment carries no viewpoint at a comparable separation, and so the most proximate residential effects in the entire study area are absent from it.

8.15.2 The most populous: where the largest numbers are affected

The significance findings are not an artefact of small outlying groups. The three largest clusters all record significant effect across the great majority of their dwellings. The single most populous cluster, fifty-five dwellings strung along the Galbally Road to the east, holds a consistent seven turbines in view; all fifty-five are assessed at Substantial–moderate or greater, and fifty-three at Substantial or above. The thirty-seven dwellings near Carrig village on the N52 hold eight turbines in view and are uniformly significant. The twenty-six dwellings at the Doorley cluster span the full range from no turbines to all eleven, with seventeen at Substantial or above. The effect therefore falls on the most populous receptor concentrations, not merely on isolated properties, and it does so in the very locations the applicant's viewpoint sample passes over.

8.15.3 A sustained band of effect along the N52 at Carrig

Two adjacent clusters on the N52 approach to Carrig village — thirty-seven dwellings at the church, ten more immediately outside the village — together record a continuous band of high residential visual effect, the latter at Profound–Substantial, along a national secondary road serving a settlement the adopted development plan seeks to protect. This bears directly on the County Development Plan dimension of the objection set out in Part B: significant residential effect at a protected settlement, on a busy approach road, that the applicant's assessment does not report.

8.15.4 Where the cumulative context tips the balance — and where the method finds no effect

The value of keeping the two assessments separate is shown where they diverge. At Tinnakilly and at Clonkelly Lane, clusters that sit at the lower significant tier on the proposed development alone rise by a full tier once the Lacka and Carrig turbines enter the view — the receptor-level evidence for the cumulative case that the applicant's cumulative chapter does not develop. The divergence runs in both directions: at the upper Rathbeg Lane cluster, part of the group eases on the cumulative figure as the distance modifier resolves the combined count, which is reported transparently rather than smoothed.

Equally important are the clusters where the method finds no significant effect. At the L8029/R492 junction, fourteen dwellings see only three turbines and the cluster sits, in the round, below the threshold; at Loughkeen, the only cluster from which no Ballincor turbine is visible at all, both dwellings are Slight–Imperceptible. These are reported as non-significant without qualification. Their inclusion matters: a method that returned significance everywhere would be open to the charge of being insensitive to genuine variation. That two clusters fall below the threshold demonstrates that the framework discriminates on actual exposure and gives the eighty-eight and ninety-two per cent findings their force.

8.16 What This Means for the Applicant's "Not Significant"

The applicant's conclusion of no significant residential visual effect rests on the assessment of a small and largely distant sample of viewpoints. When the applicant's own method — the same sensitivity properly applied, the same magnitude definitions, the same significance matrix — is applied instead to every one of the 312 dwellings on its own measured exposure, the conclusion does not hold. Significant effect is recorded at 88 per cent of dwellings on the proposed development alone and 92 per cent cumulatively. The dwellings most directly exposed, and the most populous concentrations of homes, are precisely those the viewpoint sample does not represent.

The mechanism by which the applicant reached "Not Significant" is therefore identifiable: it is the generalisation, to a whole near-field residential community, of the limited effect recorded at a sample weighted towards distance and open ground. Part C does not rest on a competing methodology or a contested matter of opinion that an inspector would have to choose between. It rests on the applicant's own framework, applied without the selection that produced the applicant's result. On that basis the proposed development gives rise to significant residential visual effects across the great majority of the surrounding community, and the assessment in Chapter 12 cannot be relied upon to conclude otherwise.

Chapter 9: Shadow Flicker

Appendix 9-1:	**Gurteen Vs Birr Sunshine Data**
Appendix 9-2:	**Technical Appendix**
Appendix 9-3:	**Unassessed Sensitive Receptors**
Appendix 9-4:	**Receptor Elevation Geometry**

9.0 Introduction

This chapter addresses Chapter 16 EIAR and the three WindPRO modelling appendices submitted with it. It interrogates the applicant's own documents and demonstrates from those documents alone that the shadow flicker assessment placed before An Coimisiún Pleanála cannot support a grant of planning permission. Appendices 9-1 to 9-4 have been compiled to support the assertions and dataset conclusions drawn in this chapter.

This review will present five evidence-based grounds of objection, each supported by the applicant's own submitted documents. The grounds compound each other in a way that is more than the sum of their parts.

9.1 Summary of Grounds

- **Ground 1 — The Compliance Case Rests on the Wrong Baseline Weather Data.** Every "Expected" compliance figure in Chapter 16 is produced by multiplying the worst-case modelled hours by a single sunshine probability fraction, and that fraction is wrong. The applicant's worst-case figures show 41 receptors above the 30-hour annual threshold and 46 above the 30-minute daily threshold; every one of those exceedances disappears only after the sunshine reduction is applied. The EIAR text attributes the fraction to the Mullingar station (83 km away), records from 1979-2006, while the model actually ran Birr data 1981-2010. The two are in direct conflict, and no reader can reconstruct the Expected values from the EIAR's own stated source. That said, neither station is appropriate. Gurteen, 4.5 km from the site, has recorded radiation continuously since 2008 and shows **27.5% more annual sunshine** than the Birr data the model used. Corrected for Gurteen, the margin of compliance narrows at every receptor. If the foundation fails, every conclusion built on it fails with it.

- **Ground 2 — The Derivation of the Compliance Figures Has Never Been Disclosed.** Distinct from the choice of dataset is the question of method. The Expected values are produced by combining the sunshine fraction with the wind-direction fraction and the worst-case results/ Nowhere in the submitted documents is it explained how that combination is performed. No formula is given and no worked example is shown. The calculation is not a simple multiplication, the model weights sunshine probability against wind direction because a turbine casts shadow only when it is moving. That interaction determines every compliance figure in Table 16-1. An inspector cannot verify from the submitted documents how any Expected figure was arrived at. The entire compliance case rests on figures whose derivation has not been disclosed.

- **Ground 3 — The Site Geometry Is Inverted From the Standard Model.** The conventional shadow flicker model assumes turbines on elevated ground and homes below, with shadows cast downward and broken up by terrain. At Ballincor the turbines sit on bog at 43–63 m above sea level and, established from the applicant's own Digital Terrain Model elevations, 65 of the 129 assessed homes sit above the blade bottom of their nearest turbine, 49 of those are above the blade bottom of every turbine in range. Residents look across at, or up into, the lower rotor arc rather than up at an overhead machine. The pattern is concentrated and severe across the southern arc (38 of 39 properties), the eastern arc (67%) and the western arc (64%). This single geometric fact corrupts a further element of the assessment, addressed in Ground 4: it invalidates the study boundary. It also transforms the character of the shadow events themselves, which now arrive at the lowest sun angles in their longest, most horizontal and most penetrating form.

- **Ground 4 — The Study Boundary Is Too Small and Excludes Properties the Applicant's Own Software Reached.** The applicant drew a study boundary at 1,630 metres (ten rotor diameters of the N163) and reported no results beyond it yet the applicant's own software was set to calculate shadow to 1,789 m (N163), 1,823 m (N149) and 1,905 m (V150). 56 sensitive properties identified by the applicant sit in that gap, between 1,630 m and 1,905 m, and none was assessed or explained. Two further properties, R258 and R288, sit at exactly 1,630 metres — on the line the applicant drew — and were excluded without explanation. Receptor 217 is plotted on the applicant's own Figure 16-1 shadow flicker map but never entered into the receptor list or modelled. Taken together, 58 sensitive properties the applicant itself identified were never assessed. The 1,630 m rule is in any event derived from flat-terrain assumptions that do not hold here: at the model's own 3-degree minimum, the shadow from a 180 m tip is still 95 m above ground when it crosses the boundary. The 1630m radius marks a point well within the shadow, not its edge.

- **Ground 5 — Shadow-Day Data the Applicant Held Was Not Disclosed, and the Impact Is Understated.** WindPRO produces two "days" figures per property: the total number of days on which any shadow flicker occurs, and the number on which it exceeds 30 minutes. Chapter 16 reports only the second; the total shadow-days column the applicant's own software produced appears nowhere in the chapter. The effect is twofold. Properties that do exceed the daily threshold appear to have far fewer affected days than they do — Receptor 160 shows 86 days in Table 16-1 against 212 in the appendix; Receptor 261 shows 65 against 185. And 34 properties whose daily maximum is below 30 minutes show zero days in Table 16-1 and appear completely unaffected, when the

appendix records between 25 and 147 days of shadow flicker at each of them. A planning authority reading Chapter 16 in good faith would form a materially different understanding of the scale of impact than the applicant's own data supports.

- **Ground 6 — Compound Multi-Turbine Shadow Flicker Is Never Assessed.** The assessment sums shadow flicker from all turbines into a single annual total per property and so misses compound flicker entirely, that is the case where two or more turbines cast shadow through the same window at the same time. Using the applicant's own coordinates and study boundary, 44 of the 129 assessed properties lie within the simultaneous shadow zone of two or more turbines; 19 are Critical (turbine pairs within 10 degrees of bearing, producing overlap windows of 4–39 minutes every suitable day) and 18 are Severe (10–20 degrees, 43–76 minutes). Not one of the 44 has been assessed for compound exposure. This is not a larger version of single-turbine flicker: blade shadows arriving alternately from two machines at close to double frequency produce the irregular, arrhythmic, high-contrast stimulus that the peer-reviewed photosensitivity research identifies as most potent. The 30-minute threshold has no category for it.

- **Ground 7 — The Cumulative Assessment Overlooks Two Operational Wind Farms.** Chapter 16, Section 16.2.5 states there is "no potential for overlap of the same receptor with any other proposed or operational wind farm developments." The applicant's own Chapter 4, Table 4-2 lists two operational wind farms immediately west of the site: Lacka at approximately 1.7 km and Skehanagh at approximately 2.7 km, eight turbines in total. The nearer lies within the 2 km cumulative-assessment threshold set by the IWEA Best Practice Guidelines the applicant itself cites. A coordinate check identifies 32 sensitive properties falling within the combined shadow zones; because the Ballincor turbines cast westward in the morning and the existing cluster casts eastward in the afternoon, properties between them can receive shadow from opposing directions on the same day. The statement at 16.2.5 was not a considered finding but an unexamined assumption presented as fact, and it is contradicted by the applicant's own Chapter 4.

- **Ground 8 — No Expected Daily Maximum, and Thresholds With No Medical Basis.** Two related deficiencies in the standard applied. First, although the applicant claims expected annual compliance, it has never calculated or disclosed an Expected daily maximum for the 30-minute-per-day limit: for 46 properties the worst-case daily maximum exceeds 30 minutes, and the figure that would show whether realistic conditions bring them within the daily limit is simply absent. Second, the 30-hour/year and 30-minute/day thresholds themselves have no medical basis — they are legacy administrative limits from 1990s German planning practice for turbines of 50–80 metres,

roughly a third of the height proposed here. Voicescu et al. (2016) found the daily maximum a better predictor of annoyance than the annual total, and found people with migraine, dizziness or tinnitus at three times higher odds of annoyance; Ireland's primary metric remains annual hours.

- **Ground 9 — The Mitigation Cannot Cure the Defect.** The applicant's answer to every failure above is the same: an automatic shutdown system will prevent non-compliance. It cannot. The system is calibrated to the 30/30 thresholds, not to zero, so it permits up to 29 minutes of flicker daily until the annual cap is reached; it can respond only to what the model recorded, so it cannot reach the 58 unassessed properties or the sub-threshold and compound exposures the model never measured; it will be operated and self-reported by the developer, with no independent monitoring, no named enforcement body and no resident-accessible review. The applicant's "near zero" commitment is used in three irreconcilable senses in the same chapter and is breached on the applicant's own Expected values within the first year. The Cloghan precedent demonstrates what this enforcement architecture produces in practice, and the CJEU has held (C-50/09; C-427/07) that deficiencies in environmental assessment cannot be cured by post-permission monitoring. This is a transfer of risk from the developer to the residents, and it is not a lawful planning basis.

9.2 The foundation of the compliance case is unsound

Every compliance figure in Chapter 16 is the product of a single arithmetic step: the worst-case modelled hours are multiplied by a sunshine probability fraction. If that fraction is wrong, every Expected value is wrong, and the entire finding of zero non-compliant receptors falls with it. This section will establish a foundational point that affects every result, every table, and every compliance claim in Chapter 16.

In this submission the "Expected (Realistic)" values are built on sunshine probability data that is internally inconsistent, misattributed in the EIAR text, drawn from the wrong station, and contradicted by an up-to-date and current 18-year dataset from a Met Éireann station 4.5 kilometres from the site that the applicant never used, cited, or acknowledged.

This is not a peripheral technical dispute. The Board is asked to understand at the outset that if the baseline weather data is wrong, everything derived from it is wrong. The worst-case modelled figures show 41 receptors exceeding the 30 hours per year threshold and 46 exceeding the 30-minutes-per-day limit. It is only after the sunshine probability reduction is applied that every one of those exceedances disappears and the assessment returns a finding of zero non-compliant receptors. That reduction is the single most consequential number in the entire chapter. It is the number that converts a failing assessment into a passing one..

9.2.1 What the Compliance Case Requires

The WindPRO shadow modelling software produces two sets of outputs for each receptor: a *Worst-case* figure, which assumes 100% sunshine during all daylight hours and worst-case wind alignment for the entire year, and an *Expected (Realistic)* figure, which applies two reduction factors to the worst case, one for the probability that the sun is actually shining on any given day (the sunshine fraction), and one for the probability that the wind is aligned to cast the maximum shadow (the wind direction fraction). The Expected values are computed by multiplying the worst-case figure by these two fractions.

The sunshine fraction is therefore not an incidental input. It is a direct multiplier on the worst-case hours. If the sunshine fraction is understated, that is, if the station used records less

sunshine than the site actually receives, then the Expected values are correspondingly understated, they inevitably show less shadow flicker than will realistically occur. In this case the margin between the reported Expected hours and the 30-hour compliance threshold is artificially widened, not because the site is less affected than the worst case, but because the baseline sunshine figure is lower than the site actually experiences. This is the error this submission relies upon throughout.

9.2.2 What Dataset the EIAR Claims to Use– Mullingar Data 1979-2008

Chapter 16, page 16-12, makes the following statement:

"Met Éireann data for this region shows that the sun shines on average for only 30% of the daylight hours per year."

Footnote 6 in that chapter identifies the source of this figure as the **Mullingar 1979–2008** averages published on the Met Éireann website, accessed March 2025. The Mullingar meteorological station is located in Co. Westmeath at Latitude 53.54°N, Longitude −7.36°E — 83 kilometres north-northeast of the Ballincor site.

9.2.3 What Dataset the Model Actually Used – Birr Data 1981-2010

The WindPRO output reports — Appendices 16.1, 16.2, and 16.3, covering all three turbine scenarios — each carry the following header on the first page, identical in all three cases:

"Sunshine probability S (Average daily sunshine hours) ***[BIRR]*** Jan 1.57 — Feb 2.08 — Mar 2.82 — Apr 4.36 — May 5.20 — Jun 4.37 — Jul 4.15 — Aug 3.90 — Sep 3.54 — Oct 2.68 — Nov 1.94 — Dec 1.23"*

These twelve monthly values match exactly — to two decimal places in every month — the published Met Éireann climatological normals for **Birr, Co. Offaly, 1981–2010**. The Birr station page is separately cited in footnote 2 of the same chapter, in relation to wind direction data. The model did not use Mullingar data. It used Birr data. The EIAR text and the model inputs are in direct and irreconcilable conflict. The Mullingar sunshine record cited in footnote 6 moreover ends in December 2006 — the "1979–2008" period is a mischaracterisation; the data runs to 2006 at most, leaving the cited dataset at minimum 20 years out of date at the time the model was run.

The two datasets produce sunshine fractions 14.3% apart: Mullingar at 32.9% (rounded to "30%" in the EIAR text) versus the lower Birr figure (what the model actually ran). Because the EIAR invokes the Mullingar percentage to justify the reduction while the model applied the Birr figure, no independent reader can reconstruct the Expected values from the EIAR's own stated source.

9.2.4 What Dataset the Model Should have Used – Gurteen Data 2008-2025

Neither Birr nor Mullingar is the nearest available Met Éireann station to the Ballincor site. That station is **Gurteen, Co. Tipperary**, at Latitude 53.04°N, Longitude −8.01°E, **4.5 kilometres west** of the site.

Gurteen has recorded daily global radiation continuously since February 2008. The Met Éireann data file contains 6,081 daily radiation observations spanning February 2008 to March 2026. This represents 18 years of contemporary, proximate measurement from a station climatologically representative of the Ballincor area, subject to the same Atlantic weather systems, at the same latitude, and at essentially the same elevation.

The World Meteorological Organisation standard for climatological normals requires a minimum of 10 years of data before a station can be used as a reliable long-term average input. Gurteen, at 18 years, comfortably exceeds that threshold. Its record spans dull years (2012: estimated 1,212 sunshine hours — one of the lowest on record) and exceptionally sunny years (2022: estimated 1,718 sunshine hours), capturing the full range of inter-annual variability that determines realistic shadow flicker probability at this location.

Global radiation is converted to estimated sunshine hours using the Ångström-Prescott formula, the standard method used by Met Éireann, by the FAO-56 reference evapotranspiration methodology, and by meteorological agencies internationally. The conversion is well-validated for Irish conditions and produces monthly sunshine hour estimates directly comparable in format to the Birr data used in the model. Applying this method to 17 complete years of Gurteen data (2009–2025) available to view in Appendix 9-1, yields the following:

Gurteen shows **27.5% more annual sunshine** than the Birr data entered into the model (full workings at Appendix 9-1: Gurteen Sunshine Fraction - An Independent Verification).

Because the relationship between sunshine fraction and Expected shadow hours is directly linear in WindPRO, applying Gurteen data would increase the Expected values at every receptor by approximately the same proportion. Table 9-1 below shows the adjusted figures for the highest-exposure receptors.

Table 9-1 Expected Values (Birr Data) Vs Corrected/Expected Values (Gurteen Data)

Receptor	Worst case annual	Expected — as submitted (Birr data)	Gurteen-corrected Expected (×1.275)	Headroom vs 30h limit
160	99h 59min	15h 50min	20h 11min	9h 48min
17	83h 56min	13h 18min	16h 57min	13h 02min
285	80h 45min	14h 26min	18h 24min	11h 35min
296	77h 21min	13h 49min	17h 36min	12h 23min
261	75h 40min	12h 07min	15h 26min	14h 33min

Expected figures sourced directly from WindPRO Appendix 16-1. Gurteen-corrected figures apply a factor of 1.275, reflecting the 27.5% additional annual sunshine recorded at Gurteen versus the Birr data used in the model (full derivation at Appendix 9-1). The corrected figures are a floor, not a ceiling — they address the sunshine station error only.

On the annual hours threshold alone, no receptor crosses 30 hours under the Gurteen correction but that correction addresses only the sunshine station error. The Board is asked to treat the Gurteen-corrected figures as a floor, not a ceiling: they correct the sunshine input alone, while other directional issues identified in the grounds below, the cumulative shadow flicker from Lacka and Skehanagh that was never modelled, remain unquantified. The

submission does not assert that these push any receptor over 30 hours; it asserts that the corrected figures cannot be treated as a ceiling while those issues remain unaddressed.

9.2.5 The consequence of the sunshine correction values

Two immediate consequences of the sunshine correction itself follow, and both are calculated, not projected.

1. The margins of compliance narrow substantially even at the most-exposed occupied receptors: Receptor 17, the highest-exposure occupied property in Table 9-1, moves from an Expected figure of 13 hours 18 minutes to a Gurteen-corrected figure of 16 hours 57 minutes (13:18 × 1.275) — a real increase of 3 hours 39 minutes on this one receptor from the sunshine station error alone, before any of the other unquantified factors are considered.
2. The number of days per year on which each receptor experiences any shadow flicker — data the applicant's own software produced but omitted entirely from Table 16-1 — increases proportionally, with direct implications for the daily 30-minute threshold.

9.2.6 Consequence for All Subsequent Grounds

Because the Expected values underpin the applicant's claim of zero exceedances, and because those values are built on baseline weather data that is misattributed, internally inconsistent, and materially lower than the best available local source, every conclusion in Chapter 16 that relies on the Expected figures is called into question. The grounds that follow address additional and independent defects in the modelling methodology. The Board is asked to bear in mind throughout that even if each of those further grounds were resolved in the applicant's favour, the Expected values presented in Table 16-1 would still not be verifiable or reliable until the model is rerun with a disclosed, consistent, site-representative, and contemporary sunshine dataset.

9.2.7 The derivation methodology was never disclosed

A further and distinct problem with the Expected figures concerns how they were produced. The applicant's appendix sets out two datasets: a monthly sunshine hours table and an

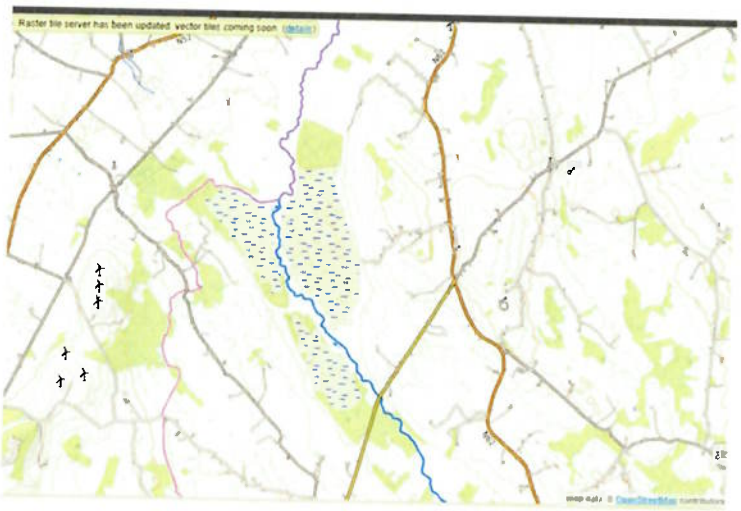
operational hours by wind direction table. The Expected values are derived by combining these two factors with the worst-case results. But nowhere in the submitted documents is it explained how this combination is done. No formula is given. No worked example is shown.

The calculation is not as simple as multiplying worst-case figures by a sunshine fraction. The model weights sunshine probability differently depending on the wind direction, because a turbine only casts shadow when it is actually running. That interaction is at the heart of the Expected value calculation. It determines every compliance figure in Table 16-1. And it has never been explained. An inspector cannot verify from the submitted documents how any Expected figure was arrived at. The entire compliance case rests on figures whose derivation has not been disclosed.

Section 9-2 has shown that the assessment fails at its foundation. The baseline weather data is wrong, the methodology underpinning every compliance figure has never been disclosed, and the consequential errors all run in one direction.

9.3 The Site Topography – Why this site is different

The standard shadow flicker model assumes turbines sit on high ground and homes sit below them. Shadows are cast downward and across the landscape. Terrain and hedgerows break up the shadow before it reaches anyone's window. At Ballincor the situation is different. The turbines sit on bog at between 43 and 63 metres above sea level. Many of the surrounding homes sit on ground that is significantly higher. This means residents are not looking up at a turbine that is above them. They are looking across at a turbine whose rotor arc begins at or below their eye level. This is a fact the applicant's assessment consistently fails to account for.



At the 3-degree solar elevation the model uses as its minimum threshold, the shadow from a 180-metre turbine tip is still travelling through the air at approximately 95 metres above the ground when it reaches the 1,630 metre study boundary. It has not come close to landing. The study boundary does not mark the edge of the shadow. It marks a point well within it.

Shadow flicker models are calibrated for the standard situation: turbines above, homes below. They assume shadows travel downward and across the landscape, losing intensity and being broken up by terrain along the way. Every built-in assumption in the model reflects that standard geometry.

When a home is higher than the turbine base, all of those assumptions break down. Shadows don't travel down to the property — they arrive nearly horizontally. The lower part of the rotor arc appears at or below the horizon from the property.

9.3.1 The Evidence from the Applicant's Own Documents

The applicant's WindPRO Appendix 16-1 records the ground elevation of each assessed property. These elevations come from the applicant's own Digital Terrain Model. The turbine base elevations are also in the appendix. Using those two figures, and the blade bottom clearance of 17 metres confirmed in the EIAR, we can calculate whether each property sits above or below the lowest point of the rotor arc.

The result, using only the applicant's own data, is as follows. The blade bottom of each turbine ranges from 59.5 metres above sea level (T03, the lowest base on the site) to 79.4 metres above sea level (T06, the highest base). A property whose eye level is above those figures is sitting within the lower rotor arc.

Receptor 249, which the applicant's own appendix records at 83.1 metres above sea level, is one example. Its nearest turbine, T08, has a blade bottom at 65.9 metres above sea level. The observer at Receptor 249 is looking at these turbines at rotor level rather than upward at them from below. This produces a very different shadow flicker event as there is no dilution of the shadow and absolutely no possibility of screening.

9.3.2 How Widespread This Problem Is — A Systematic Analysis

Receptor 249 is not an isolated case. Using the applicant's own elevation data from Appendix 16-1, we applied the same calculation to all 129 assessed properties. See Appendix 9-4. The results are striking.

- 65 of the 129 assessed properties have their observer eye level above the blade bottom of their nearest turbine. This is based entirely on the applicant's own ground elevation figures (column Z in Appendix 16-1), the applicant's own turbine base elevations, and the applicant's own blade bottom clearance of 17 metres.
- Of those 65 properties, 49 have their eye level above the blade bottom of every turbine within the calculation distance — not just the nearest one.

Table 9-2: Summary of Elevation statistics

Direction from site	Properties assessed	Eye above blade bottom	%	Ground range (m above sea level)
North	19	3	16%	45–64m
North-East	3	1	33%	49–83m
East	6	4	67%	49–82m
South-East	14	7	50%	52–73m
South	39	38	97%	64–90m
South-West	11	2	18%	70–77m
West	14	9	64%	55–73m
North-West	23	1	4%	47–60m

The pattern is not uniform. The north and north-west of the site is genuinely low, bog-level ground — only 1 of 23 north-western properties is above the blade bottom. We are not claiming the problem is everywhere. But the southern arc is dramatic: 38 of 39 southern properties sit above the blade bottom of their nearest turbine. The eastern arc and western arc show 67% and 64% respectively. This is not an occasional quirk — it is the dominant condition across three sides of the assessment area.

The south-west appears to be an exception — only 2 of 11 properties are above the blade bottom — but this is because T06, the nearest turbine for most south-western properties, has the highest base on the site at 62.4 metres. Its blade bottom sits at 79.4 metres, which is above most south-western eye levels. This is an honest qualification and we include it.

For properties at higher elevation than the turbine bases, shadow flicker arrives when the sun is low in the sky — producing the longest, most horizontal and most penetrating shadows, and the most intense flicker. The assessment reports these events only as an annual hours total, which conveys nothing of their intensity. How this affects specific households is shown in the Case Studies section of this submission.

How this affects specific households is shown in the Case Studies section (Section 9.8 at the end of this chapter)

9.4 Boundary Adequacy: Properties excluded or missing from the study

The applicant used a study boundary of 1,630 metres, described as 10 times the rotor diameter of the N163. Appendix 9-3 examines in full the distance from all receptors to their nearest turbine.

9.4.1 Missing: Receptors 258 and 288

Two sensitive receptors — R258 and R288 — sit at precisely 1,630 metres from their nearest turbine. R258 is 1,630 metres from T3; R288 is 1,630 metres from T8. Both distances are calculated by Haversine formula from the ITM coordinates in the applicant's own Appendix 5-1 and Appendix 16-1. Neither property appears in Table 16-1. Neither was modelled. The EIAR provides no explanation for their exclusion.. These are not properties beyond the boundary. They are properties at the boundary — exactly on the line the applicant drew. If the stated rule is that all sensitive receptors within 1,630 metres are assessed, then R258 and R288 are within 1,630 metres and should have been assessed. Their exclusion is unexplained and cannot be reconciled with the applicant's own stated methodology. Only ONE of these properties is the home of a party to this submission.

9.4.2 Missing: Receptor 217 — never modelled

Receptor 217 appears on the applicant's own Figure 16-1, the shadow flicker map submitted as part of this application, showing all identified sensitive receptors plotted against the shadow flicker contours. Receptor 217 is clearly visible on that map. It does not appear in Table 16-1, does not appear in the WindPRO receptor input list, and was never modelled. A property the applicant identified and plotted on their own shadow flicker map was excluded from the assessment without explanation. This is a deficiency in the assessment that has not been acknowledged or corrected anywhere in Chapter 16.

9.4.3 The Study area is too small – 56 properties were never assessed

The applicant used a study boundary of 1,630 metres, properties beyond that boundary were excluded from the assessment entirely. Two major issues become clear:

1. **The boundary is based on flat-terrain assumptions**

The 1,630 metre boundary was developed for flat, open sites where shadow intensity drops off predictably with distance. At Ballincor, shadows travel nearly horizontally to elevated properties, carrying further with less loss of intensity. The 1,630 metre rule was never designed to account for this. At 3 degrees solar elevation, the model's own minimum threshold, the shadow from a 180-metre turbine tip is still travelling through the air at approximately 95 metres above the ground when it reaches the stated study boundary. The study boundary does not mark the edge of the shadow. It marks a point well within it.

2. The applicant's own software used a larger boundary

A comparison of the three WindPRO appendices shows that in every scenario, the model's calculation envelope extended beyond the 1,630 metre boundary stated in the EIAR.

Table 9-3: Calculation distance versus stated study boundary

Scenario	Calculation distance	Gap beyond 1,630 m	Properties beyond 1,630 m (cumulative)
N163 (worst case)	1,789 m	+159 m	36
N149	1,823 m	+193 m	42
V150	1,905 m	+275 m	56

56 sensitive properties identified by the applicant sit between 1,630 metres and 1,905 metres — each one listed in Appendix 9-3. All of them were excluded from the assessment. None of them appears in Table 16-1. The applicant's own software was set to calculate shadow to 1,905 metres for the V150 scenario. The applicant then drew the boundary at 1,630 metres and reported no results — and no explanation — for the 56 sensitive properties the software had already reached..

Taking the three categories together, the 56 properties beyond the stated boundary that the model itself calculated shadow for, the two properties (R258 and R288) at the boundary excluded without explanation, and Receptor 217 plotted on the applicant's own map but never entered into the receptor list, 58 sensitive properties identified by the applicant were never assessed. The elevated receptor geometry and the compound multi-turbine exposure identified mean that actual flicker exposure at the most affected properties is greater in frequency, duration, and severity than the applicant has assessed.

9.5 The Impact is Understated – 4 Critical Omissions

Section 9.2 showed that the foundation of the assessment is unsound. Sections 9.3 and 9.4 showed that the geometry and the boundary do not fit this site. All of those issues compound the effect and undermine the reliability and credibility of the Applicant's shadow flicker report at its foundation. This section turns from how the assessment was constructed to what it actually reports and more tellingly to what, on the applicant's own data, it does not report at all. This section addresses four critical omissions that, taken together, materially understate the impact this development will have on the people who live next to it. Each is established from the applicant's own documents.

9.5.1. Shadow-day data the applicant held and did not disclose

A cross-examination of WindPRO Appendix 16-1 against Chapter 16 Table 16-1 confirms that the figures in the chapter are consistent with the Appendix, no transcription errors were found. However, this cross-examination has identified a material omission that gives a fundamentally misleading picture of the scale of impact.

The WindPRO software produces two different 'days' figures for each property. The first is the number of days per year on which any shadow flicker occurs at all. The second is the number of days on which shadow flicker exceeds 30 minutes. Chapter 16 Table 16-1 reports only the second of these.

The first, the total shadow days figure, does not appear anywhere in Chapter 16. This omission creates two categories of misrepresentation:

1. Properties that do exceed the 30-minute threshold appear to have fewer affected days than they actually do.
2. 34 properties whose maximum daily duration is below 30 minutes show zero days in Table 16-1. They appear completely unaffected — when the appendix records between 25 and 147 days of shadow flicker at each of them.

Table 9-4 below captures the data for properties that do exceed the 30-minute threshold but appear to have fewer affected days than they actually do.

Table 9-4: The most significantly affected properties: shadow days omitted from Chapter 16

Receptor	Worst case annual	Total shadow days (appendix)	Days >30 min (Table 16-1)	Days not in chapter
160	99h 59min	212	86	126
285	80h 45min	146	94	52
296	77h 21min	109	90	19
261	75h 40min	185	65	120
17	83h 56min	182	85	97
73	50h 24min	164	29	135

Receptor 160, which carries the model's highest single figure (99 hours 59 minutes worst-case annual, 212 shadow days), is also present in the applicant's own appendix; Table 16-1 records 86 days for that property, with the remaining 126 days not appearing anywhere in Chapter 16.

Receptor 261, an occupied home experiencing shadow flicker on 185 days per year according to the appendix, illustrates the scale of omission: For this receptor Table 16-1 records 65 days only, leaving 120 days on which shadow flicker occurs but lasts less than 30 minutes entirely absent from Chapter 16.

Table 9-5 below is a representative sample of the 34 properties whose maximum daily duration is below 30 minutes and show zero days in Table 16-1.

Table 9-5: Properties that appear unaffected in Table 16-1

Receptor	Total shadow days	Max daily	Table 16-1 shows	Worst case annual
270	142 days	27 min	0 days — appears unaffected	34h 01min
218	131 days	21 min	0 days — appears unaffected	25h 57min
89	129 days	24 min	0 days — appears unaffected	29h 14min
280	120 days	28 min	0 days — appears unaffected	33h 15min
39	119 days	25 min	0 days — appears unaffected	21h 25min
297	106 days	27 min	0 days — appears unaffected	23h 57min

They appear completely unaffected when the Appendix records between 25 and 147 days of shadow flicker at each of them.

A planning authority reading Chapter 16 in good faith would form a materially different understanding of the extent of shadow flicker impact than the applicant's own data supports. 34 properties appear unaffected. They are not.

9.5.2 Compound shadow flicker — two turbines at once

The applicant's shadow flicker assessment adds up shadow flicker from all turbines into a single annual total for each property. This approach misses a distinct and more serious category of impact entirely: compound shadow flicker, where two or more turbines are simultaneously casting shadow through the same window at the same time.

When two turbines lie close together in bearing as seen from a property — that is, they appear close to each other in the sky when you look toward them — there is a period each day when the sun passes behind both of them at once. The resident does not experience two separate episodes. They experience

one sustained episode with blade shadows arriving alternately from two turbines at close to double the frequency of a single turbine. The duration of that overlap is determined by the angular separation between the two turbines as seen from the property. The sun moves at approximately 0.25 degrees per minute in azimuth. Two turbines separated by 4 degrees produce a simultaneous overlap window of approximately 16 minutes. Two turbines separated by 10 degrees produce approximately 40 minutes. These are not theoretical possibilities — they are geometric certainties that repeat on every suitable shadow day throughout the year.

9.5.2.1 How this analysis was carried out

Using the ITM coordinates published in the applicant's own Appendix 16-1, we calculated the bearing from each assessed receptor to each turbine within the applicant's stated study boundary of 1,630 metres. We applied the standard directional constraint used in all shadow flicker assessment — shadow flicker can only occur within 130 degrees either side of north, because the sun never passes through the southern arc at Irish latitudes. We excluded landowner receptors and receptors with zero shadow flicker results in the applicant's own model. For each remaining receptor with two or more turbines in zone, we calculated the minimum bearing separation between any two turbines and derived the simultaneous compound overlap window. This analysis uses only the applicant's own coordinates and their own stated study boundary. It requires no external data. Appendix 9-2 contains the full analysis.

9.5.2.2 What the analysis shows

- 44 of the 129 assessed properties lie within the shadow flicker zone of two or more turbines simultaneously, within the applicant's own 1,630 metre study boundary. Not one of these 44 properties has been assessed for compound shadow flicker.
- 19 properties are Critical — the two closest turbines appear within 10 degrees of each other in bearing, producing confirmed simultaneous compound flicker windows of between 4 and 39 minutes on every suitable shadow day.
- 18 properties are Severe — the two closest turbines are between 10 and 20 degrees apart, producing simultaneous compound windows of between 43 and 76 minutes per suitable day.
- 7 further properties have two or more turbines in zone with separations above 20 degrees.

The applicant's Chapter 16 contains no analysis of simultaneous multi-turbine shadow flicker. It does not acknowledge that multiple turbines can simultaneously cast shadow at the same property. The 30-minute daily threshold was designed for single-turbine exposure. There is no established threshold anywhere for compound multi-turbine shadow flicker. For a Critical-tier property experiencing a

compound window of up to 39 minutes, without mitigation, that single episode accounts for the entirety of the permitted daily exposure and it arrives at a higher effective flicker frequency than any single turbine produces. The time-based threshold has no category for the character of compound exposure. Whether the system shuts down one turbine or two, the fact that two turbines produce an irregular, arrhythmic pattern at higher effective frequency is not captured by any threshold in this assessment.

The significance of compound shadow flicker goes beyond duration. It is a question of the character of the experience itself. A single turbine produces shadow flicker at a regular, predictable rhythm — one pulse per blade pass, at a consistent frequency. Research on photosensitive conditions identifies the brain's limited capacity to habituate to regular, predictable stimuli. Compound flicker from two turbines simultaneously breaks that rhythm entirely. Blade shadows arrive alternately from two machines in an irregular, arrhythmic pattern at close to double the frequency. That irregularity is precisely what the neurological research identifies as most potent — the mark-space ratio is disrupted, the stimulus becomes unpredictable, and the visual angle of successive blade passages is maximised (as set out in the Health Chapter submission: Harding et al. 2008; Voicescu et al. 2016). For a person with migraine photosensitivity, photosensitive epilepsy, or reactive tinnitus, compound shadow flicker from two or more turbines simultaneously is not a larger version of single-turbine exposure. It is a qualitatively different and more severe neurological stimulus. This assessment never describes it. The EIAR never assesses it.

It should also be noted that the 44 properties identified here are those within the applicant's stated 1,630 metre study boundary. The applicant's own software calculated shadow to 1,789 metres — a fact established in Section 9.4 of this chapter. Had the analysis been extended to that distance, the number of properties with compound multi-turbine exposure would be substantially higher.

The compound geometry at two of the most severely affected properties is examined in detail in the Case Studies

9.5.3 Cumulative assessment — two wind farms overlooked

EIAR Chapter 16 Section 16.2.5 states: "*There is no potential for overlap of the same receptor with any other proposed or operational wind farm developments.*" The applicant's own Chapter 4 Table 4-2 lists two operational wind farms west of the site.

Table 4-2: Pending and Determined Wind Farm Planning Applications 20km from the Site.

Wind Farm	Consenting Authority	Planning Reference	Decision	No. Turbines	Distance from site approx. Km
Carrig (Lacka) Wind Farm	Tipperary	5123496	Granted (Conditional) - operational	3	c.1.7km
Skehanagh (Lacka) Wind Farm	Tipperary	5123495	Granted (Conditional) - operational	5	c.2.7km

Carrig Lacka Wind Farm sits approximately 1.7 km, and Skehanagh (Lacka) Wind Farm at approximately 2.7 km from the development site, eight turbines in total. The IWEA Best Practice Guidelines, cited by the applicant, require cumulative shadow flicker assessment for any wind farm within 2 km. The nearer of the two, Carrig (Lacka), is within that threshold.

The closest turbine of this operational cluster lies approximately 1,700 metres from T03. A coordinate-based check carried out for this submission, using the turbine positions published in the applicant's own documents and the receptor coordinates in Appendix 5-1, identifies 32 sensitive properties in the applicant's own dataset that fall within the combined shadow zones of Ballincor and these two existing wind farms.

The Ballincor turbines sit on bog at 43–63 m above sea level and cast shadows westward in the morning. The Carrig (Lacka) and Skehanagh turbines sit to the west of the site on higher ground and cast shadows eastward, toward Ballincor, in the afternoon. Properties between the existing farms and the proposed site can therefore receive shadow from opposing directions at different times of the same day. No single-farm model can capture this combined exposure, and none has been attempted.

The statement at 16.2.5 — 'there is no potential for overlap with any other wind farm' — is demonstrably incorrect. Two operational wind farms lie immediately west of the site, the nearer of them within the applicant's own 2 km cumulative-assessment threshold. The statement was not a considered finding based on evidence; it was an unexamined assumption presented as fact, and it is contradicted by the applicant's own Chapter 4.

9.5.4 No Expected daily maximum figure

The Applicant asserts expected annual compliance on the basis of figures this submission contests. But even on their own terms, they have never calculated or disclosed whether expected daily compliance is achieved for the 30-minute-per-day limit. For 46 properties the worst-case daily maximum exceeds 30 minutes. The Expected daily equivalent — the figure that would show whether realistic sunshine conditions bring those properties within the daily limit — is simply absent from the assessment.

9.5.5 The 30-hour/year and 30-minute/day thresholds have no medical basis

The 30-hour per year and 30-minute per day thresholds applied in this assessment are not the applicable standard for a development of this scale. They are legacy administrative limits derived from German planning practice in the 1990s, developed for turbines of 50 to 80 metres in height. They have no medical basis. The Linden and Fouquet (2011) review found that no jurisdiction anywhere adopted them on the basis of clinical evidence

Research by Voicescu et al. (2016) found that the maximum daily duration of shadow flicker was a better predictor of health annoyance than the annual total — yet Ireland's primary metric is annual hours. The same research found that people with migraines, dizziness, and tinnitus have three times higher odds of shadow flicker annoyance.

9.6 — The Remedy Cannot Cure the Defect

The preceding sections have established a series of failures in the baseline date, in the modelling and in the reporting of Shadow Flicker impact by the Applicant. The Applicants expectation is a 'near zero' impact. The answer to any prospect of mild shadow flicker for receptors is the installation of an automatic shutdown system to prevent any non-compliance. This section explains why that answer, on its own merits, cannot be accepted as a planning basis.

The proposed shutdown system has never been verified against measured shadow flicker at this site; it cannot cover 56 properties the Applicant's own software calculated shadow for but did not include; it cannot reach the most severe daily events at elevated receptors; it does not address compound exposure from multiple turbines in any specified way. It is a system that will be operated and self-reported by the developer; that has no independent monitoring; that has no named enforcement body; that has no resident-accessible review mechanism; and that promises a "near zero" outcome the Applicant's own document defines in three irreconcilable ways. Each of these is set out below.

9.6.1. Mitigation is an unverified, developer-controlled promise

Before turning to the specific failures of the proposed system, An Coimisiún Pleanála is asked to understand the structural problem with how that system is presented throughout Chapter 16.

The worst-case figures in this assessment are not theoretical extremes. They are the Applicant's own calculated baseline — what will happen at these properties when the wind blows and the sun shines. Taking the three most affected receptors by annual shadow flicker:

- **Receptor 160:** 99 hours 59 minutes per year, shadow flicker on 212 days.
- **Receptor 17:** 83 hours 56 minutes per year, 182 shadow days.
- **Receptor 285:** 80 hours 45 minutes per year, 146 shadow days.

These are not edge cases. They are the starting point, the reality of what this development produces at the homes of people who live next to it.

An Coimisiún Pleanála is being asked to grant permanent planning permission for a 35 year development on the basis of a promise about future operational behaviour made by the developer about the developer's own system. That promise has never been independently tested. It has never been verified against actual measured shadow flicker at this site. It is not independently monitored. There is no named body responsible for checking it, and no specified mechanism if it fails. And as the sub-sections below demonstrate, it has structural gaps that mean it cannot deliver what it claims even if it functions exactly as described, including, most strikingly, a central "near zero" commitment that the Applicant's own Expected values show will be breached before the development is a year old (9.6.4).

The Board is asked to treat the mitigation as what it is, a conditional, unverified, developer-controlled promise, and not as the guaranteed outcome that Chapter 16 presents.

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9.6.2 How the shutdown system actually works

The automatic shutdown system is calibrated against the 30/30 thresholds: 30 minutes per day and 30 hours per year. It shuts the turbines down when shadow flicker is predicted to exceed those limits, and the turbines run without restriction once the accumulated total is within them.

The consequence is that the system does not prevent harm; it permits harm up to a defined ceiling. Under a standard planning condition calibrated to these thresholds, a resident may lawfully experience up to 29 minutes of shadow flicker every day until the 30-hour annual cap is reached, on the order of 60 days per year at maximum daily exposure. Below that ceiling, the shutdown system offers no protection at all. It does not eliminate flicker; it sets a level of flicker that is deemed acceptable under a threshold with no medical basis, derived from German administrative planning practice in the 1990s for turbines of 50–80 metres in height roughly a third of the height of the turbines proposed here.

This matters for a reason developed in 9.6.4: the system is calibrated to worst-case exceedance, not to the Applicant's Expected values. The "realistic" figures the Applicant relies on elsewhere to argue the impact is negligible play no role in when the system intervenes.

9.6.3 What the shutdown system cannot reach

Beyond how the system tracks accumulated exposure, there are categories of shadow flicker at this site that the shutdown system cannot address in principle — not because of a design flaw, but because they were never entered into the model that feeds it.

The shutdown system is calibrated from the WindPRO model. It can only respond to what the model recorded. It therefore cannot respond to what the model missed.

The 56 properties between 1,630 metres and 1,905 metres — identified in Section 9.4 of this submission — were excluded from the assessment entirely. They are not in the model. They are not in the shutdown system. They have no protection whatsoever. 18% of this community within 2 km of the site have zero protection from shadow flicker events because they were never assessed.

These are not modelling errors that can be corrected by recalibrating the shutdown system after permission is granted. They are structural absences. The system was never designed to cover them. Permission granted on the basis of this assessment would leave those exposures permanently unaddressed for the 35 year life of this development.

9.6.4 'Near zero' — a commitment that cannot mean what it says

The Applicant uses the term 'near zero' six times in Chapter 16 with at least three different meanings. They define it once — precisely and honestly — as the 1-2 minutes of shadow flicker that occurs while turbine blades physically decelerate to a stop after shutdown is triggered. That is a fair description of what the technology can achieve beyond zero.

But the applicant then immediately applies the same term to their overall commitment — 'the Applicant has committed to having near zero shadow flicker at any occupied dwelling.' That is a completely different claim. And the shutdown system that is supposed to deliver it is calibrated not to zero but to the 30/30 thresholds. Section 16.5.1 of Chapter 16 states explicitly that the system ensures 'mitigation is implemented if shadow flicker exceeds the thresholds as set out in the assessment criteria.' Those thresholds are 30 minutes per day and 30 hours

per year. The system does not intervene until those thresholds are reached. 'Near zero' therefore means near zero above 30/30 — not near zero from the outset. A resident may experience up to 29 minutes of shadow flicker every day until the annual cap is reached. That is not 'near zero' by any ordinary meaning of the words.

There is a further and irreconcilable problem. If the applicant's own definition is taken at face value — 'near zero' means 1-2 minutes — then it cannot be reconciled with their own Expected values. The appendix records Expected annual shadow flicker of up to 15 hours 50 minutes at the most affected non-landowner property. On the applicant's own definition, their Expected values show they will breach their own commitment before the development is a year old. Either the definition is wrong, the commitment is wrong, or the Expected values are wrong. The applicant cannot have all three.

By Section 16.7 the same term is used to justify a finding that cumulative shadow flicker impact is negligible. The word has done three different jobs in the same chapter.

An Coimisiún Pleanála cannot determine from Chapter 16 *what* the applicant is actually committing to. A commitment whose meaning cannot be determined from the document that contains it is not an enforceable commitment — and cannot form the basis of a planning condition.

9.6.5 The Cloghan precedent — what planning conditions actually deliver

Cloghan Wind Farm in Co. Offaly is directly relevant. The operator confirmed its shadow flicker system was operating as per the planning condition. Offaly County Council received 270 complaints, suppressed for two years before release under FOI. The Cloghan experience shows that a planning condition on paper and actual protection for residents are not the same thing.

The Board is asked to note what Cloghan demonstrates about the enforcement architecture of a shadow flicker planning condition. The developer self-reports. The planning authority has no independent means of verifying compliance. Residents who believe the system is failing have no formal mechanism to trigger review. The complaints they made were not acted upon

for two years and were suppressed when made. That is not a compliance framework. That is a framework in which non-compliance is the path of least resistance for the developer and the path of maximum difficulty for the resident.

Nothing in the Applicant's Chapter 16 proposes anything different from the Cloghan model. The shutdown system will be operated by RWE. Compliance will be self-reported by RWE. There is no named independent body. There is no physical measurement at receptor level. There is no mechanism for residents to trigger review. There is no specified consequence for non-compliance beyond the general planning enforcement powers of the planning authority — powers which, as Cloghan demonstrated, are slow, opaque, and resident-hostile in practice.

9.6.6 The promise cannot be accepted as a planning basis

The Applicant's own worst-case figures show 41 receptors exceeding the annual limit and 46 exceeding the daily limit. Against that, the entire compliance case rests on a single shutdown system. That system:

- has never been verified against measured shadow flicker at this site;
- does not cover the 56 properties the Applicant's own software calculated shadow for;
- does not reach the most severe daily events at elevated receptors;
- addresses compound exposure from multiple turbines in no specified way;
- will be operated and self-reported by the developer;
- has no independent monitoring;
- has no named enforcement body;
- has no resident-accessible review mechanism; and
- rests on a "near zero" commitment that the Applicant defines three different ways and that the Applicant's own Expected values contradict.

The Cloghan experience shows what this architecture produces in practice. The "near zero" commitment shows what the language of that architecture means when examined. And the structural gaps set out above show that the system cannot deliver what it promises even on its own terms.

This is not a defect that a planning condition can cure, and that is the decisive point. The standard remedy available to the Board — attaching a 30/30 condition and a shutdown scheme — *is* the scheme being challenged here. Conditioning the permission in the ordinary way would reproduce the exact framework that failed at Cloghan: developer-operated, self-reported, unmonitored, and unenforceable in practice.

For that reason, the Applicant's mitigation cannot be accepted as a planning basis, and the application as submitted should be refused. At a minimum, no permission should issue unless and until: the assessment is redone with the 56 excluded properties included; compound exposure at multi-turbine receptors is properly modelled; and any mitigation scheme is independently verified against measured flicker at receptor level, independently monitored, made enforceable through a named responsible body, and equipped with a review mechanism that residents can themselves trigger. Absent those safeguards, the grant of permission would not be a planning judgment that the impacts are acceptable. It would be a transfer of risk — from the developer, who profits, to the residents, who bear it.

9.7 — LEGAL FRAMEWORK

Shadow flicker constitutes actionable private nuisance in Irish law. It enters the home through windows, engaging Article 40.5 of the Irish Constitution (inviolability of the dwelling) and Article 8 of the European Convention on Human Rights (the right to private and family life). It is caused by a commercial installation for the benefit of a third party. The affected residents derive no benefit from it.

The Court of Justice of the European Union has held, in Commission v Ireland cases C-50/09 and C-427/07, that deficiencies in environmental assessment cannot be cured by post-permission monitoring.

Case: *European Commission v Ireland*, Case C-50/09, Judgment of 3 March 2011. The competent authority must not merely identify and describe environmental effects; it must assess them appropriately, and the assessment must be carried out before consent. The judgment summary also says that, to satisfy Article 3, the competent environmental authority "may not confine itself to identifying and describing" effects, but must assess them appropriately in each individual case.

Case: *Commission of the European Communities v Ireland*, Case C-427/07, Judgment of 16 July 2009.
Projects likely to have significant environmental effects must be subject to development consent and environmental assessment before consent is given. It also confirms the need for clear, binding transposition and public rights.

This is directly applicable here. The deficiencies identified in this submission are not minor gaps that a monitoring condition could address. They go to the structural foundation of the assessment — the methodology applied, the data withheld, the geometry misrepresented. No monitoring condition can retrospectively correct an assessment that was structurally incapable of measuring what it was supposed to measure. Monitoring can only tell you how much shadow flicker is occurring after the development is built. It cannot substitute for an assessment that accurately described how much shadow flicker would occur before permission was granted. The assessment submitted does not accurately do so — as this submission has demonstrated from the applicant's own documents.

Granting planning permission on the basis of an assessment that demonstrably underestimates actual exposure does not extinguish residents' rights in nuisance law. A planning permission is not a licence to cause nuisance.

9.7.1 The 2019 Draft Wind Energy Development Guidelines

The 2019 Draft Wind Energy Development Guidelines state that no existing dwelling should experience shadow flicker as a result of a wind energy development. The applicant quotes this in their own EIAR and correctly notes that under the 2019 approach 'no amount of shadow flicker per day or per year would be acceptable.' They then assess the entire development against the 2006 thresholds.

The Board is invited to impose the zero-flicker standard the guidelines describe and to note that the assessment submitted does not meet it.

9.8 - CASE STUDIES — TWO HOUSEHOLDS

The chapter thus far has established a series of failures in the applicant's shadow flicker assessment, each verified from the applicant's own documents. This section brings those findings together at the level of individual households.

These are not abstract receptor numbers. They are occupied homes with people whose quality of life inside their homes will be severely affected for a commercial gain that they will not benefit from. The figures used in these case studies come from the applicant's own Appendix 16-1. Where the Applicant's Expected annual figures are referenced, they are included only to demonstrate that even on their own contested and unverifiable numbers, the exposure at these properties is severe. The worst-case figures, the Applicant's own calculated baseline for what will happen at these homes, are the operative basis on which this submission asks An Coimisiún Pleanála to assess the impact. The Expected figures are what the Applicant promises mitigation will achieve.

9.8.1 Case Study 1 — Receptor 285

This property sits on rising ground to the west of the proposed turbine cluster. Five turbines would be visible from it within the applicant's own study boundary, ranging from 812 metres to 1,627 metres away. They span a wide arc of the northern and north-eastern sky as seen from the property.

Shadow flicker would affect this household on approximately 146 days of the year — roughly five months, concentrated in autumn and winter. That figure comes from the applicant's own software output. It does not appear anywhere in Chapter 16.

Four of the five turbines in this property's zone sit on lower ground than the property itself. Their rotors begin below the observer's eye level. This means shadow flicker from those four turbines arrives when the sun is low in the sky. The most severe shadow events at this property — the longest, most horizontal and most penetrating, producing the most intense flicker — are precisely those that the applicant's assessment reduces to a single annual hours figure, conveying nothing of their intensity.

The two closest turbines as seen from this property are separated by just 1.1 degrees of bearing — the tightest turbine pair anywhere on the site. On every suitable shadow day there is a window of several minutes during which both are simultaneously casting shadow through this property's windows. The occupant does not experience two separate episodes. They experience a single sustained episode at close to double the normal flicker frequency. The shutdown system tracks cumulative exposure per receptor and would intervene when the combined daily total approaches 30 minutes. But it has no mechanism to respond to the character of the exposure — the irregular, arrhythmic pattern from two turbines simultaneously is not a threshold that exists anywhere in the assessment.

What this assessment does not tell the resident of this property is what that experience will actually feel like. It does not say that two turbines will be flickering simultaneously, that the rhythm will be doubled and irregular, or that this arrhythmic compound stimulus is precisely the type identified in peer-reviewed research as most likely to trigger a neurological response in photosensitive individuals. A single annual hours figure tells you nothing about any of this.

The applicant's own worst-case annual figure for this property is 80 hours 45 minutes. Their Expected figure — which this submission contests — is 14 hours 26 minutes. Even on the applicant's own unverified Expected figures, this is one of the highest exposure figures in the entire assessment.

Chapter 16 does not tell the inspector:

- That shadow flicker affects this property on 146 days per year — approximately five months
- That four of the five contributing turbines appear at or below the observer's horizon, meaning the most severe shadow events arrive at the lowest sun angles
- That this property faces the tightest compound turbine geometry on the entire site
- That the shutdown system's response to simultaneous compound flicker from two turbines has never been specified

9.8.2 Case Study 2 — Receptor 261

This property sits on the eastern arc of the site. Four turbines lie within the applicant's study boundary. Shadow flicker affects this household on 185 days of the year — just over six months.

That figure, 185 shadow days, does not appear anywhere in Chapter 16. Table 16-1 records 65 days on which shadow flicker exceeds the 30-minute daily threshold. The remaining 120 days, on which shadow flicker occurs but lasts less than 30 minutes, are invisible in the chapter. A reader of Chapter 16 would have no idea that this household experiences shadow flicker as a recurring feature of more than half the year.

All four turbines in this property's zone sit on lower ground than the property. Every single one has its blade bottom below the observer's eye level. Every turbine affecting this property appears at or below the observer's horizon. Shadow flicker from all four begins when the sun is at its lowest — the most severe conditions, producing the longest and most horizontal shadows.

Two of the four turbines produce a confirmed compound overlap window of approximately 29 minutes on every suitable shadow day — a window that arrives when the sun is low and the flicker is at its most intense.

What this assessment does not acknowledge is that for the resident of this property, those 29 minutes are not 29 minutes of predictable, single-turbine shadow. They are 29 minutes of overlapping shadow from two turbines simultaneously — an unpredictable, arrhythmic experience that the neurological research identifies as distinctly more potent than the same duration from a single source. That distinction is nowhere in the document presented to this Board.

The worst-case annual total is 75 hours 40 minutes.

Chapter 16 does not tell the inspector:

- That shadow flicker affects this property on 185 days per year — more than half the year, for over six months
- That the observer's eye level is above the blade bottom of every turbine in the calculation zone without exception

- That shadow flicker from all four turbines begins at the lowest sun angles, when shadows are longest, most horizontal, and most penetrating
- That a confirmed 29-minute compound window exists on every suitable day and has never been assessed

9.8.3 What these two properties have in common

Each tells a different story. Receptor 285 carries the most severe compound geometry on the site. Receptor 261 has the greatest frequency — 185 shadow days, more than half the year, 120 of which were not reported to the Board.

What they share is this. In both cases the picture presented in Chapter 16 is materially incomplete. In both cases the complete picture is in Appendix 16-1 and requires nothing more than reading the columns the applicant chose not to reproduce. And in both cases compound multi-turbine exposure has never been assessed.

An Coimisiún Pleanála cannot grant planning permission on the basis of an assessment that has systematically left the most significant findings of its own software output out of the document presented to the planning authority.

9.9 — CONCLUSION: WHY THIS APPLICATION CANNOT PROCEED

This submission has examined the shadow flicker assessment placed before An Coimisiún Pleanála for the proposed Ballincor Wind Farm and has found it wanting at every level on which such an assessment must be sound: its data, its methodology, its geometry, the completeness of what it reports, and the mitigation offered to cure its defects. Every finding was reached by reading what the applicant wrote, checking it against what the applicant's own software produced, and carrying out the arithmetic that follows from the figures the applicant itself published.

The assessment fails first at its foundation. Every claim of compliance in Chapter 16 rests on a single arithmetic step — the worst-case modelled hours reduced by a sunshine probability fraction — and that fraction is wrong. The EIAR attributes it to a station 83 kilometres away whose record ends in 2006, while the model in fact ran data from a different station entirely; the two are irreconcilable, and no reader can reconstruct the compliance figures from the source the EIAR itself cites. In any event neither station is the right one. Gurteen, 4.5 kilometres from the site and recording continuously since 2008, shows 27.5% more annual sunshine than the data the model used. Correct that single input and the margin of compliance narrows at every receptor. Worse, the method by which the sunshine and wind-direction fractions are combined to produce the compliance figures has never been disclosed anywhere in the application — no formula, no worked example — so an inspector cannot verify how a single figure in Table 16-1 was arrived at. The compliance case is built on an input that is wrong and a derivation that has never been shown.

It fails next in its geometry. The model assumes the standard arrangement — turbines above, homes below, shadows breaking up across the landscape — and applies it to a site where the opposite is true. Residents do not look up at these machines; they look across at, or into, the lower arc of the rotor. That single fact invalidates the 1,630-metre study boundary, which was drawn for flat terrain and which the applicant's own software overran in every scenario, reaching as far as 1,905 metres. Fifty-six properties sit in the gap the software calculated but the assessment ignored; two more sit exactly on the line and were excluded without a word; one more was plotted on the applicant's own map and never modelled at all. Fifty-eight homes the applicant itself identified were never assessed.

It fails next in what it reports. The applicant's software produced, for every property, the total number of days each year on which shadow flicker occurs. That column appears nowhere in Chapter 16. The consequence is not a technicality: thirty-four homes that the appendix records as experiencing shadow flicker on between 25 and 147 days a year appear in the chapter as entirely unaffected, and homes that do breach the daily limit are shown with a fraction of the affected days the appendix records. A planning authority reading Chapter 16 in good faith would form a materially false impression of the scale of this impact. To this is added a category of harm the assessment does not acknowledge exists. On the applicant's own coordinates, 44 properties lie within the simultaneous shadow zone of two or more turbines, yet compound flicker — two machines casting through the same window at once, in the irregular, arrhythmic, high-contrast pattern that the photosensitivity research identifies as most potent — is assessed nowhere. The cumulative assessment fares no better: Chapter 16 states there is no potential for overlap with any other wind farm, while the applicant's own Chapter 4 lists two operational wind farms immediately to the west, the nearer of them inside the applicant's own two-kilometre threshold. And although the applicant claims annual compliance, no Expected daily maximum has ever been calculated for the 46 properties whose worst-case daily exposure exceeds the limit.

These are not isolated faults, and the pattern they form is the most telling fact in this submission. Every error runs in the same direction. Not one of the failures identified here makes the impact appear larger than the applicant's own data supports; every one makes it appear smaller. A wrong sunshine input, an undisclosed method, an inverted geometry, an under-drawn boundary, a missing data column, an unassessed category of harm, a denied cumulative overlap, a threshold with no clinical foundation each, independently, would call the assessment into question. Taken together, and all pointing one way, they establish that the document does not describe the impact this development will have on the people who live beside it.

To all of this the applicant's answer is a single one: an automatic shutdown system will hold the figures within the limits. It cannot. The system is calibrated to the 30/30 thresholds, not to zero, so it permits up to 29 minutes of flicker a day until the annual cap is reached; it can respond only to what the model recorded, so it is structurally blind to the 58 unassessed homes, the sub-threshold days, and the compound exposures the model never measured; and it will be operated and self-reported by the developer, with no independent monitoring, no named enforcement body and no resident-accessible review. The Cloghan precedent shows exactly what this architecture produces in practice.

The two households set out in the case studies show what these failures mean once they leave the page. At Receptor 285, the tightest turbine pairing on the site casts overlapping shadow through the windows on 146 days a year, a figure that appears nowhere in Chapter 16. At Receptor 261, shadow flicker recurs on 185 days, more than half the year, of which 120 were never reported to the Board, with every contributing turbine sitting below the observer's horizon so that the worst events arrive at the lowest, longest, most penetrating sun angles. Neither household is an abstraction. They are occupied homes whose quality of life indoors will be materially diminished for a commercial benefit their occupants will never share — and the full extent of that diminution was available to the applicant, in the applicant's own appendix, and was left out of the document placed before this Board.

The residents of the assessed properties are entitled to an environmental assessment that describes, accurately and completely, the impact this development will have on their homes. They have not received one. The assessment's stated methodology does not match the methodology it applied; its compliance figures rest on a derivation never disclosed; its central mitigation commitment means three different things in the chapter that defines it; and its omissions, without exception, understate the harm.

An Coimisiún Pleanála is therefore asked to refuse permission for this development. The shadow flicker assessment submitted in support of the application does not meet the legal standard required to sustain a grant of permission, and its defects are of a kind that cannot be corrected by any condition attached after the fact. Should a revised application ever be brought forward, the residents are entitled to expect what this one failed to provide: an assessment that begins from the correct site geometry, uses accurate, local and contemporary meteorological data, discloses its method in full, assesses compound and cumulative exposure, and presents the complete output of its own modelling rather than the selected portion of it that has been placed before this Board.

CHAPTER 10: Roads, Traffic and Transportation

10.0 Introduction

This chapter is a direct, evidence-based objection to the Roads, Traffic and Transportation assessment presented in Chapter 14 of the Applicant's Environmental Impact Assessment Report (EIAR), read together with its supporting appendices: the Stage 1/2 Road Safety Audit (Appendix 14-1), the IDASO traffic counts (Appendix 14-2) and the Traffic Management Plan (Appendix 2-2).

The community's central submission is a simple one: the Applicant's own documents do not support the conclusions the Applicant draws from them. This objection is built on the Applicant's own survey data and its own consultants' reports. The grounds that follow repeatedly identify points at which Chapter 14 reaches a reassuring conclusion that its own appendices contradict.

Three features of the assessment run through this objection as a whole. **First**, the assessment relies on smoothed averages and percentage-increase metrics that mask the acute, concentrated reality of the works — averaging heavy-vehicle deliveries across a working week, expressing surges as small percentages of a low baseline, and so presenting an intense industrial undertaking as a series of minor, transient effects. **Second**, the documents are internally inconsistent: Chapter 14, the Traffic Management Plan and the Road Safety Audit disagree with one another on matters as fundamental as the available visibility splay, the volume of construction traffic, and the construction programme itself. **Third**, the evidence base is thinner than the firm conclusions drawn from it — a single-day junction count, an automatic count cut short by equipment failure, and a single survey season are made to bear conclusions of "ample capacity" and effects that are "imperceptible / not significant."

Against that backdrop, the introduction of intensive heavy civil-engineering works, an underground grid connection trenched over 12.23 km across two county jurisdictions, heavily concentrated traffic surges during the foundation concrete pours, and large Abnormal Indivisible Load (AIL) turbine-delivery configurations, will cause significant disruption, pose real safety hazards to local residents, and place severe strain on the rural road network this community depends upon for daily life, school transport, employment and agricultural operations.

The grounds of objection are set out below, ordered broadly from the most safety-critical and most clearly evidenced to the supporting and cumulative concerns. They begin with the Applicant's own measured speed data and the contradiction it exposes in the visibility-splay case (§10.1–§10.2); proceed through the deficiencies of the Road Safety Audit and the unreliability of the underlying survey data (§10.3–§10.4); address the underestimation of

construction and concrete-pour traffic, the Blackbull junction, the condition of the haul roads, and the grid-connection trenching (§10.5–§10.10); and conclude with the characterisation of residual effects, the threats to heritage structures and the abnormal-load route, the cumulative impact of concurrent infrastructure projects, and the community's rejection of the Applicant's overall "not significant" conclusion (§10.11–§10.15). Where the objection relies on community field observation rather than on the Applicant's documents, that is stated expressly, so that the Commission may weigh each point on its proper footing.

10.1 The Applicant's Own Speed Data Demonstrates a Severe, Unaddressed Safety Risk — rewritten in full

This is the single most important issue in the assessment and it is established entirely by the Applicant's own survey data. The Automatic Traffic Count (ATC) survey commissioned by the Applicant and reproduced at Appendix 14-2 records actual measured vehicle speeds on both access roads. Those measured speeds substantially exceed the posted limits and are flatly inconsistent with the visibility and stopping-sight-distance claims made in Chapter 14.

Road	Posted speed limit	Cumulative 85th-percentile speed	Maximum recorded speed
R492 / ATC 1	80 km/h	94.4 km/h	137.7 km/h
L1071 / ATC 2	60 km/h	89.5 km/h	131.3 km/h

Source: Appendix 14-2 (IDASO ATC survey, May 2024), cumulative speed-survey summaries.

The 85th-percentile speed is the standard design parameter used to set required visibility and stopping sight distances under TII DN-GEO-03060. On the R492, the measured 85th-percentile speed of 94.4 km/h is 18% above the posted 80 km/h limit, and the recorded maximum of 137.7 km/h is almost 72% above it. On the L1071, the measured 85th-percentile speed of 89.5 km/h is approximately 49% above the posted 60 km/h limit.

This is decisive for three reasons.

- First, it confirms the community's field observation (previously dismissible as anecdotal) that real-world speeds on these roads regularly reach or exceed 90–100 km/h.
- Second, the Applicant's own Road Safety Audit independently flagged exactly this problem (Appendix 14-1, S4.1.1: "site observations suggest the vehicle speeds might be in excess of these speed limits").
- Third, the visibility splays must be designed for the speeds vehicles *actually* travel, not the speeds posted — and on the measured 85th-percentile speeds, the splays the Applicant's own auditors recorded (160 m and 90 m; see S10.9) fall short of the required stopping sight distance.

Critically, the R492 speed data is the only part of that survey the Applicant could rely upon,and even that survey is incomplete. Every page of the R492 count carries the note: *"No data after*

16:00 22/05/2024 as tubes were damaged." The R492 ATC therefore captured only seven full days, the final day is partial, and the survey failed to record the Wednesday evening (PM) peak at all — the very peak period the assessment treats as the worst-case scenario. The Applicant draws firm conclusions about R492 capacity and safety from a dataset its own equipment failed to complete.

The Applicant's proposed mitigation, a "temporary advisory speed limit" that the TMP expressly states it does not propose to signpost to general traffic (TMP S5.6.2), will have no effect whatsoever on the public traffic that the ATC data shows is travelling at these speeds. An unsigned advisory limit binding only the developer's own contractors cannot mitigate a hazard created by the speed of *other* road users.

10.2 Technical Flaws and Internal Contradiction in the Claimed Visibility Splays

The Applicant relies on compliance with TII DN-GEO-03060 (Geometric Design of Junctions) to claim that the primary access junctions can "safely accommodate" both standard heavy transport and Abnormal Indivisible Loads (AILs). That claim does not survive examination of the Applicant's own documents, which state three different visibility figures for the same junction.

The visibility splay (the "y-distance") is the foundation of any junction safety case, and the three documents submitted in this application cannot agree on what it is:

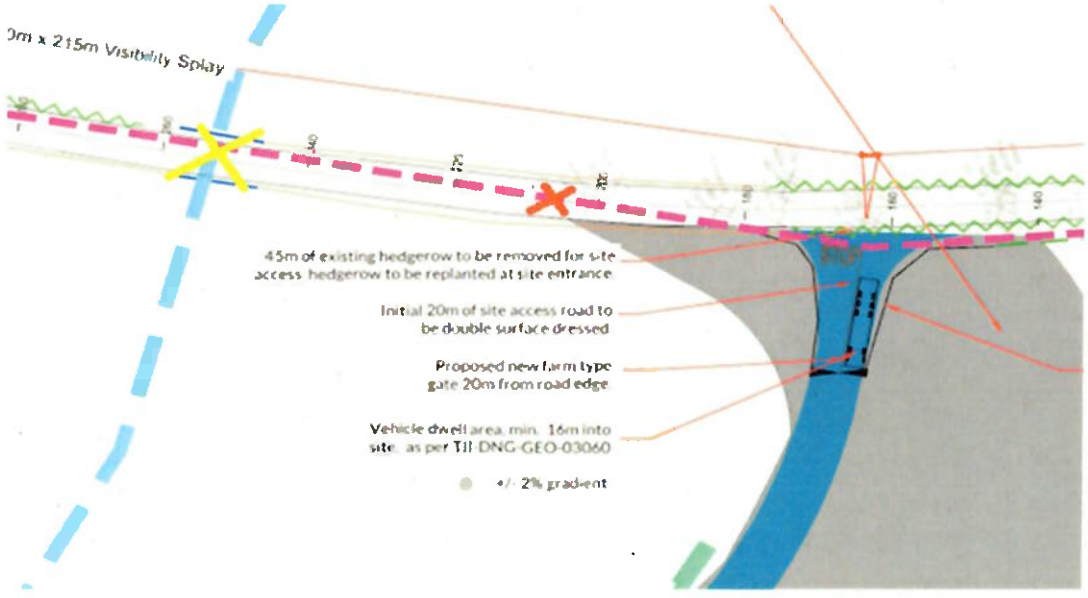
- Chapter 14 (S14.9.1.3) asserts a **215 m** y-distance on the R492 and states that sightlines accord with TII DN-GEO-03060 and the Offaly County Development Plan.
- The Applicant's own Stage 1/2 Road Safety Audit (Appendix 14-1, S4.1.1) records the available splays as only **160 m on the R491/R492 and 90 m on the L1071** — not 215 m.
- The Applicant's own Traffic Management Plan (Appendix 2-2, S5.4) likewise states the requirement as **160 m** (citing the Offaly CDP), and records vertical visibility of only 165 m achievable to the right.

There is therefore an unexplained **55 m discrepancy** between the figure relied upon in the impact assessment (215 m) and the figure the Applicant's own consultants actually measured

and recorded (160 m). The 215 m on which the entire "safe accommodation" conclusion rests is not supported by the Applicants own Road Safety Audit or the Traffic Management Plan.

Of greatest concern to the community is that even the disputed 215 m would be marginal against the measured speeds; the recorded 160 m is plainly inadequate. As set out above, the Applicant's ATC survey (Appendix 14-2) records a cumulative 85th-percentile speed of **94.4 km/h on the R492** — 18% above the posted 80 km/h limit, with a maximum recorded speed of 137.7 km/h. The stopping sight distance required under TII standards for that measured speed is materially greater than 160 m. The splay the auditors actually recorded therefore falls short of the requirement for the speeds vehicles are genuinely travelling — precisely the hazard the auditors themselves flagged at Appendix 14-1, S4.1.1 ("development traffic may exit into the path of unsighted public road vehicles").

The Applicant further asserts a 3 m 'x-distance' setback. On a live, unlit, high-speed regional road, a 3 m setback requires the cab of a standard heavy vehicle or the far longer nose of an AIL transporter to sit dangerously close to the carriageway before the driver can achieve any forward sightline at all. Read together with the micro-topography of the R492 (mature roadside hedgerows and severe vertical and horizontal crests), the theoretical splay is not achievable in practice.



The image above suggests a straight line view from the access point/site entrance to the yellow cross. In fact a clear line of sight extends only to the Red X.. From the site entrance the yellow X is around the bend, on the crest of the bridge with a hollow beyond it – there is no clear line of visibility to this point.

These conditions are borne out by direct field measurements and empirical observations compiled by the local community, which reveal severe, unaddressed spatial hazards on the R492 **within a critical 150 m envelope** on the Sharavogue side of the entrance. The following measurements are community-sourced field observations and are advanced to demonstrate that the local topography reduces real-world visibility well below even the disputed splay figures:

- As a driver approaches the site access from the Sharavogue direction, the undulating road topography cuts off any view of the entrance. Owing to a sharp bend, a structural hollow and two historic bridges, the first point of any theoretical visibility occurs at a mere **130 m**, as the vehicle crests the bridge. Safe, dependable and reliable visibility does not present until an unacceptably short **90 m** from the junction interface.





- Looking out from the proposed site access back toward Sharavogue, the micro-topography creates a dangerous blind zone. A vehicle travelling from the Sharavogue direction becomes entirely submerged and invisible in the road hollow at a distance of **125 m**, and re-emerges into the line of sight of an exiting heavy vehicle only at a critically compressed **115 m**.





While the posted speed limit on this section of the R492 is 80 km/h, the Applicant's own survey data (Appendix 14-2) confirms that real-world speeds regularly approach and exceed 100 km/h. At these speeds, when driver perception-reaction time and heavy-vehicle braking coefficients on a non-flat, un-engineered rural surface are taken into account, the real-world visibility window of 115 m to 130 m falls drastically short of safe stopping sight distances. Forcing slow-moving, multi-axle HGVs or wind-turbine transporters to pull out onto a high-

speed regional route from an access blinded by a physical hollow is, in the community's submission, a serious road-safety hazard.

Finally, the Applicant's reliance on swept-path analysis demonstrates geometric possibility, not operational safety. The claim that Autotrack or swept-path analysis (Appendix 2-1) "demonstrates that the junction can safely accommodate wheel tracks" presents an idealised scenario. A 16.5 m legal articulated vehicle — still more a specialised multi-axle turbine-blade transporter — executing a tight turn from a narrow, un-engineered rural road body will generate extreme tail-swing and front over-sail. Even where the *wheels* remain on the structural pavement, the body and cargo will sweep over the opposing road boundary, forcing oncoming traffic to make emergency stops on a route where, on the Applicant's own data, vehicles travel at an 85th-percentile speed of 94.4 km/h and visibility is readily compromised by weather and seasonal glare. The simulation proves the manoeuvre is geometrically possible; it does not prove it is safe.

10.3 Hidden Hazards Dismissed by the Stage 1 Road Safety Audit (RSA)

The Applicant states (Chapter 14, S14.12) that a Road Safety Audit was carried out for the R492 (southern) and L1071 (northern) access junctions, and that its recommendations "have been incorporated into the scheme design." An examination of the audit itself (Appendix 14-1) shows that this reassurance does not withstand scrutiny.

10.3.1 The audit is preliminary, brief, and conducted in benign conditions

The audit is a Stage 1/2 audit (Appendix 14-1, cover and S1.1) — not a final, construction-stage audit. The audit "process" ran **between 24–28 October 2025** (S1.2) but the actual site inspection lasted 45 minutes (11:30–12:15 on 25 October 2025), in conditions the auditors themselves record as "fine," with a "dry" road surface and traffic "considered light with cars and light goods vehicles only" (S1.4). The audit therefore tested none of the operational realities — dust, seasonal glare, severe weather, or the presence of heavy vehicles — on which the community's safety concerns rest.

The auditors themselves recommend a further audit. At S1.6 the audit team records that detailed design elements (levels, gradients, surfacing, lighting, signs) were not provided, and expressly states that "it is therefore recommended a further road safety audit of the full design is undertaken prior to commencing the construction of this scheme." The Applicant's own auditors thus regard the Stage 1/2 audit as an insufficient basis on which to commence construction.

10.3.2 The "incorporated into the scheme design" claim is unevidenced

Chapter 14 states the audit recommendations were "incorporated into the scheme design." However, the audit's own Designer Response / Feedback Form (Appendix 14-1, Appendix B) is **blank**. There is no signed Designer Response accepting, rejecting or proposing alternatives to any recommendation, and no Audit Team confirmation that any response was accepted. The procedural step that would evidence "incorporation" has not been completed. The claim is therefore unsupported on the face of the Applicant's own documents.

10.3.3 The audit raises unresolved safety problems

Far from clearing the scheme, the audit (S4) records the following problems, each of which the audit team certifies (S1.8) "require action in order to improve the safety of the scheme and minimise collision occurrence":

- **Junction visibility / speed (S4.1.1):** the splays are recorded as "160 m for the R491 and 90 m for the L1071," and the auditors note that "site observations suggest the vehicle speeds might be in excess of these speed limits." Development traffic "may exit into the path of unsighted public road vehicles."
- **Forward visibility (S4.1.3):** forward visibility for R491 southbound drivers to a vehicle waiting to turn right may be "restricted by roadside hedging," with a risk of "rear-end shunts."
- **Junction radii (S4.2.1):** the operational-phase junction radii "appear large," with a risk that traffic "may exit left off the R491 at high speeds and lose vehicle control," and that turning drivers may be unable to see smaller approaching vehicles such as two-wheelers.
- **Livestock (S4.1.2) and L1071 conflicts (S4.2.2):** absence of fencing/gates raises a risk of livestock straying onto the public road; and at the L1071 the proximity of the farm access raises a risk of vehicles becoming "stranded with the rear end protruding into the L1071 carriageway."

Road-numbering defect. The audit also records (S1.6) a material documentation error: the design drawings label the regional access road as the **"R491"** whereas the road is in fact the R492. The audit was conducted, and the junctions assessed, against drawings bearing the wrong road number. This casts doubt on the precision of the design information underpinning the access junction.

10.4 Unreliability of the Survey Evidence Base — new standalone ground

Beyond the specific findings in S10.2 and S10.8, the community objects to the reliability of the survey evidence on which the entire transport assessment is built. A traffic and transport assessment is only as sound as the baseline data underpinning it. On examination, the IDASO surveys at Appendix 14-2 are affected by data gaps, single-point sampling and seasonal limitations that the Applicant does not disclose or address in Chapter 14.

- The R492 automatic count is incomplete. As set out at S10.8, the R492 (ATC 1) count was terminated early by equipment failure: *"No data after 16:00 22/05/2024 as tubes were damaged"* (Appendix 14-2). The R492 — the road the Applicant designates to carry 100% of construction traffic (S14.3.3) — was therefore surveyed for only around seven full days, with the final day partial and the Wednesday PM peak missing. No re-survey was carried out to fill the gap.
- The Blackbull junction was counted on a single day. The classified turning count at the N62/R492 Crossroads — the principal assessment junction — was undertaken on one Thursday only (16 May 2024) (Appendix 14-2, Site 1). A single 12-hour weekday count provides no basis for assessing day-to-day variability, and none was undertaken.
- The surveys are single-season. Both counts were conducted in mid-to-late May 2024, a single non-representative window that falls outside both the main agricultural working peaks and the school-holiday troughs. There is no seasonal adjustment, and no acknowledgement that traffic and heavy-vehicle volumes on these rural roads vary materially across the year.
- The HGV baseline data is not used to express the true scale of impact. The survey data shows existing heavy-vehicle volumes that Chapter 14 never states in absolute terms: the R492 carries on average approximately 89 HGV movements per day (≈6.8% of traffic) and the L1071 approximately 42 HGV movements per day (≈8%), with weekday HGV proportions reaching 9–10% (Appendix 14-2, daily totals). Against the R492 baseline of ~89 HGV movements per day, the concrete-pour requirement of 186 two-way HV movements (S14.6.1.1) would roughly treble existing heavy-vehicle traffic on that road on each of the 10 pour days — an impact wholly obscured by the Applicant's "percentage increase against all traffic" presentation.
- The conclusions are disproportionate to the evidence. On the basis of one incomplete week on the R492, one Thursday at the junction, and a single survey season, the Applicant concludes that the junctions have "ample capacity," that detailed capacity modelling is unnecessary (S14.8.2.1), and that residual effects are "imperceptible / not

significant" (S14.13). The community submits that these conclusions are not supported by an evidence base of this quality, and that — at minimum — the R492 count should be repeated in full, multi-day junction counts undertaken, and capacity modelling carried out, before any reliance is placed on the assessment's findings.

10.5 Severe Operational Strain and Underestimation of Peak Trip Generation

The community objects to the way Heavy Vehicle (HV) movements are presented in Chapter 14, S14.6.1, and to material inconsistencies between the EIAR and the TMP.

The Applicant states a "maximum of 27 daily HV one-way trips" at peak construction (S14.6.1, Table 14-4), i.e. **54 two-way HV movements per day**, over the July–September 2027 peak when site compounds, forest felling, drainage, internal road building, turbine hardstands and foundation steelwork occur simultaneously.

The figures are internally inconsistent. The TMP (Appendix 2-2, S4.4.2) states the scheme will generate "approximately 10 one-way HV movements per day on average," and (S4.4.3) "daily average 20 HGV 2-way movements" which is markedly different from the EIAR's 27 one-way / 54 two-way peak. The staff-trip assumptions also differ: the EIAR assumes one person per car (240 trips; S14.6.2) while the TMP assumes two persons per car (160 trips; S4.4.1). Two of the Applicant's own documents cannot agree on the volume of traffic the project will generate.

Finally the construction programme itself is inconsistent. The EIAR (S14.5.1) gives the Electrical/Grid phase as 18 months, turbine delivery as 12 months and commissioning as 4 months; the TMP (S4.1) gives the same phases as 9 months, 4 months and 2 months respectively. A transport assessment built on a programme that the Applicant cannot state consistently cannot be relied upon to demonstrate that peak overlaps have been correctly identified.

10. 6 Unprecedented Concrete Pour Surges and Total Gridlock Risk

Chapter 14, S14.6.1.1 discloses a concentrated logistical surge during the turbine foundation concrete pours that presents a serious risk to local traffic and road safety.

The construction methodology requires each of the 11 No. turbine foundations to be completed as a continuous, single-day pour (S14.6.1.1). Each pour day requires **93 HVs to arrive on site — i.e. 186 two-way HV movements** — on the narrow local road network within a single working day (S14.6.1.1). The Applicant's own figure of an average of **9 HVs arriving per hour** (S14.6.1.1) equates to a heavy vehicle traversing the local roads approximately **every 6.6 minutes** throughout the working day, on each of the 10 pour days.

The proposed mitigation is inadequate and partly self-contradictory. The Applicant proposes only to limit "other" non-essential HVs on pour days (S14.6.1.1, S14.9.1). The TMP (S5.6.4) goes further and proposes "staggering the pouring of concrete on different days" and avoiding pours on days of large deliveries — an implicit acknowledgement that pour-day traffic is incompatible with normal operations. Neither measure addresses the existing agricultural and domestic traffic that must share these roads, nor the cumulative effect of a continuous convoy at this frequency on local farming operations during critical seasonal windows.

10.7 Dangerous Traffic Extensification and Bottlenecks at Blackbull (N62/R492 Crossroads)

The Applicant's assessment of the Blackbull junction, which the Applicant identifies as the "N62/R492 Crossroads Junction" and treats as the principal assessment junction (Site 1), understates the operational risk to this intersection, and rests on a survey basis too thin to support the conclusions drawn from it.

The junction is a **four-arm crossroads**, not a simple priority T-junction. The Applicant's own turning count (Appendix 14-2, Site 1) records four arms — Arm A (L4008), Arms B and D (N62), and Arm C (R492) — meaning every development vehicle turning between the N62 and the R492 must negotiate conflicting movements across a full crossroads. This geometry is materially more hazardous for slow-turning HGVs and multi-axle AIL configurations than the assessment acknowledges.

S14.3.3 (Table 14-1) records total approach flows of 685 vehicles (AM peak, 08:15–09:15) and 747 vehicles (PM peak, 17:00–18:00). The Applicant's own survey data discloses a further figure not carried into Chapter 14: a 15-minute peak of 202 vehicles between 17:15 and 17:30 (Appendix 14-2, Site 1 summary) equivalent to a flow rate of over 800 vehicles per hour at the

sharpest point of the evening peak. The junction is therefore considerably busier at its true peak than the smoothed hourly figures suggest.

The classified turning count was undertaken on **one day only — Thursday 16 May 2024**, between 07:00 and 19:00 (Appendix 14-2, Site 1). There is no multi-day or multi-season validation. The Applicant nonetheless relies on this single Thursday count to conclude that the junction has "ample capacity" and that "further detailed junction capacity analysis is not considered necessary" (S14.8.2.1). No ARCADY/PICADY or equivalent capacity modelling has in fact been carried out, despite the chapter author listing that very software among her competencies (S14.1.1).

The percentage-increase methodology masks the problem rather than assessing it: a low background flow on a geometrically constrained four-arm crossroads does not establish that the junction can absorb slow-turning HGVs and AIL configurations turning between the high-speed N62 (100 km/h) and the narrow R492. The relevant question is conflict and queuing geometry, not percentage of a small base number. Because the R492 is narrow with poor alignment (S14.3.2.2), the community submits that slow-turning HGVs and AIL configurations exiting the N62 into the R492 will generate queuing on the national secondary route, affecting local commuters, agricultural machinery and school transport. The physical geometry of the Blackbull crossroads is not capable of safely filtering these combined movements. That question has not been assessed at all.



Black Bull towards Birr



Black Bull towards Roscrea



Black Bull towards Shinrone

10.8 - Mischaracterisation of "Legacy" Regional and Local Roads

The Applicant asserts (Chapter 14, S14.3.1.1) that the regional road R492 and local road L1071 are "generally in good condition" and (S14.3.2.2) suitable for HGVs. The community disputes this characterisation, which is contradicted by the Applicant's own description of the same roads.

- Having described the R492 as "generally in good condition," S14.3.2.2 then admits the R492 — the designated primary construction haul route — is "relatively narrow, with limited hard shoulders and several bends, typical of rural roads in the area." A road cannot simultaneously be "suitable" for prolonged industrial haulage and "relatively narrow" with "limited hard shoulders and several bends."
- These are historic, lightly-engineered rural roads lacking deep structural foundations. The Applicant provides no pavement core data, no structural (CBR or equivalent) testing, and no residual-life analysis to support the bare assertion that they are "suitable" for intense, prolonged construction haulage.
- The Applicant confirms (S14.3.3, S14.7.1) that **100% of construction traffic will be routed onto the R492**, with the L1071 access used for the operational phase only. The entire construction burden therefore falls on a single, admittedly narrow regional road. The community submits that this concentration will result in structural pavement failure, edge-breaking, and localised "water cuts" where trenching severs the road body.

10.9 Community Isolation and Grid Connection Route (GCR) Disruption

Section 8.2.4 reveals a massive, long-term impact that will severely isolate residents and disrupt daily transit.

- The proposed Grid Connection Route (GCR) spans 12.23 km, cutting through the border between County Tipperary (8.54 km) and County Offaly (3.66 km), with the vast majority situated inside our vulnerable public road network before running along 2.44 km of the busy R439 Birr–Banagher Road.
- The applicant admits that progress will be a painfully slow 250 meters per week, with up to 100 meters of trench left wide open at any given time. The figures demonstrate that trenching the public road network will drag on for nearly 50 weeks (almost a full year) of continuous local disruption.
- The applicant's casual acknowledgement that this "will require a temporary road closure of local roads and a temporary road closure of regional road R439" represents an unacceptable threat to community connectivity. Labelling these as "temporary" closures masks a year-long rolling blockade.
- The proposal to backfill trenches with "temporary surfacing material" at the end of each working day is highly dangerous for rural road users. These temporary fills quickly settle, crack, and wash out under heavy weather, leaving structural "water cuts," dangerous open edges, and severe tire-shredding potholes that directly threaten the safety of local drivers, cyclists, and agricultural machinery.

10.10 Quarry Routing and Cumulative Haul Concentration

The community identifies a contradiction in the Applicant's construction haul-route logic (Chapter 14, S14.5.3 and S14.7.9).

The Applicant claims that because quarry material will be "principally from the south (Dowlings)" via the R433, L3246 and N62, there will be "limited effects on Birr town" (S14.5.3) and that the predominant HGV approach will avoid Birr Town Centre (S14.7.9).

This understates that **all three identified quarry sources** — Loughnane Concrete (Birr), Dowling Quarries (Lisduff) and Kilsaran (Tullamore) (Chapter 14, Table 14-2) — converge on

the same terminal corridor: the **N62 and the R492**. Whatever the origin, the final approach funnels through the same constrained local pinch points. The "principally from the south" assumption is precisely that — an assumption — and the Applicant provides no binding commitment that the northern sources will not be used.

Finally note the inconsistency between documents. The EIAR (Table 14-2) gives the Dowling route as "R433, L3246, N62, R492," while the TMP (S4.5/S5.5) gives it as "R433 → L3247 → L3246 → N62 → R492," adding a local road (L3247) not referenced in the EIAR chapter. The community cannot be confident which local roads will in fact carry aggregate fleets.

10.11 Minimisation of Environmental Impacts in "Residual Effects"

The community objects to the characterisation of residual effects in Chapter 14, S14.10, which significantly understates the impact on the local road network.

- **The "not significant" characterisation.** The Applicant concludes that, with design mitigation (onsite borrow pits, use of existing forestry tracks), the residual average construction traffic effect is a "short-term, slight, negative effect (not significant)" (S14.10.1). The community submits that a 24-month construction phase generating sustained heavy traffic on a single narrow regional road is not properly described as "slight."
- **The concrete-pour peaks.** The Applicant accepts (S14.10.1) that the worst-case residual impact is equivalent to the peak impact on the L1071 and R492, but describes the 10-day foundation-pour programme as a "short-term negative effect." For residents on these roads, a heavy vehicle every 6.6 minutes (S10.6 above) is a significant interruption to road access, not a passing inconvenience.
- **The internal tension in the labelling.** The Applicant acknowledges that temporary traffic management will have a "moderate negative temporary effect" on existing road users and that the cabling works will likewise have a "moderate negative temporary effect" on local roads (S14.10.1), yet attaches the label "not significant" to both. An effect that moves road conditions to "moderate negative" across a 12.23 km corridor for approximately 50 weeks is, in the community's submission, significant to the safety and daily livelihood of the rural population.
- **"Very short duration" closures.** The Applicant asserts (S14.10.1) that cabling closures will be off-peak and of "very short duration." This sits uneasily with S14.8.2.4, which records progress of 250 m per week with up to 100 m of trench open at any one

time over the full 12.23 km. A rolling operation of that length and pace cannot reasonably be described, in aggregate, as of "very short duration."

10.12 Threat to Protected Architectural Heritage: Statutory Violations and Structural Omissions at the 1850 Sharavogue Bridge

While the applicant notes that national routes like the M7 possess sufficient structural capacity for heavy freight, they fail to provide localised, non-destructive structural integrity guarantees for the historic masonry arch bridges and vulnerable culverts spanning the regional (R492, R439) and local (L3246, L1071) road networks.

The community highlights a critical, non-compliant omission in the applicant's transport and infrastructure assessment regarding the historical infrastructure at Sharavogue. The proposed Turbine Delivery Route (TDR) and heavy haulage strategy require the continuous traversing of the masonry arch bridge on the R492 at Sharavogue, constructed in 1850. The applicant treats this historic asset as a generic public road link, completely failing to address its structural limitations.



- **Absence of a structural capacity assessment.** Neither Chapter 14 nor the TMP contains any non-destructive testing or structural capacity calculation demonstrating that this historic masonry structure can withstand AIL wheel-loads. The TMP (S4.6, S5.6.5) states the AIL route was selected on the basis of "bridge capacities," but no bridge assessment is reproduced or referenced for the Sharavogue structure specifically.
- **Statutory protection.** The community understands the Sharavogue masonry bridge to be a heritage asset of the type protected under the Offaly County Development Plan 2021–2027 (Record of Protected Structures / NIAH). The local authority is required to protect such structures from damaging

interventions, and the community submits that a structural integrity audit should precede any AIL movement across it.

- **Direct Conflict with Multi-Axle AIL Configurations:** The physical geometry of this historic masonry structure—characterised by narrow roadways, low load-bearing parapets, and an un-engineered stone arch—is fundamentally incompatible with modern wind turbine haulage. The large axle configurations combined gross vehicle weights exceeding 100+ tonnes, and the wide wheel-tracks of specialised turbine transporters will exert unprecedented horizontal shear and vertical structural loading stresses directly on the 1850 stone arch.

10.13 Structural Objections to the Foynes Port Turbine Delivery Route (TDR) and Swept Path Failures

The community strongly challenges the applicant's reliance on Section 14.5.5 regarding the abnormal Indivisible Load (AIL) transport plan. The proposal to haul large turbine components from Foynes Port, Co. Limerick, via the N69, N18, M7 (Junction 21), R435, R445, through Roscrea town on the N62, and finally down the R492 via Sharavogue crossroads features severe real-world operational errors:

- **The Sharavogue Crossroads Failure:** The applicant explicitly admits that the current public road footprint is completely physically incapable of accommodating these oversized loads without intrusive modifications. Forcing multi-axle heavy haulage transport to cut across private lands at Sharavogue crossroads via "temporary hardcore placement" represents a high-impact, temporary industrial bypass that will damage the local landscape and alter agricultural soil structures.
- **Sweeping Radius/ Auto track Fallacy:** The community completely rejects the applicant's reliance on desktop Auto track simulations (Appendix 2-1) to claim feasibility. These software programs assume perfectly cleared sightlines, static boundaries, and zero vertical margin of error. The sweeping radius required for modern wind turbine blades will cause severe spatial conflict with historic roadside stone boundaries, century-old hedgerows, and overhead utility lines.
- **Widespread Environmental and Ecological Stripping:** Labelling the extensive removal of mature hedgerows and the stripping of natural margins as mere "hedgerow trimming/clearing is an egregious underestimation of local ecological destruction. These lines form the protective, stabilising boundary of our regional and local road

network. Stripping them back destabilises adjacent road ditches, accelerates edge-breakage, and permanently strips the rural character from the regional road corridors.

- **Severe Urban Gridlock and Administrative Risk:** Funnelling these turbines configurations along the R445 and directly northwest through the historic Roscrea town on the N62 is a logistical hazard. The applicant passes the entire operational risk of this decision down the line by stating that road opening licenses, local authority agreements, and Garda escorts will simply be sought "in a timely manner" by an unnamed appointed Contractor. This casual treatment of administrative and structural risk offers zero protection against the complete gridlock of regional commerce and localised structural vibrations near fragile town centre foundations.

10.14 Compound Construction Traffic and Major Storage Depots of the Shannon Pipeline Project

The community objects to the applicant's failure to adequately consider the severe, overlapping traffic impacts of a major concurrent infrastructure project within our community. Uisce Éireann's multi-billion-euro **Shannon-to-Dublin Water Pipeline Project** (Water Supply Project Eastern & Midlands Region, Case Reference PA92.324279/323980) will cut directly through this exact geographic corridor, requiring an expansive 50-meter-wide temporary working easement.

- **Immediate Infrastructure Proximity at Corolanty:** The spatial conflict between these two projects is critical. The proposed wind farm site redline is adjacent to the borders of the pipeline's path, placing the nearest wind turbine infrastructure at a critical, minimal distance from the proposed pipeline crossing point at **Corolanty, Shinrone**. Forcing two heavy industrial construction footprints to operate practically on top of each other creates an unacceptable concentration of risk for residents.
- **Industrial Traffic Overlap:** Pipeline installation utilises an open-cut trenching method requiring a continuous fleet of Heavy Goods Vehicles (HGVs) to transport thousands of tons of imported pipe bedding materials, and 1,600 mm structural steel pipes. This large-scale water project is moving forward on an overlapping timeline with the proposed wind farm's construction phase.

- **Storage Depot at Boveen:** The pipeline scheme establishes a pipe storage depot directly inside our immediate local network, in the townland of **Boveen, Co. Offaly**. This logistical base will operate as centralised, high-frequency loading yard. The depot will facilitate a persistent, secondary industrial fleet of multi-axle HGVs directly onto the regional network to facilitate the construction of the project.
-

10.14.1 Pipe Storage Depot 3 – Boveen, Co. Offaly

- Located on agricultural lands with direct access onto the N62 National Secondary Road, routing directly down to the regional and local junctions feeding the Ballincor/Corolanty corridor.
- Average Daily HGV Traffic: Proposed to generate an average of 35 to 50 HGV movements per day during active storage cycles.
- Peak Surge Traffic: Can spike up to 80 HGV movements per day during concentrated multi-axle pipe haulage drop-offs.

10.14.2 Cumulative Effect on the R492

The traffic volumes from the Shannon Pipeline civil works from Boveen depot operations, and the Ballincor Wind Farm development onto the **R492** will completely exceed the carrying capacity of this regional road. The community rejects any transport assessment that treats our local roads as isolated corridors. The combined axle-loading of the pipeline's aggregate and pipe fleets alongside the wind farm's 186 continuous concrete-pour HVs will result in immediate subgrade collapse and structural failure of the R492 pavement.

The pipeline construction requires major direct road crossings and extensive trenching adjacent to the R492, which will already be curbed single-lane closures, temporary traffic systems, and rolling blockades. Forcing large multi-axle wind turbine transport units (AILs) and daily wind farm heavy construction fleets into a narrow regional road corridor that is simultaneously acting as a haulage corridor for two major pipeline storage depots is a logistical failure that will leave the communities along the R492 in a total isolation.

10.15 Rejection of the Applicant's "Imperceptible / Not Significant" Conclusion

The community respectfully but firmly rejects the Applicant's overall conclusion (Chapter 14, S14.13) that "the residual effects on the road network will be imperceptible / not significant." That conclusion is not consistent with the Applicant's own narrative of a 12.23 km trenching operation, up to 100 m of open trench at a time, lane closures on the R439, and a 24-month construction phase concentrated onto a single narrow regional road.

Under the EPA's own terminology, an "imperceptible" effect is one that is without noticeable consequence. The community submits that an effect comprising nearly a year of rolling road works, structural trenching of the public carriageway, and sustained heavy-vehicle movement through local pinch points cannot be classified as imperceptible, and that the use of that classification undermines confidence in the objectivity of the transport assessment as a whole.

10.16 Mandatory Planning Conditions and Protections Required

Should An Coimisiún Pleanála decide to grant permission for this development despite the community's strong opposition, we request that the following legally binding, non-negotiable conditions be attached to protect our lives, safety, and local infrastructure.

Condition 1: Supplementary Municipal District Funding for Immediate Repairs & Water Cuts

Prior to any development, enabling, or trenching works commencing on-site or within the public road network, the developer must be legally required to provide a dedicated, ring-fenced fund directly to the local Municipal Districts of both Offaly and Tipperary.

- This fund must be strictly ring-fenced for immediate emergency patching and the permanent rectification of hazardous "water cuts," trench settlement, or pavement damage caused by the grid connection and development works.
- This extra funding must remain fully liquid and accessible to the MDs for the entire duration of the construction phase, the 50-week rolling trenching programme, and the subsequent commissioning phase, ensuring residents do not have to navigate hazardous, broken, or improperly backfilled roads while waiting for the developer to act.

Condition 2: Full-Lifecycle Financial Bond

To ensure the developer cannot walk away leaving the community with ruined infrastructure, a substantial Financial Bond must be lodged with the Planning Authorities prior to commencement.

- This bond must be secured and maintained in force for the full duration of the project lifecycle, explicitly including the decommissioning phase.
- This guarantees that total structural restoration, full-width road overlays, and trench remediation can be fully funded and executed independently if the developer fails to reinstate the roads to an improved, safe standard.

Condition 3: Engineered Site Entrance Surfacing

To prevent severe damage to the public road edge and stop stone/aggregate migration onto the R492 and L1071, the site entrances must undergo heavy civic stabilization works before heavy construction begins.

- A minimum length of 100 meters of the internal site access track, measured back from the public road boundary, must be fully surfaced as a bound structural pavement layer immediately following site mobilization.
- Within this area, the first 50 meters directly leading into the site from the public road edge must be fully surfaced in high-durability asphalt (asphalt concrete) to withstand heavy turning axles and protect the public road interface from collapsing under heavy civic works.

Condition 4: Mandatory Automated Wheel Wash Facility

To ensure our community roads are kept completely free of dangerous mud and debris, a heavy-duty, automated, high-pressure Wheel Wash System must be installed.

- This facility must be located precisely **50 meters inward from the entrance**, positioned directly on the newly specified internal asphalt track.
- Every single heavy vehicle leaving the construction site must be washed down completely before its tires ever touch the public road network.

Condition 5: Independent Before-and-After Bridge Surveys

To protect the integrity of local bridges and culverts, particularly along the R492, R433, R439 grid corridor, and vulnerable local road L3246, an independent structural engineering firm must be appointed to conduct rigorous surveys.

- A Before-Works Baseline Survey must be completed and published to the local authority and community before any construction, trenching, or component delivery vehicles enter the network.
- An After-Works Validation Survey must be conducted immediately post-construction. Any structural displacement, masonry cracking, or weakening identified must be remediated immediately at the developer's sole expense.

Condition 6: Maximum Sightline Enforcement and Mandatory 215 m Visibility Splays

The primary site entrance joins the R492 where a posted speed limit of 80 km/h combined with a narrow, winding alignment poses a major risk when interacting with slow-moving construction traffic and heavy vehicle tail-swing.

- Binding Implementation of Claimed Splays: Prior to the commencement of any on-site civil works, the developer must fully construct and implement the maximum visibility splays asserted in their Environmental Impact Assessment Report. A strict visibility triangle maintaining a minimum 3 m x-distance setback and an entirely unobstructed 215 y-distance in both directions must be physically established at all site access junctions.
- Physical Obstruction Restrictions: No hedging, boundary walls, earthen embankments, or construction signage shall be allowed to exceed 1.0 m in height within these structural visibility triangles. This splay must be maintained at the developer's sole expense throughout the entire 24-month construction phase and the full operational lifecycle of the wind farm to guarantee adequate stopping sight distances for local motorists.

Condition 7: Blackbull Junction Traffic Management & Advanced Variable Signage

To actively combat the traffic extensification and queuing hazards at the Blackbull junction (N62/R492), the R439 grid trenching zones, and the site entries, the developer must be mandated to install a comprehensive, high-visibility digital warning and management system.

- Solar-powered Electronic Variable Message Signs (VMS), alongside static high-reflectivity warning signs, must be deployed at all key approaches to the Blackbull crossroads, the R439 / L70152 grid junction, and along critical haul roads (including the L3246 and R433).
- These electronic signs must actively display real-time, dynamic updates regarding "Heavy Construction Traffic Ahead at Blackbull," "Road Closures / Open Trench Operations Ahead," and expected delay durations to allow residents, school transport, and agricultural users to navigate the network safely.
- No standard delivery convoys or non-emergency works shall be permitted to traverse the Blackbull junction during peak local transit hours (08:15–09:15 and 17:00–18:00).
- Concrete Pour & Trenching Notification Protocol: On days scheduled for continuous foundation concrete pours (delivering 9 HVs per hour) or active road trenching, the developer must issue an automated VMS alert 72 hours in advance. No trenching

operations or concrete transit movements shall intersect local school transport routes during drop-off and pick-up hours. All out-of-hours or night-time turbine deliveries must be flagged via VMS 48 hours in advance to protect sleep and night-time driving safety.

Condition 8: Mandated Independent Stage 2, 3, and 4 Road Safety Audits

To ensure safety changes are not restricted to preliminary design stages, the developer must fund a rolling regime of independent Road Safety Audits across the lifetime of the project.

- Prior to the close of detailed design, a Stage 2 RSA must be completed and submitted to the local authorities.
- Immediately upon completion of the site entrance works and before any operational or component haulage phase begins, an independent Stage 3 RSA (incorporating daytime and night-time site drive-overs) must be carried out to verify the live safety of the junctions.
- A Stage 4 RSA (monitoring live collision data and near-miss feedback) must be completed 12 months into the operational phase to confirm that no permanent road safety hazards have been left behind. All recommended interventions from these audits must be fully funded and executed by the developer.

Chapter 11: Equine

11.0 Introduction

This report addresses the impact of the proposed Ballincor Wind Farm on three equine breeding enterprises located within close proximity to the proposed turbine array. It examines how the developer's Environmental Impact Assessment Report (EIAR) treated these enterprises, identifies the critical gaps in that assessment and draws on peer-reviewed scientific literature, planning precedent, and official equine welfare guidance to demonstrate why the proposed development poses unacceptable risks to these operations.

Grounds for Objection / Principal Failures

- **Ground 1** — The EIAR is materially incomplete and legally inadequate in its treatment of equine receptors.
- **Ground 2** — The proposed development poses an unacceptable, unassessed risk to equine welfare, breeding viability, and human safety, supported by peer-reviewed evidence.
- **Ground 3** — The application is contrary to established planning precedent and the precautionary principle, and is unsupported against industry concern.

Wraymount Stud is a family-run Thoroughbred breeding farm located in Sharavogue, Birr, County Offaly. Owned and operated by bloodstock expert Patrick Headon, the stud is highly regarded in the Irish horse racing and breeding industry for successfully producing resilient, black-type racehorses. Wraymount Stud is not a purely domestic enterprise. It keeps and manages horses for owners from around the world, including the Middle East, placing it within a network of international bloodstock investment where confidence in the quality of the local environment is a commercial prerequisite. Wraymount Stud paddocks extend down to the callows of the River Brosna where all paddocks will lie under 1 km from the nearest proposed turbine. The closest paddock will be 300m from T8. The property is listed as Receptor 162 in RWE's shadow flicker assessment.



Images of Wraymount Stud and paddocks and proximity to Turbines above and below.



Hazel Perdue is a breeder of Irish Draught horses located approximately 1.1km from the proposed development. The Irish Draught is Ireland's first traditional working horse and a native horse breed, classified by the United Nations Food and Agriculture Organisation as endangered. The breeding tradition itself is listed on Ireland's National Inventory of Intangible Cultural Heritage, maintained by the Department of Housing, Local Government and Heritage. Fewer than 1,000 purebred foals are registered in the entire country each year. The breed survives only through the active conservation effort of breeders such as Ms Perdue, supported by Horse

Sport Ireland, the Irish Draught Horse Society of Ireland, the Royal Dublin Society, and the Irish Cattle Breeding Federation.

Michael Hunt breeds Thoroughbreds at Orchard House, Ballinamoe, Shinrone, with stables attached to the family home and broodmares, foals and yearlings cycling through the premises in every season. He is an Irish Master Farrier, American Certified Farrier and European Certified Farrier with more than twenty-five years' professional experience across multiple jurisdictions working with horses of every breed and temperament. His property is listed as Receptor 53 (H053) in RWE's assessment. The nearest of the proposed turbines, T6, stands 854 metres from the house, with three further turbines , T5, T7 and T4, falling within the shadow flicker study area. RWE's own model records 73 hours and 33 minutes of shadow flicker per year at the property across 144 days, one of the highest exposures of any receptor on the site, yet the stables and paddocks where his horses live were never modelled as equine receptor points.

While this report focuses primarily on the thoroughbred dimension, where the scientific evidence base is strongest and the economic stakes most quantifiable, the risks to Ms Perdue's Irish Draught breeding programme and animals are no less real and significant.

11.2 Context: Ireland's Equine Industry and the Area

11.2.1 National Significance

Ireland is the third largest producer of thoroughbred foals in the world, behind only the United States and Australia, and exceeds the combined totals of the United Kingdom and France. According to the 2017 Deloitte Economic Impact Study commissioned by Horse Racing Ireland, the Irish breeding and racing industry generates €1.84 billion in total direct and stimulated expenditure and sustains approximately 28,900 jobs across Ireland (Deloitte, 2017). On a per capita basis, Ireland has approximately 50 thoroughbred horses per 10,000 people — a figure that is several multiples higher than any other major racing nation and ten times greater than Great Britain.

The industry operates across all 32 counties, with particular concentration in rural areas that have limited alternative employment opportunities. Horseracing is deeply rooted in national heritage and rural identity, and Ireland's continued viability as a world-leading equine centre depends on protecting the environmental conditions under which horses are bred, reared, and trained.

11.2.2 Wraymount Stud

Wraymount Stud is a thoroughbred breeding operation of established reputation, situated on historically significant lands. The property includes Wraymount House, recorded on the 1838 Ordnance Survey map with a long tree-lined avenue, and the Raymount Demesne, identified in the Ch 13 EIAR as a designed landscape. The stud maintains broodmares, manages paddocks, exercise arenas, and schooling areas, and operates a breeding programme that contributes to Ireland's bloodstock output.

The principal paddock of the stud farm sits at approximately 975 metres from turbine T09, a second paddock sits just 300 metres from turbine T08. Two further turbines, T07 at 1,585 metres and T10 at 1,629 metres, also fall within the shadow flicker study boundary from that paddock. RWE's own EIAR named Wraymount Stud in two separate chapters, Ch2 and Ch5. This is not a business that was unknown to the developer.

11.2.3 Hazel Perdue — Irish Draught Breeding

Ms Perdue's Irish Draught horse breeding enterprise lies approximately 1,100 metres from the nearest proposed turbine. Her operation continues a family tradition of breeding Ireland's first native horse breed. The scale of the conservation challenge cannot be overstated: fewer than 1,000 purebred foals are registered annually across the entire country. Every active breeder is a participant in a nationally and internationally recognised conservation effort. Any disruption to her operation is not merely a private economic loss; it is a measurable setback to an endangered breed conservation programme recognised by the State (Department of Housing, Local Government and Heritage.

Despite this, RWE's EIAR contains no reference whatsoever to Ms Perdue's enterprise. Her horses, her breeding programme, and her intangible cultural heritage contribution are entirely absent from the developer's assessment.

11.2.3 Michael Hunt

This local Thoroughbred breeding operation is run from Orchard House, Ballinamoe, Shinrone, where stables are attached to the family home and broodmares, foals and yearlings are kept on the premises throughout the year. Michael Hunt's holding is classified as a *residential* receptor (R53) and is also one of the highest shadow-flicker exposures on the entire site (73h33m/year), with a confirmed night-time noise exceedance. His holding was named as a residence, assessed as a building, never as a stud..

11.3. How the Developer Treated These Enterprises

11.3.1 Wraymount Stud: Named and Then Ignored

RWE's EIAR acknowledged Wraymount Stud by name in two separate chapters. Chapter 2, the project description chapter, states: 'Some equestrian activity is noted in the surrounding area. Wraymount Stud is located approximately 1.4 km north east of the proposed wind farm site.' Chapter 5 names it again among the amenities and services nearest to the proposed wind farm site. Despite this double acknowledgement, no equine-specific assessment was carried out in any chapter of the EIAR:

- **Shadow Flicker:** Wraymount Stud is listed as Receptor 162 in the shadow flicker assessment and described simply as a 'sensitive receptor' — the same generic category applied to every dwelling in the study area. The assessment point was placed at the building coordinates, not at the paddocks where horses are kept. The principal paddock, at approximately ITM E 605,534, N 697,927, is around 502 metres west-southwest of where RWE placed their model point. From the building, only two turbines fall within the study boundary. From the paddock, four do. No paddock, exercise arena, or schooling area was modelled. No equine receptor points were entered. No equine welfare threshold was applied.

- **Noise:** The noise assessment was designed and calibrated entirely for human residential receptors. Wraymount Stud falls within the 35 to 40 dB(A) noise zone at rated wind speed. Whether this is acceptable for horses, animals that detect low-frequency vibration through their hooves and teeth as well as through hearing (Sankey et al., 2023) was never asked.

- **Heritage:** Chapter 13 identified two heritage assets associated with the property and found that all will experience moderate indirect negative effects. Wraymount House (CH8) and Raymount Demesne (DL49) were assessed by desktop analysis, ZTV mapping, and photomontages — without a site visit. Eleven turbines at 180 metres tip height, at 1.36 kilometres from this property, will dominate the visual character of this demesne for 35 years.

- RWE named this stud farm. They knew what it was. They then prepared every chapter of the EIAR as if it were a residential dwelling. The failure to carry out a site-specific equine assessment was not an oversight. It was a choice.

The legal standard against which the developer's assessment must be measured is not in dispute. Article 3 of the EIA Directive (2011/92/EU as amended) requires an environmental impact assessment to identify, describe and assess the direct and indirect significant effects of a development on, among other receptors, fauna and material assets. That obligation is carried into Irish law through the Planning and Development Regulations 2001 (as amended) and Schedule 6 thereto. A working equine breeding enterprise is both fauna and a material asset within the meaning of these provisions. The duty is therefore not satisfied by acknowledging that an enterprise exists; it is satisfied only by identifying the enterprise as the receptor it actually is and assessing the effects of the development upon it.

This distinction is central to the present objection. An Coimisiún Pleanála cannot lawfully grant consent on the basis of an EIAR that has failed to assess a significant effect on an identified receptor. Where an assessment has not been carried out at all, the deficiency cannot be cured by the Board on appeal, because there is no assessment to review. The duty to give the main reasons and considerations for a decision, and the requirement that an EIA contain a complete identification and assessment of significant effects, are well established in Irish law (*Connelly v An Bord Pleanála* [2018] IESC 31). The submission below demonstrates two distinct failures against that standard: the complete omission of two equine enterprises, and the mis-characterisation of a third as an ordinary residential dwelling.

11.3.2 Hazel Perdue and Michael Hunt: Not Even Mentioned

Ms Perdue's Irish Draught horse breeding enterprise does not appear anywhere in the EIAR. It is not named. It is not described. It is not assessed. No reference is made to the presence of an endangered native breed within 1,100 metres of the proposed turbines. No reference is made to the intangible cultural heritage dimension of her breeding practice. No shadow flicker, noise, or heritage assessment addresses her horses or her operation in any way. This is a complete omission of a receptor of national conservation significance. An adequate Environmental Impact Assessment cannot claim to have assessed the impact of a development on the surrounding area when an enterprise breeding an FAO-classified endangered breed within 1,100 metres of the turbine array has been entirely excluded.

Michael Hunt's holding is classified as a *residential* receptor (R53) and despite the recorded noise and shadow flicker impact in the Applicants document with a confirmed night-time noise exceedance, his holding was never assessed for equine activity.

11.4 Impact of Wind Turbines on Horses and Breeding Operations

11.4.1 The Equine Visual System and Shadow Flicker

The horse possesses the largest eyes of any land mammal relative to skull size, positioned laterally to provide a visual field of approximately 350 degrees (Evans & McGreevy, 2006; Iowa State University Extension, n.d.; Olsson et al., 2025). The retina has a rod-to-cone ratio of approximately 20:1, heavily optimised for motion detection rather than colour or fine detail. This architecture evolved specifically for detecting predator approach from any angle, and it means a horse can see a rotating turbine blade virtually anywhere in its surroundings without turning its head (Knickelbein, 2022).

Shadow flicker from a wind turbine is precisely the type of stimulus this system is calibrated to detect. It is intermittent, not constant; moving across the visual field; occurring in peripheral vision for horses grazing in a field; and rhythmic and repetitive. The neural pathway from peripheral motion detection to adrenal arousal in the horse is extremely short — faster than conscious processing. A horse does not evaluate whether a flickering shadow is dangerous. It reacts first (Olsson et al., 2025).

The British Horse Society, the most authoritative equestrian body in the UK and Ireland, explicitly identifies shadow flicker as a horse-spooking hazard in its published guidance on wind turbines (BHS, 2025). Shadow flicker can extend up to 1.0–1.5 km under certain solar geometry conditions. All enterprises fall within this range, their paddocks even more so.

11.4.2 Thoroughbred-Specific Stress Physiology

The Thoroughbred horse is the product of over 300 years of selective breeding for athletic performance traits — primarily speed, cardiovascular output, and reactive agility. These traits have a well-documented consequence: elevated HPA-axis (hypothalamic-pituitary-adrenal) reactivity compared to calmer breeds (Noschenko & Masko, 2022).

A peer-reviewed study of 149 sport horses (PMC6886778) found that Thoroughbreds showed significantly higher cortisol stress responses than other breeds after stimulation testing (Zubrod

et al., 2019). This is not anecdotal observation; it is peer-reviewed neuroendocrine evidence that the breed kept at Wraymount Stud is demonstrably more stress-reactive at a physiological level than calmer breeds. Sustained cortisol elevation in mares has been associated with impaired conception rates and early embryonic loss. For a stud farm, this is not just a welfare concern. It is a direct commercial and reproductive risk.

11.4.3 Shadow Flicker Exposure at Wraymount Stud

RWE's figures for Receptor 162 show an annual shadow flicker total of 9 hours and 20 minutes, occurring across 48 days per year, with a maximum daily duration of 21 minutes. On the basis of these figures, RWE treats this property as fully compliant with the 30/30 standard (30 hours per year, 30 minutes per day).

However, this assessment is fundamentally inadequate for a stud farm:

- **The assessment point was at the building, not the paddock.** The principal paddock is approximately 502 metres west-southwest of Receptor 162. From the paddock, four turbines fall within the study boundary — T07, T08, T09, and T10. None were modelled as casting shadow onto this paddock.
- **Cumulative daily exposure is approximately 110 minutes.** This comprises 23 minutes from T10, 38 minutes from T09, and a compound window of 49 minutes from T07 and T08 together, whose shadow windows overlap within the same afternoon period. During that 49-minute compound window, the paddock receives shadow from two turbines in close succession in an arrhythmic pattern
- **The 30/30 thresholds are designed for humans in buildings.** They were developed in Germany in the 1990s for residential amenity and have no relationship to equine welfare, equine physiology, or the specific vulnerabilities of thoroughbred horses.
- .**No shutdown system protects any paddock.** Because no paddock was entered as a receptor point, no automatic turbine shutdown has been configured for any equine area on this farm.

11.4.4 Noise and Vibration

Horses are significantly more sensitive to sound than humans. Their hearing range extends to frequencies above 33 kHz, compared to under 20 kHz for humans, and they detect low-frequency vibration through their hooves and teeth during grazing as well as through hearing. Wind turbines generate both audible broadband noise and low-frequency ground vibration — both of which horses may register through multiple sensory channels simultaneously (Sankey et al., 2023)..

Research confirms that unpredictable noise causes the greatest fear reactions in horses. More than 84% of horses show immediate avoidance or attempts to flee after perceived threats. A UK/US owner survey study found that in very anxious horses, noise reactivity did not improve over time in 49% of cases and worsened in 15% (Gianoli et al., 2022). The assumption that horses near turbines will 'get used to it' is not supported for the subset of horses with higher baseline anxiety — a subset disproportionately represented in the Thoroughbred breed.

Pregnant mares exhibit heightened sensitivity to noise and light fluctuations, which may interfere with gestation and increase the risk of premature birth or behavioural distress. Foals exposed to elevated noise levels during early development show signs of sleep disruption, increased startle responses, and reduced social bonding behaviours. For Wraymount Stud's Thoroughbreds, Ms Perdue's Irish Draughts and Michael Hunts Thoroughbreds, these are serious welfare and breeding viability concerns.

11.4.5 Rider and Handler Safety

This dimension has no equivalent in assessments of turbine impacts on other livestock. A spooking dairy cow is a welfare concern; a spooking Thoroughbred with a rider or handler is a potential human fatality.

The British Horse Society guidance notes that horses are flight animals whose instinct is to run from perceived danger, and that some horses may instantly flee (BHS, 2025). Shadow flicker presents a particularly insidious safety risk because it is intermittent and unpredictable from the horse's perspective; because it operates in peripheral vision, where the horse is most likely to trigger a reflex flight response; and because it may occur in areas a rider believes to be familiar and safe, varying as it does with season and time of day. A horse that has safely passed a turbine location fifty times without incident may encounter shadow flicker there for the first time on the fifty-first.

The Safety, Health and Welfare at Work Act 2005 imposes on an employer or operator a duty to identify and manage foreseeable risks in the place of work. Shadow flicker causing a horse to bolt, rear or spin without warning during mounted exercise or routine handling is precisely such a foreseeable hazard. The duty under that Act falls on the operator of each equine enterprise rather than on the developer directly; but it is for exactly that reason a material planning consideration the EIAR was obliged to identify. A development that introduces a foreseeable workplace hazard onto neighbouring holdings — one that the affected operators will then be legally bound to manage, without having been consulted or assessed — is a consideration the assessment cannot simply pass over in silence. It has not been assessed, managed or mentioned anywhere in RWE's submission.

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11.4.6 Non-Habituation

A critical point for all operations is that shadow flicker cannot be systematically desensitised in the conventional sense. It is intermittent and variable — it changes with season, time of day, and wind direction. Unlike a static object that a horse encounters repeatedly at the same location, a horse may pass the turbine site calmly on dozens of occasions and encounter shadow flicker unexpectedly for the first time weeks or months later (BHS, 2025; Janicka et al., 2024).

Furthermore, stud farm operations involve a continuous throughput of animals. Visiting mares arrive for covering and remain for short periods. Newborn foals have no prior habituation to any environmental stimuli. Young horses in breaking and pre-training face the same exposure afresh. Horses returning from the southern hemisphere for each breeding season encounter conditions anew. There is no opportunity for systematic acclimatisation (ITBA & IRTA, 2020).

11.4.7 Specific Risks to Irish Draught Horses

While much of the scientific literature focuses on thoroughbreds, the Irish Draught is not immune to the effects described above. All horses share the prey-animal visual architecture, the flight response mechanism, and sensitivity to noise and vibration. Irish Draughts, though generally calmer in temperament than thoroughbreds, are still flight animals with the same basic neurological responses to moving shadows and unpredictable noise (Evans & McGreevy, 2006; Olsson et al., 2025).

.The critical additional factor for Ms Perdue's operation is the conservation dimension. With fewer than 1,000 purebred foals registered annually, every breeding mare, every successful

foaling, and every healthy foal matters to the survival of the breed. Any disruption to reproductive outcomes — whether through stress-induced early embryonic loss, foal injury from flight responses, or behavioural disturbance during the critical neonatal bonding period — has consequences that extend beyond one farm to the national and international conservation effort for Ireland's first native horse breed.

11.5 Planning Precedent

The principle that industrial-scale development must demonstrate compatibility with established equine operations has been upheld in both Irish and UK planning decisions.

11.5.1 An Bord Pleanála — Castleblake, Rosegreen, Co. Tipperary

In ABP Reference PL23.225138, the Board refused planning permission for an industrial facility adjacent to a major thoroughbred operation, finding that it would be incompatible with equine related activities in the vicinity and would be prejudicial to the viability of the equine industry in that area. The Planning Inspector invoked the precautionary principle, stating that the business in question carries Ireland's reputation in the bloodstock industry worldwide and that the onus is on any new development in the rural area, and in particular non-agricultural development, to demonstrate that it will not have a negative impact on the viability of existing stud farms or stables (ABP PL23.225138).

11.5.2 UK Secretary of State — Equine Businesses Refusal

In Planning Appeal Reference APP/H0928/A/09/2093576, the UK Secretary of State for Communities and Local Government refused permission for a proposed development of 9 wind turbines, acknowledging that the development would have a potential significant adverse impact on three nearby equine businesses and that considerable weight should be attached to this. The Planning Inspector noted three particular aspects of wind turbines that have a very significant detrimental effect on horses and riders: blade movement, shadow flicker, and noise at start-up. The Inspector acknowledged that thoroughbred horses are high value, highly strung and volatile and concluded that the risks would exist over and above the normal risks these stables experience.

11.5.3 The Precautionary Principle

The EU's specialist animal welfare body for equines, EURCAW, confirmed in its 2024 review that direct scientific research on shadow flicker and horses is essentially absent (EURCAW, 2024). That absence of research does not mean the risk is absent; it means the risk has not yet been studied. These are not the same thing, and the distinction is decisive for how the Commission must approach this application.

The precautionary principle is embedded in EU environmental law through Article 191(2) of the Treaty on the Functioning of the European Union and is a settled feature of Irish planning practice. Its effect, in the context of an environmental impact assessment, is to determine where the burden lies when a significant effect cannot be excluded on the information available. Where a real risk to a sensitive receptor cannot be ruled out on the basis of the material before the decision-maker, the appropriate response to that uncertainty is further assessment before consent — not the grant of permission on the assumption that the risk will not materialise. Acknowledged scientific uncertainty is a reason to assess, not a licence to proceed.

Applied here, the logic is straightforward. The developer has not assessed the effects of shadow flicker, noise or vibration on the equine receptors at all, whether at Wraymount Stud, where the paddocks were never modelled, or at the Perdue and Hunt enterprises, which were not identified as equine operations. The specialist welfare body confirms that the underlying science is undeveloped. In those circumstances the Commission cannot lawfully be satisfied that the development will not have a significant effect on these enterprises, because the information needed to reach that conclusion has not been generated. For a development that will operate for twenty-five to thirty years alongside working breeding operations, the precautionary principle points clearly towards refusal, or at minimum towards stringent and enforceable conditions, rather than towards the assumption that human residential thresholds adequately protect horses.

11.6. Industry Support

The concerns raised in this report are supported by other formal ACP submissions from national and international industry bodies. The Association of Irish Racecourses, representing all 26 licensed racecourses in Ireland, has submitted a formal objection to another Windfarm development in Ballinla Co. Offaly, stating its strong concern regarding the potential implications for the wider horse racing and breeding industries See Appendix 11-1. The Association highlighted the current decline in Ireland's foal crop and emphasised that any disruption to animal health or behaviour arising from industrial-scale wind energy developments in key breeding regions could have a serious knock-on effect on the entire horse racing and bloodstock ecosystem.

The Irish Thoroughbred Breeders' Association and Irish Racehorse Trainers' Association have jointly submitted formal positions to the WEDG (Wind Energy Development Guidelines) Review, making clear that the thoroughbred industry is unusually sensitive to perceptions of landscape quality and operational environment (ITBA & IRTA, 2020). International investors, overseas owners, and clients of elite bloodstock operations expect a rural setting characterised by undisturbed pasture, open skylines, and high-quality land management. This is not aesthetic preference — it is a commercial requirement underpinning a €1.84 billion national industry (Deloitte, 2017).

11.7 Conclusion

The evidence assembled in this report demonstrates the following:

1. RWE identified Wraymount Stud by name in its EIAR and then failed to carry out any equine-specific assessment of shadow flicker, noise, or heritage impacts. The shadow flicker assessment modelled the building, not the paddocks. The noise assessment applied human thresholds without equine adjustment. The heritage assessment reached a moderate negative effect finding without visiting the property.

2. RWE entirely omitted Ms Perdue's Irish Draught horse breeding enterprise and Michael Hunt's equine enterprise from the EIAR, despite their proximity to the site, the high risks of shadow flicker and the recorded noise levels and exceedances.

3. These are not deficiencies of weight but of legality: by omitting two equine enterprises entirely and assessing a third as a dwelling, the EIAR fails the Article 3 duty to identify and assess significant effects on the receptors concerned, and the Commission cannot lawfully be satisfied, on an assessment that was never carried out, that the development is acceptable.

4. The peer-reviewed scientific evidence demonstrates that horses — and thoroughbreds in particular — are disproportionately sensitive to shadow flicker, noise, and vibration. The equine visual system is specifically adapted to detect moving shadows as predator-approach signals. Thoroughbreds show statistically higher cortisol stress responses than calmer breeds. Sustained cortisol elevation in mares is associated with reproductive impairment.

5. The cumulative unmodelled shadow flicker exposure at Wraymount Stud's principal paddock from four turbines is approximately 110 minutes per day under worst-case conditions, in a compound and arrhythmic pattern. No shutdown system has been configured for any equine receptor point on this property.

6. Rider and handler safety near turbines is a recognised and unmitigated risk, acknowledged by the British Horse Society and upheld in UK planning decisions.

7. Planning precedent in both Ireland and the United Kingdom supports the refusal of developments that are incompatible with established equine operations, and the application of the precautionary principle to protect bloodstock businesses of national significance.

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CHAPTER 12: Impact on Material Assets

12.1 Introduction and Scope

Material Assets is a defined topic under the Environmental Impact Assessment Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) and is required to be addressed in any Environmental Impact Assessment Report submitted in support of a development of this scale. As confirmed by the Environmental Protection Agency's 2022 Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Material Assets includes built services and infrastructure, economic assets, and assets of strategic, scientific, educational or cultural value to the receiving community.

The proposed Ballincor Wind Farm would be constructed in a landscape that supports four Material Assets of exceptional and in two cases, internationally significant value:

- **Birr Aerodrome (ICAO: EIBR)** — a licensed aviation facility and Designated Training Organisation operated by Ormand Flying Club for over fifty years;
- **The emergency and rotary-wing aviation corridor** crossing the western Slieve Bloom mountains, on which Coast Guard, Air Corps and Helicopter Emergency Medical Service operations depend in poor weather;
- **I-LOFAR (Irish Low Frequency Array)** — the Irish station of the European LOFAR radio telescope network and Ireland's premier radio astronomy facility, located at Birr Castle Demesne; and
- **Birr Outdoor Education and Training Centre (Birr OETC)** — a State-affiliated residential outdoor education facility operating under the Laois and Offaly Education and Training Board.

This chapter consolidates the impacts on each, demonstrates the cumulative effect on the Material Assets of the receiving environment, and identifies a clear failure in the applicant's Environmental Impact Assessment Report to properly characterise these assets or to consult their operators. On that basis the Group respectfully requests that An Coimisiún Pleanála refuse permission for the proposed development.

12.2 Birr Aerodrome (EIBR) — Licensed Aviation Infrastructure

12.2.1 Status and Function

Birr Aerodrome, identified internationally by ICAO designator EIBR, is a licensed civil aerodrome operated by Ormand Flying Club from a site approximately one nautical mile (1.9 km) south of Birr town. The aerodrome has operated for over fifty years and is widely recognised as the oldest grass-runway flying club in Ireland. It is licensed by the Irish Aviation Authority (IAA) and holds Designated Training Organisation status conferred by the IAA, delivering Private Pilot Licence training to standards prescribed by the European Union Aviation Safety Agency (EASA).

Key operational characteristics are as follows:

- A single grass runway oriented north–south, designated 18/36, approximately 585 metres in length;
- Aerodrome elevation of approximately 250 feet above mean sea level;
- Operations conducted under Visual Flight Rules only, within Class G uncontrolled airspace, with no radar service and no air traffic control — the standard model for Irish general aviation training aerodromes;
- Location within designated Military Operating Area MOA5;
- AVGAS and MOGAS fuel facilities available, making the aerodrome a routine transit point for general aviation traffic across the Irish midlands;
- A confirmed partnership with a skydiving operator, with parachute operations commencing in Summer 2026.

The aerodrome also serves as an occasional base for helicopter emergency and rescue operations responding to tasks in the local area and hosts the Annual Birr Vintage Week Airshow and the Annual Breakfast Fly-In. The latter has raised in excess of €15,000 annually for the Birr branch of the Society of St Vincent de Paul. Educational visits by school groups and Scouting organisations are a regular feature of its programme.

12.2.2 Direct Conflict with the Proposed Turbines

Recent engagement with The Ormand Flying Club identifies a series of safety-critical interactions between the proposed turbines and standard aerodrome operations. The most

material of these are summarised below; the full technical analysis is set out in a separate submission presented by Ormand Flying Club and is adopted in full by reference here:

- **Proximity.** Proposed Turbine 1 is located at a distance of approximately 3.8 km (2 nautical miles) from the aerodrome. Turbines 2 and 4 are assessed by the operator as directly overlapping the established training and traffic circuit area. The applicant's assertion at the May 7th 2025 pre-application meeting with An Coimisiún Pleanála that Birr Aerodrome lies "outside the zone of influence" of the development is factually incorrect.

- **Obstacle clearance against circuit altitude.** Training circuit flying at Birr Aerodrome is conducted at the standard 800 feet above ground level. Rule SERA.5005(f) of the Standardised European Rules of the Air requires a minimum clearance of 500 feet above any obstacle overflown. Turbines of approximately 180 metres tip height equate to approximately 590 feet. Maintaining the required clearance would demand circuit altitudes in excess of 1,090 feet above ground level in the affected sector — a height that is not operationally compatible with the standard training circuit at Birr Aerodrome. The circuit cannot simply be 'moved'; it is fixed by runway orientation, prevailing wind, and traffic pattern geometry.

- **Student pilot altitude tolerance.** A student pilot in early training may routinely deviate from assigned circuit altitude by plus or minus 200 feet. This is not negligence — it is the expected variation through which the skill of altitude-holding is acquired. In consequence, an aircraft intending to fly at 800 feet may at a given moment be at 600 feet, leaving only tens of feet of clearance above a 590-foot turbine tip. This is a foreseeable scenario arising in the normal course of training and would be made permanent and recurrent by the proposed development.

- **Prevailing wind and approach geometry.** Runway 18/36 is aligned with the prevailing westerly and north-westerly winds typical of this part of the midlands. Under these conditions the active base and final approach legs of the circuit are oriented to bring aircraft over or in close proximity to the proposed turbine cluster. The conflict between circuit traffic and the turbines would not be an occasional or exceptional event but a routine feature of operations under the most common meteorological conditions.

- **Visual navigation and loss of the River Brosna reference corridor.** General aviation training at uncontrolled aerodromes is fundamentally dependent on Visual Flight Rules and visual navigation using clear ground features. The River Brosna corridor serves as a primary visual reference line for local training flights operating to

and from Birr Aerodrome. The introduction of multiple 180-metre rotating structures into this corridor would compromise the clarity of the river as a navigation reference, introduce dominant vertical elements that compete with the underlying landscape, and increase pilot workload — in particular for student pilots still developing situational awareness.

- **Mechanical turbulence and wake.** Under moderate to strong wind conditions, the turbulent wake of turbines of this scale can persist for several rotor diameters — potentially several hundred metres — at altitudes consistent with light-aircraft training flight. This is a recognised hazard in aviation guidance, including the UK Civil Aviation Authority's CAP 764 and the European Union Aviation Safety Agency's 2020 report on the safety impact of wind turbines in the vicinity of aerodromes and air routes.

- **Uncontrolled airspace and absence of safety net.** Pilots operating at EIBR are responsible for their own separation from terrain, obstacles and other aircraft using visual reference alone. There is no radar controller available to alert a pilot to an emerging conflict. Introducing dominant obstacles into routinely used training airspace removes margin that, in a controlled environment, might be recoverable; at an uncontrolled aerodrome, it is not.

- **Aviation obstruction lighting and low-sun operations.** Flights at EIBR routinely occur in low-sun conditions of early morning and evening, when glare and reduced contrast already affect a pilot's ability to identify and judge distance to obstacles. The mandatory aviation warning lighting on turbines of this height would introduce multiple flashing red obstruction lights into airspace that is presently free of tall lit structures, with consequent visual confusion at the edges of the operating day.

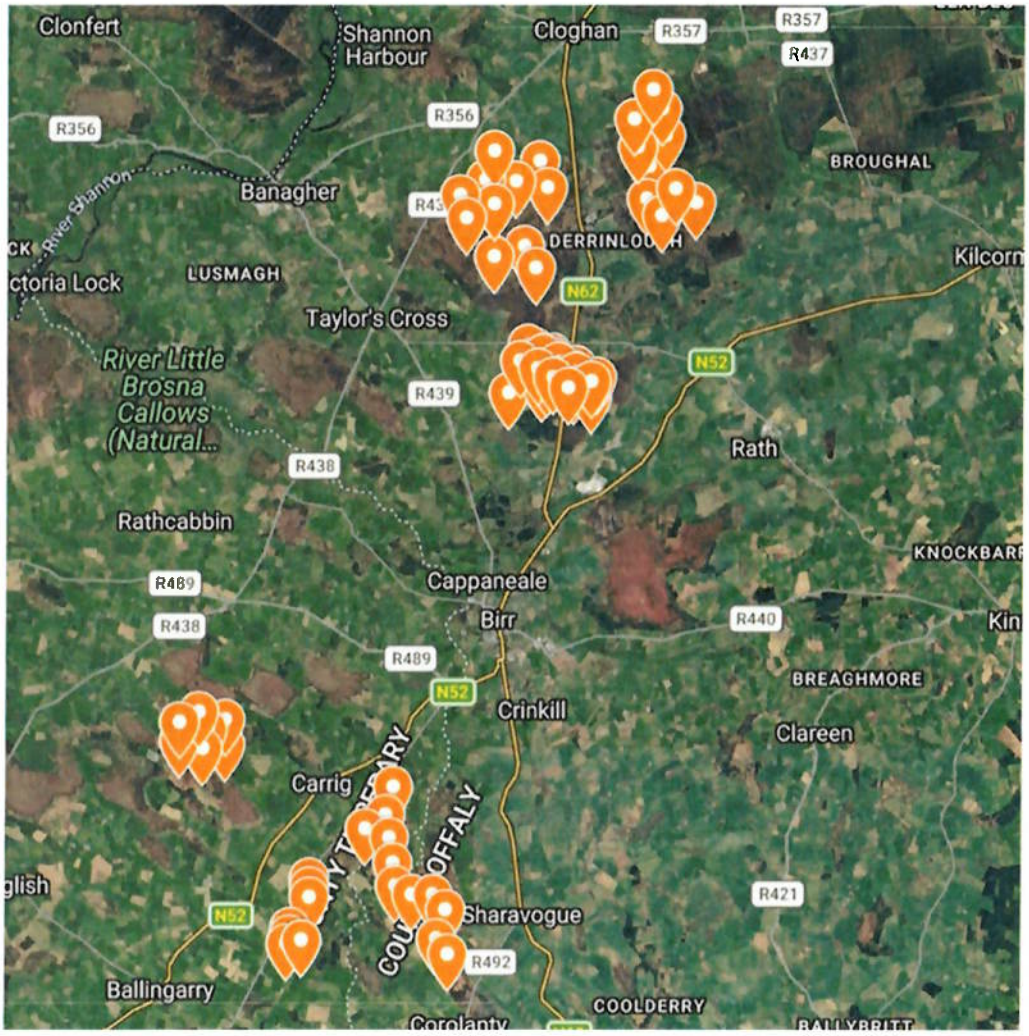
12.2.3 Failure of Consultation

Ormand Flying Club's submission documents that, notwithstanding express direction from both An Coimisiún Pleanála (at the pre-application meeting of February 22nd 2024) and the Irish Aviation Authority that the applicant should engage directly with the operator of Birr Aerodrome, no direct, documented or substantive consultation was undertaken. The only correspondence received by officers of the club, dated February 14th and March 19th 2025, was sent under a subject line referencing "Arbourhill, Tipperary Windfarm Proposal" — a different development at a different location. Thisd was, in any event, not followed up by telephone call, site visit or in-person meeting. This is a material deficiency in the application's treatment of a Material Asset whose operational safety is directly affected by the proposal.

12.3 Emergency and Rotary-Wing Aviation Corridor

12.3.1 A Concentrating Pattern of Development

Over the past five years the Birr area of County Offaly has seen a marked intensification of wind farm development. Consent has already been granted for a development in the Carrig area, with further installations at Derrinlough, Cush, Meenwaun and Cloghan. The present application proposes a further eleven turbines of approximately 185 metres in the Brosna Valley. The cumulative effect is a clustering of large-scale turbines across a single corridor of midlands airspace.



12.3.2 Established Flight Paths Through the Corridor

That corridor is not empty airspace. It lies within established routes used by emergency services helicopters transiting between Dublin and Shannon Airport, and within airspace routinely used by local aviation — including traffic associated with Birr Aerodrome and general leisure and recreational flying across the region.

The operational significance of this clustering has been assessed with the assistance of a retired captain of the Irish Coast Guard (IRCG) rescue helicopter service. That assessment identifies significant concerns not only for IRCG aircraft but for military (Irish Air Corps) helicopters and for civilian aircraft on Air Ambulance or Helicopter Emergency Medical Service (HEMS) missions. The clustering of large turbine developments in this area presents considerable challenges for emergency aircraft logistics. Their proximity to the Slieve Bloom and Kinnitty uplands further restricts the flight paths available, particularly in adverse conditions.

12.3.3 Loss of Viable Flight Corridors in Poor Weather

These constraints are most acute in conditions of low cloud, when safe navigation options are already limited and the available flight corridors are correspondingly reduced. A typical case illustrates the difficulty. A helicopter routing from Shannon to Dublin under Visual Flight Rules (VFR) must remain in visual contact with the ground at all times. The highest point on the Slieve Bloom plateau is 1,729 feet above mean sea level (AMSL). With a cloud base of, say, 1,000 feet AMSL, a direct Shannon–Dublin track is not available, because it would require overflying the plateau into cloud. The crew's only option is to offset the direct track to the east or west of the plateau.

Which side is chosen is dictated by the prevailing air mass — wind direction, cloud base, and any associated turbulence, which in strong winds can be significant. The predominant winds in Ireland are from the south, south-west or west. To avoid turbulence and remain on the upwind side of the plateau, most crews would, in those conditions, route to the west of the plateau — whose south-western extremity lies in the area of Birr, precisely where the proposed turbines would stand. Turbines in excess of 600 feet in height in that position would constitute a direct flight safety hazard at exactly the point to which poor-weather rotary operations are funnelled.

12.3.4 Material Asset Significance

The integrity of this corridor is a Material Asset in the fullest sense: the capacity to move emergency, rescue, military and medical aircraft safely across the midlands in marginal weather is a public-safety function on which lives depend. Unlike a fixed installation, this asset has no single operator to consult and no boundary fence; its value lies in the continued

availability of safe, weather-resilient routing. The proposed development, taken with the consented and proposed turbines at Carrig, Derrinlough, Meenwaun, Cloghan and Cush, would progressively close off the western Slieve Bloom corridor in the very conditions in which it is most needed — a cumulative erosion of emergency-response capability that the applicant's Environmental Impact Assessment Report does not assess at all.

12.4 LOFAR — Radio Astronomy Facility of National and European Strategic Importance

12.4.1 Status and Function

The Irish Low Frequency Array (I-LOFAR), located at Birr Castle Demesne, is the Irish station of the International LOFAR Telescope (ILT), a Pan-European low-frequency radio interferometer operating across the 10–240 MHz band. I-LOFAR is the most sensitive radio telescope ever constructed in Ireland and connects Irish astrophysics to one of the most sophisticated astrophysics research infrastructures in the world.

Key features of the facility, drawn from the I-LOFAR consortium and Science Foundation Ireland, are summarised below:

- Constructed with a foundation grant of €1.4 million from Science Foundation Ireland and total support exceeding €3 million from Science Foundation Ireland, Enterprise Ireland, Offaly County Council, private donors and eight partner universities in Ireland and Northern Ireland;
- A vital component of a major €150 million European radio telescope network with eight international partner countries, currently in the process of applying to become a European Commission European Research Infrastructure Consortium (ERIC);
- Officially opened in July 2017 by the Minister of State for Training, Skills, Innovation, Research and Development;
- Sited at Birr Castle following two years of test array observations which confirmed the location as the most radio-quiet site available in Ireland;
- Operating within Birr Castle Demesne, which was added to Ireland's UNESCO World Heritage Tentative List in April 2025.

12.4.2 Vulnerability of the Facility to Wind Turbine Interference

The function of a radio telescope is to detect signals of extraordinarily low power originating from astronomical sources often billions of light years distant. I-LOFAR is, by design, among the most sensitive radio receivers operating anywhere on the island of Ireland. That sensitivity, which is the basis of its scientific output, also makes it acutely vulnerable to terrestrial sources of radio noise. The I-LOFAR consortium has publicly and repeatedly stated that wind turbines are among the most damaging such sources.

Two distinct mechanisms by which wind turbines degrade radio astronomy are identified in the peer-reviewed literature (including Winkel and Jessner, 2018) and are acknowledged by the I-LOFAR consortium on its own published guidance:

- **Direct unintentional emission.** Although wind turbines are not designed as radio transmitters, their power electronics, switching converters, generators and control systems emit radio energy across a broad range of frequencies overlapping the LOFAR observing band. These emissions enter the telescope through both its main beam and its sidelobes.
- **Reflection and re-radiation.** The large rotating metal blades of modern utility-scale turbines act as efficient reflectors of pre-existing radio transmissions (for example terrestrial DAB radio), causing the telescope to receive signals that it would not otherwise detect, and modulating those signals at blade-passing frequencies in a way that is particularly destructive to astronomical observation.

The consortium's own published position on its website (lofar.ie/windfarms) states that, in the worst case, interference from such sources can "completely blind a sensitive radio telescope such as I-LOFAR." This is not a contingent or speculative outcome; the same has been demonstrated empirically at the LOFAR core in the Netherlands and at LOFAR stations across Europe.

12.4.3 I-LOFAR's Established Position on Wind Farms in the Birr Area

In its formal submission on the Draft Offaly County Development Plan, the I-LOFAR consortium called for planning regulations that would:

- Prohibit large wind or solar farm development within a FIVE-kilometre radius of the I-LOFAR site at Birr Castle;
- Impose limitations on wind turbine heights within a ten-kilometre radius of the site;
- Require statutory consultation with the I-LOFAR consortium on the specific equipment proposed in any development within that wider radius, as "turbines from certain manufacturers are better than others" in terms of radio interference;
- Provide for field tests to characterise the radio-frequency emissions of any proposed installation before consent.

Birr I-LOFAR

I-LOFAR is a low-frequency radio telescope array located within the grounds of Birr Castle, County Offaly. It forms part of the wider European LOFAR network, spanning over 2,000 km from Ireland to Poland, and is used for detecting extremely weak cosmic radio signals. Due to

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the sensitive nature of its equipment. I-LOFAR operates in a radio-quiet zone and has requested restrictions on nearby developments that could generate electromagnetic interference. I-LOFAR request that there is a 5 km exclusion zone surrounding the I-LOFAR. T1 is at the edge of this buffer (circa 4.96 km from I-LOFAR to closest turbine distance) while the substation and all other turbines are >5 km. Consultation was undertaken with the observatory to inform the assessment of potential impacts. At the time of writing, in relation to Ballincor Wind Farm, no response had been received.

Image above from the Applicants documents shows that the closest Turbine, T1 at the proposed Ballincor Wind Farm site lies 4.96km from the iLOFAR site right on the boundary of the exclusion zone. At eleven turbines of up to 180–185 metres tip height, the development is the largest single source of potential radio interference yet proposed in the immediate vicinity of the facility.

12.4.4 Material Asset Significance

I-LOFAR is, in EIA terms, a Material Asset of exceptional kind. It is a publicly-funded research infrastructure built over more than a decade at a cost in excess of €3 million, it underpins the careers and research output of Irish astrophysicists in eight partner universities, and it is the Irish component of a continental-scale facility that Ireland has committed to support through prospective ERIC membership. Its situation at Birr is not interchangeable with any other Irish location — the site was selected precisely because it offered the lowest radio-frequency background available in the country. To degrade that radio quiet now, in service of a development that could be sited elsewhere, would be to extinguish a strategic national asset that cannot be replaced.

That the proposal sits at the very threshold of the protective radius I-LOFAR itself defined as the absolute minimum, the Commission is asked to treat its proximity not as a marginal technicality but as a direct encroachment on a scientific facility of international standing — one whose value, once compromised, cannot be recovered.

12.5 Birr Outdoor Education and Training Centre (Birr OETC)

12.5.1 Status and Function

Birr Outdoor Education and Training Centre is a non-profit residential outdoor education facility established in 1989 and operating under the auspices of Laois and Offaly Education and Training Board (LOETB). It is one of twelve OETCs that together form the national outdoor education and training network operated by the ETB sector, and is affiliated to the Department of Further and Higher Education, Research, Innovation and Science and the Department of Education.

The centre operates a four-acre site on the outskirts of Birr with three associated facility locations at Birr, Banagher and Cadamstown. It accommodates up to 74 participants in residential dormitory accommodation, with additional capacity for over 100 in camping facilities, and delivers structured programmes to primary schools, post-primary schools, further education and training students, youth groups and community organisations. Its programme contributes formally to the President's Award (Gaisce), at both Bronze and higher levels.

The activity programme — archery, kayaking, canoeing, rock climbing, raft building, hillwalking, orienteering, ecology, team building and wilderness skills — is delivered using the surrounding landscape, and in particular the River Brosna corridor and the Slieve Bloom Mountains, as a working environment. As the Centre's submission states, this environment is "fundamental, not incidental" to the activities of the Centre.

12.5.2 Impacts of the Proposed Development

The Birr OETC submission dated 18th May 2026 identifies a series of direct and material impacts on the operation of the Centre arising from the proposed development. These are summarised here and should be read in conjunction with the standalone submission of the Centre:

- **Loss of amenity character of the River Brosna corridor.** The river corridor functions as a 'living classroom' for the Centre's kayaking, water safety, biodiversity and environmental education programmes. The introduction of eleven turbines of approximately 180 metres in height into the visual catchment of this corridor would impose an industrial vertical element on a landscape that is currently rural in character and is selected for its rural character.

- **Noise environment.** Outdoor education in a river corridor is reliant on a quiet acoustic environment for instruction, group communication, wildlife observation, and the reflective elements of personal-development programmes. The persistent low-frequency noise associated with operational turbines of this scale is incompatible with that requirement.
- **Construction-phase disturbance.** The Centre raises specific concern regarding sediment runoff to the River Brosna catchment, water quality impacts during construction, and disturbance to river-based activities during multi-year construction.
- **Biodiversity and educational programme degradation.** A measurable reduction in bird and bat populations and in habitat connectivity, of the type widely documented in association with wind farms of this scale, would directly reduce the educational content available to the Centre's ecology and environmental awareness programmes.
- **Programme viability.** Taken together, these impacts amount to a measurable reduction in the quality and viability of the Centre's programmes — a material planning concern under the Planning and Development Act 2000 (as amended).

12.5.3 Material Asset Significance

Birr OETC is part of the State's social infrastructure for outdoor education. It is one of only twelve such centres serving the entire Republic of Ireland and the only such centre operating within the Laois and Offaly ETB area. Its capacity to deliver its statutory function is materially dependent on the amenity and environmental quality of the River Brosna corridor and surrounding lands. The proposed development would, on the Centre's own assessment, result in a permanent degradation of those assets and a corresponding loss of the public good they support.

12.6 Cumulative Impact on Material Assets

The four Material Assets identified in this chapter are not independent of one another. Each draws value from the same characteristic of the receiving environment: a quiet, low-disturbance rural landscape with an unobstructed visual, electromagnetic and aerial horizon. That characteristic is precisely what the proposed development would extinguish.

In aviation terms, the visual integrity of the River Brosna corridor is the navigation reference on which Birr Aerodrome depends, and the unobstructed airspace over the western Slieve Bloom is the route on which emergency rotary operations rely in marginal weather. In scientific terms, the radio-quiet of the same landscape is the operational basis of I-LOFAR. In educational terms, the rural character of the corridor is the working environment of Birr OETC.

A single development of eleven turbines of up to 185 metres in tip height would, simultaneously and at a single stroke:

- Compromise the safety of operations at a 50-year-old licensed aerodrome and Designated Training Organisation;
- Constrict the airspace available to emergency, rescue, military and medical aircraft transiting the midlands in poor weather, at the very point to which those operations are funnelled;
- Risk degrading, and at the upper bound blinding, an internationally significant publicly-funded radio astronomy facility; and
- Materially reduce the educational value of a State-affiliated outdoor education centre serving thousands of young people each year.

The Environmental Impact Assessment Report submitted by the applicant does not adequately characterise these assets and did not engage with their operators — in the case of Birr Aerodrome, in direct contradiction of a documented direction from the Irish Aviation Authority. It does not assess the **in-combination airspace** effect at all. It does not, in our submission, satisfy the requirement of Schedule 6 of the Planning and Development Regulations 2001 (as amended) to describe the likely significant effects of the proposed development on Material Assets.

Chapter 13: Waste Management

13.0 Introduction

This chapter sets out the grounds of objection relating to the adequacy of the waste management provisions in the Environmental Impact Assessment Report (EIAR) for the proposed Ballincor Wind Farm. The assessment of waste is contained principally in Chapter 15 (Material Assets, Telecommunications & Aviation), with supporting material in Chapter 2 (Description of the Proposed Project), Appendix 8-3 (Spoil and Peat Management Plan, hereafter the "SPMP"), and the Construction and Environmental Management Plan (CEMP, Appendix 2-3).

It is acknowledged at the outset that the EIAR addresses certain waste streams however, the waste management framework taken as a whole is materially deficient. The EIAR concludes at Section 15.5.2.3 that *"no significant effects on waste/waste management are anticipated"* and that *"no specific mitigation measures are proposed in terms of waste/waste management."* That conclusion is not supported by the evidence presented in the EIAR itself. The chapter rests its "not significant" finding on the premise that waste will be removed to appropriately licensed facilities by permitted collectors. As the grounds below demonstrate, the EIAR has not established that those facilities are available, has not quantified the principal waste streams, has not identified any collector or receiving facility, and has not provided for the hazardous waste arising from the proposed battery energy storage system. Where the foundation of an assessment is unsound, its conclusion cannot stand.

Grounds of Objection:

- **Ground 1 -** Reliance on Waste Facilities that are Closed, Unavailable, or Mischaracterised
- **Ground 2 -** Construction and Demolition Waste Not Quantified
- **Ground 3 -** Inadequate Treatment of Hazardous Waste from the BESS
- **Ground 4 -** No Waste Collection Companies or Receiving Facilities Identified
- **Ground 5 -** Failure to Address Statutory and Stakeholder Consultation Responses on Waste
- **Ground 6 -** No Reference to the Statutory Regional Waste Management Plans
- **Ground 7 -** The Chapter's Own Assessment is Internally Inconsistent

13.1 Analysis: Grounds of Objection

13.1.1 Reliance on Waste Facilities that are Closed, Unavailable, or Mischaracterised

Chapter 15, Table 15-1 lists seven EPA-licensed waste facilities across Counties Offaly, Tipperary, Westmeath and Galway. This table is presented as the baseline assessment of the waste infrastructure available to receive the project's waste. The "not significant" conclusion for waste depends entirely on the existence of this capacity. The current operational status of the listed facilities, however, does not bear the weight the assessment places on it.

Facility (Licence No.)	County	Status relevant to this project
Peat Ash Ltd / West Offaly Ash Disposal Facility (W0110)	Offaly	No longer receives active waste. Unavailable to the developer.
Shannon Vermicomposting Facility (W0209)	Tipperary	Not in operation as a waste-acceptance facility; the site is the subject of an ongoing clean-up and legal process, with waste being removed from it to Ballaghveny. Unavailable to receive this project's waste.
Ballydonagh Landfill (W0028)	Westmeath	Closed in 2010. Not accepting waste.
Pollboy Landfill (W0027)	Galway	Ceased operating as a landfill in 2005. Not accepting waste.
Bord na Móna Recycling Ltd (W0240)	Tipperary	Operates as a waste transfer station, not a final waste destination. The EIAR does not identify where waste would ultimately be processed or disposed of after transfer.
Derryclure Landfill (W0029)	Offaly	No confirmation of available capacity or current operational status is provided in the EIAR.
Ballaghveny Landfill (W0078-03)	Tipperary	Potentially operational, but no confirmation of available capacity is provided, no correspondence with the operator is evidenced, and no assessment is made of whether this single facility can accommodate this project's waste alongside its existing commitments — including waste already being transferred to it from the Shannon Vermicomposting clean-up.

Of the seven facilities relied upon, at least three are definitively closed, one is a transfer station rather than a final destination, one is engaged in a clean-up operation rather than accepting waste, and the remaining two have no confirmed available capacity. The status set out above for the closed and unavailable facilities is drawn from reliable, locally-sourced knowledge of these sites; it is open to the applicant to demonstrate otherwise, but the EIAR contains nothing that does so.

Notably, the EIAR's own footnotes (Chapter 15, footnotes 4 and 5) cite contemporary press reporting on the Shannon Vermicomposting clean-up and the transfer of waste to Ballaghveny. The applicant was therefore aware that the site is not a functioning waste-acceptance facility, yet it remains in Table 15-1 as part of the baseline capacity. There are also reported local concerns regarding the Ballaghveny landfill, including concerns about contamination of drinking water and leachate from older cells; the EIAR's reliance on this single facility as the practical destination for the district's waste is advanced without any examination of that facility's capacity, condition, or existing burden.

The condition of Ballaghveny Landfill (W0078-03) — the de facto destination for the district's waste.

The seriousness of the reliance placed on this single facility is illustrated by the matters reported in the local press shortly before this application was advanced. Below is an image of an article headed *"'Major concerns' over local landfill"* (*Nenagh Guardian*, 11 June 2026),



...until the Centre was agreed upon and opened. Photo: Rose Mannion.

Concern landfill site contaminating drinking water

Darren Keegan

CONCERNS about potential impacts on water quality prompted Councillors in North Tipperary to demand the suspension of remedial works at the Ballaghveny landfill site near Nenagh.

At the June meeting of Tipperary County Council, elected members from the Nenagh District brought forward two notices requesting the local authority suspend further works on the engineered weather cap of two cells at the Ballaghveny Landfill facility "for a defined period, to commission an independent and comprehensive peer review of all remediation options and subject to EPA review." Capping of the historical landfill is currently underway, which aims to limit environmental exposure to the rubbish in the landfill, and to support the use of the land into the future. In response to the motion, director of services for the environment Eamon Lonergan said that the project to cap the landfill is worth over €2-million, and the council would be in breach of their contract if they stalled the works.

A second motion requested groundwater and domestic well monitoring in the vicinity of the Ballaghveny landfill facility. Members of the Ballymackey Environmental Group attended the meeting as observers.

The concerns focus on the condition of two landfill cells at Ballaghveny, which were filled between 1985 and 1993 and if they are in direct contact with groundwater, allowing rain water

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Attic Stairs

it was reported that a local residents' group, the Ballymackey Environmental Group, had attended a meeting of Tipperary County Council to seek a temporary suspension of works on

two cells at the Ballaghveny site pending an Environmental Protection Agency review. The group's stated concern is that they are sitting in groundwater that is rinsing waste and releasing leachate into the surrounding environment. The group is reported to have claimed that chemicals including benzene, perchloroethylene, chloride and ammonia are being leached from the landfill, and to have called for removal of the waste, remediation of the site, and testing of local wells and groundwater.

The same report records that elected members tabled motions seeking (i) a temporary suspension of further works on the engineered weather cap on Phase 1 (Cells 1 and 2) of the facility, to allow an independent peer review of the remediation options, and (ii) an expanded, independent programme of groundwater and domestic well monitoring in the vicinity of the landfill. According to the report, the council's officials advised that any interruption to the remediation project could expose the council to enforcement action by the EPA, including potential prosecution, and could jeopardise a €2.2 million programme of environmental protection works funded by the Department of Climate, Energy and the Environment, for which a contractor had already been engaged.

It is not necessary, for the purpose of this objection, to resolve the competing positions on whether the Ballaghveny site is or is not causing environmental harm. What the report establishes is that the very facility the EIAR relies upon as the nearest licensed waste site and the de facto destination for waste from the district, including the waste already being transferred to it from the Shannon Vermicomposting clean-up, is at the same time the subject of an active, contested remediation programme, an EPA review, and documented community concern about leachate and groundwater contamination. A facility in that condition cannot simply be assumed, without any examination, to have the spare capacity and the unencumbered availability to receive a major wind farm's construction and operational waste over a multi-year period. The EIAR contains no assessment of the facility's remaining void, its remediation status, or its existing commitments, and so provides no basis on which the Commission could be satisfied that this reliance is sound.

Why this matters. The EIAR appears to have reproduced EPA licence-register data without verifying current operational status. A register entry records that a licence exists; it does not establish that a facility is open, accepting waste, or has capacity. This is a desk-based exercise that does not satisfy the requirement to demonstrate that waste can in fact be collected, transported and disposed of at appropriately authorised facilities with available capacity. Because the "not significant" conclusion is built on this table, and the table does not survive scrutiny, **the Commission cannot be satisfied on the evidence before it that adequate, available waste disposal capacity exists for the proposed development.**

13.1.2 Construction and Demolition Waste Not Quantified

Chapter 15 quantifies municipal waste (approximately 73,705 kg over the construction period) and construction-phase wastewater (approximately 3.8 million litres) to a high degree of apparent precision, using national per-capita statistics. By contrast, for Construction and Demolition (C&D) waste other than soil and stone — concrete, brick, tile and gypsum waste, mixed C&D waste, and wood, paper, glass, plastic and metal — the chapter states only that these *"are anticipated to be small and will be segregated and managed appropriately on site"* (Section 15.4.2.3). No volumes are provided for any of these streams.

That assumption is unsupported for a project of this scale, which involves, among other elements:

- Eleven turbine foundations, each requiring a substantial pour of reinforced concrete (in the order of several hundred cubic metres each, amounting to several thousand cubic metres in total);
- An extensive internal site road network and hardstanding areas;
- A battery energy storage system (BESS) comprising 90 container units;
- A 110 kV substation and associated buildings;
- Multiple temporary construction compounds operating over the construction period;
- Forestry felling to facilitate the development; and
- A grid connection route of approximately 12.23 km, the construction of which will generate excavated road-surface arisings (including potentially tar-bound and contaminated material from the public road network).

The packaging, off-cuts, formwork, damaged components, surplus concrete and metal waste arising from works of this magnitude cannot reasonably be characterised as "small" without any supporting calculation. The point is not merely that figures are missing; it is that **the absence of any quantification makes it impossible to assess whether the waste infrastructure relied upon in Ground 1 has the capacity to receive these materials, or whether the waste hierarchy has been meaningfully applied.** The Commission is left unable to conclude that the principal construction waste streams can be accommodated, because the applicant has not stated what they are.

13.1.3 Inadequate Treatment of Hazardous Waste from the BESS

Chapter 2 (Section 2.10.2) acknowledges that lithium batteries are classified as hazardous waste. The proposed BESS comprises 90 container units and the wind farm has a stated operational life of 35 years. In respect of this hazardous waste stream, the EIAR states only that batteries requiring replacement *"will be removed using licenced/permitted waste management companies."* Chapter 15 — the chapter dedicated to the assessment of waste — makes no mention of hazardous waste management protocols for the battery storage system at all.

The following are absent from the assessment:

- Any estimate of the quantity of battery waste likely to arise over the 35-year operational life, including from routine replacement and from end-of-life decommissioning;
- Any storage protocol for damaged, degraded, or end-of-life battery units pending collection, including fire-safe and containment provisions;
- Any identified, authorised disposal or recovery destination for hazardous lithium battery waste; and
- Any assessment of the consequences of a hazardous-waste event (such as cell damage or thermal runaway producing contaminated firewater or residues).

This gap is of particular concern given the environmental sensitivity of the receiving environment. The site lies in proximity to the Little Brosna River and to the Sharavogue Bog Special Area of Conservation. Hazardous waste arising from the BESS, if not provided for, presents a pathway to these receptors. The absence of any hazardous waste management protocol for a 90-unit battery installation, on a site of this sensitivity, is a material deficiency, and **the Commission cannot be satisfied that hazardous battery waste will be managed so as to avoid significant effects on the adjacent water-dependent and protected habitats.**

13.1.4 No Waste Collection Companies or Receiving Facilities Identified

Chapter 15 repeatedly states that waste will be removed by *"a permitted waste collector"* or by *"suitably permitted commercial waste collectors"* (e.g. Section 15.5.2.3). At no point does the EIAR name any collector, confirm that any collector holds the necessary permit under the Waste Management (Collection Permit) Regulations 2007 (as amended), or demonstrate that any collector has been contacted or engaged.

The same vagueness affects wastewater. Chapter 2 (Section 2.9.3) states that wastewater will be tankered off-site by a permitted waste collector, but does not identify the collector or the destination treatment plant, stating only that *"when the final destination of the wastewater is known following the appointment of a permitted contractor, this information will be submitted to the Planning Authority."* In other words, the destination of the waste is expressly deferred to a point after the determination of the application.

For a project generating waste across two counties over a construction period of approximately 24 months, this is insufficient at the planning stage. Taken together with Ground 1 (the listed destinations are largely closed or unavailable) and Ground 2 (the volumes are unquantified), the absence of any identified collector or receiving facility means **there is no point in the waste chain — arising, collection, transport, or final destination — at which the EIAR demonstrates a verified, available route for the project's waste.**

13.1.5 Failure to Address Statutory and Stakeholder Consultation Responses on Waste

Specific waste-related concerns raised during consultation are not substantively addressed in the assessment:

- **Uisce Éireann — waste sampling strategy for backfill.** Uisce Éireann requested that, where backfilling of excavated material is proposed, a waste sampling strategy be included to ensure the material is inert. The SPMP (Appendix 8-3) was the appropriate document in which to provide such a strategy. It contains no waste sampling or testing protocol; it proceeds on the assumption that all excavated peat and mineral soils are suitable for on-site reuse without any characterisation testing. Chapter 15 does not reference this requirement at all. A specific measure requested by a statutory consultee is therefore simply absent from the documents in which it should appear.
- **Uisce Éireann — abstraction from / discharge to protected sites.** Uisce Éireann also asked that consideration be given where water is taken out of, or put into, a protected site. The EIAR does not connect this concern to the waste management framework. In particular, it does not address how settlement-pond sludge, silt-trap residue, or filtration-unit residue — each of which is a waste requiring characterisation

and lawful disposal — will be managed, nor how this interacts with the protected status of the receiving environment.

- **Fáilte Ireland — amenity and tourism.** Fáilte Ireland identified that waste can impact tourism. Neither Chapter 15 nor Chapter 2 addresses how construction waste, litter, or the visual impact of waste storage at the temporary compounds over the construction period will be managed so as to protect the amenity of the surrounding area.

Where a statutory consultee requests a specific protective measure and that measure is neither provided nor explained, the EIAR has not discharged its function. **The Commission cannot treat these consultation responses as answered when the requested measures do not appear in the application documents.**

13.1.6 No Reference to the Statutory Regional Waste Management Plans

The proposed development straddles Counties Offaly and Tipperary, which fall within two different statutory waste-planning regions. Chapter 15 does not reference the Eastern-Midlands Region Waste Management Plan (covering Offaly) or the Southern Region Waste Management Plan (covering Tipperary). There is no assessment of whether the proposed approach to waste is consistent with the objectives of those plans, including their targets for waste prevention, reuse, recycling, and diversion from landfill. In the absence of any such assessment, the Commission cannot be satisfied that the development's waste management is consistent with adopted regional waste policy.

13.1.7 The Chapter's Own Assessment is Internally Inconsistent

The conclusion at Section 15.5.2.3 that *"no significant effects on waste/waste management are anticipated"* — and the consequent decision that no specific mitigation is required — sits in direct tension with the contents of the same chapter and its supporting documents. Within the EIAR, the assessment simultaneously:

- Lists, as its baseline waste infrastructure, facilities the majority of which are closed, unavailable, or are transfer stations rather than final destinations (Table 15-1; see Ground 13.1.1);
- Acknowledges (via Chapter 2) that excavated road-surface material from the public road network, which may include tar-bound or contaminated material, will require disposal to licensed waste facilities, but does not identify which facilities;

- Defers all substantive waste management measures to the CEMP (Appendix 2-3) without summarising, within the chapter itself, what those measures actually are;
- Provides project-specific quantities for municipal waste only, relying on national statistics, while leaving the principal construction waste streams unquantified (see Ground 13.1.2); and
- Concludes that no mitigation is required, while the embedded text simultaneously commits to segregation, the use of permitted collectors, and compliance measures — which are themselves mitigation.

A finding of "no significant effect" is the end-point of an assessment, not a substitute for one. Here it is reached before the assessment has demonstrated that disposal capacity exists, before the principal waste streams have been quantified, and before any collector or receiving facility has been identified. **The conclusion is, on the face of the chapter, premature and unsupported.**

13.2 Conclusion

While the EIAR provides adequate treatment of spoil and peat management through the SPMP, and offers statistical estimates for municipal waste and wastewater, the waste management framework taken as a whole is materially deficient. The application:

- Relies on a baseline of waste disposal facilities that are predominantly closed, unavailable, or are transfer stations rather than final destinations, without verifying current operational status or available capacity;
- Fails to quantify the principal Construction and Demolition waste streams for a major infrastructure project, characterising them as "small" without calculation;
- Omits any hazardous waste management protocol for the 90-unit BESS, on a site adjacent to the Little Brosna River and in proximity to the Sharavogue Bog SAC;
- Identifies no waste collector and no confirmed disposal destination, expressly deferring the destination of wastewater to after the determination of the application;
- Does not provide the inert-backfill sampling strategy requested by Uisce Éireann, nor address the other consultation responses on waste; and
- Makes no reference to the statutory Regional Waste Management Plans governing the two counties in which the development sits.

Chapter 15's conclusion that no specific waste mitigation measures are required is not supported by the evidence presented in the EIAR. The "not significant" finding depends on a

chain of premises — that facilities exist, that they are available, that capacity is sufficient, that collectors are in place — none of which the EIAR establishes. Where the foundation is unverified, the conclusion drawn from it can carry no weight.

Chapter 14: Population and Human Health

This chapter is accompanied by and should be read alongside Chapter 7: Noise and Chapter 9: Shadow Flicker which set out the technical analysis on which a number of the findings below depend. Each is referenced at the relevant point. The legal, statutory and peer-reviewed sources relied upon are listed in the Bibliography at the end of this chapter.

14.0 Introduction

Human health is the endpoint that every other environmental effect of a wind farm ultimately bears upon. Noise, shadow flicker, low-frequency sound and the disturbance of the home are not, in the end, free-standing technical matters; they are the means through which a development of this scale reaches the body and the mind of the person who lives beside it, every operating day, for the lifetime of the permission. Of all the chapters before An Coimisiún Pleanála, the health chapter is the one in which the question is no longer what the development does to the environment, but what it does to the people in it.

The legal context is settled and is not in dispute. Article 3(1) of the EIA Directive (2011/92/EU as amended by 2014/52/EU) requires that the likely significant effects of a project on human health be identified, described and assessed. The applicant accepts that standard. Chapter 5 of the EIAR confirms that its assessment is carried out in accordance with the Directive and the EPA EIAR Guidelines (2022). The standard the applicant set for itself is therefore the standard against which it's health chapter must be measured.

That standard has lately been sharpened by the courts. In *Webster and Rollo v Meenacloghspar (Wind) Ltd* [2024] IEHC 136, Ms Justice Emily Egan held that noise from an operating wind farm amounted to an actionable nuisance notwithstanding the development's compliance with its planning conditions. In the subsequent relief judgment ([2025] IEHC 300) the Court ordered overnight shutdown to protect against sleep disturbance, with a combined damages award in excess of €300,000 following in November 2025. The harm the Court accepted as real was health harm: chronic sleep disruption, elevated anxiety, low mood, and the loss of the home as a place of recovery. The principle for the Commission is the one the judgment establishes, that demonstrating predicted levels sit within a numerical limit does not establish that significant adverse effects on health are unlikely.

The point is straightforward. Compliance with an emission limit and the assessment of an effect on human health are two different obligations, and the second is not discharged by performing the first. The sections that follow apply that distinction to the assessment as submitted.

Grounds of Objection

This submission identifies a series of deficiencies in the applicant's human-health assessment (EIAR Chapter 5 and the technical chapters it relies on) which, individually and cumulatively, mean it does not give An Coimisiún Pleanála a sound basis to determine the application on health grounds. Each is drawn from the applicant's own documents, its own methodology, or named

peer-reviewed science. The grounds are previewed here in the order the chapter develops them, set out in full in the sections indicated, and gathered with their legal consequence at Section 14.10.

Ground 1 — The health assessment was never carried out. Chapter 5's finding of no significant health effect rests on supports that cannot bear it: a withdrawn HSE paper, technical chapters that test compliance and never assess health, and health-based standards the applicant held but applied only to noise. *(14.1)*

Ground 2 — The noise study was not even shown to be compliant. The omitted valley correction, once applied, turns eleven "compliant" homes into night-time exceedances, and the health effect of that noise in a near-silent baseline was never assessed at all. *(14.3)*

Ground 3 — The flicker limit has no medical foundation. The 30/30 threshold was never a health standard; a more protective standard was conceded and then set aside; and an undisclosed dataset conceals how often residents are exposed. *(14.4)*

Ground 4 — Infrasound was never looked for. The one emission the chosen method is built to filter out carries documented pathways to cardiac, autistic and tinnitus sufferers that the assessment never engages. *(14.5)*

Ground 5 — Vulnerable residents were treated as average ones. Seven clinically vulnerable groups present in the community each have a clear pathway to harm, and for each the assessment is silent. *(14.6)*

Ground 6 — Stressors were assessed singly, never together. The same household absorbs noise, low-frequency sound, flicker and modulation at once, every operating day, indefinitely, with the compounding effect the science predicts left unexamined. *(14.7)*

Ground 7 — A crowded landscape was assessed as if empty. Transposed wind-farm distances and a denied overlap conceal a resident receiving flicker from two directions on the same day. *(14.7)*

Ground 8 — A power station was left out of the health chapter. A 100MW battery storage installation the applicant's own documents placed within 500 m of the site boundary is absent from the health assessment entirely. *(14.9)*

Ground 9 — The oversight model has already failed here. The proposed complaints mechanism is the near-identical one that failed at Cloghan and Meenwaun in this county, now the subject of a council referral to the HSE. *(14.8)*

14.1 The Health Assessment Required by Article 3 Was Never Carried Out

Before any question of detailed science arises, the chapter must confront a single, structural problem that runs underneath everything that follows. The assessment of human health that Article 3 of the EIA Directive requires was never actually performed. The health conclusion in Chapter 5, that the development gives rise to no significant effects on human health, rests on nothing that can support it. It relies on a withdrawn health-authority paper, on technical chapters that test compliance and never assess health, and on health-based standards it passed over. Each strand comes from the applicant's own documents, and together they mean the chapter contains no health assessment capable of supporting permission for eleven turbines of up to 185 metres over a thirty-five-year life.

The health conclusion is deferred to chapters that assess compliance, not health

Chapter 5 does not itself assess the operational means by which this development reaches human health. It defers them, and the deferral forms a closed loop. The noise–health question is passed to Chapter 11, which checks predicted levels against numerical limits and, finding them met, concludes there is no significant effect. It never actually assesses the health outcome of that exposure for the people present. Shadow flicker is passed to Chapter 16, which applies a shutdown model and a 30-minute daily limit of no clinical basis, again testing compliance rather than health effect. Combined and cumulative effects are passed to Chapter 19, which disposes of the operational health question for each stressor in a single sentence and never considers the stressors acting together (Section 14.7).

At no point in this loop does any chapter identify, describe and assess the effect on human health. Each assumes the health question has been answered elsewhere; nowhere is it answered. Checking compliance with an emission limit and assessing a significant effect on human health are legally distinct obligations (Section 14.2.1), and demonstrating the first does not discharge the second. This is a distinction the Ballyduff judgment confirms, where planning-compliant noise was nonetheless held to cause real, cognisable health harm. On the EIAR as submitted, the applicant has discharged neither obligation in respect of the pathways that matter.

The one health authority cited has withdrawn the paper relied upon.

Against that absence of any real health assessment, Chapter 5 offers a single piece of positive reassurance. It relies on the HSE Position Paper on Wind Turbines and Public Health (2017) for the proposition that there is no credible evidence linking wind turbines to negative health effects. But the applicant's own footnote 14 records that the HSE has withdrawn that paper and that it is under review, with no replacement in force. The objection is precise. It is not merely that the guidance is withdrawn. It is that the applicant cites the withdrawn paper as affirmative support for a conclusion of safety while nowhere acknowledging, in the body of its assessment, that once the paper is withdrawn it can no longer provide that support. A withdrawn paper cannot stand as the authority for a finding of no health risk. Withdrawal signals that the issuing body no longer stands behind the conclusion. It does not confirm it. The one piece of positive support the applicant offered for its health finding has been removed by the very authority that produced it.

The health-based standards that did exist were never applied to the health question

The applicant was not in fact left without any standard to assess against. The WHO Environmental Noise Guidelines (2018), which the applicant itself cites, set their 45 dB Lden recommendation expressly because wind turbine noise above that level is associated with adverse health effects, which makes it a health-based standard and not merely an acoustic one. The Draft Revised Wind Energy Development Guidelines (2019), which the applicant also acknowledges, set their noise limit consistent with the same WHO 2018 metric for the protection of human health. The applicant cites both standards but applies neither to health. It invokes WHO 2018 and then declines to apply its health logic to the silent baseline at this site (Section 14.3), and it acknowledges the 2019 health-based approach while assessing against the weaker 2006 thresholds (Section 14.4). In short, the applicant had the standards that could have framed the health question and turned each one into a box-ticking compliance check instead. That same swap runs through the whole chapter.

The result is a health chapter whose central conclusion has no valid foundation, not the withdrawn paper it cites, not the compliance chapters it defers to, and not the health-based standards it had available and did not apply. The sections that follow establish, pathway by pathway and population by population, what an assessment that was never carried out has failed to capture. But the structural point stands on its own and ahead of them. On its own documents, the applicant has not carried out the assessment of significant effects on human health that Article 3(1) of the EIA Directive requires.

14.2 The Legal and Regulatory Framework

The assessment of human health in an EIAR of this kind is governed by a layered framework of EU law, national guidance and statutory policy. The applicant's own assessment cites each of the instruments below. They are set out here because the findings in the sections that follow are measured against them.

14.2.1 The statutory standard: human health must be assessed

Article 3(1) of the EIA Directive (2011/92/EU as amended by 2014/52/EU) requires that the environmental impact assessment identify, describe and assess the likely significant effects of a project on human health. That duty is not satisfied by listing health as a topic. It requires that the operative pathways through which the project may affect health are themselves identified, described and assessed as health matters. The EPA EIAR Guidelines (2022), a statutory reference document the applicant adopts, direct that health be assessed through the environmental pathways by which it may be affected: air, water, soil and, materially here, noise.

14.2.2 What assessment "through other chapters" permits — and does not permit

The EPA Guidelines do allow human health to be considered with reference to other factors such as noise and air. The applicant relies on this to structure the health chapter as a set of cross-references to the technical chapters. Cross-referencing is legitimate only where the chapter being referenced has itself assessed the health consequence of the exposure it measures. Where the referenced chapter assesses compliance and stops, the cross-reference points to no health assessment at all and this is exactly what the applicant here has done.

14.2.3 The WHO Environmental Noise Guidelines (2018)

The applicant's own noise chapter reproduces the WHO Environmental Noise Guidelines for the European Region (2018) and their conditional recommendation that wind turbine noise be reduced below 45 dB Lden, because noise above that level is associated with adverse health effects as mentioned above. Two points follow from the applicant's own text. First, the WHO makes no night-time (Lnight) recommendation for wind turbines because the evidence base is too weak to support one, an acknowledged evidence gap, not a finding of safety. Second, by adopting WHO 2018 as its reference standard the applicant adopts a framework whose entire purpose is the protection of health from noise, and cannot then confine its assessment to acoustic compliance and omit the health endpoint the framework exists to protect.

There is also a development-plan dimension. A substantial part of the scheme lies within the administrative area of Offaly County Council, whose adopted County Development Plan, at Development Management Standard DMS-109, requires that wind energy development demonstrate consistency with the WHO 2018 Guidelines as part of the noise assessment. As the companion noise submission establishes, the applicant's Chapter 11 engages WHO 2018 largely in order to argue against applying it, calculates Lden at no noise-sensitive location, and makes no reference to DMS-109 at all. The Commission is not bound to refuse on this account, for strategic infrastructure it retains the power to grant even where a development materially contravenes the plan. But it cannot determine whether the development is consistent with the development plan on this health-relevant standard, because the assessment that would allow that determination was not carried out. The health significance is that the one development-plan standard expressly tying this development to a health-based noise threshold has been argued around rather than applied, leaving a question the Commission cannot answer on the documents submitted.

14.2.4 The precautionary principle

The precautionary principle, given effect through Article 191(2) TFEU and informing the EIA Directive, applies where scientific uncertainty exists as to potential harm to human health. Its effect is to place the burden on the applicant to demonstrate that significant adverse health effects are unlikely, not on affected residents to prove harm. Acknowledged evidence gaps, such as the WHO's absent night-time guideline, and reliance on withdrawn guidance engage the principle directly. Uncertainty counts against the application, not in it's favour.

14.2.5 Compliance is not a complete answer: the Ballyduff judgment

In Webster and Rollo v Meenacloghspar (Wind) Ltd [2024] IEHC 136 (the Ballyduff litigation, liability judgment of 8 March 2024), the High Court held that noise from an operating wind farm amounted to an unreasonable interference with the plaintiffs' enjoyment of their homes, an actionable nuisance, notwithstanding compliance with the development's planning conditions. The relief judgment ([2025] IEHC 300, May 2025) required overnight shutdown at certain wind speeds to protect against sleep disturbance, and a combined damages award in excess of €300,000 followed in November 2025. The harm the Court accepted as real included chronic sleep disruption, elevated anxiety, low mood and loss of the enjoyment of the home. The principle for the Commission is that compliance with dB(A)-based conditions is not a complete answer where the health question has not been separately assessed; an EIAR that offers the former in place of the latter has not met the Article 3(1) standard.

14.2.6 The direction of travel — why the highest scrutiny is warranted now

The standards the applicant relies on are, in important respects, not the standards under which this development would operate for most of its life. The 30/30 shadow-flicker thresholds come from 1990s administrative practice. The 2006 noise framework remains in force only pending a review that has run for several years without being finalised, and the more protective 2019 Draft Guidelines have not yet been adopted. At EU level the adequacy of conventional dB(A)-based assessment is itself an open question. Petition 0482/2021 remains before the European Parliament's Committee on Petitions, which decided on 25 September 2025 that the matter be investigated further, and in March 2026 the Parliament hosted a conference on public health and wind-energy infrasound. The courts have signalled that questions of health and amenity should be resolved at the planning stage, and the direction of travel in both national and EU policy is toward stricter protection. The appropriate response is to hold the present assessment to the most rigorous reading of the standards that currently govern it. That is the standard applied throughout this submission.

14.3 Noise Through a Health Lens

This section is not a noise assessment; the acoustic methodology and its limitations are set out in full in the companion noise submission. Its purpose is narrower: to take the headline findings of that work and carry them into the assessment the applicant was required to perform but did not, an assessment of significant effects on human health.

The distinction matters because it is the applicant's own structural failure. As Section 14.1 established, Chapter 5 does not assess noise-related health effects at all; it defers to Chapter 11, which checks levels against numerical limits and presents compliance as though it were a finding that no significant health effect will occur. It is not. The two are legally distinct obligations, and the gap between them is widest precisely where the acoustic baseline is most unusual. This receptor area is one of the more unusual acoustic baselines in the country, and the applicant has never engaged with what that means for the people who live in it.

14.3.1 The baseline is effectively silence — and the applicant has never addressed what that means

The applicant's own data records a night-time background sound level across this receptor area of approximately 17 to 19 dB. Table 11-10 of Chapter 11 derives night-time LA90 background levels at the seven monitoring locations that, at the lowest operational wind speeds, sit between 17.8 and 19.1 dB.

A night-time background of 17 to 19 dB is, in practical human terms, silence — below a whisper at one metre, and at or near the noise floor of the measuring instrument itself. A rural night with this background contains no continuous ambient sound against which an intermittent new source could be lost. There is, in the acoustic sense, nothing to mask the turbines.

This is the central fact the applicant's health assessment never confronts. The sleep-disturbance literature is consistent on a single point directly engaged by these figures. The adverse effects of intermittent night-time noise are most severe in quiet baseline environments where there is no acoustic masking. A new noise event of a given level produces a materially larger physiological and sleep-architecture response when it arrives against silence than against an existing ambient background. The relevant measure of harm is not the absolute level of the turbine noise alone; it is the contrast between that noise and the baseline into which it intrudes. The same modelled level that might be largely inaudible in a typical rural background of 30 to 35 dB will be very audible here, including the periodic amplitude-modulated swish that is the characteristic and most sleep-relevant feature of large turbine noise.

There is no analysis anywhere in Chapter 5 or Chapter 11 of what an exceptionally quiet baseline means for sleep disturbance, for the audibility of the development, or for the absence of acoustic masking. The unusual quietness of this environment is recorded in the applicant's own table and then treated as if it were irrelevant, or, worse, as if it were an advantage to the applicant because the resulting limits are low. The opposite is true. The quietness of the baseline is the very feature that makes this population more vulnerable to sleep disturbance, not less, and it has been passed over by conveniently changing the narrative of it's meaning.

14.3.2 The 45 dB Lden threshold the applicant cites carries a logic it does not apply

The applicant cites the WHO recommendation that wind turbine noise be kept below 45 dB Lden as if 45 dB were a line below which health is protected. It is not. WHO set the figure at 45 dB because that is the level at which the adverse effects associated with turbine noise, in particular annoyance, and through it sleep disturbance and chronic stress, become common enough across a population to recommend against exceeding it. It is the point where harm becomes widespread, not a guarantee of safety below it; harm rises through and around that figure rather than switching on at it.

That figure is also a population average, drawn from communities with ordinary background noise. This community is not ordinary. Its night-time baseline, as already discussed, is 17 to 19 dB, near silence, with nothing to mask the turbines. The same Lden value that is barely noticed against a normal rural background of 30 to 35 dB is plainly audible and far more disturbing here. The applicant cites the WHO figure but never applies the reasoning behind it. The exceptionally quiet baseline is the very feature that makes this community more exposed to harm than the average population the figure was drawn from, and it is the feature the applicant leaves out.

14.3.3 The acoustic data does not capture the exposure residents will actually experience

There is a prior finding that reframes everything in this section, and it is established in full in the companion noise submission. The assessment is not merely permissive, it is not even compliant once its own governing methodology is applied. The Institute of Acoustics Good Practice Guide, which the applicant adopted as governing, requires at Section 4.3.9 a mandatory correction, derived from the JOULE geometric formula, wherever noise propagates across a concave or "valley" ground profile, the exact terrain at this site, where turbines sit on a flat bog platform and receptors stand on rising ground to the east and west. That correction was never performed. As shown in chapter 7, when it is applied, it produces confirmed night-time exceedances of the assigned limit at eleven non-stakeholder homes that the assessment presented as compliant. The

health significance is that the foundation of the entire noise and health case, the proposition that residents are protected because predicted levels sit within limits, fails on the applicant's own figures. At these eleven homes the limit is not met and the sleep-disturbance and stress consequences set out in this chapter follow directly, without any need to argue that compliance is insufficient.

Two further findings are recorded here only for their health consequence. First, amplitude modulation — the periodic rise and fall in turbine noise, the characteristic swish, is the single most sleep-relevant feature of wind turbine sound, because it is the fluctuating character of the noise, not its steady average, that drives night-time awakening. The companion noise submission establishes both that the required amplitude-modulation correction was not applied and that the site meets every precondition for the aggravated form of modulation; the health consequence is that the assessment understates the very feature most likely to fragment sleep, in a baseline where it will be most audible and least masked.

Second, the background survey excluded winter, the season under which these turbines generate their maximum output. The acoustic environment that has been characterised is therefore not the environment in which residents will experience the worst of the development. A health assessment must assess the exposure that will actually occur; an assessment that omits a mandatory correction, omits the correction for the most sleep-disruptive feature of the noise, and characterises the baseline using data excluding the conditions of maximum output, is assessing a milder, partial and more favourable exposure than the real one. The gap between the two is exactly the gap into which significant health effects fall, and it has not been assessed.

On the companion noise submission's findings the assessment does not even demonstrate compliance. Applying the mandatory Section 4.3.9 correction to the applicant's own figures produces confirmed night-time exceedances at eleven non-stakeholder homes. The health consequence of noise in this exceptionally quiet baseline, the question the chapter was required to answer, was never assessed.

14.4 Shadow Flicker Through a Health Lens

This section does not assess shadow flicker; the technical analysis, covering the contested study boundary, the compound flicker between turbines, the undisclosed shadow-day data, the elevated-receptor geometry and the understated sunshine inputs, is set out in full in the companion shadow flicker submission and should be read alongside this chapter. The purpose here is the step that comes before that analysis: to establish what the shadow-flicker assessment in the EIAR actually measures, and what it does not. The entire health conclusion on shadow flicker rests on a single exposure limit that has no medical origin, was never designed as a health threshold, and has never been clinically validated as one. Once that is understood, the applicant's repeated reliance on "compliance" with that limit can be seen for what it is, a statement about an engineering convention, not a finding about human health.

14.4.1 The 30/30 limit has no medical origin and has never been validated as a health threshold

The assessment is conducted against the "30/30" thresholds drawn from the 2006 Wind Energy Development Guidelines, a maximum of 30 hours of shadow flicker per year and 30 minutes on any given day at any affected dwelling. Compliance with these figures is the basis on which the applicant concludes there is no significant shadow-flicker effect, and Chapter 5 relies on that conclusion for its health finding. But neither figure has a clinical basis. The 30/30 convention does not originate in medicine, in any study of human photosensitivity, or in any health authority's assessment of harm. It derives from German administrative practice of the 1990s, developed for turbines of an entirely different scale, tip heights of the order of 50 to 80 metres, as a planning convention to manage amenity nuisance, by engineers and administrators rather than clinicians.

Two consequences follow. First, the limit was calibrated, to the extent it was calibrated to anything, against turbines a fraction of the size of those proposed here. It is not reliable for eleven Nordex N163 turbines at a tip height of 185 metres, roughly two to three times the scale of the machines for which the figure was conceived. Second, and more fundamentally, even on its own terms the limit is an amenity standard, not a health standard. Demonstrating that a dwelling receives no more than 30 minutes of shadow flicker on a given day tells the reader something about an engineering convention but it tells the reader nothing about whether that exposure is capable of triggering a clinical response in an occupant who is photosensitive. Compliance with a limit that was never validated against any clinical evidence therefore says nothing about whether the exposure is clinically safe.

14.4.2 The applicant's own EIAR concedes a more protective standard exists — and applies the weaker one

The applicant assesses against the 2006 Guidelines and their 30/30 thresholds, yet its own EIAR acknowledges the more protective Draft Revised Guidelines of December 2019, under which conditions should ensure that no affected dwelling experiences shadow flicker at all and automatic control runs for the full operational life of the scheme. Under that approach the 30-minute allowance is not merely reduced. It no longer applies, because the standard becomes zero. The applicant identifies that more protective standard, accepts what it requires, offers a commitment framed around achieving "near zero" shadow flicker, and then assesses against the weaker 2006 thresholds regardless. The significance for the health chapter is evidential. A reader cannot treat compliance with the 2006 thresholds as reassurance about health when the applicant's own document records that those thresholds are the less protective of the two standards it had in front of it.

14.4.3 The applicant measures the wrong thing, an annual dose rather than the triggering event

The annual and daily limits assume shadow flicker is a quantity that accumulates and that harm is a function of how much is received over a year. For the photosensitive population that assumption is wrong. The relevant threshold is potentially a single exposure event, because one episode of flickering light can trigger a photosensitive migraine or, in a susceptible person, a seizure.

Voicescu and colleagues (2016) found maximum daily duration a better predictor of adverse symptoms than the annual total. The full mechanism is set out in Sections 14.6.1 and 14.6.3. The consequence here is that an assessment built around an annual allowance answers a question irrelevant to the vulnerable occupant, since a dwelling well within its allowance can still deliver, on any suitable day, an exposure capable of triggering an attack.

The same error has a more dangerous form. The assessment treats each property as facing one turbine at a time, summing all turbines into a single annual figure. The companion shadow flicker submission establishes that on the applicant's own coordinates 44 of the 129 assessed properties sit within the simultaneous shadow zone of two or more turbines, nineteen of them critical, where blade shadows arrive alternately at close to double the single-turbine frequency in an irregular pattern. None was assessed for this. Compound flicker is not a larger dose of the same exposure. It is a qualitatively more provocative stimulus for exactly the populations identified in Section 14.6, the irregular, unpredictable, higher-frequency flashing that the photosensitivity literature (Harding

et al., 2008; Voicescu et al., 2016) identifies as most dangerous, and it was neither described nor assessed.

14.4.4 The frequency of exposure was materially understated by an undisclosed dataset

If the daily exposure event is the relevant unit of harm, then the number of days on which a property experiences any shadow flicker is a health-critical figure. And the companion shadow flicker submission establishes that this exact figure was produced by the applicant's own software and withheld from the chapter put before the Commission. WindPRO generates two "days" figures for every property. The total number of days on which any shadow flicker occurs, and the smaller number on which it exceeds thirty minutes. Chapter 16, Table 16-1 reports only the second. The total-shadow-days figure appears nowhere in the chapter, though it sits in the applicant's own Appendix 16-1 for every property.

The health consequence of that omission is severe and concrete. For a photosensitive resident, a day with twenty minutes of flicker is a day with a trigger. The thirty-minute cut-off is an amenity threshold, not a clinical one, so the days the chapter discards are precisely the days that matter clinically. On the applicant's own appendix figures, Receptor 261 experiences shadow flicker on 185 days a year, of which Chapter 16 reports only 65. Thirty-four properties shown in Table 16-1 as entirely unaffected in fact carry between twenty-five and 147 shadow-flicker days each, their daily maxima simply falling below the thirty-minute line. A reader of Chapter 16 forms a materially false picture of how often these households are exposed, and the data to correct it existed in the applicant's own appendix and was not reported.

The shadow-flicker case is therefore assessed against a limit with no clinical basis, on selectively reported data, with the qualitatively more dangerous compound flicker not assessed at all. So the effect on the clinically vulnerable populations actually present has not been established.

14.5 Infrasound Through a Health Lens

This section does one thing only. It takes a single fact about the applicant's acoustic assessment, that it is physically incapable of detecting infrasound, and turns it into what it means in law: a failure to discharge the health-assessment obligation.

14.5.1 The measurement gap: an assessment silent on a known emission

Article 3 of the EIA Directive requires that the significant effects of a development on human health be identified, described and assessed. That is an existing obligation; it does not depend on whether domestic guidance has caught up with the science, and it cannot be discharged by an assessment silent on a known emission of the development. As Section 14.1 established, A-weighting attenuates acoustic energy below 20 Hz to the point of effective elimination. Infrasound is defined as sound below 20 Hz, the applicant's own Chapter 11 (§11.3.2.6.10) adopts this definition, and the 185 m Nordex N163 turbines generate their principal infrasonic output in precisely that range.

The instrument the applicant has used to assess the acoustic environment cannot, by its own mathematical construction, detect the infrasound. An assessment that concludes there is no significant infrasound effect, using a method that filters out infrasound before measurement, has not assessed infrasound at all. The applicant cannot discharge the health obligation using an instrument that by design cannot detect the output whose health effect is in question.

14.5.2 Named health consequences for identified vulnerable populations

The objection is not the general assertion that infrasound causes harm. It is that specific residents of this community live with conditions for which the pathway from low-frequency and infrasonic exposure to clinical harm is independently documented, cardiac arrhythmia (via the PIEZO mechanosensitive channels and autonomic activation), autism spectrum disorder (via vestibular and interoceptive sensitivity), and tinnitus (via the inner ear's sub-threshold response and the HPA stress axis). And for none of them was that link assessed. Each is set out in full, with its sources, in the relevant part of Section 14.6; the point here is simply that every one of these routes operates on exactly the low-frequency output the applicant's method cannot detect.

14.5.3 The forward legal record

This is stated plainly to preserve the submission record for any future challenge, whatever determination the Commission reaches. The infrasound health question was raised, the science

and its clinical mechanisms identified, and the Commission placed on notice. The framework on which this application rests is actively before the courts and the EU institutions. The Ballyduff litigation (Webster and Rollo v Meenacloghspar (Wind) Ltd [2024] IEHC 136 and [2025] IEHC 300, with a combined award in excess of €300,000) is on appeal as of March 2026, so the legal status of dB(A)-based assessment is live and undetermined, and being decided on machines half the size of those proposed here. At EU level, Petition 0482/2021 remains open before the Committee on Petitions, which decided on 25 September 2025 that the matter be further investigated, and the Parliament hosted a conference on public health and wind-energy infrasound on 24 March 2026. The WHO ICD-10 classification already lists Vertigo from Infrasound (T75.2) as a recognised clinical condition. These are cited not as a settled EU position but as evidence that the adequacy of conventional wind-turbine noise assessment is an open question actively before the institutions. The precautionary principle places the burden of demonstrating safety on the applicant; that burden has not been met, because no adequate infrasound assessment has been conducted.

The result is that the development's primary low-frequency output, and its documented pathways to harm in identified vulnerable residents, were left unassessed because the chosen method cannot detect them.

14.6 The Vulnerable Populations Left Unassessed

The failure described in Section 14.1, that no health assessment was carried out, shows itself most sharply in how little the applicant knew about the people it was assessing. Chapter 5's own baseline reproduces, for County Tipperary, Census 2022 health and disability figures identical in absolute terms to those it reports for County Offaly, a county of roughly half the population, an arithmetic impossibility that can only be a verbatim copy-paste, and that shows no site-specific health baseline was ever researched for half the study area. This section sets out what this development would mean for the specific vulnerable residents in the area. For each condition it states the pathway by which the development interacts with the condition and identifies the gap in the EIAR. The applicant's own concession that "Health Standards are set for the vulnerable and not for the robust" is the standard against which each of the following failures should be read.

14.6.1 Photosensitive migraine

Migraine is not a headache but a complex neurological disorder, ranked by the Global Burden of Disease Study (Vos et al., The Lancet, 2016) among the leading causes of disability worldwide. It affects roughly 14 to 15 per cent of Irish adults, and of those, 85 to 90 per cent are sensitive to light; and that light sensitivity is not fixed. It builds, intensifies and becomes chronic with repeated exposure to triggers. Shadow flicker, the rhythmic high-contrast alternation of light and dark sweeping through a window, is exactly such a trigger. Three well-established features of the migraine brain explain why it is a clinical trigger and not a mere annoyance. First, between attacks the migraine brain is already over-excitable, over-responding to ordinary visual stimulation (cortical hyperexcitability; Aurora and Wilkinson, 2007), and critically it reacts across a far wider range of flicker rates than the narrow band relevant to epilepsy, including the slow, sub-3 Hz flicker that turbines produce. In plain terms, the flicker rate the developer says is too slow to harm an epileptic is well within the range that provokes a migraine. Second, repeated triggering lowers the bar for the next attack, because the pain-processing pathway becomes progressively more easily set off (central sensitisation in the trigeminal nucleus caudalis; Noseda et al., 2010), so each episode makes the person more vulnerable, not less. Third, that escalating cost accumulates physiologically over time (allostatic load; Blumenfeld et al., 2021), the same mechanism set out in full in Section 14.7.

The harm is therefore not a series of isolated bad days; it is cumulative, and in part it is structural. It physically changes the brain. A neuroimaging study (Chong, Starling and Schwedt, Cephalalgia, 2016) found that migraine sufferers with persistent between-attack light sensitivity have measurably thicker cortex in the visual-processing regions of the brain, a change that does not

reverse once it is established. The significance for this application is direct. Each shadow-flicker event is not a transient nuisance that passes when the cloud moves, but a contribution to a permanent lowering of the threshold at which the next attack is triggered. And because the companion shadow flicker submission shows that the real exposure at affected homes is probably greater than the applicant modelled, the true harm is correspondingly greater than any figure in the EIAR predicts.

The EIAR addresses shadow-flicker health risk almost exclusively through the lens of photosensitive epilepsy. It cites the low blade-pass frequency of modern turbines as evidence that health effects "will not have the potential to occur," and otherwise characterises shadow flicker as "predominantly an annoyance" and a matter of "residential amenity." This is simply not true. The absence of epilepsy risk is used to dismiss all shadow-flicker health concern, when the migrainous population, by prevalence the single largest vulnerable group in the receptor area, is vulnerable at stimulus levels well below the epilepsy threshold. The EIAR does not identify or assess the migrainous population at all; applies the wrong threshold to a population that reacts below it; treats a cumulative, partly irreversible neurological stressor as mere amenity nuisance; and assesses against the 2006 limit while acknowledging the more protective 2019 approach.

14.6.2 Sleep disorders and obstructive sleep apnoea

Sleep disruption is the single most consistently reported health-relevant effect of wind turbine operation across the international literature. For a resident with a diagnosed sleep disorder, in particular obstructive sleep apnoea, it is an additional nightly stressor laid on top of a sleep that is already badly fragmented, since such a person is already losing the deep and REM sleep an intact night provides. Anything that fragments it further compounds an existing medical deficit.

Three physical facts combine to make turbine noise reach sleep that other noise does not. First, the worst-case acoustic exposure occurs at night. Under the stable, low-turbulence conditions typical of flat midland bogland after dark, turbines continue at full output while ground-level wind, and natural masking, falls away, and low-frequency sound propagates most efficiently under exactly these conditions, so the acoustic worst case and the period of greatest physiological vulnerability coincide. Second, the baseline is silence. As established in 14.3.1, the night-time baseline is 17 to 19 dB, and disturbance is most severe in such unmasked environments. The contrast, not the absolute level, is what the sleeping auditory system detects. Third, the brain monitors sound during sleep and reacts below the waking threshold, through cortical and autonomic micro-arousals, brief, often unremembered shifts toward lighter sleep with heart-rate and blood-pressure surges, which is why self-report questionnaires systematically under-capture the effect and why objective measurement matters.

The decisive evidence on that methodological point is the WiTNES study (Smith et al., Sleep, 2020; Universities of Gothenburg, Chalmers and Lund), which placed participants in a controlled sound environment reproducing measured wind turbine noise, including the amplitude-modulated swish and low-frequency components, and recorded sleep objectively by polysomnography, the clinical gold standard. On turbine-noise nights REM sleep took about 17 minutes longer to arrive and was cut by about 11 minutes, with self-reported disturbance significantly worse. Its significance is methodological. It establishes, by objective measurement rather than questionnaire, that wind turbine noise produces real physiological effects on sleep, and that the amplitude-modulated and low-frequency character of the noise, not merely its broadband dB(A) level, is the feature that does it. It is the objective study the WHO 2018 review (Basner and McGuire) called for and that post-dates much of the evidence the applicant relies on; the applicant cannot lean on a 2018 statement that the objective evidence was thin while ignoring the objective study that has since verified its results.

The EIAR does not identify the sleep-disorder population at all; it assesses against a 43 dB(A) "protects sleep" assertion that is, by definition, a standard for the robust sleeper in an average environment, never validated for a person with OSA in a 17 to 19 dB rural night. It relies on the 2018 self-report evidence base and ignores the post-2018 objective evidence. It assesses an annual-average dB(A)/Lden metric incapable of capturing the amplitude-modulated character WiTNES shows to be the operative feature; and it makes no assessment of the compounding effect on an already-fragmented sleep architecture, every night, for the operational life of the development.

14.6.3 Photosensitive epilepsy

Photosensitive epilepsy is the most common form of reflex epilepsy. In people who are susceptible, a flickering pattern of light and shade can trigger a seizure, and how likely that is depends on physical, measurable things: how fast the flicker is, how sharp the contrast, and how much of what the person sees it fills. Shadow flicker is exactly that kind of stimulus. The applicant's whole defence rests on one claim, that the turbines flicker too slowly to fall in the range that provokes seizures, and that claim does not survive contact with the specialist literature.

That claim rests on two policy notes (the 2007 BERR note and the 2015 NHMRC review), which set the turbine rotation rate of 0.3 to 1.0 Hz against a conventional epilepsy band of 2.5 to 30 Hz. Even that single claim is contested: Harding, Harding and Wilkins (Epilepsia, 2008), the one peer-reviewed study of seizure risk from turbine shadow flicker, found the provoking band reaches lower than the applicant assumes. The applicant assessed each turbine on its own and that is the crux of our argument here. Compound flicker, established in Section 14.4.3, where the shadow flicker submission identifies 44 of 129 properties in the simultaneous shadow zone of two or more

turbines, produces a higher effective flash frequency than any single turbine, pushing exposure toward the very band the applicant relies on being clear of. The seizure risk to an identified photosensitive resident was excluded by arithmetic that ignores the layout actually proposed, not assessed.

14.6.4 Cardiac palpitations and arrhythmia

For a resident already living with atrial fibrillation, ectopic beats, supraventricular tachycardia or a palpitation disorder, the clinical concern is not the arrhythmia itself but what triggers or worsens it. Autonomic arousal is one of the best-characterised triggers in the cardiac literature, so any chronic environmental stimulus that drives that autonomic shift is directly relevant to this group. This is the pathway the EIAR was required to consider, and did not.

The output of concern is the infrasound and low-frequency noise produced by the blade-pass action of large turbines as a repetitive, pulsating wave, and the case that it can engage cardiac tissue rests on two named routes. The first is autonomic: a multi-database review by Lehmann et al. (Applied Sciences, MDPI, 2026) found infrasound activates the autonomic centres governing the cardiovascular system, dysregulating heart rate and blood pressure, the very shift that turns a stable arrhythmia symptomatic. The second is mechanical: Bellut-Staeck (SCIREA Journal of Clinical Medicine, 2025) sets out that the PIEZO1 and PIEZO2 pressure-sensing ion channels, distributed throughout cardiovascular tissue and the subject of the 2021 Nobel Prize in Physiology or Medicine (Patapoutian), are directly activated by infrasound pressure waves of exactly this pulsating character. The risk to a cardiac resident is therefore not inferred from annoyance; it rests on named physiology.

The deficiency is the one set out in full in Section 14.5. The assessment dismisses infrasound and low-frequency noise as being below the threshold of conscious perception, using an A-weighted method that by design cannot register that band. For the cardiac pathway that reasoning is not merely incomplete, it is beside the point. The PIEZO and autonomic routes described above do not depend on the resident consciously hearing anything. The applicant has therefore measured the wrong thing with the wrong instrument, proposed no metric by which the relevant exposure at any home could be established, and identified none of the cardiac-vulnerable residents present, so the effect of the development's infrasound on this group has not been assessed at all.

14.6.5 Tinnitus

For a resident with tinnitus, how loud and intrusive it becomes is governed above all by the surrounding sound environment and their stress level, and this development worsens both. Tinnitus is characteristically worst in silence, because steady background sound is what masks it, so the 17 to 19 dB night-time baseline (Section 14.3.1) is the worst possible setting for a sufferer, into which the development introduces not steady masking sound but an attention-grabbing amplitude-modulated signal. Severity also tracks chronic stress through the HPA axis (Schaette and McAlpine, 2011; Mazurek et al., 2012; Patil et al., 2023), and a chronic, inescapable stressor is exactly the sustained activation that drives tinnitus from manageable to disabling; the inner ear's sub-threshold response to infrasound (Salt and Hullar, 2010) adds further input. The EIAR identifies no tinnitus sufferer, treats the quiet baseline as protective when for tinnitus it is the most symptomatic environment, assesses dB(A) averages rather than the amplitude modulation that is the mechanism of harm, and never engages the stress pathway at all.

14.6.6 Autism spectrum disorder

For an autistic resident the problem is the lack of habituation. A defining feature of autism is difficulty filtering out or growing used to sensory input a neurotypical nervous system tunes out automatically, and the clinical literature reports roughly half of autistic people are severely sensitive to flickering light and up to three-quarters to bright or flashing light. The entire framework the applicant relies on, the 30/30 thresholds, the dB(A) limits, the "annoyance" model, assumes a person who habituates, which is precisely what autism impairs. Both pathways engage: shadow flicker is the patterned visual stimulus autistic processing cannot filter, with no voluntary "look away" available, particularly for children; and the inner ear responds to infrasound below the conscious threshold (Salt and Hullar, 2010) through vestibular and interoceptive channels documented as atypical in autism. The EIAR never treats neurodiverse residents as a distinct sensitive receptor.

14.6.7 Anxiety and mental health

This is the one vulnerable group the EIAR addresses, and the way it does so is the problem. Chapter 5 accepts that anxiety and depression from wind-farm exposure would be health impacts, then draws a line between mere annoyance, which it treats as non-medical, and diagnosed illness, and counts only the latter. That is a false division. Chronic annoyance is the documented pathway by which a sustained stressor produces psychiatric harm, not an alternative to it. The same allostatic-load mechanism set out for migraine (Section 14.7) applies directly, sharpened by the loss of the home as a place of recovery, the defining harm in Ballyduff, and by the disrupted sleep of Section 14.6.2. The framing is also internally contradictory, because the WHO 2018 Guidelines the applicant itself cites treat noise annoyance as a health-relevant outcome and set

the 45 dB Lden recommendation precisely because annoyance rises above that level. In the end the EIAR treats the difficulty of measuring this harm as evidence that it is absent, identifies none of the at-risk residents, and rests on a no-evidence-elsewhere argument that says nothing about this never-surveyed community in its silent baseline.

14.7 Cumulative Stressor Effects: Allostatic Load

14.7.1 The argument the EIAR never engaged

A wind farm does not deliver its effects to a resident one stressor at a time, in isolation, with rest periods in between. The same person, in the same dwelling, can be exposed at once to operational noise, low-frequency sound, amplitude modulation and shadow flicker when conditions allow, on every operating day, across the full operational life of the development. The question for human health is therefore not whether any single stressor, assessed alone, stays within a threshold. It is what the combination does to a person over time. The EIAR never asks that question. Chapter 19, the Cumulative Effects chapter, was the place to answer it, and what it provides is a single sentence for each stressor in isolation. On noise it states that "no significant effects are expected from the interaction of operational noise with Population and Human Health." On shadow flicker it states that "no significant negative effects from shadow flicker on the local community are anticipated during the operational phase of the project." That is the entirety of it. Two sentences, each considering one emission on its own, in the one chapter of the EIAR whose specific function is to assess how effects combine. Nowhere does Chapter 19 consider noise and shadow flicker acting on the same resident at the same time, and the health chapter does not assess the combination either, having deferred the question here in the first place. The result is the circular failure described in Section 14.1, in its sharpest form. The cumulative health effect of this development was assigned to the chapter built to assess it, and that chapter assessed each stressor singly with that one single sentence and nothing else and the combination not at all. For a development imposing four simultaneous stressors on vulnerable residents every day for thirty-five years, the combined effect on human health received no assessment whatsoever.

14.7.2 What allostatic load is, and why it matters here

Allostasis is the process by which the body maintains stability through change, mobilising physiological systems: the HPA axis, the autonomic nervous system, cardiovascular and metabolic responses, to adapt to demands placed on it. These responses are protective in the

short term; the problem arises when demands are chronic and repeated rather than acute and occasional. Allostatic load is the cumulative physiological cost of that chronic adaptation. The wear-and-tear that accumulates when stress-response systems are activated too often, for too long, without returning to baseline. The concept, developed by McEwen and Stellar and extended across three decades of research, is well established, and its central finding is directly relevant. Multiple chronic stressors do not simply add together, they interact and compound. The combined burden of several simultaneous stressors is greater than the sum of each in isolation, and the systems most affected, cardiovascular regulation, sleep architecture, neurological excitability, are precisely those engaged by the stressors this development produces.

This matters because the entire structure of the EIAR's health case rests on the opposite, unstated assumption. That if each stressor is individually shown to fall within or near a threshold, health is protected. Allostatic load is the body of science establishing that this assumption is false. A resident does not experience "noise compliance" and "shadow-flicker compliance" as separate, survivable events; they experience the convergence of both, continuously, and the physiological cost of that convergence has not been measured, modelled, or acknowledged.

14.7.3 The concrete case: convergence on a single vulnerable household

The argument is clearest applied to a real, named property. House 285 appears in both our Shadow Flicker and our Noise Companions. On the applicant's own shadow-flicker appendix it is struck on 146 days of the year, two in every five, for a worst-case of over 80 hours, among the heaviest exposures on the site. On noise it was simply omitted from the prediction table, while its neighbour around 50 metres away, H 053, was assessed and called compliant by the applicant. Once the omitted Joule Valley correction was applied however, the night-time limit was breached. At that distance the two houses share effectively the same geometry and elevation relative to the turbines; if one breaches, so does the other. The applicant assessed the neighbour and left House 285 out altogether. This dwelling is affected on both counts: it carries the heaviest non-landowner exposure on the site and given how close it sits to H053, it is also non-compliant, a result the assessment never records.

The point does not depend on knowing the medical history of any particular occupant. Across the affected homes the prevalence figures in Section 14.6 make it statistically near-certain that some residents live with a sleep, photosensitive or cardiac condition, and for any such resident in a house like this the failure is plain. They face recurrent daytime flicker on 146 days a year and turbine noise intruding on a silent night-time baseline, every day for thirty-five years, each effect assessed in isolation or, for noise at this house, not at all, and never against a health threshold. The combined load on that person's sleep, heart and nervous system, the thing that actually determines whether they are harmed, is never mentioned in the EIAR. This is not a gap a condition

could cure after permission. It is a foreseeable and serious health effect, left unassessed before the decision is made.

14.7.4 The external dimension: a multi-source environment assessed as single-source

The cumulative failure is compounded by the applicant's treatment of the surrounding wind-energy environment. The residents in question are not moving into an empty landscape. Carrig (Lacka) Wind Farm lies approximately 1.7 km from the nearest proposed turbine and Skehanagh (Lacka) approximately 2.7 km, and Chapter 5 records these two farms with their distances transposed. An error that on its face indicates the cumulative baseline was not handled with care. More seriously, the shadow-flicker assessment proceeds as though the proposed development were the only source affecting these receptors, notwithstanding that Carrig (Lacka) sits within the 2 km cumulative-assessment threshold the applicant's own cited guidance applies. A resident positioned between the proposed development and an existing farm may, depending on the relative geometry, receive shadow flicker from different directions at different times of the same day. This is a genuine cumulative exposure that the applicant's assessment structurally couldn't capture. The health baseline has been constructed as if these residents inhabit a single windfarm environment; they already live in a multi farm one and this development would add to it.

The convergence of these stressors on a single vulnerable household — every operating day, for the life of the permission, was therefore never measured, modelled or acknowledged anywhere in the EIAR.

14.8 The Cloghan and Meenwaun Precedents and the Oversight Failure

The applicant's response to the health concerns raised by this development rests, in part, on a proposed monitoring and complaints mechanism. The developer operates the control systems, commissions the compliance monitoring, and handles resident concerns, with no independent verification built in. Detection of harm depends on residents complaining, and the determination of compliance rests on monitoring, the developer itself acquires. A complaints-based protocol that relies on developer-commissioned monitoring, without independent verification, cannot be relied upon to detect or remedy health impacts, and this is not theoretical. The same model has failed, recently and on the record, at two operational wind farms within Offaly.

At Meenwaun Wind Farm, operational since 2018, developer-side monitoring reported compliance while residents' complaints of noise and sleep disturbance went unresolved for years. Enforcement never followed, and in October 2024 the Council closed the complaint log without remedy, residents having been told the development was by then effectively statute-barred. At Cloghan Wind Farm, the developer's own 2023 compliance report was contradicted only when residents funded their own acoustician, whose independent monitoring in late 2025 was said to show the site not compliant with its planning conditions. In both cases compliant-looking developer monitoring coexisted with years of reported harm, and it took evidence the community obtained itself to surface non-compliance.

In late 2025 the elected members of Offaly County Council, on a cross-party motion, resolved that complaints received about wind turbine noise and shadow flicker should be referred to the HSE for investigation. Councillors framed the decision around the protection of affected communities and the need for the HSE to be informed of the noise recorded at Cloghan. The decision shows the elected members of this county choosing to route such complaints to an external public-health authority rather than rely on the developer or local-authority handling of the kind now proposed for Ballincor. The Ballincor protocol shares every feature that failed at those sites. It is developer-operated, complaint-triggered, dependent on developer-commissioned monitoring, and contains no independent verification. Had it contained a material safeguard those sites lacked, independent monitoring, mandatory disclosure or third-party verification, the precedents could be distinguished. It does not, and so they cannot. The oversight mechanism on which the applicant's health assurances depend is of the same model as one that has demonstrably failed, in this same county, within the past two years, whoever operates it.

14.9 The Battery Energy Storage Omission

The preceding sections demonstrate failures of method, of baseline and of scientific engagement. This section identifies something simpler, and for that reason harder for the applicant to answer. A component of the development identified in the applicant's own documents and then left entirely out of the chapter whose statutory function was to assess it.

Chapter 10 of the EIAR (Air Quality), at Table 10.12, Planned and Permitted Developments with Potential for Cumulative Effects, lists planning reference 2560367. The applicant describes that development, in its own words, as a 100MW Battery Energy Storage Station comprising 53 battery containers and associated equipment, located within 500 m of the wind farm site. The applicant therefore identified this installation, recorded its scale and proximity, and recorded it as a development with potential for cumulative effects. The identification is the applicant's own.

Chapter 5 (Population and Human Health) does not assess it. There is no consideration anywhere in the health chapter of what a battery storage station of this scale, at this distance, means for the health of nearby residents. The specific health-risk considerations a 100MW installation of 53 containers presents, thermal runaway events, the release of fire-suppression and combustion chemicals during such events, the emergency response and evacuation requirements such a facility imposes on a rural population, and long-term chemical exposure pathways over the operational life of the installation, are entirely absent from the health assessment. They are not assessed inadequately; they are not assessed at all. This is not a matter of scientific controversy and does not require the Commission to weigh competing expert evidence. It is a provable omission established by placing two chapters of the applicant's own EIAR side by side. The applicant cannot characterise as an oversight a development it expressly catalogued in its own cumulative-effects table. The Commission must determine the application on the EIAR as submitted, and the EIAR as submitted does not assess this component at all.

A 100MW battery storage station of 53 containers that the applicant's own EIAR places within 500 m of the site is therefore absent from the health assessment altogether.

14.10 Grounds for Refusal (Consolidated)

The grounds established above are gathered here as an index, each developed in full in the section shown. None is answered by a condition. The governing duty throughout is Article 3 of Directive 2014/52/EU, to identify, describe and assess the significant effects of the project on human health, a duty legally distinct from, and not discharged by, compliance with noise, shadow flicker or other planning limits.

Ground 1: The Article 3 health assessment was never carried out. *(14.1)*

Ground 2: Noise was not even shown to be compliant, and its health effect in a silent baseline was never assessed. *(14.3)*

Ground 3: The shadow-flicker limit has no clinical basis, and exposure was understated. *(14.4)*

Ground 4: Infrasound and its health consequences were not assessed. *(14.5)*

Ground 5: Identified vulnerable populations were not assessed. *(14.6)*

Ground 6: The combined effect of simultaneous stressors was not assessed. *(14.7)*

Ground 7: The external cumulative assessment rests on false data. *(14.7)*

Ground 8: The 100MW battery storage station was omitted. *(14.9)*

Ground 9: The oversight model has demonstrably failed in this county. *(14.8)*

14.11 Conclusion

The EIA Directive 2014/52/EU requires, as a precondition of any grant of permission, that the Commission be satisfied, on the basis of assessment actually contained in the EIAR, that the likely significant effects of the development on human health have been identified, described and assessed, and that significant adverse effects are unlikely for the receptors actually present. This chapter has shown, from the applicant's own documents and from named peer-reviewed science, that the Commission cannot make those findings.

The health assessment fails at its foundation. It rests on health guidance the HSE has withdrawn, on a population baseline the applicant copied verbatim from a different county, on a circular structure in which every operative health pathway is deferred to a technical chapter that assesses compliance and never health, and on an acoustic method that by mathematical design cannot detect the primary low-frequency output of the machines it assesses. Each of these is provable without external evidence, and each on its own means the human-health obligation has not been discharged.

Beyond the foundations, every health effect the applicant was required to assess has been left unassessed. Noise has been assessed against numerical limits in a 17 to 19 dB silent baseline whose significance, the applicant never engaged. Shadow flicker has been assessed against a 30/30 limit of no clinical origin that the applicant's own EIAR concedes is the less protective of two available standards. Infrasound has been excluded by the very measurement method used. Seven identified clinically vulnerable populations, photosensitive migraine, photosensitive epilepsy, cardiac conditions, sleep disorders, tinnitus, autism spectrum disorder, and anxiety and mental health, have been neither identified, located nor assessed. The cumulative, compounding effect of these stressors converging on a single vulnerable household across a thirty-five-year permission has never been measured or acknowledged. A 100MW battery storage station the applicant itself catalogued within 500 m of the site does not appear in the health chapter at all. And the oversight mechanism on which the applicant's assurances depend is of the same model, developer-run and self-monitored with no independent check, as one that has failed in this same county.

These are not nine separate complaints to be weighed and picked off one by one. They are nine proofs of a single failure. Article 3 required the applicant to assess what this development does to human health. Instead, at every point, they only checked whether each effect stayed within a numerical limit. That is not the same question. A development can meet every limit and still harm the people living with it. The pattern is uniform, and it is the pattern, not any one ground, that decides the chapter.

These are not deficiencies that a condition could cure, because the assessment that would allow the Commission to impose a meaningful condition does not exist. Nor do the gaps in the assessment count in the applicant's favour. Where the likely effect on health has not been established, the precautionary principle places the burden on the applicant to show that significant adverse effects are unlikely. The applicant has repeatedly failed in this regard. If an effect was never assessed, that burden has not been met. Each effect this chapter raises is therefore a reason to refuse, not a matter to be resolved after permission is granted. The Commission cannot lawfully find, on the evidence before it, that the significant effects of this development on human health have been identified, described and assessed, or that significant adverse effects on the receptors are unlikely. The obligation under Article 3(1) of the EIA Directive has not been discharged. For the reasons set out in this chapter, the Greater Birr Wind Action Group respectfully requests that An Coimisiún Pleanála refuse permission for the proposed development on human-health grounds. On the applicant's own documents and its own adopted methodology, the assessment does not provide a sound basis on which permission could properly be granted.

14.12 Bibliography

This bibliography lists the legal, statutory and peer-reviewed sources relied upon in this chapter. Part One sets out the legal and statutory authorities; Part Two lists the peer-reviewed and scientific sources, alphabetically by lead author.

Part One — Legal and Statutory Authorities

EU instruments

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (the EIA Directive), as amended by Directive 2014/52/EU.
- Treaty on the Functioning of the European Union (TFEU), Article 191(2) (the precautionary principle).
- European Parliament, Committee on Petitions (PETI), Petition 0482/2021, calling for a common European framework for wind turbine noise; decision of 25 September 2025 that the matter be further investigated (petition open; European Commission written response committed).
- European Parliament conference, 'Unheard but Not Harmless: Public Health and Wind Energy Infrasound', Brussels, 24 March 2026 (no resolution adopted).

Irish statutes, guidelines and policy

- Environmental Protection Agency (EPA), Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022).
- Department of Housing, Local Government and Heritage, Wind Energy Development Guidelines (2006) (the "30/30" shadow-flicker thresholds).
- Department of Housing, Planning and Local Government, Draft Revised Wind Energy Development Guidelines (December 2019), Sections 5.8 and 7.16.
- Health Service Executive (HSE), Position Paper on Wind Turbines and Public Health (2017), withdrawn by the HSE and under review; no replacement in force.

Case law

- Webster and Rollo v Meenacloghspar (Wind) Ltd [2024] IEHC 136 (High Court of Ireland, Egan J., liability judgment, 8 March 2024): the "Ballyduff" litigation; wind turbine noise held an actionable nuisance notwithstanding planning compliance.
- Webster and Rollo v Meenacloghspar (Wind) Ltd [2025] IEHC 300 (High Court of Ireland, relief judgment, May 2025), injunctive relief requiring overnight turbine shutdown at certain wind speeds on sleep-disturbance grounds; combined damages award in excess of €300,000 followed in November 2025. Appeal filed March 2026.

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- World Health Organization, International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10), code T75.2 (Vertigo from Infrasound).
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- Central Statistics Office (CSO), Census of Population 2022, county health and disability data (Offaly and Tipperary).
- Offaly County Council, cross-party decision of January 2026 to refer all wind turbine noise and shadow flicker complaints to the Health Service Executive (HSE).
- Institute of Acoustics, advice of December 2024 on the assessment of infrasound and low-frequency noise (as relied upon in EIAR Chapter 11).

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Appendix 2-1 RED III Parliamentary Question — PQ 164, 4 November 2025, National Territory Mapping under Article 15b RED III

Topic: Renewable Energy Generation

Date: Tuesday, 4 November 2025

PQ No.: 164

Questioner: Donna McGettigan TD, Clare, Sinn Féin

Minister replying: Darragh O'Brien TD, Minister for Environment / Climate, Energy and Environment

Question reference: [57860/25]

DÁIL ÉIREANN

Dé Máirt, 4 Samhain, 2025
Tuesday, 4th November, 2025

CEISTEANNA
QUESTIONS

*164. To ask the Minister for Climate, Energy and the Environment whether a strategic environmental assessment (SEA) has been, or is being, undertaken by his Department in respect of the National Territory Mapping for Renewable Electricity, being prepared under Article 15b of the Renewable Energy Directive (EU) 2023/2413 (RED III); if not, the reason his Department considers this mapping process to comply with the requirements of the SEA Directive (2001/42/EC) and the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004), given that the mapping exercise constitutes a national plan setting the framework for future renewable energy development consents; if his Department intends to carry out a full SEA, incorporating consultation with prescribed authorities including the Irish Aviation Authority, AirNav Ireland, and the National Parks and Wildlife Service, before finalising or submitting the national map to the European Commission, as required under Article 15b(5) of RED III, which obliges Member States to ensure compliance with European Union environmental law; and if he will make a statement on the matter. — Donna McGettigan. [57860/25]

REPLY (Darragh O'Brien, Minister for Climate, Energy and the Environment, FFFG)

Renewable Energy Directive (EU) 2023/2413 (RED III) requires EU Member States to carry-out national territory mapping (under Article 15b) to identify the domestic potential and the available areas that are necessary for the installation of renewable energy plants and their related infrastructure as required to meet Ireland's national contributions towards the overall EU renewable energy target of 42.5% by 2030.

Noting that Article 15b states that 'Member States may use or build upon their existing spatial planning documents or plans' and noting that several local Planning Authorities have already identified lands suitable for renewable energy development, the coordinated mapping of the national territory has been undertaken based on the lands already identified for same, in City or County Development Plans.

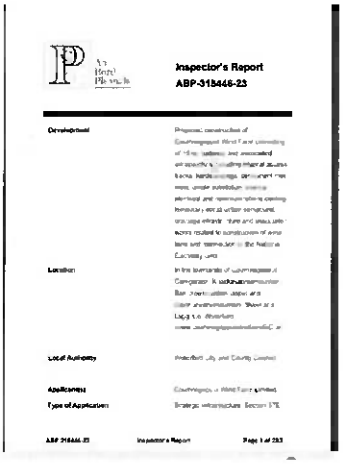
On this basis, all 31 local Planning Authorities were consulted, to obtain and collate the mapping and information that already identifies the potential opportunities for grid scale onshore renewables, in particular grid scale onshore wind and solar PV. This is included in several existing Development Plans and Wind Energy Strategies/Renewable Energy Strategies. These plans in themselves have been subject to environmental assessments and statutory public consultation (in accordance with the relevant provisions of the Planning and Development Act 2000) and are adopted by the Elected Members of each local Planning Authority.

Using the mapping received from local Planning Authorities, collated maps for onshore wind and solar PV have been created showing all current local Planning Authority lands identified in a single map that amalgamates and harmonises the local authority lands identified into uniform national classifications. It does not alter or amend any existing plans, nor does it affect their status under any enactment. Any planning applications for development within any lands already identified as suitable for renewable energy developments will be subject to detailed assessment by the relevant Planning Authority and is subject to all relevant planning and environmental legislation and regulations.

Appendix 2-2 – ACP Precedent

Below is a sample of previous ACP decisions where County Development Plans were considered central determinants by Inspectors.

Inspector's Report ABP-318446-23



Inspector's Report
ABP-318446-23

Development

Location

Local Authority

Applicant(s)

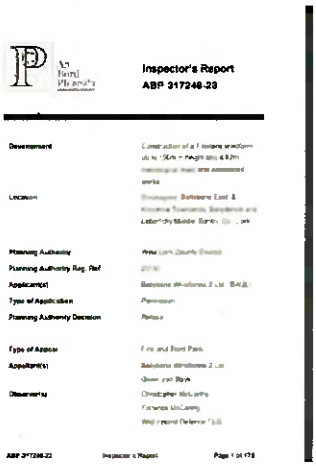
Type of Application

Proposed construction of Coumnagappul Wind Farm (www.coumnagappulwindfarmSID.ie).

Inspector Recommendation:

Site falls within an area identified as 'Exclusion Zone' on the RES Wind Energy Strategy Maps for new wind energy developments, the proposed development would materially contravene Policy Objective UTL 13 of the Waterford City and County Development Plan 2022-2028. Accordingly the Board was not satisfied that, notwithstanding the benefits of renewable energy proposals and the policy support otherwise, that the proposed development would in this instance be plan led as it would not be in accordance with the stated policy objective of the statutory development plan for the subject site. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

Inspector's Report ABP-317240-2



Inspector's Report
ABP 317240-23

Construction of a 7 turbine windfarm up to 150m in height and a 92m metrological mast and associated works Location Shronagree, Ballybane East, & Knockroe Townlands, Ballydehob and Letterlicky Middle, Bantry, Co. Cork.

Inspector Recommendation:

The site is located in designated Landscape Character Area titled 'Rugged Ridge Peninsulas' which has a very high landscape value and very high landscape sensitivity and is of national importance. Section 14.8.8 considers such areas to be amongst Corks most valuable landscapes and therefore is ABP-317240-23 Inspector's Report Page 169 of 175 designated as High Value Landscapes (HVL). The application site is not considered an appropriate location for the proposed development and accordingly, I can only recommend that permission is refused as the proposed development would materially contravenes Objectives ET 13-8 (where no exceptional circumstance are considered applicable due to the proposals adverse impacts on the Landscape), Objectives GI 14-9, GI 14-10, GI 14-12, GI 14-13, and TO 10-5 of the Cork County Development Plan 2022- 2028 and would be contrary to National Policy Objective 55 of the National Planning Framework which seeks to promote renewable energy use and generation at "appropriate locations".

Inspector's Report ABP-317265-23



Inspector's Report
ABP-317265-23

Construction of Dyrick Hill Windfarm comprising 12 no. wind turbines and related works.

Inspector Recommendation:

I recommend that permission is refused for the reasons and considerations set out hereunder. 15.0 Reasons and Considerations 1. Having regard to Policy Objective UTL 13, which seeks to facilitate and encourage proposals for renewable energy generation '...developed fully in accordance with the Waterford Renewable Energy Strategy (RES), the wind energy designation map (Appendix 2 of the RES), the Waterford Landscape and Seascape Character Assessment (LSCA) undertaken to inform this Development Plan and the National Wind Energy Guidelines, or any subsequent update/ review of these', and given the proposed development ABP-317265-23 Inspector's Report Page 214 of 216 site falls within an area identified as 'Exclusion Zone' on the RES Wind Energy Strategy Maps for new wind energy developments, the proposed development would materially contravene Policy Objective UTL 13 of the Waterford City and County Development Plan 2022-2028. Accordingly the Board was not satisfied that, notwithstanding the benefits of renewable energy proposals and the policy support otherwise, that the proposed development would in this instance be plan led as it would not be in accordance with the stated policy objective of the statutory development plan for the subject site. The proposed development would, therefore, be contrary to the proper planning and sustainable development of the area.

APPENDIX 2-3 Joint Committee Meeting on Climate, Environment and Energy Nov 26th 2025. Transcript excerpts

At a recent Oireachtas Committee meeting: **Joint Committee Meeting on Climate, Environment and Energy which met for further engagement on the delivery challenges in the Offshore Wind Sector 26 Nov 2025, 10:41** the Chief Executive Officer ACP Peter Mullins and the Director of Planning ACP Ciara Kellett were asked to clarify ACPs position on the County Development Plan. See Appendix 1 for full context and transcript.

Below is a video link and quotes taken from the public transcript



Video link 1.44:48

https://www.oireachtas.ie/en/debates/debate/joint_committee_on_climate_environment_and_energy/2025-11-26/

Context: The meeting focused on Off-Shore Wind and a key area of discussion centred on the Designated Maritime Area Plan (DMAP), a statutory marine spatial plan under the Maritime Area Planning Act 2021. In practice, it

- Designates specific sea areas as suitable (or not) for particular maritime uses (e.g., offshore renewable energy),
- Sets policy objectives for development in those areas,
- Is intended to reduce conflict with fisheries, environment, navigation, heritage, e

John Clendennen TD asked both the Chief Executive Officer ACP Peter Mullins and the Director of Planning ACP Ciara Kellett to discuss if the DMAP in an off-shore context corresponds with a local County development plan in an on-shore context; are both designed to designate suitable areas for wind energy development and to be protected as such. Both Peter Mullins the Chief Executive and Ciara Kellett Director of Planning **agreed that designated sites have gone through a process and that we would not go outside those areas**.

A video link is available above and the specific issue as discussed is available below in transcript form. Key aspects of the discussion are highlighted.

Transcript

John Clendennen TD: Just my first question is in relation to the whole area of DMAP and spatial planning. And I know there's a number of different applications and projects that are ongoing, but no different to county development plans as such, where a county would designate land suitable for wind, DMAP is essentially the same thing.

Is there any reasons or any particular circumstances that we could find ourselves in that An Coimisiún Pleanála would override that DMAP guidance to grant planning for an offshore wind project?

Peter Mullins Chief Executive ACP: Now, that's an important question, Deputy. I'm simply not qualified — I'm not a planner. I mean, I don't want to defer, I mean, I'm here as the leader of the organisation. *Defers to Ciara Kellett Director of Planning ACP*

Thank you very much. Obviously, the site across DMAP is available, identifies locations for the wind, and that has already gone through a process.

And again, Deputy, as you're saying in terms of the county development plans that we're all very familiar with, they have gone through a process whereby these sites have been identified. So it would be very strange for us to find something there that would mean we go outside of the areas that have been identified for the offshore, which I think is what you're asking.

John Clendennen TD Yeah, yeah. So generally speaking, where there are areas identified through DMAP, no different to a county development plan — exactly — you're working in that scope. Spatial plan

Hydro-G

An Coimisiún Pleanála - Case reference: PAX92.324279

Ballincor Wind Farm and all associated infrastructure

Applicant: RWE Renewables Ireland Ltd.

Agents: Tobin

Independent Expert Opinion for Greater Birr Wind Action Group & An Coimisiún Pleanála

in the context of

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (EIA Directive).

European Union Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

EU Floods Directive (2007/60/EC): Transposed into Irish law via S.I. No. 122 of 2010 (as amended by S.I. No. 495 of 2015)

European Communities Environmental Objectives (Surface Water) Regulations, S.I. No. 272 of 2009 as amended.

European Communities (Birds and Natural Habitats) Regulations, 2011. S.I. No. 477 of 2011, as amended 2021. SI No. 293 of 2021.

EUROPEAN UNION HABITATS (SHARAVOGUE BOG SPECIAL AREA OF CONSERVATION 000585) REGULATIONS 2017

European Union (2024) REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on nature restoration and amending Regulation (EU) 2022/869. THE EUROPEAN PARLIAMENT THE COUNCIL Brussels, 15 March 2024.

Prepared by

Dr. Pamela Bartley

Independent Hydrogeologist & Consultant

Hydro-G

for

Greater Birr Wind Action Group

June 2026

An Coimisiún Pleanála - Case reference: PAX92.324279

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Project No.: 2026_Greater Birr Wind Action Group

Report Status: **Issue**

Report Title: **Independent Expert Opinion for Greater Birr Wind Action Group & An Coimisiún Pleanála: Ballincor Wind Farm and all associated infrastructure, Birr, Co. Offaly. Applicant: RWE Renewables Ireland Ltd. Agents: Tobin.**

Legislation of Particular Note:

- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (EIA Directive).
- European Union Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.
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- European Communities Environmental Objectives (Surface Water) Regulations, S.I. No. 272 of 2009 as amended.
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- European Union (2024) REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on nature restoration and amending Regulation (EU) 2022/869. THE EUROPEAN PARLIAMENT THE COUNCIL Brussels, 15 March 2024.

Date: 24th June 2026

Prepared by:

Dr. Pamela Bartley B.Eng, M.SC., Ph.D.

An Coimisiún Pleanála - Case reference: PAX92.324279

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An Coimisiún Pleanála - Case reference: PAX92.324279

Statement of Expertise Pamela Bartley B.Eng., MSc., Ph.D

This report has been prepared by Dr. Pamela Bartley. She is a water focussed civil engineer and is considered an Expert Service Provider (ESP) in the matter of construction impacts on hydrology and hydrogeology. Pamela is a team member in Environmental Impact Assessments and the preparation of Environmental Impact Assessment Reports (EIARs) for the extractive industry in Ireland.

Pamela is engaged as an independent consultant to Uisce Eireann, Group Water Schemes supplying potable water to the public, regionally important quarries. She has over 25 years of field based practice in borehole drilling, groundwater monitoring and abstraction point management and the assessment of rivers for the purposes of Section 4 Discharge and Water Pollution Act evaluations. Her Ph.D was a field based Impact Assessment tying actions at the land surface to responses in water by application of the Source Pathway Receptor (SPR) Risk Assessment model. Pamela is qualified and IOSH certified to act as PSDP (Project Supervisor Design Phase) & PSCS (Project Supervisor Construction Stage) as defined by the Construction Regulations. She has a wealth of experience in working at large scale construction sites involving earth movement and placement of rock, such as would occur in the construction of pads for Turbine erection. She is co-owner of Hydro-G and this Ltd. company is a registered Irish Water Supplier (no. 1855). Pamela Bartley is HSQE approved within Irish Water and is one of their Hydrogeologist Framework service providers. Upon completion of a Diploma in Water and Wastewater Technology at Sligo RTC, she completed a degree in Civil Engineering at Queens University, Belfast and then completed a Master of Science in Environmental Engineering followed by a hydrogeological focussed Ph.D. on Karst Groundwater Impact: both postgraduate degrees were completed within the school of Civil Engineering at Trinity College, Dublin.

Her key work areas are groundwater impact and groundwater use. Pamela has successfully completed post doctorate formal course training in the areas of:

- PSDP & PSCS (IOSH certified, 2016)
- Karst Hydrogeology (GSI, 2013)
- Planning & Development Act (IE, 2010) & Expert Witness (IE, 2011)
- On Site Wastewater & Water Services Amendment Act 2012 (IE, 2012 & Dublin 2012)
- Zero Discharge Willow Wastewater Systems Design Courses (Denmark 2008 & 2011 & Ireland 2012)
- Surface Water Regulations 2009 & Assessment of Licensing (DoE, 2010 & 2011)
- Sustainable Drainage (Wallingford/CIRIA, 2005 & 2008)
- Source Protection Zone Delineation (IGI/GSI, 2007)
- Groundwater & Contaminant Microbiology (IGI/GSI, 2006)
- Site Suitability Assessment (FETAC, 2002) & Applied Groundwater Modelling (ESI, UK, 2000)

As a result of work in evaluating planning appeals, Pamela has become specialist in planning evaluations in the context of enacted Irish Regulation and EU Directives concerning EIA and the water environment such as the European Parliament and Council Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (EIA Directive), Groundwater Regulations (S.I. No. 9 of 2010 & Amendment Regulations S.I. No. 366/2016), Surface Water Regulations (S.I. No. 272 of 2009 & Amendment Regulations S.I. No. 386 of 2015), Water Framework and Habitats' Directives. She has been an invited guest speaker at An Bord Pleanála, The Irish Concrete Federation, The Health Service Executive, Environmental Health Officers National Conference, The Irish Planning Institute's National Conference, The International Association of Hydrogeologist's National Conference (Irish Branch) and has delivered hydrogeological lectures to the public during Science Week. In the past, she has held full time lecturing positions in third level institutions (WIT & CIT, 1996 – 1999), delivered practical laboratory instruction in the assessment of subsoils for the FETAC Site Assessor programme and also demonstrated hydraulics laboratory and practical field survey tutorial modules at Trinity College Dublin (1996). Pamela is a qualified and certified 'Site Assessor' and has been an interviewer of examination candidates in respect of eligibility for the Site Suitability FETAC Qualification.

Pamela Bartley's company is Bartley Hydrogeology ltd., registered to trade as Hydro-G. The company holds the industry requisite professional indemnity insurance and employers, public and products liability insurances.

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1.0 Introduction

The Greater Birr Wind Action Group engaged Dr. Pamela Bartley to independently assess the water, construction and Conservation Objective site information related to the proposed Ballincor Wind Farm in which RWE, through their agents Tobin, propose 11 Turbines and a Grid Connection. Dr. Pamela Bartley's Statement of Expertise is provided at the beginning of this report. In overall summary, she is an experienced EIA practitioner with water, soils, subsoils and nature conservation expertise.

The centre of the overall construction zone for the Turbine Masts and their foundations is primarily in a townland named Cloonaheen and it is c. 6.4 km to the south, south east, of the town of Birr, Co. Offaly.

The river named the 'Little Brosna River' flows between the proposed construction lands and the western boundary of the Sharavogue Bog SAC (Site Code 000585).

The lands proposed for construction are hydraulically connected by the Little Brosna River and details presented by the applicant's agents acknowledge that the Little Brosna River floods into the proposed development area. The lands proposed for construction are hydrogeologically classified by the Geological Survey of Ireland (GSI) as the same type of lands in the subsurface, named 'Cut over raised peat' subsoil (Quaternary Sediment). There is a hydrologically and hydrogeologically extremely interesting pocket of 'Gravels' and a connected Esker mapped by the GSI in the middle of the proposed red line application area. However, the applicant's agents have drawn a line around this to suggest that it is separate from the proposed development area. Nature does not separate itself on the basis of red lines drawn on maps by agents for applicants. Neither would An Commissiun Pleanala exclude the significance of the Gravels and Eskers and the cut over raised peats of the proposed development area and Sharavogue Bog SAC.

2.0 Proposed Development

The proposed project will involve 11 Wind Turbine Generators with a blade tip height between 179.5 and 180 m, rotor diameter between 149 to 163 m, hub height of between 98.5 and 105 m. These Turbines will require large cranes and vehicles for their assembly on site and erection. The works will require construction of 'hardstanding', which is an engineering term for lands stripped of their soil cover and covered with rock so as to allow traffic of cranes and delivery vehicles. The turbine foundations at each turbine location will require excavation into peatlands and river banks of rivers documented in the applicant's application documents to be flood zones.

In addition, construction works to enable toe private energy proposal would require excavation works and traffic management along public roads and private land for 12.23 kms of trenches for a grid connection to the existing Dallow 110 kV substation. These works would include the construction efforts for the installation of 17 joint bays along the grid connection route ("GCR") across the townlands of Cronekill, Castletown, Cornhill, Caherhoereigh, Pallas, Kylenamuck, Tinnakilly, Ballyloughnane, Killeen, Croghan, in Co. Tipperary and Townparks, Dovegrove, Woodfield or Tullynisk, and Clondallow in Co. Offaly.

There will also be societal and environmental impacts associated with the proposed Turbine Delivery Accommodation works, road surfacing works and temporary wall/vegetation removal. Additional road construction proposed will be the excavations and loading of materials to provide roads that can actually accommodate the scale of machinery required for the RWE project. The roads will require widening to a clearance width of 5.5m so as to allow for Turbine delivery. This means the roads are not suitable at the moment. A particular pinch point is the Sharavogue crossroads, Sharavogue, Co. Offaly, which is in proximity to Sharavogue Bog SAC (Site Code 000585) and that SAC is in active conservation measures as a showcase forerunner in Ireland's efforts under the Nature Restoration Laws of Europe.

Details provided by the applicant include a requirement to upgrade existing access tracks, construction of new founded access roads and floating roads. The proposed total length of access roads will be 9.7 km. On the basis that the information provided by the applicant suggests that main roads will require widening to 5.5m clearance width to enable Turbine delivery trucks and their lifting cranes, it is reasonable to assume that the 9.7 km of internal access roads will result in 5.5 m width of clearance, scraping of soil and alteration of the hydrological and hydrogeological catchment. For a length of 9.7 km (9,700 m) and a width of 5.5 m it is determined that within the construction area only at least 5 hectares of catchment will be altered by heavy machinery and Excessive Loads for

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the purposes of internal track roadways (9.7Km *1000m *5.5m clearance = 53,350 m2 = 5.3 hectares). Similarly, for the proposed 11 number Turbines, having 'rotor diameters between 149 to 163 m', it is calculated that the excavated hardstanding pads built to accommodate the cranes will amount to a total area of at least 7 ha of catchment alteration (156m average rotor diameter = 78 m rotor blade requiring ground clearance for crane lift in each direction * 11 locations = 66,924 m2 = c. 7 hectares). In total, the soils and subsoils of cutover peat will be excavated and compressed by Excessive Loads for at least 12 hectares of one side of the Little Brosna River, which is hydraulically connected to the Sharavogue Bog SAC.

The proposed construction site and development area requires upgrades of two site entrances: one on the Regional Road R492, close to where the Little River Brosna traverses under that road on a narrow bridge and the second modification is associated with the narrow Local Road L1071, which also has many tributaries of the Little Brosna River traversing under it. The Local road is narrower than the narrow Regional road.

Ancillary elements, but not insignificant in terms of potential impacts, are listed by agents for the applicant as follows:

- Erection of 104 m permanent meteorological mast and including lightning pole,
- All associated excavation, earthworks and spoil management,
- Surface water drainage system and sediment control,
- Installation of new clear span watercourse or drain crossings on proposed wind farm site,
- Excavation of rock from 3 mini-quarries (named 'borrow pits' in the application) and 'restoration' of same (assumed a proposal for infill of some nature?),
- One peat deposition area,
- Wheel wash, security fencing & hut,
- Four Temporary construction compounds including site office and staff facilities,
- Installation of 33 kV medium voltage electrical and communication cabling underground between the proposed turbines and the proposed on-site substation and associated ancillary works,
- All electrical plant and infrastructure and grid ancillary services equipment,
- 110 kV electricity on-site substation and switch rooms,
- one EirGrid control building containing welfare facilities and storeroom, wastewater and rainwater holding tank,
- One Independent Power Producer (IPP) control building containing HV switch room, site offices, welfare facilities, wastewater holding tank,
- One Battery energy storage system (BESS) control building containing worker welfare facilities and equipment store, wastewater holding tank, 90 BESS container units, inverters, underground water storage tank (requiring excavation) and associated works,
- All associated infrastructure and services including site works and temporary construction signage,
- Operational stage site signage,
- All related site works and ancillary development including berms, landscaping, and soil excavation,
- Tree felling (7.2 ha) and hedgerow removal (1.1 km) to facilitate construction and operation of the proposed project,
- Hedgerow replanting (1.3 km), peatland works and some token tree planting.

3.0 Independent Literature

Independent scientific literature presents facts of particular relevance to the Inspector's evaluation of renewable energy proposals. Appendix A of this report provides just three scientific papers of note and the Inspector is asked to review their detail and significance to the issues at hand, which are not the generation of more power but of attempting to stop assaulting the natural world.

(a) Locke *et al.*, (2026) opens with *"Human activities are driving a global decline in biodiversity and are interfering with the natural processes essential for human well-being. Achieving climate and development goals is impossible without keeping nature intact. In this article, we establish the urgent need for a paradigm shift toward a "Nature Positive" (NP) future, where the health and resilience of the Earth system are recognized as the fundamental basis for human prosperity. This requires that humanity acts to halt and reverse the loss of nature by 2030." The same paper closes with "It is time for us to recognize that nature is the foundation of all human affairs. Unless we act swiftly to make the world NP by 2030, our lives are likely to become very difficult in a destabilized Anthropocene.*

- Hydro-G offers that the European Union (2024) Regulation Of The European Parliament And Of The Council on Nature Restoration and amending Regulation (EU) 2022/869 sets out on the path towards attempting to achieve restoration. However, Sharavogue Bog SAC is a prime example of what can be achieved in peatland restoration in 35 years. The Bog was in bad shape before two local farmers

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decided to try to save it in 1990. Refer to detail in Section 3.2 of this report. There is no reason why the area proposed for Wind Farm development could not be restored in the same fashion. This would have carbon sequestration benefits, Nature Restoration law benefits and true biodiversity gain.

(b) Damiens *et al.*, (2021) opens with *"Economic development is increasingly impacting biodiversity, leading to a rise in biodiversity offset policies globally that aim to compensate for biodiversity losses. Many developments generating offsets create long-term, irreversible losses of biodiversity and, therefore, require biodiversity gains from offsets to be retained over the long term to have any hope of achieving "no net loss" (NNL) of biodiversity. This raises important ecological and institutional challenges that current offset mechanisms, built for politico-economic systems with short-term policy horizons, do not sufficiently consider. We explore this issue and discuss several responses to the problem ranging from incremental changes for improving on-ground management, through to major governance shifts required to support the long-term social-ecological resilience of offset sites. We argue that without these changes, at best, NNL policies participate in temporarily reducing permanent biodiversity loss. At worst, they participate in a false promise, distracting institutions from the transformative changes needed to reverse biodiversity depletion".*

- Hydro-G offers that it has recently well covered in the Irish media that since 2022 none of the renewable energy MWs have been used to assist citizens in reducing their use of fossil fuels. No Climate Action has been achieved. Instead, Ireland is cited as a 'cautionary tale' by the UN in the context of every single MW of renewable energy been given to new industry, thereby countering Climate Objectives.

(c) Habib *et al.* (2024) in Trinity College, Dublin, research opens with *"Ireland has > 50% of the EU's ocean-raised bogs; however, degradation through land-use activities has transformed them from carbon (C) sinks to sources. Given their significant role in climate mitigation, it is essential to quantify the emissions resulting from land use degradation of these ecosystems".* They developed a mapping system "using Sentinel-2 imagery, random forest machine learning and Google Earth Engine" and their results are fascinating and are summarised as follows: *"The results revealed that agricultural grassland comprised 43% of the land use on raised bogs, followed by, forestry (21%), cutover (11%), cutaway (10%) remnant peatlands (13%), waterbodies and built-up ~ 1% each. The overall accuracy of the map was 89%. The map was used to estimate CO2 emissions for four classes constituting 85% of raised bogs: cutover, cutaway, grassland, and forestry using the IPCC wetlands supplement and literature-based emission factors, we estimated emissions at ~ 1.92 (± 1.58–2.27 Mt CO2-C-yr–1) and ~ 0.68 Mt CO2-C-yr–1 (± 0.44–0.91 Mt CO2-C-yr–1) respectively. This is the first study to spatially quantify land use and related emissions from raised bogs. The results have revealed widespread degradation of these globally rare habitats, making them net emitters of CO2. The map is vital for the conservation of these ecosystems through restoration efforts, and the methodology can also be applied to other regions with similar peatland land use issues".*

- Hydro-G offers that the science is abundantly reported and all points to the importance of restoring peatlands such as the areas around the proposed development. It is not enough anymore to greenwash renewable energy. Construction sites with large machinery that will enable turbines to rotate and change air patterns resulting in 'wake' is something that has previously been presented to An Commissiun in many other Observations relating to Wind Farm proposals.

4.0 Local Environment Characteristics

4.1 River System & **Water Framework Directive**

The proposed development site is mapped by the EPA as follows:

- Catchment 25B Lower Shannon
- Little Brosna River, EPA segment name 'LITTLE BROSNA_040', EU Code IE_SH_25L020700
- WFD Status (2019 – 2024) = **Poor Status**
- 3rd Cycle = **At Risk**
- EPA (2024) 3rd Cycle Report for Lower Shannon HA25B reports as follows:
  - Good Status Objective Not Yet met, target is 2027
  - Significant Issues = Morphological
  - Significant Pressures = Agricultural, Hydromorphology, Peat Extraction and Drainage.

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- LA Waters Programme = AFA = Area for Action. The proposed wind farm site falls within the Little Brosna Area for Action (AFA) designated under the River Basin Management Plan Cycle 2 (2018–2021) and continuing under the Water Action Plan 2024.

With respect to information presented in the EIAR and associated Appendices, information presented to Coimisiún Pleanála for their statutory obligation to complete the EIA is inconsistent and contradictory. Significant issues include, but are not limited to, the following:

- WFD status classifications are reported differently in different parts of the EIAR: for example, Table 9-5 of the Water Chapter reports Status as Moderate whereas Table 2-2 reports Poor Status. Chapter 9's narrative repeats incorrect information. The presentation of baseline environmental information precludes the use of the EIAR for Coimisiún Pleanála's EIA.

- The entire WFD impact assessment in EIAR Chapter 9, and the adequacy conclusions drawn from the SWMP (Appendix 9-4), have been developed against a Moderate baseline rather than a Poor baseline. It is stated that *"The WFD Compliance Assessment follows the structure of Chapter 9 (Hydrology and Hydrogeology) of the EIAR in so far as the three main phases of the proposed project are considered separately... Effects in this section are thus the residual effects identified in Chapter 6 (Biodiversity) and Chapter 9 (Hydrology and Hydrogeology) of the EIAR for each quality element of each WFD water body."* (Appendix 9-1 Stage 3 Compliance Assessment, p.17). Therefore, the WFD Assessment explicitly delegates its own impact and residual effects analysis back to Chapter 9, stating its conclusions are "the residual effects identified in Chapter 9." Chapter 9 used the Moderate baseline. Therefore Appendix 9-1's compliance conclusion is built entirely on Chapter 9's Moderate-baseline impact assessment. Under the Weser judgment (C-461/13, paras 67–69), the difference is legally determinative: at Moderate status, the non-deterioration obligation allows some headroom across quality elements; at Poor status, any deterioration of any single quality element — including a temporary construction-phase reduction in macroinvertebrate community — is absolutely prohibited regardless of overall class change. An impact assessment premised on the wrong baseline status cannot satisfy the Weser obligation. The Inspector cannot resolve this inconsistency by preferring Chapter 9 over Appendix 9-1 because Appendix 9-1 is the specialist document, Table 2-2 is the correct disaggregated classification. The WFD Assessment correctly identifies, as stated in EPA (2024), the 'Significant Issues' driving the declining status as Agriculture (nutrients), Peat Drainage and Extraction and drainage (hydromorphology). Peat disturbance is explicitly listed as a pressure category in this catchment — the same category generated by the proposed development. The Poor and At Risk classification is critical as it captures the notable and trending downward/ deterioration of the waterbody between monitoring cycles.

- There is no quantification of ortho-phosphate loading from proposed excavation areas of disturbed peat. Neither is the effect of the iron content of the waters in the photos of the Trial Pits (Appendix 8-1) evaluated in the context of affecting BOD in associated nutrient-impaired waterbody. Both BOD and ortho-P are Surface Water Regulation parameters with Environmental Quality Objectives. Nutrients (phosphorus, nitrogen) are one driver of Poor status in this catchment.

- The proposed wind farm site falls within the Little Brosna Area for Action (AFA) designated under the River Basin Management Plan Cycle 2 (2018–2021) and continuing under the Water Action Plan 2024. The WFD Assessment (App.9-1, p.15) describes this AFA as a designated Area for Restoration, led by LAWPRO, covering 11 waterbodies. The AFA programme exists precisely to address the pressures — nutrients, peat workings, hydromorphology — that are driving Poor status in this catchment. A development generating the exact pressure categories identified in the AFA recovery programme, in the AFA catchment, is not prima facie consistent with the programme of measures under the River Basin Management Plan (RBMP). Appendix 9-1, Section 3.3, sets out the applicable legal test correctly: whether the proposed project can support delivery of the RBMP programme of measures or has the potential to hinder it. It acknowledges the AFA designation and its objective of addressing nutrient and hydromorphological pressures in the Little Brosna_040. However, no analysis, no findings and no conclusions are progressed. The section ends after describing Sharavogue Bog's rewetting programme without addressing whether introducing a proposal to move and disturb 59,000 m^3 of peat, which is the exact pressure category the AFA restoration programme targets, is compatible with or would hinder RBMP delivery. The applicant identifies the test, acknowledges every relevant fact required to apply it, and then declines to complete the requisite test. This gap is not remedied elsewhere in the WFD Assessment. The applicant's WFD Assessment contains two legally distinct obligations that must

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not be conflated. Sections 3.1 to 3.2.5, summarised in Table 3-1, address the site-specific impact test: whether the project itself will cause deterioration in waterbody status, with the conclusion that CEMP and SWMP mitigation will ensure compliance. Section 3.3 addresses an entirely separate obligation under Article 4(1)(a)(iii) WFD: whether the project is consistent with the active programme of public measures already committed to restoring this catchment. The Table 3-1 assertion that site-level controls will prevent deterioration cannot release the obligations of the State and the published national Programme of Measures. These are different tests. The first asks whether harm will occur. The second asks whether the development is consistent with Ireland's committed RBMP restoration programme for a catchment where peat workings are a formally identified driver of failure. An Coimisiún Pleanála cannot be satisfied that the Article 4(1)(a)(iii) test has been met on the basis of an assessment that sets out that test, acknowledges the AFA designation and the peat pressure category, and contains no analysis of compatibility with the programme of measures. Coimisiún Pleanála is referred to the detail of Appendix 9-1, Sections 2.1, 3.2.5, 3.3 and Table 3-1 & Ireland's Water Action Plan 2024.

4.2 Conservation Objective Sites

The proposed development site is hydrologically connected to Sharavogue Bog SAC, which is on the other bank of the Little Brosna River. One of the Turbines (T8) is less than 80m from Sharavogue Bog. The Sharavogue Bog SAC has a remarkable story associated with its restoration. Sharavogue Bog has its own Statutory Instrument (European Union Habitats (Sharavogue Bog Special Area Of Conservation 000585) Regulations 2017) protecting it. A Google search, available to all, provides as follows when one enters the prompt "Can you do a search and find a history of how local people and a Dutch university have worked towards protecting Sharavogue Bog SAC County Offaly Ireland"?

- Sharavogue Bog SAC in County Offaly owes its survival to a famous grassroots rescue led by two local Birr farmers in the 1990s, heavily championed and supported by Dutch academics and conservationists over several decades. [1, 2, 3, 4, 5].

- **The Local Heroic Intervention (1990s)**
  In 1990, local farmers Liam Egan and Patrick Headon discovered that large-scale drainage channels were being sliced into the high bog, threatening the ecosystem with heavy machinery extraction. Facing unfavourable laws regarding neighbouring land rights, the two men and their solicitor tracked down the title-holder living in England, travelled across the Irish Sea, and jointly purchased the freehold to protect the bog from development. They later entered a management agreement with the National Parks and Wildlife Service (NPWS). [1, 2, 3]

- **The Dutch Connection**
  The late 1970s saw the start of a massive Dutch-Irish research and conservation collaboration, famously spearheaded by Dr. Matthijs Schouten of Wageningen University. [1, 2]

- **The "Battle of the Bogs":** Inspired by early conservation victories in Ireland, the Dutch Foundation for the Conservation of Irish Bogs was formed to help fund, study, and advocate for the protection of unique Irish peatlands. [1, 2]

- **Scientific Research:** Wageningen University researchers published extensive hydro-ecological studies focusing on raised bog fauna, which formed the bedrock of the data that helped Ireland secure SAC (Special Area of Conservation) designations. [1, 2, 3, 4, 5].

- **Awards:** In the 2010s, the Dutch Foundation for Conservation of Irish Bogs formally presented Patrick Headon and Liam Egan with a special Award of Merit in the Netherlands, recognizing their vital, locally driven efforts in saving Sharavogue. [1, 2, 3].

Sharavogue Bog SAC (Site Code 000585) is a Priority Habitat site. Its qualifying interests include Active Raised Bog [7110*] and Degraded Raised Bog [7120]. A restoration programme completed in 2021 installed over 400 rewetting dams, expanding Active Raised Bog from 25.8 ha toward a target of over 40 ha and restoring peat-forming conditions across the full 223 ha extent of the bog. This information is confirmed by Appendix 9-1 (p.22) of the application. The bog is in an active ecological recovery phase and water tables are higher than pre-2021 and peat-forming conditions are being re-established. The SAC is most sensitive to any hydrological disturbance. The NIS integrity assessment for Sharavogue Bog SAC in Table 6-2 does not engage with the

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restoration status of the site. A distance-based impact assessment is applied using habitat maps. The assessment submitted with the application does not assess whether any change to the peat water table in the lagg zone, where the interface vegetation already indicates active upwelling, could arrest or reverse the post-2021 rewetting trajectory. The public investment in the restoration programme (confirmed in Appendix 9-1, p.22) and the ecological recovery trajectory of the site are relevant to whether any residual risk, however small, is acceptable under Article 6(3). Under Case C-461/17 (Holohan v An Bord Pleanála, 2018, para.44), an Appropriate Assessment must contain complete, precise and definitive findings and conclusions free of lacunae. The 'Source–Pathway–Receptor' chain does exist and the information before An Commissiun is contradictory.

In pre-planning consultation meetings the Inspector explicitly required the Applicant to consider the full hydrological corridor and any or all impacts therein. The Little Brosna and its tributaries are hydrologically connected to six European sites protected under the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC). The NIS (Section 6.1, p.117) acknowledges that, in the absence of mitigation, indirect adverse effects on all six sites from water quality degradation cannot be excluded. The sites are listed in the Tobin Reports accompanying this application for consideration [AA Screening & NIS Section 6.1, p.117; NIS Table 5-1, p.87; WFD Assessment App.9-1, p.22], as follows:

- Sharavogue Bog SAC (Site Code 000585) — a Priority Habitat raised bog, boundary 10 metres from the wind farm site, currently in active restoration following installation of over 400 rewetting dams in 2021.
- River Shannon Callows SAC.
- River Little Brosna Callows SPA (004086) — designated for nationally important populations of wintering Whooper Swan, Bewick's Swan and Golden Plover; Middle Shannon Callows SPA (004096); Dovegrove Callows SPA; Lough Derg (Shannon) SPA.

The NIS (Section 6.1, p.117 onwards) acknowledges that the proposed project, in the absence of mitigation, could result in indirect adverse effects on all six of these sites due to degradation in water quality.

6

4.3 Flooding and Proposed Development in Flood Zones A & B

The applicant's Flood Risk Assessment (FRA, Appendix 9-3) uses CFRAM Study modelling to establish that four of the eleven proposed turbines are located within Flood Zone A or B under existing conditions. The inundation data for each at-risk turbine, as recorded in the FRA, is as follows:

- **T1**: approximately 25% of hardstand inundated at 1% AEP (1-in-100yr); approximately 35% at 0.1% AEP (1-in-1000yr). Access road sections within flood envelope.
- **T2**: approximately 5% inundated at 1% AEP; approximately 25% at 0.1% AEP. Recorded peat depth 0.3–1.2m. Foundation excavation to 4.5m bgl required.
- **T8**: approximately 5% inundated at 1% AEP. Peat depth 2.1m. Located 50m west of the Little Brosna River and the Sharavogue Bog SAC boundary. Risk Register scores T8 as Distance to watercourse <10m (score 3×3=9, PSRA App.8-2).
- **T9 — most critical**: approximately 50% of hardstand inundated at 1% AEP. Peat depth 3.2m — deepest on the site. Highest flood exposure, deepest peat, closest turbine to the SAC boundary. Risk Register: Distance to watercourse <10m, evidence of surface water flow at hardstand area (PSRA App.8-2).

The Mid-Range Future Scenario (MRFS, +20% peak flows for climate change) are presented as follows:

Turbine	1% AEP (1-in-100yr)	0.1% AEP (1-in-1000yr)
T1	**40%**	slightly larger
T2	**25%**	slightly larger
T8	**15%**	slightly larger
T9	**75%**	slightly larger

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The access tracks are also inundated, in particular the site access track from R492 along the river Brosna is fully submerged and unavailable in a Medium Range Future Scenario. (Reference: FRA App.9-3, pp.11-12; EIAR Ch.8, p.8-22; PSRA App.8-2 Risk Register).

Under the PSFRM Guidelines (OPW/DOEHLG, 2009), wind farms are classified as 'essential infrastructure', appropriate only in Flood Zone C. The applicant acknowledges that the Justification Test is required for T1, T2, T8 and T9. The Applicant clearly sets out the criteria required to satisfy the Justification test (see below) but attempts to satisfy it by simply proposing raised platform levels and an emergency evacuation protocol. To meet the Justification Test the applicant must meet the criteria provided in Box 5.1 of DoEHLG & OPW (2009) Flooding Guidelines, as shown here:

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

It is noted that the proposed development has NOT BEEN ZONED or designated for wind energy infrastructure. The Supreme Court in Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5 was explicit that developments must not be assessed in isolation from their broader county and regional context. Applying that principle here: the Climate action this development is said to serve can be met —is being met — in lower-risk, designated locations within Offaly and across the Eastern Region. The proposal for development of Turbines at Ballincor is not consistent with Flooding Guidance, EIA Regulations given that it is hydraulically connected to an active Natura 2000 restoration catchment in a Poor Status river catchment.

The FRA contains an unresolved material inconsistency in the description of the proposed flood compensation storage. Section 4.4 (p.21) states that the compensation storage "has an area of approximately 14,000m²" and that, to compensate for the approximate 3,000m³ of floodplain removed, this area "should have a depth of approximately 1m." Section 4.5 (Justification Test) states that "an additional 14,000m³ of compensation storage will be provided." Furthermore, the FRA's flood compensation calculation uses both 14,000 m² and 14,000 m³ for the same figure in different sections. This is an internal inconsistency that renders the compensation analysis unreliable.

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In the matter of proposed construction in Flood Zones A & B, the following is brought to attention:

- The access tracks serving Turbines 8 and 9 run along the eastern boundary of the site, parallel to and within approximately 50–100 metres of the Little Brosna River. This corridor is within Flood Zone A/B as mapped by OPW CFRAM. The applicant acknowledges that T8 and T9 are liable to fluvial flooding in a 1-in-100 year event and that T9 hardstand is 50% inundated under that scenario (Appendix 9-3, p.11–12). The information is presented in a fashion that implies that An Commissiun should accept that these access tracks can be designed, built and operated in a way that protects a receiving waterbody already classified as Poor Status (2019-2024) and 3rd Cycle 'At Risk' of failing WFD Good Status objectives by 2027 (EIAR Chapter 9, Table 4-1). The critical question is whether the Site Investigation information submitted supports a conclusion that the proposal is feasible. The facts of the case are that the Site Investigation information submitted DOES NOT support a conclusion that the proposal is feasible.
- The Site Investigation information submitted provides as follows:
  - **TP08** (GL 44.38m OD, 30 July 2024, Appendix 8-1A): Peat to 2.1m; soft peaty silt to 3.1m; soft sandy silt to 3.70m. Groundwater at 3.20m. Trial pit terminated due to sidewall collapse. Competent stratum not reached.
  - **TP09** (GL 45.37m OD, 30 July 2024, Appendix 8-1A): Peat to 2.7m; soft peaty silt to 3.70m. Trial pit terminated at 3.70m due to sidewall collapse. Competent stratum not reached.
  - **BH02** (GL 45.34m OD, 18–19 September 2024, Appendix 8-1C): 2.3m of peat, then a continuous column of very soft silt and clay from 2.3m to 12.80m depth. Every Standard Penetration Test from 2.30m to 12.80m returned SPT N=0 — meaning the sampler penetrated under its own weight with zero hammer blows. The first material showing any measurable resistance (SPT N=7, still classified very soft) appeared at 12.80m. Dense gravel did not appear until 15.80–18.80m depth.

The project's Peat Stability Risk Assessment (PSRA) summarises results in row 9 of the stability calculations Table (Appendix 8-2) in stating "3.2m PEAT in probes, >3.7m peaty SILT in TP09, 12m very soft material in BH02." The undrained shear strength assigned to T9 ground is 22 kPa, which is the lowest on the entire site (Appendix 8-2, Table 2). The stability factor of safety under construction surcharge (ODF Case 2) is 3.4, which is the second lowest on the site, after T4.

The agents for the applicant's design response to ground conditions along access tracks is contained in Appendix 8-3 (p.9-13) and the CEMP (Appendix 2-3). The key statements are:

- "Founded tracks are excavated down to and constructed up from a competent geological stratum" (Appendix 8-3, p.9).
- "Where peat is deeper than 1m, floating roads will be used" (Appendix 8-3, p.12).

Hydro-G advises that these are generic methodology statements. They describe a binary choice — excavate to competent stratum, or float over peat. They do not address the specific ground conditions encountered at TP08, TP09 and BH02, where:

- Peat extends to 2.1-2.7m;
- Below the peat is not competent stratum but soft organic silt;
- The organic silt itself extends to at least 12m (BH02);
- No competent stratum was reached in any investigation point in this zone;
- Sidewall collapse prevented the trial pits from going deeper.
- The floating track methodology (Appendix 8-3, Section 2.4.1) requires placing geogrid directly on the peat surface. It does not address the bearing capacity of the peat when the material beneath it is also very soft. The PSRA stability calculation for T9 (Appendix 8-2, Table 2)

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records an undrained shear strength of just 22 kPa — the lowest value on the entire site — and 12.8m of soft material in the combined depth column. The ODF (Overturning Design Factor) for T9 under construction surcharge is only 3.4, the second lowest on the site after T4. These values relate to the turbine foundation, but they characterise the same ground on which the access track will be built.

- Nowhere in the submitted documents is it detailed how a track will be designed and built in a zone where the founding material below the peat is itself 12 metres of very soft organic silt. The methodology statement assumes that either competent stratum exists (for founded tracks) or that peat provides adequate support for a floating track (which requires that the peat has some bearing capacity). Neither assumption is validated by the site investigation data for the T8/T9 river corridor.

- The PSRA concludes that more investigation is needed before submission (Appendix 8-2, Section 7.1) "detailed design must include "specification of additional site investigations inclusive of in situ testing and laboratory testing in specific risk areas on the site" — an explicit acknowledgement that the investigation submitted with this application is insufficient to design the works in these areas.

- The Surface Water Management Plan similarly states it is "a Planning Stage document and will be subject to further revision following Planning Permission and the Detailed Design Stage" (Appendix 9-4, p.1). The applicant is asking the planning authority to grant permission on documents that their own team acknowledges are incomplete and require revision. This point warrants emphasis as the application has been submitted with the acknowledged gap in place. The planning authority is being asked to grant permission before that additional investigation has been done.

4.4 GSI mapped Soils & Subsoils of the Proposed Development Area & Sharavogue Bog SAC

Of particular note is GSI mapping of the subsoils of the area. Subsoils are referred to as 'Quaternary Deposits' by the GSI. Subsoils are the material underneath the top layer of soil on the earth, which is called Topsoil and is usually only a few inches deep. Subsoils are usually the primary load bearing material of the subsurface, unless bedrock drilling is proposed for foundations. In the case of internal access roads to a development of this nature and the crane hardstandings, the subsoil is the load bearing component.

GSI mapping for subsoils on both sides of the Little Brosna River are presented as Plate A: On the west side of the River the general centre of the proposed application area is shown by Hydro-G with a Red Triangle and on the east side of the river the Sharavogue Bog is shown with a Checkered Flag.

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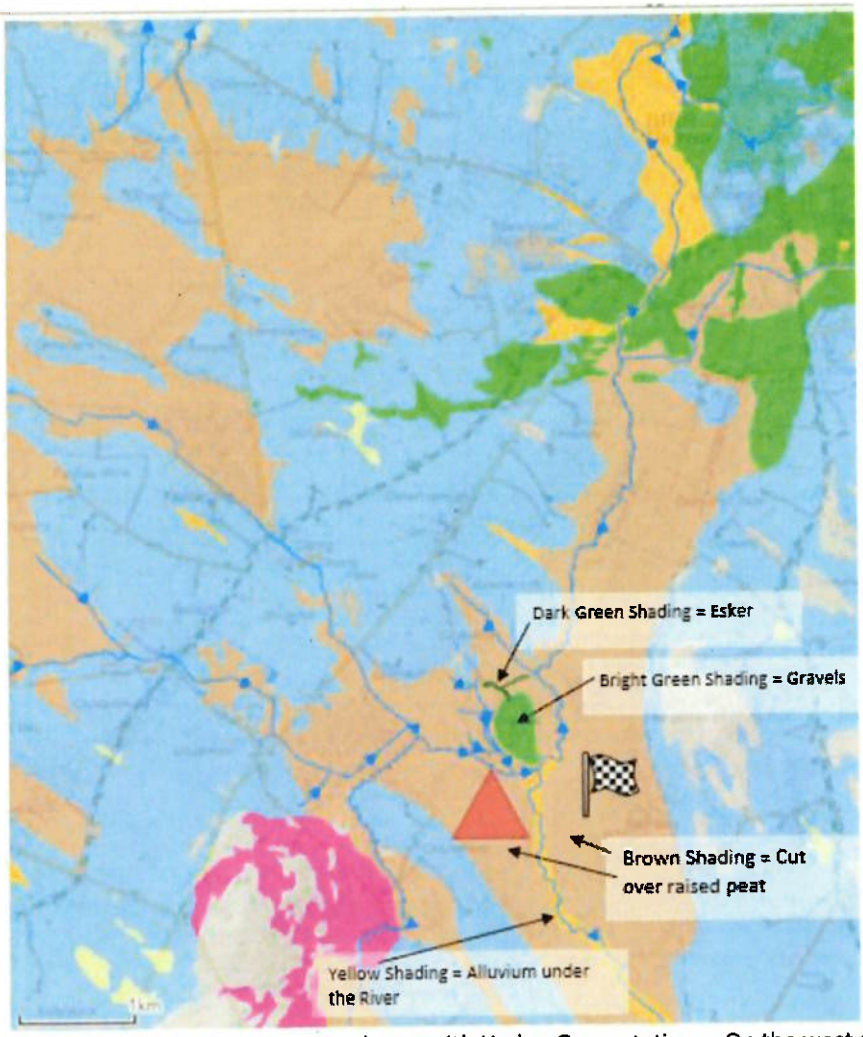


Plate A GSI Subsoil Mapping for the general area with Hydro-G annotations : On the west side of the Little Brosna River the general centre of the proposed application area is shown by Hydro-G with a Red Triangle and on the east side of the river the Sharavogue Bog is shown with a Checkered Flag.

With specific reference to GSI mapped information for subsoils either side of the Little Brosna River, it is observed that the same subsoil exists on both sides of the river. The significance of this information is that the river hydrologically links similar subsurface areas. Also of particular hydrogeological significance is the small pocket of GSI mapped area of Gravels and Esker that is essentially within the proposed development area, although circled as excluded by the applicant's Red Line boundary. We know that large volumes of groundwater can emit from a Peat > Gravels boundary situation and the Esker provides another hydrological and undocumented risk and unknown in the presentation of information for this site. It is interesting to note that the Gravels and Esker have been excluded from the proposed development area's Red Line boundary but the significance of the area cannot be excluded when it is proposed to add Excessive Loads to the boundary of the Peat > Gravel area. It is understood by hydrogeologists that although the areal extent of the gravels is small, the sands and gravels provide a window in the subsoil through which it is easier for groundwater to emerge from the underlying bedrock. The mapped ending of the Esker is coincident with the commencement of a surface water system. This could be a groundwater spring.

The applicant's presentation of subsoils and the Red Line application area is shown on their Figure 8-4 Subsoils Map of the Land, Soils & Geology Chapter, as reproduced here for ease of reference.

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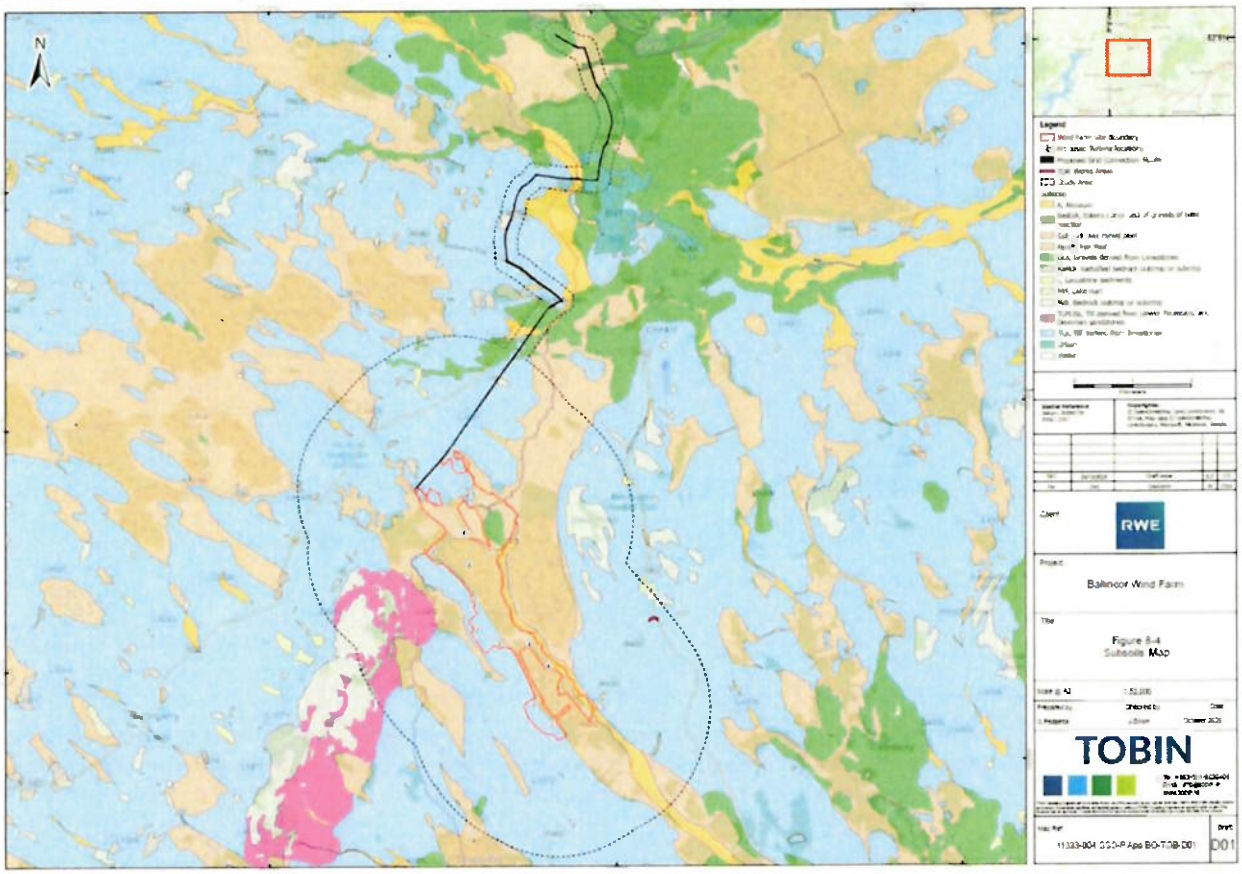


Plate B Applicant's Figure 8-4 Subsoils Map.

5.0 Unassessed Construction Impacts Arising From Soil Compaction on the edge of Peat and Flood Zones

The proposal to bring large cranes to work the edges of this cut over peatland area and OPW mapped flood zone presents real risks of increasing the already frequent flood experiences. An Coimisiún Pleanála is requested to compare and contrast the baseline information used to inform the 'no risk' conclusion of the applicant's agents with this independent assessment commissioned by residents of the area. The actual flood experience to date and the frequency of flooding cannot be mitigated by proposing additional heavy load construction at this location. The Desk Study for Flood Risk Analysis (Tobin, 2026) may report OPW mapping for the **current** situation. However the **future** flood risks have not been presented. These are real risks resulting from applying Abnormal and Excessive Loads to wet peatland soil and thereby destroying what small pore space there may have been prior to the construction effort. The Flood Risk Assessment HAS NOT simulated the compaction along proposed internal haul routes and construction pads.

Natural, pre-development, pore space allows some waters to be absorbed in the soils of a flood zone, which this development area is. When abnormal loads are applied to large areas of the flood plain, for the purposes of creating access tracks, hardstanding for cranes and turbine component parts, the result is that the natural, pre-development, characteristic of the soils and its inherent porosity and runoff characteristic will change. This has neither been acknowledged nor evaluated by the agents for the applicant. This presents increased risk of flooding to the rivers and roads of the area.

Cranes are required to lift the masts and turbine blades. Counter weights are required to stabilise the cranes. The cranes and counter weights require enabling roads and land surfaces with the ability to carry 750 tonne weight of a crane itself plus the likely 200 tonne counter weight and the chain and hoist infrastructure. The pressure of the weight of the crane and counter weight results in destruction of the permeability and pore space of subsoils in the proposed construction areas, which are lands that are the catchment area of a river that floods in this particular river bank setting.

The potential for increased flood risk arising from the change in soil and subsoil structure is not acknowledged by those employed by renewable energy investment firms. An Coimisiún Pleanála is requested to use their own

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resources, or AI, to fact check potential mass loadings arising from the enabling works that would be required to erect turbines in a flood plain wetland such as at the proposed Wind Farm site. Hydro-G's forays into this realm of AI and civil engineering infrastructure suggest, as follows:

a. Crane weights (ballast/counterweights) and base loadings required for erecting a 3-blade wind turbine with **hub heights in the 98.5 and 105 m range and 149 to 163 m rotor diameter** ranges in GSI mapped cutover peats and adjacent to a flood zone is complex and requires a full engineering lift study.

b. When erecting a large wind turbine in a challenging site (wetland, flood-zone) you must account for:
   - The crane capacity (lift weight + reach) and corresponding ballast/counterweight.
   - Ground support / crane hardstanding and pad design (especially for soft or wet ground).
   - Water/flood risk, settlement, high water table, reduced bearing capacity.
   - Wind loads during erection (significant for tall hub height & large rotor).
   - Transport, crane mobilisation, boom length, luffing or fixed jib, outrigger spread.
   - Safety factors, crane manufacturer load charts, method statements, lifting plans.

c. Main Lifting cranes can have a lifting capacity of up to 850 tonnes and a tail crane up to 500 tonnes.

d. The ground pressure under a crane lifting a tower up to 100m, "Every square metre under the heavy crawler chains must be able to withstand a ground pressure of 26 tonnes." theconstructtionindex.co.uk

e. For each of the 11 turbines proposed for the Ballincor Wind Farm a crane of higher higher-capacity range would be required (up to 1000tonne) class cranes depending on component weights and reach).

f. In a Flood Zone, additional measures are required:
   - Ground bearing capacity will be lower, so you may need piled support, mats, heavier crane pad substructure, larger footprint.
   - Hardstanding for the crane likely needs thicker crushed stone, possibly geotextile, maybe timber/steel mats to distribute loads.
   - The crane's outriggers and tracks (if crawler) will impose high ground pressure; you must check ground pressure limits of the site.
   - Flood risk means you must ensure crane set-up does not risk stability if water rises or softens ground.
   - The lift plan must assume possible higher wind/gust profiles due to exposure in open wetland.

The facts of how crane and ballast weights will impact the drainage systems are not assessed and the omissions presents a health hazard and risk to the public and the WFD's Objectives for waterbodies in the catchment. The inspector and An Commissiun are requested to investigate and provide detail in their reporting and discussions/voting on this matter.

With respect to the likely loss of flood plain in the proposed Ballinlee Turbine Farm, because the effects have been not considered **in respect of the LOADS placed upon the construction pads and access haul routes,** there is no scientific evidence or mathematical detail to support the conclusions in relation to flood or loss of flood plain. As is the case with most renewable energy projects, the FRA is SITE SPECIFIC in the sense **that it considers risk posed to their own infrastructure and they do not categorically assess flood risk to the Conservation Objective Sharavogue SAC site adjacent.**

6.0 Ireland's History of Impact Assessment Failure

Meenbog Wind Farm is just one example of the significant damage that can result from EIAR assertions that are not grounded in logic. The Meenbog Wind Farm's EIAR concluded 'No Potential for Impact' but this was proven incorrect when the land did slide in November 2020 and there was both water impact and habitat destruction requiring Donegal County Council to secure an order prohibiting further works at Meenbog wind farm (Irish Times, April 2024; Donegal Daily, 12th April, 2024). Photographs of the scale of the real risk again presented here for the lands bounded the Little Brosna River and connected to the Sharavogue Bog SAC. There are comparative areas of peat, forestry and Conservation Objective Site's impact potential.

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Plate C Previously concluded 'No Potential for Impact' Meenbog Wind Farm site, which failed in in 2020. (Photo credit Donegal Daily 12th April 2024).



Plate D Previously concluded 'No Potential for Impact' Meenbog Wind Farm site, which failed in in 2020. (photo credit Donegal Live 4th January 2024).

With specific reference to the evidence of peat failure and watercourse impact shown in Plate C and Plate D, the assessments completed and reported for that Meenbog Wind Farm are available for review at https://www.pleanala.ie/en-ie/case/300460 and comparison with the information before them now. In 2018 the Board accepted a conclusion in the EIAR (2017)'s Lands, Soils and Geology Chapter that ***"No significant impacts on the soil and geology of the site of proposed development will occur."*** **and qualifications that** ***"A peat stability assessment undertaken for the site shows that the risk of peat failure is designated trivial and tolerable and that the site has an acceptable margin of safety."*** Yet, there was a failure. In the Board's 'Reasons and Considerations'

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supporting a Grant of Permission for Meenbog Windfarm the opening statement is that *"Having regard to: (a) the national targets for renewable energy contribution of 40% gross electricity consumption by 2020...."*. However, Mr. Justice Holland is reported by the Irish Times (11th April, 2024) as ruling that *"the integrity of the planning and environmental law systems "weighs heaviest" in this case of all the factors in paly and favour granting the injunction. He did not see that the "undoubted public interest in wind energy" weighs "much at all" in favour of exercising his discretion against making the order.* [Hydro-G provides clarification that Mr. Justice Holland has restrained the developers from finishing their "largely complete" 19-turbine project.] Mr Justice Holland said the developers submitted a report of a civil and environmental engineering expert to the EPA estimating that in the November 2020 incident about 86,240m³ of peat slid, of which about 65,740m³ entered a river and ended up on nearby European-protected sites, "causing significant environmental damage". Hydro-G offers that the Meenbog Windfarm slide of 86,240m³ of peat equates to destroying a carbon sequestration asset equivalent to 14.8 million kgs of CO2 emissions. [Source: National Trust for Scotland, 2024, provides that 172 kg of CO2eq is contained in each m3 of peat].

It is usual for the EIARs for Wind Turbine plantations to state that IF the project is constructed and operated in accordance with the design, best practice and mitigation that is described within the application's documents, then significant individual or cumulative effects on ecology are not anticipated at the international, national, county, or local scales or on any of the identified Key Environmental Receptors. **Hydro-G** offers that that Conclusion is at odds with recent experiences in Meenbog and also contrary to the most recent Case Law in Ireland stating that one cannot rely on Best Construction Practices and mitigation to protect Conservation Sites.

7.0 Maladaptation

Maladaptation refers to actions or strategies that, while intended to address the challenges posed by climate change, inadvertently exacerbate the problem, or create new vulnerabilities. This can occur when adaptation measures are poorly planned, misaligned with the local conditions, or fail to account for long- term consequences. The Ireland National Adaptation Framework – National Adaptation Plan 2025 (NAP 2025) published by United Nations Framework Convention on Climate Change (UNFCCC) requires, as follows:

- p.42, "Avoiding Maladaptation: Ensure that adaptation actions do not inadvertently create new vulnerabilities or exacerbate existing ones."
- "Consideration of Climate Mitigation: Ensure that climate mitigation outcomes are considered alongside adaptation planning where appropriate."
- p. 47, As part of its annual review, the CCAC also considers developments made in terms of supporting a just transition in terms of both mitigation and adaptation – noting in its 2023 review the need to accelerate the integration of the just transition principles across all mitigation and adaptation policy development and implementation".

In the case of the proposed Ballincor Wind Farm, Cut over peatland that is already in conservation adjoins the proposed development area (namely Sharavogue Bog SAC), peat excavation is proposed in a flood zone that will exacerbate losses of Carbon Sequestration, tree felling and hedgerow destruction is proposed resulting in Biodiversity loss, widening of roads, construction of roads and 90 BESS containers shipped to and stored on site. It is difficult to understand why one would propose destroying lands that could be transformed in the exact same way as Sharavogue Bog SAC, whose conservation journey began in our lifetime.

Whilst there are biodiversity 'compensation' measures presented to An Commissiun Pleanala, this concept is assessed by academics (Damiens et al., 2021) as ***"At worst, current approaches to offsetting participate in a false promise, which distracts institutional efforts from much needed transformative change centred on renouncing impactful projects, considering a greater range of alternatives, and a greater emphasis on avoidance in the mitigation hierarchy."***

8.0 Impossible EIA

With specific reference to An Coimisiún Pleanála's statutory obligation to complete the EIA, it is hereby advised that there are errors or omissions in the EIAR relating to information in the Water Chapter, the Lands, Soils & Geology Chapter, the Flood Risk Assessment and the AA Screening & NIS. It is respectfully requested that An Coimisiún Pleanála consider whether the Obligations of the EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU, can be met with the information before us. Substantial lacunae include, but are not limited to, the following:

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(1) Overall, not all Environmental Assessments should be written up as EIARs and submitted to competent authorities. The site is simply not suitable on many levels: inappropriate roads, flooding, WFD Poor Status & At Risk issues related to peat drainage when more effect on peat is proposed, Conservation Objective site proximity and hydraulic connectivity, not zoned and many other reasons.

(2) On a hydrological basis, the proposed development site **is** hydrologically connected to the Sharavogue Bog SAC. The proposed development site is the same type of subsoil to the Sharavogue Bog SAC and the Little Brosna River is like a spine, or 'back bone' supporting both the SAC and the proposed development site.

(3) There is a hydrologically and hydrogeologically significant pocket or gravels and an Esker within the lands proposed for development, although a circle has been drawn to exclude it from the Red Line application area. When one has a situation where GSI mapping for 'cut over peat' is on both sides of a river, underlain by Alluvium, and there is a random pocket of gravels with a tail-spur of an Esker emerging from those gravels, one MUST assess the significance with respect to negative impact from Excessive Load construction on the surrounding lands. Does this Gravel hold a key to a connection to the Sharavogue Bog SAC? What is the function of the Esker? How will compressive 'Excessive Load' weights associated with Turbine sites T1, T2, T3 and T4 interact with the Gravels and Eskers excluded from the applicant's 'Red Line' development area? It is not only about 'loss of storage'. It is about weights and the compressive forces associated with Cranes lifting Turbine masts, in 3 pieces for each mast, and 3 rotor blades for each Turbine.

(4) The lands are 'Benefiting Lands' as per the Arterial Drainage Act and An Coimisiún Pleanála are asked to consult directly with the OPW in this regard.

(5) Four of the proposed 11 Turbine locations are in lands that do flood now (Turbines 1, 2, 8 and 9). The development has all classes of Flood Zones A, B, C within it. An Coimisiún Pleanála are asked to specifically address the issue of maladaptation in their reporting of consideration of the case.

9.0 Reasons for Refusal

Some but not all of the Reasons for Refusal directly related to water, flooding and the linked Conservation Objective site are outlined, as follows

a. Refusal is warranted on the basis that there is too much understatement of Risk with respect to the Impact Assessment and the direct hydrological and hydrogeological link with the Sharavogue SAC is not correctly acknowledged.

b. With respect to the obligations on the State with respect to the WFD, the EPA reports Poor Status (2019-2024) of the Little Brosna River (Little Brosna_040) bounding the development site and 3rd Cycle 'At Risk' (EPA, 2024). One of the 'Significant Pressures reported in EPA (2024) 3rd Cycle report for the Hydrometric Area is 'Peat Extraction and Drainage'. Given that the proposed development proposes more of this pressure, an Article 4 determination of no potential to impede the Objectives of the WFD cannot be concluded. The applicant has expressly waived both derogation pathways that would otherwise provide flexibility in this assessment. The WFD Assessment (Appendix 9-1, p.28) states that "the proposed project is compliant with WFD and therefore does not require assessment under Article 4.7"; the NIS (p.4) states that "the project proponent places no reliance upon" Article 6(4) IROPI. Full, unqualified compliance with Article 4(1)(a) WFD and Article 6(3) of the Habitats Directive must therefore be demonstrated on the basis of the application as submitted. EU case law requires that NO REASONABLE scientific doubt applies, it requires pre-consent certainty. The detail in the EIAR and associated Appendices has shown how that is not possible. Construction of T1–T9 creates a real and unquantified risk of further deterioration, which is legally impermissible under Directive 2000/60/EC and CJEU Case C-461/13 (Weser).

c. Refusal is warranted on the grounds that the applicant has not correctly applied the principles of the requisite 'Consideration of Alternatives' requirement of the EIA Directive. For example, Section 4.2 of the Flood Risk Assessment states that "1. The site has not been zoned as part of the Offaly or Tipperary County Development Plans (2021 – 2027 and 2022-2028 respectively), however a comprehensive site selection process considering land ownership and environmental limitations identified this area as the most suitable location for the wind farm". Hydro-G advises that it is interesting to note that the

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language used is careful to state that "**a comprehensive site selection process considering land ownership and environmental limitations identified this area as the most suitable location for the wind farm".** It is not stated that the site IS SUITABLE. It is stated that on the basis of who owned land and who would engage with the developer and 'environmental limitations' identified the area as THE MOST SUITABLE. This means **relatively**, *i.e.*, the site is relatively most suitable. But by whose measure? Cut over peatland that is already in conservation adjoins the proposed development area (namely Sharavogue Bog SAC), peat excavation is proposed in a flood zone that will exacerbate losses of Carbon Sequestration, tree felling and hedgerow destruction is proposed resulting in Biodiversity loss, widening of roads, construction of roads and 90 BESS containers shipped to and stored on site. It is difficult to understand why one would propose destroying lands that could be transformed in the exact same way as Sharavogue Bog SAC, whose conservation journey began in 1990, which is c. 35 years ago. Therefore, for the same lifetime proposed for this private energy endeavour, a restoration project could be successful with better carbon gains.

d. Flooding: Turbines T1, T2, T8 and T9 are located in Flood Zone A/B. T9's hardstand is 50% inundated in a 1-in-100 year event. This is acknowledged in the Flood Risk Assessment for the applicant. The same flood events that inundate these structures will overwhelm the sediment and pollution control measures upon which the entire WFD compliance case rests. Similarly, the NIS conclusion of no adverse effect on the integrity of downstream European sites (Shannon Callows SAC, Little Brosna Callows SPA, Dovegrove Callows SPA, Middle Shannon Callows SPA, Lough Derg SPA) rests entirely on mitigation measures that cannot function during the flood events already shown to affect the site.

e. Site Investigation information presented does not support the access roads and Turbine locations proposed.

f. No amount of 'mitigation' text can outweigh the concept of 'avoidance of risk' which is a key tenet of the Construction Regulations. The Sharavogue Bog SAC shares the same Little River Brosna 'back bone' as the lands proposed for the private energy enterprise. The hydrological link is unquestionable. The Risks are too high and the Mitigation Measures indefensible. There are unacceptable uncertainties with respect to residual risks and land stability, risks of failure and the potential for the proposed Wind Farm's enabling works to interfere with water dependent Designated Sites with Conservation Objectives.

An Coimisiún Pleanála is requested to refuse permission to the proposed development on many grounds, some detailed by other experts for the local residents and some presented by experts commissioned by local residents in their new endeavour of 'citizen science'.

Signed: _____ Date: 24th June 2026

Dr. Pamela Bartley BEng, MSc, PhD

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An Coimisiún Pleanála - Case reference: PAX92.324279

Appendix A

Scientific Publications Relevant to the Assessment

(a) Locke *et al.*, (2026) opens with *"Human activities are driving a global decline in biodiversity and are interfering with the natural processes essential for human well-being. Achieving climate and development goals is impossible without keeping nature intact. In this article, we establish the urgent need for a paradigm shift toward a "Nature Positive" (NP) future, where the health and resilience of the Earth system are recognized as the fundamental basis for human prosperity. This requires that humanity acts to halt and reverse the loss of nature by 2030." The same paper closes with "It is time for us to recognize that nature is the foundation of all human affairs. Unless we act swiftly to make the world NP by 2030, our lives are likely to become very difficult in a destabilized Anthropocene.*

- Hydro-G offers that the European Union (2024) Regulation Of The European Parliament And Of The Council on Nature Restoration and amending Regulation (EU) 2022/869 sets out on the path towards attempting to achieve restoration.

(b) Damiens *et al.*, (2021) opens with *"Economic development is increasingly impacting biodiversity, leading to a rise in biodiversity offset policies globally that aim to compensate for biodiversity losses. Many developments generating offsets create long-term, irreversible losses of biodiversity and, therefore, require biodiversity gains from offsets to be retained over the long term to have any hope of achieving "no net loss" (NNL) of biodiversity. This raises important ecological and institutional challenges that current offset mechanisms, built for politico-economic systems with short-term policy horizons, do not sufficiently consider. We explore this issue and discuss several responses to the problem ranging from incremental changes for improving on-ground management, through to major governance shifts required to support the long-term social-ecological resilience of offset sites. We argue that without these changes, at best, NNL policies participate in temporarily reducing permanent biodiversity loss. At worst, they participate in a false promise, distracting institutions from the transformative changes needed to reverse biodiversity depletion".*

- Hydro-G offers that it has recently well covered in the Irish media that since 2022 none of the renewable energy MWs have been used to assist citizens in reducing their use of fossil fuels. No Climate Action has been achieved. Instead, Ireland is cited as a 'cautionary tale' by the UN in the context of every single MW of renewable energy been given to new industry, thereby countering Climate Objectives.

(c) Habib *et al.* (2024) in Trinity College, Dublin, research opens with *"Ireland has > 50% of the EU's ocean-raised bogs; however, degradation through land-use activities has transformed them from carbon (C) sinks to sources. Given their significant role in climate mitigation, it is essential to quantify the emissions resulting from land use degradation of these ecosystems".* They developed a mapping system "using Sentinel-2 imagery, random forest machine learning and Google Earth Engine" and their results are fascinating and are summarised as follows: *"The results revealed that agricultural grassland comprised 43% of the land use on raised bogs, followed by, forestry (21%), cutover (11%), cutaway (10%) remnant peatlands (13%), waterbodies and built-up ~ 1% each. The overall accuracy of the map was 89%. The map was used to estimate CO2 emissions for four classes constituting 85% of raised bogs: cutover, cutaway, grassland, and forestry using the IPCC wetlands supplement and literature-based emission factors, we estimated emissions at ~ 1.92 (± 1.58–2.27 Mt CO2-C-yr–1) and ~ 0.68 Mt CO2-C-yr–1 (± 0.44–0.91 Mt CO2-C-yr–1) respectively. This is the first study to spatially quantify land use and related emissions from raised bogs. The results have revealed widespread degradation of these globally rare habitats, making them net emitters of CO2. The map is vital for the conservation of these ecosystems through restoration efforts, and the methodology can also be applied to other regions with similar peatland land use issues".*

- Hydro-G offers that the science is abundantly reported and all points to the importance of restoring peatlands such as the areas around the proposed development. It is not enough anymore to greenwash renewable energy. Construction sites with large machinery that will enable turbines to rotate and change air patterns resulting in 'wake' is something that has previously been presented to An Commissiun in many other Observations relating to Wind Farm proposals.

An Coimisiún Pleanála - Case reference: PAX92.324279

APPENDIX 4-1: Dawn and Dusk Survey Coverage: Analysis and Assessment

The TOBIN winter 2025/26 survey was conducted to a materially higher standard than the preceding Ecology Ireland surveys. It represents ONE SINGLE WINTER SEASON. The eight Ecology Ireland seasons (2020–2024) — on which the overwhelming majority of CRM data and analysis relies — were conducted with surveys concentrated in the middle of the day, with limited or no dawn/dusk coverage and no nocturnal monitoring.

This appendix analyses the temporal distribution of survey effort across all nine seasons of vantage point surveys conducted for the Ballincor Wind Farm Environmental Impact Assessment Report. Its purpose is to demonstrate, from the developer's own data, that the survey programme systematically failed to record bird activity during the dawn and dusk periods — the periods most ecologically significant for the qualifying interest species of the River Little Brosna Callows SPA and the species recorded in the Zone of Influence.

The analysis draws directly from CRM Tables 3.8 and 3.9 (Diel distribution of survey effort, summer and winter respectively) and from the CRM's own narrative at Section 3.4.3. All figures cited are the developer's own. The CRM itself states: 'The Ecology Ireland survey effort was heavily concentrated in the middle of the day.' This appendix quantifies that statement and sets out its consequences for the assessment of disturbance, displacement and collision mortality.

The analysis in this appendix below establishes six conclusions from the developer's own data, carried forward into Section 2 of the main objection report. All are audited and verified in the tables that follow.

1. The dominant dataset is structurally deficient at dawn and dusk.

Eight Ecology Ireland seasons provide zero survey coverage at sunrise in summer, zero coverage at sunset in summer, and only 16 minutes at sunset across four winter seasons. These are not marginal shortfalls — they are structural absences that mean the CRM has no empirical foundation for assessing disturbance, displacement or collision mortality during the periods of highest crepuscular bird activity.

2. The TOBIN data confirms what the EI data missed.

TOBIN's single winter season recorded higher recording rates at dusk and pre-dawn that the EI dataset could not detect. The CRM notes elevated Mute Swan and Whooper Swan recording rates at dawn in the EI winter data — but acknowledges insufficient survey effort to calculate recording rates for the evening period. TOBIN fills this gap for one season only. Eight seasons remain uncorrected.

3. The TOBIN season cannot retrospectively validate the EI dataset.

One winter of improved methodology cannot be used to characterise the crepuscular activity patterns for breeding seasons, non-winter seasons, or any of the eight seasons in which the deficient methodology was applied. The CRM outputs for those seasons remain founded on a dataset that missed the most ecologically significant periods of daily activity for the priority species.

4. The nocturnal activity rankings in the CRM have no empirical foundation in the dominant dataset.

The CRM applies nocturnal/crepuscular activity corrections for curlew, golden plover, lapwing, black-tailed godwit, wigeon, teal and mallard. These corrections are based on literature values, not site survey data, because the EI surveys did not cover the periods in which nocturnal and crepuscular activity would have been recorded. The corrections therefore introduce assumed values into the model where empirical values should exist.

5. The dawn and dusk gap is directly relevant to disturbance and displacement — not only collision mortality.

The most significant impact during dawn and dusk for many species is disturbance and displacement — breeding birds disturbed during territorial display, flocks displaced from feeding grounds during approach to roost, whooper swans diverted from established flight lines. These impacts are not modelled in the CRM at all. The absence of dawn and dusk data means that the developer cannot assess these impact pathways for the periods in which they are most likely to occur.

6. NatureScot 2024 and DAU requirements are not met by the dominant dataset.

NatureScot 2024 explicitly requires coverage before sunrise and after sunset for waterfowl. The DAU letters for both the Cush and Carrig applications identify the absence of dawn and dusk coverage as a basis for requiring further information. The Ecology Ireland dataset — which drives the CRM — does not meet this standard in any of its eight seasons.

SECTION 1 — CRM DIEL EFFORT DATA: REPRODUCED AND ANNOTATED

Table A.1 — Summer Survey Effort by Time Period (Ecology Ireland, April–September)

Source: CRM Table 3.8. Ecology Ireland surveys only — 4 summer seasons: 2020, 2021, 2023, 2024. Summer 2022 is entirely absent from the dataset.

Time Period	Daylight Hrs Available	VP Minutes (EI)	Min / Daylight Hr	Assessment
Sunrise − 1 hr (pre-dawn)	183	0	0.0	ABSENT
Sunrise (dawn)	183	0	0.0	ABSENT
Sunrise + 1 hr	183	15	0.1	CRITICAL GAP
Sunrise + 2 hrs	183	776	4.2	SEVERE GAP
Sunrise + 3 hrs	183	2,135	11.7	SIGNIFICANT GAP
Sunrise + 4 hrs	183	5,270	28.8	PARTIAL
Sunrise + 5 hrs	183	7,582	41.5	PARTIAL
Mid-day block (Sunrise+6 to Sunset+6)	282	12,669–12,227	44.9–43.3	PEAK EFFORT
Sunset + 5 hrs	183	3,655	20.0	PARTIAL
Sunset + 4 hrs	183	1,268	6.9	SEVERE GAP
Sunset + 3 hrs	183	219	1.2	CRITICAL GAP
Sunset + 2 hrs	183	0	0.0	ABSENT
Sunset + 1 hr	183	0	0.0	ABSENT
Sunset (dusk)	183	0	0.0	ABSENT
Sunset − 1 hr (post-dusk)	183	0	0.0	ABSENT

Commentary on Summer Dawn and Dusk Periods

The table above shows that, across all four Ecology Ireland summer seasons, survey effort is entirely absent at the critical crepuscular periods:

- Pre-dawn and sunrise (Sunrise −1 hr through Sunrise): 0 minutes across all VPs and all four seasons. Pre-dawn is the peak departure period for whooper swan from roost and the commencement of territorial display for breeding curlew and merlin.
- First hour after sunrise (Sunrise +1 hr): Only 15 minutes total across all vantage points and all four seasons combined — less than 1 minute per VP per season. Statistically meaningless as a basis for assessment.
- Sunset through post-dusk (Sunset +2 hrs through Sunset −1 hr): Zero minutes at any of these periods. Evening flight activity, pre-roost gatherings, and return commuting are entirely unrecorded.
- Sunrise +3 hrs: 11.7 min/hr — approximately 20% of what proportionate coverage would require.

Table A.2 — Winter Survey Effort: 4 Seasons: Ecology Ireland vs 1 Season: TOBIN (October–March)

Source: CRM Table 3.9. Ecology Ireland: 4 winter seasons 2020/21–2023/24. TOBIN: 1 winter season 2025/26 only. This comparison is the clearest illustration of the methodological gulf between the two datasets.

Time Period	EI Minutes	EI Min/Hr	TOBIN Minutes	TOBIN Min/Hr	EI Assessment	TOBIN Assessment
Sunrise − 1 (pre-dawn)	152	0.8	612	3.4	CRITICAL GAP	COVERED
Sunrise (dawn)	2,326	12.8	942	5.2	PARTIAL	GOOD
Sunrise + 1 hr	5,917	32.5	1,007	5.5	PARTIAL	GOOD
Sunrise + 2 hrs	7,652	42.0	712	3.9	ADEQUATE	ADEQUATE
Mid-day block (SR+3 to SS+3)	13,850–12,450	43.7–39.3	2,274–2,256	7.2–7.1	PEAK EFFORT	ADEQUATE
Sunset + 2 hrs	4,993	27.4	994	5.5	PARTIAL	GOOD
Sunset + 1 hr	1,984	10.9	956	5.3	SIGNIFICANT GAP	GOOD
Sunset (dusk)	16	0.1	869	4.8	ABSENT	COVERED
Sunset − 1 (post-dusk)	0	0.0	538	3.0	ABSENT	COVERED

Key Species Significance — Winter Diel Coverage

The following notes explain the ecological significance of the coverage contrasts shown above, by time period:

- Sunrise −1 hr (pre-dawn): EI recorded only 152 minutes across FOUR winters; TOBIN recorded 612 minutes in ONE winter. Pre-dawn is the primary whooper swan roost-departure window. EI pre-dawn coverage amounts to 25% of TOBIN's single-season effort.
- Sunrise (dawn): CRM notes higher recording rates for Mute Swan and Whooper Swan at this period in the EI data, attributing this to 'birds commuting from nocturnal roost sites.' EI captures some of this but coverage is inconsistent.
- Sunset (dusk): The starkest single contrast — EI recorded only 16 total minutes at sunset across FOUR winter seasons; TOBIN recorded 869 minutes in ONE season. The CRM itself acknowledges insufficient effort to calculate EI evening recording rates.
- Sunset −1 hr (post-dusk): EI recorded zero minutes across all four winters; TOBIN recorded 538 minutes in one season. NatureScot 2024 explicitly requires coverage in this period for waterfowl. The difference is absolute.

WINTER FINDING

At sunset — the most critical dusk period for commuting wildfowl — Ecology Ireland recorded only 16 total minutes across four winter seasons. TOBIN recorded 869 minutes at the same time period in a single winter. Post-dusk: Ecology Ireland recorded zero minutes across four winters; TOBIN recorded 538 minutes in one season.

The CRM itself admits 'there was not sufficient survey effort to calculate recording rates for the evening period in the Ecology Ireland dataset.' This is a self-admission that the dominant dataset cannot support any assessment of dusk-period disturbance, displacement or collision mortality — yet the CRM conclusions rely on that dataset.

SECTION 2 — QUANTIFIED SUMMARY OF DAWN AND DUSK COVERAGE GAPS

Table A.3 — Season-by-Season Summary: Dawn and Dusk Coverage

'Proportionate coverage' = percentage of survey minutes in the dawn/dusk period relative to what would be expected if effort were evenly distributed across daylight hours. Figures derived from CRM Tables 3.8 and 3.9.

Season / Surveyor	Dawn Period	Dawn Coverage (% proportionate)	Dusk Period	Dusk Coverage (% proportionate)	Overall Assessment
EI: Summer (4 seasons, 2020–2024)	0 min at sunrise; 15 min total in hour after sunrise (all VPs, all seasons)	~0%	0 min at sunset; 0 min in hour before sunset; 219 min at Sunset+3	~0%	ABSENT
EI: Winter (4 seasons, 2020/21–2023/24)	152 min pre-dawn; 2,326 min at sunrise; 5,917 min in hour after	~25% pre-dawn; ~22% at sunrise	16 min at sunset; 0 min post-dusk	~0.1% at sunset; 0% post-dusk	CRITICAL GAP
TOBIN: Winter 2025/26 (1 season only ⚠)	612 min pre-dawn; 942 min at sunrise; 1,007 min in hour after	~66% pre-dawn; ~18% at sunrise	869 min at sunset; 538 min post-dusk	~16% at sunset; ~10% post-dusk	ADEQUATE
NatureScot 2024 — Required Standard	Full coverage before sunrise to after sunset required	100%	Full coverage before sunset to after sunset required	100%	STANDARD

SECTION 3 — SPECIES-SPECIFIC SIGNIFICANCE OF DAWN AND DUSK COVERAGE GAPS

Table A.4 — Dawn and Dusk Significance by Priority Species

The following species cards set out the ecological significance of the coverage gaps for each priority species. The CRM assigns nocturnal activity rankings to several species, acknowledging activity beyond daylight hours. The absence of crepuscular survey coverage means that peak movement periods — when disturbance, displacement and collision mortality risk is highest relative to turbine operation — are systematically unrecorded in 8 of 9 survey seasons.

Whooper Swan *Cygnus cygnus*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Annex I · SPA Qualifying Interest	Waterfowl — +2 hrs added to daylight period	Pre-dawn: 152 min / 4 winters · Sunset: 16 min total · Post-dusk: 0 min

Departs nocturnal roost sites in pre-dawn period, often in darkness. Returns to roost at dusk and post-dusk. Communal roost commuting occurs on established flight lines. The CRM specifically identifies pre-dawn and post-sunset as 'potentially important for commuting swans and geese' (NS 2025a).

The established roost at Sharragh (confirmed by Oran Ecology) and the flight line toward the Little Brosna SPA pass through the development Zone of Influence. Pre-dawn commuting on this line is entirely unrecorded in the dominant dataset. Disturbance risk at

dawn, displacement of roost commuting routes, and collision mortality risk during low-light commuting cannot be assessed from EI data.

Curlew *Numenius arquata*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Red-listed · Annex I	Ranking 2 — 25% of day-time activity rates assumed at night	Summer: 0 min at dawn/dusk · Winter: 16 min at sunset / 4 seasons

Crepuscular feeder — peak foraging activity at dawn and dusk. Returns to night roost at dusk. During breeding season, males commence territorial calling and display flights from pre-dawn.

With approximately 105 breeding pairs nationally, every individual curlew matters. Breeding season dawn disturbance from construction and operational noise — occurring precisely when territorial males are most active — is unassessed in the EI data. Dusk foraging movements crossing the turbine Zone of Influence are unrecorded. The CRM nocturnal correction underestimates crepuscular risk because EI data provides no empirical foundation for the correction.

Merlin *Falco columbarius*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Annex I	Ranking 1 — diurnal only assumed	Summer: effectively zero EI dawn coverage across all breeding seasons

Active hunter at dawn and dusk — typically commences hunting immediately after sunrise. Roosts communally in winter away from breeding territory. Confirmed breeding on Ballyduff/Clonfinnane SAC (BirdWatch Ireland, May/June 2025).

The confirmed adjacent breeding pair's foraging range almost certainly overlaps the development ZoI. Dawn hunting activity — the peak period for disturbance to an active breeding pair — is entirely unrecorded across all breeding season surveys. A nocturnal ranking of 1 may underestimate crepuscular activity. Breeding disturbance assessment has no empirical dawn-period foundation.

Golden Plover *Pluvialis apricaria*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · SPA Qualifying Interest	Ranking 2 — 25% nocturnal activity rate applied	Summer: 0 min dawn/dusk · Winter: near-zero at sunset (16 min / 4 seasons)

Highly mobile. Forms large winter flocks that commute between feeding and roosting areas at dawn and dusk. Night-time activity documented. Population at Little Brosna SPA already 50% below baseline.

Flocking movements of golden plover are concentrated at dawn and dusk. The peak count of ~3,500 birds within 500m of the site boundary (NIS, p.11) was recorded during winter surveys, but the dusk departure and dawn arrival of these flocks is entirely unrecorded in EI data. Collision mortality risk is highest when birds are flying in low-light conditions in large flocks. This period is systemically absent from the model's empirical foundation.

Greenland White-fronted Goose *Anser albifrons flavirostris*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · Annex I · SPA Qualifying Interest	Waterfowl — +2 hrs added to daylight period	Pre-dawn: near-absent in EI data · Post-dusk: 0 EI min / 4 winters

Commutes between feeding grounds and roost in pre-dawn and post-dusk. Tagged individual confirmed passing within 6km of site during migration. One of the most disturbance-sensitive species in the Irish wintering assemblage.

The tagged goose evidence and SPA qualifying interest status make this species directly relevant to the Article 6(3) test. Roost commuting movements in pre-dawn and post-dusk are the primary risk period for both disturbance and collision mortality. These periods are effectively absent from the EI dataset. The CRM cannot reliably assess Greenland white-fronted goose flight activity at these times from EI data alone.

Hen Harrier *Circus cyaneus*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · Annex I	Ranking 1 — diurnal only assumed	Dawn: minimal EI data · Dusk: near-zero in winter EI dataset

Communal winter roosting — birds depart from roost in pre-dawn period and return at dusk. Roost surveys conducted by TOBIN but not by Ecology Ireland. Dawn hunting flights over bog and grassland.

Pre-dawn roost departure and dusk return are the key movement periods for winter harriers. EI surveys did not include roost watches. TOBIN conducted roost surveys in one winter only. Disturbance to roost commuting and collision mortality risk at low-light transitions are unassessed in the dominant dataset.

APPENDIX 4-2: CRM Self-Identified Limitations
Full Catalogue with Page References

Ballincor Wind Farm Ornithological Objection · Source: Collision Risk Model report (CRM), Appendix 7-2 to EIAR · EIAR Chapter 7 Section 7.2.8 · Cross-reference: Sections 2.10, 3.2–3.5 of main objection report

Every limitation, caveat, uncertainty statement and species exclusion in the CRM is extracted below — verbatim or in close paraphrase — with its CRM section and page reference. These are the developer's own words.

This appendix catalogues 25 separate limitations, caveats, uncertainty statements and species exclusions drawn from the developer's own CRM. They fall into five categories: survey methodology deviations (9); spatial and temporal coverage gaps (5); model uncertainty and statistical limitations (8); species exclusions (5); and other acknowledged uncertainties (5).

No single limitation is individually fatal to the assessment. Cumulatively, however, they demonstrate that the CRM outputs cannot be treated as the complete, precise and definitive findings required by Article 6(3) of the Habitats Directive. The developer's response to each limitation has been to apply a conservative assumption that biases toward over-prediction of collision mortality — while simultaneously using the resulting high figures as justification for concluding that impacts are negligible because the 1% threshold is 'highly precautionary.' This is a circular argument addressed directly in Sections 3.7, 3.9 and 6.2 of the main report

Each entry is cross-referenced to the section of the main objection report where it is challenged. The cumulative weight of these admissions is substantial: together they demonstrate that the CRM's conclusions cannot be considered complete, precise or definitive as required by Article 6(3) of the Habitats Directive and the legal standard established in Case C-127/02 (Waddenzee).

CATALOGUE OF CRM SELF-IDENTIFIED LIMITATIONS

The catalogue below is organised into five categories. Within each category, entries are ordered by their appearance in the CRM. Each entry comprises: the CRM reference; the developer's own statement (quoted or closely paraphrased); and the objection's challenge to that statement.

Category summary:

- Category A — Survey Methodology Deviations (9 entries): non-compliance with NatureScot guidance, mid-day concentration, height data gaps, viewshed over-counting, reduced-visibility watches, statistical independence failures.
- Category B — Spatial and Temporal Coverage Gaps (5 entries): T5/T6 viewshed gaps, 62% buffer coverage, missing summer 2022, admitted Whooper Swan under-estimation, simulation exclusions.
- Category C — Model Uncertainty and Statistical Limitations (8 entries): under-detection excluded from ranges (+1.5–3×), avoidance rate uncertainty excluded, inappropriate error structure, flock-event irreducible uncertainty.
- Category D — Species Exclusions (5 entries): snipe, curlew, white-fronted goose, pintail, teal, shoveler, buzzard — reasons examined and challenged.
- Category E — Other Acknowledged Uncertainties (5 entries): nocturnal ranking crudeness, avoidance rate sensitivity, height classification caveat, 1% threshold characterisation, displacement assessment proxy reliance.

A — Survey Methodology Deviations

9 entries

Non-compliance with NatureScot guidance, mid-day concentration, height data gaps, viewshed over-count, reduced-visibility watches, concurrent VP statistical dependency

A1

CRM Reference: **CRM §1.5 · p.2**

Objection Cross-Reference: §2.1 · §3.2

CRM Limitation — Developer's Own Words

The methodology of most of the vantage point surveys carried out for this project deviated in a number of respects from the recommended methodology (NatureScot, 2025a). Conservative assumptions have been applied where possible in this collision risk model to address the implications of these deviations.

Objection Challenge

The developer presents conservative assumptions as a corrective for systematic methodology failures. The objection challenges whether precautionary assumptions are a legally adequate substitute for compliant survey data when the AA must be 'complete, precise and definitive' (Waddenzee, Case C-127/02).

A2

CRM Reference: **CRM §2.4.3.1 · §3.2.2**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

The Ecology Ireland vantage point watches were all continuous six-hour watches without the 30-minute break after three hours required by the NatureScot survey guidance.

Objection Challenge

All Ecology Ireland watches are formally non-compliant with NatureScot guidance. The CRM ran both compliant and non-compliant versions and used the higher estimate — a precautionary approach that does not validate the underlying non-compliance.

A3

CRM Reference: **EIAR §7.2.8 · p.7-22**

Objection Cross-Reference: §2.1 · §3.2

CRM Limitation — Developer's Own Words

Flight activity was not systematically classified by height band [by Ecology Ireland] and a proportion of records lacked complete flight height, flight duration and/or mapped flightline data. In addition, some records included mixed flight and non-flight behaviour or were recorded at higher taxonomic groupings, requiring interpretation and standardisation of the dataset prior to collision risk modelling.

Objection Challenge

The absence of height band classification means that the proportion of flight activity at collision height — a fundamental CRM input — is based on assumptions and literature values rather than site data for 8 of 9 survey seasons. This directly affects the reliability of all collision mortality estimates.

A4

CRM Reference: **CRM §2.4.3.2 · p.10**

Objection Cross-Reference: §2.2 · §3.2 · App.D

CRM Limitation — Developer's Own Words

A substantial proportion of the Ecology Ireland survey time was spent tracking flightlines outside the viewshed arcs, with less than 50% of mapped flightlines falling within the defined viewshed arcs at some vantage points. This means that the effective survey effort will have been lower than the total vantage point survey durations.

Objection Challenge

VP2 had only 44% and VP6 only 40% of mapped flight durations within their arcs. The headline survey hours materially overstate effective coverage of the turbine buffer, affecting the reliability of flight density estimates for disturbance, displacement and collision mortality assessment.

A5

CRM Reference: **CRM §2.3 · p.5**

Objection Cross-Reference: §2.4 · App.A

CRM Limitation — Developer's Own Words

The Ecology Ireland vantage point surveys were concentrated in the middle of the day, but there was some coverage of the early morning period during the winter months.

Objection Challenge

The CRM's own narrative confirms the mid-day concentration. CRM Tables 3.8 and 3.9 quantify zero summer dawn/dusk coverage and near-zero winter dusk coverage. This is explored in full in Appendix A of this objection.

A6

CRM Reference: **CRM §3.4.3 · Fig.3.6–3.8 · p.46**

Objection Cross-Reference: §2.4 · §3.1 · App.A

CRM Limitation — Developer's Own Words

There was not sufficient survey effort to calculate recording rates for the AM1 period in summer or for the PM1 period in both seasons [Ecology Ireland dataset].

Objection Challenge

The CRM admits it cannot calculate recording rates for the dawn and dusk periods in the dominant dataset. This is a self-admission that the model has no empirical foundation for assessing crepuscular activity — the peak risk period for disturbance, displacement and collision mortality for whooper swan, curlew, golden plover and other priority species.

A7

CRM Reference: **CRM §3.2.3 · p.41**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

Some of the TOBIN vantage point surveys included watches with reduced visibility where the full 2 km viewsheds at potential collision height were not fully visible. These comprised 7% of the TOBIN watches.

Objection Challenge

Even the higher-quality TOBIN dataset contains reduced-visibility watches. One repeat survey was conducted, but the 7% figure applies to the dataset as a whole.

A8

CRM Reference: **CRM §3.2.3 · p.41**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

Both sets of vantage point surveys included some watches with reduced visibility. These comprised 11% of the Ecology Ireland watches.

Objection Challenge

11% of Ecology Ireland watches were conducted in poor visibility conditions, further reducing effective coverage in a dataset already compromised by mid-day concentration and non-compliant methodology.

A9

CRM Reference: **CRM §3.2.1 · p.40**

Objection Cross-Reference: §3.2 · §3.3

CRM Limitation — Developer's Own Words

Over 50% of the Ecology Ireland survey days included concurrent watches at all the vantage points. As there were large overlaps between viewsheds, the predominance of concurrent watches created significant issues for the statistical independence of the flight activity sampled at each vantage point.

Objection Challenge

The fundamental statistical assumption of the NatureScot model — that each VP represents an independent sample — is violated by concurrent watches at overlapping viewsheds. Approximately 10% of duplicated flightlines were identified, which the CRM acknowledges is likely an undercount given the overlap extent.

A10

CRM Reference: **CRM §3.2.1 · p.40**

Objection Cross-Reference: §3.2 · §3.3

CRM Limitation — Developer's Own Words

The Brosna North Corridor did not include any turbine locations. I excluded the flight activity within the Brosna North Corridor from the spatially-structured models because of the high concentration of flight activity associated with birds feeding on flooded fields and/or the differences in flight activity densities between the Brosna North Corridor and Brosna South Corridor. (CRM §2.5.3)

Density data (CRM Table 3.4, 17m viewshed): Whooper Swan: North 901 vs Remainder 191 (4.7×); Wigeon: North 8,434 vs Remainder 1,058 (8.0×); Lapwing: North 7,845 vs Remainder 1,363 (5.8×); Black-tailed Godwit: North 10,573 vs Remainder 3,377 (3.1×). All four species are SPA qualifying interests.

Objection Challenge

The CRM excludes the highest bird density zone in the survey area from the collision risk model. Birds feeding in the North Corridor must commute south through or over the wind farm footprint to reach alternative feeding areas and roost sites. That commuting flight activity — the event that generates collision risk — is not separately modelled. No commuting flight analysis was conducted. The CRM therefore models collision risk for Whooper Swan, Wigeon and Lapwing from the lowest-density zone (Remainder) while the highest-density zone (North Corridor) is excluded and the commuting movements it implies are unquantified. The CRM further acknowledges (§4.7.2.3) that annual variation in North Corridor densities is driven by flooding patterns — meaning peak-year densities in the highest-activity zone are not captured by the exclusio

n.

B — Spatial and Temporal Coverage Gaps

5 entries

T5/T6 viewshed gaps, buffer coverage shortfall, missing summer 2022 season, admitted diel under-estimation of Whooper Swan, simulation exclusions

B1

CRM Reference: **CRM §3.1.1.1 · p.39**

Objection Cross-Reference: §2.2 · App.D

CRM Limitation — Developer's Own Words

The viewshed coverage at 17m above ground level included eight turbine locations [Ecology Ireland]. The two turbine locations not covered by the 30m viewshed (T5 and T6) were within 25m of the viewshed boundary. T6 was around 200m from the 17m viewshed boundary.

Objection Challenge

T5 is outside all EI viewsheds at all heights. T6 is approximately 200m outside the 17m viewshed — a substantial gap, not a marginal omission. Disturbance, displacement and collision mortality assessment at T5 and T6 from Ecology Ireland data has no direct empirical foundation.

B2

CRM Reference: **CRM §3.1.1.1 · p.39**

Objection Cross-Reference: §2.2 · App.D

CRM Limitation — Developer's Own Words

The 17m viewshed coverage included 62% of the 500m turbine buffer [Ecology Ireland]. While there is incomplete coverage of the turbine locations and the 500m buffer around the turbine locations, the gaps in coverage are small and there are not any significant areas lacking coverage.

Objection Challenge

The developer's characterisation that 'gaps in coverage are small' is directly contradicted by the T6 gap (200m from viewshed boundary) and VP6's 40% within-arc compliance rate. The objection challenges this as inconsistent with the data presented.

B3

CRM Reference: **CRM §2.3.1 · p.5**

Objection Cross-Reference: §2.5 · §3.1

CRM Limitation — Developer's Own Words

Summer 2022 is absent from the survey dataset. The flight activity data comprised surveys between summer 2020 and summer 2024 with the exception of summer 2022.

Objection Challenge

An entire breeding season is absent from the dataset with no explanation given. For curlew (~105 breeding pairs nationally) and merlin (confirmed breeding on adjacent SAC), missing one breeding season is not a minor data gap.

B4

CRM Reference
CRM §4.7.2.5 · p.80

Objection Cross-Reference
§2.4 · §3.7 · App.A

CRM Limitation — Developer's Own Words

Uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk.

Objection Challenge

The CRM explicitly acknowledges that its own diel coverage gap may have caused under-estimation of Whooper Swan collision risk. This directly undermines the developer's conclusion that Whooper Swan impact is negligible. If dusk and pre-dawn movements are underrepresented, the central estimate may be lower than the true figure — and disturbance and displacement risks are entirely absent from the model.

B5

CRM Reference
CRM §4.7.2.1 · p.73

Objection Cross-Reference
§3.2 · §3.3

CRM Limitation — Developer's Own Words

No simulations were carried out for Wigeon or Black-tailed Godwit due to the low number of records in the dataset that was used to parameterise the simulation.

Objection Challenge

Wigeon is a SPA qualifying interest species. Black-tailed Godwit generates the highest single-species collision estimates in the CRM (3.3–4.7/year). Neither could be modelled for sampling effects uncertainty due to data scarcity — meaning the reported uncertainty ranges for these two species are the least reliable in the dataset.

C — Model Uncertainty and Statistical Limitations

8 entries

Under-detection excluded from ranges (+1.5–3×), avoidance rate uncertainty excluded, inappropriate error structure, weighting formula anomaly, flock-event irreducible uncertainty

C1

CRM Reference
CRM §5.3 · p.91

Objection Cross-Reference
§3.4 · §3.7

CRM Limitation — Developer's Own Words

The uncertainty ranges did not take account of potential under-detection of distant flightlines. Inclusion of this factor would raise the mortality increases by factors of around 1.5–3 times.

Objection Challenge

The reported uncertainty ranges — already wide — would increase by a factor of 1.5 to 3 if under-detection were included. For species already exceeding or approaching the 1% mortality threshold, this correction could be determinative. The developer does not apply this correction to the final assessment conclusions.

C2

CRM Reference
CRM §5.3 · p.91

Objection Cross-Reference
§3.4

CRM Limitation — Developer's Own Words

The uncertainty ranges also did not take account of uncertainty due to limited knowledge of avoidance rates.

Objection Challenge

Avoidance rates are the single most influential variable in the CRM. For golden plover, the difference between 98% and 99.6% avoidance rates changes the predicted collision figure by approximately an order of magnitude (CRM Table 4.9). The developer applies 99.6% without adequate justification for its applicability to 172m rotor diameter turbines in this landscape type.

C3

CRM Reference
CRM §4.7.2.1 · p.72

Objection Cross-Reference
§3.2 · §3.3

CRM Limitation — Developer's Own Words

The overall uncertainties are dominated by the sampling effects uncertainties. For most species, uncertainty decreased substantially when the number of survey seasons increased from one to two, with smaller reductions as additional seasons were added. This suggests that the principal source of uncertainty arises from within-season sampling variability rather than the number of seasons.

Objection Challenge

The CRM states that most uncertainty reduction occurs when going from one to two seasons — additional seasons provide diminishing returns. With nine seasons, uncertainty remains very large (golden plover upper range: 26–51/year against a central estimate of ~8). This confirms that the problem is within-season variability — i.e., mid-day concentration — not season count.

C4

CRM Reference
CRM §4.7.2.1 · p.73

Objection Cross-Reference
§3.3

CRM Limitation — Developer's Own Words

The relative error method appears poorly suited to flight activity data from vantage point surveys because monthly values aggregate across daily variation. The frequent occurrence of negative lower bounds further indicates that the approach imposes an inappropriate symmetric error structure on a non-negative and strongly skewed variable.

Objection Challenge

The CRM identifies a fundamental statistical incompatibility between the standard NatureScot uncertainty method and this dataset. The developer substitutes an alternative (multiplicative) method producing narrower uncertainty ranges. The choice of uncertainty method influences which species appear to exceed the 1% threshold.

C5

CRM Reference
CRM §4.7.3.1 · p.79

Objection Cross-Reference
§3.7

CRM Limitation — Developer's Own Words

The NatureScot collision risk model scales predicted risk directly with the number of birds recorded, implicitly treating a single flock of 100 birds as equivalent to 100 independent single-bird passages. This assumes that the probability of avoidance by each bird is independent and unaffected by flocking behaviour. However, for a cohesive flock, collision risk and avoidance behaviour are unlikely to be independent among individuals.

Objection Challenge

Particularly relevant to golden plover (peak count ~3,500 birds within 500m) and pintail (~200 recorded March 2024). The model may significantly misrepresent collision risk from large flocks. The same logic the developer uses to dismiss the pintail count as a one-off should apply to the large golden plover flocks underpinning the elevated collision estimate.

C6

CRM Reference
CRM §4.7.5 · p.80

Objection Cross-Reference
§3.4 · §5.4

CRM Limitation — Developer's Own Words

The uncertainty due to distance effects is not included in the overall uncertainty estimates because distance effects are not included in the NatureScot methodology. This uncertainty would double the upper end of the collision risk range by a factor of around 1.5–3 times.

Objection Challenge

Distance under-detection corrections of 1.5–3× are calculated for this site (CRM Table 4.6) but deliberately excluded from the reported uncertainty ranges because NatureScot methodology does not require them. For species near or at the 1% threshold, this omission is not conservative — it is systematically in the developer's favour.

C7

CRM Reference
CRM §4.7.3.1 · p.77

Objection Cross-Reference
§3.3

CRM Limitation — Developer's Own Words

Another issue with the weighted averaging procedure is that the penalty imposed on a vantage point with a smaller viewshed and/or lower survey effort increases with the number of vantage points. This is a mathematical property of the formula, but it is somewhat counter-intuitive.

Objection Challenge

The CRM identifies a mathematical limitation in the NatureScot weighting formula but does not resolve it. This is a further reason why the model outputs cannot be treated as definitive.

C8

CRM Reference
CRM §5.2 · p.91

Objection Cross-Reference
§3.3 · §3.7

CRM Limitation — Developer's Own Words

Vantage point surveys typically sample only around 1.5–2% of daylight hours across the season. As a result, if the survey effort, by chance, coincided with one of the relatively few occasions when a large flock occurred, the collision risk could be overestimated by at least an order of magnitude. An alternative possibility is that the survey effort may have under-sampled the occurrence of large flocks. This uncertainty cannot be resolved from the available data.

Objection Challenge

The CRM explicitly acknowledges an 'irreducible source of uncertainty' arising from infrequent large-flock events. This applies directly to the black-tailed godwit estimate (dominated by a single large-flock observation) and to the pintail flock dismissed as a one-off. The CRM cannot distinguish between a genuine anomaly and an undersampled regular event.

D — Species Exclusions and Stated Reasons

5 entries

Snipe, curlew, white-fronted goose, pintail, teal, shoveler, buzzard excluded — reasons examined and challenged

D1

CRM Reference
CRM §2.2 · p.5

Objection Cross-Reference
§4.10

CRM Limitation — Developer's Own Words

Snipe was not included [in the CRM] because vantage point surveys are not an effective method of sampling their flight activity, so the results from collision risk modelling would not be very meaningful.

Objection Challenge

Snipe exclusion is acknowledged as a methodological limitation. Snipe is recorded on site and is a Red-listed species. The developer offers no alternative assessment of snipe disturbance, displacement or collision mortality risk.

D2

CRM Reference
EIAR §7.2.7 · p.7-146

Objection Cross-Reference
§4.2 · §4.4 · §4.6

CRM Limitation — Developer's Own Words

Non-target species such as passerines, as well as target species that were rarely recorded, were not assessed in the CRM. This was due to several factors: these species are considered less at risk from potential turbine impacts, they hold a more favourable conservation status, they were infrequently recorded during surveys, or their flight activity was so low that the CRM would have produced negligible results.

Objection Challenge

This exclusion encompasses curlew, white-fronted goose, teal, pintail, shoveler, kingfisher and jack snipe — all Red-listed, Annex I or SPA qualifying interest species. The rationale that 'infrequent recording suggests limited site reliance' ignores that mid-day concentrated surveys systematically missed the periods when these species would most likely be recorded.

D3

CRM Reference
CRM Table 3.7 · p.45

Objection Cross-Reference
§3.1 · §4.2 · §4.6 · §4.8

CRM Limitation — Developer's Own Words

Additional species recorded with a total of less than 10 records, or outside the Ecology Ireland 1.5km viewsheds: White-fronted Goose, Teal, Pintail, Shoveler, Little Grebe, Moorhen, Curlew, Jack Snipe, Herring Gull, Great Black-backed Gull, Kingfisher, Unidentified swan, Unidentified goose, Unidentified wader, Unidentified gull.

Objection Challenge

The '<10 records' exclusion threshold is applied to species whose low detection directly results from the mid-day survey methodology. Curlew, white-fronted goose, pintail, teal and shoveler — all SPA qualifying interests or Annex I species — are excluded on this basis. The threshold conflates genuine rarity with survey methodology failure.

D4

CRM Reference
CRM Table 3.7 · p.45

Objection Cross-Reference
§3.7 · §4.9

CRM Limitation — Developer's Own Words

Black-tailed Godwit had a total of <10 records but are included in this table because of the large collision risks that those records generated.

Objection Challenge

The CRM created a species-specific exception for black-tailed godwit because even a small number of records generated a large collision estimate (3.3–4.7/year, exceeding the 1% threshold). This demonstrates that the '<10 records' rule is not consistently applied — it is applied where it produces lower risk estimates and waived where few records generate high estimates.

D5

CRM Reference
EIAR §7.3.7 · p.7-152

Objection Cross-Reference
§3.7

CRM Limitation — Developer's Own Words

Buzzard was not carried forward into the detailed collision risk assessment. Although a population estimate is available, it is largely outdated, being based on data published in 2013, and the actual population is likely to be significantly higher than reported.

Objection Challenge

The developer uses population data uncertainty to justify exclusion of buzzard from detailed assessment. The same logic — that population estimates are uncertain — is not applied to species where such uncertainty would increase the significance of the assessment.

E — Other Acknowledged Uncertainties

5 entries

Nocturnal ranking crudeness, avoidance rate sensitivity, height classification caveat, 1% threshold characterisation, displacement assessment proxy reliance

E1

CRM Reference
CRM §2.6.7.3 · p.25

Objection Cross-Reference
§3.2 · §3.3 · App.A

CRM Limitation — Developer's Own Words

The NatureScot methodology uses a crude ranking of the degree of nocturnal flight activity to calculate nocturnal correction factors and the information available about the degree of nocturnal flight activity for most species is very limited.

Objection Challenge

The CRM applies nocturnal corrections for curlew, golden plover, lapwing, black-tailed godwit, wigeon, teal and mallard based on literature rankings with acknowledged limited empirical support. No nocturnal surveys were conducted. The correction therefore introduces assumed values where empirical values are required by the NatureScot standard.

E2

CRM Reference
CRM §5.3 · p.91 · Table 4.9

Objection Cross-Reference
§3.4

CRM Limitation — Developer's Own Words

Uncertainty due to limited knowledge of avoidance rates is not included in [the overall uncertainty] estimates. The variation in predicted collision risks with avoidance rates of 95%, 98%, 99% and 99.5% is shown in Table 4.9.

Objection Challenge

CRM Table 4.9 shows that for golden plover the central collision estimate ranges from 7.9/year (at 99.6% avoidance) to 64/year (at 95% avoidance) — an 8-fold range solely from avoidance rate selection. This uncertainty is excluded from

the formal uncertainty ranges. The developer applies 99.6% without demonstrating its applicability to 172m rotor turbines in this landscape.

E3

CRM Reference
CRM §4.7.2.5 · p.80

Objection Cross-Reference
§3.3 · §3.7

CRM Limitation — Developer's Own Words

Precautionary approaches to the assignment of flight heights may have caused general overestimation of collision risks.

Objection Challenge

The developer uses the possibility of height overestimation as a reason to downplay collision risk findings approaching the 1% threshold. However, height overestimation was necessitated by the absence of proper height band classification in the EI surveys. The developer cannot use a consequence of survey inadequacy as justification for reducing the significance of results.

E4

CRM Reference
CRM §5.3 · p.91 · EIAR §7.3.7

Objection Cross-Reference
§3.7 · §3.9 · §6.2

CRM Limitation — Developer's Own Words

The 1% threshold is likely to be very precautionary. The calculations of the increase in annual mortality also made strong precautionary assumptions that all the collision fatalities were adult birds and that the collision mortality was additive not compensatory. Therefore, substantial increases in annual mortality well above the 1% threshold are likely to be required to cause significant impacts on the affected populations.

Objection Challenge

This statement — repeated throughout EIAR Chapter 7 — is the principal mechanism by which the developer dismisses species approaching or exceeding the 1% threshold. The NPWS DAU (Cush letter, 2024) has explicitly rejected this reasoning: for species in unfavourable conservation condition (golden plover, 50% below SPA baseline), the precautionary principle requires assessing whether the proposal undermines potential for recovery — not merely whether it accelerates an existing decline.

E5

CRM Reference
EIAR §7.3 · general

Objection Cross-Reference
§3.5 · §3.6

CRM Limitation — Developer's Own Words

The displacement and disturbance assessment relies on the CRM flight activity data as a proxy for site usage. No specific displacement surveys (e.g., before-after comparisons at alternative sites) were conducted.

Objection Challenge

The developer's assessment of displacement and disturbance is entirely derivative of the flawed VP dataset. No independent displacement assessment was conducted. The developer assumes that low VP recording rates indicate limited site dependency — but mid-day concentrated surveys cannot support this inference for species whose peak activity is at dawn and dusk.

APPENDIX 4-3 — Protected Species: Full Status Schedule and Conservation Context

This appendix sets out the full protection status and conservation context for every species discussed in Section 4 of the main objection report. Each species entry follows a consistent structure: a compact status block showing all legal and conservation designations, followed by bullet points covering population context, recorded presence in the Zone of Influence, the developer's assessment, and the basis on which that assessment is challenged. Colour-coded priority headings correspond to the ranking used throughout the objection.

PRIORITY 1 — Highest concern	PRIORITY 2 — Significant concern	PRIORITY 3 — Relevant concern

PRIORITY 1 SPECIES — HIGHEST CONSERVATION CONCERN

Whooper Swan *(Cygnus cygnus)* — PRIORITY 1

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086); Middle Shannon Callows SPA (004096)
Irish wintering population	Approximately 16,000 individuals
Developer's assessment	Local importance (higher value); impact: negligible

Population and conservation context

- Whooper swan is an Annex I species under the EU Birds Directive, obligating member states to classify the most suitable territories as SPAs and to take special conservation measures.
- The River Little Brosna Callows SPA is a designated qualifying site for this species. The SPA's conservation objectives require that the population is maintained in favourable condition.
- Irish wintering population of approximately 16,000 is of international significance. The BirdWatch Ireland IWeBS data shows counts at the Little Brosna Callows SPA regularly approaching or exceeding the 1% international threshold of approximately 160 birds.
- The species is highly site-faithful, returning to established wintering grounds and roost sites year after year. Displacement from a roost or feeding site is therefore not a temporary inconvenience — it represents a long-term loss of functionally important habitat.

Recorded presence in the Zone of Influence

- Recorded in all four Ecology Ireland winter seasons and in the TOBIN winter 2025/26 season, primarily along the River Little Brosna corridor and adjacent flooded fields in the northeast of the site. Maximum single count of 55 individuals.
- A confirmed communal roost site exists at NPWS-owned land at Sharragh (documented in the Oran Ecology report, 2023), with observed flight lines running northwest toward the Little

Brosna SPA. This roost and its associated flightlines pass directly through or adjacent to the development Zone of Influence.

- ESB Networks previously installed bird strike deflectors on powerlines in the Sharragh/Lissernane area due to repeated whooper swan collisions — physical evidence of an established and long-used flightline through this landscape.
- Pre-dawn and post-dusk commuting movements between the Sharragh roost and the SPA are entirely unrecorded in 8 of 9 survey seasons (see Appendix A). The CRM acknowledges uneven diel coverage may have caused under-estimation of whooper swan collision risk (CRM §4.7.2.5).

Developer's assessment and gaps

- The developer assigns local importance (higher value) and concludes the impact is negligible.
- The CRM produces a central collision estimate of 0.02–0.05 birds per year depending on turbine model. The developer does not separately assess disturbance or displacement from the established Sharragh roost flightline.
- No nocturnal or pre-dawn surveys were conducted. No radar was deployed to quantify migration or commuting at height. The species' peak movement period is systematically absent from the dominant dataset.

Conclusion

The developer's negligible impact finding relies on a collision estimate derived from daytime vantage point surveys that miss the species' peak crepuscular movement period. The CRM's own caveat (§4.7.2.5) that diel coverage gaps may have caused under-estimation of whooper swan risk is not reflected in the assessment conclusion. Displacement from the Sharragh roost flightline — a long-established and physically evidenced movement corridor — receives no quantitative treatment. Under Article 6(3), adverse effects on the SPA qualifying interest cannot be excluded on the basis of an assessment with these acknowledged gaps. With both Article 6(4) IROPI and Article 4.7 WFD derogations expressly waived, this insufficiency is determinative.

Eurasian Curlew *(Numenius arquata)* PRIORITY 1

EU Habitats Directive	Not listed (non-breeding); Annex I — Birds Directive
EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	Not a qualifying interest of local SPAs but is an SCI species in adjacent callows systems
Irish breeding population	Approximately 105–130 breeding pairs nationally (NPWS)
Developer's assessment	Grouped in 'rarely recorded target species'; assessed collectively; local importance (higher value)

Population and conservation context

- Curlew is one of Ireland's most critically threatened breeding birds. With approximately 105 breeding pairs remaining nationally, the loss of a single breeding pair represents

approximately 1% of the national population — a figure of unambiguous conservation significance.

- Ireland holds a disproportionate European responsibility for curlew conservation. The national breeding population is so small that any localised mortality or breeding failure attributable to a wind farm development carries national-level consequences.
- The NPWS has designated curlew conservation as a national priority. A dedicated Curlew Conservation Project operates across the midlands and west. The area surrounding Ballyduff/Clonfinnane SAC — directly adjacent to the Ballincor development zone — is within the curlew conservation project target area.
- Studies on wind farm impacts on curlew document breeding density reductions of up to 42% within 500m and avoidance distances extending to 800m from operational turbines. The developer uses a 300m displacement zone — substantially below the documented evidence base.

Recorded presence in the Zone of Influence

- Curlew was recorded during breeding season 2023 in the Ecology Ireland dataset, and in winter 2020/21. It is listed as a rarely recorded target species with fewer than 10 records across the survey period.
- A confirmed breeding record of curlew was located in the region of the Arragh More Bog NHA and Kilcarren-Firville Bog SAC to the southwest of Sharragh (NPWS 2021 survey), within 5km of the Ballincor site.
- The 2025 BirdWatch Ireland breeding survey on the adjacent Ballyduff/Clonfinnane Bog SAC confirmed curlew presence (alongside confirmed breeding merlin). This survey, conducted in May and June 2025, is the most recent and directly relevant field evidence available.
- The low recording rate in the Ecology Ireland dataset is a direct consequence of mid-day concentrated surveys. Curlew is predominantly active at dawn and dusk. Zero dawn/dusk coverage in summer seasons means the dominant dataset cannot support any conclusion about curlew site use.

Developer's assessment and gaps

- Curlew is grouped with 10 other species under 'rarely recorded target species' and assessed collectively — receiving no individual collision risk modelling and no species-specific displacement assessment.
- The grouping rationale is that species with fewer than 10 records during surveys 'were infrequently recorded, suggesting limited reliance on the area for breeding or feeding.' This inference is invalid where the survey methodology systematically missed the periods in which curlew activity would have been recorded.
- No targeted curlew breeding surveys were conducted in 2022 (season entirely absent) or in the 2025 breeding season, despite NPWS scoping requirements for specific curlew survey effort.

Conclusion

Curlew cannot lawfully be assessed collectively with common species of lower conservation concern. With approximately 105 breeding pairs nationally, it requires individual treatment. The developer's inference that low recording rates indicate limited site dependence is directly contradicted by the 2025 breeding survey on the adjacent SAC and by the known dawn/dusk activity patterns that the surveys systematically missed. The displacement distance of 300m used in the assessment is not supported by current literature (documented avoidance to 800m).

The absence of individual collision risk modelling for a Red-listed, nationally critical species with confirmed presence in the Zone of Influence is a material gap in the Appropriate Assessment.

Merlin *(Falco columbarius)* — PRIORITY 1

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish breeding population	Approximately 130–170 pairs nationally; precise count uncertain
Developer's assessment	Grouped in 'rarely recorded target species'; local importance (higher value)

Population and conservation context

- Merlin is Ireland's smallest falcon and one of its rarest breeding raptors. The national breeding population is small and concentrated on upland and lowland bog habitats — exactly the habitat type present at Ballyduff/Clonfinnane Bog SAC adjacent to the Ballincor site.
- As an Annex I species, merlin is subject to special conservation measures. Any development that risks breeding failure, nest desertion through disturbance, or mortality of breeding adults requires rigorous assessment.
- Merlin is sensitive to disturbance at the nest, particularly during incubation and early chick-rearing. Repeated disturbance from construction activity or low-flying maintenance helicopters during the breeding season can lead to nest desertion.

Recorded presence in the Zone of Influence

- Merlin was recorded in breeding seasons 2023 and 2024, and in all four Ecology Ireland winter seasons plus the TOBIN winter 2025/26 season. It is listed as a target species but grouped in the rarely recorded collective.
- Most significantly: BirdWatch Ireland confirmed breeding merlin on Ballyduff/Clonfinnane Bog SAC in May and June 2025, using passive acoustic monitoring (ARUs) deployed around the perimeter of the SAC. The nest was subsequently located. This is the most current and direct field evidence available — postdating the developer's survey programme entirely.
- The confirmed breeding pair's foraging range will almost certainly extend into the proposed turbine zone. Merlin typically forages up to 2–3km from the nest during the breeding season, with the nearest proposed turbine locations approximately 1–2km from the SAC boundary.
- The developer's breeding bird surveys did not include targeted merlin surveys using appropriate methodology (passive acoustics, nest searches). The 2025 BirdWatch Ireland findings demonstrate what a properly conducted breeding survey would have revealed.

Developer's assessment and gaps

- Merlin receives no individual collision risk assessment and no species-specific breeding disturbance assessment in the EIAR.
- The CRM produces a central estimate of 0.00–0.01 merlin collisions per year. Given the confirmed adjacent breeding pair, any collision mortality risk to breeding adults is ecologically disproportionate relative to the national population size.

- No acoustic or nocmig surveys were conducted. The 2025 ARU methodology employed by BirdWatch Ireland is precisely the technique NatureScot 2024 recommends for detecting breeding raptors. Its absence from the pre-application survey programme is a significant methodological gap.

Conclusion

The confirmed breeding of merlin on the adjacent SAC in 2025 — postdating the developer's survey programme — constitutes new material evidence that was not available to the applicant at the time of submission but is available to An Coimisiún Pleanála now. It demonstrates active breeding in the Zone of Influence that the developer's survey programme failed to detect. The absence of targeted breeding surveys using current methodology (passive acoustics) is a significant gap. A breeding pair on the adjacent designated site, with a foraging range overlapping the turbine zone, engages the Article 6(3) assessment directly.

White-tailed Eagle *(Haliaeetus albicilla)* PRIORITY 1

EU Habitats Directive	Not listed (Annex A — CITES)
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish population	Approximately 150 individuals in the wild (NPWS 2025) — entire national population
Developer's assessment	Grouped in 'rarely recorded target species'; county importance (higher value)

Population and conservation context — why individual birds matter

- The entire wild white-tailed eagle population of Ireland comprises approximately 150 individuals (NPWS, 2025). This figure is confirmed by the EIAR itself (Chapter 7, p.7-81). The species was extinct in Ireland for over a century before reintroduction from Norway.
- With 150 individuals nationally, every single bird is individually significant to the recovery programme. A single collision fatality represents a loss of approximately 0.67% of the national population — a percentage that would be considered significant for any other species.
- The species' recovery is fragile. Low reproductive rates (typically one chick per pair per year), delayed sexual maturity (4–5 years), and high juvenile dispersal mortality mean that any additional adult mortality source directly threatens the viability of the recovery programme.
- White-tailed eagle is an Annex I species. Its reintroduction has been one of NPWS's most significant nature conservation undertakings. The developer's decision to assess it collectively with common species is not merely a methodological choice — it is a failure to engage with the species' exceptional national significance.

Recorded presence in the Zone of Influence

- White-tailed eagle was recorded twice during the TOBIN winter 2025/26 survey: a single bird in flight in the southern section of the proposed site in December 2025, and two birds within the 10km buffer at the River Little Brosna Callows SPA in November 2025.
- Both records are from the single TOBIN season. Given that Ecology Ireland surveys covered 8 seasons with mid-day concentration and no dawn/dusk coverage, it is not possible to determine whether white-tailed eagles use the site regularly or what flight patterns they follow.
- White-tailed eagles frequently soar at heights that would bring them into collision risk height with 200m tip-height turbines. The CRM produces a central estimate of 0.02–0.04 collisions per year. Given the national population of 150, this represents a theoretical annual mortality rate of 0.013–0.027% of the national population per year — equivalent to 0.4–0.8% per 30-year operational life.

Developer's assessment and gaps

- White-tailed eagle is placed in the 'rarely recorded target species' collective, assessed alongside common gull, coot, kingfisher and jack snipe. The juxtaposition of a species with 150 national individuals alongside common species of widespread distribution is indefensible in conservation assessment terms.
- The CRM collision estimate (0.02–0.04/year, Table 4.3) is included in the model but is not carried into the detailed assessment because it falls below the 1% threshold for the all-Ireland population. However, no 1% population threshold is a meaningful tool when the population denominator is 150 individuals — a single collision at 30-year operational scale is individually significant.
- No displacement or disturbance assessment is provided for this species despite confirmed on-site records.

Conclusion

The 1% annual mortality threshold is designed as a screening tool for common or abundant species where population-level impacts require large absolute numbers of deaths to be detectable. It is not designed for species with national populations of 150 individuals, where any individual is ecologically irreplaceable and where the recovery programme is inherently fragile.

For white-tailed eagle, the mathematics of the 1% threshold are as follows:

- 1% of the national population (150) = 1.5 individuals. The threshold would not be triggered until collision mortality reached 1.5 eagles per year.
- The CRM's central estimate is 0.02–0.04 collisions per year — well below 1.5. The developer therefore concludes impact is negligible.
- However, at an expected 30-year operational life, 0.02 collisions per year equates to a cumulative expected mortality of 0.6 birds over the project lifetime. At 0.04/year, this rises to 1.2 birds.
- Given a national population of 150, the loss of even one breeding adult over the operational lifetime of the wind farm is individually significant to the recovery of a species that was extinct in Ireland for over a century.
- The 1% annual threshold was developed for abundant species where compensatory mortality mechanisms operate. It has no scientific or legal basis as a criterion for assessing impacts on critically small populations undergoing recovery from functional extinction.

An Coimisiún Pleanála is requested to note that the developer's application of the 1% threshold to white-tailed eagle is not a legitimate use of that assessment tool. The precautionary principle — which underpins Article 6(3) — requires that where the scale of a population is so small that individual losses are ecologically irreplaceable, no adverse effect can be excluded on the basis of a statistical threshold designed for common species.

PRIORITY 2 SPECIES — SIGNIFICANT CONSERVATION CONCERN

Golden Plover *(Pluvialis apricaria)* — PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
Local SPA population (IWeBS 5-yr mean)	Approximately 5,100–6,900 birds (River Little Brosna Callows SPA)
Conservation condition	Unfavourable — mean peak counts 2016/17–2020/21 are 50% below baseline reference values
Developer's assessment	Individual assessment conducted; CRM collision risk; impact assessed as negligible

Population and conservation context

- Golden plover is a Special Conservation Interest (SCI) species for the River Little Brosna Callows SPA. The First Order Site-Specific Conservation Objective for this SPA requires the maintenance or restoration of the favourable conservation condition of golden plover.
- The NPWS/DAU submission on the Cush Wind Farm (March 2024) explicitly states that golden plover at the SPA is in unfavourable conservation condition, with mean peak counts between 2016/17 and 2020/21 standing at 50% below the baseline reference values. National declines of over 20% have been recorded.
- Given this unfavourable baseline, the NatureScot/DAU guidance is clear: for species already in decline, the assessment must focus on whether the proposed development would undermine the potential for halting decline and allowing recovery to favourable conservation status. The developer's assessment does not adopt this framing.

Recorded presence in the Zone of Influence

- Golden plover was recorded in breeding seasons 2021, 2023 and 2024, and in all four Ecology Ireland winter seasons plus TOBIN 2025/26. The NIS states that during winter 2022/23, a peak count of approximately 3,500 birds was observed within 500m of the project site boundary.
- The CRM produces central collision estimates of 7.9–9.4 birds per year depending on turbine model, with uncertainty ranges of 3.3–51.4 collisions per year. The upper end of the range comfortably exceeds any threshold of significance for a population already 50% below baseline.

- Flight activity shows variable diel patterns. The CRM acknowledges that insufficient Ecology Ireland survey effort in the early morning and evening limits the reliability of the diel recording rate analysis for this species.

Developer's assessment and gaps

- The developer concludes that golden plover impact is negligible because the central collision estimate (without uncertainty applied) does not exceed the 1% mortality threshold for the local wintering population.
- The developer applies a 99.6% avoidance rate for golden plover, citing the CRM author's own published research (Gittings, 2022). However, that research was based on UK wind farms with smaller turbines in lowland agricultural settings — not 172m rotor diameter machines over bog and pasture in Ireland.
- The NPWS/DAU Cush letter (March 2024) specifically challenged the 99.6% avoidance rate on these grounds: the rate is derived from farms with turbine diameters up to 92m, while the proposed turbines have 163–172m rotor diameters. The applicability of this avoidance rate is contested by the regulatory authority.
- The 1% threshold — repeatedly invoked to dismiss golden plover risk — is explicitly acknowledged as 'highly precautionary' in the CRM. For a species already at 50% of its SPA baseline, even mortality increases below 1% annual rate may undermine the conservation objective.

Conclusion

The combination of contested avoidance rate, acknowledged diel coverage gaps, a population already in unfavourable conservation condition, and uncertainty ranges extending to 51 collisions per year means that adverse effects on the golden plover SPA qualifying interest cannot be excluded on the basis of the evidence presented. The NPWS/DAU has reached this conclusion in respect of the comparable Cush application. The same reasoning applies with equal or greater force to Ballincor, which contributes additional collision mortality and displacement to the same finite SPA population.

Greenland White-fronted Goose *(Anser albifrons flavirostris)*

PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086); Dovegrove Callows SPA; All Saints Bog SPA (004103)
World population	Approximately 22,000–27,000 individuals; entire world population winters in Ireland and Scotland
Developer's assessment	Grouped in 'rarely recorded target species'; collective assessment; local importance (higher value)

Population and conservation context

- Greenland white-fronted goose (GWfG) is a globally threatened species. The entire world population winters exclusively in Ireland and Scotland. Ireland therefore bears a unique and absolute conservation responsibility for this subspecies.
- GWfG is an Annex I species requiring special protection measures. It is one of the most disturbance-sensitive species in the Irish wintering waterbird assemblage — flocks will flush at distances of several hundred metres from human activity, and repeated disturbance prevents access to feeding grounds, affecting body condition and survival.
- The species uses the River Little Brosna Callows SPA, Dovegrove Callows SPA and All Saints Bog SPA as qualifying interest — all within the Zone of Influence of the Ballincor development.

Recorded presence in the Zone of Influence

- GWfG was recorded in the Ecology Ireland winter 2022/23 season and in the TOBIN winter 2025/26 season. It is classified as a rarely recorded target species.
- A tagged individual Greenland white-fronted goose was recorded by a PhD researcher at the University of Saskatchewan passing within 6km of the Cush Wind Farm site during migration from the Wexford Slobs. The NPWS/DAU Cush letter cites this as evidence of migration connectivity through the Zone of Influence — the same Zone of Influence that encompasses the Ballincor site.
- Pre-dawn and post-dusk movements — the periods during which GWfG commutes between roost and feeding grounds — are absent from 8 of 9 survey seasons. The CRM applies a waterfowl nocturnal correction (adding 2 hours to daylight hours) but has no site-specific data for this species at dawn or dusk.
- GWfG was recorded in the CRM collision risk model but falls below the reporting threshold of 0.01 collisions per year at most avoidance rates. It is included in Table 4.3 at 0.01 collisions per year (N163 turbine model).

Developer's assessment and gaps

- Assessment is collective. No individual collision risk analysis is presented for a species that bears the unique status of its entire world population wintering in Ireland and Scotland.
- No disturbance or displacement assessment addresses the sensitivity of GWfG to operational turbines — despite published evidence that this subspecies is among the most easily disturbed of Irish wintering waterbirds.
- The tagged bird evidence cited in the NPWS/DAU Cush letter demonstrates migration connectivity between known GWfG sites and the Zone of Influence. This connectivity is not addressed in the Ballincor assessment.

Conclusion

A species whose entire world population winters in Ireland and Scotland cannot lawfully be assessed collectively with common or widespread species. The tagged bird evidence confirms migration through the Zone of Influence. The pre-dawn and post-dusk movement periods most relevant to disturbance and collision mortality risk are absent from the dominant dataset. For a subspecies of this global significance, the precautionary principle demands individual treatment and the explicit exclusion — beyond reasonable scientific doubt — of adverse effects on the populations using the adjacent SPAs.

Hen Harrier *(Circus cyaneus)* PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Slieve Bloom Mountains SPA — within range of development
Irish breeding population	Approximately 108–130 pairs nationally
Developer's assessment	Individual target species; roost surveys conducted; impact assessed as negligible

Population and conservation context

- Hen harrier is an Annex I species that has experienced severe population decline in Ireland. Breeding populations are concentrated on upland bog and heathland habitats. The species commutes from communal winter roosts to feeding grounds over open habitats including bog and agricultural land.
- Communal roost sites are used repeatedly over many years and are highly sensitive to disturbance. Roost departure typically occurs in pre-dawn darkness, with return at dusk — precisely the periods absent from the Ecology Ireland dataset.
- Research on wind farm impacts on hen harrier documents avoidance of turbines during the breeding season and displacement from roost sites near operational turbines.

Recorded presence in the Zone of Influence

- Hen harrier was recorded in breeding season 2023 and in three winter seasons (2020/21, 2022/23, 2023/24, 2025/26). Roost surveys were conducted by TOBIN during the 2025/26 season at two designated harrier VP locations.
- Ecology Ireland recorded hen harrier across multiple seasons but without dawn and dusk coverage. The roost departure and arrival periods — the peak movement and disturbance risk windows — are absent from the dominant dataset.
- The CRM produces a central collision estimate of 0.01–0.02 per year for hen harrier, below the 1% threshold for any reasonable population denominator.

Developer's assessment and gaps

- Hen harrier receives individual assessment. The TOBIN roost surveys are an improvement on the Ecology Ireland methodology but represent only one winter season.
- No assessment of breeding season disturbance is provided for a confirmed breeding season record in 2023. Breeding season disturbance avoidance distances of 750m have been documented for hen harrier.
- The adequacy of roost survey coverage from one winter season (TOBIN) against a requirement for multi-season roost survey data is a gap not addressed in the assessment.

Conclusion

One season of roost surveys (TOBIN 2025/26) does not constitute an adequate basis for concluding that hen harrier roost sites and movement patterns are sufficiently characterised. The confirmed breeding season record has not been followed with targeted breeding disturbance assessment. The 2023 breeding record in conjunction with the adjacent Ballyduff/Clonfinnane SAC — confirmed as active merlin and curlew breeding habitat in 2025 — suggests a broader raptor breeding assemblage that the survey programme has not adequately characterised.

Pintail *(Anas acuta)* — PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex II/1, III/1 — quarry species; but SPA qualifying interest
Irish Wildlife Acts	Schedule 1 — protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
National importance threshold	20 birds (1% of national wintering population)
Developer's assessment	Grouped in 'rarely recorded target species'; a flock of approximately 200 recorded March 2024 dismissed as one-off

Population and conservation context

- Pintail is a SPA qualifying interest species at the River Little Brosna Callows SPA. The SPA conservation objective requires maintenance of the pintail population in favourable condition.
- The national importance threshold for pintail is 20 birds (1% of the estimated Irish wintering population of approximately 2,000). A flock exceeding this threshold is ecologically significant by definition.
- The BirdWatch Ireland IWeBS data for the Little Brosna Callows SPA shows pintail mean peak counts of approximately 590 birds, with individual survey peaks of 1,519 birds — well above the 1% international threshold of 600.

Recorded presence in the Zone of Influence

- Pintail was recorded in winter 2023/24 and 2025/26. In March 2024, a flock of approximately 200 pintail was recorded — a nationally important count exceeding the 1% national importance threshold of 20 birds.
- This flock was recorded during the Ecology Ireland survey period, not during the TOBIN high-quality season. It is therefore present in the dominant dataset.
- The species is listed as a rarely recorded target species with fewer than 10 records, and is excluded from individual CRM analysis on this basis. The nationally important flock count is subsumed into the collective assessment.

Developer's assessment and gaps

- The developer acknowledges the March 2024 flock but characterises it as a one-off event, citing the CRM's acknowledgement that vantage point surveys sample only 1.5–2% of daylight hours and that a single large flock event could dominate the estimate.
- This reasoning is self-contradictory. The same logic — that a single large flock event cannot be relied upon — applies equally to the large golden plover flocks that generate the most significant collision estimates in the CRM. The developer applies the argument selectively: for golden plover, the large flock data is used to generate a collision estimate; for pintail, the large flock is dismissed as unreliable.
- No assessment of disturbance or displacement of pintail from its SPA foraging habitat adjacent to the site is provided.

Conclusion

A flock of 200 pintail exceeds the national importance threshold of 20 birds by a factor of ten. It is a SPA qualifying interest species. Its dismissal as a one-off event using an argument about survey sampling variability — while simultaneously using the same type of data for other species — is logically inconsistent and constitutes a selective application of the precautionary principle. The CRM's own statement that 'this uncertainty cannot be resolved from the available data' should have led to additional survey effort, not dismissal of the record.

PRIORITY 3 SPECIES — RELEVANT CONSERVATION CONCERN

SPA Qualifying Interest Waterbirds *(Lapwing, Wigeon, Teal, Shoveler, Black-tailed Godwit)*

PRIORITY 3

Lapwing	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest Little Brosna Callows & Middle Shannon Callows
Wigeon	Wildlife Acts Schedule 1; BoCCI Amber List; SPA qualifying interest River Little Brosna Callows SPA
Teal	Wildlife Acts Schedule 1; BoCCI Amber List; SPA qualifying interest River Little Brosna Callows SPA
Shoveler	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest River Little Brosna Callows SPA
Black-tailed Godwit	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest Little Brosna Callows & Middle Shannon
Developer's assessment	All receive individual or grouped assessment; CRM conducted for lapwing, wigeon, godwit

Collective notes

- All five species are SPA qualifying interests of the River Little Brosna Callows SPA. Adverse effects on any of these populations engage the Article 6(3) test directly.
- Lapwing (Red List) and shoveler (Red List) are in significant decline nationally. Lapwing recorded in the breeding season 2023, indicating possible breeding activity in the Zone of Influence — not followed with specific breeding assessment.
- Black-tailed godwit generates the highest collision estimate in the CRM after golden plover: 3.3–4.7 collisions per year (central estimate), with an upper uncertainty range of 14–43 collisions per year. The developer concludes impact is negligible, invoking the 1% threshold characterisation.
- Wigeon and teal are nocturnal feeders — both receive nocturnal activity corrections in the CRM. Neither species has dawn or dusk survey coverage in 8 of 9 seasons. The CRM assigns nocturnal activity rankings based on literature values with no empirical site data.
- The BirdWatch Ireland IWeBS dataset for the Little Brosna Callows SPA shows IWeBS 5-year mean peak counts substantially exceeding national importance thresholds for all five species: lapwing 4,787 mean / 12,026 peak; wigeon 4,935 mean / 9,440 peak; teal 2,683 mean; shoveler 191 mean / 592 peak; black-tailed godwit — qualifying interest.

Conclusion

The cumulative collision mortality across these five SPA qualifying interest species — when added to the estimates for golden plover, whooper swan and GWfG — represents a significant combined burden on a finite SPA population. No cumulative species-level assessment has been conducted. The developer treats each species in isolation, allowing each individual estimate to fall below thresholds that would, when combined, exceed any reasonable significance criterion for the SPA as a whole.

Other Species of Concern *(Barn Owl, Kingfisher, Woodcock, Snipe, Peregrine)*

PRIORITY 3

Barn Owl	Wildlife Acts Schedule 1; BoCCI Red List; confirmed breeding in close proximity (NPWS, July 2023)
Kingfisher	Wildlife Acts Schedule 1; EU Birds Directive Annex I; BoCCI Amber List; recorded at site
Woodcock	Wildlife Acts Schedule 1; BoCCI Red List; recorded at site; drumming males observed
Snipe	Wildlife Acts Schedule 1; BoCCI Red List; excluded from CRM as VP surveys are ineffective for this species
Peregrine	Wildlife Acts Schedule 1; EU Birds Directive Annex I; BoCCI Green List; recorded in multiple seasons
Developer's assessment	All grouped in 'rarely recorded target species' collective; no individual assessments

Key points

- Barn owl: NPWS personnel confirmed a breeding nest site 75 metres from the wind farm site in July 2023 (cited in the Carrig Ch.7 notes). This is an extraordinary proximity for a Red-listed species. The developer's EIAR acknowledges a barn owl territory within 75m but does not follow this with a specific collision risk or disturbance assessment for an active breeding site.
- Kingfisher: Annex I species. Recorded in winter 2020/21 and 2025/26. The River Brosna corridor within and adjacent to the site provides riparian habitat used by kingfisher. Grouped in the rarely recorded collective with no Annex I-specific assessment.
- Woodcock: Red-listed. Records of drumming males in the Ecology Ireland survey period indicate possible breeding. Excluded from individual assessment. Woodcock are crepuscular — all activity recording is likely to be systematically underrepresented by mid-day surveys.
- Snipe: Red-listed. Excluded from CRM because VP surveys are not effective for sampling snipe flight activity. No alternative assessment of disturbance, displacement or habitat loss is provided for a Red-listed species with confirmed presence.
- Peregrine: Annex I. Recorded in multiple breeding and winter seasons. No individual collision risk assessment despite confirmed multi-season presence.

Conclusion

Five species of significant individual protection status — including two Annex I species and three Red-listed species — are grouped into a collective rarely-recorded assessment. The barn owl breeding site at 75 metres from the site boundary is the most acute specific gap: an active nest at this proximity requires individual assessment of disturbance, displacement and collision risk. The CRM author's own exclusion of snipe on methodological grounds creates an obligation to provide an alternative disturbance and displacement assessment — which the developer has not done.

Habitat Connectivity and the SAC Network *(Raised bog corridor function)*

PRIORITY 3

European Union Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

European Union Environmental Objectives (Surface Waters) (Amendment) Regulations, 2015. S.I. No. 386 of 2015.

European Union Environmental Objectives (Surface Waters) (Amendment) Regulations, 2019. S.I. No. 77 of 2019.

European Union (Drinking Water) Regulations 2023 (S.I. No. 99 of 2023).

EUROPEAN UNION HABITATS (SHARAVOGUE BOG SPECIAL AREA OF CONSERVATION 000585) REGULATIONS 2017. European Union (2024) REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on nature restoration and amending Regulation (EU) 2022/869. THE EUROPEAN PARLIAMENT THE COUNCIL Brussels, 15 March 2024.GSI Bedrock Geology Sheets 1:100,000 Map Series. Geological Survey of Ireland.

EU Floods Directive (2007/60/EC): Transposed into Irish law via S.I. No. 122 of 2010 (as amended by S.I. No. 495 of 2015).

GSI On-line Groundwater database. Aquifer Classification, Aquifer Vulnerability, Teagasc Soil Classification, Subsoils, Karst features, groundwater recharge.

Guidelines for the Preparation of Soils, Geology & Hydrogeology Chapters of Environmental Impact Statements, 2013.

Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, NRA Document.

Habib, W., Ingle, R., Saunders, M., & Connolly, J. (2024). Quantifying peatland land use and CO2 emissions in Irish raised bogs: Mapping insights using Sentinel-2 data and Google Earth Engine. Scientific Reports, 14(1), 1171. https://doi.org/10.1038/s41598-024-51660-0 [1, 2, 3].

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National Trust for Scotland (2024) https://www.nts.org.uk/stories/conserving-natural-capital-the-trusts-peatlands

NRA (2008) Environmental Impact Assessment of National Road Schemes – A Practical Guide & National Roads Authority (2008) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.

Ordnance Survey, Ireland Map Series 1:50,000 Sheets.

SNH (2018) Scottish National Heritage A handbook on environmental impact assessment: Guidance for Competent Authorities, Consultees and others involved in the Environmental Impact Assessment Process in Scotland, Scottish Natural Heritage, 5th Edition, 2018. Section C8.

An Coimisiún Pleanála - Case reference: PAX92.324279

Appendix A

Scientific Publications Relevant to the Assessment

(a) Locke *et al.*, (2026) opens with *"Human activities are driving a global decline in biodiversity and are interfering with the natural processes essential for human well-being. Achieving climate and development goals is impossible without keeping nature intact. In this article, we establish the urgent need for a paradigm shift toward a "Nature Positive" (NP) future, where the health and resilience of the Earth system are recognized as the fundamental basis for human prosperity. This requires that humanity acts to halt and reverse the loss of nature by 2030." The same paper closes with "It is time for us to recognize that nature is the foundation of all human affairs. Unless we act swiftly to make the world NP by 2030, our lives are likely to become very difficult in a destabilized Anthropocene.*

- Hydro-G offers that the European Union (2024) Regulation Of The European Parliament And Of The Council on Nature Restoration and amending Regulation (EU) 2022/869 sets out on the path towards attempting to achieve restoration.

(b) Damiens *et al.*, (2021) opens with *"Economic development is increasingly impacting biodiversity, leading to a rise in biodiversity offset policies globally that aim to compensate for biodiversity losses. Many developments generating offsets create long-term, irreversible losses of biodiversity and, therefore, require biodiversity gains from offsets to be retained over the long term to have any hope of achieving "no net loss" (NNL) of biodiversity. This raises important ecological and institutional challenges that current offset mechanisms, built for politico-economic systems with short-term policy horizons, do not sufficiently consider. We explore this issue and discuss several responses to the problem ranging from incremental changes for improving on-ground management, through to major governance shifts required to support the long-term social-ecological resilience of offset sites. We argue that without these changes, at best, NNL policies participate in temporarily reducing permanent biodiversity loss. At worst, they participate in a false promise, distracting institutions from the transformative changes needed to reverse biodiversity depletion".*

- Hydro-G offers that it has recently well covered in the Irish media that since 2022 none of the renewable energy MWs have been used to assist citizens in reducing their use of fossil fuels. No Climate Action has been achieved. Instead, Ireland is cited as a 'cautionary tale' by the UN in the context of every single MW of renewable energy been given to new industry, thereby countering Climate Objectives.

(c) Habib *et al.* (2024) in Trinity College, Dublin, research opens with *"Ireland has > 50% of the EU's ocean-raised bogs; however, degradation through land-use activities has transformed them from carbon (C) sinks to sources. Given their significant role in climate mitigation, it is essential to quantify the emissions resulting from land use degradation of these ecosystems".* They developed a mapping system "using Sentinel-2 imagery, random forest machine learning and Google Earth Engine" and their results are fascinating and are summarised as follows: *"The results revealed that agricultural grassland comprised 43% of the land use on raised bogs, followed by, forestry (21%), cutover (11%), cutaway (10%) remnant peatlands (13%), waterbodies and built-up ~ 1% each. The overall accuracy of the map was 89%. The map was used to estimate CO2 emissions for four classes constituting 85% of raised bogs: cutover, cutaway, grassland, and forestry using the IPCC wetlands supplement and literature-based emission factors, we estimated emissions at ~ 1.92 (± 1.58–2.27 Mt CO2-C-yr–1) and ~ 0.68 Mt CO2-C-yr–1 (± 0.44–0.91 Mt CO2-C-yr–1) respectively. This is the first study to spatially quantify land use and related emissions from raised bogs. The results have revealed widespread degradation of these globally rare habitats, making them net emitters of CO2. The map is vital for the conservation of these ecosystems through restoration efforts, and the methodology can also be applied to other regions with similar peatland land use issues".*

- Hydro-G offers that the science is abundantly reported and all points to the importance of restoring peatlands such as the areas around the proposed development. It is not enough anymore to greenwash renewable energy. Construction sites with large machinery that will enable turbines to rotate and change air patterns resulting in 'wake' is something that has previously been presented to An Commissiun in many other Observations relating to Wind Farm proposals.

An Coimisiún Pleanála - Case reference: PAX92.324279

APPENDIX 4-1: Dawn and Dusk Survey Coverage: Analysis and Assessment

The TOBIN winter 2025/26 survey was conducted to a materially higher standard than the preceding Ecology Ireland surveys. It represents ONE SINGLE WINTER SEASON. The eight Ecology Ireland seasons (2020–2024) — on which the overwhelming majority of CRM data and analysis relies — were conducted with surveys concentrated in the middle of the day, with limited or no dawn/dusk coverage and no nocturnal monitoring.

This appendix analyses the temporal distribution of survey effort across all nine seasons of vantage point surveys conducted for the Ballincor Wind Farm Environmental Impact Assessment Report. Its purpose is to demonstrate, from the developer's own data, that the survey programme systematically failed to record bird activity during the dawn and dusk periods — the periods most ecologically significant for the qualifying interest species of the River Little Brosna Callows SPA and the species recorded in the Zone of Influence.

The analysis draws directly from CRM Tables 3.8 and 3.9 (Diel distribution of survey effort, summer and winter respectively) and from the CRM's own narrative at Section 3.4.3. All figures cited are the developer's own. The CRM itself states: 'The Ecology Ireland survey effort was heavily concentrated in the middle of the day.' This appendix quantifies that statement and sets out its consequences for the assessment of disturbance, displacement and collision mortality.

The analysis in this appendix below establishes six conclusions from the developer's own data, carried forward into Section 2 of the main objection report. All are audited and verified in the tables that follow.

1. The dominant dataset is structurally deficient at dawn and dusk.

Eight Ecology Ireland seasons provide zero survey coverage at sunrise in summer, zero coverage at sunset in summer, and only 16 minutes at sunset across four winter seasons. These are not marginal shortfalls — they are structural absences that mean the CRM has no empirical foundation for assessing disturbance, displacement or collision mortality during the periods of highest crepuscular bird activity.

2. The TOBIN data confirms what the EI data missed.

TOBIN's single winter season recorded higher recording rates at dusk and pre-dawn that the EI dataset could not detect. The CRM notes elevated Mute Swan and Whooper Swan recording rates at dawn in the EI winter data — but acknowledges insufficient survey effort to calculate recording rates for the evening period. TOBIN fills this gap for one season only. Eight seasons remain uncorrected.

3. The TOBIN season cannot retrospectively validate the EI dataset.

One winter of improved methodology cannot be used to characterise the crepuscular activity patterns for breeding seasons, non-winter seasons, or any of the eight seasons in which the deficient methodology was applied. The CRM outputs for those seasons remain founded on a dataset that missed the most ecologically significant periods of daily activity for the priority species.

4. The nocturnal activity rankings in the CRM have no empirical foundation in the dominant dataset.

The CRM applies nocturnal/crepuscular activity corrections for curlew, golden plover, lapwing, black-tailed godwit, wigeon, teal and mallard. These corrections are based on literature values, not site survey data, because the EI surveys did not cover the periods in which nocturnal and crepuscular activity would have been recorded. The corrections therefore introduce assumed values into the model where empirical values should exist.

5. The dawn and dusk gap is directly relevant to disturbance and displacement — not only collision mortality.

The most significant impact during dawn and dusk for many species is disturbance and displacement — breeding birds disturbed during territorial display, flocks displaced from feeding grounds during approach to roost, whooper swans diverted from established flight lines. These impacts are not modelled in the CRM at all. The absence of dawn and dusk data means that the developer cannot assess these impact pathways for the periods in which they are most likely to occur.

6. NatureScot 2024 and DAU requirements are not met by the dominant dataset.

NatureScot 2024 explicitly requires coverage before sunrise and after sunset for waterfowl. The DAU letters for both the Cush and Carrig applications identify the absence of dawn and dusk coverage as a basis for requiring further information. The Ecology Ireland dataset — which drives the CRM — does not meet this standard in any of its eight seasons.

SECTION 1 — CRM DIEL EFFORT DATA: REPRODUCED AND ANNOTATED

Table A.1 — Summer Survey Effort by Time Period (Ecology Ireland, April–September)

Source: CRM Table 3.8. Ecology Ireland surveys only — 4 summer seasons: 2020, 2021, 2023, 2024. Summer 2022 is entirely absent from the dataset.

Time Period	Daylight Hrs Available	VP Minutes (EI)	Min / Daylight Hr	Assessment
Sunrise − 1 hr (pre-dawn)	183	0	0.0	ABSENT
Sunrise (dawn)	183	0	0.0	ABSENT
Sunrise + 1 hr	183	15	0.1	CRITICAL GAP
Sunrise + 2 hrs	183	776	4.2	SEVERE GAP
Sunrise + 3 hrs	183	2,135	11.7	SIGNIFICANT GAP
Sunrise + 4 hrs	183	5,270	28.8	PARTIAL
Sunrise + 5 hrs	183	7,582	41.5	PARTIAL
Mid-day block (Sunrise+6 to Sunset+6)	282	12,669–12,227	44.9–43.3	PEAK EFFORT
Sunset + 5 hrs	183	3,655	20.0	PARTIAL
Sunset + 4 hrs	183	1,268	6.9	SEVERE GAP
Sunset + 3 hrs	183	219	1.2	CRITICAL GAP
Sunset + 2 hrs	183	0	0.0	ABSENT
Sunset + 1 hr	183	0	0.0	ABSENT
Sunset (dusk)	183	0	0.0	ABSENT
Sunset − 1 hr (post-dusk)	183	0	0.0	ABSENT

Commentary on Summer Dawn and Dusk Periods

The table above shows that, across all four Ecology Ireland summer seasons, survey effort is entirely absent at the critical crepuscular periods:

- Pre-dawn and sunrise (Sunrise −1 hr through Sunrise): 0 minutes across all VPs and all four seasons. Pre-dawn is the peak departure period for whooper swan from roost and the commencement of territorial display for breeding curlew and merlin.
- First hour after sunrise (Sunrise +1 hr): Only 15 minutes total across all vantage points and all four seasons combined — less than 1 minute per VP per season. Statistically meaningless as a basis for assessment.
- Sunset through post-dusk (Sunset +2 hrs through Sunset −1 hr): Zero minutes at any of these periods. Evening flight activity, pre-roost gatherings, and return commuting are entirely unrecorded.
- Sunrise +3 hrs: 11.7 min/hr — approximately 20% of what proportionate coverage would require.

Table A.2 — Winter Survey Effort: 4 Seasons: Ecology Ireland vs 1 Season: TOBIN (October–March)

Source: CRM Table 3.9. Ecology Ireland: 4 winter seasons 2020/21–2023/24. TOBIN: 1 winter season 2025/26 only. This comparison is the clearest illustration of the methodological gulf between the two datasets.

Time Period	EI Minutes	EI Min/Hr	TOBIN Minutes	TOBIN Min/Hr	EI Assessment	TOBIN Assessment
Sunrise − 1 (pre-dawn)	152	0.8	612	3.4	CRITICAL GAP	COVERED
Sunrise (dawn)	2,326	12.8	942	5.2	PARTIAL	GOOD
Sunrise + 1 hr	5,917	32.5	1,007	5.5	PARTIAL	GOOD
Sunrise + 2 hrs	7,652	42.0	712	3.9	ADEQUATE	ADEQUATE
Mid-day block (SR+3 to SS+3)	13,850–12,450	43.7–39.3	2,274–2,256	7.2–7.1	PEAK EFFORT	ADEQUATE
Sunset + 2 hrs	4,993	27.4	994	5.5	PARTIAL	GOOD
Sunset + 1 hr	1,984	10.9	956	5.3	SIGNIFICANT GAP	GOOD
Sunset (dusk)	16	0.1	869	4.8	ABSENT	COVERED
Sunset − 1 (post-dusk)	0	0.0	538	3.0	ABSENT	COVERED

Key Species Significance — Winter Diel Coverage

The following notes explain the ecological significance of the coverage contrasts shown above, by time period:

- Sunrise −1 hr (pre-dawn): EI recorded only 152 minutes across FOUR winters; TOBIN recorded 612 minutes in ONE winter. Pre-dawn is the primary whooper swan roost-departure window. EI pre-dawn coverage amounts to 25% of TOBIN's single-season effort.
- Sunrise (dawn): CRM notes higher recording rates for Mute Swan and Whooper Swan at this period in the EI data, attributing this to 'birds commuting from nocturnal roost sites.' EI captures some of this but coverage is inconsistent.
- Sunset (dusk): The starkest single contrast — EI recorded only 16 total minutes at sunset across FOUR winter seasons; TOBIN recorded 869 minutes in ONE season. The CRM itself acknowledges insufficient effort to calculate EI evening recording rates.
- Sunset −1 hr (post-dusk): EI recorded zero minutes across all four winters; TOBIN recorded 538 minutes in one season. NatureScot 2024 explicitly requires coverage in this period for waterfowl. The difference is absolute.

WINTER FINDING

At sunset — the most critical dusk period for commuting wildfowl — Ecology Ireland recorded only 16 total minutes across four winter seasons. TOBIN recorded 869 minutes at the same time period in a single winter. Post-dusk: Ecology Ireland recorded zero minutes across four winters; TOBIN recorded 538 minutes in one season.

The CRM itself admits 'there was not sufficient survey effort to calculate recording rates for the evening period in the Ecology Ireland dataset.' This is a self-admission that the dominant dataset cannot support any assessment of dusk-period disturbance, displacement or collision mortality — yet the CRM conclusions rely on that dataset.

SECTION 2 — QUANTIFIED SUMMARY OF DAWN AND DUSK COVERAGE GAPS

Table A.3 — Season-by-Season Summary: Dawn and Dusk Coverage

'Proportionate coverage' = percentage of survey minutes in the dawn/dusk period relative to what would be expected if effort were evenly distributed across daylight hours. Figures derived from CRM Tables 3.8 and 3.9.

Season / Surveyor	Dawn Period	Dawn Coverage (% proportionate)	Dusk Period	Dusk Coverage (% proportionate)	Overall Assessment
EI: Summer (4 seasons, 2020–2024)	0 min at sunrise; 15 min total in hour after sunrise (all VPs, all seasons)	~0%	0 min at sunset; 0 min in hour before sunset; 219 min at Sunset+3	~0%	ABSENT
EI: Winter (4 seasons, 2020/21–2023/24)	152 min pre-dawn; 2,326 min at sunrise; 5,917 min in hour after	~25% pre-dawn; ~22% at sunrise	16 min at sunset; 0 min post-dusk	~0.1% at sunset; 0% post-dusk	CRITICAL GAP
TOBIN: Winter 2025/26 (1 season only ⚠)	612 min pre-dawn; 942 min at sunrise; 1,007 min in hour after	~66% pre-dawn; ~18% at sunrise	869 min at sunset; 538 min post-dusk	~16% at sunset; ~10% post-dusk	ADEQUATE
NatureScot 2024 — Required Standard	Full coverage before sunrise to after sunset required	100%	Full coverage before sunset to after sunset required	100%	STANDARD

SECTION 3 — SPECIES-SPECIFIC SIGNIFICANCE OF DAWN AND DUSK COVERAGE GAPS

Table A.4 — Dawn and Dusk Significance by Priority Species

The following species cards set out the ecological significance of the coverage gaps for each priority species. The CRM assigns nocturnal activity rankings to several species, acknowledging activity beyond daylight hours. The absence of crepuscular survey coverage means that peak movement periods — when disturbance, displacement and collision mortality risk is highest relative to turbine operation — are systematically unrecorded in 8 of 9 survey seasons.

Whooper Swan *Cygnus cygnus*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Annex I · SPA Qualifying Interest	Waterfowl — +2 hrs added to daylight period	Pre-dawn: 152 min / 4 winters · Sunset: 16 min total · Post-dusk: 0 min

Departs nocturnal roost sites in pre-dawn period, often in darkness. Returns to roost at dusk and post-dusk. Communal roost commuting occurs on established flight lines. The CRM specifically identifies pre-dawn and post-sunset as 'potentially important for commuting swans and geese' (NS 2025a).

The established roost at Sharragh (confirmed by Oran Ecology) and the flight line toward the Little Brosna SPA pass through the development Zone of Influence. Pre-dawn commuting on this line is entirely unrecorded in the dominant dataset. Disturbance risk at

dawn, displacement of roost commuting routes, and collision mortality risk during low-light commuting cannot be assessed from EI data.

Curlew *Numenius arquata*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Red-listed · Annex I	Ranking 2 — 25% of day-time activity rates assumed at night	Summer: 0 min at dawn/dusk · Winter: 16 min at sunset / 4 seasons

Crepuscular feeder — peak foraging activity at dawn and dusk. Returns to night roost at dusk. During breeding season, males commence territorial calling and display flights from pre-dawn.

With approximately 105 breeding pairs nationally, every individual curlew matters. Breeding season dawn disturbance from construction and operational noise — occurring precisely when territorial males are most active — is unassessed in the EI data. Dusk foraging movements crossing the turbine Zone of Influence are unrecorded. The CRM nocturnal correction underestimates crepuscular risk because EI data provides no empirical foundation for the correction.

Merlin *Falco columbarius*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 1 · Annex I	Ranking 1 — diurnal only assumed	Summer: effectively zero EI dawn coverage across all breeding seasons

Active hunter at dawn and dusk — typically commences hunting immediately after sunrise. Roosts communally in winter away from breeding territory. Confirmed breeding on Ballyduff/Clonfinnane SAC (BirdWatch Ireland, May/June 2025).

The confirmed adjacent breeding pair's foraging range almost certainly overlaps the development ZoI. Dawn hunting activity — the peak period for disturbance to an active breeding pair — is entirely unrecorded across all breeding season surveys. A nocturnal ranking of 1 may underestimate crepuscular activity. Breeding disturbance assessment has no empirical dawn-period foundation.

Golden Plover *Pluvialis apricaria*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · SPA Qualifying Interest	Ranking 2 — 25% nocturnal activity rate applied	Summer: 0 min dawn/dusk · Winter: near-zero at sunset (16 min / 4 seasons)

Highly mobile. Forms large winter flocks that commute between feeding and roosting areas at dawn and dusk. Night-time activity documented. Population at Little Brosna SPA already 50% below baseline.

Flocking movements of golden plover are concentrated at dawn and dusk. The peak count of ~3,500 birds within 500m of the site boundary (NIS, p.11) was recorded during winter surveys, but the dusk departure and dawn arrival of these flocks is entirely unrecorded in EI data. Collision mortality risk is highest when birds are flying in low-light conditions in large flocks. This period is systemically absent from the model's empirical foundation.

Greenland White-fronted Goose *Anser albifrons flavirostris*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · Annex I · SPA Qualifying Interest	Waterfowl — +2 hrs added to daylight period	Pre-dawn: near-absent in EI data · Post-dusk: 0 EI min / 4 winters

Commutes between feeding grounds and roost in pre-dawn and post-dusk. Tagged individual confirmed passing within 6km of site during migration. One of the most disturbance-sensitive species in the Irish wintering assemblage.

The tagged goose evidence and SPA qualifying interest status make this species directly relevant to the Article 6(3) test. Roost commuting movements in pre-dawn and post-dusk are the primary risk period for both disturbance and collision mortality. These periods are effectively absent from the EI dataset. The CRM cannot reliably assess Greenland white-fronted goose flight activity at these times from EI data alone.

Hen Harrier *Circus cyaneus*

Priority	CRM Nocturnal Ranking	EI Dawn/Dusk Coverage
Priority 2 · Annex I	Ranking 1 — diurnal only assumed	Dawn: minimal EI data · Dusk: near-zero in winter EI dataset

Communal winter roosting — birds depart from roost in pre-dawn period and return at dusk. Roost surveys conducted by TOBIN but not by Ecology Ireland. Dawn hunting flights over bog and grassland.

Pre-dawn roost departure and dusk return are the key movement periods for winter harriers. EI surveys did not include roost watches. TOBIN conducted roost surveys in one winter only. Disturbance to roost commuting and collision mortality risk at low-light transitions are unassessed in the dominant dataset.

APPENDIX 4-2: CRM Self-Identified Limitations
Full Catalogue with Page References

Ballincor Wind Farm Ornithological Objection · Source: Collision Risk Model report (CRM), Appendix 7-2 to EIAR · EIAR Chapter 7 Section 7.2.8 · Cross-reference: Sections 2.10, 3.2–3.5 of main objection report

Every limitation, caveat, uncertainty statement and species exclusion in the CRM is extracted below — verbatim or in close paraphrase — with its CRM section and page reference. These are the developer's own words.

This appendix catalogues 25 separate limitations, caveats, uncertainty statements and species exclusions drawn from the developer's own CRM. They fall into five categories: survey methodology deviations (9); spatial and temporal coverage gaps (5); model uncertainty and statistical limitations (8); species exclusions (5); and other acknowledged uncertainties (5).

No single limitation is individually fatal to the assessment. Cumulatively, however, they demonstrate that the CRM outputs cannot be treated as the complete, precise and definitive findings required by Article 6(3) of the Habitats Directive. The developer's response to each limitation has been to apply a conservative assumption that biases toward over-prediction of collision mortality — while simultaneously using the resulting high figures as justification for concluding that impacts are negligible because the 1% threshold is 'highly precautionary.' This is a circular argument addressed directly in Sections 3.7, 3.9 and 6.2 of the main report

Each entry is cross-referenced to the section of the main objection report where it is challenged. The cumulative weight of these admissions is substantial: together they demonstrate that the CRM's conclusions cannot be considered complete, precise or definitive as required by Article 6(3) of the Habitats Directive and the legal standard established in Case C-127/02 (Waddenzee).

CATALOGUE OF CRM SELF-IDENTIFIED LIMITATIONS

The catalogue below is organised into five categories. Within each category, entries are ordered by their appearance in the CRM. Each entry comprises: the CRM reference; the developer's own statement (quoted or closely paraphrased); and the objection's challenge to that statement.

Category summary:

- Category A — Survey Methodology Deviations (9 entries): non-compliance with NatureScot guidance, mid-day concentration, height data gaps, viewshed over-counting, reduced-visibility watches, statistical independence failures.
- Category B — Spatial and Temporal Coverage Gaps (5 entries): T5/T6 viewshed gaps, 62% buffer coverage, missing summer 2022, admitted Whooper Swan under-estimation, simulation exclusions.
- Category C — Model Uncertainty and Statistical Limitations (8 entries): under-detection excluded from ranges (+1.5–3×), avoidance rate uncertainty excluded, inappropriate error structure, flock-event irreducible uncertainty.
- Category D — Species Exclusions (5 entries): snipe, curlew, white-fronted goose, pintail, teal, shoveler, buzzard — reasons examined and challenged.
- Category E — Other Acknowledged Uncertainties (5 entries): nocturnal ranking crudeness, avoidance rate sensitivity, height classification caveat, 1% threshold characterisation, displacement assessment proxy reliance.

A — Survey Methodology Deviations

9 entries

Non-compliance with NatureScot guidance, mid-day concentration, height data gaps, viewshed over-count, reduced-visibility watches, concurrent VP statistical dependency

A1

CRM Reference: **CRM §1.5 · p.2**

Objection Cross-Reference: §2.1 · §3.2

CRM Limitation — Developer's Own Words

The methodology of most of the vantage point surveys carried out for this project deviated in a number of respects from the recommended methodology (NatureScot, 2025a). Conservative assumptions have been applied where possible in this collision risk model to address the implications of these deviations.

Objection Challenge

The developer presents conservative assumptions as a corrective for systematic methodology failures. The objection challenges whether precautionary assumptions are a legally adequate substitute for compliant survey data when the AA must be 'complete, precise and definitive' (Waddenzee, Case C-127/02).

A2

CRM Reference: **CRM §2.4.3.1 · §3.2.2**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

The Ecology Ireland vantage point watches were all continuous six-hour watches without the 30-minute break after three hours required by the NatureScot survey guidance.

Objection Challenge

All Ecology Ireland watches are formally non-compliant with NatureScot guidance. The CRM ran both compliant and non-compliant versions and used the higher estimate — a precautionary approach that does not validate the underlying non-compliance.

A3

CRM Reference: **EIAR §7.2.8 · p.7-22**

Objection Cross-Reference: §2.1 · §3.2

CRM Limitation — Developer's Own Words

Flight activity was not systematically classified by height band [by Ecology Ireland] and a proportion of records lacked complete flight height, flight duration and/or mapped flightline data. In addition, some records included mixed flight and non-flight behaviour or were recorded at higher taxonomic groupings, requiring interpretation and standardisation of the dataset prior to collision risk modelling.

Objection Challenge

The absence of height band classification means that the proportion of flight activity at collision height — a fundamental CRM input — is based on assumptions and literature values rather than site data for 8 of 9 survey seasons. This directly affects the reliability of all collision mortality estimates.

A4

CRM Reference: **CRM §2.4.3.2 · p.10**

Objection Cross-Reference: §2.2 · §3.2 · App.D

CRM Limitation — Developer's Own Words

A substantial proportion of the Ecology Ireland survey time was spent tracking flightlines outside the viewshed arcs, with less than 50% of mapped flightlines falling within the defined viewshed arcs at some vantage points. This means that the effective survey effort will have been lower than the total vantage point survey durations.

Objection Challenge

VP2 had only 44% and VP6 only 40% of mapped flight durations within their arcs. The headline survey hours materially overstate effective coverage of the turbine buffer, affecting the reliability of flight density estimates for disturbance, displacement and collision mortality assessment.

A5

CRM Reference: **CRM §2.3 · p.5**

Objection Cross-Reference: §2.4 · App.A

CRM Limitation — Developer's Own Words

The Ecology Ireland vantage point surveys were concentrated in the middle of the day, but there was some coverage of the early morning period during the winter months.

Objection Challenge

The CRM's own narrative confirms the mid-day concentration. CRM Tables 3.8 and 3.9 quantify zero summer dawn/dusk coverage and near-zero winter dusk coverage. This is explored in full in Appendix A of this objection.

A6

CRM Reference: **CRM §3.4.3 · Fig.3.6–3.8 · p.46**

Objection Cross-Reference: §2.4 · §3.1 · App.A

CRM Limitation — Developer's Own Words

There was not sufficient survey effort to calculate recording rates for the AM1 period in summer or for the PM1 period in both seasons [Ecology Ireland dataset].

Objection Challenge

The CRM admits it cannot calculate recording rates for the dawn and dusk periods in the dominant dataset. This is a self-admission that the model has no empirical foundation for assessing crepuscular activity — the peak risk period for disturbance, displacement and collision mortality for whooper swan, curlew, golden plover and other priority species.

A7

CRM Reference: **CRM §3.2.3 · p.41**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

Some of the TOBIN vantage point surveys included watches with reduced visibility where the full 2 km viewsheds at potential collision height were not fully visible. These comprised 7% of the TOBIN watches.

Objection Challenge

Even the higher-quality TOBIN dataset contains reduced-visibility watches. One repeat survey was conducted, but the 7% figure applies to the dataset as a whole.

A8

CRM Reference: **CRM §3.2.3 · p.41**

Objection Cross-Reference: §2.2 · §3.2

CRM Limitation — Developer's Own Words

Both sets of vantage point surveys included some watches with reduced visibility. These comprised 11% of the Ecology Ireland watches.

Objection Challenge

11% of Ecology Ireland watches were conducted in poor visibility conditions, further reducing effective coverage in a dataset already compromised by mid-day concentration and non-compliant methodology.

A9

CRM Reference: **CRM §3.2.1 · p.40**

Objection Cross-Reference: §3.2 · §3.3

CRM Limitation — Developer's Own Words

Over 50% of the Ecology Ireland survey days included concurrent watches at all the vantage points. As there were large overlaps between viewsheds, the predominance of concurrent watches created significant issues for the statistical independence of the flight activity sampled at each vantage point.

Objection Challenge

The fundamental statistical assumption of the NatureScot model — that each VP represents an independent sample — is violated by concurrent watches at overlapping viewsheds. Approximately 10% of duplicated flightlines were identified, which the CRM acknowledges is likely an undercount given the overlap extent.

A10

CRM Reference: **CRM §3.2.1 · p.40**

Objection Cross-Reference: §3.2 · §3.3

CRM Limitation — Developer's Own Words

The Brosna North Corridor did not include any turbine locations. I excluded the flight activity within the Brosna North Corridor from the spatially-structured models because of the high concentration of flight activity associated with birds feeding on flooded fields and/or the differences in flight activity densities between the Brosna North Corridor and Brosna South Corridor. (CRM §2.5.3)

Density data (CRM Table 3.4, 17m viewshed): Whooper Swan: North 901 vs Remainder 191 (4.7×); Wigeon: North 8,434 vs Remainder 1,058 (8.0×); Lapwing: North 7,845 vs Remainder 1,363 (5.8×); Black-tailed Godwit: North 10,573 vs Remainder 3,377 (3.1×). All four species are SPA qualifying interests.

Objection Challenge

The CRM excludes the highest bird density zone in the survey area from the collision risk model. Birds feeding in the North Corridor must commute south through or over the wind farm footprint to reach alternative feeding areas and roost sites. That commuting flight activity — the event that generates collision risk — is not separately modelled. No commuting flight analysis was conducted. The CRM therefore models collision risk for Whooper Swan, Wigeon and Lapwing from the lowest-density zone (Remainder) while the highest-density zone (North Corridor) is excluded and the commuting movements it implies are unquantified. The CRM further acknowledges (§4.7.2.3) that annual variation in North Corridor densities is driven by flooding patterns — meaning peak-year densities in the highest-activity zone are not captured by the exclusio

n.

B — Spatial and Temporal Coverage Gaps

5 entries

T5/T6 viewshed gaps, buffer coverage shortfall, missing summer 2022 season, admitted diel under-estimation of Whooper Swan, simulation exclusions

B1

CRM Reference: **CRM §3.1.1.1 · p.39**

Objection Cross-Reference: §2.2 · App.D

CRM Limitation — Developer's Own Words

The viewshed coverage at 17m above ground level included eight turbine locations [Ecology Ireland]. The two turbine locations not covered by the 30m viewshed (T5 and T6) were within 25m of the viewshed boundary. T6 was around 200m from the 17m viewshed boundary.

Objection Challenge

T5 is outside all EI viewsheds at all heights. T6 is approximately 200m outside the 17m viewshed — a substantial gap, not a marginal omission. Disturbance, displacement and collision mortality assessment at T5 and T6 from Ecology Ireland data has no direct empirical foundation.

B2

CRM Reference: **CRM §3.1.1.1 · p.39**

Objection Cross-Reference: §2.2 · App.D

CRM Limitation — Developer's Own Words

The 17m viewshed coverage included 62% of the 500m turbine buffer [Ecology Ireland]. While there is incomplete coverage of the turbine locations and the 500m buffer around the turbine locations, the gaps in coverage are small and there are not any significant areas lacking coverage.

Objection Challenge

The developer's characterisation that 'gaps in coverage are small' is directly contradicted by the T6 gap (200m from viewshed boundary) and VP6's 40% within-arc compliance rate. The objection challenges this as inconsistent with the data presented.

B3

CRM Reference: **CRM §2.3.1 · p.5**

Objection Cross-Reference: §2.5 · §3.1

CRM Limitation — Developer's Own Words

Summer 2022 is absent from the survey dataset. The flight activity data comprised surveys between summer 2020 and summer 2024 with the exception of summer 2022.

Objection Challenge

An entire breeding season is absent from the dataset with no explanation given. For curlew (~105 breeding pairs nationally) and merlin (confirmed breeding on adjacent SAC), missing one breeding season is not a minor data gap.

B4

CRM Reference
CRM §4.7.2.5 · p.80

Objection Cross-Reference
§2.4 · §3.7 · App.A

CRM Limitation — Developer's Own Words

Uneven diel coverage may have caused under-estimation of Cormorant and (possibly) Whooper Swan collision risk.

Objection Challenge

The CRM explicitly acknowledges that its own diel coverage gap may have caused under-estimation of Whooper Swan collision risk. This directly undermines the developer's conclusion that Whooper Swan impact is negligible. If dusk and pre-dawn movements are underrepresented, the central estimate may be lower than the true figure — and disturbance and displacement risks are entirely absent from the model.

B5

CRM Reference
CRM §4.7.2.1 · p.73

Objection Cross-Reference
§3.2 · §3.3

CRM Limitation — Developer's Own Words

No simulations were carried out for Wigeon or Black-tailed Godwit due to the low number of records in the dataset that was used to parameterise the simulation.

Objection Challenge

Wigeon is a SPA qualifying interest species. Black-tailed Godwit generates the highest single-species collision estimates in the CRM (3.3–4.7/year). Neither could be modelled for sampling effects uncertainty due to data scarcity — meaning the reported uncertainty ranges for these two species are the least reliable in the dataset.

C — Model Uncertainty and Statistical Limitations

8 entries

Under-detection excluded from ranges (+1.5–3×), avoidance rate uncertainty excluded, inappropriate error structure, weighting formula anomaly, flock-event irreducible uncertainty

C1

CRM Reference
CRM §5.3 · p.91

Objection Cross-Reference
§3.4 · §3.7

CRM Limitation — Developer's Own Words

The uncertainty ranges did not take account of potential under-detection of distant flightlines. Inclusion of this factor would raise the mortality increases by factors of around 1.5–3 times.

Objection Challenge

The reported uncertainty ranges — already wide — would increase by a factor of 1.5 to 3 if under-detection were included. For species already exceeding or approaching the 1% mortality threshold, this correction could be determinative. The developer does not apply this correction to the final assessment conclusions.

C2

CRM Reference
CRM §5.3 · p.91

Objection Cross-Reference
§3.4

CRM Limitation — Developer's Own Words

The uncertainty ranges also did not take account of uncertainty due to limited knowledge of avoidance rates.

Objection Challenge

Avoidance rates are the single most influential variable in the CRM. For golden plover, the difference between 98% and 99.6% avoidance rates changes the predicted collision figure by approximately an order of magnitude (CRM Table 4.9). The developer applies 99.6% without adequate justification for its applicability to 172m rotor diameter turbines in this landscape type.

C3

CRM Reference
CRM §4.7.2.1 · p.72

Objection Cross-Reference
§3.2 · §3.3

CRM Limitation — Developer's Own Words

The overall uncertainties are dominated by the sampling effects uncertainties. For most species, uncertainty decreased substantially when the number of survey seasons increased from one to two, with smaller reductions as additional seasons were added. This suggests that the principal source of uncertainty arises from within-season sampling variability rather than the number of seasons.

Objection Challenge

The CRM states that most uncertainty reduction occurs when going from one to two seasons — additional seasons provide diminishing returns. With nine seasons, uncertainty remains very large (golden plover upper range: 26–51/year against a central estimate of ~8). This confirms that the problem is within-season variability — i.e., mid-day concentration — not season count.

C4

CRM Reference
CRM §4.7.2.1 · p.73

Objection Cross-Reference
§3.3

CRM Limitation — Developer's Own Words

The relative error method appears poorly suited to flight activity data from vantage point surveys because monthly values aggregate across daily variation. The frequent occurrence of negative lower bounds further indicates that the approach imposes an inappropriate symmetric error structure on a non-negative and strongly skewed variable.

Objection Challenge

The CRM identifies a fundamental statistical incompatibility between the standard NatureScot uncertainty method and this dataset. The developer substitutes an alternative (multiplicative) method producing narrower uncertainty ranges. The choice of uncertainty method influences which species appear to exceed the 1% threshold.

C5

CRM Reference
CRM §4.7.3.1 · p.79

Objection Cross-Reference
§3.7

CRM Limitation — Developer's Own Words

The NatureScot collision risk model scales predicted risk directly with the number of birds recorded, implicitly treating a single flock of 100 birds as equivalent to 100 independent single-bird passages. This assumes that the probability of avoidance by each bird is independent and unaffected by flocking behaviour. However, for a cohesive flock, collision risk and avoidance behaviour are unlikely to be independent among individuals.

Objection Challenge

Particularly relevant to golden plover (peak count ~3,500 birds within 500m) and pintail (~200 recorded March 2024). The model may significantly misrepresent collision risk from large flocks. The same logic the developer uses to dismiss the pintail count as a one-off should apply to the large golden plover flocks underpinning the elevated collision estimate.

C6

CRM Reference
CRM §4.7.5 · p.80

Objection Cross-Reference
§3.4 · §5.4

CRM Limitation — Developer's Own Words

The uncertainty due to distance effects is not included in the overall uncertainty estimates because distance effects are not included in the NatureScot methodology. This uncertainty would double the upper end of the collision risk range by a factor of around 1.5–3 times.

Objection Challenge

Distance under-detection corrections of 1.5–3× are calculated for this site (CRM Table 4.6) but deliberately excluded from the reported uncertainty ranges because NatureScot methodology does not require them. For species near or at the 1% threshold, this omission is not conservative — it is systematically in the developer's favour.

C7

CRM Reference
CRM §4.7.3.1 · p.77

Objection Cross-Reference
§3.3

CRM Limitation — Developer's Own Words

Another issue with the weighted averaging procedure is that the penalty imposed on a vantage point with a smaller viewshed and/or lower survey effort increases with the number of vantage points. This is a mathematical property of the formula, but it is somewhat counter-intuitive.

Objection Challenge

The CRM identifies a mathematical limitation in the NatureScot weighting formula but does not resolve it. This is a further reason why the model outputs cannot be treated as definitive.

C8

CRM Reference
CRM §5.2 · p.91

Objection Cross-Reference
§3.3 · §3.7

CRM Limitation — Developer's Own Words

Vantage point surveys typically sample only around 1.5–2% of daylight hours across the season. As a result, if the survey effort, by chance, coincided with one of the relatively few occasions when a large flock occurred, the collision risk could be overestimated by at least an order of magnitude. An alternative possibility is that the survey effort may have under-sampled the occurrence of large flocks. This uncertainty cannot be resolved from the available data.

Objection Challenge

The CRM explicitly acknowledges an 'irreducible source of uncertainty' arising from infrequent large-flock events. This applies directly to the black-tailed godwit estimate (dominated by a single large-flock observation) and to the pintail flock dismissed as a one-off. The CRM cannot distinguish between a genuine anomaly and an undersampled regular event.

D — Species Exclusions and Stated Reasons

5 entries

Snipe, curlew, white-fronted goose, pintail, teal, shoveler, buzzard excluded — reasons examined and challenged

D1

CRM Reference
CRM §2.2 · p.5

Objection Cross-Reference
§4.10

CRM Limitation — Developer's Own Words

Snipe was not included [in the CRM] because vantage point surveys are not an effective method of sampling their flight activity, so the results from collision risk modelling would not be very meaningful.

Objection Challenge

Snipe exclusion is acknowledged as a methodological limitation. Snipe is recorded on site and is a Red-listed species. The developer offers no alternative assessment of snipe disturbance, displacement or collision mortality risk.

D2

CRM Reference
EIAR §7.2.7 · p.7-146

Objection Cross-Reference
§4.2 · §4.4 · §4.6

CRM Limitation — Developer's Own Words

Non-target species such as passerines, as well as target species that were rarely recorded, were not assessed in the CRM. This was due to several factors: these species are considered less at risk from potential turbine impacts, they hold a more favourable conservation status, they were infrequently recorded during surveys, or their flight activity was so low that the CRM would have produced negligible results.

Objection Challenge

This exclusion encompasses curlew, white-fronted goose, teal, pintail, shoveler, kingfisher and jack snipe — all Red-listed, Annex I or SPA qualifying interest species. The rationale that 'infrequent recording suggests limited site reliance' ignores that mid-day concentrated surveys systematically missed the periods when these species would most likely be recorded.

D3

CRM Reference
CRM Table 3.7 · p.45

Objection Cross-Reference
§3.1 · §4.2 · §4.6 · §4.8

CRM Limitation — Developer's Own Words

Additional species recorded with a total of less than 10 records, or outside the Ecology Ireland 1.5km viewsheds: White-fronted Goose, Teal, Pintail, Shoveler, Little Grebe, Moorhen, Curlew, Jack Snipe, Herring Gull, Great Black-backed Gull, Kingfisher, Unidentified swan, Unidentified goose, Unidentified wader, Unidentified gull.

Objection Challenge

The '<10 records' exclusion threshold is applied to species whose low detection directly results from the mid-day survey methodology. Curlew, white-fronted goose, pintail, teal and shoveler — all SPA qualifying interests or Annex I species — are excluded on this basis. The threshold conflates genuine rarity with survey methodology failure.

D4

CRM Reference
CRM Table 3.7 · p.45

Objection Cross-Reference
§3.7 · §4.9

CRM Limitation — Developer's Own Words

Black-tailed Godwit had a total of <10 records but are included in this table because of the large collision risks that those records generated.

Objection Challenge

The CRM created a species-specific exception for black-tailed godwit because even a small number of records generated a large collision estimate (3.3–4.7/year, exceeding the 1% threshold). This demonstrates that the '<10 records' rule is not consistently applied — it is applied where it produces lower risk estimates and waived where few records generate high estimates.

D5

CRM Reference
EIAR §7.3.7 · p.7-152

Objection Cross-Reference
§3.7

CRM Limitation — Developer's Own Words

Buzzard was not carried forward into the detailed collision risk assessment. Although a population estimate is available, it is largely outdated, being based on data published in 2013, and the actual population is likely to be significantly higher than reported.

Objection Challenge

The developer uses population data uncertainty to justify exclusion of buzzard from detailed assessment. The same logic — that population estimates are uncertain — is not applied to species where such uncertainty would increase the significance of the assessment.

E — Other Acknowledged Uncertainties

5 entries

Nocturnal ranking crudeness, avoidance rate sensitivity, height classification caveat, 1% threshold characterisation, displacement assessment proxy reliance

E1

CRM Reference
CRM §2.6.7.3 · p.25

Objection Cross-Reference
§3.2 · §3.3 · App.A

CRM Limitation — Developer's Own Words

The NatureScot methodology uses a crude ranking of the degree of nocturnal flight activity to calculate nocturnal correction factors and the information available about the degree of nocturnal flight activity for most species is very limited.

Objection Challenge

The CRM applies nocturnal corrections for curlew, golden plover, lapwing, black-tailed godwit, wigeon, teal and mallard based on literature rankings with acknowledged limited empirical support. No nocturnal surveys were conducted. The correction therefore introduces assumed values where empirical values are required by the NatureScot standard.

E2

CRM Reference
CRM §5.3 · p.91 · Table 4.9

Objection Cross-Reference
§3.4

CRM Limitation — Developer's Own Words

Uncertainty due to limited knowledge of avoidance rates is not included in [the overall uncertainty] estimates. The variation in predicted collision risks with avoidance rates of 95%, 98%, 99% and 99.5% is shown in Table 4.9.

Objection Challenge

CRM Table 4.9 shows that for golden plover the central collision estimate ranges from 7.9/year (at 99.6% avoidance) to 64/year (at 95% avoidance) — an 8-fold range solely from avoidance rate selection. This uncertainty is excluded from

the formal uncertainty ranges. The developer applies 99.6% without demonstrating its applicability to 172m rotor turbines in this landscape.

E3

CRM Reference
CRM §4.7.2.5 · p.80

Objection Cross-Reference
§3.3 · §3.7

CRM Limitation — Developer's Own Words

Precautionary approaches to the assignment of flight heights may have caused general overestimation of collision risks.

Objection Challenge

The developer uses the possibility of height overestimation as a reason to downplay collision risk findings approaching the 1% threshold. However, height overestimation was necessitated by the absence of proper height band classification in the EI surveys. The developer cannot use a consequence of survey inadequacy as justification for reducing the significance of results.

E4

CRM Reference
CRM §5.3 · p.91 · EIAR §7.3.7

Objection Cross-Reference
§3.7 · §3.9 · §6.2

CRM Limitation — Developer's Own Words

The 1% threshold is likely to be very precautionary. The calculations of the increase in annual mortality also made strong precautionary assumptions that all the collision fatalities were adult birds and that the collision mortality was additive not compensatory. Therefore, substantial increases in annual mortality well above the 1% threshold are likely to be required to cause significant impacts on the affected populations.

Objection Challenge

This statement — repeated throughout EIAR Chapter 7 — is the principal mechanism by which the developer dismisses species approaching or exceeding the 1% threshold. The NPWS DAU (Cush letter, 2024) has explicitly rejected this reasoning: for species in unfavourable conservation condition (golden plover, 50% below SPA baseline), the precautionary principle requires assessing whether the proposal undermines potential for recovery — not merely whether it accelerates an existing decline.

E5

CRM Reference
EIAR §7.3 · general

Objection Cross-Reference
§3.5 · §3.6

CRM Limitation — Developer's Own Words

The displacement and disturbance assessment relies on the CRM flight activity data as a proxy for site usage. No specific displacement surveys (e.g., before-after comparisons at alternative sites) were conducted.

Objection Challenge

The developer's assessment of displacement and disturbance is entirely derivative of the flawed VP dataset. No independent displacement assessment was conducted. The developer assumes that low VP recording rates indicate limited site dependency — but mid-day concentrated surveys cannot support this inference for species whose peak activity is at dawn and dusk.

APPENDIX 4-3 — Protected Species: Full Status Schedule and Conservation Context

This appendix sets out the full protection status and conservation context for every species discussed in Section 4 of the main objection report. Each species entry follows a consistent structure: a compact status block showing all legal and conservation designations, followed by bullet points covering population context, recorded presence in the Zone of Influence, the developer's assessment, and the basis on which that assessment is challenged. Colour-coded priority headings correspond to the ranking used throughout the objection.

PRIORITY 1 — Highest concern	PRIORITY 2 — Significant concern	PRIORITY 3 — Relevant concern

PRIORITY 1 SPECIES — HIGHEST CONSERVATION CONCERN

Whooper Swan *(Cygnus cygnus)* — PRIORITY 1

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086); Middle Shannon Callows SPA (004096)
Irish wintering population	Approximately 16,000 individuals
Developer's assessment	Local importance (higher value); impact: negligible

Population and conservation context

- Whooper swan is an Annex I species under the EU Birds Directive, obligating member states to classify the most suitable territories as SPAs and to take special conservation measures.
- The River Little Brosna Callows SPA is a designated qualifying site for this species. The SPA's conservation objectives require that the population is maintained in favourable condition.
- Irish wintering population of approximately 16,000 is of international significance. The BirdWatch Ireland IWeBS data shows counts at the Little Brosna Callows SPA regularly approaching or exceeding the 1% international threshold of approximately 160 birds.
- The species is highly site-faithful, returning to established wintering grounds and roost sites year after year. Displacement from a roost or feeding site is therefore not a temporary inconvenience — it represents a long-term loss of functionally important habitat.

Recorded presence in the Zone of Influence

- Recorded in all four Ecology Ireland winter seasons and in the TOBIN winter 2025/26 season, primarily along the River Little Brosna corridor and adjacent flooded fields in the northeast of the site. Maximum single count of 55 individuals.
- A confirmed communal roost site exists at NPWS-owned land at Sharragh (documented in the Oran Ecology report, 2023), with observed flight lines running northwest toward the Little

Brosna SPA. This roost and its associated flightlines pass directly through or adjacent to the development Zone of Influence.

- ESB Networks previously installed bird strike deflectors on powerlines in the Sharragh/Lissernane area due to repeated whooper swan collisions — physical evidence of an established and long-used flightline through this landscape.
- Pre-dawn and post-dusk commuting movements between the Sharragh roost and the SPA are entirely unrecorded in 8 of 9 survey seasons (see Appendix A). The CRM acknowledges uneven diel coverage may have caused under-estimation of whooper swan collision risk (CRM §4.7.2.5).

Developer's assessment and gaps

- The developer assigns local importance (higher value) and concludes the impact is negligible.
- The CRM produces a central collision estimate of 0.02–0.05 birds per year depending on turbine model. The developer does not separately assess disturbance or displacement from the established Sharragh roost flightline.
- No nocturnal or pre-dawn surveys were conducted. No radar was deployed to quantify migration or commuting at height. The species' peak movement period is systematically absent from the dominant dataset.

Conclusion

The developer's negligible impact finding relies on a collision estimate derived from daytime vantage point surveys that miss the species' peak crepuscular movement period. The CRM's own caveat (§4.7.2.5) that diel coverage gaps may have caused under-estimation of whooper swan risk is not reflected in the assessment conclusion. Displacement from the Sharragh roost flightline — a long-established and physically evidenced movement corridor — receives no quantitative treatment. Under Article 6(3), adverse effects on the SPA qualifying interest cannot be excluded on the basis of an assessment with these acknowledged gaps. With both Article 6(4) IROPI and Article 4.7 WFD derogations expressly waived, this insufficiency is determinative.

Eurasian Curlew *(Numenius arquata)* PRIORITY 1

EU Habitats Directive	Not listed (non-breeding); Annex I — Birds Directive
EU Birds Directive	Annex I — special protection measures required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	Not a qualifying interest of local SPAs but is an SCI species in adjacent callows systems
Irish breeding population	Approximately 105–130 breeding pairs nationally (NPWS)
Developer's assessment	Grouped in 'rarely recorded target species'; assessed collectively; local importance (higher value)

Population and conservation context

- Curlew is one of Ireland's most critically threatened breeding birds. With approximately 105 breeding pairs remaining nationally, the loss of a single breeding pair represents

approximately 1% of the national population — a figure of unambiguous conservation significance.

- Ireland holds a disproportionate European responsibility for curlew conservation. The national breeding population is so small that any localised mortality or breeding failure attributable to a wind farm development carries national-level consequences.
- The NPWS has designated curlew conservation as a national priority. A dedicated Curlew Conservation Project operates across the midlands and west. The area surrounding Ballyduff/Clonfinnane SAC — directly adjacent to the Ballincor development zone — is within the curlew conservation project target area.
- Studies on wind farm impacts on curlew document breeding density reductions of up to 42% within 500m and avoidance distances extending to 800m from operational turbines. The developer uses a 300m displacement zone — substantially below the documented evidence base.

Recorded presence in the Zone of Influence

- Curlew was recorded during breeding season 2023 in the Ecology Ireland dataset, and in winter 2020/21. It is listed as a rarely recorded target species with fewer than 10 records across the survey period.
- A confirmed breeding record of curlew was located in the region of the Arragh More Bog NHA and Kilcarren-Firville Bog SAC to the southwest of Sharragh (NPWS 2021 survey), within 5km of the Ballincor site.
- The 2025 BirdWatch Ireland breeding survey on the adjacent Ballyduff/Clonfinnane Bog SAC confirmed curlew presence (alongside confirmed breeding merlin). This survey, conducted in May and June 2025, is the most recent and directly relevant field evidence available.
- The low recording rate in the Ecology Ireland dataset is a direct consequence of mid-day concentrated surveys. Curlew is predominantly active at dawn and dusk. Zero dawn/dusk coverage in summer seasons means the dominant dataset cannot support any conclusion about curlew site use.

Developer's assessment and gaps

- Curlew is grouped with 10 other species under 'rarely recorded target species' and assessed collectively — receiving no individual collision risk modelling and no species-specific displacement assessment.
- The grouping rationale is that species with fewer than 10 records during surveys 'were infrequently recorded, suggesting limited reliance on the area for breeding or feeding.' This inference is invalid where the survey methodology systematically missed the periods in which curlew activity would have been recorded.
- No targeted curlew breeding surveys were conducted in 2022 (season entirely absent) or in the 2025 breeding season, despite NPWS scoping requirements for specific curlew survey effort.

Conclusion

Curlew cannot lawfully be assessed collectively with common species of lower conservation concern. With approximately 105 breeding pairs nationally, it requires individual treatment. The developer's inference that low recording rates indicate limited site dependence is directly contradicted by the 2025 breeding survey on the adjacent SAC and by the known dawn/dusk activity patterns that the surveys systematically missed. The displacement distance of 300m used in the assessment is not supported by current literature (documented avoidance to 800m).

The absence of individual collision risk modelling for a Red-listed, nationally critical species with confirmed presence in the Zone of Influence is a material gap in the Appropriate Assessment.

Merlin *(Falco columbarius)* — PRIORITY 1

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish breeding population	Approximately 130–170 pairs nationally; precise count uncertain
Developer's assessment	Grouped in 'rarely recorded target species'; local importance (higher value)

Population and conservation context

- Merlin is Ireland's smallest falcon and one of its rarest breeding raptors. The national breeding population is small and concentrated on upland and lowland bog habitats — exactly the habitat type present at Ballyduff/Clonfinnane Bog SAC adjacent to the Ballincor site.
- As an Annex I species, merlin is subject to special conservation measures. Any development that risks breeding failure, nest desertion through disturbance, or mortality of breeding adults requires rigorous assessment.
- Merlin is sensitive to disturbance at the nest, particularly during incubation and early chick-rearing. Repeated disturbance from construction activity or low-flying maintenance helicopters during the breeding season can lead to nest desertion.

Recorded presence in the Zone of Influence

- Merlin was recorded in breeding seasons 2023 and 2024, and in all four Ecology Ireland winter seasons plus the TOBIN winter 2025/26 season. It is listed as a target species but grouped in the rarely recorded collective.
- Most significantly: BirdWatch Ireland confirmed breeding merlin on Ballyduff/Clonfinnane Bog SAC in May and June 2025, using passive acoustic monitoring (ARUs) deployed around the perimeter of the SAC. The nest was subsequently located. This is the most current and direct field evidence available — postdating the developer's survey programme entirely.
- The confirmed breeding pair's foraging range will almost certainly extend into the proposed turbine zone. Merlin typically forages up to 2–3km from the nest during the breeding season, with the nearest proposed turbine locations approximately 1–2km from the SAC boundary.
- The developer's breeding bird surveys did not include targeted merlin surveys using appropriate methodology (passive acoustics, nest searches). The 2025 BirdWatch Ireland findings demonstrate what a properly conducted breeding survey would have revealed.

Developer's assessment and gaps

- Merlin receives no individual collision risk assessment and no species-specific breeding disturbance assessment in the EIAR.
- The CRM produces a central estimate of 0.00–0.01 merlin collisions per year. Given the confirmed adjacent breeding pair, any collision mortality risk to breeding adults is ecologically disproportionate relative to the national population size.

- No acoustic or nocmig surveys were conducted. The 2025 ARU methodology employed by BirdWatch Ireland is precisely the technique NatureScot 2024 recommends for detecting breeding raptors. Its absence from the pre-application survey programme is a significant methodological gap.

Conclusion

The confirmed breeding of merlin on the adjacent SAC in 2025 — postdating the developer's survey programme — constitutes new material evidence that was not available to the applicant at the time of submission but is available to An Coimisiún Pleanála now. It demonstrates active breeding in the Zone of Influence that the developer's survey programme failed to detect. The absence of targeted breeding surveys using current methodology (passive acoustics) is a significant gap. A breeding pair on the adjacent designated site, with a foraging range overlapping the turbine zone, engages the Article 6(3) assessment directly.

White-tailed Eagle *(Haliaeetus albicilla)* PRIORITY 1

EU Habitats Directive	Not listed (Annex A — CITES)
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	Not a direct qualifying interest of local SPAs
Irish population	Approximately 150 individuals in the wild (NPWS 2025) — entire national population
Developer's assessment	Grouped in 'rarely recorded target species'; county importance (higher value)

Population and conservation context — why individual birds matter

- The entire wild white-tailed eagle population of Ireland comprises approximately 150 individuals (NPWS, 2025). This figure is confirmed by the EIAR itself (Chapter 7, p.7-81). The species was extinct in Ireland for over a century before reintroduction from Norway.
- With 150 individuals nationally, every single bird is individually significant to the recovery programme. A single collision fatality represents a loss of approximately 0.67% of the national population — a percentage that would be considered significant for any other species.
- The species' recovery is fragile. Low reproductive rates (typically one chick per pair per year), delayed sexual maturity (4–5 years), and high juvenile dispersal mortality mean that any additional adult mortality source directly threatens the viability of the recovery programme.
- White-tailed eagle is an Annex I species. Its reintroduction has been one of NPWS's most significant nature conservation undertakings. The developer's decision to assess it collectively with common species is not merely a methodological choice — it is a failure to engage with the species' exceptional national significance.

Recorded presence in the Zone of Influence

- White-tailed eagle was recorded twice during the TOBIN winter 2025/26 survey: a single bird in flight in the southern section of the proposed site in December 2025, and two birds within the 10km buffer at the River Little Brosna Callows SPA in November 2025.
- Both records are from the single TOBIN season. Given that Ecology Ireland surveys covered 8 seasons with mid-day concentration and no dawn/dusk coverage, it is not possible to determine whether white-tailed eagles use the site regularly or what flight patterns they follow.
- White-tailed eagles frequently soar at heights that would bring them into collision risk height with 200m tip-height turbines. The CRM produces a central estimate of 0.02–0.04 collisions per year. Given the national population of 150, this represents a theoretical annual mortality rate of 0.013–0.027% of the national population per year — equivalent to 0.4–0.8% per 30-year operational life.

Developer's assessment and gaps

- White-tailed eagle is placed in the 'rarely recorded target species' collective, assessed alongside common gull, coot, kingfisher and jack snipe. The juxtaposition of a species with 150 national individuals alongside common species of widespread distribution is indefensible in conservation assessment terms.
- The CRM collision estimate (0.02–0.04/year, Table 4.3) is included in the model but is not carried into the detailed assessment because it falls below the 1% threshold for the all-Ireland population. However, no 1% population threshold is a meaningful tool when the population denominator is 150 individuals — a single collision at 30-year operational scale is individually significant.
- No displacement or disturbance assessment is provided for this species despite confirmed on-site records.

Conclusion

The 1% annual mortality threshold is designed as a screening tool for common or abundant species where population-level impacts require large absolute numbers of deaths to be detectable. It is not designed for species with national populations of 150 individuals, where any individual is ecologically irreplaceable and where the recovery programme is inherently fragile.

For white-tailed eagle, the mathematics of the 1% threshold are as follows:

- 1% of the national population (150) = 1.5 individuals. The threshold would not be triggered until collision mortality reached 1.5 eagles per year.
- The CRM's central estimate is 0.02–0.04 collisions per year — well below 1.5. The developer therefore concludes impact is negligible.
- However, at an expected 30-year operational life, 0.02 collisions per year equates to a cumulative expected mortality of 0.6 birds over the project lifetime. At 0.04/year, this rises to 1.2 birds.
- Given a national population of 150, the loss of even one breeding adult over the operational lifetime of the wind farm is individually significant to the recovery of a species that was extinct in Ireland for over a century.
- The 1% annual threshold was developed for abundant species where compensatory mortality mechanisms operate. It has no scientific or legal basis as a criterion for assessing impacts on critically small populations undergoing recovery from functional extinction.

An Coimisiún Pleanála is requested to note that the developer's application of the 1% threshold to white-tailed eagle is not a legitimate use of that assessment tool. The precautionary principle — which underpins Article 6(3) — requires that where the scale of a population is so small that individual losses are ecologically irreplaceable, no adverse effect can be excluded on the basis of a statistical threshold designed for common species.

PRIORITY 2 SPECIES — SIGNIFICANT CONSERVATION CONCERN

Golden Plover *(Pluvialis apricaria)* — PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Red List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
Local SPA population (IWeBS 5-yr mean)	Approximately 5,100–6,900 birds (River Little Brosna Callows SPA)
Conservation condition	Unfavourable — mean peak counts 2016/17–2020/21 are 50% below baseline reference values
Developer's assessment	Individual assessment conducted; CRM collision risk; impact assessed as negligible

Population and conservation context

- Golden plover is a Special Conservation Interest (SCI) species for the River Little Brosna Callows SPA. The First Order Site-Specific Conservation Objective for this SPA requires the maintenance or restoration of the favourable conservation condition of golden plover.
- The NPWS/DAU submission on the Cush Wind Farm (March 2024) explicitly states that golden plover at the SPA is in unfavourable conservation condition, with mean peak counts between 2016/17 and 2020/21 standing at 50% below the baseline reference values. National declines of over 20% have been recorded.
- Given this unfavourable baseline, the NatureScot/DAU guidance is clear: for species already in decline, the assessment must focus on whether the proposed development would undermine the potential for halting decline and allowing recovery to favourable conservation status. The developer's assessment does not adopt this framing.

Recorded presence in the Zone of Influence

- Golden plover was recorded in breeding seasons 2021, 2023 and 2024, and in all four Ecology Ireland winter seasons plus TOBIN 2025/26. The NIS states that during winter 2022/23, a peak count of approximately 3,500 birds was observed within 500m of the project site boundary.
- The CRM produces central collision estimates of 7.9–9.4 birds per year depending on turbine model, with uncertainty ranges of 3.3–51.4 collisions per year. The upper end of the range comfortably exceeds any threshold of significance for a population already 50% below baseline.

- Flight activity shows variable diel patterns. The CRM acknowledges that insufficient Ecology Ireland survey effort in the early morning and evening limits the reliability of the diel recording rate analysis for this species.

Developer's assessment and gaps

- The developer concludes that golden plover impact is negligible because the central collision estimate (without uncertainty applied) does not exceed the 1% mortality threshold for the local wintering population.
- The developer applies a 99.6% avoidance rate for golden plover, citing the CRM author's own published research (Gittings, 2022). However, that research was based on UK wind farms with smaller turbines in lowland agricultural settings — not 172m rotor diameter machines over bog and pasture in Ireland.
- The NPWS/DAU Cush letter (March 2024) specifically challenged the 99.6% avoidance rate on these grounds: the rate is derived from farms with turbine diameters up to 92m, while the proposed turbines have 163–172m rotor diameters. The applicability of this avoidance rate is contested by the regulatory authority.
- The 1% threshold — repeatedly invoked to dismiss golden plover risk — is explicitly acknowledged as 'highly precautionary' in the CRM. For a species already at 50% of its SPA baseline, even mortality increases below 1% annual rate may undermine the conservation objective.

Conclusion

The combination of contested avoidance rate, acknowledged diel coverage gaps, a population already in unfavourable conservation condition, and uncertainty ranges extending to 51 collisions per year means that adverse effects on the golden plover SPA qualifying interest cannot be excluded on the basis of the evidence presented. The NPWS/DAU has reached this conclusion in respect of the comparable Cush application. The same reasoning applies with equal or greater force to Ballincor, which contributes additional collision mortality and displacement to the same finite SPA population.

Greenland White-fronted Goose *(Anser albifrons flavirostris)*

PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086); Dovegrove Callows SPA; All Saints Bog SPA (004103)
World population	Approximately 22,000–27,000 individuals; entire world population winters in Ireland and Scotland
Developer's assessment	Grouped in 'rarely recorded target species'; collective assessment; local importance (higher value)

Population and conservation context

- Greenland white-fronted goose (GWfG) is a globally threatened species. The entire world population winters exclusively in Ireland and Scotland. Ireland therefore bears a unique and absolute conservation responsibility for this subspecies.
- GWfG is an Annex I species requiring special protection measures. It is one of the most disturbance-sensitive species in the Irish wintering waterbird assemblage — flocks will flush at distances of several hundred metres from human activity, and repeated disturbance prevents access to feeding grounds, affecting body condition and survival.
- The species uses the River Little Brosna Callows SPA, Dovegrove Callows SPA and All Saints Bog SPA as qualifying interest — all within the Zone of Influence of the Ballincor development.

Recorded presence in the Zone of Influence

- GWfG was recorded in the Ecology Ireland winter 2022/23 season and in the TOBIN winter 2025/26 season. It is classified as a rarely recorded target species.
- A tagged individual Greenland white-fronted goose was recorded by a PhD researcher at the University of Saskatchewan passing within 6km of the Cush Wind Farm site during migration from the Wexford Slobs. The NPWS/DAU Cush letter cites this as evidence of migration connectivity through the Zone of Influence — the same Zone of Influence that encompasses the Ballincor site.
- Pre-dawn and post-dusk movements — the periods during which GWfG commutes between roost and feeding grounds — are absent from 8 of 9 survey seasons. The CRM applies a waterfowl nocturnal correction (adding 2 hours to daylight hours) but has no site-specific data for this species at dawn or dusk.
- GWfG was recorded in the CRM collision risk model but falls below the reporting threshold of 0.01 collisions per year at most avoidance rates. It is included in Table 4.3 at 0.01 collisions per year (N163 turbine model).

Developer's assessment and gaps

- Assessment is collective. No individual collision risk analysis is presented for a species that bears the unique status of its entire world population wintering in Ireland and Scotland.
- No disturbance or displacement assessment addresses the sensitivity of GWfG to operational turbines — despite published evidence that this subspecies is among the most easily disturbed of Irish wintering waterbirds.
- The tagged bird evidence cited in the NPWS/DAU Cush letter demonstrates migration connectivity between known GWfG sites and the Zone of Influence. This connectivity is not addressed in the Ballincor assessment.

Conclusion

A species whose entire world population winters in Ireland and Scotland cannot lawfully be assessed collectively with common or widespread species. The tagged bird evidence confirms migration through the Zone of Influence. The pre-dawn and post-dusk movement periods most relevant to disturbance and collision mortality risk are absent from the dominant dataset. For a subspecies of this global significance, the precautionary principle demands individual treatment and the explicit exclusion — beyond reasonable scientific doubt — of adverse effects on the populations using the adjacent SPAs.

Hen Harrier *(Circus cyaneus)* PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex I — special protection required
Irish Wildlife Acts	Schedule 1 — fully protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	Slieve Bloom Mountains SPA — within range of development
Irish breeding population	Approximately 108–130 pairs nationally
Developer's assessment	Individual target species; roost surveys conducted; impact assessed as negligible

Population and conservation context

- Hen harrier is an Annex I species that has experienced severe population decline in Ireland. Breeding populations are concentrated on upland bog and heathland habitats. The species commutes from communal winter roosts to feeding grounds over open habitats including bog and agricultural land.
- Communal roost sites are used repeatedly over many years and are highly sensitive to disturbance. Roost departure typically occurs in pre-dawn darkness, with return at dusk — precisely the periods absent from the Ecology Ireland dataset.
- Research on wind farm impacts on hen harrier documents avoidance of turbines during the breeding season and displacement from roost sites near operational turbines.

Recorded presence in the Zone of Influence

- Hen harrier was recorded in breeding season 2023 and in three winter seasons (2020/21, 2022/23, 2023/24, 2025/26). Roost surveys were conducted by TOBIN during the 2025/26 season at two designated harrier VP locations.
- Ecology Ireland recorded hen harrier across multiple seasons but without dawn and dusk coverage. The roost departure and arrival periods — the peak movement and disturbance risk windows — are absent from the dominant dataset.
- The CRM produces a central collision estimate of 0.01–0.02 per year for hen harrier, below the 1% threshold for any reasonable population denominator.

Developer's assessment and gaps

- Hen harrier receives individual assessment. The TOBIN roost surveys are an improvement on the Ecology Ireland methodology but represent only one winter season.
- No assessment of breeding season disturbance is provided for a confirmed breeding season record in 2023. Breeding season disturbance avoidance distances of 750m have been documented for hen harrier.
- The adequacy of roost survey coverage from one winter season (TOBIN) against a requirement for multi-season roost survey data is a gap not addressed in the assessment.

Conclusion

One season of roost surveys (TOBIN 2025/26) does not constitute an adequate basis for concluding that hen harrier roost sites and movement patterns are sufficiently characterised. The confirmed breeding season record has not been followed with targeted breeding disturbance assessment. The 2023 breeding record in conjunction with the adjacent Ballyduff/Clonfinnane SAC — confirmed as active merlin and curlew breeding habitat in 2025 — suggests a broader raptor breeding assemblage that the survey programme has not adequately characterised.

Pintail *(Anas acuta)* — PRIORITY 2

EU Habitats Directive	Not listed
EU Birds Directive	Annex II/1, III/1 — quarry species; but SPA qualifying interest
Irish Wildlife Acts	Schedule 1 — protected
BoCCI 2020–2026	Amber List
SPA Qualifying Interest	River Little Brosna Callows SPA (004086) — Special Conservation Interest
National importance threshold	20 birds (1% of national wintering population)
Developer's assessment	Grouped in 'rarely recorded target species'; a flock of approximately 200 recorded March 2024 dismissed as one-off

Population and conservation context

- Pintail is a SPA qualifying interest species at the River Little Brosna Callows SPA. The SPA conservation objective requires maintenance of the pintail population in favourable condition.
- The national importance threshold for pintail is 20 birds (1% of the estimated Irish wintering population of approximately 2,000). A flock exceeding this threshold is ecologically significant by definition.
- The BirdWatch Ireland IWeBS data for the Little Brosna Callows SPA shows pintail mean peak counts of approximately 590 birds, with individual survey peaks of 1,519 birds — well above the 1% international threshold of 600.

Recorded presence in the Zone of Influence

- Pintail was recorded in winter 2023/24 and 2025/26. In March 2024, a flock of approximately 200 pintail was recorded — a nationally important count exceeding the 1% national importance threshold of 20 birds.
- This flock was recorded during the Ecology Ireland survey period, not during the TOBIN high-quality season. It is therefore present in the dominant dataset.
- The species is listed as a rarely recorded target species with fewer than 10 records, and is excluded from individual CRM analysis on this basis. The nationally important flock count is subsumed into the collective assessment.

Developer's assessment and gaps

- The developer acknowledges the March 2024 flock but characterises it as a one-off event, citing the CRM's acknowledgement that vantage point surveys sample only 1.5–2% of daylight hours and that a single large flock event could dominate the estimate.
- This reasoning is self-contradictory. The same logic — that a single large flock event cannot be relied upon — applies equally to the large golden plover flocks that generate the most significant collision estimates in the CRM. The developer applies the argument selectively: for golden plover, the large flock data is used to generate a collision estimate; for pintail, the large flock is dismissed as unreliable.
- No assessment of disturbance or displacement of pintail from its SPA foraging habitat adjacent to the site is provided.

Conclusion

A flock of 200 pintail exceeds the national importance threshold of 20 birds by a factor of ten. It is a SPA qualifying interest species. Its dismissal as a one-off event using an argument about survey sampling variability — while simultaneously using the same type of data for other species — is logically inconsistent and constitutes a selective application of the precautionary principle. The CRM's own statement that 'this uncertainty cannot be resolved from the available data' should have led to additional survey effort, not dismissal of the record.

PRIORITY 3 SPECIES — RELEVANT CONSERVATION CONCERN

SPA Qualifying Interest Waterbirds *(Lapwing, Wigeon, Teal, Shoveler, Black-tailed Godwit)*

PRIORITY 3

Lapwing	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest Little Brosna Callows & Middle Shannon Callows
Wigeon	Wildlife Acts Schedule 1; BoCCI Amber List; SPA qualifying interest River Little Brosna Callows SPA
Teal	Wildlife Acts Schedule 1; BoCCI Amber List; SPA qualifying interest River Little Brosna Callows SPA
Shoveler	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest River Little Brosna Callows SPA
Black-tailed Godwit	Wildlife Acts Schedule 1; BoCCI Red List; SPA qualifying interest Little Brosna Callows & Middle Shannon
Developer's assessment	All receive individual or grouped assessment; CRM conducted for lapwing, wigeon, godwit

Collective notes

- All five species are SPA qualifying interests of the River Little Brosna Callows SPA. Adverse effects on any of these populations engage the Article 6(3) test directly.
- Lapwing (Red List) and shoveler (Red List) are in significant decline nationally. Lapwing recorded in the breeding season 2023, indicating possible breeding activity in the Zone of Influence — not followed with specific breeding assessment.
- Black-tailed godwit generates the highest collision estimate in the CRM after golden plover: 3.3–4.7 collisions per year (central estimate), with an upper uncertainty range of 14–43 collisions per year. The developer concludes impact is negligible, invoking the 1% threshold characterisation.
- Wigeon and teal are nocturnal feeders — both receive nocturnal activity corrections in the CRM. Neither species has dawn or dusk survey coverage in 8 of 9 seasons. The CRM assigns nocturnal activity rankings based on literature values with no empirical site data.
- The BirdWatch Ireland IWeBS dataset for the Little Brosna Callows SPA shows IWeBS 5-year mean peak counts substantially exceeding national importance thresholds for all five species: lapwing 4,787 mean / 12,026 peak; wigeon 4,935 mean / 9,440 peak; teal 2,683 mean; shoveler 191 mean / 592 peak; black-tailed godwit — qualifying interest.

Conclusion

The cumulative collision mortality across these five SPA qualifying interest species — when added to the estimates for golden plover, whooper swan and GWfG — represents a significant combined burden on a finite SPA population. No cumulative species-level assessment has been conducted. The developer treats each species in isolation, allowing each individual estimate to fall below thresholds that would, when combined, exceed any reasonable significance criterion for the SPA as a whole.

Other Species of Concern *(Barn Owl, Kingfisher, Woodcock, Snipe, Peregrine)*

PRIORITY 3

Barn Owl	Wildlife Acts Schedule 1; BoCCI Red List; confirmed breeding in close proximity (NPWS, July 2023)
Kingfisher	Wildlife Acts Schedule 1; EU Birds Directive Annex I; BoCCI Amber List; recorded at site
Woodcock	Wildlife Acts Schedule 1; BoCCI Red List; recorded at site; drumming males observed
Snipe	Wildlife Acts Schedule 1; BoCCI Red List; excluded from CRM as VP surveys are ineffective for this species
Peregrine	Wildlife Acts Schedule 1; EU Birds Directive Annex I; BoCCI Green List; recorded in multiple seasons
Developer's assessment	All grouped in 'rarely recorded target species' collective; no individual assessments

Key points

- Barn owl: NPWS personnel confirmed a breeding nest site 75 metres from the wind farm site in July 2023 (cited in the Carrig Ch.7 notes). This is an extraordinary proximity for a Red-listed species. The developer's EIAR acknowledges a barn owl territory within 75m but does not follow this with a specific collision risk or disturbance assessment for an active breeding site.
- Kingfisher: Annex I species. Recorded in winter 2020/21 and 2025/26. The River Brosna corridor within and adjacent to the site provides riparian habitat used by kingfisher. Grouped in the rarely recorded collective with no Annex I-specific assessment.
- Woodcock: Red-listed. Records of drumming males in the Ecology Ireland survey period indicate possible breeding. Excluded from individual assessment. Woodcock are crepuscular — all activity recording is likely to be systematically underrepresented by mid-day surveys.
- Snipe: Red-listed. Excluded from CRM because VP surveys are not effective for sampling snipe flight activity. No alternative assessment of disturbance, displacement or habitat loss is provided for a Red-listed species with confirmed presence.
- Peregrine: Annex I. Recorded in multiple breeding and winter seasons. No individual collision risk assessment despite confirmed multi-season presence.

Conclusion

Five species of significant individual protection status — including two Annex I species and three Red-listed species — are grouped into a collective rarely-recorded assessment. The barn owl breeding site at 75 metres from the site boundary is the most acute specific gap: an active nest at this proximity requires individual assessment of disturbance, displacement and collision risk. The CRM author's own exclusion of snipe on methodological grounds creates an obligation to provide an alternative disturbance and displacement assessment — which the developer has not done.

Habitat Connectivity and the SAC Network *(Raised bog corridor function)*

PRIORITY 3

Sharavogue Bog SAC	SAC 000585 — immediately adjacent to site; qualifying habitat: active raised bog
Ballyduff/Clonfinnane Bog SAC	SAC — within 5km; confirmed 2025 breeding merlin and curlew
Arragh More Bog NHA	Adjacent to the Carrig wind farm site; curlew and breeding bird records
Kilcarren-Firville Bog SAC	Within shared Zone of Influence; part of the midland bog SAC network
Redwood Bog SAC	SAC 002353 — within Zone of Influence
Ecological corridor function	These SACs form a network of raised bog habitats providing stepping-stone connectivity for bog-dependent species including merlin, curlew and hen harrier

Key points

- The raised bog SAC network in the midlands — including Sharavogue, Ballyduff/Clonfinnane, Arragh More, and Kilcarren-Firville — functions as an ecological corridor for species that breed on or move between raised bog habitats. Merlin, curlew, and hen harrier use multiple sites within this network.
- Turbine structures at Ballincor, combined with proposed turbines at Carrig (within 5km), would create a barrier effect across the corridor between Sharavogue Bog SAC and the bog SACs to the south and west. The cumulative barrier effect has not been assessed.
- Article 10 of the Habitats Directive requires member states to manage landscape features of major importance for the coherence of the Natura 2000 network — including ecological corridors. The developer's assessment does not address Article 10 connectivity obligations.
- The 2025 breeding bird survey on Ballyduff/Clonfinnane SAC confirms that these bog habitats support active breeding populations of Annex I species that depend on the connectivity of the network. Turbines sited on the corridor between these SACs are not merely local infrastructure — they are a structural barrier within a designated ecological network.

Conclusion

The barrier effect of the proposed turbines on the ecological corridor function of the midland bog SAC network is not assessed in the EIAR or NIS. This is not a theoretical concern: the 2025 breeding data confirms active use of the network by breeding Annex I species. Article 10 of the Habitats Directive creates an explicit obligation to consider corridor connectivity. Combined with the Carrig development within 5km, the cumulative barrier effect across this corridor is a material gap in the Appropriate Assessment.

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Appendix 4-4: The Survey Effort

Two critical issues emerge on review of the Bird Survey effort. First, it cites NatureScot 2024 as the reference baseline for the Survey effort and second two separate studies were completed with vastly different methodologies. The TOBIN winter 2025/26 survey was conducted to a materially higher standard than the preceding Ecology Ireland surveys. It represents **ONE** single winter season. The **EIGHT** Ecology Ireland seasons (2020–2024) — on which the overwhelming majority of CRM data and analysis relies — were conducted with surveys concentrated in the middle of the day, with limited or no dawn/dusk coverage and no height band classification. The presence of one improved season does not compensate for, or validate, the deficiencies in the dominant dataset. These gaps affect the assessment of disturbance, displacement and collision mortality equally. These gaps are audited in this Appendix.

4.4.1 - Survey Effort vs NatureScot 2024 Minimum Requirements

The table exposes a systematic pattern of non-compliance running through the eight Ecology Ireland survey seasons that form the dominant data input to the Collision Risk Model. While the basic headline hours requirement — 36 hours per vantage point per season — was nominally met for the winter seasons and partially met across summer seasons (with three of four summer seasons falling below minimum at some VPs, and summer 2022 omitted entirely from the dataset with no explanation), compliance on every other material criterion was not achieved. Dawn and dusk coverage was entirely absent across all Ecology Ireland seasons: CRM Table 3.8 confirms zero survey minutes in the hour before or after sunrise in summer, and only 16 minutes at sunset across four complete winter seasons. Nocturnal coverage for waterfowl — explicitly required by NatureScot 2024 — was never conducted at all. Height band classification, mandatory under NatureScot guidance and essential for the CRM to function correctly, was not applied by Ecology Ireland across any of its eight seasons; the CRM required extensive assumption-making to substitute for this missing data. These are not minor administrative shortfalls — they go to the core inputs of the model.

The single TOBIN winter 2025/26 season stands in stark contrast, meeting NatureScot 2024 requirements on dawn/dusk coverage, height band classification, hours delivered, and temporal spread. But this improvement in methodology cannot rescue the dominant dataset. The table makes clear that the season count — four winter plus four summer Ecology Ireland seasons plus one TOBIN winter — superficially exceeds the NatureScot minimum of two winter plus two summer seasons, and the developer relies on this count as evidence of a robust baseline. That reliance is misplaced: the CRM's own analysis confirms that uncertainty is driven by within-season sampling variability rather than season count, and eight seasons of mid-day concentrated surveys without dawn, dusk or nocturnal coverage do not provide a reliable empirical foundation for assessing disturbance, displacement or collision mortality risk for the crepuscular and nocturnal species that are the qualifying interests of the River Little Brosna Callows SPA. The TOBIN season demonstrates what compliant survey effort looks like; it cannot retrospectively validate the years that preceded it

4.4.2: Vantage Point Survey Effort by Season

The survey programme comprises 1,777 hours across nine seasons, but this headline figure conceals a fundamental split. Eight seasons and 1,591 hours were delivered by Ecology Ireland using mid-day concentrated watches that systematically excluded dawn, dusk and nocturnal periods; one season and 186 hours were delivered by TOBIN to the full NatureScot 2024 standard. Summer 2022 is missing entirely with no explanation. The two datasets are methodologically incompatible and cannot be treated as a uniform baseline — yet it is the Ecology Ireland hours, representing 90% of the total, that drive the Collision Risk Model.

4.4.3: Survey Methodology Comparison — Ecology Ireland vs TOBIN

The comparison table makes clear that across every material criterion of survey methodology, the eight Ecology Ireland seasons that form the dominant data input to the Collision Risk Model failed to meet NatureScot 2024 standards. Survey timing was concentrated in the middle of the day, with zero survey minutes at sunrise across all summer seasons and only 16 minutes at sunset across four winter seasons — a structural absence, not a shortfall. Dawn and dusk coverage were effectively non-existent in the Ecology Ireland dataset. Height band classification was not carried out at all; instead four informal height ranges were used that are not NatureScot-compliant, requiring the CRM to make extensive assumptions to substitute for missing data. A substantial proportion of Ecology Ireland survey time was spent watching areas outside the defined viewshed arcs, with VP6 recording only 40% of mapped flightlines within its arc — meaning the headline hours overstate the effective coverage of the turbine buffer. Watch duration methodology was also non-compliant: all Ecology Ireland watches were continuous six-hour sessions without the 30-minute break after three hours required by NatureScot guidance, a deviation the CRM itself acknowledges.

Beyond the daily methodology failures, the Ecology Ireland programme has significant structural gaps. Nocturnal surveys — required by NatureScot 2024 specifically for waterfowl including whooper swan and golden plover — were not conducted across any of the eight seasons. Acoustic and radar monitoring were absent from both datasets entirely. Summer 2022 is missing from the breeding season record with no explanation, meaning curlew and merlin breeding season coverage is incomplete. The breeding season gap is compounded by the fact that TOBIN conducted winter surveys only and contributes no breeding season data whatsoever, so the deficit in summer 2022 is permanent and uncompensated.

TOBIN's single winter season meets or substantially meets NatureScot 2024 requirements across the criteria where Ecology Ireland failed — full diel coverage including pre-dawn and post-sunset periods, five properly classified height bands, flightlines concentrated within viewshed arcs, and evenly distributed rather than concurrent VP watches. This demonstrates that compliant survey methodology was achievable on this site. It also makes the contrast with the Ecology Ireland dataset more, not less, significant: TOBIN represents 10% of the data and meets the standard; Ecology Ireland represents 90% of the data and does not. The CRM's conclusions rest overwhelmingly on the deficient dataset, and no amount of conservative modelling assumptions can substitute for the empirical record that compliant dawn, dusk, nocturnal and height-classified surveys would have produced.

4.4.4 Viewshed Spatial Coverage and Turbine Coverage Gaps

The Ecology Ireland viewsheds at minimum turbine ground clearance height (17m AGL) cover only 62% of the defined 500m turbine buffer, with three turbine locations — T4, T5 and T6 — falling outside that viewshed entirely. Coverage improves to 85% at 30m AGL but T5 and T6 remain outside or at the margin even at that height, with T6 approximately 200m from the 17m viewshed boundary — a substantial gap that the developer characterises as minor but which the data does not support. TOBIN's viewsheds perform similarly, covering 68% of the buffer at 17m and 91% at 30m, but T5 remains outside the 30m TOBIN viewshed and represents the only turbine uncovered even in the higher-quality dataset.

At the individual turbine level, the picture is materially worse for specific locations. T5 is outside both survey programmes at both assessment heights across all nine survey seasons — no direct flight activity data at collision risk height has ever been recorded at this turbine, making the disturbance, displacement and collision mortality assessment there entirely modelled rather than observed. T6 is approximately 200m outside the Ecology Ireland 17m viewshed across eight of nine seasons, falling within TOBIN coverage only in the single winter 2025/26 season. T4 is outside the Ecology Ireland 17m viewshed in eight of nine seasons, and T7 and T8 are marginally outside the TOBIN 17m viewshed at 1m and 15m from the boundary respectively, though covered at 30m. Turbines T1, T2, T3 and T9–T11 are adequately covered by both survey programmes.

The cumulative effect of these gaps is that the three turbines with the most significant coverage deficits — T4, T5 and T6 — are assessed for disturbance, displacement and collision mortality on the basis of extrapolated data from neighbouring vantage points rather than direct observation. For T5 in particular, this position has applied across every season of the survey programme, and no data from either surveyor addresses it at collision risk height. The developer's assertion that spatial coverage gaps are small and do not affect the assessment is directly contradicted by the turbine-level evidence in the CRM's own tables.

Impact on Assessment

This comparison demonstrates that the two survey programmes are not methodologically equivalent. The TOBIN winter 2025/26 season met NatureScot 2024 standards; the eight Ecology Ireland seasons did not. The dominant dataset driving the CRM outputs is therefore the deficient one.

The mid-day concentration of survey effort in the dominant dataset systematically misses the crepuscular movement periods of whooper swan, curlew, and golden plover. The disturbance, displacement, and collision mortality implications of movements at dawn and dusk are therefore entirely unrecorded across the dataset that forms the primary basis of the assessment.

- Dawn is the peak commuting period for whooper swan travelling from roost sites and for curlew returning to feeding areas. The absence of dawn survey coverage from eight of the nine survey seasons means that the disturbance, displacement, and

collision mortality assessments are built on a dataset that structurally excludes the period of highest activity for two key qualifying interest species.

- Evening departure from feeding areas to roost sites is a critical movement period for wildfowl. This period is systematically absent from the Ecology Ireland dataset, creating an equivalent gap in the assessment of disturbance, displacement, and collision mortality during evening movements.
- Without adequate height band data, the proportion of flight activity occurring within the collision risk zone cannot be accurately determined. The Collision Risk Model has applied precautionary assumptions to address this, but precautionary assumptions are not a substitute for empirical height data and cannot adequately inform the collision mortality assessment.
- NatureScot 2024 guidance and the Development Assessment Unit letters in respect of Cush and Carrig Wind Farms explicitly require nocturnal surveys for waterfowl. Neither surveyor fully meets this requirement. The entire nocturnal movement period for SPA qualifying interest species remains unassessed across all nine survey seasons, leaving a wholesale gap in the disturbance, displacement, and collision mortality assessments for those species.
- NatureScot 2024 recommends the use of nocmig — nocturnal migration acoustic monitoring — as a means of characterising bird usage within the Zone of Influence. The Development Assessment Unit's Cush letter explicitly identifies this as a tool that should be deployed for this purpose. It is absent from the entire survey programme, meaning a recognised method for capturing nocturnal activity has not been applied at any point during the survey period.
- With turbines reaching 200 metres tip height, radar survey is necessary to quantify migrating bird movements above the altitude at which vantage point observation is practicable. Radar is absent from the entire survey programme. The Development Assessment Unit's Cush letter identifies radar as a requirement for developments of this scale. Without it, the collision mortality assessment cannot account for high-altitude migration movements through the site.
- Non-compliant watch periods were included in the Collision Risk Model, with the higher of the compliant and non-compliant estimates used as the basis for the collision mortality calculation. While this represents a partial mitigation of the underlying data quality issue, it does not resolve the methodological concern arising from the inclusion of non-compliant survey effort.
- Breeding season disturbance and displacement are the primary impact mechanisms for curlew and merlin. The confirmed 2025 breeding records on the adjacent SAC demonstrate that active breeding is occurring in this landscape, and that the survey programme has not adequately captured the level of breeding activity relevant to the disturbance and displacement assessment.
- Time spent by surveyors recording outside the defined viewshed means that effective survey effort within the survey area was lower than the headline hours suggest. This reduces the reliability of flight density estimates at turbine locations and affects the validity of the disturbance, displacement, and collision mortality assessments that depend on those estimates.
- The data quality issues running through the dominant dataset required conservative assumptions to be applied throughout the Collision Risk Model. The developer argues that these assumptions overestimate risk. This objection takes a different

view: conservative assumptions cannot substitute for properly collected data, particularly in relation to the disturbance and displacement assessment, which depends on the accurate spatial distribution of records rather than on modelled estimates derived from a methodologically compromised baseline.

D1 - Survey Effort vs NatureScot 2024 Minimum Requirements

Appendix D1 : Survey Effort vs NatureScot 2024 Minimum Requirements					
Survey Season / Type	**NatureScot 2024 Minimum (hrs/season)**	**Hours Delivered (all VPs combined)**	**Shortfall (hrs)**	**Status**	**Notes**
Winter seasons (4 seasons: 2020/21, 21/22, 22/23, 23/24)	36	36 hrs/VP	—	✓ MET (EI)	*Minimum hours per VP achieved in Ecology Ireland winter seasons. However surveys concentrated mid-day — temporal coverage does not meet NatureScot dawn/dusk requirements.*
Summer seasons (4 seasons: 2020, 2021, 2023, 2024)	36	30–37 hrs/VP	0–6 hrs/VP	⚠ PARTIAL	*Summer 2020 and 2021: 30 hrs/VP (below 36 hr minimum). Summer 2023: 37 hrs at EI1, 36 at EI2–EI7. Summer 2024: 30 hrs/VP. 3 of 4 summer seasons below minimum at some VPs.*
Summer 2022 season	36	0 hrs (OMITTED)	36 hrs/VP	✗ NOT MET	*Summer 2022 entirely absent from the dataset. This is a critical gap — a full breeding season with no survey effort whatsoever. The CRM acknowledges this omission.*
Dawn/dusk coverage — all Ecology Ireland seasons	Required	Not achieved	Full dawn/dusk period	✗ NOT MET	*NatureScot 2024 requires coverage from before sunrise to after sunset. CRM Table 3.8 confirms zero survey minutes in the hour before/after sunset in summer; negligible dawn coverage. This is not a minor shortfall — it is a structural absence affecting disturbance, displacement and collision mortality assessment for crepuscular species.*

Nocturnal survey coverage	Required for waterfowl (NatureScot 2024)	Not conducted (Ecology Ireland)	Entire nocturnal period	✗ NOT MET	*NatureScot 2024 specifically requires nocturnal/pre-dawn coverage for waterfowl including whooper swan and geese. Ecology Ireland conducted no nocturnal surveys across all 8 seasons. TOBIN covered pre/post-sunset in 1 winter season only.*
Height band classification	5 bands required (NatureScot 2024)	Not classified (Ecology Ireland)	Full height classification	✗ NOT MET	*Ecology Ireland did not classify flight activity into NatureScot-compliant height bands. Records use 4 informal height ranges (0–5m, 5–25m, 25–100m, >100m AGL). CRM required extensive assumptions to substitute for missing height data. TOBIN used 5 bands correctly.*
Number of survey seasons	Minimum 2 winter + 2 summer	4 winter + 4 summer (EI) + 1 winter (TOBIN)	Exceeds minimum	✓ MET (count)	*Season count exceeds the NatureScot minimum. However, quantity does not compensate for qualitative deficiencies. 8 seasons of mid-day concentrated surveys without dawn/dusk coverage do not provide a reliable baseline for nocturnal or crepuscular species impacts — disturbance, displacement and collision mortality risk during those periods is unquantified.*
TOBIN Winter 2025/26 — overall compliance	Full season required	222 hours across 5 VPs	—	✓ MET	*TOBIN winter 2025/26 met NatureScot 2024 requirements for dawn/dusk coverage, height band classification and temporal spread. This represents ONE single winter season. It cannot retrospectively validate or correct the 8 deficient Ecology Ireland seasons that provide the dominant data input to the CRM.*

D2: Vantage Point Survey Effort by Season

Ballincor Wind Farm Ornithological Objection | Source: CRM Table 2.1 (Appendix 7-2 to EIAR) | ⚠ Note: 8 of 9 seasons conducted by Ecology Ireland (mid-day concentrated surveys). TOBIN winter 2025/26 = ONE season only.

SECTION A: Survey Hours per Vantage Point per Season (hours, rounded to nearest hour)

Vantage Point	Sum 2020	Win 2020/21	Sum 2021	Win 2021/22	Win 2022/23	Sum 2023	Win 2023/24	Sum 2024	Win 2025/26 (TOBIN)	TOTAL HOURS
EI1 (VP1)	30	36	30	36	36	37	36	30	—	271
EI2 (VP2)	30	36	30	36	30	36	36	30	—	264
EI3 (VP3)	30	36	30	36	30	36	36	30	—	264
EI4 (VP4)	30	36	30	36	30	36	36	30	—	264
EI5 (VP5)	30	36	30	36	30	36	36	30	—	264
EI6 (VPA)	—	—	—	—	30	36	36	30	—	132
EI7 (VPB)	—	—	—	—	30	36	36	30	—	132
TB1	—	—	—	—	—	—	—	—	36	**36**
TB2	—	—	—	—	—	—	—	—	42	**42**
TB3	—	—	—	—	—	—	—	—	36	**36**
TB4	—	—	—	—	—	—	—	—	36	**36**
TB5	—	—	—	—	—	—	—	—	36	**36**
TOTAL HOURS (all VPs)	**150**	**180**	**150**	**180**	**216**	**253**	**252**	**210**	**186**	**1777**
Ecology Ireland sub-total (EI1–EI7, 8 seasons)	150	180	150	180	216	253	252	210	—	**1591**
TOBIN sub-total (TB1–TB5, 1 season only ⚠)	—	—	—	—	—	—	—	—	186	**186**

D3: Survey Methodology Comparison — Ecology Ireland vs TOBIN

This comparison demonstrates that the two survey programmes are not methodologically equivalent. The TOBIN winter 2025/26 season met NatureScot 2024 standards; the eight Ecology Ireland seasons did not. The dominant dataset driving the CRM outputs is therefore the deficient one. Impact categories: D = Disturbance | Dp = Displacement | CM = Collision Mortality

Survey Criterion	Ecology Ireland (8 seasons, 2020–2024)	TOBIN (1 season, Winter 2025/26)	COMPLIANCE Ecology Ireland 90% DATA	COMPLIANCE TOBIN 10% DATA
Survey timing — daily start/end	Concentrated in the middle of the day. CRM Table 3.8 confirms zero survey minutes at sunrise in summer; negligible early morning coverage in winter.	Full coverage from before sunrise to after sunset, including pre-dawn and post-sunset periods as required for waterfowl.	✗ NOT MET	✓ MET
Dawn coverage (hour before/after sunrise)	Summer: 0 minutes across all seasons. Winter: some limited coverage but well below proportionate daylight coverage (CRM Table 3.8–3.9).	Pre-dawn coverage included. Good coverage of early morning period (CRM Table 3.9 confirms TOBIN coverage at Sunrise–1 and Sunrise).	✗ NOT MET	✓ MET
Dusk coverage (hour before/after sunset)	Summer: 0 minutes in sunset hour and two hours before. Winter: near-zero at Sunset (16 minutes total across all EI winter seasons — CRM Table 3.9).	Post-sunset coverage included. Coverage at Sunset and Sunset–1 confirmed (CRM Table 3.9).	✗ NOT MET	✓ MET
Height band classification	4 informal height ranges only (0–5m, 5–25m, 25–100m, >100m AGL). Not NatureScot-compliant. CRM required extensive assumptions to address missing height data.	5 NatureScot-compliant height bands: 0–25m, 25–50m, 50–150m, 150–200m, >200m AGL. Properly classified.	✗ NOT MET	✓ MET

Nocturnal surveys	None conducted across all 8 seasons. Nocturnal movements of whooper swan, golden plover and other wildfowl entirely unrecorded.	Pre/post-sunset coverage only (not full nocturnal). No formal nocturnal surveys in TOBIN season either.	✗ NOT MET	⚠ PARTIAL
Acoustic / nocmig monitoring	Not conducted.	Not conducted.	✗ NOT MET	✗ NOT MET
Radar survey for migration	Not conducted.	Not conducted.	✗ NOT MET	✗ NOT MET
NatureScot-compliant watch duration	Continuous 6-hour watches without the 30-minute break after 3 hours required by NatureScot guidance. CRM acknowledges non-compliance (Section 2.4.3.1).	Methodology followed SNH/NatureScot 2017 guidelines. Minimum 36 hrs/VP/season achieved.	⚠ PARTIAL	✓ MET
Seasonal coverage — breeding season	4 breeding seasons surveyed (2020, 2021, 2023, 2024). Summer 2022 entirely absent. Curlew and Merlin breeding season coverage therefore incomplete.	Winter season only. No breeding season surveys conducted by TOBIN.	⚠ PARTIAL	N/A
Flightlines within viewshed arcs	Substantial proportion of survey time spent watching areas OUTSIDE viewshed arcs. VP6: only 40% of mapped flight durations within arc. Effective survey effort lower than total	Flightlines concentrated within viewshed arcs. Small number extended outside arcs at arc boundaries only.	⚠ PARTIAL	✓ MET

	durations (CRM Table 3.1).			
CRM-ready data quality	Multiple issues: incomplete flight height data, mixed flight/non-flight behaviour records, higher-level taxonomic groupings, records requiring interpretation and standardisation before CRM use (EIAR Ch.7, Section 7.2.8).	Data recorded in CRM-compliant format. Height bands, flight durations and flightline maps all recorded as required.	⚠ PARTIAL	✓ MET

D 4: Viewshed Spatial Coverage and Turbine Coverage Gaps

Source: CRM Section 3.1 (Appendix 7-2 to EIAR). Viewsheds mapped at 17m AGL (minimum turbine ground clearance) and 30m AGL. Coverage gaps affect the ability to record and assess disturbance, displacement and collision mortality for all affected species.

PART A: Overall Viewshed Coverage of the 500m Turbine Buffer

Survey Programme	Viewshed Height (AGL)	500m Buffer Coverage (%)	Turbine Locations Covered (of 11)	Assessment	Notes
EI	**17m AGL**	62%	8 of 11	⚠ SIGNIFICANT GAP	*Only 62% of the defined 500m turbine buffer is visible from Ecology Ireland VPs at the minimum turbine ground clearance height. 3 turbine locations (T4, T5, T6) not within the 17m viewshed.*
EI	**30m AGL**	85%	9 of 11	⚠ PARTIAL COVERAGE	*Coverage improves at 30m but T5 and T6 remain outside or at the margin of the viewshed. T5 within 25m of boundary; T6 around 200m from 17m viewshed boundary — a substantial gap.*
TOBIN	**17m AGL**	68%	8 of 11	⚠ SIGNIFICANT GAP	*TOBIN viewsheds at 17m also do not achieve full turbine coverage. T5 is around 35m from the 17m viewshed boundary. T7 and T8 are marginally outside (1m and 15m respectively).*
TOBIN	**30m AGL**	91%	10 of 11	⚠ PARTIAL COVERAGE	*T5 remains outside the 30m TOBIN viewshed (around 10m from boundary). One turbine location uncovered at the standard assessment height even in the higher-quality TOBIN survey.*

PART B: Turbine-Level Coverage — Specific Gaps at T4, T5, T6 and Others						
Turbine	EI Viewshed 17m Coverage	EI Viewshed 30m Coverage	TOBIN Viewshed 17m Coverage	TOBIN Viewshed 30m Coverage	Overall Assessment	Significance for Disturbance, Displacement and Collision Mortality Assessment
T1	✓ Covered	✓ Covered	✓ Covered	✓ Covered	**✓ Adequate**	*T1 falls within viewsheds of both survey teams at both heights. Coverage adequate for disturbance, displacement and collision mortality assessment at this turbine.*
T2	✓ Covered	✓ Covered	✓ Covered	✓ Covered	**✓ Adequate**	*T2 covered by both survey programmes. Adequate spatial coverage.*
T3	✓ Covered	✓ Covered	✓ Covered	✓ Covered	**✓ Adequate**	*T3 covered by both survey programmes. Adequate spatial coverage.*
T4	X NOT covered (within 40m of boundary)	✓ Covered	✓ Covered	✓ Covered	⚠ Gap at 17m	*T4 falls outside the Ecology Ireland 17m viewshed (within 40m of boundary). Flight activity at minimum ground clearance height not surveyed at this turbine in 8 of 9 seasons. Disturbance and collision mortality risk at T4 based on extrapolation, not direct observation.*

T5	✗ NOT covered (within 25m of boundary)	✗ NOT covered (within 25m of boundary)	✗ NOT covered (~35m from boundary)	✗ NOT covered (~10m from boundary)	**✗ CRITICAL GAP**	*T5 is outside BOTH survey programmes at BOTH viewshed heights. It is the only turbine not covered by the 30m TOBIN viewshed. No direct flight activity data at T5 at collision risk heights in ANY of the 9 survey seasons. Disturbance, displacement and collision mortality assessment at T5 is entirely modelled, not observed. This is a critical gap.*
T6	✗ NOT covered (~200m from 17m boundary)	✗ NOT covered (within 25m of boundary)	✓ Covered	✓ Covered	**✗ Significant gap (EI)**	*T6 is approximately 200m from the Ecology Ireland 17m viewshed boundary — a substantial distance, not a marginal omission. T6 falls within the TOBIN viewsheds but TOBIN represents only one winter season. 8 of 9 survey seasons provide no direct flight activity data at minimum collision height at T6. Disturbance and displacement from T6 during construction and breeding seasons unassessed.*

T7	✓ Covered	✓ Covered	✗ marginally outside (1m from boundary)	✓ Covered	⚠ Minor gap	*T7 marginally outside TOBIN 17m viewshed (1m) but covered at 30m. Adequate for most purposes but the marginal exclusion at minimum ground clearance is noted.*
T8	✓ Covered	✓ Covered	✗ marginally outside (15m from boundary)	✓ Covered	⚠ Minor gap	*T8 marginally outside TOBIN 17m viewshed (15m). Covered at 30m. Similar observation to T7.*
T9, T10, T11	✓ Covered (all)	✓ Covered (all)	✓ Covered (all)	✓ Covered (all)	✓ Adequate	*T9, T10 and T11 fall within viewsheds of both survey programmes at both heights. Adequate spatial coverage.*

A critical finding from the CRM: a substantial proportion of Ecology Ireland survey time was spent recording flight activity OUTSIDE the defined viewshed arcs.

This means effective survey effort within the defined turbine buffer was lower than headline hours suggest. This affects estimates of flight density and therefore assessments of disturbance, displacement and collision mortality at each turbine.

VP (Ecology Ireland)	Total Flight Duration (seconds) — Outside Arc	Total Flight Duration (seconds) — Within Arc	% Within Viewshed Arc	Assessment	Implication for Impact Assessment
EI1 (VP1)	12578	26841	68%	⚠ Moderate loss	*32% of survey time at VP1 was outside the defined viewshed arc. Flight density estimates for*

					T4 corridor reduced.
EI2 (VP2)	20482	16083	44%	✗ Significant loss	*Only 44% of VP2 survey time within arc. More than half of recorded flight activity at this VP falls outside the area used for collision risk modelling. This substantially reduces effective survey effort for turbines within VP2's viewshed.*
EI3 (VP3)	12137	45737	79%	✓ Acceptable	*79% within arc. Reasonable spatial compliance.*
EI4 (VP4)	18280	25615	58%	⚠ Moderate loss	*42% of VP4 survey time outside arc. Reduced effective coverage of turbines in the central site area.*
EI5 (VP5)	3074	28182	90%	✓ Good	*90% within arc. VP5 well-positioned relative to arc boundary.*
EI6 (VP6)	28831	19534	40%	✗ Significant loss	*Only 40% of VP6 survey time within arc — the poorest compliance of any VP. The viewshed arc for VP6 faced north away from the main wind farm site and flooded River Brosna grasslands. This VP was effectively watching a different area*

					for 60% of survey time.
EI7 (VP7)	2072	23225	92%	✓ **Good**	*92% within arc. VP7 well-positioned.*

APPENDIX 4-5 — Cumulative Developments: Register and Shared Population Analysis

Article 6(3) of the Habitats Directive requires that the Appropriate Assessment considers the implications of a plan or project 'alone or in combination with other plans or projects.' This is not discretionary. Each developer in this cluster has assessed only their own project. The DAU has explicitly stated (Cush letter, March 2024) that 'in-combination effects of several wind farms across this area on migrating birds has not been assessed.' This appendix demonstrates the scale of that gap

This appendix provides the factual register of wind energy developments within the shared Zone of Influence (ZoI) that must be considered in any lawful in-combination assessment under Article 6(3) of the Habitats Directive. It then presents a combined collision mortality analysis for the SPA qualifying interest species that share the same finite populations across all developments, and documents what each developer claimed in their NIS regarding in-combination effects — and where those claims have been directly challenged by the NPWS/DAU.

Conclusion

The cumulative assessment in the Ballincor NIS does not meet the requirements of Article 6(3) of the Habitats Directive. It does not independently assess the in-combination burden on shared SPA populations. It relies on each other developer's self-assessed nil-residual-effects conclusion as a baseline fact. It does not aggregate collision mortality estimates across the Zone of Influence. It does not address the cumulative barrier effect on the ecological corridor connecting the SAC network. The NPWS/DAU has explicitly identified this gap in the context of the Cush application, using language — 'in-combination effects of several wind farms across this area... has not been assessed' — that applies with equal force to Ballincor. The cumulative assessment is not merely inadequate. It is absent.

PART 1: DEVELOPMENT REGISTER — ZONE OF INFLUENCE

The following developments are identified in the Ballincor EIAR (Table 7-23) and NIS (Table 6-13) as the relevant wind farms within the 20km cumulative assessment radius. The four primary developments — Ballincor, Carrig, Cush, and Derrinlough — form the core shared ecosystem argument. Additional operational farms (Skehanagh/Lacka, Monaincha, Cloghan) are noted for completeness.

1. Ballincor Wind Farm (proposed — this application) *Co. Offaly / Co. Tipperary*

Planning reference	ABP / An Coimisiún Pleanála — SID application (current)
Number of turbines	11 turbines
Tip height	200m (hub height 98.5–105m; rotor diameter 149–163m)
Distance from River Little Brosna Callows SPA	Approximately 7km (site centroid to SPA)
Distance from Sharavogue Bog SAC	Immediately adjacent — SAC borders the development site

Planning status	Application under consideration — subject of this objection
Operational period	35 years from commissioning (estimated 2027)

- Ballincor is the subject of this objection. It is the development whose Appropriate Assessment is challenged throughout this document.
- The site adjoins Sharavogue Bog SAC and lies approximately 7km upstream of the River Little Brosna Callows SPA along the River Brosna corridor — the same corridor used by whooper swan, golden plover, wigeon and other SPA qualifying interest species as a movement route between feeding and roosting areas.
- The developer's own NIS identifies Carrig, Cush, Derrinlough, Monaincha, Skehanagh/Lacka and Cloghan as the relevant cumulative developments. This register therefore reflects the developer's own acknowledgement of the shared landscape context.

2. Carrig Wind Farm *Co. Tipperary — within 5km of Ballincor — shared ecosystem*

Planning reference	ABP 318689 — An Coimisiún Pleanála SID
Number of turbines	7 turbines
Tip height	Not specified in available documentation — comparable scale SID application
Distance from Ballincor site	**Approximately 3.9km (EIAR Table 7-23) / 1.5km (NIS Table 6-13)**
Distance from River Little Brosna Callows SPA	Within Zone of Influence of SPA on developer's own 5km range
Planning status	Granted — 30 June 2025
Shared ecosystem note	**Within 5km of Ballincor — treated as part of shared ecosystem throughout this objection**

- Carrig is the most proximate development to Ballincor. At 1.5–3.9km distance (the discrepancy between the NIS and EIAR figures is noted — 1.5km from the NIS is the more precise measurement), it is well within the Zone of Influence for all mobile species considered in this objection.
- The Carrig application (ABP 318689) attracted a detailed NPWS/DAU submission raising identical concerns to those raised for Cush and Ballincor: nocturnal survey absence, displacement distance inadequacy, curlew and merlin vulnerability, and in-combination assessment failure.
- A confirmed breeding record of curlew was located to the southwest of Sharragh — between the Carrig and Ballincor development zones. The 2025 BirdWatch Ireland survey confirmed breeding merlin and curlew on Ballyduff/Clonfinnane SAC, which lies between and adjacent to both sites.
- The Ballincor NIS states (§6.3.1.1): 'The Carrig Wind Farm has been assessed as having no significant residual effects on European sites... since the Carrig Wind Farm has no residual effects, its presence does not increase baseline pressures.' This assertion — that a granted 7-turbine wind farm in the same shared ecosystem creates no baseline pressure on shared SPA populations — is not credible and is directly contradicted by the NPWS/DAU position.

3. Cush Wind Farm *Co Offaly — 10km from Ballincor — same SPA catchment*

Planning reference	ABP 318816-24 — An Coimisiún Pleanála SID
Number of turbines	8 turbines
Tip height	200m (hub height 114m; rotor diameter 172m)
Distance from Ballincor site	Approximately 10km
Distance from River Little Brosna Callows SPA	Approximately 6.25km
Planning status	Granted — 04 November 2024
DAU submission	**NPWS/DAU submitted detailed ornithological objection, 1 March 2024 (ABP-318816-24)**

- Cush is an 8-turbine, 200m tip height development in the same SPA catchment as Ballincor. It was granted consent in November 2024, after the NPWS/DAU submitted a detailed ornithological objection that directly parallels the concerns raised in this document.
- The DAU Cush letter (1 March 2024) is the most authoritative regulatory statement on cumulative assessment failure in this landscape. It explicitly states: 'in-combination effects of several wind farms across this area on migrating birds has not been assessed.'
- The DAU concluded that golden plover at the SPA must be assumed to be part of the SPA population given the proximity and lack of evidence to the contrary. The predicted Cush collision rate was 77,358 collisions per year at a 98% avoidance rate — equivalent to a 5.61% annual mortality increase on the SPA population of 5,110 birds. Even at the 99.6% avoidance rate applied in the Ballincor CRM, the Cush golden plover estimate generated 24–94 collisions per year.
- The Derrinlough NIS (2020) calculated a golden plover collision rate of 14.9/year. Ballincor CRM produces 7.9–9.4/year (central estimate, 99.6% avoidance). Cush adds 24–94/year. These are additive burdens on the same finite SPA population.
- The Ballincor NIS states (§6.3.1.4): 'since the Cush Wind Farm has no residual effects, its presence does not increase baseline pressures.' The NPWS/DAU has explicitly rejected the premise that Cush has no residual effects. The Ballincor developer's cumulative assessment relies on each preceding developer's self-assessed 'no residual effects' conclusion — a circular structure that by design produces a nil cumulative impact finding regardless of the true aggregate burden.

4. Derrinlough Wind Farm *Co. Offaly — 13km from Ballincor — first development in this SPA catchment*

Planning reference	ABP 306706 — An Coimisiún Pleanála
Number of turbines	21 turbines
Tip height	Not specified — 2020 application; smaller turbine scale than current applications
Distance from Ballincor site	Approximately 13km
Distance from River Little Brosna Callows SPA	Within SPA influence zone
Planning status	Granted (Conditional) — 26 August 2021
Collision risk — golden plover	**14.9 collisions per year (Derrinlough NIS CRM, 2020)**

- Derrinlough is the largest of the four primary developments by turbine count (21 turbines) and the first to be consented. Its NIS (prepared by MKO, 2020) acknowledged potential disturbance and displacement pathways to the River Little Brosna Callows SPA and Middle Shannon Callows SPA for golden plover, whooper swan, wigeon, lapwing, black-tailed godwit and teal.
- The Derrinlough NIS calculated a golden plover collision rate of 14.9 per year. This was assessed against a county population of 15,898 birds — a 0.35% annual mortality increase — and dismissed as negligible. Crucially, the Derrinlough NIS used a county population denominator rather than the SPA population, which has since been confirmed by the DAU as the appropriate denominator.
- The Derrinlough cumulative assessment concluded: 'all potential impact pathways have been blocked... there is therefore no potential for the proposed development to contribute to any in-combination impact on EU Designated Sites.' This conclusion is now itself one of the 'other plans and projects' that must be considered in Ballincor's cumulative assessment — and it is not credible as a nil-impact baseline given the acknowledged disturbance and displacement pathways to the SPA.
- The Ballincor NIS states (§6.3.1.5): 'since the Derrinlough Wind Farm has no residual effects, its presence does not increase baseline pressures.' This repeats the same circular structure as the Carrig and Cush assessments.

Additional operational developments within the 20km assessment radius

The following developments are noted for completeness. They are operational and form part of the existing baseline that new developments must assess against.

Development	Key facts
Skehanagh/Lacka Wind Farm	8 turbines; c.1.7–2.7km from Ballincor; granted 2001; older, smaller turbine scale; operational since approximately 2006; forms part of existing baseline
Monaincha Bog Wind Farm and Solar Farm	10 turbines; c.15km from Ballincor; granted 23 January 2024 (ACP 315975); operational
Cloghan Wind Farm	9 turbines; c.16km from Ballincor; granted with revised conditions 27 October 2016 (ACP 244053); operational; NIS and EIAR identified potential for likely significant effects on designated sites

PART 2: COMBINED COLLISION MORTALITY — SHARED SPA POPULATIONS

The following analysis aggregates the collision mortality predictions from the three primary developments for which CRM data is available — Ballincor, Derrinlough, and Cush — against the shared SPA populations of the River Little Brosna Callows SPA. Carrig CRM data is not available in the documents reviewed; its contribution is noted qualitatively. The purpose of this analysis is to demonstrate the additive burden on finite SPA populations that no single developer has assessed.

Note: The figures below use each developer's own central collision estimates, drawn from their respective NIS/CRM documents. These figures are accepted for the purposes of this analysis — the objection does not accept that any of them is reliable or complete (see Sections 2 and 3 of the main report and Appendix B). The purpose is to show that even using the developer's own preferred figures, the combined burden on shared SPA populations is material. If the acknowledged uncertainties (distance under-detection +1.5–3x; avoidance rate variation; diel coverage gaps) were incorporated, the combined figures would be substantially higher.

Golden Plover — SPA qualifying interest, River Little Brosna Callows SPA

SPA population (IWeBS 5-year mean): approximately 5,100–6,900 birds. Conservation condition: unfavourable — 50% below baseline reference values (NPWS/DAU Cush letter, 2024).

Development	Turbines	CRM collision estimate (collisions/year, central)	Avoidance rate applied	Annual mortality increase (local SPA population, central)	Source
Derrinlough	21	14.9	98% (SNH standard)	~0.29% (vs county pop; SPA pop not used)	Derrinlough NIS 2020
Ballincor (this application)	11	7.9–9.4 (central, 99.6% avoidance)	99.6%	0.3–0.4% (local SPA pop, central)	Ballincor CRM Table 5.1
Cush	8	24–94 (central, 98% default)	98% default (DAU challenge: should be 98%)	1.76–6.81% (DAU Cush letter calc)	NPWS/DAU Cush letter, March 2024
Carrig	7	Not available (CRM not reviewed)	N/A	Not calculable (qualitatively additive)	ABP 318689
COMBINED (Derrinlough + Ballincor + Cush)	**40**	**46.8–118.3 (excluding Carrig)**	**Mixed**	**~3.4–8.4% additional annual mortality on SPA population of 5,100**	**This analysis**

Note: The combined central estimate of 46.8–118.3 golden plover collisions per year from three developments, applied to an SPA population already 50% below its baseline reference value, represents a potentially irrecoverable cumulative burden on a population in unfavourable conservation condition. No developer has assessed this aggregate figure against the SPA conservation objective.

Whooper Swan — SPA qualifying interest, River Little Brosna Callows SPA

Irish wintering population: approximately 16,000. Confirmed flightline through shared ZoI. Roost at Sharragh NPWS lands.

Development	Turbines	CRM whooper swan estimate (collisions/year, central)	Avoidance rate	Annual mortality increase (central)	Source
Derrinlough	21	Assessed — no significant residual effects stated	N/A in NIS	Not calculated	Derrinlough NIS 2020
Ballincor (this application)	11	0.02–0.05/year (central estimate)	99.5%	~0.0–0.1% (local SPA population)	Ballincor CRM Table 4.3
Cush	8	~0.01/year (approx from NIS)	99.5%	~0.0%	Cush NIS 2023
Carrig	7	Not available	N/A	Not calculable	ABP 318689
COMBINED	**40**	**~0.03–0.06+/year (underestimate — diel coverage gaps acknowledged by Ballincor CRM §4.7.2.5)**	**Mixed**	**Underestimated across all assessments**	**This analysis**

Note: The Ballincor CRM explicitly acknowledges (§4.7.2.5) that uneven diel coverage may have caused under-estimation of whooper swan collision risk. This caveat applies to all developments whose surveys lacked dawn/dusk coverage. The combined figure is therefore an underestimate from a dataset that the developers themselves acknowledge is incomplete for this species.

Other SPA qualifying interest species — summary note

For all other SPA qualifying interest species — lapwing, wigeon, teal, shoveler, black-tailed godwit — no developer has provided a combined collision mortality figure across the four primary developments. The Ballincor CRM produces the following central estimates from Ballincor alone:

- Black-tailed godwit: 3.3–4.7 collisions/year (central, local population 1.6–2.2% annual mortality increase). Derrinlough did not produce a comparable CRM figure for this species. Cush NIS — not available in reviewed documents.

- Lapwing: 1.4–1.6/year (Ballincor central). Derrinlough — not available from reviewed NIS. Cush — not available.
- Wigeon: 1.4–2.4/year (Ballincor central). Derrinlough assessed disturbance and displacement but no specific CRM collision estimate. Cush — not available.
- For all three species, the Ballincor estimates alone approach or exceed significance thresholds at the local SPA population scale. The addition of Derrinlough, Cush and Carrig mortality to these figures has never been calculated by any developer or regulatory body.

PART 3: WHAT EACH DEVELOPER CLAIMED — AND THE DAU'S RESPONSE

Each developer in this cluster has assessed in-combination effects using a consistent methodology: they accept that other developments exist, note that each other development concluded 'no significant residual effects,' and on that basis conclude that the combination also produces no significant effects. The following extracts the precise language each developer used and, where available, the DAU's response.

Ballincor NIS §6.3.1.1 — on Carrig

> *"The Carrig Wind Farm has been assessed as having no significant residual effects on European sites... since the Carrig Wind Farm has no residual effects, its presence does not increase baseline pressures. Consequently, even with temporal overlap, the combination of the two projects does not result in additive or synergistic effects that would compromise site integrity."*

Objection notes: This statement relies entirely on the Carrig developer's own self-assessment of nil residual effects. It does not independently assess whether that conclusion is correct, or whether the combination of two 7–11 turbine developments within 4km of each other produces additive effects on shared SPA populations. The DAU Carrig submission challenges the nil residual effects conclusion for that application on grounds that directly parallel those raised here.

Ballincor NIS §6.3.1.4 — on Cush

> *"The Cush Wind Farm has been assessed as having no significant residual effects on European sites... since the Cush Wind Farm has no residual effects, its presence does not increase baseline pressures."*

Objection notes: This is demonstrably incorrect. The NPWS/DAU submission on Cush (March 2024) explicitly found that the Cush assessment was inadequate and required further information. The DAU concluded that golden plover birds at the site must be assumed to be part of the SPA population, that the in-combination effects of several wind farms on migrating birds had not been assessed, and that the appropriate assessment had gaps. A development that attracted a detailed DAU challenge has not been assessed as having 'no significant residual effects' in any meaningful regulatory sense.

Ballincor NIS §6.3.1.5 — on Derrinlough

> *"The Derrinlough Wind Farm has been assessed as having no significant residual effects on European sites... Spatially, the two projects are sufficiently separated, so there is no overlap in the areas of potential disturbance, displacement, or barrier effects."*

Objection notes: The Derrinlough NIS (2020) itself acknowledged disturbance and displacement pathways to the River Little Brosna Callows SPA and Middle Shannon Callows SPA for golden plover, whooper swan, wigeon, lapwing, black-tailed godwit and teal. The claim of 'no overlap in areas of potential disturbance' is contradicted by Derrinlough's own NIS. The two sites share the same SPA population as their denominator. The spatial separation between sites is irrelevant to cumulative mortality on a shared population — a bird killed at Derrinlough is subtracted from the same population as a bird killed at Ballincor.

Derrinlough NIS §7.3 — overall cumulative conclusion (2020)

> *"Following an examination, evaluation and analysis... it can be concluded that the proposed development will not have an adverse impact on Any European Site and cannot contribute to any cumulative or in-combination effect when considered alongside any other plan or project. In the review of the projects that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified."*

Objection notes: This 2020 conclusion was reached before the Cush application, before the Carrig application, and before the Ballincor application. At the time, Derrinlough was the primary development in this landscape. It is now one of four significant developments operating on the same SPA populations. Its own 'no cumulative impact' conclusion cannot serve as a nil-impact baseline for subsequent developments — it is itself now a 'other plan or project' to be assessed against.

NPWS/DAU Cush letter §on in-combination — March 2024

> *"The Department considers that the risk to birds on migration of being involved in collisions with the proposed wind farm in its operational phase has not been satisfactorily evaluated by the applicant. Additionally, in-combination effects of several wind farms across this area on migrating birds has not been assessed."*

Objection notes: This is the clearest regulatory statement available on the cumulative assessment gap. The DAU has stated directly — in the context of a development in the same Zone of Influence — that in-combination effects have not been assessed. The Ballincor application must be assessed against this background. The same gap identified by the DAU for Cush exists, unchanged, in the Ballincor NIS.

PART 4: SUMMARY — THE STRUCTURAL GAP

The pattern revealed by this register is not coincidental. It is structural. Each developer in this cluster applies the same methodology:

- Identify other developments within the 20km assessment radius.
- Note that each other development's own NIS concluded 'no significant residual effects.'
- Conclude that the combination also produces no significant effects, because nil plus nil equals nil.
- Submit the application.

This methodology is circular. It treats each preceding developer's self-assessment as a reliable baseline fact rather than a contested finding. It produces a nil cumulative impact finding by construction, regardless of the true aggregate burden on shared SPA populations.

The consequence, demonstrated numerically in Part 2 above, is that three developments alone (Derrinlough, Ballincor, Cush) are projected to cause 46.8–118.3 golden plover collisions per year on an SPA population already 50% below its baseline reference value — and no regulatory body has ever seen this figure presented in a single document, because no developer has ever calculated it.

Impact on Assessment

The cumulative assessment in the Ballincor NIS does not meet the requirements of Article 6(3) of the Habitats Directive. It does not independently assess the in-combination burden on shared SPA populations. It relies on each other developer's self-assessed nil-residual-effects conclusion as a baseline fact. It does not aggregate collision mortality estimates across the Zone of

Influence. It does not address the cumulative barrier effect on the ecological corridor connecting the SAC network. The NPWS/DAU has explicitly identified this gap in the context of the Cush application, using language — 'in-combination effects of several wind farms across this area... has not been assessed' — that applies with equal force to Ballincor. The cumulative assessment is not merely inadequate. It is absent.

OBSERVATION ON BEHALF OF BIRR WIND ACTION GROUP TO AN COIMISIUN PLEANALA REGARDING 10 YEAR PLANNING PERMISSION FOR THE PROPOSED DEVELOPMENT OF BALLINCOR WIND FARM AND ALL ASSOCIATED INFRASTRUCTURE PERTAINING TO POTENTIAL IMPACTS ON AVIFAUNA

JUNE 2026



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1 Competency of Author

This report, prepared by Dr Patrick Moran on behalf of the Birr Wind Action Group concerns a 10 year planning permission to An Coimisiún Pleanála by RWE Renewables Ireland Ltd. for the proposed development of Ballincor Wind Farm and all associated infrastructure located within the townlands of Cloonaheen, Ballincor Demesne, and Curralanty, County Offaly, and Clonfree, Castletown and Cronekill, County Tipperary. This report comprises a peer-review of ecological aspects of the proposed development, in particular with regard to the potential impact on avifauna and the potential identification of likely significant effects on the conservation objectives of proximate SPAs. Dr Moran holds a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD), a M.Sc. in Geographical Information Systems (UU, Coleraine), a Higher Diploma in Environmental and Planning Law (King's Inn) and a M.Sc. in Environmental and Climate Change Law (UCD). Dr Moran has in excess of 25 years of experience in undertaking ecological surveys on both and academic and a professional basis. Dr Moran has peer-reviewed EIAR and NIS for a multitude of both public (for example An Bord Pleanála, Office of Public Works and Co. Councils) and private clients regarding a wide variety of planning proposals.

2 Brief Outline of proposed development

The proposed project will consist of the development of 11 no. wind turbines and all associated infrastructure including turbine foundations, hardstanding areas, borrow pits, access tracks. The proposed project also includes the proposed grid connection route (GCR), which extends approximately 12.23 km from the northern edge of the wind farm site to the existing Dallow 110kV substation in the townland of Clondallow, Co. Offaly, and works along the road network for the proposed turbine delivery route (TDR).

While it is recognised that renewable energy projects are vital for the achievement of climate goals, the appropriate siting of such projects and the provision of sufficient data to inform the potential environmental impacts of renewable energy projects is nevertheless required. While this report is limited to a review of the information presented with regard to the avifaunal resource occurring, this development is proposed in a very sensitive ecological location and all ecological aspects of the information submitted should be subject to scrutiny.

3 Grounds for objection

Given the current Climate and Biodiversity Emergency, and the inextricable link between the two issues, this objection recognises the necessity for renewal energy. Wind energy production is a key component of combatting climate change. Biodiversity and climate change commitments have equal standing. The realisation of both Biodiversity and Climate Change commitments, without compromising each other, is crucial. Indeed, enhancing biodiversity is key to ameliorating the impacts of climate change.

This objection concerns inadequacies (primarily pertaining to avifauna) within the relevant chapters of the Environmental Impact Assessment Report (EIAR)/related documents and the impacts of these inadequacies on the findings of the Natura Impact Statement (NIS). These inadequacies have potentially precluded the implementation of mitigation measures pertaining to elements of the local avifaunal resource and in particular, on the Qualifying Interests of proximate Special Protection Areas. Requests for a portion of the missing data, primarily relating to the full details of vantage point surveys undertaken was submitted to An Coimisiún Pleanála (19/05/26) and subsequently (08/06/26) to the Tobin team (on foot of instruction from An Coimisiún Pleanála) but the requests yielded no further information (as of 22/06/26). Please note that the identification of inadequacies herein are limited by time and resources. Some of the primary concerns regarding the proposed development are outlined in the following sections

3.1 Inadequacy of Environmental Impact Assessment Report (EIAR)

An Environmental Impact Assessment Report (EIAR) has been prepared regarding the proposed development. It is submitted that the EIAR does not comply with the requirements of Article 3 (1) (b) of the EIA Directive[1] under which an environmental impact assessment is required to identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on biodiversity with particular attention to species and habitats protected under (*inter alia*) the Habitats Directive[2].

A representative sample of the inadequacies of the EIAR and associated reports with regard to potential impacts on avifauna are presented herein. Considering the importance of the potential impacts of a development of this type on avifauna, this does not generate confidence in the adequacy of other aspects of the EIAR presented.

3.1.1 Ornithology survey methodology

The level of detail of the methodology utilised to undertake bird surveys is wholly insufficient to inform the assessment of potential likely significant impacts and/or effects. Examples of these insufficiencies are presented below.

3.1.1.1 Insufficient data regarding surveys undertaken

There is a complete absence (both within the Ornithology Chapter and Appendix 7.1 Ornithological Results) of a summary table detailing the requisite information for each survey as per Annex 3 of the Nature Scot Guidelines. There are no details presented with regard to each Vantage Point survey as to the observer, the start time, the finish time or the prevailing weather conditions. This data was requested from An Coimisiún Pleanála (ad subsequently directly to Tobin) in order to permit an independent assessment of the viewshed analysis undertaken but was not provided. Although dates and times are presented for individual observations within Appendix 7.1 (Ornithological Results) there

[1] Directive No. 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014
[2] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

is no data presented to indicate the period over which Vantage Point surveys were undertaken. There are a number of issues arising concerning this lack of information.

In the Collision Risk Modelling presented (REPORT NUMBER: 2604-F1) with the proposed development it is indicated within Section 1.5 (Limitations) that

> *"...The methodology of most of the vantage point surveys carried out for this project deviated in a number of respects from the recommended methodology..."*

While the Collision Risk Model indicates that owing to deviations, conservative assumptions have been applied, the Collision Risk Model does not fully elucidate exactly how the methodology for the vantage point surveys has deviated, or the degree to which this deviation might impact the outcome of the model. For example, it is specifically stated within The Nature Scot Guidelines that

> *"...VP survey **must** not take place simultaneously with any other fieldwork on the site, as it may cause disturbance and **invalidate** the VP survey results...."*

In addition to a lack of a table outlining the dates, start/finish time weather and observer data for bird surveys – there is, for the most part, also a lack of this data presented for any of the other ecological surveys (habitat, general mammal, etc.). In fact, details regarding the times, dates and surveyors is almost universally absent. The methodology describing Aquatic Ecology Surveys (6.2.6.5 of the Biodiversity Chapter of the EIAR, 6), however, indicates

> *"...Aquatic surveys were conducted between the 2nd and 3rd of August 2022 and 26th and 30th of June 2023. Electrofishing surveys were carried out by TOBIN ecologists between the 8th and 10th of July 2024. Aquatic surveys consisted of an evaluation of the aquatic habitats, fisheries assessment (fisheries habitat appraisal, salmonid nursery and spawning habitat), biological river quality (aquatic macroinvertebrate species composition) as per McGarrigle et al., (2002), electrofishing and the presence/absence of protected aquatic species including that of White- 2 Maps - Biodiversity Maps (biodiversityireland.ie) clawed crayfish (Austropotamobius pallipes), Atlantic Salmon (Salmo salar), Lamprey species, Freshwater pearl mussel (Margaritifera margaritifera) (FWPM) and the suitability of habitat for European eel (Anguilla anguilla)..."*

While the absence of a detailed schedule of surveys precludes a direct comparison in order to determine if there was a systematic undertaking of surveys simultaneously with vantage point surveys (in direct contravention of the Nature Scot Guidelines), on the 27th of June 2023 there were a minimum of three vantage point surveys undertaken at the same time as aquatic surveys were being conducted.

In the absence of detailed dates and times for all ecological surveys, it is not possible to illustrate the degree with which vantage point surveys deviated from the guidance that **VP survey must not take place simultaneously with any other fieldwork on the site**. It is acknowledged in the Nature Scot Guidelines that undertaking other surveys simultaneously may invalidate the Vantage Point surveys and as such, any Collision Risk Modelling based on such Vantage Point Surveys.

It is specifically stated within the Nature Scot Guidance that

> *"...Wintering water birds (waders, waterfowl and gulls) may show regular flight routes to and from nocturnal roosts, as well as movements associated with tidal cycles, and these must be factored into survey design if they are likely to use or pass through the survey area..."*

The absence of details of the Vantage Point surveys to include start/finish times of each survey precludes a detailed analysis of the survey effort undertaken with regard to movements to/from nocturnal roosts/foraging grounds (of particular importance with regard to species such as Whooper Swam, Golden Plover and Lapwing, all of which commute at times of limited light). The vast majority of ornithological surveys were undertaken by Ecology Ireland (2022 – 2024 inclusive). The Collision Risk Model, prepared for the proposed development indicates that

> *"...The Ecology Ireland vantage point surveys were concentrated in the middle of the day, but there was some coverage of the early morning period during the winter months (see Section 2.5.5). The TOBIN surveys included full coverage from sunrise to sunset, and also covered the hours before sunrise and after sunset as recommended for waterfowl by the NatureScot guidance..."*

The Collision Risk Modelling identifies, therefore, that the majority of ornithological surveys undertaken were not as per the recommendation by the Nature Scot Guidance.

Critical to the calculations utilised in the Collision Risk Modelling Report presented is the use of "Vantage Points" and generation of viewsheds from these vantage points. While viewsheds were generated utilising a scientific assessment within the Collision Risk Model as presented by Dr Gittings, there is no indication that viewshed analysis of the subject site was undertaken prior to surveys in order to inform the location of Vantage Points for the purpose of Vantage Point Surveys.

At no point in the documentation presented within the Biodiversity Chapter of the EIAR, the Ornithology Chapter of the EIAR or Appendix 7.1 (Ornithological Results) to the EIAR is there any details of the co-ordinates utilised for Vantage Point surveys. Within the Nature Scot Guidance it is stated that

> *"...Changing the VP location complicates collision risk analysis and assumptions cannot be made that viewshed (the view visible from the VP location) areas will be the same. It is therefore critical that the spatial coordinates of VP positions are measured to the highest level of accuracy using a GPS. The VP locations and associated viewsheds referred to in the environmental statement must be those used in the field..."*

Within the Collision Risk Model it is acknowledged that

> *"...Vantage point (VP) locations and initial viewshed arcs were provided by Ecology Ireland and TOBIN. Because the Ecology Ireland arcs did not align precisely with the VP coordinates, I generated revised arcs using the azimuths of the supplied arc boundaries, ensuring geometric alignment with the VP locations. A 10 m buffer was applied during raster processing to avoid edge artefacts; final outputs were clipped to the unbuffered arcs..."*

There is no indication that the Vantage Point surveys undertaken by Ecology Ireland were based on a viewshed analysis generated through a scientific process such as the use of a Geographic Information System. There are several variables upon which the outcome of viewshed analysis is dependant, but the input surface raster (for example Digital Elevation Model, DEM or Digital Terrain Model, DTM), Input point (vantage point) and height of observer are key components. Viewshed analysis must be undertaken based on the consistent use of a vantage point and from the observer height of the shortest surveyor involved in surveys. As opposed to viewshed analysis informing the optimal placement of vantage points. The viewsheds as utilised for the Collision Risk Modelling appear to have been "reverse-engineered". Nature Scot Guidance indicates that

> *"...potential detectability issues should be borne in mind when selecting VP locations to ensure they are as appropriate as possible for the species to be surveyed..."*

The importance of the choice of Vantage Points from which to undertaken Vantage Point surveys is highlighted in the Nature Scot Guidance. The primary aim of the Vantage Point surveys should be to maximise coverage of the survey area while using the minimum number of Vantage Points in order to minimise disturbance of the flightlines of target species. It is stated in the Nature Scot Guidance that

"...It is very important that VPs are chosen to achieve maximum visibility with the minimum number of points. As detection of flight activity will decrease with distance, VPs should be located as close to the survey area as possible..."

The lack of viewshed analysis in informing Vantage Point placement is indicated by the finding within the Collision Risk Model that

"...The Ecology Ireland viewsheds had large overlaps. EI1 and EI2 shared much of the closest sections of their viewsheds, where detection rates would have been highest, while there were large overlaps between EI3 and EI5, EI4 and EI7, and EI6 and EI7. Vantage point watches were frequently carried out concurrently at these overlapping viewsheds, resulting in duplicated spatial coverage and a high risk that the same flightlines were recorded at more than one vantage point. Conversely, periods of low activity would also have been spatially duplicated..."

Furthermore, in Section 3.1.2.1 of the Collision Risk Model, it is stated that with regard to Ecology Ireland survey effort

"...The mapped flightlines included many that were outside the viewshed arcs, and, at some vantage points, there was a more or less 360° distribution of flightlines around the vantage points..."

Nature Scot Guidance indicates, however, that

"...We recommend scanning an arc of up to 180° from each VP. Larger arcs cannot be scanned efficiently..."

3.1.1.2 Inaccuracies in viewsheds presented

The use of precise and accurate scientifically robust data is key to the production of viewsheds that can properly inform any analyses based on viewshed generation. In order to illustrate the importance of the use of precise and accurate data to inform the generation of viewsheds, sample viewshed analyses based on three points varying only in 50m with regard location was undertaken. It is of importance to note that the accuracy of co-ordinate locations is entirely dependent on the accuracy of the equipment utilised. For instance the accuracy of co-ordinates recorded on a smart phone can be completely inaccurate. It is for this reason that Nature Scot recommend vantage points co-ordinates be determined to the highest level of accuracy utilising GPS. In order to illustrate the impact of small details such as vantage point coordinate inaccuracies and difference in observer

height, a number of sample viewsheds as prepared utilising GIS are presented in the following sections. These sample viewsheds are utilised to illustrate a number of points:

(1) To indicate the absolute requirement to accurately record the co-ordinates of the vantage point in order to ensure accurate and precise replication of viewsheds;

(2) To demonstrate the effect of observer height on viewshed analysis, which does not appear to have been taken into account; and

(3) To demonstrate that large areas of the site over which birds pass at 10m or less (common flight height for commuting Whooper Swan, for example) were unlikely to have been visible.

Viewshed analysis was undertaken in ArcMap 10.8.2 using the Spatial Analyst extension. The input raster used was 25cm Photogrammetric Digital Surface Model (12/08/22) from Bluesky. There are numerous variables that are generally required to inform viewsheds including observer height, azimuth 1 and azimuth 2, radius 1 and radius 2. In the absence of the provision of any details regarding azimuth1/2 angles, viewsheds were generated based on 90° and 270° giving a 180° viewshed. While a radius of 2km was utilised for the Ecology Ireland viewshed analysis, it was stated by the author of the Collision Risk Model in a recent review of the impact of distance effects on detection rates[3] that

> *"...The analyses indicate that the largest declines in detection rates occur at distances of more than 1000 m from the vantage point. Therefore, 1 km viewsheds are likely to produce much more accurate vantage point survey results than the current industry standard of 2 km viewsheds..."*

For this reason, the viewshed analysis presented here is based on a 1km viewshed.

(1) The requirement to accurately record the co-ordinates of the vantage point in order to ensure accurate and precise replication of viewsheds

In this example, viewsheds were generated from three vantage points separated by less than 50m (such as when inaccurate co-ordinates, or a rough location are provided to surveyors) but with all other variables (with the exception of terrain) maintained. It can be seen from Figure 1, Figure 2 and Figure 3 that there is a wide range of visibility when the vantage point used varies by less than 50m, which might be the magnitude of error, if for example, the location of a vantage point was indicated on a map, or co-ordinates provided with insufficient accuracy as might occur with a smart phone.

[3] Gittings, T. (2024). Distance effects on detection rates in wind farm vantage point surveys: Implications for avian collision risk modelling. In Practice, 126, 40–44.



Figure 1: 17m Viewshed at Point A (observer height 165 cm)



Figure 2: 17m Viewshed at Point B (observer height 165 cm) less than 50m from point A



Figure 3: 17m Viewshed at Point C (observer height 165 cm) less than 50m from points A/B

(2) Effect of observer height on viewshed analysis

One of the key variables in any generation of viewshed analysis is the "observer height" or the eye level of the surveyor. While this may seem unimportant, there is a large scope for variation in the viewshed of an observer of 135cm (a short female surveyor) and an observer of 185cm (a tall male surveyor). This effect is exacerbated if an observer is sitting/lying down rather than standing up. A proportion of the Ecology Ireland vantage point surveys were undertaken over a six-hour period (over which period the surveyor should have stayed more or less motionless at the same coordinates and maintained observation at the same height). A measure of variation in observer height does not appear to have been taken into account by the viewshed analysis undertaken. By means of an example of the importance of observer height, two viewsheds are illustrated in Figure 4 and Figure 5. These viewsheds are generated from the same vantage point, with only observer height varying (from 0 to 1.85m). The difference in the area visible demonstrates the importance of observer height.
Consistency of observer height in addition to observer location are key to the generation of consistent viewsheds from a given vantage point.

(3) Large areas of the site over which birds pass at 10m or less (common flight height for commuting Whooper Swan, for example) were unlikely to have been visible

While the viewshed analysis purported to take into account birds, or flocks of birds flying within the potential rotor-sweep of turbines, one of the target species, Whooper Swan, habitually commute between roosting and foraging sites at heights well below this threshold. The behavioural ecology of this species in particular is examined in Section 3.2.1.4. What is at issue with regard the viewsheds is an absence of viewsheds for the height at which Whooper Swan ***typically*** commute (Figure 6). This is likely to have resulted in a potentially sizeable (when combined with the paucity of surveys undertaken at key time of low light levels) underestimate of the numbers of this species regularly commuting through the proposed wind-farm area.



Figure 4: Viewshed from vantage point A at observer height of 185 cm



Figure 5: Viewshed from vantage point A at ground level



Figure 6: Viewshed analysis of Vantage Point A from ground level at 10m, with turbine locations indicated by stars

3.1.2 *Sample of inadequacies of data provided with regard to specific species*

With regard to timing of survey visits, it is stated in the Nature Scot Guidelines that

> *"...All bird species have varied seasonal and within day activity patterns. Survey design should be based around the times when birds are likely to be most active. It is important that survey methods are followed accurately..."*

Examples of species to which survey design has not taken into account behavioural ecology are presented in the following sections. The desk-top study identified the likely presence of these species within the survey are and the survey design should have taken these species into account.

3.1.2.1 Golden Plover

According to Section 7.4.2.1.9 of the Ornithology chapter of the EIAR

> *"...Golden Plover was regularly recorded within the study area during the baseline surveys. Over the survey period, a total of 125 observations were made, involving 20,226 individual birds. With the proposed project site flock sizes ranged from four to 700 individuals, with the largest counts occurring in flooded fields to the north of the site near the Little Brosna River. The species was also recorded in other wetland habitats throughout the wider study area, with the larges flocks of up to 4,000 individuals sighted at the River Little Brosna Callows SPA. The majority of records occurred during the winter season or in the late breeding season (September), which is consistent with the species' known wintering and migratory behaviour in Ireland. There was no breeding activity recorded over the survey period. Golden Plover was primarily observed foraging, resting, or flying between feeding areas within and around the site. The site is considered to provide valuable wintering habitat for Golden Plover. Given the high frequency of records, large flock sizes, and the species' Red listed status, the local population using the site is assessed to be of local importance (higher value)..."*

Despite the recognition within the assessment that the site is considered to provide valuable wintering habitat for Golden Plover, there was no multi-year, over-winter systematic post-sunset bird surveying undertaken for this Annex I bird species. Significant populations (in light of the National large decline in this species[4]) of Golden Plover were identified as utilising the habitats in the *environs* of the proposed development. Golden Plover typically forage across farmland at night and the day-time

[4] https://birdwatchireland.ie/app/uploads/2023/08/iwebs_trends_00000_National.html

distribution of these species cannot be used to predict post-sunset use of habitats[5]. The Nature Scot Guidelines state

> *"...For species which are active at dawn and dusk, or at night, other methods of recording or assessing activity need to be employed. Night vision/infra-red equipment and survey on moonlit nights can establish presence of nocturnal species or presence and direction of feeding/migration movements both by calls and by sight..."*

Golden Plover is an Annex I (Birds Directive[6]) species and is a Qualifying Interest of several SPAs proximate to the proposed development. Indeed, the Natura 2000 data form for River Little Brosna Callows SPA (IE0004086) (identified as being within the zone of influence of the development) indicates that the population Golden Plover occurring at this site is of excellent value (A) both in terms of Conservation and Global importance. The failure to adequately assess the post-sunset use of the habitats occurring at/near the development site by a Qualifying Interest of proximate SPAs is a critical flaw in the assessment of the ecological resource occurring, with serious ramifications for the conclusions of the EIAR, the Collision Risk Modelling and the NIS prepared in support of the proposed development[7].

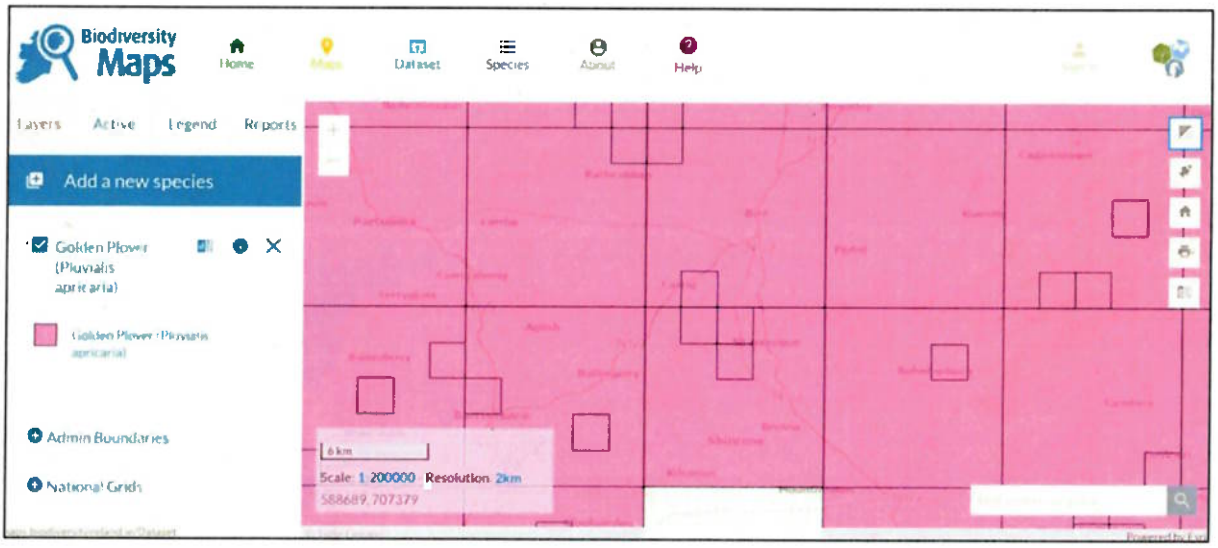


Figure 7: NBDC datacentre records for Golden Plover

[5] Gillings S, Fuller R and Sutherland W (2005).Diurnal studies do not predict nocturnal habitat choice and site selection of European Golden Plover (*Pluvialis apricaria*) and Northern Lapwing (*Vanellus vanellus*). *The Auk*, **122(4)**, pp 1249 – 1260.
[6] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds
[7] [2020] IEHC 622

3.1.2.2 Greenland White-fronted Goose

According to Section 7.4.2.1.12 of the Ornithology chapter of the EIAR

> *"...During baseline surveys, the species was rarely recorded, with seven observations within the study area. On three occasions the species was recorded within the proposed project site during the winter season, involving up to two individuals either commuting above or foraging within flooded agricultural fields adjacent to the River Little Brosna. An additional four sightings, involving up to 107 individuals, were recorded within the 10 km buffer at the River Little Brosna Callows SPA during Wetland Bird Surveys (I-WeBS). Although there was the very low level of activity recorded and absence of site use beyond overflight, as Greenland White-fronted Goose are and SCI of three SPAs within the ZoI of the proposed project and that all wild birds are protected under the EU Birds Directive (2009/147/EC), the species is considered to be of local importance (higher value)..."*

During the 2024/2025 season, the Little Brosna site held the third-highest population of Greenland White-fronted Geese in Ireland[8]. Given that the Little Brosna Callows is within the Zone of Interest, supporting an internationally important population of this species, it must be considered of greater importance than "*..local importance (higher value)...*".

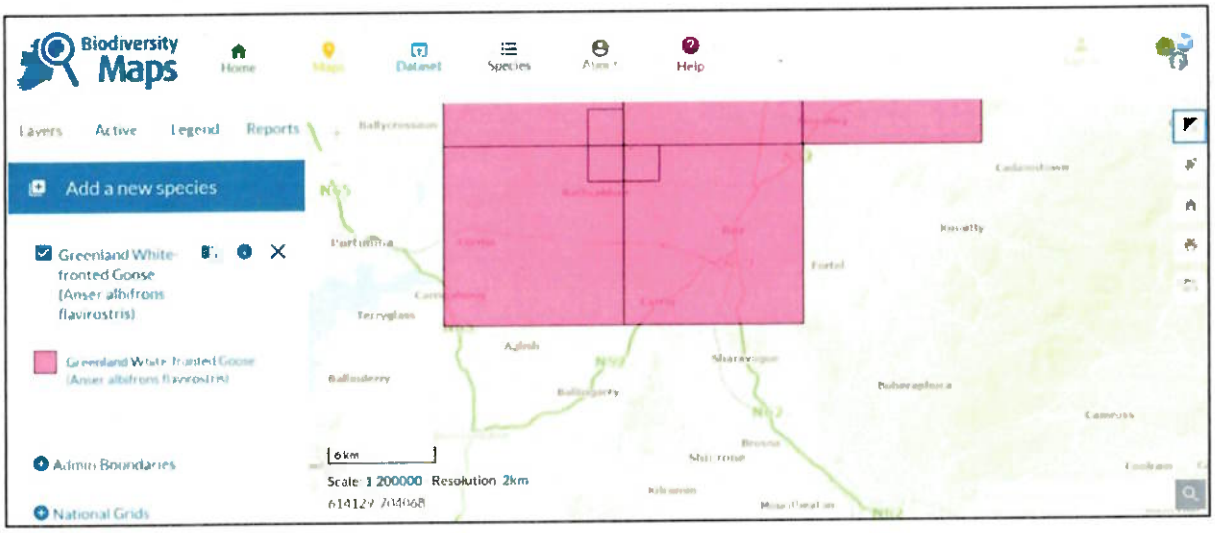


Figure 8: NBDC datacentre records for Greenland White-fronted Geese

[8] Report of the 2024/2025 internation census of Greenland White-fronted Geese.

3.1.2.3 Lapwing

According to Section 7.4.2.1.19 of the Ornithology chapter of the EIAR

> *"...Lapwing was occasionally recorded within the study area, with the majority of observations recorded during the winter season. A total of 104 observations were made, involving 8,681 individual birds. Within the proposed project site, records typically involved small flocks of around 10 to 70 individuals, although larger groups of up to 200 birds were recorded. The species was primarily concentrated in the northern and southern parts of the site, particularly in areas of flooded fields and bog, as well as commuting along the Little Brosna River to the east. Additional records of Lapwing were made within the 10 km buffer at the River Little Brosna Callows SPA and Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS), with flocks reaching up to 2300 individuals. Only a single observation was made during the breeding season (July 2023), which likely related to failed or non-breeding birds from elsewhere, as no breeding activity was recorded at the site prior to, or after this sighting. Based on the level of activity, the size of flocks using the site, and the species' status as an SCI for a downstream SPA, the local population using the site is considered to be of local importance (higher value)..."*

Despite the recording of a significant number of Lapwing, there was no multi-year over-winter systematic post-sunset bird surveying undertaken for this species despite the large National decline in the numbers of this species[9] . Lapwing, like Golden Plover, typically forage across farmland at night and the day-time distribution of these species cannot be used to predict post-sunset use of habitats[10]. The Nature Scot Guidelines state

> *"...For species which are active at dawn and dusk, or at night, other methods of recording or assessing activity need to be employed. Night vision/infra-red equipment and survey on moonlit nights can establish presence of nocturnal species or presence and direction of feeding/migration movements both by calls and by sight..."*

Lapwing is a Qualifying Interest of several SPAs proximate to the proposed development. Indeed, the Natura 2000 data form for River Little Brosna Callows SPA (IE0004086) (identified as being within the zone of influence of the development) indicates that the population Lapwing occurring at this site is of excellent value (A) both in terms of Conservation and Global importance. The failure to adequately assess the post-sunset use of the habitats occurring at/near the development site by a Qualifying

[9] https://birdwatchireland.ie/app/uploads/2023/08/iwebs_trends_00000_National.html

[10] Gillings S, Fullar R and Sutherland W (2005).Diurnal studies do not predict nocturnal habitat choice and site selection of European Golden Plover (*Pluvialis apricaria*) and Northern Lapwing (*Vanellus vanellus*). *The Auk*, **122(4)**, pp 1249 – 1260.

Interest of proximate SPAs is a critical flaw in the assessment of the ecological resource occurring, with serious ramifications for the conclusions of the EIAR, the Collision Risk Modelling and the NIS prepared in support of the proposed development[11].

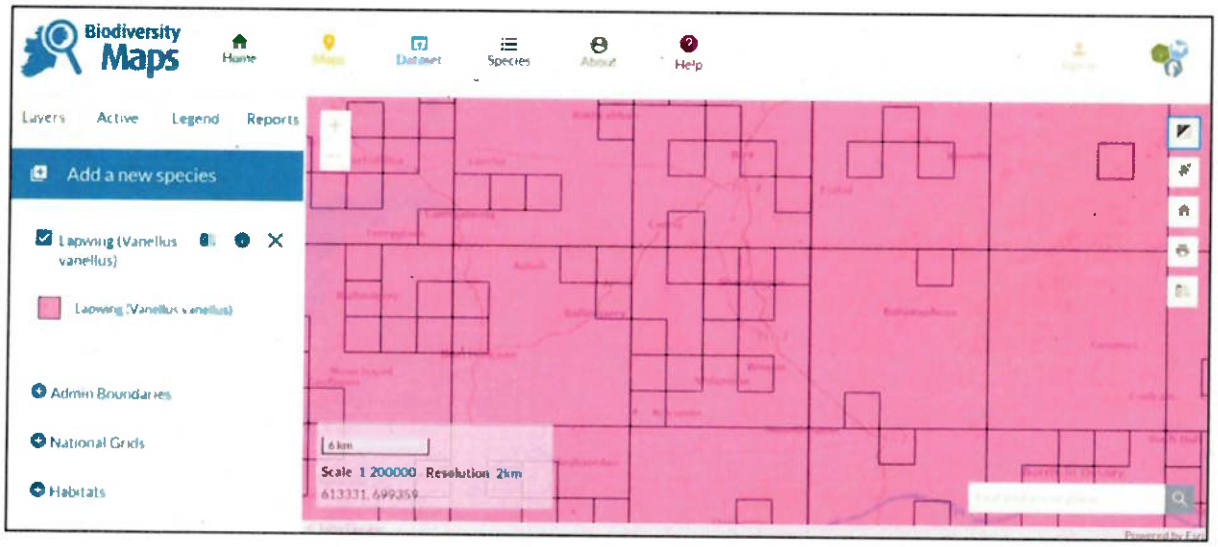


Figure 9: NBDC datacentre records for Lapwing

3.1.2.4 Whooper Swan

According to Section 7.4.2.1.34 of the Ornithology chapter of the EIAR

> *"...During baseline surveys, the species was occasionally recorded, with a total of 85 observations involving 744 individuals. Flocks ranged in size from 2 to 11 birds, but up to 55 were recorded. Records were almost entirely confined to the Little Brosna River and adjacent flooded agricultural fields to the northeast of the site. Observations typically involved commuting or foraging birds, often feeding in shallow flooded fields during the winter months. Additionally, Whooper Swan was recorded outside of the proposed project site within the 10 km buffer, including groups of up to 19 individuals at the Dovegrove Callows SPA during Wetland Bird Surveys (I-WeBS). The site provides suitable wintering habitat for this species, particularly in areas of temporary flooding along the river corridor. Based on the number of birds recorded and the foraging activity observed, the site is considered to be of local importance (higher value) for Whooper Swan..."*

[11] [2020] IEHC 622

The methodology as utilised during the winter bird surveys is wholly inadequate and flawed with regard to identifying areas important to crepuscular movements of species commuting to/from foraging and roosting areas. According to the Nature Scot guidelines

> *"...All bird species have varied seasonal and within day activity patterns. Survey design should be based around the times when birds are likely to be most active..."*

Whooper Swan are widely recorded within the vicinity of the proposed development according to the NBDC database (Figure 10) indicating that there are very likely commuting corridors in the vicinity of the proposed development. While Vantage point watches can be utilised to determine regular commuting flights between roosts and foraging areas, the vantage point watches as presented do not satisfy this requirement. It has been established that Whooper Swan move between roosting sites and foraging sites at key times of low light, including before sunrise and after sunset, and even in darkness[12]. A seminal work on Whooper Swan behavioural ecology, the Ph.D. thesis of Mark Brazil[13], found that with regard to arrival/departure of Whooper Swan to/from feeding grounds

> *"...Arrivals were evenly distributed throughout the period from 60 min before local sunrise to 10 min. afterwards. Departures were normally distributed, occurring in the period from sunset until 90 min. afterwards..."*

Although there is a complete lack of the provision of a table outlining survey times that might be used to establish whether any surveys were undertaken in these key commuting windows, there are no records presented with the EIAR or associated documents that would indicate any surveys were undertaken within the key time intervals identified. Furthermore, Whooper Swans typically fly at low altitudes (often below 15 metres) when commuting between foraging and roosting sites but can increase flight height during conditions of reduced visibility or when anticipating a longer commute (for example during very cold weather when inland water bodies may be frozen-over). Although Whooper Swan were recorded on site, no systematic, multiyear vantage point surveys (and in particular no surveys aimed to identifying birds flying below 15 m) were undertaken at the key times of an hour before sunrise and an hour after sunset in order to identify the importance of the area as a commuting corridor. As such, it cannot be stated with any scientific certainty that the methodology utilised has established the degree of use of the site by commuting Whooper Swan. The failure to adequately assess the use of the habitats occurring at/near the development site by a Qualifying

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[12] Rees E, Bruce J and White G (2005). Factors affecting the behavioural responses of whooper swans (*Cygnus c. cygnus*) to various human activities. *Biological Conservation*, **121**, pp 369 - 382

[13] Brazil M (1981). The behavioural ecology of the Whooper Swan (*Cygnus cygnus*). Ph.D. Thesis, University of Stirling, Scotland

Interest of proximate SPAs is a critical flaw in the assessment of the ecological resource occurring, with serious ramifications for the conclusions of the EIAR, the Collision Risk Modelling and the NIS prepared in support of the proposed development[14].

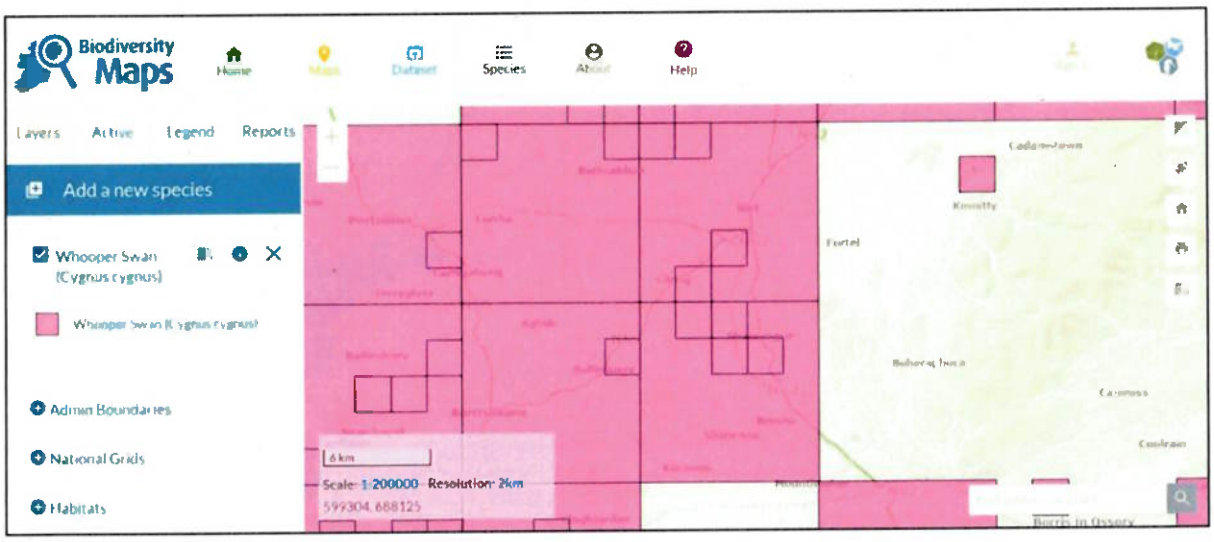


Figure 10: NBDC datacentre records for Whooper Swan

Also of note, although Lough Nahinch (a subsite of Ballingarry OJS03) is identified in Figure 7-6 of the EIAR ornithology chapter as an I-WeBS site, Birdwatch Ireland indicated [15] that

> *"...Ballingarry OJS03 site and subsites are Swan Sites. This means that are only routinely counted for the purpose of the International Swan Census..."*

The 2014/15 Swan Census recorded a peak number of 176 Whooper Swan, utilising Ballingarry subsite at Gurteen Agricultural College (ITM 596,351 699,634). The 2014/15 Swan Census recorded a peak number of 80 Whooper Swan, utilising Ballingarry subsite Munlusk (ITM 596,451 699,534).

The use of the Ballingarry site, of which Lough Nahinch is a subsite within the I-WeBS network of sites by a peak of almost 200 Whooper Swan (as counted during a Swan Census) would indicate that the Ballingarry site is of ecological importance with regard to Whooper Swan and that there is a significant Source-Pathway-Receptor link between the proposed development and this site. Of note, this degree of Whooper Swan activity should be viewed in light of the numbers utilised to inform the Collision Risk

[14] [2020] IEHC 622
[15] *Personal communication with Laura Dargan*

Model (Local – 337, County – 1,506, National – 19,111). The peak number of Whooper Swan recorded at the Ballingarry subsite at Gurteen Agricultural College was, therefore, in excess of 50% of the Local Population and in excess of 10% of the County Population.

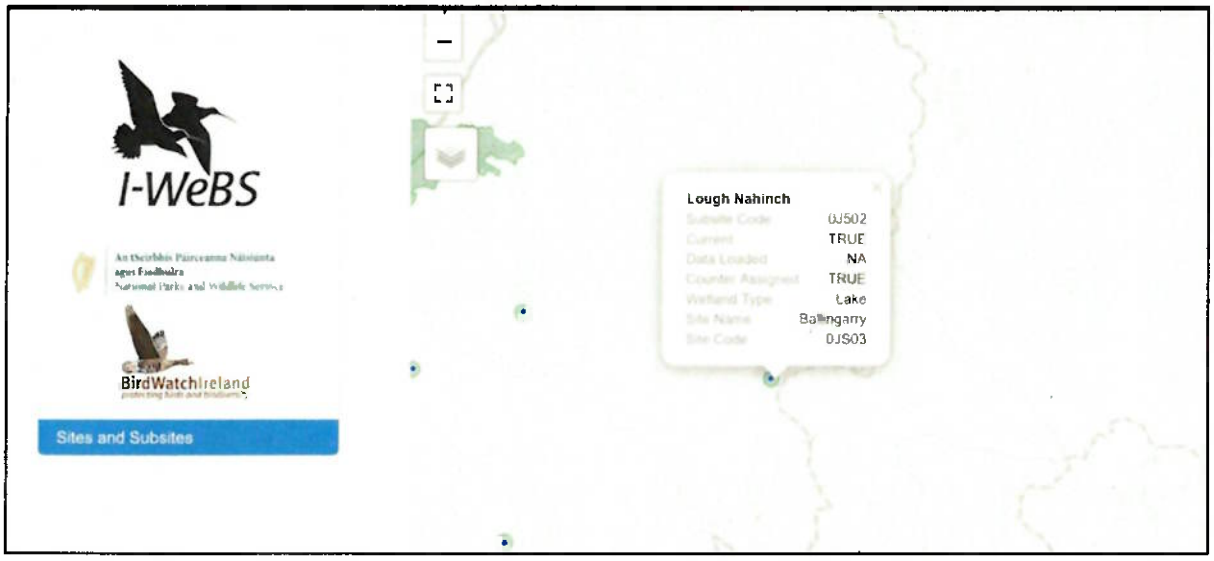


Figure 11: Location of Lough Nahinch subsite

3.1.3 Cumulative impacts – inadequate assessment

When undertaking an EIAR, the totality of the project must be considered, including off-site and secondary projects as well as indirect, secondary and cumulative impacts in accordance with the relevant caselaw[16]. A developer must supply information in relation to the environmental impact of both the chosen option and of all the main alternatives studied by the developer, together with the reasons for their choice, considering at least the environmental effects, even if such an alternative was rejected at an early stage[17]. A query of the EIA portal[18] of developments/proposed developments proximate to the proposed development indicates that in accordance with Section 37E of the Planning and Development Act 2000, as amended, Uisce Éireann has given notice of its intention to make an application for permission to An Coimisiún Pleanála in relation to a Strategic Infrastructure Development (SID) adjacent to the proposed development (Figure 12). This Proposed Development will primarily consist of a proposed Raw Water Intake & Pumping Station at Garrynatineel, Ballina, Co. Tipperary; a proposed Water Treatment Plant at Incha Beg, Birdhill, Co. Tipperary; a proposed Break Pressure Tank at Knockanacree, Cloughjordan, Co. Tipperary; a proposed Booster Pumping Station at

[16] [2014] IEHC 632
[17] C-461/17
[18] https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1

Coagh Upper, Birr, Co. Offaly; a proposed Flow Control Valve at Commons Upper, Celbridge, Co. Kildare; a proposed Termination Point Reservoir at Loughtown Upper, Peamount, County Dublin; c. 172km of pipeline connecting the water infrastructure sites; uprating and associated works to the existing Ardnacrusha – Birdhill 38kV line and Ardnacrusha – Birdhill – Nenagh 38kV line, works at the existing Birdhill 38 kV electricity substation, power connections to infrastructure and all ancillary works above and below ground. The potential impact of this project on proximate SPAs, including the River Little Brosna Callows SPA has been identified in the EIAR and NIS. The failure of the Ornithology Chapter of the EIAR (or indeed the NIS) to identify any potential for cumulative or in-combination impacts/effects must be construed as a fatal flaw.

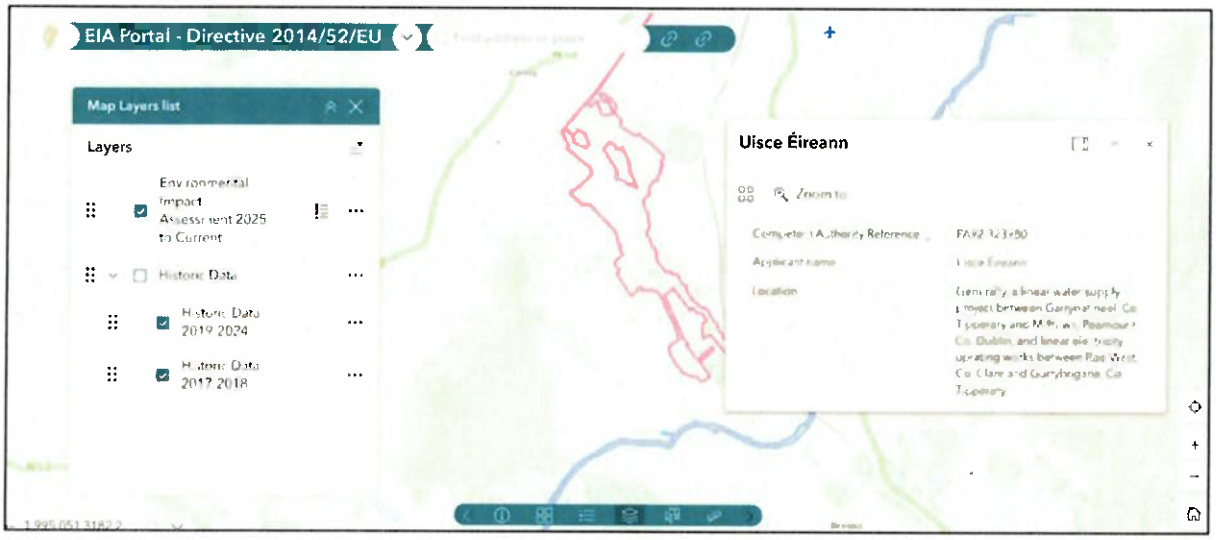


Figure 12: Excerpt from EIA Portal, indicating location of major Strategic Infrastructure Development adjacent to proposed development that was not considered with regard to cumulative/in-combination impacts/effects

3.2 Impact of inadequate bird surveys on Collision Risk Modelling Report

The Collision Risk Model as prepared by Dr Tom Gittings is an excellent analysis of a scientific assessment of risk. The quality of data informing the collision risk model, however, does not comply with the standards as outlined in the guidance used, and the impact of this poor-quality data must be considered. Within the summary of the CRM it is stated

> *"...The collision risk model was based on nine seasons of vantage point survey data from up to seven vantage points with a survey effort of around six hours / month / vantage point. The NatureScot model was used. As well calculating predicted collision risks, the uncertainty ranges around the estimates were quantified. Collision risks that would cause a 1% or greater increase in mortality to the affected population were considered potentially significant..."*

Within the introduction, however, it is stated that with regard to limitations

> *"...The methodology of most of the vantage point surveys carried out for this project deviated in a number of respects from the recommended methodology (NatureScot, 2025a). Conservative assumptions have been applied* ***where possible*** *in this collision risk model to address the implications of these deviations, as described in the relevant sections of this report..."*

On page 7-22 of the Ballincor EIAR Ornithology Chapter it is stated that with regard to survey limitations

> *"...The viewshed analysis was based on shapefiles of vantage point locations and viewshed arcs provided by Ecology Ireland, but the original arcs did not align precisely with the recorded vantage points. To improve spatial accuracy, new arcs were generated using the directional angles of the original arc boundaries, and a 10m buffer was applied to smooth the viewshed edges and maintain coverage..."*

An Coimisiún Pleanála should note that the co-ordinates utilised for Vantage Points are not presented within any of the documentation submitted and were not provided when requested to permit an independent viewshed analysis. Within the Nature Scot Guidelines[19], which are referred to repeatedly in the Ballincor EIAR Ornithology Chapter and the Collision Risk Modelling undertaken it is stated that

[19] https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms#8-vantage-point-survey

"...Changing the VP location complicates collision risk analysis and assumptions cannot be made that viewshed (the view visible from the VP location) areas will be the same. It is therefore critical that the spatial coordinates of VP positions are measured to the highest level of accuracy using a GPS. The VP locations and associated viewsheds referred to in the environmental statement must be those used in the field...."

The spatial coordinates of Vantage Point positions, the method by which these Vantage Point positions were measured or the continuity of use is not addressed in the documents presented, even within the CRM, which is entirely dependent on the precision and accuracy with which Vantage Points were utilised.

The Collision Risk Model, although it applies precautionary assumptions, is based on fundamentally flawed Ornithological surveys and as such cannot be considered to be a scientifically robust assessment of the potential impact of the proposed wind farm on the local avifaunal resource.

3.3 Impact of inadequate bird surveys on Appropriate Assessment process

The granting of development consent by the Relevant Authority following appropriate assessment (AA) is conditional on the removal of all scientific doubt regarding potential adverse impacts on any Natura 2000 sites concerned, and the Relevant Authority must establish that specific scientific findings exist that permit this removal of doubt[20]. The appropriate assessment screening and Natura Impact Statement provided in support of the planning application are informed by the EIAR, and in particular the Ornithology Chapter (the inadequacies of which pervade the Collision Risk Model prepared and Appropriate Assessment). The Appropriate Assessment Screening report and Natura Impact Statement prepared in relation to the proposed development are wholly inadequate and fatally flawed, containing numerous gaps, emissions and *lacunae*. Granting of development consent would, therefore, be unlawful[21]. This peer-review has focussed primarily on avifauna.

The Appropriate Assessment Screening report and Natura Impact Statement provided are informed by a wholly inadequate suite of surveys undertaken with regard to avifauna. The surveys were undertaken over an appropriate period, providing in theory, results based on nine seasons of vantage

[20] [2014] IEHC 400, [2018] IESC 31
[21] C-258/11

point survey data from up to seven vantage points with a survey effort of around six hours / month / vantage point. The methodology utilised, however, and the data resulting from these surveys cannot be considered to be of sufficient quality for the removal of scientific doubt regarding potential adverse impacts on the Natura 2000 sites concerned. Examples of these flaws in survey design are presented in the following sections

1) **Disregarding S-P-R linkages** - The Appropriate Assessment screening process has identified that there is no viable pathway between the proposed development and the Lough Derg North-east Shore SAC (002241). The Appropriate Assessment screening process has identified that there are viable pathways between the proposed development and the Lough Derg (Shannon) SPA (004058), the Middle Shannon Callows SPA (004096) and the River Shannon Callows SAC (000216). The Conservation Objectives document for the Lough Derg North-east Shore SAC states specifically that *"...Please note that this SAC overlaps with Lough Derg (Shannon) SPA (004058) and Middle Shannon Callows SPA (004096) and is adjacent to River Shannon Callows SAC (000216) and Barroughter Bog SAC (000231). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate...".*

   The Appropriate Assessment screening process found that there was no S-P-R linkage between the proposed development and the Slieve Bloom Mountains SPA (004160) as the proposed development site is located approximately 10km from the Natura 2000 site and was thus outside of the foraging range of this species. The NBDC data centre mapping clearly indicates that Hen Harrier are frequently recorded in the vicinity.



Figure 13: Excerpt from NBDC database of Hen Harrier records

   The results of the bird surveys undertaken have recorded Hen Harrier utilising the site/*environs* during the winter. The most recent research on Hen Harrier distribution in

Ireland[22] has indicated that with regard to Hen Harrier *'...Across Europe, the hen harrier is subject to a range of ongoing pressures and threats. The main drivers of its decline are the ongoing loss and degradation of suitable nesting, foraging, and wintering habitats...'*. The Hen Harrier Threat Response Plan[23] indicates that *"...There is much overlap in the distribution of breeding and wintering Hen Harrier in Ireland, with the wintering distribution more dispersed and encompassing a wider range, throughout the uplands and lowlands. In the winter, non-breeding Hen Harrier predominantly roost in heath/bog habitats (53%), settling to rest on the ground at night, and often roost communally. The Hen Harrier typically forages over ground that is rich in prey (e.g. medium and small-sized birds, small mammals), such as grasslands and winter stubble. As mentioned previously, juvenile survival overwinter is poor, and recruitment into the breeding population is thus lower than needed to maintain a stable population. There are a number of significant information gaps with respect to the ecology of wintering Hen Harrier. While progress has been made in recent years, more remains to be done..."*. Furthermore, this Plan indicates that Wind Energy Production has the potential to impact on both wintering and breeding Hen Harrier.

To discount a Source-Pathway-Receptor linkage between the proposed development site and the Slieve Bloom Mountains SPA owing to the fact that it is outside of the (summer) foraging limits from the site must be considered to be a significant omission.

2) Section 5.1.2.1 of the Appropriate Assessment screening document recognises one of the potential impacts of the proposed development as being

> *"... The presence of turbines in the landscape could potentially cause disturbance impacts to species using the area and its surroundings, resulting in a disturbance displacement effect. This effect can be particularly significant for avian species..."*

Neither the AA screening, nor the NIS contain any consideration of *ex-situ* impacts on birds foraging within the survey area or commuting through survey area at night. No adequate survey effort was undertaken to establish if Golden Plover or Lapwing, both species Qualifying Interests of proximate Special Protection Areas, utilise the development site or *environs* post-sunset for foraging or commuting purposes. Day-time distribution of these species cannot be used to predict post-sunset use of habitats[24]. The failure to thoroughly assess *ex-situ* impacts

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[22] Ruddock, M., Wilson-Parr, R., Lusby, J., Connolly, F., J. Bailey, & O'Toole, L. (2024). The 2022 National Survey of breeding Hen Harrier in Ireland. Report prepared by Irish Raptor Study Group (IRSG), BirdWatch Ireland (BWI), Golden Eagle Trust (GET) for National Parks & Wildlife Service (NPWS). Irish Wildlife Manuals, No. 147. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

[23] https://www.npws.ie/sites/default/files/publications/pdf/hen-harrier-threat-response-plan-final.pdf

[24] Gillings S, Fuller R and Sutherland W (2005).Diurnal studies do not predict nocturnal habitat choice and site selection of European Golden Plover (*Pluvialis apricaria*) and Northern Lapwing (*Vanellus vanellus*). *The Auk*, **122(4)**, pp 1249 – 1260.

on these Qualifying Interests and consider indirect impacts on the Conservation Objectives of the proximate SPAs must be considered a fatal flaw in the AA process as relates to the proposed development[25].

3) According to EU Guidelines[26] one of the primary steps in the AA screening process is identification of negative pressures and/or threats with impacts on designated sites and

> *"...The information provided in the Natura 2000 standard data form is the starting point for identifying the habitat types and species that are significantly present on the site and that could be affected by the plan or project, as well as any existing pressures and impacts on the site..."*

Although this information is readily available online[27], the AA process would appear to fail to consult Natura 2000 data forms to consider these threats, pressures and activities (internal and external) with impacts on the sites as comprehensively detailed in the relevant Natura 2000 data-forms. This must be seen as a fatal flaw in the AA process.

4) The SPAs within the zone of influence of the proposed development are primarily designated for over-wintering bird populations utilising the habitat for roosting/foraging. Changes in water levels associated with Climate Change will impact on the availability of the distribution of these habitat, displacing foraging populations of bird species comprising qualifying interests. According to EU Guidance[28], *'...Deterioration is any form of degradation affecting a habitat. The Member State has to take into consideration all the influences on the environment hosting the habitats...'*. Caselaw[29] has identified that

> *"...it may be necessary to adopt both measures intended to avoid external man-caused impairment and disturbance and measures to prevent natural developments that may cause the conservation status of species and habitats in SACs to deteriorate..."*.

Furthermore, guidance indicates that potential modifications of Natura 2000 sites linked to climate change should be assessed case-by-case[30]. The AA of the proposed development (which pertains to renewable energy as a means to combat climate change) has given no cognisance to the potential impact of climate change on the Conservation Objectives of Qualifying Interests of the relevant Natura 2000 sites (both SACs and SPAs), nor on the potential impacts on, for example, changes in species distribution or flight paths.

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[25] IEHC [2020] 622
[26] Commission Notice - Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (2021/C 437/01)
[27] https://natura2000.eea.europa.eu/
[28] Commission notice "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Brussels, 21.11.2018 C (2018) 7621 final.
[29] C-6/04
[30] See guidance on Climate change and Natura 2000 at http://ec.europa.eu/environment/nature/climatechange/pdf/Guidance%20document.pdf

4 Conclusion

Despite the nature of the proposed development, it is the opinion of the author of this report, that the conclusions of both the EIAR and the NIS prepared with regard the planning permission application for the Ballincor Wind Farm are fundamentally and critically flawed owing to the wholly inadequate methodologies utilised to undertake the surveys of the avifaunal resource occurring. The documents as provided cannot sufficiently inform an Environmental Impact Assessment or Appropriate Assessment of the proposed development by the Competent Authority, owing to a combination of factors, including the lack of adequate information to assess the potential impact of the proposed project, alone or in combination with other plans/projects on the environment and/or Natura 2000 network. It is respectfully requested that An Coimisiún Pleanála consider the lack of appropriate surveying with regard to assessing the potential impact of the proposed development in relation to avifauna.

Appendix 6-1: Croneen Trout Little Brosna 2021

Appendix 6-2: Wild Trout Trust – letter of concern

Fish in Rivers Factsheet

SHIRBD **Little Brosna Catchment** **Factsheet: 2021/3**

The Little Brosna catchment is located within the Shannon International River Basin District and covers an area of approximately 579km^2. It rises near Dunkerrin, Co. Offaly and flows near Birr Co. Offaly and Roscrea, Co Tipperary. The most significant tributary in the catchment is the Camcor River which is known for its run of migratory trout ('croneen') from Lough Derg which enter the river from July onwards under suitable water conditions. Other tributaries include the Bunow River, the Golden Grove Stream, the Keeloge Stream and the Pallas Stream.

Inland Fisheries Ireland conducts annual nation-wide fish sampling surveys to assess the status of stocks in Ireland's rivers, lakes and estuaries. This report presents the results of a catchment-wide survey of the Little Brosna catchment undertaken in 2021.

A total of thirty-five sites were surveyed by electro-fishing (CEN 2003) in the Little Brosna catchment from the 10th to 24th of August, 2021. The survey methods included 10-minute timed Electro-Fishing (TEF_{10}) and Area Delineated Electro-Fishing (ADEF (boat)). All TEF_{10} fish count results were converted to minimum population estimates according to Matson *et al.* (2018).



Little Brosna River at Riverstown (Site 4)

Iascach Intíre Éireann
Inland Fisheries Ireland

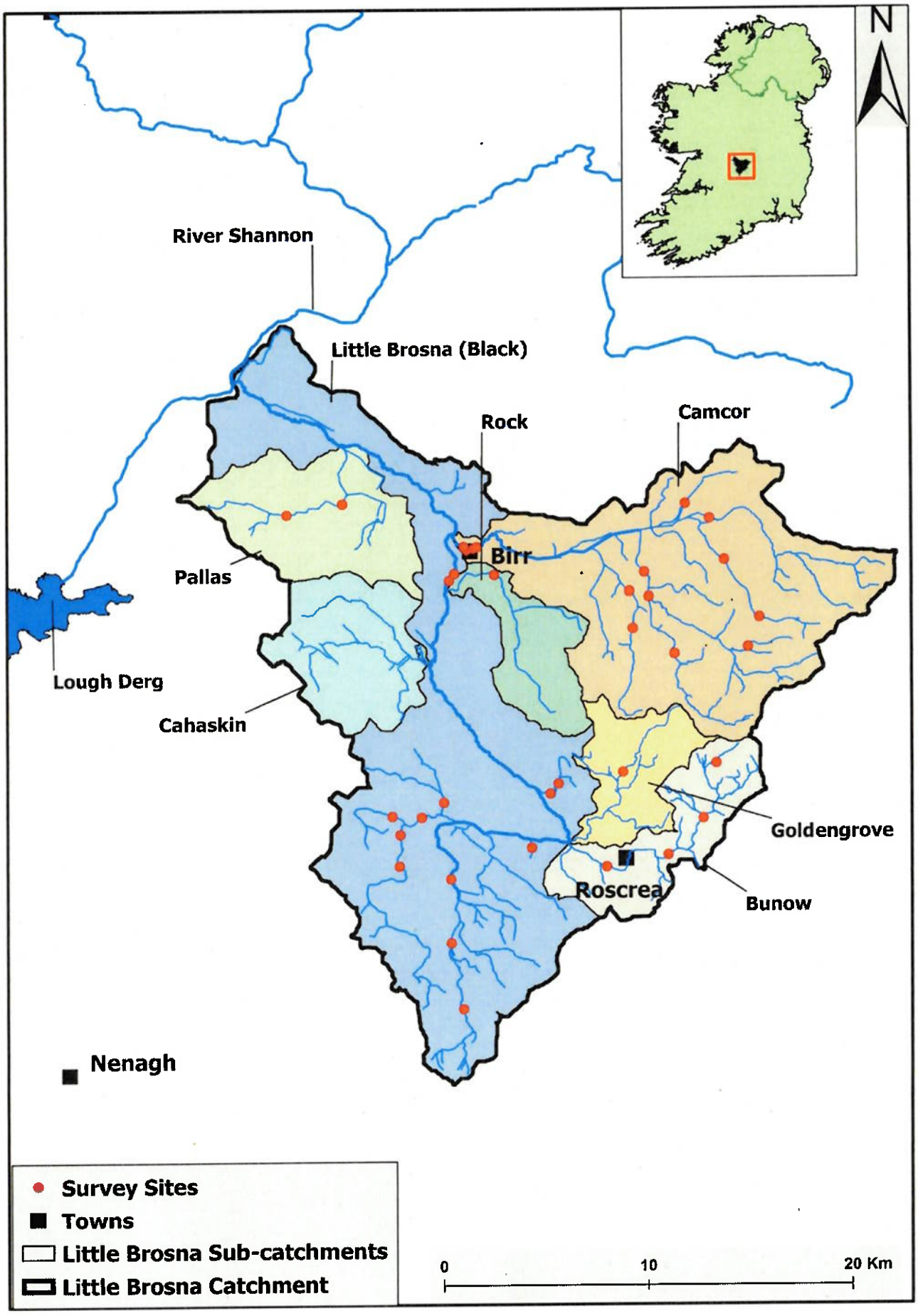


Figure 1. Location of electrofishing survey sites and sub-catchments, Little Brosna catchment, August 2021

Table 1. Site survey details for the Little Brosna catchment, August 2021

No.	Sub-catchment	River name	Site	Method	WFD	Date
1	Pallas	Pallas stream	Holy Well	TEF_{10}	–	10/08/2021
2		Pallas stream	Pallas Br.	TEF_{10}	–	10/08/2021
3	Little Brosna & Black	Little Brosna	Riverstown Br.	ADEF (boat)	YES	18/08/2021
4		Little Brosna	Ballindarra	ADEF (boat)	–	18/08/2021
5		Glasderry	Agnadouglas	TEF_{10}	–	11/08/2021
6		Glasderry	Roscrea	TEF_{10}	–	17/08/2021
7		Mounteaton	Moutheaton	TEF_{10}	–	17/08/2021
8		Little Brosna	Clonlisk Br.	TEF_{10}	–	12/08/2021
9		Kilcomin	Cloghmoyle	TEF_{10}	–	17/08/2021
10		Kilcomin	Caolroe Br.	TEF_{10}	–	17/08/2021
11		Kilcomin	Clucka North	TEF_{10}	–	17/08/2021
12		Kilcomin	Driminduff	TEF_{10}	–	19/08/2021
13		Black	Dunnes Br.	TEF_{10}	–	10/08/2021
14		Keeloge	Franckfort	TEF_{10}	–	12/08/2021
15		Keeloge	South of Motte	TEF_{10}	–	12/08/2021
16	Camcor	Glenafelly	Br. 3km E of longford	TEF_{10}	YES	19/08/2021
17		Glenafelly	Ballyshane Br.	TEF_{10}	–	16/08/2021
18		Camcor	Drumcullen Br.	TEF_{10}	–	19/08/2021
19		Knockbarron	E. of Pass Cross Roads	TEF_{10}	–	16/08/2021
20		Camcor	u/s Maltings Pool	ADEF (boat)	–	18/08/2021
21		Camcor	Upper Oxmantown Br.	ADEF (boat)	–	19/08/2021
22		Camcor	Oxmantown Br.	ADEF (boat)	–	19/08/2021
23		Camcor	Drumbane Br.	ADEF (boat)	–	18/08/2021
24		Fuarawn	Clareen	TEF_{10}	–	24/08/2021
25		Fuarawn	Grange	TEF_{10}	–	16/08/2021
26		Breaghmore	Knockarey Br.	TEF_{10}	–	16/08/2021
27		Breaghmore	Breaghmore Br.	TEF_{10}	–	24/08/2021
28		Breaghmore	Lofus Br.	TEF_{10}	–	23/08/2021
29		Roscomore	Hundredacres	TEF_{10}	–	11/08/2021
30	Rock	Rock	Whiteford	TEF_{10}	–	11/08/2021
31	Goldengrove	Goldengrove	Ballyrickard More	TEF_{10}	–	23/08/2021
32	Bunow	Bunow	Gorteen	TEF_{10}	–	24/08/2021
33		Bunow	Killavilla Br.	TEF_{10}	–	18/08/2021
34		Bunow	Benamore Br.	TEF_{10}	–	18/08/2021
35		Bunow	Willison Br.	TEF_{10}	–	11/08/2021

Pallas, Little Brosna and Black River sub-catchments

Fifteen sites were surveyed in the north-western and southern portion of the Little Brosna catchment during 2021 (Table 1). Two sites (Sites 1 and 2) were surveyed on the Pallas River sub-catchment and 13 (Sites 3 to 15) on the Little Brosna and Black River sub-catchments.

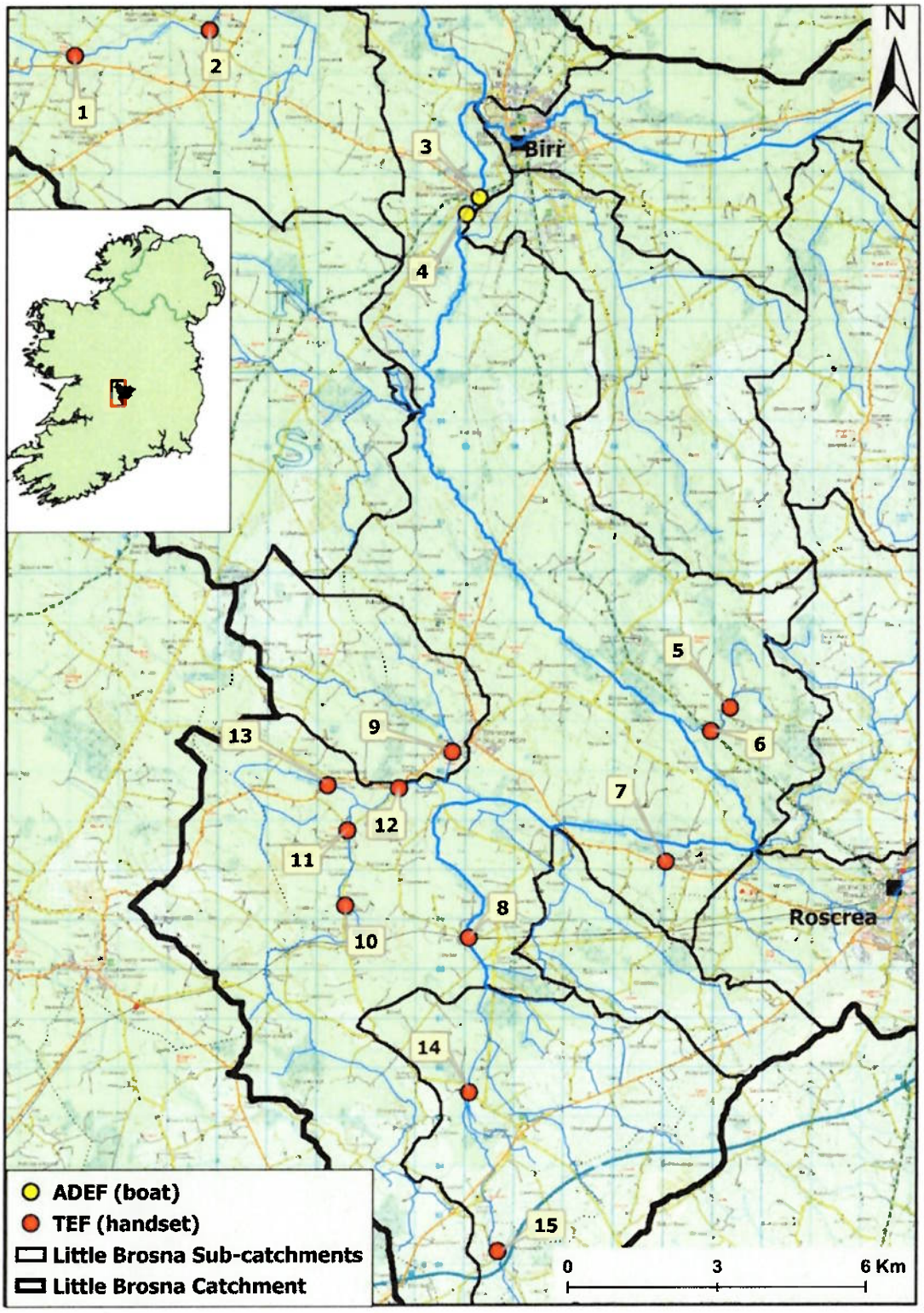


Figure 2. Location of electrofishing survey sites, Little Brosna catchment (Sites 1-15), August 2021

Table 2. Minimum density estimates (no. fish/m²) for the Little Brosna catchment (Sites 1-15), 2021

Pallas Catchment					Black Catchment			
Site no.	1	2			3			
Species	2021	2015	2019	2021	2008	2012	2015	2021
Brown trout	0.161	0.500	0.028	0.205	0.018	0.029	0.196	0.040
0+ brown trout	0.147	0.238	0.017	0.074	0.001	0.001	0.046	0.012
1+ & older brown trout	0.013	0.263	0.011	0.131	0.017	0.028	0.151	0.028
Salmon	-	-	0.228	-	0.009	0.011	0.046	0.004
0+ salmon	-	-	0.194	-	0.003	0.001	-	0.002
1+ & older salmon	-	-	0.034	-	0.006	0.010	0.046	0.002
European eel	-	0.038	-	-	-	-	-	0.001
Lamprey sp.	-	-	-	-	-	0.001	0.003	-
Minnow	-	-	-	-	-	-	0.108	0.003
Rainbow trout	-	-	-	-	-	0.001	-	-
Roach	-	-	-	-	-	-	0.022	-
Stone loach	-	-	0.074	-	0.001	0.001	0.011	-
Three-spined stickleback	-	0.200	-	0.033	-	-	0.003	-
All fish	**0.161**	**0.738**	**0.330**	**0.238**	**0.028**	**0.042**	**0.387**	**0.050**

Black Catchment								
Site no.	4	5		6		7	8	9
Species	2021	2015	2021	2015	2021	2021	2021	2021
Brown trout	0.048	0.467	0.146	0.425	0.440	-	0.411	0.292
0+ brown trout	0.001	0.433	0.146	0.425	0.392	-	0.058	0.052
1+ & older brown trout	0.048	0.033	-	-	0.048	-	0.353	0.239
European eel	-	0.050	-	-	-	-	-	-
Minnow	0.005	-	-	-	-	-	-	-
Three-spined stickleback	0.001	-	-	0.400	0.067	-	-	0.067
All fish	**0.054**	**0.517**	**0.146**	**0.825**	**0.506**	**no fish**	**0.411**	**0.359**

Black Catchment							
Site no.	10	11	12	13		14	15
Species	2021	2021	2021	2015	2021	2021	2021
Brown trout	0.228	0.134	0.607	0.663	0.005	0.336	-
0+ brown trout	0.021	0.124	0.594	0.663	0.005	0.097	-
1+ & older brown trout	0.207	0.010	0.013	-	-	0.239	-
Stone loach	-	0.007	-	0.025	-	-	-
Three-spined stickleback	-	0.054	0.013	-	0.032	-	-
All fish	**0.228**	**0.194**	**0.620**	**0.688**	**0.038**	**0.336**	**no fish**

Camcor River sub-catchment

Fourteen sites were surveyed on the Camcor River sub-catchment in the north-eastern portion of the Little Brosna Catchment during 2021 (Table 1).

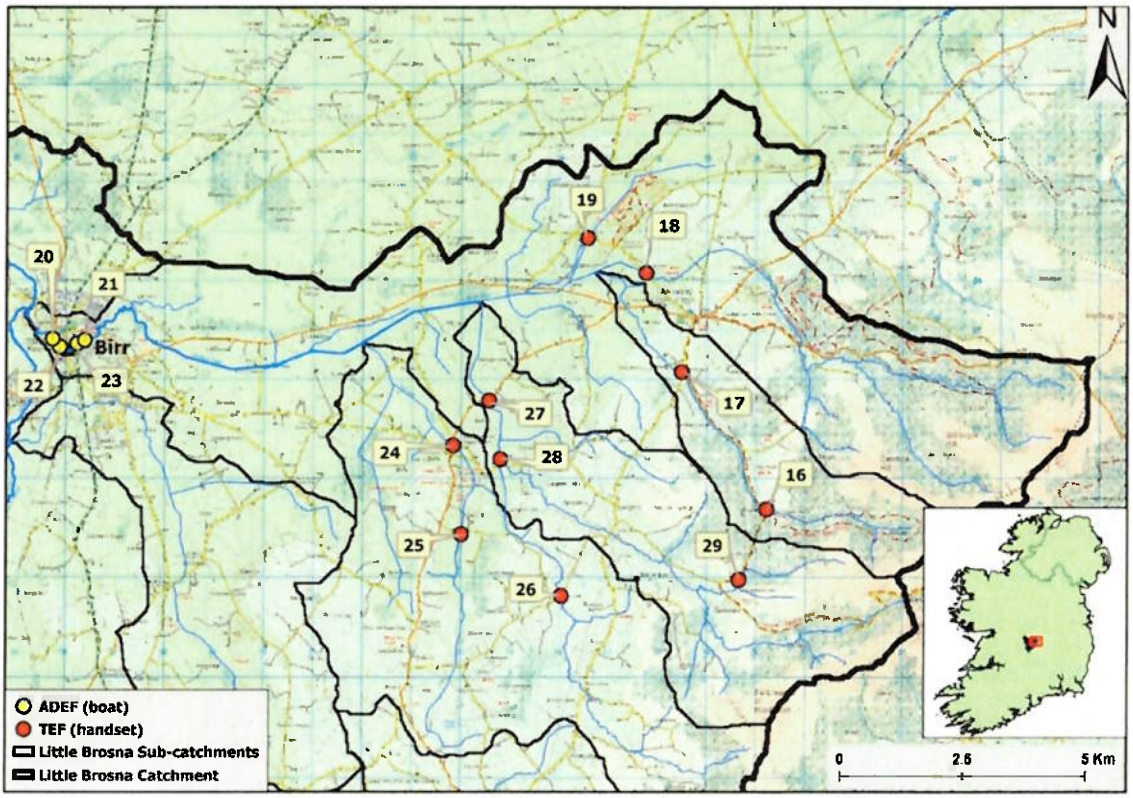


Figure 3. Location of electrofishing survey sites, Camcor River and tributaries (Sites 16-29), August 2021

Table 3. Minimum density estimates (no. fish/m^2) for the Camcor River and tributaries (Sites 16-29), 2021

Camcor River sub-catchment								
Site no.	**16**			**17**	**18**	**19**	**20**	**21**
Species	**2008**	**2020**	**2021**	**2021**	**2021**	**2021**	**2021**	**2021**
Brown trout	0.300	0.029	0.431	0.234	0.475	0.271	0.054	0.028
0+ brown trout	0.225	-	0.373	0.188	0.329	0.225	0.001	0.005
1+ & older brown trout	0.075	0.029	0.059	0.046	0.146	0.047	0.053	0.022
Salmon	-	-	-	-	-	-	0.001	0.001
1+ & older salmon	-	-	-	-	-	-	0.001	0.001
Minnow	-	-	-	-	-	-	0.001	0.004
Stone loach	-	-	-	-	-	-	-	0.001
All fish	**0.3**	**0.029**	**0.431**	**0.234**	**0.475**	**0.271**	**0.056**	**0.033**
Camcor River sub-catchment								
Site no.	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**
Species	**2021**	**2021**	**2021**	**2021**	**2021**	**2021**	**2021**	**2021**
Brown trout	0.035	0.106	0.247	0.33	0.555	0.355	0.201	0.144
0+ brown trout	-	0.103	0.182	0.288	0.495	0.245	0.186	0.144
1+ & older brown trout	0.035	0.003	0.065	0.041	0.06	0.11	0.015	-
Salmon	0.001	-	-	-	-	0.045	0.033	0.012
0+ salmon	-	-	-	-	-	0.045	0.033	0.012
1+ & older salmon	0.001	-	-	-	-	-	-	-
Lamprey sp.	-	-	-	0.008	-	-	-	-
Minnow	0.006	-	-	-	-	-	-	-
Three-spined stickleback	-	-	0.026	-	0.015	-	-	-
All fish	**0.041**	**0.106**	**0.273**	**0.338**	**0.57**	**0.4**	**0.234**	**0.156**

Rock, Goldengrove and Bunow River sub-catchments

Six sites were surveyed in the south-eastern portion of the Little Brosna Catchment during 2021 (Table 1). One site was surveyed on the Rock, one site on the Goldengrove and four sites on the Bunow River sub-catchment.

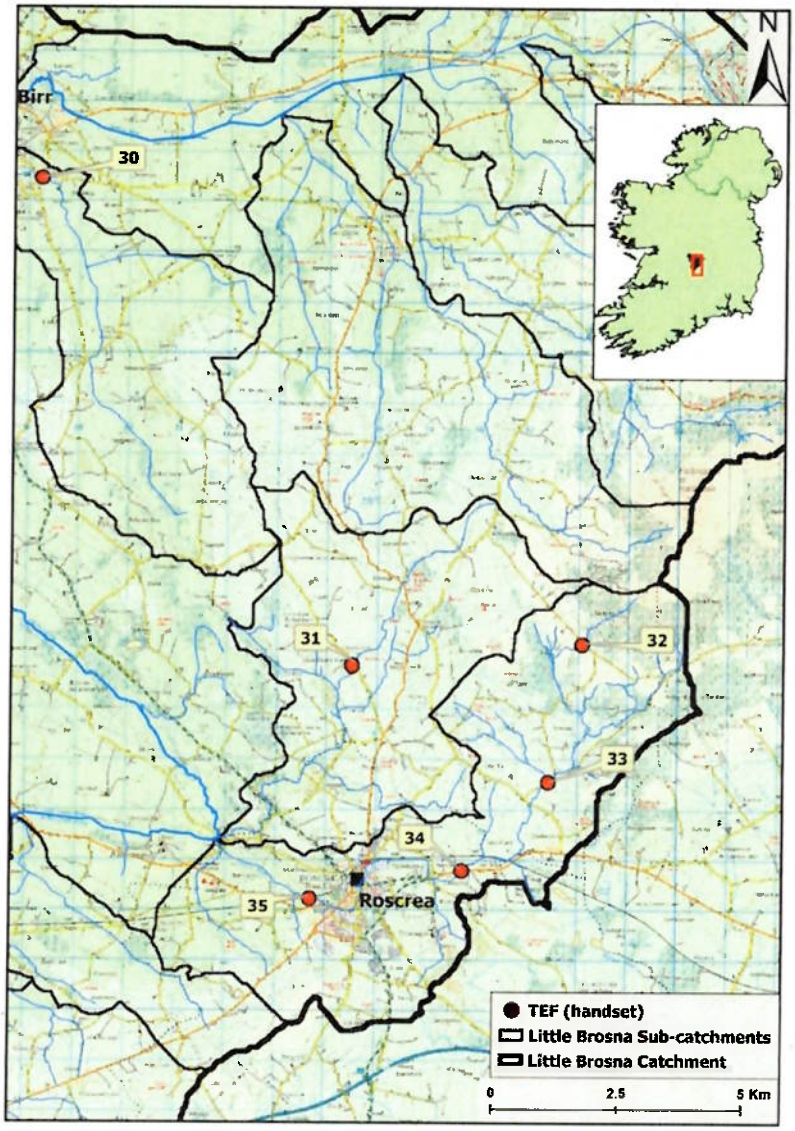


Figure 4. Location of electrofishing survey sites, Little Brosna River catchment (Sites 30-35), August 2021

Table 4. Minimum density estimates (no. fish/m^2) for the Little Brosna River catchment (Sites 30-35), 2021

	Rock	Goldengrove	Bunnow Catchment					
Site no.	30	31	32	33	34		35	
Species	2021	2021	2021	2021	2015	2021	2015	2021
Brown trout	0.492	0.021	-	0.522	0.492	1.636	0.300	0.055
0+ brown trout	0.451	-	-	0.393	0.317	0.446	0.170	0.045
1+ & older brown trout	0.041	0.021	-	0.122	0.175	1.190	0.130	0.010
Lamprey sp.	-	-	-	-	-	0.037	-	-
Stone loach	-	-	-	0.014	0.050	1.227	-	-
Three-spined stickleback	-	0.756	-	-	-	-	-	-
All fish	**0.492**	**0.776**	**no fish**	**0.536**	**0.542**	**2.900**	**0.300**	**0.055**

Table 5. Fish ecological status for the Little Brosna catchment, 2021. Previous results are shown where applicable (H=High, G=Good, M=Moderate, P=Poor and B=Bad).

Site No.	2008	2012	2015	2019	2020	2021
1	–	–	–	N/A	–	Mod
2	–	–	–	N/A	–	Mod
3	Good	Good	Good	–	–	Mod
4	–	–	–	–	–	Mod
5	–	–	N/A	–	–	Mod
6	–	–	N/A	–	–	Good
7	–	–	–	–	–	N/A
8	–	–	–	–	–	Mod
9	–	–	–	–	–	Mod
10	–	–	–	–	–	Mod
11	–	–	–	–	–	Mod
12	–	–	–	–	–	Mod
13	–	–	–	–	–	Poor
14	–	–	–	–	–	Mod
15	–	–	–	–	–	N/A
16	Good	–	–	–	Poor	Mod
17	–	–	–	–	–	Mod
18	–	–	–	–	–	Mod
19	–	–	–	–	–	Mod
20	–	–	–	–	–	Mod
21	–	–	–	–	–	Mod
22	–	–	–	–	–	Poor
23	–	–	–	–	–	Poor
24	–	–	–	–	–	Mod
25	–	–	–	–	–	Mod
26	–	–	–	–	–	Mod
27	–	–	–	–	–	Mod
28	–	–	–	–	–	Mod
29	–	–	–	–	–	Poor
30	–	–	–	–	–	Mod
31	–	–	–	–	–	Poor
32	–	–	–	–	–	N/A
33	–	–	Good	–	–	Good
34	–	–	Mod	–	–	Good
35	–	–	Mod	–	–	Poor

Table 6. Salmonid % age class structure (where recorded) for the Little Brosna catchment, August 2021

Site No.	Brown trout					Salmon		
	% of catch					% of catch		
	0+	1+	2+	3+	4+	0+	1+	2+
1	93	7	–	–	–	–	–	–
2	33	40	27	–	–	–	–	–
3	29	8	55	8	–	50	17	33
4	1	28	55	15	–	–	–	–
5	100	–	–	–	–	–	–	–
6	89	7	4	–	–	–	–	–
8	10	67	23	–	–	–	–	–
9	17	75	8	–	–	–	–	–
10	10	48	38	5	–	–	–	–
11	91	9	–	–	–	–	–	–
12	98	2	–	–	–	–	–	–
13	100	–	–	–	–	–	–	–
14	29	50	21	–	–	–	–	–
16	85	15	–	–	–	–	–	–
17	79	18	3	–	–	–	–	–
18	69	24	6	–	–	–	–	–
19	83	11	6	–	–	–	–	–
20	2	34	53	8	3	–	–	100
21	20	51	29	–	–	–	–	100
22	–	68	27	5	–	–	100	–
23	3	49	44	4	–	–	–	–
24	75	17	8	–	–	–	–	–
25	87	9	4	–	–	–	–	–
26	89	11	–	–	–	–	–	–
27	69	16	13	2	–	100	–	–
28	93	7	–	–	–	100	–	–
29	100	–	–	–	–	100	–	–
30	92	8	–	–	–	–	–	–
31	–	50	50	–	–	–	–	–
33	73	22	5	–	–	–	–	–
34	26	52	22	–	–	–	–	–
35	86	0	14	–	–	–	–	–

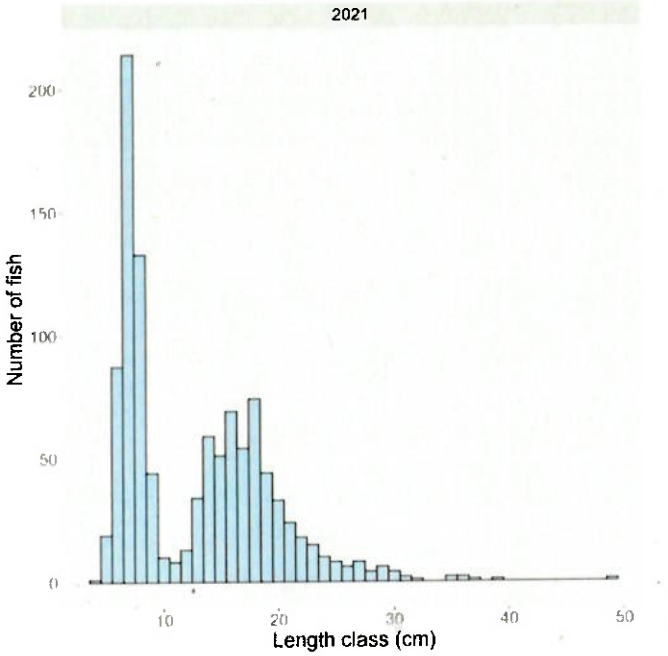


Figure 5. Length frequency for brown trout (n= 1060) in the Little Brosna catchment 2021

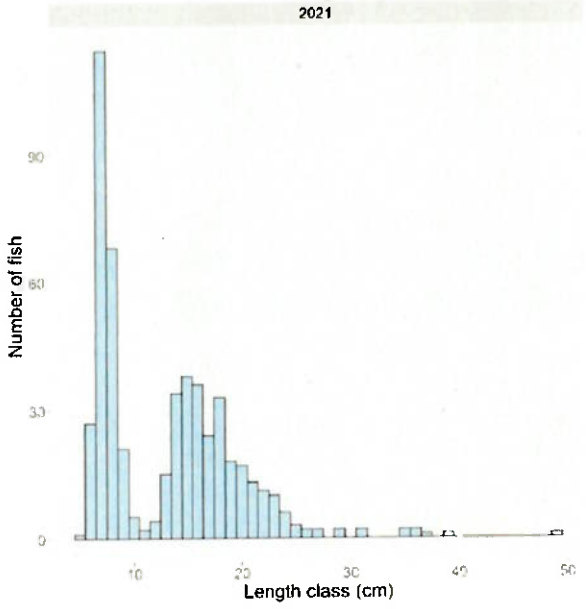


Figure 6. Length frequency for brown trout (n= 515) in the Camcor sub-catchment 2021

Summary

A total of seven fish species were recorded at 35 sites surveyed during the Little Brosna catchment survey in August 2021 (Tables 2, 3, 4 and Figure 7). Brown trout were the most common and abundant species captured with lengths ranging from 4.5 to 49.7cm. Five age classes (0+, 1+, 2+, 3+ and 4+) were present with 0+ the most abundant.

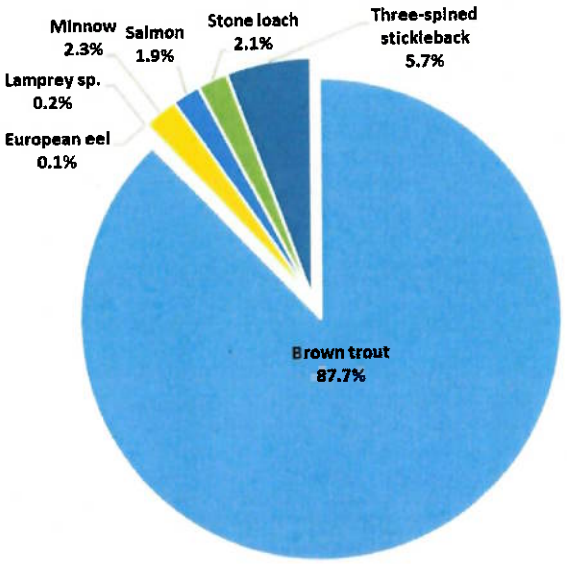


Figure 7. Fish species composition (%), Little Brosna catchment, 2021

The highest density of brown trout (1.636 fish/m^2) was recorded at Site 34 (Bunow River at Benamore Br.). The highest density of 0+ brown trout (0.594 fish/m^2) was recorded at Site 12 (Kilcomin River at Driminduff), while the highest density of 1+ and older brown trout (1.19 fish/m^2) was also recorded at Site 34.

Salmon were caught at seven sites with lengths ranging from 5 to 17.2cm. Three age classes (0+, 1+ and 2+), were present with 0+ being the most abundant cohort.

The highest density of salmon (0.045 fish/m^2) was recorded at Site 27 (Breaghmore River at Breaghmore Br.); these were all aged 0+. The highest density of 1+ and older salmon (0.002 fish/m^2) was recorded at Site 3 (Little Brosna at Riverstown Br.).

Three-spined stickleback were recorded at ten sites (n=69), minnow at five sites (n=28), stone loach at four sites (n=25), lamprey at two sites (n=2) and European eel at one site (n=1).

The highest density of three-spined stickleback (0.756 fish/m^2) was recorded at Site 31 (Goldengrove Stream at Ballyrickard More). The highest density of stone loach (1.227 fish/m^2) was recorded at Site 34 (Bunow River at Benamoe Br.); this was a relatively large increase when compared to the 2015 survey.

A Water Framework Directive fish classification tool (FCS2) was developed for Irish rivers in 2011 (SNIFFER 2011). The tool works by comparing various fish community metric values within a site to those predicted for a site under un-impacted conditions. In general, a site will achieve High status if indicator species (e.g. both salmonid cohorts 0+ and 1+ and older) are present and in expected numbers. Status will decline if such cohorts are missing, are in poor abundance, or if more tolerant species proliferate.

Fish ecological status was assigned to 32 sites surveyed on the Little Brosna catchment during 2021. Three sites achieved Good status, 23 Moderate status and six Poor status, with the remaining three sites unassigned (no fish recorded). Compared to the previous year's fish ecological status (see Table 5 where applicable), two sites (Site 16 and 34) improved in status, one site (Site 33) remained unchanged, while one site deteriorated (Site 35). Good status sites (Sites 6, 33 and 34) were located on the Glasderry and Bunow rivers in the eastern part of the catchment (Figure 8).

The reasons for the failures and deteriorations in fish ecological status were due to lower-than-expected abundance of type specific indicator species (e.g., salmon and trout), absence of certain age cohorts indicating recruitment failures and/or the presence of a relatively high abundance of tolerant fish species (e.g. three-spined stickleback). Failures and deteriorations in fish ecological status were likely caused by pressures such as nutrient enrichment, habitat modification and fish passage issues.

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CEN 2003 Water Quality Sampling of Fish with Electricity. CEN EN 14011:2000. Brussels. European Committee for Standardization.

Matson, R., Delanty, K., Shephard, S., Coghlan, B. and Kelly, F. (2018). *Moving from multiple pass depletion to single pass timed electrofishing for fish community assessment in wadeable streams*. Fisheries Research, 198, 99-108.

SNIFFER River Fish Classification Tool: Science Work. WFD68c, Phase 2. Final Report. Version 6. Edinburgh. Scotland and Northern Ireland Forum for Environmental Research.

Inland Fisheries Ireland: 3044 Lake Drive, Citywest Business Campus, Dublin, D24 Y265, Ireland

CITATION: Gordon, P., Matson, R., Corcoran, W., Donovan, R., Kelly, K., Duffy, P., Burke, E. and Kelly, F.L. (2021) Sampling Fish in Rivers 2021 –Little Brosna Catchment, Factsheet No. 2021/3. National Research Survey Programme. Inland Fisheries Ireland

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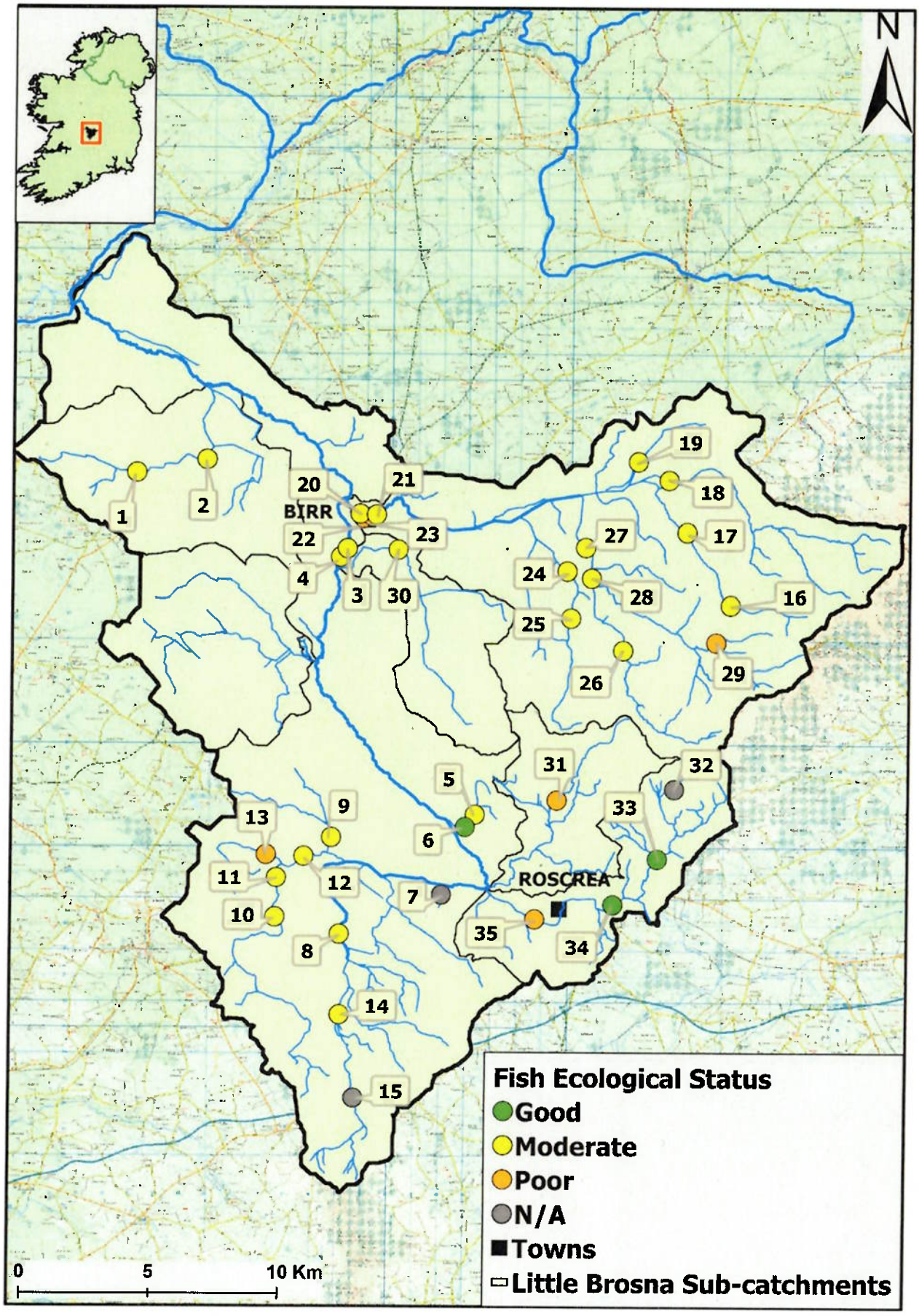


Figure 8. Fish ecological status map of the Little Brosna catchment, August 2021

WILD TROUT TRUST

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12th January 2026

To whom it may concern,

Re. Ballincor Wind Farm Development

The Wild Trout has previously undertaken advisory visits to the River Shannon system including the Little Brosna River, and others locally, and share concerns about any proposed development so close to a river, particularly one with a distinct, locally adapted trout population like the Croneen Trout. Indeed, Queens University Belfast in collaboration with citizen scientists have undertaken various investigations into the genetics, population structuring, and feeding of Lough Derg's trout populations, including the Croneen, to better understand the range and importance of these distinct local trout. Atlantic salmon, populations are also present in the River Shannon catchment, including the Little Brosna River. The precarious state of those important animals internationally is now so serious that they have been designated as endangered, so their conservation is also of utmost importance.

Recent windfarm developments around Ireland (and elsewhere in the British Isles) have resulted in severe damage to riverine and terrestrial habitats, with issues occurring from poor site selection and screening, and poor management, and failure to manage fine sediment escapement from site, both during development and subsequent operation. This has led to degradation of the water quality and substrate habitat required to produce and maintain healthy fish and invertebrate populations, catastrophically in some cases. Examples of such developments include Derrybrien Wind Farm (Co. Galway), Tullynamoyle Windfarm (Co. Leitrim), Meenbog wind farm in (Co. Donegal) in Ireland, and Viking Wind Farm in Shetland, to name but a few, where catastrophic bog slide and more general runoff of fine sediment escapement to nearby watercourses was a recurring theme.

The potential negative impact of wind turbines from aspects such as shadow flicker upon various wildlife, including fish, is also yet to be fully quantified for developments of this type by watercourses, but should be considered.

While the Wild Trout Trust recognises the requirement to develop sustainable sources of energy, we also believe it is vital not to sacrifice one aspect of the environment for another, and renewable energy can only be considered green energy if it is obtained without environmental detriment. For these reasons, the risk of development from an industry with

such a poor track record poses serious cause for concern, particularly when located so close to a watercourse and important wildlife, including locally unique and internationally endangered fish populations. We hope that this support will contribute to ensuring that any development is strictly screened, overseen, and managed in ways that ensure absolutely no detriment to the precious local environment and the wildlife it supports.

Kind regards



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Ballincor Wind Farm

Co. Tipperary & Co. Offaly

Planning Stage Environmental Impact Assessment Report (EIAR)
Chapter 11 Review

30 June 2026

Greater BIRR Wind Action Group

Report Author: Dirun Ergin

Report: DC2769 RT01

Report Control

Document Title:	Planning Stage Environmental Impact Assessment Report (EIAR) Chapter 11 Review

Project:	Ballincor Wind Farm

Client:	Greater BIRR Wind Action Group

Job Number:	DC2769-RT01

Report Author:	Dirun Ergin BA MSc MIOA

Signed:	

Date:	30 June 2026

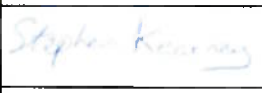
Issue	Date	Status	Checked By	Signed
1	19/06/2026	For Information	Stephen Kearney BE MIEI MIOA	
2	24/06/2026	For Information	Stephen Kearney BE MIEI MIOA	
3	30/06/2026	For Information	Stephen Kearney BE MIEI MIOA	
4				

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1 Introduction

Allegro Acoustics was commissioned by the Greater BIRR Wind Action Group to complete an Acoustic Review of the Environmental Impact Assessment Report (EIAR) Chapter 11 and the associated appendices from the Planning Application documents for the Ballincor Wind Farm development (Case Reference Number: PAX92.324279). The site for the development is shown in Figure 1 below.

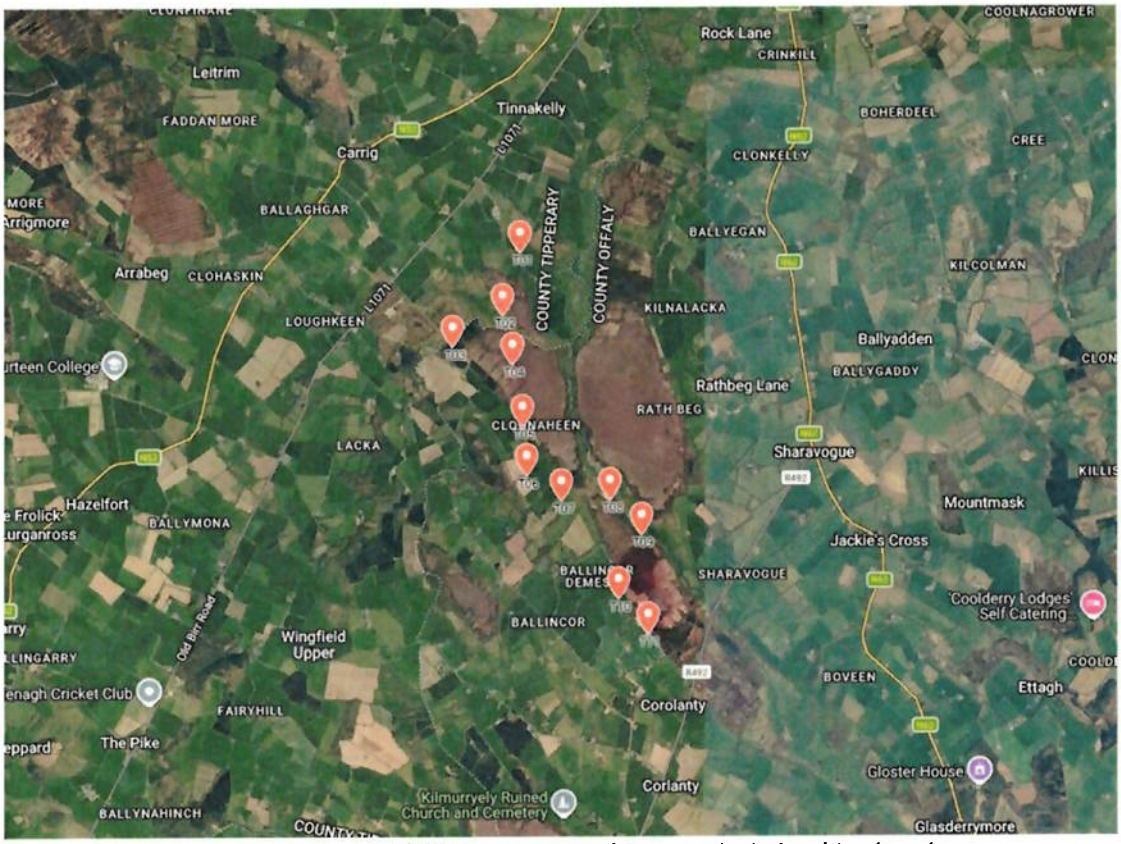


Figure 1: Graphic depicting the site of the Ballincor Wind Farm and wind turbine locations.

This report includes our assessment based on guidance outlined in the following standards and guideline documents:

- Department of Trade & Industry (UK) Energy Technology Support Unit, *The Assessment and Rating of Noise from Wind Farms* (ETSU-R-97) [1].
- Institute of Acoustics, *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* [2].
- The Department of the Environment, Heritage and Local Government, *Wind Energy Development Guidelines* [3].

The documents reviewed are listed as follows:

- Ballincor Wind Farm Planning Statement
- Ballincor Wind Farm EIAR Chapter 11: Noise and Vibration
- Ballincor Wind Farm EIAR Chapter 11 Appendix 3: Background Noise Survey
- Ballincor Wind Farm EIAR Chapter 11 Appendix 4: Noise Prediction Calculation Methodology, Inputs and Assumptions
- Ballincor Wind Farm EIAR Chapter 11 Appendix 5: Assigned Limits
- Ballincor Wind Farm EIAR Chapter 11 Appendix 6: Noise Prediction Results

2 Suitably Qualified Consultants

This response was written by Dirun Ergin and reviewed by Stephen Kearney. Dirun is the Principal Acoustic Consultant and Stephen is the Technical Director at Allegro Acoustics. Summaries of their qualifications and experience are presented in Table 1 below.

Qualifications and Experience of the Report Author and the Report Reviewer

Stephen Kearney BEng MIEI MIOA

Technical Director at Allegro Acoustics

Qualifications:

- Postgraduate Diploma in Acoustics and Noise Control from Trinity College Dublin and the Institute of Acoustics (IOA) (Hons 1:1, 2016)
- Bachelor's Degree in Energy Systems Engineering from National University of Ireland, Galway (Hons 2:1 2014)

Professional Memberships:

- Member of Engineers Ireland (MIEI)
- Member of the Institute of Acoustics (MIOA)

Experience:

Stephen has 12 years' experience working on the acoustic design of Power Generation & Renewables, Data Centre, Commercial, Residential and Education developments.

Dirun Ergin BA MSc MIOA

Principal Acoustic Consultant at Allegro Acoustics

Qualifications:

- Master's Degree in Architectural Acoustics from Yildiz Technical University, Turkey (2011)
- Bachelor's Degree in Interior Architecture and Environmental Design from Bilkent University, Turkey (2009)

Professional Memberships:

- Member of the Institute of Acoustics (MIOA)
- Member of Turkish Acoustic Association

Experience:

Dirun has 13 years' experience working on the acoustic design of Arts & Performance, Commercial, Corporate, Residential, Education, Hospitality, Public and Healthcare developments.

Table 1: Qualifications and experience of the report author and the report reviewer.

3 Acoustic Review of the EIAR Chapter 11

Allegro Acoustics has reviewed the Noise and Vibration chapter (Chapter 11) and relevant appendices (Appendix 3, 4, 5, 6) of the Environmental Impact Assessment Report for the Ballincor Wind Farm development. This section includes our opinion on the compliance of the reviewed report with the best practice guideline documents for wind farm developments.

3.1 Existing Environment (Section 11.5)

3.1.1 Summary of Derived Background Noise Levels (Section 11.5.1)

It is seen in the EIAR and Appendix 11.3 (Background Noise Survey) that the maximum wind speed while deriving the background noise levels was limited to 9m/s. As shown in Figure 2 below, IOA recommends the upper level of the wind speed to be either 12m/s or the proposed wind turbine's maximum sound power level [2].

> 2.9.3 Therefore the recommended minimum wind speed range (10 m standardised) for background noise surveys is:
>
> - For pitch-regulated turbines: between cut-in wind speed and the wind speed corresponding to its maximum sound power level.
> - For stall-regulated turbines: between cut-in wind speed and 12 m/s.

Figure 2: Extract from IOA GPG about Background Data Collection – Duration of Surveys [2].

It is also seen on the Appendix 11.4 (Noise Prediction Calculation Methodology, Inputs and Assumptions) that, the sound power level of the proposed wind turbine is the same for the wind speed 7m/s and higher.

Table 3 LwA Levels Used for Prediction Model – Nordex N163[1] 98.5 m Hub Height

Wind Speed (m/s at 10m Standardised Height)	Octave Bank Centre Frequency (Hz)								dB L_{WA}
	63	125	250	500	1000	2000	4000	8000	
3	77.0	84.6	86.7	87.9	89.7	90.4	84.8	70.4	95.8
4	78.3	85.9	88.0	89.2	91.0	91.7	86.1	71.7	97.1
5	82.9	90.5	92.6	93.8	95.6	96.3	90.7	76.3	101.7
6	87.3	94.9	97.0	98.2	100.0	100.7	95.1	80.7	106.1
7	88.6	96.2	98.3	99.5	101.3	102.0	96.4	82.0	107.4
8	88.6	96.2	98.3	99.5	101.3	102.0	96.4	82.0	107.4
≥9	88.6	96.2	98.3	99.5	101.3	102.0	96.4	82.0	107.4

Figure 3: Extract from EIAR Appendix 11.4 – the turbine sound power noise emission values.

As it is depicted in Figure 4, The EIAR states that the wind speed of 9m/s is the point where the turbine reaches its maximum sound power level.

> Table 11-11 outlines the operational noise limits derived for the assessment in accordance with applicable criteria. Turbine noise limits have been established for wind speeds between 3 and 9 m/s, covering the range from turbine cut-in up to the point where the turbine reaches its maximum sound power level.
>
> In the absence of measured background noise data above 9 m/s, a conservative approach assumes that the background noise levels derived at 9 m/s apply at higher wind speeds. However, it is expected that as wind speeds increase beyond 9 m/s, background noise levels will also rise.

Figure 4: Extract from EIAR Wind Turbine Noise Limits – Assigning Representative Background Noise Levels

Comment 1: While it is acknowledged that the Derived Background Noise Levels lack data for wind speeds exceeding 9m/s, setting out the criteria for higher wind speeds same with 9m/s represents a safe approach. However, the assessment doesn't provide predicted noise levels for wind speeds above 9m/s to show compliance with these criteria. If the cut-off wind speed for the proposed wind turbines is 9m/s, or if the sound power levels remain constant for wind speeds above 9 m/s as implied in Figure 3, the current assessment would be considered adequate. However, indicative technical data publicly available for the Nordex N163 turbine

series suggests that cut-out wind speeds can reach up to 26 m/s (https://www.nordex-online.com/en/product/n163-5-x/). Therefore, we ask the applicant to confirm that the maximum sound power levels presented in the EIAR, and utilized in the noise model, will not be exceeded under any operational circumstances at higher wind speeds. We suggest that these maximum sound power levels be defined within a Planning Condition to ensure that the predicted noise levels at 9m/s remain representative for higher wind speeds. i.e. The maximum permitted sound power level from each individual turbine at all wind speeds must not exceed the values included in the EIAR and shown below.

Maximum Permitted Sound Power Level (dB L_{WA})								
Octave Band Frequency (Hz)								dB L_{WA}
63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
88.6	96.2	98.3	99.5	101.3	102.0	96.4	82.0	107.4

Table 2: Maximum Permitted Sound Power Level (dB L_{WA}) per Octave Band.

Comment 2: If the turbine model, size or type changes throughout the project, the sound power level from the turbine must not exceed the values included in the EIAR and shown in Table 2 above.

3.1.2 Wind Turbine Noise Limits (Section 11.5.2)

In the planning statement, the applicant confirms that the predicted operational noise levels will comply with the applicable WEDG06 guidelines as demonstrated in Figure 5.

> ***Based on detailed information on the site layout, turbine noise emission levels and turbine hub height, turbine noise levels have been predicted at NSLs for a range of operational wind speeds. The predicted noise levels associated with the proposed project will be within the noise criteria stated in the applicable WEDG06s guidelines. Therefore, it is not considered that a significant effect is associated with the development.***

Figure 5: Extract from the Ballincor Wind Farm Planning Statement

The applicable criteria outlined in WEDG06 is presented in Figure 6 and the noise limits set out by the applicant are shown in Figure 7 [3].

> In general, a lower fixed limit of 45 dB(A)[10] or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations is considered appropriate to provide protection to wind energy development neighbours. However, in very quiet areas, the use of a margin of 5dB(A) above background noise at nearby noise sensitive properties is not necessary to offer a reasonable degree of protection and may unduly restrict wind energy developments which should be recognised as having wider national and global benefits. Instead, in low noise environments where background noise is less than 30 dB(A), it is recommended that the daytime level of the LA90, 10min of the wind energy development noise be limited to an absolute level within the range of 35-40 dB(A).
>
> Separate noise limits should apply for day-time and for night-time. During the night the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. A fixed limit of 43dB(A) will protect sleep inside properties during the night

Figure 6: Extract from the Wind Energy Development Guidelines *[3]*.

Table 11-11: Proposed Noise Criteria Curves

Location	Period	Turbine Noise Limits $L_{A90,10min}$ Levels (dB) at Various Standardised 10m Height Wind Speeds)						
		3	4	5	6	7	8	≥9
NML 1	Day	40	40	40	45	45	45	45.6
	Night	43	43	43	43	43	43	43
NML 2	Day	40	40	40	40	45	45	45
	Night	43	43	43	43	43	43	43
NML 3	Day	40	40	45	45	45	46.6	50.8
	Night	43	43	43	43	43	45.5	45.5
NML 4	Day	40	40	40	45	45	45	45.8
	Night	43	43	43	43	43	43	43
NML 5	Day	40	40	45	45	45	48.4	52.2
	Night	43	43	43	43	43	45.4	45.4
NML 6	Day	40	40	45	45	45	46.1	51.1
	Night	43	43	43	43	43	43.2	43.2
NML 7	Day	40	40	45	45	47.2	52.6	52.6
	Night	43	43	43	43	44.3	45.3	45.3

Figure 7: Extract from EIAR Wind Turbine Noise Limits – Assigning Representative Background Noise Levels, Proposed Noise Criteria Curves

Comment 3: For low noise environments where background noise is less than 30dBA WEDG06 recommends a daytime noise criteria of 35-40dBA. The applicant has recommended the upper limit of 40dBA be applied. Considering that the measured background day time noise level is as low as 23.9dB at low windspeeds, it may be worth applying a criteria that is at the lower end of this threshold (35dBA) for wind speeds that result in a background noise level that is significantly below the 30dBA threshold.

Comment 4: It is noted that the night time criteria defined by the applicant is above the daytime criteria for the locations where the derived background noise levels are below 30dBA. While this is in line with the wording of the WEDG06 guidelines it is important to note these are very low noise areas with existing noise levels as low as 18.8dBA measured during nighttime hours at low wind speeds. As such applying a fixed noise limit of 43dBA would result in noise levels that are significantly above the existing background nighttime noise level. We propose that in order to adequately protect the existing residents that the planning authority consider applying a lower nighttime noise limit than the 43dBA fixed limit in cases where the existing background nighttime noise level is extremely low.

3.2 Assessment of Effects (Section 11.6)

3.2.1 Operational Phase (Section 11.6.4)

In accordance with the IOA GPG, a +3 dB correction must be applied to account for sound propagating across a valley or concave ground profile.

4.3.9 A further correction of +3 dB (or +1.5 dB if using G=0.0) should be added to the calculated overall A-weighted noise level for propagation "across a valley", i.e. a concave ground profile, or where the ground falls away significantly, between the turbine and the receiver location. The following criterion[viii] of application is recommended:

$$h_m \geq 1.5 \times (\text{abs}\ (h_s - h_r)/2)$$

where h_m is the mean height above the ground of the direct line of sight from the receiver to the source (as defined in ISO 9613-2, Figure 3), and h_s and h_r are the heights above local ground level of the source and receiver respectively. This may be calculated using standard topographic data with a resolution of 50 m or less. Care needs to be exercised when evaluating this condition, as small changes in distance and height may trigger (or not) the criterion when the actual situation has not changed significantly. Examination of ground profiles between sources and receivers can assist in determining its application.

Figure 8: Extract from IOA GPG – Noise Propagation Model and Input Parameters *[2]*.

Comment 5: We ask the applicant to submit further calculations and assessment to determine whether this topographical correction applies to the site, and if so, incorporate it into the predicted noise levels for the relevant noise sensitive locations and reassess the exceedance levels.

3.3 Noise Prediction Results (Appendix 11.6)

Noise Prediction Results for some of the Noise Sensitive Locations (H040, H055, H082, H128, H182, H207, H214, H220, H234, H235, H247, H269, H285, H291, H295, H305, H308, H310) were not included in the results table in Appendix 11.6.

Comment 6: It is acknowledged that the majority of these locations are non-residential buildings with the exception of H285 and H082 and H285 is one of the closest receptors to the turbines (Turbine 6). We ask the applicant to clarify the status of the above mentioned buildings, explain why these noise sensitive locations were excluded from the assessment and resubmit the Noise Prediction Results to include both H285 and H082.

4 References

[1] Department of Trade & Industry (UK) Energy Technology Support Unit (ETSU), "The Assessment and Rating of Noise from Wind Farms (ETSU-R-97)," September 1996.

[2] Institute of Acoustics, "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise," May 2013.

[3] Department of the Environment, Heritage and Local Government, "Wind Energy Development Guidelines," 2006.

APPENDIX 7-2

Independent Regression Analysis of Background Noise Survey Data

Appendix C, Appendix 11.3 — Ballincor Wind Farm EIAR

Methodology

Data points from the regression scatter graphs in Appendix C of Appendix 11.3 were digitised using WebPlotDigitizer software. Axis calibration was performed using grid intersections at known values and verified against the AWN regression line at 8 m/s compared to the Table 11-10 derived value at that wind speed. The calibration verification result is noted on each chart below. An independent polynomial regression was then fitted to: (a) all digitised data points, and (b) data points falling at or above 25 dB — the lower A-weighted measurement limit specified by the manufacturer of the Rion NL-52 instrument used at all seven monitoring locations.

These charts are visual representations, not raw data analysis: The analysis below is therefore illustrative of that pattern rather than its sole basis. The data points shown in each chart were digitised visually from AWN's own scatter graphs in Appendix C of Appendix 11.3. However, the overall pattern — the density of points below the 25 dB floor, the sparsity of points above 7 m/s, and the gap between AWN's derived curve and the independently fitted regression is corroborated independently by AWN's own Table 11-10, which records derived background levels below 25 dB at multiple locations. The table values alone prove the instrument compression argument without reference to this graphical analysis. Where data points were densely clustered below the 25 dB floor and could not be individually distinguished, they were under-counted, so the percentages reported are more than likely conservative underestimates, and the true proportion of sub-floor readings at each location is actually higher than the figures shown.

Scope — a selection of locations, not an exhaustive analysis: Charts are presented for six of the seven monitoring locations — NML1, NML2, NML3, NML4, NML6 (Night) and NML5 (Daytime). NML5 Night is addressed in the summary table on the basis of AWN's own Table 11-10 values rather than graphical analysis. The six charts presented cover monitoring locations distributed across different parts of the site — north, east, south and west — and represent different distances from the proposed turbines. The fact that the same instrument compression pattern appears consistently across all six charts, at locations in different directions and at different distances, demonstrates that the finding is systematic across the entire survey rather than an artefact of one particular location or dataset.

Manufacturer Specification — Rion NL-52

Source: Rion Co. Ltd, Sound Level Meter Class 1 NL-52 / Class 2 NL-42, Specification Sheet, document reference 1011-3 1203.P.D

Parameter	Specified Value
A-weighting measurement range	25 dB to 138 dB
Inherent noise — A-weighting	17 dB or less
Inherent noise — C-weighting	25 dB or less
Applicable standard	IEC 61672-1:2002 Class 1

What the Graphs Show and Why It Matters

Each chart shows two independent regression lines alongside AWN's derived curve from Table 11-10. The blue dashed line is fitted to all data points. The green solid line is fitted only to data points above the 25 dB instrument floor — the reliable portion of the dataset.

At low wind speeds, the green line sits consistently higher than AWN's black line. This gap represents the effect of instrument compression — AWN's curve is pulled downward by the large mass of sub-floor compressed data, resulting in a background curve that is artificially low. An artificially low background curve produces noise limits that are more permissive than the true acoustic environment warrants.

This matters for three reasons. First, it undermines the credibility of the entire survey and all compliance conclusions derived from it. Second, it supports the case that the lower end of the WEDG06 range — 35 dB rather than 40 dB — should apply, since the true background is demonstrably quieter than recorded. Third, at higher wind speeds where the background-plus-5 dB regime begins to apply, the accuracy of the background level directly determines the limit.

The sparsity of data above 7 m/s — noted on each chart — is an independent concern. AWN's compliance tables show the assessment is already tight at 7–8 m/s. With almost no measured data at those wind speeds, the background curves are substantially extrapolated precisely where compliance matters most.

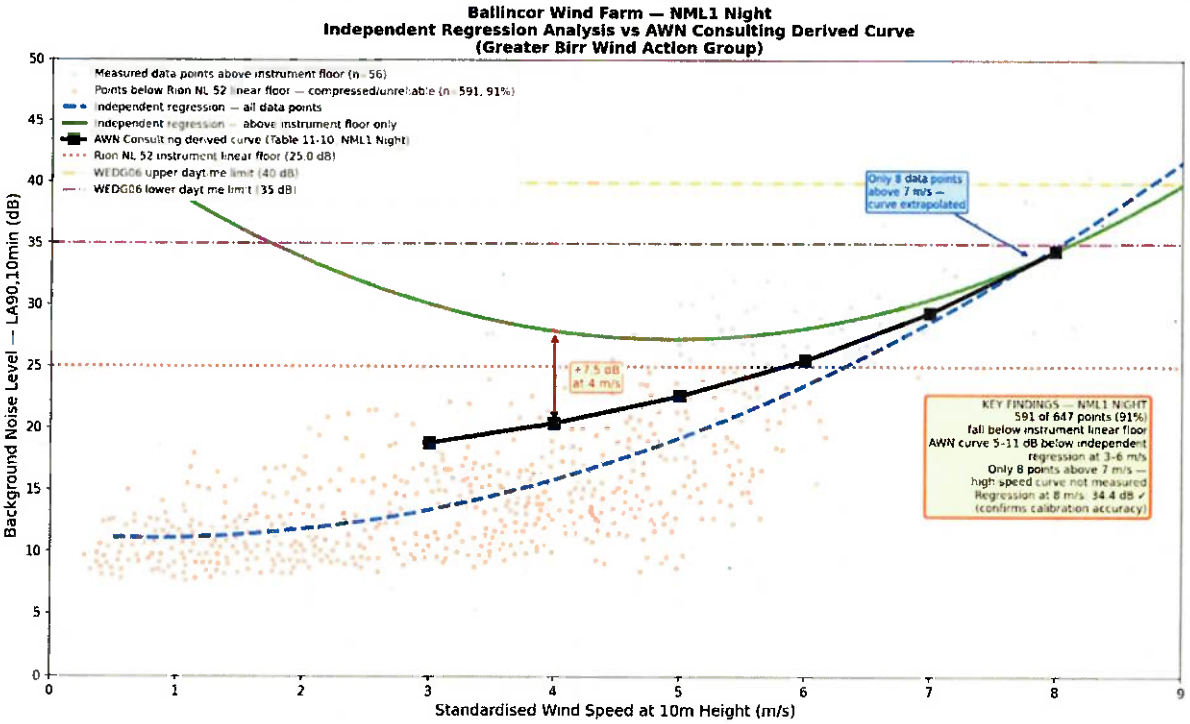
Chart Legend

- Purple circles: data points above the 25 dB instrument floor (reliable)
- Red crosses: data points below the 25 dB instrument floor (compressed/unreliable)
- Blue dashed line: independent regression — all data points
- Green solid line: independent regression — above-floor data points only
- Black line with squares: AWN Consulting's derived curve from Table 11-10
- Red dotted line: Rion NL-52 instrument linear floor (25 dB)
- Orange dash-dot line: WEDG06 upper daytime limit (40 dB)
- Purple dash-dot line: WEDG06 lower daytime limit (35 dB)

Note on NML5 Night: NML5 Night data was analysed and findings are included in the summary table in Part 2 (85.8% below floor, 10 points above 7 m/s). A chart is not included as the calibration could not be verified to the standard achieved at other locations. AWN's own Table 11-10 value of 17.8 dB at 3 m/s for NML5 Night independently confirms the instrument floor compression at that location.

NML 1 Night — H010

Calibration: Regression at 8 m/s = 34.7 dB vs AWN Table 34.4 dB (0.3 dB difference — calibration confirmed accurate)

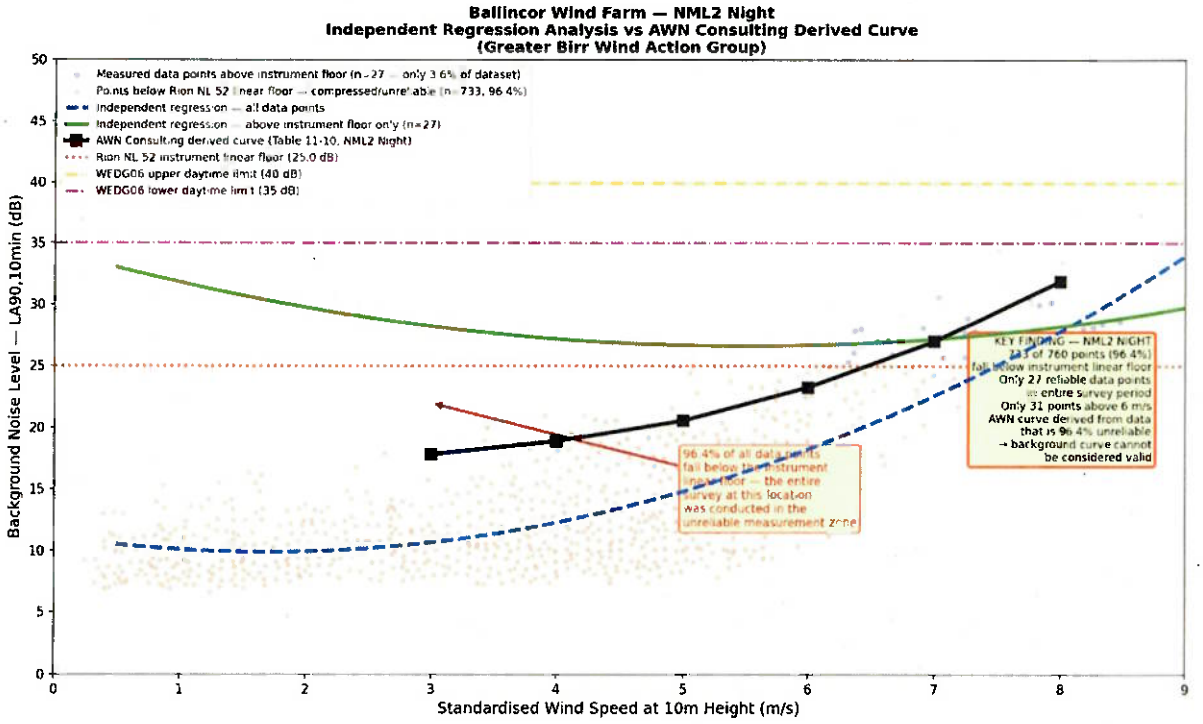


Key findings:

- 591 of 647 data points (91.3%) fall below the 25 dB instrument floor
- Only 8 data points above 7 m/s across the entire survey period
- AWN's derived curve sits 7–11 dB below the independent above-floor regression at 3–5 m/s

NML 2 Night — H141

Calibration: Calibration confirmed from grid intersection at x=6, y=40 — exact match

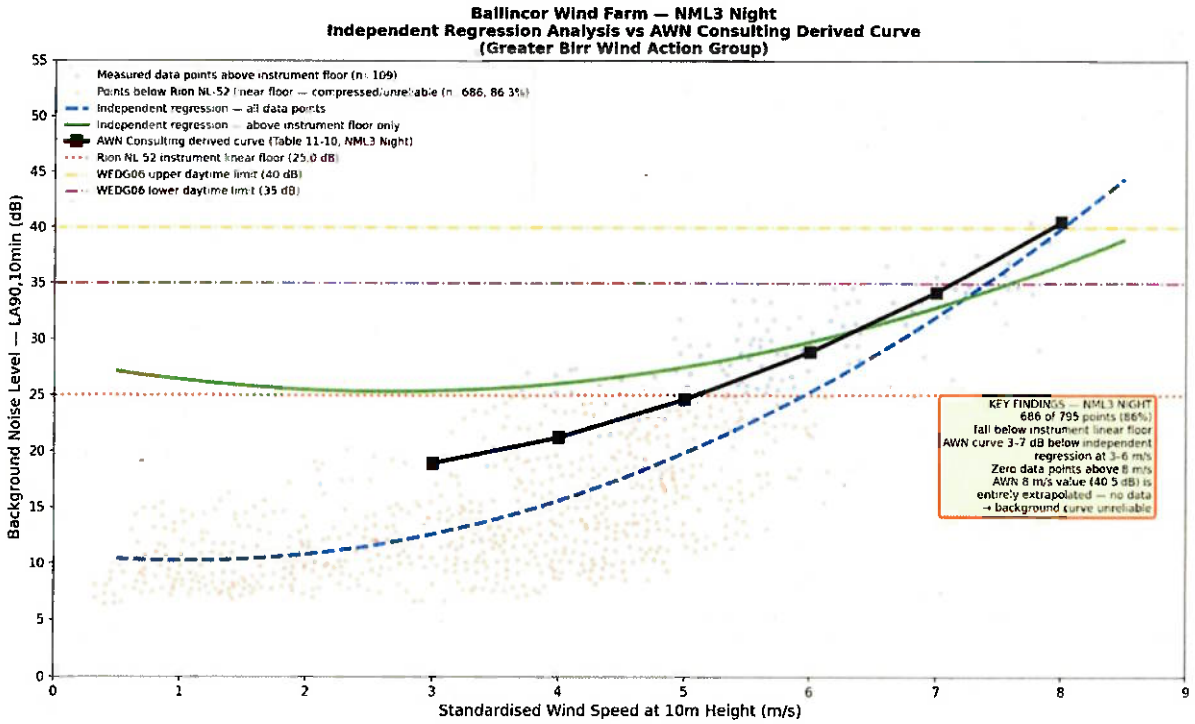


Key findings:

- 733 of 760 data points (96.4%) fall below the 25 dB instrument floor — highest proportion of any location
- Only 27 reliable data points in the entire survey period
- AWN's background curve was derived from a dataset that is 96% below the instrument's reliable measurement range

NML 3 Night — H173

Calibration: Verification point gave exactly x=0.0, y=40.0 — calibration confirmed accurate

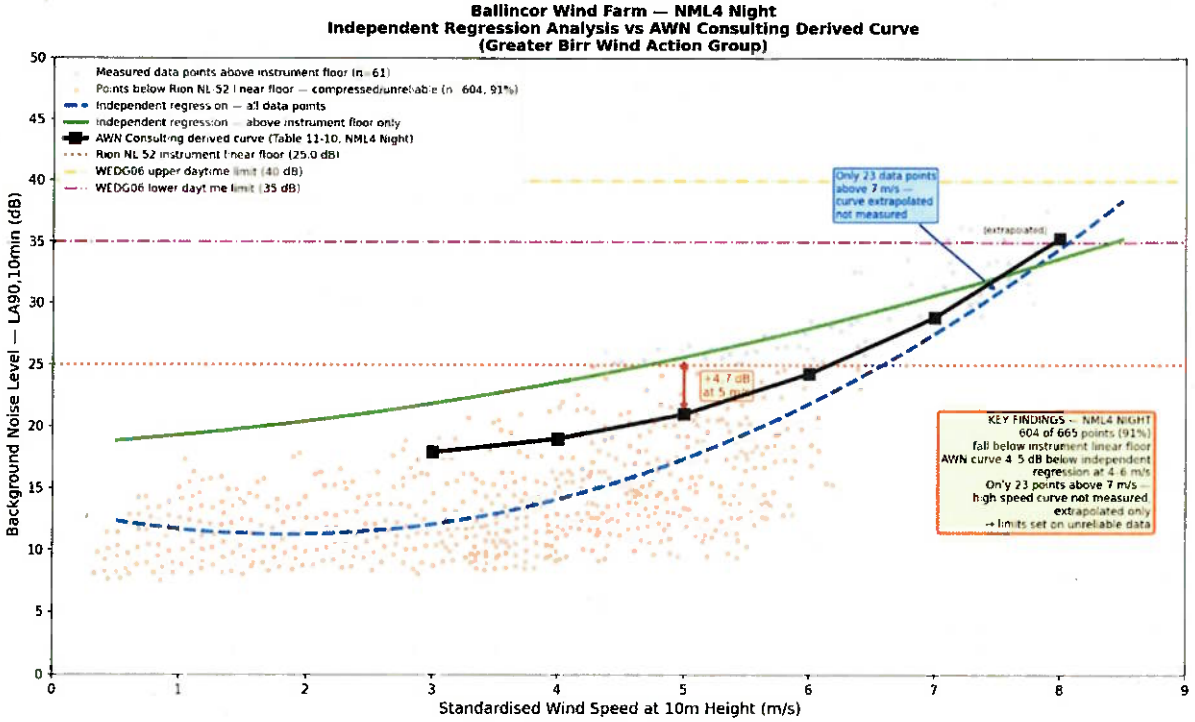


Key findings:

- 686 of 795 data points (86.3%) fall below the 25 dB instrument floor
- Zero data points above 8 m/s — AWN's value of 40.5 dB at 8 m/s is entirely extrapolated
- NML3 used to set limits for a large cluster of eastern properties

NML 4 Night — H017

Calibration: Verification point gave x=4.0, y=30.0 — exact match. Most reliably calibrated graph in the analysis.

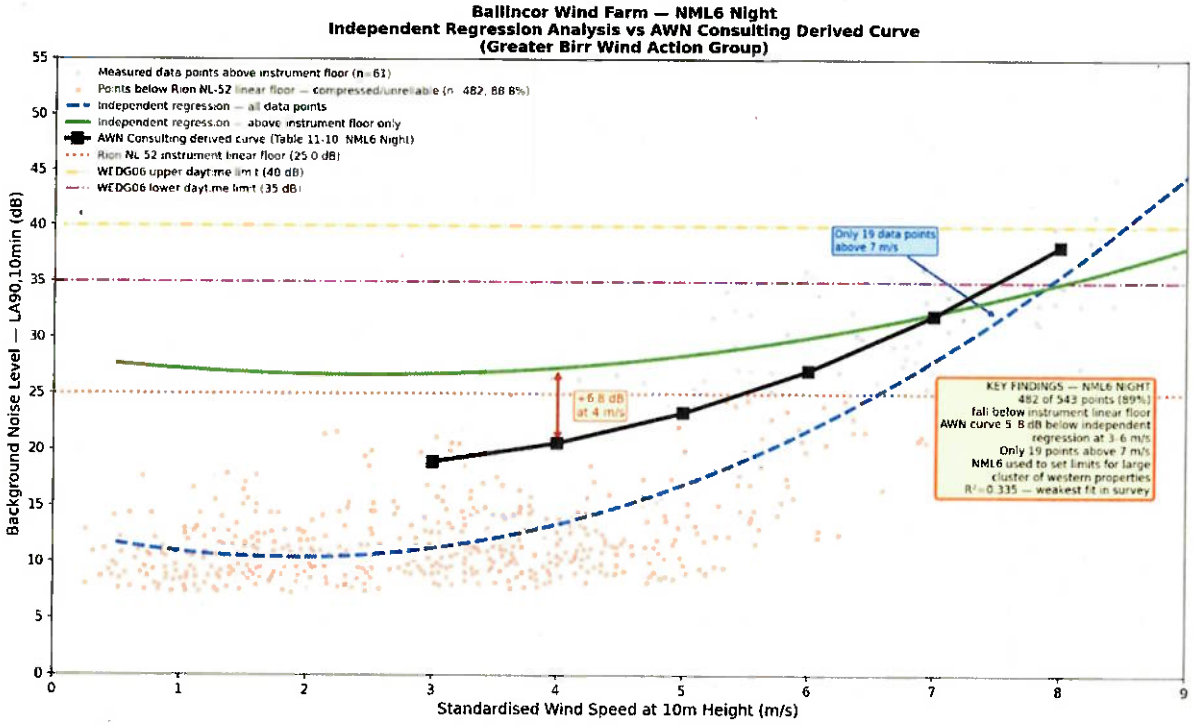


Key findings:

- 604 of 665 data points (90.8%) fall below the 25 dB instrument floor
- Only 23 data points above 7 m/s
- Gap between AWN curve and independent above-floor regression is 4–5 dB at 4–6 m/s

NML 6 Night — H109

Calibration: Calibration confirmed from axis grid points

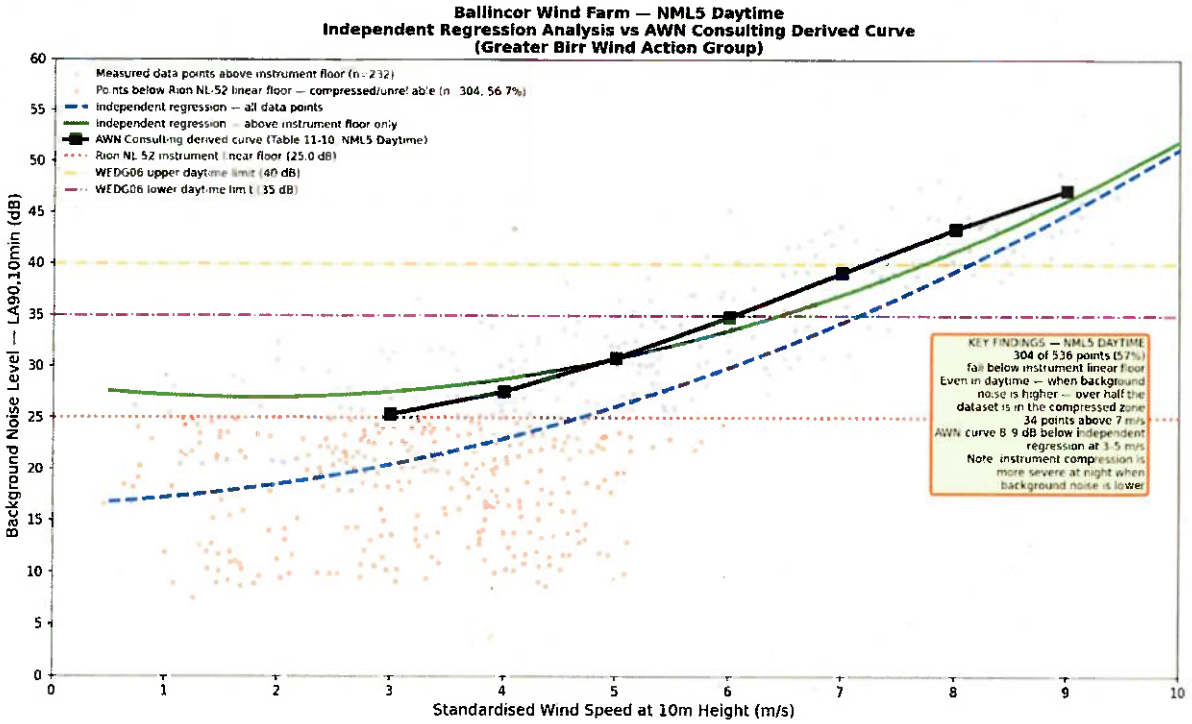


Key findings:

- 482 of 543 data points (88.8%) fall below the 25 dB instrument floor
- Only 19 data points above 7 m/s
- NML6 used to set limits for a large cluster of western properties
- Daytime $R^2 = 0.335$ — wind speed explains only 33% of daytime noise variation; inconsistent with successful wind farm exclusion and suggestive of residual Lacka/Skehanagh wind farm noise in the dataset

NML 5 Daytime — H289

Note: Daytime graph included to demonstrate compression exists in daytime periods. The night-time compression (Table 11-10 shows 17.8 dB at 3 m/s) is substantially more severe.



Key findings:

- 304 of 536 data points (56.7%) fall below the 25 dB instrument floor even in daytime
- If 57% compression exists in daytime, the night-time position is demonstrably worse

Summary

NML	Period	Points below 25 dB floor	% of dataset	Points above 7 m/s
NML 1	Night	591 of 647	91.3%	8
NML 2	Night	733 of 760	96.4%	31
NML 3	Night	686 of 795	86.3%	20
NML 4	Night	604 of 665	90.8%	23
NML 5	Night	337 of 393	85.8%	10
NML 6	Night	482 of 543	88.8%	19

At all six analysed night-time monitoring locations (NML1–6), between 85% and 96% of all data points fall below the manufacturer-specified lower measurement limit of the Rion NL-52 instrument. This is not an anomaly at one location — it is a systematic condition across the entire survey. The sparsity of data above 7 m/s is an equally significant and independent finding.

APPENDIX 7-3

IoA GPG 4.3.9 Valley Correction — Full JOULE Formula Workings

1. Purpose of This Appendix

This appendix presents the complete workings for the IoA GPG §4.3.9 valley-correction analysis referenced in Section 7.4.1 of the main submission. It shows, receptor by receptor and turbine by turbine, the application of the JOULE geometric trigger formula and the resulting compliance position. Every numerical input is taken from one of the following applicant-submitted documents:

- Turbine coordinates and base elevations — Appendix 16-1 (Shadow Flicker Report), WTG table.
- Receptor ground elevations (Z column) — Appendix 16-1, Shadow Receptor Input table.
- Predicted night-time noise levels — Appendix 11.6.
- Night-time noise criteria — Appendix 11.5.
- Ground factor G=0.5 — Appendix 11.4.
- JOULE formula and correction magnitude — IoA GPG §4.3.9, adopted by the applicant as governing methodology.

> **No external assumption is required**
> This analysis introduces no external data, no independent measurements, and no contested modelling assumptions. It applies the IoA GPG §4.3.9 formula to the applicant's own coordinates and derives the correction magnitude from the applicant's own ground factor. The only thing it adds is the step the applicant omitted.

2. The JOULE Formula — IoA GPG §4.3.9

IoA Good Practice Guide §4.3.9 requires a further correction of +3 dB (or +1.5 dB if G=0.0) to be added to the calculated overall A-weighted level for propagation across a valley — a concave ground profile, or where the ground falls away significantly between a turbine and the receiver. The trigger is the JOULE geometric criterion (European JOULE Project JOR3-CT95-0051, 1998):

$$h_m \geq 1.5 \times | h_s - h_r | / 2$$

where h_m is the mean clearance of the line of sight above the ground beneath it, h_s is the turbine hub height above sea level, and h_r is the receptor ground elevation above sea level. The criterion is evaluated for every turbine and every receptor individually. In this analysis h_m is approximated as $(h_s + h_r)/2$ − bog-floor elevation. **The applicant adopted G=0.5 in the noise model (Appendix 11.4); the applicable correction where the criterion is satisfied is therefore +3.0 dB (IoA GPG Table 4.1).**

2.1 The Conservative Bog-Floor Assumption

The h_m calculation requires an estimate of the ground elevation along the propagation path. This analysis uses 50.0 m ASL as the bog floor — a deliberately conservative estimate. The general bog platform ranges from 42.5 to 52.2 m ASL across the turbine bases (T06, at 62.4 m ASL on elevated ground, is excluded). Because $h_m = (h_s + h_r)/2$ − bog-floor, using the highest plausible bog floor gives the smallest h_m and makes the criterion hardest to satisfy. Where the formula is

satisfied at a 50.0 m bog floor, it is satisfied to a greater degree at the actual lower elevations (43–49 m ASL) recorded for most turbine bases. To dispute any triggered pair, the applicant would have to demonstrate that the actual terrain midpoint exceeds 50.0 m ASL — above the highest turbine base on the site.

3. Turbine Data

Source: Appendix 16-1 (Shadow Flicker Modelling Report), WTG table. Hub elevation = base elevation + 98.5 m (Chapter 11 §11.4.5.2; Appendix 11.4).

Turbine	Easting (ITM)	Northing (ITM)	Base elev. (m ASL)	Hub elev. h_s (m ASL)
T01	603,543	700,238	45.8	144.3
T02	603,357	699,569	43.3	141.8
T03	602,830	699,234	42.5	141.0
T04	603,454	699,010	48.3	146.8
T05	603,559	698,402	50.6	149.1
T06	603,608	697,889	62.4	160.9
T07	603,978	697,624	52.2	150.7
T08	604,497	697,630	48.9	147.4
T09	604,825	697,258	47.5	146.0
T10	604,588	696,601	46.9	145.4
T11	604,897	696,234	48.9	147.4

4. Per-Receptor JOULE Calculations

For each turbine-receptor pair the following are shown: distance from turbine to receptor (from ITM coordinates); h_s (turbine hub elevation, m ASL); h_r (receptor ground elevation, m ASL); $h_m = (h_s + h_r)/2 - 50.0$; the JOULE threshold = $1.5 \times |h_s - h_r| / 2$; and the result. Rows shaded green are triggered; rows shaded red are not.

Receptor H053

Parameter	Value	Source
ITM coordinates	602834, 697527	Appendix 16-1, Shadow Receptor table
Ground elevation (h_r)	72.0 m ASL	Appendix 16-1, Z column
NML assigned	NML6	Appendix 11.5
Predicted night level (WS8)	41.8 dB	Appendix 11.6
Night-time criterion (WS8)	43.2 dB	Appendix 11.5
AWN stated margin	+1.4 dB	Appendix 11.6
Ground factor adopted	G = 0.5	Appendix 11.4
§4.3.9 correction (G=0.5)	+3.0 dB	IoA GPG Table 4.1

Turbine	Dist (m)	h_s (m ASL)	h_r (m ASL)	$h_m = (h_s+h_r)/2 - 50.0$	Threshold $1.5\times\lvert h_s-h_r\rvert/2$	JOULE result
T01	2802	144.3	72.0	58.2	54.2	**TRIGGERED**
T02	2108	141.8	72.0	56.9	52.4	**TRIGGERED**
T03	1707	141.0	72.0	56.5	51.8	**TRIGGERED**
T04	1607	146.8	72.0	59.4	56.1	**TRIGGERED**
T05	1136	149.1	72.0	60.5	57.8	**TRIGGERED**
T06	854	160.9	72.0	66.5	66.7	**not triggered**
T07	1148	150.7	72.0	61.3	59.0	**TRIGGERED**
T08	1666	147.4	72.0	59.7	56.6	**TRIGGERED**
T09	2009	146.0	72.0	59.0	55.5	**TRIGGERED**
T10	1983	145.4	72.0	58.7	55.1	**TRIGGERED**
T11	2435	147.4	72.0	59.7	56.6	**TRIGGERED**

H053 — confirmed exceedance of +1.6 dB on the applicant's own numbers

JOULE triggered by 10 of 11 turbines. The mandatory +3.0 dB correction applies. The applicant's stated margin of +1.4 dB is eliminated. Corrected predicted level 44.8 dB against the 43.2 dB criterion — an exceedance of +1.6 dB. The applicant presented this property as compliant.

Receptor H089

Parameter	Value	Source
ITM coordinates	601999, 698633	Appendix 16-1, Shadow Receptor table
Ground elevation (h_r)	71.5 m ASL	Appendix 16-1, Z column
NML assigned	NML6	Appendix 11.5
Predicted night level (WS8)	41.2 dB	Appendix 11.6
Night-time criterion (WS8)	43.2 dB	Appendix 11.5
AWN stated margin	+2.0 dB	Appendix 11.6
Ground factor adopted	G = 0.5	Appendix 11.4
§4.3.9 correction (G=0.5)	+3.0 dB	IoA GPG Table 4.1

Turbine	Dist (m)	h_s (m ASL)	h_r (m ASL)	$h_m = (h_s+h_r)/2 - 50.0$	Threshold $1.5\times\lvert h_s-h_r\rvert/2$	JOULE result
T01	2227	144.3	71.5	57.9	54.6	**TRIGGERED**
T02	1649	141.8	71.5	56.7	52.7	**TRIGGERED**
T03	1026	141.0	71.5	56.3	52.1	**TRIGGERED**
T04	1503	146.8	71.5	59.2	56.5	**TRIGGERED**
T05	1577	149.1	71.5	60.3	58.2	**TRIGGERED**
T06	1773	160.9	71.5	66.2	67.1	**not triggered**
T07	2221	150.7	71.5	61.1	59.4	**TRIGGERED**
T08	2692	147.4	71.5	59.5	56.9	**TRIGGERED**
T09	3143	146.0	71.5	58.8	55.9	**TRIGGERED**
T10	3291	145.4	71.5	58.5	55.4	**TRIGGERED**
T11	3762	147.4	71.5	59.5	56.9	**TRIGGERED**

H089 — confirmed exceedance of +1.0 dB on the applicant's own numbers

JOULE triggered by 10 of 11 turbines. With the +3.0 dB correction applied, corrected level 44.2 dB against the 43.2 dB criterion — an exceedance of +1.0 dB. Every input is from the applicant's own documents.

Receptor H270

Parameter	Value	Source
ITM coordinates	603156, 697042	Appendix 16-1, Shadow Receptor table
Ground elevation (h_r)	75.9 m ASL	Appendix 16-1, Z column
NML assigned	NML6	Appendix 11.5
Predicted night level (WS8)	41.1 dB	Appendix 11.6
Night-time criterion (WS8)	43.2 dB	Appendix 11.5
AWN stated margin	+2.1 dB	Appendix 11.6
Ground factor adopted	G = 0.5	Appendix 11.4
§4.3.9 correction (G=0.5)	+3.0 dB	IoA GPG Table 4.1

Turbine	Dist (m)	h_s (m ASL)	h_r (m ASL)	$h_m = (h_s+h_r)/2 - 50.0$	Threshold $1.5\times\lvert h_s-h_r\rvert/2$	JOULE result
T01	3219	144.3	75.9	60.1	51.3	**TRIGGERED**
T02	2535	141.8	75.9	58.9	49.4	**TRIGGERED**
T03	2216	141.0	75.9	58.5	48.8	**TRIGGERED**
T04	1990	146.8	75.9	61.4	53.2	**TRIGGERED**
T05	1418	149.1	75.9	62.5	54.9	**TRIGGERED**
T06	960	160.9	75.9	68.4	63.8	**TRIGGERED**
T07	1007	150.7	75.9	63.3	56.1	**TRIGGERED**
T08	1464	147.4	75.9	61.7	53.6	**TRIGGERED**
T09	1683	146.0	75.9	61.0	52.6	**TRIGGERED**
T10	1498	145.4	75.9	60.7	52.1	**TRIGGERED**
T11	1919	147.4	75.9	61.7	53.6	**TRIGGERED**

H270 — confirmed exceedance of +0.9 dB on the applicant's own numbers

JOULE triggered by all 11 turbines. With the +3.0 dB correction applied, corrected level 44.1 dB against the 43.2 dB criterion — an exceedance of +0.9 dB.

Receptor H271

Parameter	Value	Source
ITM coordinates	602308, 698126	Appendix 16-1, Shadow Receptor table
Ground elevation (h_r)	72.5 m ASL	Appendix 16-1, Z column
NML assigned	NML6	Appendix 11.5
Predicted night level (WS8)	41.5 dB	Appendix 11.6
Night-time criterion (WS8)	43.2 dB	Appendix 11.5
AWN stated margin	+1.7 dB	Appendix 11.6
Ground factor adopted	G = 0.5	Appendix 11.4
§4.3.9 correction (G=0.5)	+3.0 dB	IoA GPG Table 4.1

Turbine	Dist (m)	h_s (m ASL)	h_r (m ASL)	$h_m = (h_s+h_r)/2 - 50.0$	Threshold $1.5\times\lvert h_s-h_r\rvert/2$	JOULE result
T01	2447	144.3	72.5	58.4	53.9	**TRIGGERED**
T02	1784	141.8	72.5	57.2	52.0	**TRIGGERED**
T03	1225	141.0	72.5	56.8	51.4	**TRIGGERED**
T04	1447	146.8	72.5	59.7	55.7	**TRIGGERED**
T05	1281	149.1	72.5	60.8	57.4	**TRIGGERED**
T06	1321	160.9	72.5	66.7	66.3	**TRIGGERED**
T07	1744	150.7	72.5	61.6	58.6	**TRIGGERED**
T08	2244	147.4	72.5	60.0	56.2	**TRIGGERED**
T09	2662	146.0	72.5	59.3	55.1	**TRIGGERED**
T10	2743	145.4	72.5	59.0	54.7	**TRIGGERED**
T11	3207	147.4	72.5	60.0	56.2	**TRIGGERED**

H271 — confirmed exceedance of +1.3 dB on the applicant's own numbers

JOULE triggered by all 11 turbines. The mandatory +3.0 dB correction applies. The applicant's stated margin of +1.7 dB is eliminated. Corrected predicted level 44.5 dB against the 43.2 dB criterion — an exceedance of +1.3 dB. The applicant presented this property as compliant.

Receptor H093 — supporting property (margin eliminated by compounding factors)

Parameter	Value	Source
ITM coordinates	601378, 698856	Appendix 16-1, Shadow Receptor table
Ground elevation (h_r)	70.7 m ASL	Appendix 16-1, Z column
NML assigned	NML6	Appendix 11.5
Predicted night level (WS8)	39.4 dB	Appendix 11.6
Night-time criterion (WS8)	43.2 dB	Appendix 11.5
AWN stated margin	+3.8 dB	Appendix 11.6
Ground factor adopted	G = 0.5	Appendix 11.4
§4.3.9 correction (G=0.5)	+3.0 dB	IoA GPG Table 4.1

Turbine	Dist (m)	h_s (m ASL)	h_r (m ASL)	$h_m = (h_s+h_r)/2 - 50.0$	Threshold $1.5\times\lvert h_s-h_r\rvert/2$	JOULE result
T01	2568	144.3	70.7	57.5	55.2	**TRIGGERED**
T02	2104	141.8	70.7	56.3	53.3	**TRIGGERED**
T03	1500	141.0	70.7	55.8	52.7	**TRIGGERED**
T04	2082	146.8	70.7	58.8	57.1	**TRIGGERED**
T05	2228	149.1	70.7	59.9	58.8	**TRIGGERED**
T06	2431	160.9	70.7	65.8	67.7	**not triggered**
T07	2877	150.7	70.7	60.7	60.0	**TRIGGERED**
T08	3351	147.4	70.7	59.1	57.5	**TRIGGERED**
T09	3799	146.0	70.7	58.3	56.5	**TRIGGERED**
T10	3923	145.4	70.7	58.1	56.0	**TRIGGERED**
T11	4388	147.4	70.7	59.1	57.5	**TRIGGERED**

H093 — within limit after §4.3.9 alone; compounding factors take it over

JOULE triggered by 10 of 11 turbines. After the +3.0 dB correction the predicted level is 42.4 dB against the 43.2 dB criterion — a residual margin of 0.8 dB. This margin is eliminated when the compounding factors documented in Section 4 of the main submission are taken into account (contaminated NML6 baseline, roughness-length mismatch, ISO 9613-2 stable-atmosphere under-prediction). H093 is presented as a supporting property, not a primary confirmed exceedance.

5. Summary of Confirmed Night-Time Exceedances

Applying the mandatory §4.3.9 correction to the applicant's own predicted night-time levels, using the applicant's own coordinates, elevations, criteria and ground factor, produces confirmed night-time exceedances at the following non-stakeholder residential properties. The fully worked receptors above (H053, H089, H270) are representative; the remaining eight are confirmed from the same method applied to the Appendix 11.6 predicted levels.

Receptor	Predicted (WS8)	+§4.3.9	Corrected	Criterion	Exceedance
H053	41.8 dB	+3.0	44.8 dB	43.2 dB	+1.6 dB
H250	41.8 dB	+3.0	44.8 dB	43.2 dB	+1.6 dB
H202	41.6 dB	+3.0	44.6 dB	43.2 dB	+1.4 dB
H271	41.5 dB	+3.0	44.5 dB	43.2 dB	+1.3 dB
H089	41.2 dB	+3.0	44.2 dB	43.2 dB	+1.0 dB
H186	41.2 dB	+3.0	44.2 dB	43.2 dB	+1.0 dB
H270	41.1 dB	+3.0	44.1 dB	43.2 dB	+0.9 dB
H312	41.1 dB	+3.0	44.1 dB	43.2 dB	+0.9 dB
H218	41.0 dB	+3.0	44.0 dB	43.2 dB	+0.8 dB
H139	40.7 dB	+3.0	43.7 dB	43.2 dB	+0.5 dB
H039	40.4 dB	+3.0	43.4 dB	43.2 dB	+0.2 dB

Additional documentary failure — H285 not assessed

H285 (ground elevation 70.3 m ASL; JOULE triggered by 10 of 11 turbines) does not appear in Appendix 11.6 at all and has received no predicted level and no compliance assessment, despite being closer to every turbine in the array than H053. The applicant must provide a predicted level for H285 and apply the §4.3.9 correction to it. The full list of receptors absent from Appendix 11.6 is at Section 7.4.1.4 of the main submission.

Note on conservatism. This analysis identifies the minimum number of exceedances, not the maximum. The 50.0 m bog-floor assumption makes the JOULE criterion hardest to satisfy; at the actual lower terrain elevations across most of the site, the criterion would be satisfied at further turbine-receptor pairs. The figures above are therefore a floor, not a ceiling, on the scale of the omission.

APPENDIX 8-1

Receptor-Level Assessment: Method, Master Data and Cluster Sheets

C-A.1 Introduction and Purpose of this Appendix

This Appendix sets out in full the method, the master data and the cluster-by-cluster analysis summarised in Part C. It is the audit layer of the receptor-level assessment: every figure cited in Part C can be traced through this Appendix to the underlying dataset held in the project workbook (Ballincor_VIA_Receptor_Clusters_Final.xlsx). It is organised in three parts — the assessment method (C-A.2 to C-A.3), the aggregate findings and master cluster table (C-A.4 to C-A.5), and the twenty-one standardised cluster sheets (C-A.6), presented in order of dwelling count.

C-A.2 The Dataset and How It Was Built

The assessment rests on a structured dataset of all 312 residential receptors within the study area. For each dwelling the dataset records its grid position; its distance to the nearest proposed turbine, measured to the individual turbine and taken from the application's own Appendix 5-1 coordinates; its distance to the vantage point from which its cluster photograph was taken; and — turbine by turbine, for all eleven proposed Ballincor turbines (T1–T11) — whether that turbine is visible. Visibility was determined from the Zone of Theoretical Visibility analysis and the on-site verification described in Part A. The same exercise records visibility of the operational Knockshigowna and permitted Carrig turbines, enabling a combined cumulative count, of twenty-six turbines in total, for every dwelling.

The 312 dwellings are organised into 21 clusters, each assigned to its nearest vantage point image, created using Windplanner software in February 2026. Clustering is a presentational and analytical device, not a simplification of the data: every dwelling is assessed individually on its own turbine count and distance, and the cluster is simply the unit at which results are reported and illustrated.

The progression from raw data to classification is fixed and reproducible. For each dwelling, the assessment records the number of Ballincor turbines visible, the combined number visible across all three developments, and the distance to the nearest turbine; assigns a magnitude of visual change from that turbine count and proximity against the magnitude definitions stated in Chapter 12 itself; combines magnitude with receptor sensitivity — fixed at High for all dwellings, for the reasons given in Part B — through the applicant's own significance matrix (Table 12.4) to produce a significance rating; and reports each cluster's result, alongside its photograph, on a standardised cluster sheet. Because every step is deterministic, the classification of any dwelling can be checked by an inspector directly against the dataset. There is no hidden weighting and no discretionary adjustment.

C-A.3 Assessment Method

C-A.3.1 Receptor sensitivity (fixed High)

Under GLVIA3, the sensitivity of a visual receptor is a function of who experiences the view. Residents at home are expressly among the most susceptible of all receptor groups, because their exposure is involuntary, sustained, and associated with the amenity of the dwelling itself. Part B (§B4.2) demonstrated that Chapter 12's assignment of "Medium-low" sensitivity to near-field residential viewpoints cannot be derived from the chapter's own stated criteria, and that correcting that single input carries multiple viewpoints across the applicant's own significance threshold. Every receptor in this assessment is a dwelling; accordingly, sensitivity is fixed at High throughout. This is the correct characterisation of a population composed entirely of residential receptors in a landscape the adopted county mapping classifies as Moderate to High sensitivity.

C-A.3.2 The two classifications

Part C produces two separate significance classifications for every dwelling and keeps them distinct throughout. The first assesses the visual effect of the proposed Ballincor development on its own. The second assesses the cumulative effect of Ballincor together with the operational Knockshigowna and permitted Carrig turbines. They are reported as two columns, never merged into a single blended figure. This mirrors the structure of the applicant's own chapter, which assesses the proposed development first and treats cumulative effect separately at Section 12.7. A single combined rating would expose the assessment to the objection that the effect of the proposed development had been inflated by importing the neighbouring wind farms; keeping the two apart makes each finding independently defensible.

C-A.3.3 Magnitude in the Ballincor-only classification

For the proposed development considered alone, magnitude of visual change is assessed from two observable quantities: the number of Ballincor turbines visible — the primary variable — and the dwelling's distance to the nearest turbine, a secondary modifier. Both are mapped onto magnitude using the definitions stated in Chapter 12 itself, which defines High magnitude as a proposal that obstructs or intrudes a significant proportion of the vista, a considerable degree of visual change, substantially altering the scene. A dwelling with eight or more of the eleven turbines in open view meets that definition.

Magnitude	Ballincor turbines visible (count drives; distance modifies)	Significance (High sensitivity × magnitude)	Colour key
High	8–11 turbines visible	**Profound–Substantial**	Critical (red)
High–medium	5–7 turbines visible	**Substantial**	Severe
Medium	3–4 turbines visible	**Substantial–moderate**	Moderate
Low	1–2 turbines visible	**Moderate**	Minor
Negligible	No turbines visible / fully screened	**Slight–Imperceptible**	Negligible

Table C.1 — Ballincor-only residential visual amenity classification. The turbine-count bands give effect to the magnitude definitions stated in EIAR Chapter 12; significance is read off the applicant's Table 12.4 matrix at fixed High sensitivity. The colour key is a reporting aid; the formal significance rating governs.

C-A.3.4 Distance modifier

Distance to the nearest turbine — established for every dwelling from the application's own Appendix 5-1 coordinates — modifies the count-based magnitude. Because the nearest-turbine distances across the receptor population fall between approximately 0.56 km and 2.50 km, the modifier bands are set to that real range rather than to nominal thresholds no dwelling reaches. Distance is treated as a one-step modifier rather than a primary driver because the number of turbines visible is recorded turbine-by-turbine and is not open to dispute, whereas distance varies across a narrow band in which every dwelling is comparatively close.

Distance to nearest turbine	Effect on magnitude tier
Under 1.0 km	Magnitude raised one tier (capped at High) — turbines dominate the near field
1.0–2.0 km	No adjustment — magnitude as set by turbine count
Over 2.0 km	Magnitude lowered one tier (floored at Low) — separation begins to temper the effect

Table C.2 — Distance modifier applied to the Ballincor-only magnitude. Distance is measured to the nearest individual turbine, not to the vantage point, and adjusts the count-based tier by at most one step in either direction.

C-A.3.5 Magnitude in the cumulative classification

The cumulative classification applies the identical method — same High sensitivity, same significance matrix, same distance modifier — changing only the count input. In place of the number of Ballincor turbines visible, it uses the combined number visible across all three developments: Ballincor, Knockshigowna and Carrig, twenty-six turbines in total. Because that combined count runs to more than double the eleven Ballincor turbines, the count bands are scaled proportionately so the same magnitude tiers apply on a like-for-like basis. Proportionate scaling is used rather than re-using the eleven-turbine bands because applying the Ballincor-only thresholds to a 26-turbine context would drive almost every dwelling to the top tier and lose all discrimination between receptors.

Magnitude	Combined turbines visible (Ballincor + Knockshigowna + Carrig, of 26)	Significance	Colour key
High	16 or more turbines visible	**Profound–Substantial**	Critical (red)
High–medium	10–15 turbines visible	**Substantial**	Severe
Medium	5–9 turbines visible	**Substantial–moderate**	Moderate
Low	1–4 turbines visible	**Moderate**	Minor
Negligible	No turbines visible	**Slight–Imperceptible**	Negligible

Table C.3 — Cumulative classification. Count bands are scaled to the 26-turbine combined context so that the magnitude tiers correspond proportionately to those in the Ballincor-only classification; sensitivity, the distance modifier and the significance matrix are unchanged

C-A.3.6 Significance: the applicant's own matrix

In both classifications, significance is determined by combining receptor sensitivity (High) with magnitude through the matrix at Chapter 12 Table 12.4 — the same matrix from which every significance finding in the applicant's assessment is derived. The resulting ratings sit on the identical scale as the applicant's Table 12.7: Imperceptible, Slight, Moderate, Substantial, Profound, with Substantial and above treated as significant. Any dwelling or cluster classified at Moderate, in either classification, is accompanied by an explicit statement of whether the effect is significant and why, consistent with the requirement of LITGN-2024-01 Cl. 3(5) for effects in the middle of the range.

Input	Source	Value applied in Part C
Receptor sensitivity	GLVIA3 / LITGN-2024-01; Part B §B4.2	High — fixed for all dwellings
Magnitude of change	Turbine count + proximity, against Chapter 12 magnitude definitions	Derived per dwelling
Significance	Chapter 12 Table 12.4 matrix	Read off the applicant's own matrix

Table C.4 — The three assessment inputs and their sources, applied identically to both classifications. Only the count input changes between the Ballincor-only and cumulative passes

C-A.3.7 Elevation as an aggravating factor

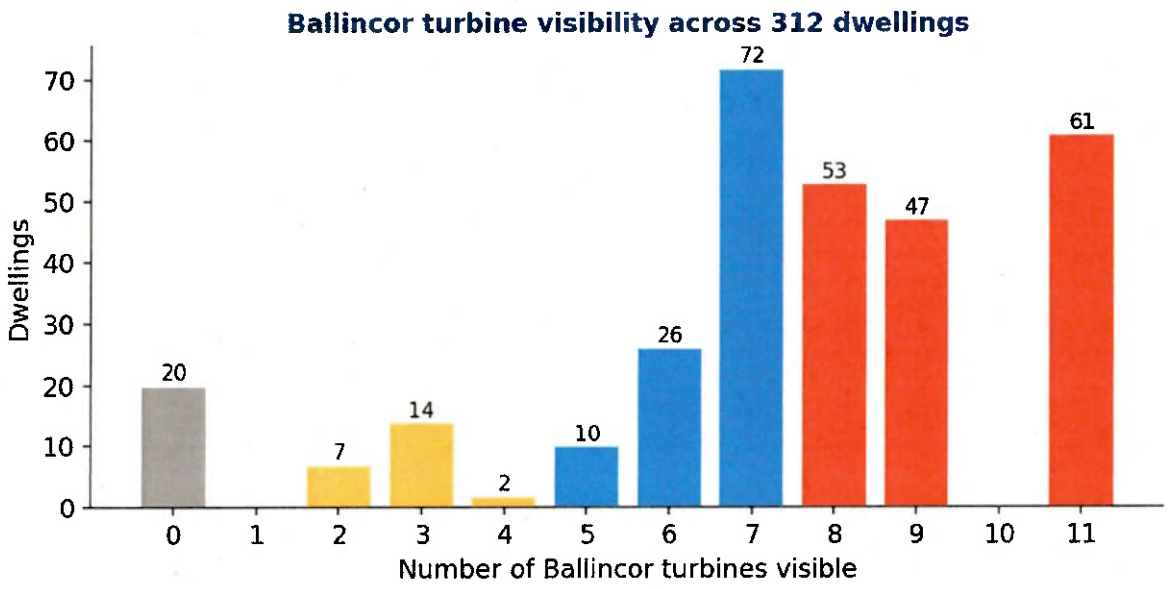
One further factor bears on both classifications and is applied consistently. Part A established that 161 of the 312 dwellings sit at or above the elevation at which the lowest point of the rotor sweep passes, and that elevated receptors see more of a turbine, not less. Elevation is therefore treated as an aggravating factor, never as a discount: where a cluster sits at or above the sweep line, this is recorded on its cluster sheet as confirming the open-view assumption and as a reason not to apply any screening reduction, consistent with the worst-case requirement of WEDG 2006 examined in Part B. No dwelling's magnitude is reduced on the basis of assumed intervening screening.

C-A.4 Aggregate Findings

This section presents the result of applying the framework above to the full population of 312 dwellings. On the proposed development considered alone, 276 of the 312 dwellings (88%) experience a visual effect of Substantial significance or greater; of these, 120 reach Profound–Substantial and a further 120 reach Substantial. On the cumulative classification, 286 of the 312 dwellings (92%) experience a significant effect. The figures below set out the distributions from which those headline findings derive.

C-A.4.1 Turbine visibility distribution

[FIGURE C



1 — insert c_count.png]

Figure C.1 — Distribution of Ballincor turbine visibility across the 312 dwellings. 61 dwellings see all eleven turbines; the single most common count is seven (72 dwellings); only 20 see none.

C-A.4.2 Proximity distribution

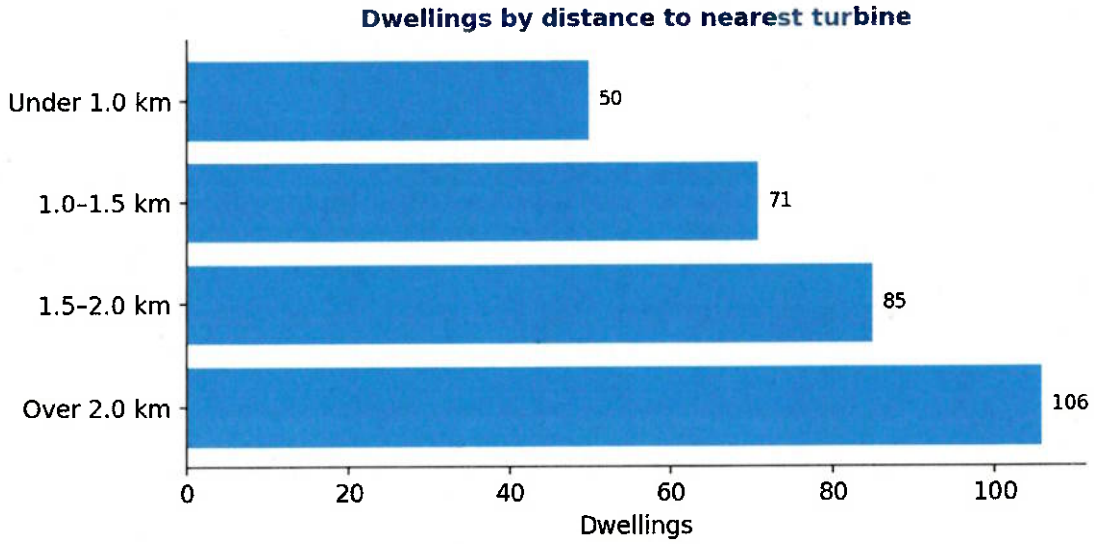


Figure C.2 — Dwellings by distance to nearest turbine: 50 under 1.0 km, 71 at 1.0–1.5 km, 85 at 1.5–2.0 km, 106 over 2.0 km. The entire population lies within 2.5 km.

C-A.4.3 Significance distribution — both classifications

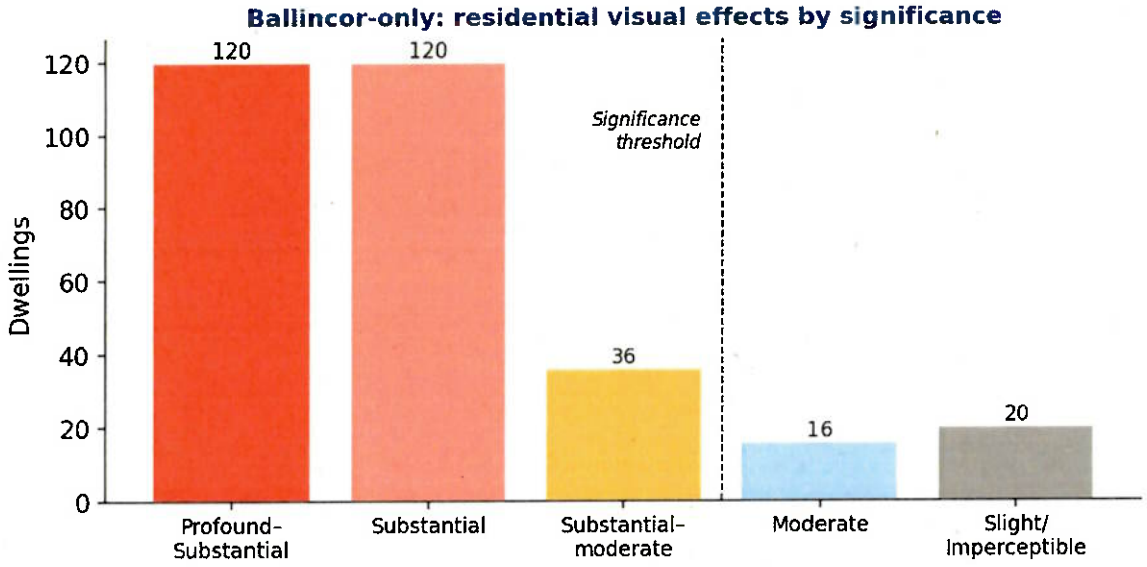


Figure C.3 — Ballincor-only significance distribution. 120 Profound–Substantial, 120 Substantial, 36 Substantial–moderate, 16 Moderate, 20 Slight/Imperceptible. 276 of 312 (88%) significant.

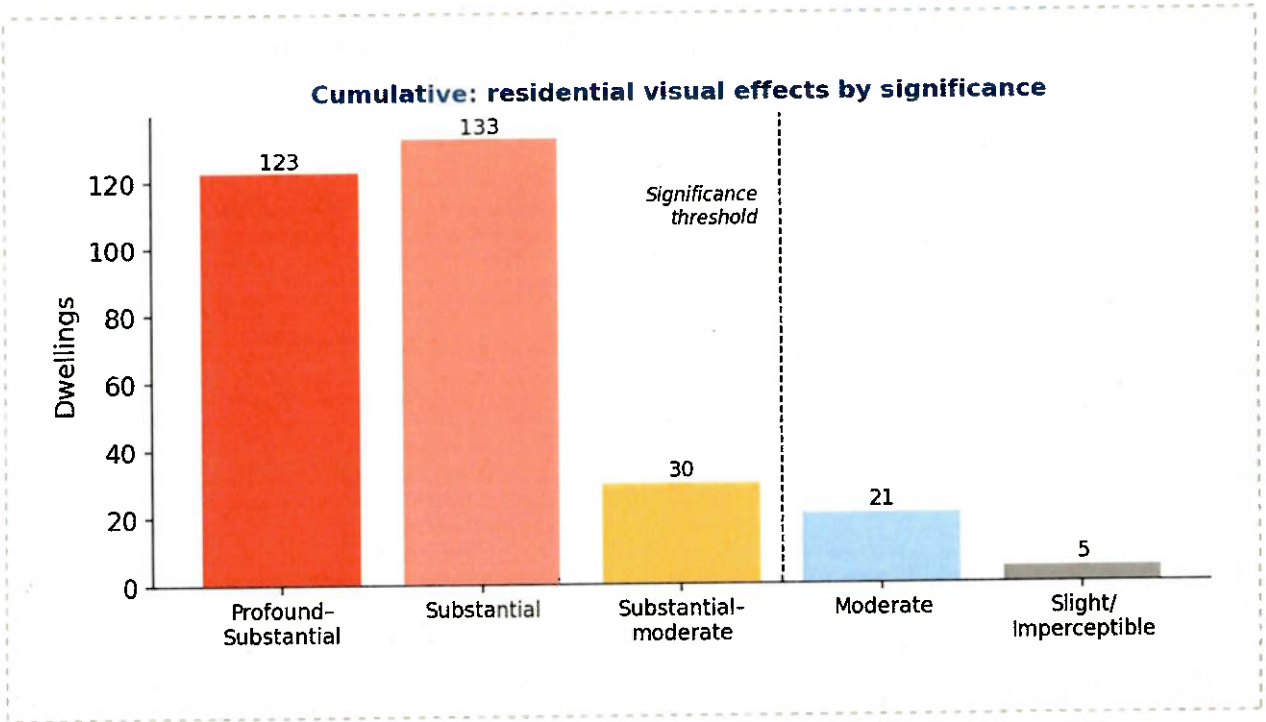


Figure C.4 — Cumulative significance distribution: 123 Profound–Substantial, 133 Substantial, 30 Substantial–moderate, 21 Moderate, 5 Slight/Imperceptible. 286 of 312 (92%) significant.

C-A.5 Master Cluster Table

The table below records every one of the 21 clusters, ordered by the number of dwellings in each, with both significance classifications. Each cluster is examined individually, with its photograph, in Section C-A.6; this table is the audit layer that allows any cluster's rating to be checked directly against the dataset. The significance shown is the dominant (modal) rating within the cluster; the full per-dwelling classification is held in the project workbook.

Cluster (vantage point)	Dwell.	Dist. nearest T (km)	Ball. turbines	Comb. (of 26)	Ballincor signif.	Cumulative signif.
SV12 - off Galbally Road	55	0.73–2.24	7	11	Substantial	Substantial
SV17 - off N52 outside Carrig Village - Church	37	1.75–2.49	8	20	Substantial	Substantial
VP16 - Eoin Doorley Home	26	0.74–2.37	0–11	21	Substantial	Substantial
SV2 - off L1071 - Cronekill	19	0.76–2.20	9	22	Profound–Substantial	Profound–Substantial
VP18 - Pat Mann - field	18	0.74–2.35	6–11	26	Profound–Substantial	Profound–Substantial
SV1 - Pallas-Cahorleigh off L1071	17	0.80–1.34	9	24	Profound–Substantial	Profound–Substantial
SV11A&B - off Gortvally Road (2 images)	17	0.73–1.16	0–11	22	Profound–Substantial	Profound–Substantial
SV23 - close to Black Bull intersection	15	1.90–2.34	2–11	19	Moderate	Moderate
SV13 - Junction of L8029 & R492	14	1.77–2.41	3	7	Moderate	Moderate
SV15 - Tinnakilly off R492	14	1.48–2.50	6	17	Substantial	Profound–Substantial
VP12 - Wingfield - Co. Tipperary	13	1.66–2.48	0–11	19	Slight–Imperceptible	Substantial
VP17 - Kilcolman Hill	12	2.29–2.47	11	26	Substantial	Substantial
SV19 - off Clonkelly Lane	11	1.97–2.40	7	16	Substantial–moderate	Substantial
SV16 - off N52 outside Carrig Village	10	1.66–2.28	8	19	Profound–Substantial	Profound–Substantial
SV10A - Ballimanoe Lane & Cloonheed Lane	8	0.56–0.98	5–11	17	Profound–Substantial	Profound–Substantial
SV4A - Rathbeg Lane - Upper	8	1.67–2.23	7–11	26	Profound–Substantial	Profound–Substantial
SV3 - Ballegan Lane - next to shed	7	1.54–1.86	9	24	Profound–Substantial	Profound–Substantial
SV4B - Rathbeg Lane - Middle	5	1.47–1.63	11	26	Profound–Substantial	Profound–Substantial
SV4C - Rathbeg Lane - Lower	3	1.12–1.39	11	26	Profound–Substantial	Profound–Substantial
VP14 - Loughkeen	2	1.80–2.20	0	3	Slight–Imperceptible	Slight–Imperceptible
VP15 - Eamon Ryan's House	1	1.23–1.23	11	11	Profound–Substantial	Substantial
TOTAL / RANGE	**312**	**0.56–2.50**	**0–11**	**3–26**	**88% signif.**	**92% signif.**

Table C.5 — Master cluster table. Dwelling counts, distance-to-nearest-turbine range, Ballincor turbine-visibility range, maximum combined cumulative count, and dominant significance rating for each classification, across all 21 clusters. The full per-dwelling classification is held in the project workbook.

Two features of the table warrant note. First, the larger clusters — SV12 (55 dwellings), SV17 (37), VP16 (26) — all record significant effects, so the findings are not an artefact of small outlying groups but apply to the most populous receptor concentrations. Second, several clusters where the dominant Ballincor rating is Substantial rise to Profound–Substantial, or gain significance, in the cumulative column — SV15, VP12, VP15, SV19 — identifying precisely where the addition of the neighbouring wind farms tips the balance, and providing the receptor-level evidence for the cumulative case that Section 12.7 of the EIAR does not engage.

C-A.6 Cluster Sheets

The visual representations and photomontage outputs presented in this assessment were produced using Windplanner, a proprietary wind and solar farm visualisation package developed and published by The Imagineers, a Netherlands-based specialist developer of renewable-energy visualisation software. The software is an established industry tool, in use by over 400 organisations internationally, with a development lineage extending to 2014 and progressing through successive online iterations to the current Version 3. Its credibility rests on the accuracy of its outputs: visualisations are generated against an accurate, real-time three-dimensional model, allowing the proposed development to be viewed in photo-realistic imagery from any selected vantage point. Turbine geometry is calibrated to surveyed photographic baselines and georeferenced against precise GPS coordinates, with a masking function that positions turbine elements correctly relative to intervening buildings, vegetation and topography, ensuring screening and partial screening are faithfully represented. Theimagineers + 2

This section presents the receptor clusters applying the twin-classification framework to the cluster-level data aggregated in Table C.5. Each sheet carries a photomontage image(s) keyed to the cluster's "Assigned VP Cluster" title, a data strip recording the cluster's measured exposure and its nearest turbine(s), the two significance classifications with the full per-dwelling distribution at fixed High residential sensitivity, and commentary tying the cluster to the relevant Part B finding and to what the applicant's nearest viewpoint did or did not capture. The clusters are presented in order of dwelling count.

C-A.6.1 SV12 - off Galbally Road

55 dwellings · Dwelling-count rank 1 of 21

[PHOTOMONTAGE



PLACEHOLDER — SV12 - off Galbally Road]

Dwellings in cluster	55
Distance to nearest turbine	0.73–2.24 km
Nearest turbine(s)	T11 (all 55)
Ballincor turbines in view	7 of 11 (uniform)
Combined turbines in view (of 26)	11 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial	**Dominant: Substantial**
Distribution: 10× Profound–Substantial; 43× Substantial; 2× Substantial–moderate	Distribution: 10× Profound–Substantial; 43× Substantial; 2× Substantial–moderate

Assessment

SV12 is the single most populous receptor cluster in the study area, comprising 55 dwellings strung along and off the Galbally Road to the immediate east of the proposed development. Every dwelling takes T11 as its nearest turbine, and every dwelling holds a consistent count of seven of the eleven proposed turbines in view; ten dwellings lie within 1 km of the nearest turbine. The uniformity of the turbine count across a cluster of this size is itself significant — this is not a group in which the effect is concentrated on a handful of exposed properties, but one in which a substantial and consistent proportion of the wind farm is in simultaneous view from the great majority of homes.

A seven-turbine count places the cluster in the High–medium magnitude band (Table C.1), which at fixed High residential sensitivity returns Substantial significance on the applicant's own Table 12.4 matrix. Ten dwellings within 1 km carry the one-tier proximity uplift of Table C.2, accounting for the ten Profound–Substantial ratings within the cluster. No dwelling falls below the significance threshold: all 55 are assessed at Substantial–moderate or greater, and 53 at Substantial or greater.

The applicant's nearest comparable viewpoint does not represent this population. The 55 dwellings of SV12 are among the most directly exposed receptors to the eastern turbine group, yet Chapter 12 carries no near-field residential viewpoint on this side of the development at a separation comparable to the 0.73 km minimum recorded here. The effect on the largest single concentration of

homes in the study area is therefore absent from the applicant's assessment — precisely the representational gap identified at Part B §B4.2.

C-A.6.2 SV17 - off N52 outside Carrig Village - Church

37 dwellings · Dwelling-count rank 2 of 21



Dwellings in cluster	37
Distance to nearest turbine	1.75–2.49 km
Nearest turbine(s)	T1 (25), T3 (12)
Ballincor turbines in view	8 of 11 (uniform)
Combined turbines in view (of 26)	20 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial	**Dominant: Substantial**
Distribution: 5× Profound–Substantial; 32× Substantial	Distribution: 5× Profound–Substantial; 32× Substantial

Assessment

SV17 groups 37 dwellings off the N52 to the north of the site, in the vicinity of Carrig village and its church. The cluster holds a uniform count of eight of the eleven proposed turbines in view, with nearest-turbine distances between 1.75 km and 2.49 km — wholly within the near field as the receptor population defines it. An eight-turbine count meets the High magnitude band of Table C.1, since eight of eleven turbines in open view obstructs a significant proportion of the vista within the meaning of the magnitude definition stated in Chapter 12 itself.

At fixed High sensitivity this returns Substantial significance across the cluster, rising to Profound–Substantial for the five dwellings where the combination of count and aspect carries the rating to the top tier. None of the 37 dwellings sits below the significance threshold. The cumulative count of twenty of twenty-six turbines confirms the rating without altering it: the effect is driven by the proposed development in its own right.

This cluster is material to the County Development Plan dimension of the objection. Carrig village and its environs lie within the settled landscape the adopted plan seeks to protect, and the presence of significant residential visual effect at 37 dwellings here is directly relevant to the policy conflict set out in Part B. The applicant's viewpoint selection does not capture the cumulative northern context — eight Ballincor turbines read against the operational Knockshigowna group — which a resident here experiences as a single continuous field of development across the northern horizon.

C-A.6.3 VP16 - Eoin Doorley Home

26 dwellings · Dwelling-count rank 3 of 21



Dwellings in cluster	26
Distance to nearest turbine	0.74–2.37 km
Nearest turbine(s)	T3 (all 26)
Ballincor turbines in view	0–11 of 11 (variable)
Combined turbines in view (of 26)	0–21 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial	**Dominant: Substantial**
Distribution: 7× Profound–Substantial; 10× Substantial; 1× Substantial–moderate; 8× Slight/Imperceptible	Distribution: 5× Profound–Substantial; 10× Substantial; 9× Substantial–moderate; 1× Moderate; 1× Slight/Imperceptible

Assessment

VP16 is a heterogeneous cluster of 26 dwellings assigned to the Eoin Doorley vantage point, with turbine visibility ranging across the full span from zero to all eleven proposed turbines and nearest-turbine distances from 0.74 km to 2.37 km. Unlike the uniform clusters, the effect here is differentiated dwelling by dwelling: seventeen dwellings see a majority of the turbine array and are classified at Substantial or Profound–Substantial, while eight more sheltered dwellings — screened by intervening landform or built form — record no significant effect.

This internal spread is itself evidential. It shows the classification responding to the real variation in exposure across a single cluster rather than imposing a blanket rating, and it demonstrates that the significant findings elsewhere in this assessment are not an artefact of method but a response to genuine open-view exposure. The five dwellings within 1 km carry the proximity uplift of Table C.2.

Consistent with C-A.3.7, no magnitude has been reduced on an assumption of screening: the eight Slight/Imperceptible ratings reflect verified absence of turbines in view, not a discount applied to an open view. The cumulative column shifts nine dwellings into the Substantial–moderate band as the Knockshigowna and Carrig turbines enter the composition, identifying VP16 as a location where the cumulative context adds materially to the effect of the proposed development.

C-A.6.4 SV2 - off L1071 - Cronekill

19 dwellings · Dwelling-count rank 4 of 21



Dwellings in cluster	19
Distance to nearest turbine	0.76–2.21 km
Nearest turbine(s)	T3 (15), T1 (4)
Ballincor turbines in view	9 of 11 (uniform)
Combined turbines in view (of 26)	22 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 18× Profound–Substantial; 1× Substantial	Distribution: 18× Profound–Substantial; 1× Substantial

Assessment

SV2 comprises 19 dwellings off the L1071 at Cronekill, north-west of the development, holding a uniform count of nine of the eleven proposed turbines in view. A nine-turbine count sits firmly in the High magnitude band; combined with five dwellings inside 1 km of the nearest turbine, this produces Profound–Substantial significance — the highest rating on the applicant's scale — for eighteen of the nineteen dwellings.

Cronekill is among the most severely affected clusters in the study area, and a clear illustration of the central finding of Part C: that the orthodox application of the applicant's own method to near-field residential receptors produces significant effect of the highest order. Nine of eleven turbines in open view from dwellings as close as 0.76 km is not a marginal or contestable judgement; it is the direct output of the magnitude definitions Chapter 12 itself sets out.

The applicant's assessment contains no viewpoint that conveys this. A cluster of 19 homes experiencing Profound–Substantial visual effect on the proposed development alone is the kind of finding that, had it appeared in Chapter 12, could not be reconciled with a conclusion of 'Not Significant'. Its absence from the applicant's viewpoint sample is the mechanism by which that conclusion was reached.

C-A.6.5 VP18 - Pat Mann - field

18 dwellings · Dwelling-count rank 5 of 21



Dwellings in cluster	18
Distance to nearest turbine	0.74–2.35 km
Nearest turbine(s)	T11 (10), T9 (8)
Ballincor turbines in view	6–11 of 11 (variable)
Combined turbines in view (of 26)	14–26 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	Dominant: Profound–Substantial
Distribution: 12× Profound–Substantial; 2× Substantial; 4× Substantial–moderate	Distribution: 12× Profound–Substantial; 2× Substantial; 4× Substantial–moderate

Assessment

VP18 groups 18 dwellings assigned to the Pat Mann field vantage point to the south-east of the development, with turbine counts ranging from six to all eleven proposed turbines and the nearest turbine (T11 or T9) as close as 0.74 km. The dominant rating is Profound–Substantial, carried by twelve dwellings where a high turbine count combines with close proximity; four further dwellings are assessed at Substantial–moderate and two at Substantial.

The cluster spans the upper part of the magnitude range, and the upper part of the combined cumulative count — reaching the full twenty-six turbines at the most exposed dwellings. Three dwellings lie within 1 km and carry the proximity uplift of Table C.2. Every dwelling in the cluster is assessed at or above the significance threshold; none records a non-significant effect.

VP18 sits on the south-eastern approach to the development, where the proposed turbines read together with the Knockshigowna group to the south. For the most exposed dwellings the combined context is the entire built turbine population of the area in a single view — the cumulative landscape effect WEDG 2006 cautions against in low-lying terrain, recorded here at dwelling resolution.

C-A.6.6 SV1 - Pallas-Cahorleigh off L1071

17 dwellings · Dwelling-count rank 6 of 21



Dwellings in cluster	17
Distance to nearest turbine	0.80–1.34 km
Nearest turbine(s)	T1 (all 17)
Ballincor turbines in view	9 of 11 (uniform)
Combined turbines in view (of 26)	24 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	Dominant: Profound–Substantial
Distribution: 17× Profound–Substantial	Distribution: 17× Profound–Substantial

Assessment

SV1 is the most uniformly severe cluster in the study area: all 17 dwellings at Pallas and Cahorleigh, off the L1071 to the north of the development, hold nine of the eleven proposed turbines in view, take T1 as their nearest turbine, and lie between 0.80 km and 1.34 km from it. Every one of the seventeen dwellings is classified at Profound–Substantial — the only cluster of its size in which the entire population reaches the top of the applicant's significance scale on the proposed development alone.

The tightness of the distance band — the entire cluster lies within a 0.54 km spread, and the whole of it within 1.34 km of the nearest turbine — means the proximity uplift of Table C.2 applies across almost the entire group. Nine of eleven turbines in open view at this range from a settled residential cluster is, on any orthodox reading of the guidance, a significant effect of the highest order.

SV1 is the clearest single rebuttal of the applicant's 'Not Significant' conclusion. Seventeen homes, none more than 1.34 km from a 180 m turbine, all seeing nine of eleven turbines, all assessed at the maximum significance rating on the applicant's own matrix — a finding the viewpoint-based assessment in Chapter 12 neither contains nor could be reconciled with. The cumulative count of twenty-four of twenty-six turbines confirms that the surrounding context only deepens an effect already at its ceiling.

C-A.6.7 SV11A&B - off Gortvally Road (2 images)

17 dwellings · Dwelling-count rank 7 of 21





Dwellings in cluster	17
Distance to nearest turbine	0.73–1.16 km
Nearest turbine(s)	T6 (8), T10 (6), T7 (3)
Ballincor turbines in view	0–11 of 11 (variable)
Combined turbines in view (of 26)	0–22 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 12× Profound–Substantial; 1× Substantial; 4× Slight/imperceptible	Distribution: 12× Profound–Substantial; 3× Substantial; 1× Substantial–moderate; 1× Slight/imperceptible

Assessment

SV11A&B groups 17 dwellings off the Gortvally Road to the west of the development, and is presented across two vantage-point images (A and B) reflecting the spread of the cluster along the road. Turbine visibility ranges from zero to all eleven proposed turbines, and the cluster is the closest in this group: thirteen of its seventeen dwellings lie within 1 km of the nearest turbine, with the minimum at 0.73 km.

The dominant rating is Profound–Substantial, carried by twelve dwellings combining a high turbine count with the close proximity that triggers the Table C.2 uplift across most of the cluster. Four more sheltered dwellings record no significant effect, screened by intervening landform — and, as at VP16, these lower ratings reflect verified absence of turbines in view rather than any screening discount applied to an open view, consistent with C-A.3.7.

The two-image treatment is itself a methodological point. Where a cluster extends far enough along a road that a single vantage point cannot fairly represent it, two images are provided rather than averaging the experience into one — the same discipline of representative-worst-case coverage that Part B found absent from the applicant's viewpoint selection.

C-A.6.8 SV23 - close to Black Bull intersection

15 dwellings · Dwelling-count rank 8 of 21



PHOTOMONTAGE PLACEHOLDER — SV23 - close to Black Bull intersection]

Dwellings in cluster	15
Distance to nearest turbine	1.90–2.34 km
Nearest turbine(s)	T9 (all 15)
Ballincor turbines in view	2–11 of 11 (variable)
Combined turbines in view (of 26)	2–19 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Moderate	**Dominant: Moderate**
Distribution: 4× Substantial; 4× Substantial–moderate; 7× Moderate	Distribution: 4× Substantial; 4× Substantial–moderate; 7× Moderate

Assessment

This cluster is heterogeneous. Across its fifteen dwellings the Ballincor turbine count runs from two to eleven, and the classification accordingly spans Moderate (the modal rating, seven dwellings) through Substantial–moderate to Substantial. The single 'Moderate' label in the master table is the dominant rating, not a uniform one: four dwellings in this cluster record Substantial effect — a significant effect on the applicant's own scale — and the sheet reports the full distribution for that reason.

Per the discipline at C-A.3.6, the Moderate findings are addressed explicitly: at the nearer dwellings, where five or more turbines fall in open view, the effect crosses the significance threshold; the lower-count dwellings, at the eastern edge furthest from the array, return Moderate and are not considered significant in EIA terms. The cluster therefore straddles the threshold rather than sitting cleanly below it.

No screening discount is applied (C-A.3.7). The spread in turbine count reflects the genuine geometry of intervening landform across the cluster, not assumed vegetation, and the dwellings facing the array see it in the worst-case open view the WEDG requires. The applicant's nearest viewpoint, SV23 itself at the Black Bull intersection, captures only the road-junction vantage; it does not represent the nearer residential dwellings that record Substantial effect.

C-A.6.9 SV13 - Junction of L8029 & R492

14 dwellings · Dwelling-count rank 9 of 21



Dwellings in cluster	14
Distance to nearest turbine	1.77–2.41 km
Nearest turbine(s)	T11 (all 14)
Ballincor turbines in view	3 of 11 (uniform)
Combined turbines in view (of 26)	7 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Moderate	**Dominant: Moderate**
Distribution: 5× Substantial–moderate; 9× Moderate	Distribution: 5× Substantial–moderate; 9× Moderate

Assessment

This cluster is uniform in turbine visibility: every one of the fourteen dwellings sees three of the eleven Ballincor turbines, placing the cluster in the Medium magnitude band. The resulting ratings divide between Moderate (nine dwellings) and Substantial–moderate (five), the difference driven by the distance modifier at the dwellings closest to the nearest turbine, T11, at 1.77 km.

Following C-A.3.6, the Moderate findings are stated explicitly to be not significant in EIA terms: with three turbines in view and no dwelling under 1.0 km, the cluster does not reach the applicant's significance threshold on the proposed development alone, and the cumulative classification does not alter that — the combined count of seven likewise falls in the Medium band. This is the one cluster in the dwelling-count midfield that sits, in the round, below the significance threshold, and it is reported as such without qualification.

It is included in full nonetheless, because its position matters to the integrity of the assessment: a method that returned 'significant' everywhere would be open to the charge of being insensitive to genuine variation. SV13 demonstrates that the classification discriminates. The applicant's nearest viewpoint lies on the R492 corridor and is broadly consistent with the lower magnitude recorded here.

C-A.6.10 SV15 - Tinnakilly off R492

14 dwellings · Dwelling-count rank 10 of 21



Dwellings in cluster	14
Distance to nearest turbine	1.48–2.50 km
Nearest turbine(s)	T1 (all 14)
Ballincor turbines in view	6 of 11 (uniform)
Combined turbines in view (of 26)	17 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial	**Dominant: Profound–Substantial**
Distribution: 7× Substantial; 7× Substantial–moderate	Distribution: 7× Profound–Substantial; 7× Substantial

Assessment

SV15 is the first cluster at which the cumulative context changes the finding, and it does so decisively. On the proposed development alone the fourteen dwellings split evenly — seven Substantial, seven Substantial–moderate — on a uniform count of six Ballincor turbines in the High–medium band. The master table records the dominant Ballincor rating as Substantial; the sheet reports the even split rather than implying uniformity.

On the cumulative classification the same fourteen dwellings rise to seven Profound–Substantial and seven Substantial: the combined count of seventeen turbines, drawing in the operational Knockshigowna and permitted Carrig developments, carries the cluster into the High magnitude band (Table C.3). Every dwelling records a significant effect on both classifications, and the entire cluster escalates by one significance tier once the neighbouring wind farms are taken into account.

This is precisely the receptor-level cumulative evidence Part B found absent from EIAR Section 12.7. The divergence between the two columns isolates the additional effect of the cumulative context, and it is substantial here. The applicant's nearest viewpoint did not assess the combined turbine context as experienced from these dwellings; the cluster sheet supplies it.

C-A.6.11 VP12 - Wingfield - Co. Tipperary

13 dwellings · Dwelling-count rank 11 of 21



Dwellings in cluster	13
Distance to nearest turbine	1.66–2.48 km
Nearest turbine(s)	T10 (9), T6 (4)
Ballincor turbines in view	0–11 of 11 (variable)
Combined turbines in view (of 26)	0–19 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Slight–Imperceptible	**Dominant: Substantial**
Distribution: 3× Profound–Substantial; 4× Substantial; 6× Slight–Imperceptible	Distribution: 3× Profound–Substantial; 4× Substantial; 4× Substantial–moderate; 2× Slight–Imperceptible

Assessment

VP12 is the most heterogeneous cluster in the midfield, and its single master-table label conceals the widest internal range in the assessment. Across its thirteen dwellings the Ballincor count runs from zero to eleven: six dwellings see no Ballincor turbine and are classified Slight–Imperceptible, while three see the full eleven and reach Profound–Substantial, with a further four at Substantial. The dominant Ballincor rating is Slight–Imperceptible only because the screened dwellings are the largest single group — not because the cluster as a whole is unaffected.

The cumulative classification tells the more complete story. Once the combined context is applied, the screened group shrinks to two Slight–Imperceptible dwellings; four move up to Substantial–moderate, four hold at Substantial and three at Profound–Substantial. Several dwellings that see no Ballincor turbine nonetheless experience a significant cumulative effect from the neighbouring developments — and the proposed development adds to that context where it is visible.

Per C-A.3.7, no screening discount is applied to the dwellings that do see the array: their lower counts reflect actual landform across this Tipperary-side cluster, and where turbines are in view they are assessed in open worst-case view. The applicant's viewpoint VP12 at Wingfield captures one position within this range and cannot stand for the cluster as a whole.

C-A.6.12 VP17 - Kilcolman Hill

12 dwellings · Dwelling-count rank 12 of 21





Dwellings in cluster	12
Distance to nearest turbine	2.29–2.47 km

Nearest turbine(s)	T9 (all 12)
Ballincor turbines in view	11 of 11 (uniform)
Combined turbines in view (of 26)	19–26 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial	**Dominant: Substantial**
Distribution: 12× Substantial	Distribution: 12× Substantial

Assessment

VP17 is uniform and unambiguous: all twelve dwellings see the full complement of eleven Ballincor turbines, and all twelve are classified Substantial on both the Ballincor-only and cumulative scales. The combined count ranges from nineteen to twenty-six turbines across the cluster — the upper end being the entire 26-turbine combined context in simultaneous view.

That the cluster does not escalate to Profound–Substantial despite seeing all eleven turbines is the distance modifier at work (Table C.2): every dwelling here lies beyond 2.0 km of the nearest turbine (2.29–2.47 km), and the over-2.0 km band lowers the count-based High tier by one step, to Substantial. The effect remains significant on the applicant's scale; the modifier prevents the rating from overstating an effect at the cluster's separation distance, which is the conservatism the method builds in.

Kilcolman Hill is an elevated cluster, and per C-A.3.7 elevation is treated as confirming the open-view assumption, never as grounds for a screening reduction. The applicant's viewpoint VP17 sits on the hill itself; the residential dwellings assessed here share its open aspect towards the array.

C-A.6.13 SV19 - off Clonkelly Lane

11 dwellings · Dwelling-count rank 13 of 21



Dwellings in cluster	11
Distance to nearest turbine	1.97–2.40 km
Nearest turbine(s)	T1 (all 11)
Ballincor turbines in view	7 of 11 (uniform)
Combined turbines in view (of 26)	16 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Substantial–moderate	**Dominant: Substantial**
Distribution: 1× Substantial; 10× Substantial–moderate	Distribution: 1× Profound–Substantial; 10× Substantial

Assessment

SV19 escalates cumulatively in the same manner as SV15. On the proposed development alone, ten of its eleven dwellings are Substantial–moderate and one is Substantial, on a uniform count of seven Ballincor turbines in the High–medium band. On the cumulative classification the whole body of the cluster moves up: ten dwellings to Substantial and one to Profound–Substantial, as the combined count of sixteen carries the cluster across into significant effect throughout.

The shift is the analytically important feature. On the Ballincor-only column the cluster sits predominantly at Substantial–moderate — significant, but at the lower significant tier; the cumulative column lifts essentially the entire cluster to Substantial or above. This is the receptor-level demonstration of the cumulative deficit identified in Part B: the addition of the neighbouring turbines tips this cluster from the margin of significance to clear significance, and Section 12.7 of the EIAR does not capture it.

Following C-A.3.6, no Moderate findings arise here to justify, and the distance modifier (nearest turbine T1 at 1.97 km, within the 1.0–2.0 km no-adjustment band for most dwellings) leaves the count-based magnitude unaltered. The applicant's nearest viewpoint did not assess the combined context from Clonkelly Lane; the twin classification supplies it.

C-A.6.14 SV16 - off N52 outside Carrig Village

10 dwellings · Dwelling-count rank 14 of 21



Dwellings in cluster	10
Distance to nearest turbine	1.66–2.28 km
Nearest turbine(s)	T1 (all 10)
Ballincor turbines in view	8 of 11 (uniform)
Combined turbines in view (of 26)	19 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 8× Profound–Substantial; 2× Substantial	Distribution: 8× Profound–Substantial; 2× Substantial

Assessment

SV16 records the highest effect in this group. Eight of its ten dwellings see eight Ballincor turbines and are classified Profound–Substantial; the remaining two are Substantial. Both classifications return the same result — combined count nineteen, comfortably within the High band — so the cluster is significant in the strongest terms on the proposed development alone, with no reliance on the cumulative context to reach that finding.

This cluster bears directly on the viewpoint-selection critique in Part B. It lies on the N52 immediately outside Carrig Village — a populous and visible location on a national secondary road — yet experiences Profound–Substantial residential visual effect the applicant's assessment does not report. The companion cluster SV17 sits on the same corridor; together they show a sustained band of high residential effect along the N52 approach to Carrig that Chapter 12 does not convey.

Per C-A.3.7 no screening discount is applied. The eight-turbine count is recorded turbine-by-turbine from the ZTV and on-site verification described in Part A, and the dwellings see the array in open view. The applicant's nearest viewpoint on this corridor captured neither the count nor the proximity that these dwellings actually experience.

C-A.6.15 SV10A - Ballimanoe Lane & Cloonheed Lane

8 dwellings · Dwelling-count rank 15 of 21



Dwellings in cluster	8
Distance to nearest turbine	0.56–0.98 km
Nearest turbine(s)	T6 (5), T4 (1), T3 (1), T5 (1)
Ballincor turbines in view	5–11 of 11 (variable)
Combined turbines in view (of 26)	9–17 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 8× Profound–Substantial	Distribution: 6× Profound–Substantial; 2× Substantial

Assessment

SV10A is the closest cluster in the entire study area: all eight dwellings on Ballimanoe Lane and Cloonheed Lane lie within 1 km of the nearest turbine, with the minimum at 0.56 km — closer to a 180 m turbine than any other residential receptor assessed. Although the Ballincor count varies across the cluster from five to all eleven turbines, every one of the eight dwellings is classified Profound–Substantial on the proposed development alone, because at this proximity the distance modifier of Table C.2 carries even the lower-count dwellings to the top tier.

This cluster is the proximity case in its purest form. Where the more populous clusters demonstrate significant effect through turbine count, SV10A demonstrates it through distance: a dwelling 0.56 km from a 180 m structure experiences a dominant near-field effect almost irrespective of how many further turbines are in view. The uniform Profound–Substantial rating is the direct output of the applicant's own matrix applied honestly at this separation.

The cumulative column holds essentially steady — six dwellings at Profound–Substantial and two easing to Substantial as the combined geometry varies — confirming that the effect here is driven by the proposed development in its own right. Consistent with C-A.3.7, the variation in count reflects genuine landform across the two lanes, not assumed screening. The applicant's assessment carries no viewpoint at a comparable separation, so the most proximate residential effect in the study area is wholly absent from Chapter 12.

C-A.6.16 SV4A - Rathbeg Lane - Upper

8 dwellings · Dwelling-count rank 16 of 21



Dwellings in cluster	8
Distance to nearest turbine	1.67–2.23 km
Nearest turbine(s)	T8 (7), T9 (1)
Ballincor turbines in view	7–11 of 11 (variable)
Combined turbines in view (of 26)	7–26 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 4× Profound–Substantial; 1× Substantial; 3× Substantial–moderate	Distribution: 4× Profound–Substantial; 1× Substantial–moderate; 3× Moderate

Assessment

SV4A is the upper of the three Rathbeg Lane clusters, eight dwellings with a heterogeneous Ballincor count from seven to all eleven turbines. On the proposed development alone the dominant rating is Profound–Substantial (four dwellings), with one at Substantial and three at Substantial–moderate — every dwelling significant, the spread reflecting the genuine variation in turbine count and aspect along the lane rather than any screening assumption (C-A.3.7).

SV4A is the one cluster in this group whose cumulative column moves downward at part of the cluster rather than up: three dwellings ease from Substantial–moderate to Moderate once the combined context is resolved. This is the distance modifier acting on the cumulative count at the further dwellings, where the additional Knockshigowna and Carrig turbines sit at separations that do not lift the count-based magnitude. The four most exposed dwellings remain at Profound–Substantial on both classifications. The divergence is reported transparently rather than smoothed.

The three Rathbeg Lane clusters — SV4A here, SV4B and SV4C following — are presented separately rather than merged because the lane descends across a distance band that materially changes the rating, and averaging them would conceal that gradient. Taken together they show a continuous run of significant residential effect along Rathbeg Lane that the applicant's nearest viewpoint does not represent.

C-A.6.17 SV3 - Ballegan Lane - next to shed

7 dwellings · Dwelling-count rank 17 of 21



Dwellings in cluster	7
Distance to nearest turbine	1.54–1.86 km
Nearest turbine(s)	T1 (all 7)
Ballincor turbines in view	9 of 11 (uniform)
Combined turbines in view (of 26)	24 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 7× Profound–Substantial	Distribution: 7× Profound–Substantial

Assessment

SV3 comprises seven dwellings on Ballegan Lane, all holding a uniform count of nine of the eleven Ballincor turbines in view, all taking T1 as their nearest turbine, and all within a tight 1.54–1.86 km band. Every dwelling is classified Profound–Substantial on both classifications — a small but uniformly and severely affected cluster.

SV3 reinforces the pattern established at SV1 and SV2 to the north-west of the development: a nine-turbine count in open view at near-field separation returns the highest rating on the applicant's scale without qualification. The cumulative count of twenty-four of twenty-six turbines confirms the rating but does not drive it; the effect is complete on the proposed development alone.

Though modest in dwelling count, SV3 is evidentially useful precisely because it is uniform and unambiguous: there is no internal spread to interpret, no screening to resolve, and no reliance on the cumulative context. Seven homes, all seeing nine of eleven turbines, all at Profound–Substantial — a finding the applicant's viewpoint sample does not contain.

C-A.6.18 SV4B - Rathbeg Lane - Middle

5 dwellings · Dwelling-count rank 18 of 21



Dwellings in cluster	5
Distance to nearest turbine	1.47–1.63 km
Nearest turbine(s)	T8 (all 5)
Ballincor turbines in view	11 of 11 (uniform)
Combined turbines in view (of 26)	26 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	Dominant: Profound–Substantial
Distribution: 5× Profound–Substantial	Distribution: 5× Profound–Substantial

Assessment

SV4B is the middle of the three Rathbeg Lane clusters: five dwellings, each seeing the full complement of all eleven Ballincor turbines, each at 1.47–1.63 km from the nearest turbine T8. All five are classified Profound–Substantial, and the combined count is the entire 26-turbine context in simultaneous view.

This is the maximal-exposure case for the Rathbeg Lane gradient: unlike SV4A above it, the middle cluster sees the complete array, and unlike the lower cluster below it, it sits close enough that the distance modifier applies no reduction. Eleven of eleven turbines in open view at under 1.63 km returns Profound–Substantial unambiguously on the applicant's matrix.

That all five dwellings, and the whole of the combined 26-turbine context, fall in a single field of view is the cumulative landscape effect WEDG 2006 cautions against in low-lying terrain, recorded here at dwelling resolution. The applicant's nearest viewpoint conveys neither the full count nor the proximity these dwellings experience.

C-A.6.19 SV4C - Rathbeg Lane - Lower

3 dwellings · Dwelling-count rank 19 of 21



Dwellings in cluster	3
Distance to nearest turbine	1.12–1.39 km
Nearest turbine(s)	T8 (2), T9 (1)
Ballincor turbines in view	11 of 11 (uniform)
Combined turbines in view (of 26)	26 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Profound–Substantial**
Distribution: 3× Profound–Substantial	Distribution: 3× Profound–Substantial

Assessment

SV4C is the lower of the three Rathbeg Lane clusters: three dwellings, all seeing the full eleven Ballincor turbines, and the closest of the Rathbeg group at 1.12–1.39 km. All three are classified Profound–Substantial on both classifications, with the entire combined 26-turbine context in view.

SV4C completes the Rathbeg Lane gradient. Read with SV4A (upper, heterogeneous count, part-Moderate on the cumulative column) and SV4B (middle, full count, Profound–Substantial), the three sheets show how the rating tracks the descent of the lane: as the dwellings move closer and the array opens fully into view, the effect rises to and holds at the top of the scale. Presenting them as one merged cluster would have averaged this gradient into a single misleading figure.

Three homes seeing all eleven turbines at as little as 1.12 km, all at Profound–Substantial — small in number but maximal in effect, and absent from the applicant's viewpoint sample.

C-A.6.20 VP14 - Loughkeen

2 dwellings · Dwelling-count rank 20 of 21



Dwellings in cluster	2
Distance to nearest turbine	1.80–2.20 km
Nearest turbine(s)	T6 (all 2)
Ballincor turbines in view	0 of 11 (uniform)
Combined turbines in view (of 26)	0–3 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Slight–Imperceptible	**Dominant: Slight–Imperceptible**
Distribution: 2× Slight–Imperceptible	Distribution: 1× Moderate; 1× Slight–Imperceptible

Assessment

VP14 at Loughkeen is the only cluster in the study area from which no Ballincor turbine is visible: both dwellings are classified Slight–Imperceptible on the proposed development alone, the view of the array being fully obstructed by intervening landform. It is reported as non-significant without qualification.

Like SV13 in the midfield, VP14 is included precisely because it returns a non-significant result. Together the two clusters demonstrate that the classification discriminates on the basis of actual exposure rather than returning significance indiscriminately — a method that found significant effect at a cluster which genuinely sees no turbines would be open to challenge, and VP14 shows that the framework does not. Consistent with C-A.3.7, the Slight–Imperceptible rating reflects verified absence of turbines in view; it is the inverse of a screening discount, not an instance of one.

The cumulative column lifts one of the two dwellings to Moderate as up to three of the neighbouring turbines become visible, while the other remains Slight–Imperceptible. Even on the cumulative classification the cluster does not reach the significance threshold. The applicant's viewpoint VP14 at Loughkeen is consistent with the absence of Ballincor visibility recorded here.

C-A.6.21 VP15 - Eamon Ryan's House

1 dwellings · Dwelling-count rank 21 of 21



Dwellings in cluster	1
Distance to nearest turbine	1.23 km
Nearest turbine(s)	T3 (all 1)
Ballincor turbines in view	11 of 11
Combined turbines in view (of 26)	11 of 26
Receptor sensitivity	High (fixed — all dwellings; per Part B §B4.2)

Ballincor-only classification	Cumulative classification (of 26)
Dominant: Profound–Substantial	**Dominant: Substantial**
Distribution: 1× Profound–Substantial	Distribution: 1× Substantial

Assessment

VP15 is a single dwelling, but it is included for completeness and because its exposure is severe: the property sees the full complement of all eleven Ballincor turbines at 1.23 km from the nearest, T3, and is classified Profound–Substantial on the proposed development alone.

The single-dwelling sheet records the effect on an individual residential receptor that the applicant's viewpoint-based method, by its nature, cannot capture: a near-field property with the entire proposed array in open view, at the maximum significance rating on the applicant's own scale. It stands as the final receptor-level demonstration of the central finding of Part C.

On the cumulative classification the dwelling eases to Substantial: the combined count remains eleven — the dwelling sees the proposed array but none of the neighbouring turbines — and the rating reflects the resolved magnitude at this separation. The effect remains significant throughout. The applicant's viewpoint VP15 sits at the dwelling and shares its open aspect towards the array.

APPENDIX 8-2. ELEVATION

ID	Type	ITM_Eastin	ITM_Northi	Lat_WGS8	Lon_WGS8	Elevation_	Sensitive
255	Receptor	605227.1	700915.2	53.05885	-7.92202	46.9	Sensitive
248	Receptor	604163.8	701580.7	53.06484	-7.93788	47.3	Sensitive
58	Receptor	604120.5	701623.4	53.06522	-7.93852	47.8	Sensitive
99	Receptor	605273.4	700919.5	53.05889	-7.92133	47.8	Sensitive
177	Receptor	605351.4	701012.3	53.05972	-7.92017	47.9	Sensitive
302	Receptor	605075.2	700340	53.05368	-7.9243	48	Sensitive
287	Receptor	603156.6	702485.7	53.07298	-7.9529	48.2	Sensitive
9	Receptor	605175.6	700626.1	53.05625	-7.9228	48.4	Sensitive
274	Receptor	601695.9	699550.7	53.04661	-7.97471	48.4	Sensitive
283	Receptor	605485.9	701102.7	53.06053	-7.91816	48.4	Sensitive
192	Receptor	602488.7	700346.5	53.05376	-7.96288	48.8	Sensitive
83	Receptor	602786.8	700200.1	53.05244	-7.95843	49.2	Sensitive
205	Receptor	605127.7	700408.5	53.0543	-7.92351	49.2	Sensitive
277	Receptor	605669.7	701325	53.06253	-7.91541	49.3	Sensitive
90	Receptor	601567.6	699673	53.04771	-7.97662	49.7	Sensitive
23	Receptor	603633.8	702356.1	53.07181	-7.94578	49.8	Sensitive
210	Receptor	601318.9	699799.4	53.04884	-7.98033	49.9	Sensitive
267	Receptor	601361.1	699791.5	53.04877	-7.9797	49.9	Sensitive
170	Receptor	601388	699765.6	53.04854	-7.9793	50.1	Sensitive
150	Receptor	601415.8	699743.5	53.04834	-7.97888	50.2	Sensitive
220	Receptor	604382	702402.6	53.07222	-7.93461	50.2	Sensitive
315	Receptor	604401.5	702372.7	53.07196	-7.93432	50.2	Sensitive
141	Receptor	602239	700042.7	53.05103	-7.96661	50.4	Sensitive
48	Receptor	605237.9	700663.6	53.05659	-7.92187	50.6	Sensitive
2	Receptor	605251.6	700708.3	53.05699	-7.92166	50.7	Sensitive
146	Receptor	602182.7	699987.4	53.05053	-7.96744	50.7	Sensitive
73	Receptor	605285.2	698420.2	53.03642	-7.9212	50.8	Sensitive
167	Receptor	601188.4	699968.4	53.05036	-7.98228	50.9	Sensitive
224	Receptor	603790.7	702345.5	53.07172	-7.94344	50.9	Sensitive
201	Receptor	601201.7	699944.4	53.05015	-7.98208	51	Sensitive
236	Receptor	601962.6	700578	53.05584	-7.97073	51	Sensitive
43	Receptor	602211	700016.4	53.05079	-7.96702	51.2	Sensitive
258	Receptor	601932.8	700594.6	53.05599	-7.97117	51.2	Sensitive
275	Receptor	601479.7	699705.9	53.048	-7.97793	51.2	Sensitive
42	Receptor	601796.2	700137.9	53.05189	-7.97321	51.3	Sensitive
59	Receptor	603880.3	702700.5	53.07491	-7.94209	51.6	Sensitive
64	Receptor	603761.2	701977	53.0684	-7.94388	51.9	Sensitive
231	Receptor	603903.8	702412.9	53.07232	-7.94175	52	Sensitive
256	Receptor	603793	702008.2	53.06868	-7.9434	52	Sensitive
233	Receptor	603823.5	702037.6	53.06895	-7.94295	52.1	Non_Sensitive
21	Receptor	603897.1	702069.8	53.06924	-7.94185	52.3	Sensitive
306	Receptor	605332	695616.4	53.01122	-7.92055	52.4	Sensitive
70	Receptor	603111.1	702374.9	53.07198	-7.95358	52.6	Sensitive
172	Receptor	604164	702656.7	53.07451	-7.93786	52.7	Sensitive
98	Receptor	605316.4	695574.2	53.01085	-7.92078	53.2	Sensitive
56	Receptor	601740.5	701386.7	53.06311	-7.97403	53.3	Sensitive
181	Receptor	601710.4	701289.9	53.06224	-7.97448	53.3	Sensitive

269	Receptor	601669.4	699483	53.046	-7.9751	53.3 Sensitive
171	Receptor	601963.1	700994.3	53.05958	-7.97072	53.4 Sensitive
88	Receptor	601749.8	701353	53.06281	-7.97389	53.5 Sensitive
252	Receptor	605650	700951.2	53.05917	-7.91571	53.5 Sensitive
207	Receptor	601691.1	701265	53.06202	-7.97477	53.6 Sensitive
276	Receptor	601785	701311.3	53.06243	-7.97337	54 Sensitive
165	Receptor	601184.9	700456.9	53.05475	-7.98233	54.2 Sensitive
80	Receptor	601821.9	699049	53.0421	-7.97283	54.3 Sensitive
112	Receptor	601808.5	701312.7	53.06244	-7.97302	54.4 Sensitive
206	Receptor	601832.4	701282.6	53.06217	-7.97266	54.4 Sensitive
241	Receptor	602974.2	701862.2	53.06738	-7.95562	54.4 Sensitive
13	Receptor	601127.6	700389.8	53.05415	-7.98318	54.5 Sensitive
50	Receptor	601648.7	701233	53.06173	-7.9754	54.5 Sensitive
175	Receptor	601816.1	701316.5	53.06248	-7.97291	54.6 Sensitive
121	Receptor	605775.5	700979.6	53.05942	-7.91384	54.7 Sensitive
145	Receptor	601639.2	701218.6	53.0616	-7.97555	54.7 Sensitive
68	Receptor	601770.5	699073.9	53.04232	-7.9736	54.8 Sensitive
78	Receptor	601114.8	700360.6	53.05389	-7.98337	54.8 Sensitive
225	Receptor	603589.2	701035.9	53.05995	-7.94646	54.8 Sensitive
8	Receptor	601755.6	699097.3	53.04253	-7.97382	55 Sensitive
197	Receptor	601828.6	701372.7	53.06298	-7.97272	55 Sensitive
234	Receptor	601840.2	701334.5	53.06264	-7.97255	55 Sensitive
235	Receptor	601840.2	701334.5	53.06264	-7.97255	55 Sensitive
30	Receptor	601586.7	701107.9	53.0606	-7.97633	55.1 Sensitive
157	Receptor	603537.8	701582	53.06485	-7.94722	55.2 Sensitive
239	Receptor	603519.9	701558.5	53.06464	-7.94748	55.2 Sensitive
38	Receptor	603502.1	701536	53.06444	-7.94775	55.4 Sensitive
55	Receptor	601868	701371.7	53.06297	-7.97213	55.4 Sensitive
91	Receptor	605406	698404.1	53.03628	-7.9194	55.4 Sensitive
147	Receptor	605862.7	700840.1	53.05817	-7.91254	55.4 Sensitive
195	Receptor	601242.3	700561.9	53.0557	-7.98147	55.4 Sensitive
303	Receptor	605862.7	700840	53.05817	-7.91254	55.4 Sensitive
44	Receptor	601887.8	701293.3	53.06227	-7.97184	55.5 Sensitive
123	Receptor	603481	701460.7	53.06377	-7.94807	55.5 Sensitive
155	Receptor	601195.7	700565.2	53.05573	-7.98216	55.8 Non_Sensitive
291	Receptor	601896.2	701383.9	53.06308	-7.97171	55.9 Sensitive
27	Receptor	605807.5	700813.5	53.05793	-7.91337	56.1 Sensitive
228	Receptor	605745.6	700849.5	53.05825	-7.91429	56.1 Sensitive
4	Receptor	603051.1	701826.6	53.06706	-7.95448	56.2 Sensitive
25	Receptor	605839.8	700795.9	53.05777	-7.91289	56.2 Sensitive
10	Receptor	603040.9	698628.4	53.03831	-7.95466	56.3 Sensitive
247	Receptor	601424.9	700915.6	53.05888	-7.97874	56.4 Sensitive
229	Receptor	604205.3	701982.4	53.06845	-7.93725	56.5 Sensitive
238	Receptor	605175.3	695482.4	53.01002	-7.92288	56.5 Sensitive
86	Receptor	601141.7	700895	53.05869	-7.98297	56.6 Sensitive
215	Receptor	601389	701069.2	53.06026	-7.97928	56.6 Sensitive
97	Receptor	601421.8	701059.1	53.06017	-7.97879	56.7 Sensitive
5	Receptor	602378.8	698648.6	53.0385	-7.96453	56.8 Sensitive

67	Receptor	601626.4	699434.9	53.04557	-7.97575	56.8	Sensitive
26	Receptor	605156	695455.8	53.00978	-7.92317	56.9	Sensitive
95	Receptor	602723.1	700564.5	53.05572	-7.95938	57	Sensitive
156	Receptor	601810	698986.5	53.04154	-7.97301	57	Sensitive
300	Receptor	603128	701955.1	53.06821	-7.95333	57	Sensitive
174	Receptor	601470.2	700785	53.0577	-7.97807	57.2	Sensitive
142	Receptor	600660	700166.7	53.05215	-7.99016	57.5	Sensitive
246	Receptor	602710.3	698251.5	53.03493	-7.95959	57.6	Sensitive
284	Receptor	603104.9	701018	53.05979	-7.95368	57.7	Sensitive
122	Receptor	602506.9	701557.1	53.06464	-7.9626	57.9	Sensitive
198	Receptor	600942.5	700275.3	53.05312	-7.98594	57.9	Sensitive
61	Receptor	603407.4	701476.9	53.06391	-7.94916	58	Sensitive
268	Receptor	602458.5	701555.2	53.06462	-7.96332	58.1	Sensitive
52	Receptor	600902.6	700307.9	53.05342	-7.98654	58.4	Sensitive
216	Receptor	605735.6	696659	53.02059	-7.91451	58.4	Sensitive
298	Receptor	601360.7	701432.5	53.06352	-7.9797	58.4	Sensitive
115	Receptor	602000.3	701432.7	53.06352	-7.97016	58.5	Sensitive
24	Receptor	603072.8	700992.2	53.05956	-7.95416	58.7	Sensitive
183	Receptor	603374.6	701325.9	53.06255	-7.94965	58.8	Sensitive
251	Receptor	600864.3	700344.3	53.05374	-7.98711	58.8	Sensitive
219	Receptor	603228.2	701113.5	53.06065	-7.95184	58.9	Sensitive
190	Receptor	602416.3	701550.5	53.06458	-7.96395	59	Sensitive
113	Receptor	602104.3	701636.3	53.06535	-7.9686	59.4	Sensitive
149	Receptor	603351.3	701259	53.06195	-7.95	59.4	Sensitive
193	Receptor	600728.7	699903.4	53.04978	-7.98913	59.4	Sensitive
31	Receptor	601669.4	699312	53.04446	-7.97511	59.5	Sensitive
45	Receptor	606763.1	695875.9	53.01354	-7.89921	59.5	Sensitive
232	Receptor	602387.2	701518.6	53.06429	-7.96438	59.6	Sensitive
243	Receptor	603255.4	701146.4	53.06094	-7.95143	59.6	Sensitive
293	Receptor	602057.7	701452.5	53.0637	-7.9693	59.9	Sensitive
313	Receptor	602757.6	697977.2	53.03246	-7.95889	59.9	Sensitive
32	Receptor	602365.7	701506.4	53.06418	-7.96471	60	Sensitive
77	Receptor	601417	699096.9	53.04253	-7.97887	60.1	Non_Sensitive
279	Receptor	603301.4	701322.7	53.06253	-7.95075	60.2	Sensitive
253	Receptor	602787.4	700667.2	53.05664	-7.95842	60.3	Sensitive
295	Receptor	605769.6	696658.3	53.02058	-7.91401	60.3	Sensitive
137	Receptor	603284.3	701274.1	53.06209	-7.951	60.9	Sensitive
314	Receptor	603211.4	701210.6	53.06152	-7.95209	60.9	Sensitive
101	Receptor	602205.6	698647	53.03848	-7.96711	61.6	Sensitive
14	Receptor	603228.2	701251.4	53.06189	-7.95184	61.8	Sensitive
136	Receptor	602577.1	698287.4	53.03525	-7.96158	61.9	Sensitive
36	Receptor	606656.2	696054.8	53.01515	-7.9008	62.6	Sensitive
184	Receptor	602173.4	701449.2	53.06367	-7.96757	62.7	Sensitive
87	Receptor	602323.8	698557.7	53.03768	-7.96535	63.9	Sensitive
160	Receptor	605560.2	697143.7	53.02495	-7.91712	64	Sensitive
57	Receptor	602911.8	700809.5	53.05792	-7.95656	64.4	Sensitive
289	Receptor	603902.7	696862.4	53.02244	-7.94183	64.4	Sensitive
84	Receptor	605130.4	695070.9	53.00632	-7.92356	64.5	Sensitive

221	Receptor	602341.5	698518.2	53.03733	-7.96509	64.8 Sensitive
290	Receptor	604723.6	695526.2	53.01042	-7.92961	64.8 Sensitive
292	Receptor	604723.6	695526.2	53.01042	-7.92961	64.8 Sensitive
296	Receptor	604236.3	695924.5	53.014	-7.93687	64.8 Sensitive
188	Receptor	602726.8	697851.3	53.03133	-7.95935	65 Sensitive
151	Receptor	604313.1	695618.7	53.01125	-7.93573	65.2 Sensitive
94	Receptor	600495	699642.7	53.04744	-7.99262	65.8 Sensitive
140	Receptor	602747.1	697814.6	53.031	-7.95905	65.8 Sensitive
242	Receptor	600515.6	699658.4	53.04758	-7.99231	66.1 Sensitive
107	Receptor	605464.2	694429	53.00055	-7.9186	66.3 Sensitive
47	Receptor	604141.5	695804.3	53.01292	-7.93828	66.4 Sensitive
17	Receptor	605740.2	696773	53.02162	-7.91444	66.5 Sensitive
223	Receptor	600525.9	699714.2	53.04808	-7.99216	66.6 Sensitive
92	Receptor	600511.7	699689.9	53.04786	-7.99237	66.7 Sensitive
131	Receptor	605421.6	694443.9	53.00069	-7.91923	67 Sensitive
309	Receptor	604480.4	695458.4	53.00981	-7.93324	67 Sensitive
196	Receptor	605879.4	694292.7	52.99932	-7.91241	67.1 Sensitive
280	Receptor	602295.5	698432.6	53.03656	-7.96577	68.2 Sensitive
222	Receptor	605908.7	694233	52.99879	-7.91198	68.6 Sensitive
180	Receptor	603867.9	696155.9	53.01609	-7.94236	69 Sensitive
307	Receptor	605239.8	694607.5	53.00216	-7.92194	69.1 Sensitive
261	Receptor	605767.7	696807.2	53.02192	-7.91403	69.5 Sensitive
134	Receptor	605332.1	694430.6	53.00057	-7.92056	69.6 Sensitive
266	Receptor	605286.3	694487.7	53.00108	-7.92125	69.8 Sensitive
294	Receptor	603833.8	696367.2	53.01799	-7.94286	69.8 Sensitive
311	Receptor	603833.8	696367.2	53.01799	-7.94286	69.8 Sensitive
28	Receptor	605294.2	694459.5	53.00083	-7.92113	69.9 Sensitive
259	Receptor	605238.3	694533.4	53.00149	-7.92196	69.9 Sensitive
34	Receptor	606047.3	697135	53.02487	-7.90986	70.2 Sensitive
102	Receptor	605257	694497.1	53.00117	-7.92168	70.2 Sensitive
272	Receptor	606028.7	697104.9	53.0246	-7.91014	70.5 Sensitive
257	Receptor	605801.9	694161.6	52.99814	-7.91357	70.7 Sensitive
285	Receptor	602871.6	697545	53.02858	-7.95719	71 Sensitive
211	Receptor	604567.9	693950.5	52.99626	-7.93196	71.2 Sensitive
89	Receptor	601999.2	698633.3	53.03836	-7.97019	71.6 Sensitive
53	Receptor	602834.2	697527.2	53.02842	-7.95775	71.9 Sensitive
250	Receptor	602859.8	697495	53.02813	-7.95737	72 Sensitive
254	Receptor	605881.8	696858.7	53.02238	-7.91233	72.2 Sensitive
202	Receptor	602878.3	697421.3	53.02747	-7.95709	72.4 Non_Sensitive
37	Receptor	605889.3	696999.4	53.02365	-7.91222	72.6 Sensitive
178	Receptor	605862.1	696940.3	53.02312	-7.91262	72.9 Sensitive
227	Receptor	607073.9	696330.6	53.01762	-7.89457	73 Sensitive
18	Receptor	604923.6	693821.2	52.9951	-7.92666	73.3 Sensitive
189	Receptor	607236.1	696313.7	53.01747	-7.89216	73.5 Sensitive
203	Receptor	604318.3	695112.7	53.00671	-7.93566	73.5 Sensitive
75	Receptor	605068.9	694670.6	53.00273	-7.92448	73.8 Sensitive
213	Receptor	607244.5	696350.6	53.0178	-7.89203	74 Sensitive
114	Receptor	604914.9	693859.6	52.99544	-7.92679	74.1 Sensitive

244	Receptor	603750.5	695991.5	53.01461	-7.94411	74.1	Sensitive
46	Receptor	605042.1	694742.1	53.00337	-7.92488	74.3	Sensitive
152	Receptor	605894.6	700212.1	53.05252	-7.91208	74.3	Sensitive
22	Receptor	607213.6	696430	53.01851	-7.89249	74.5	Sensitive
109	Receptor	603105.3	697327.3	53.02662	-7.95371	74.5	Sensitive
93	Receptor	601378.3	698855.9	53.04036	-7.97945	74.6	Sensitive
194	Receptor	604353	695026.9	53.00594	-7.93514	74.6	Sensitive
297	Receptor	603438.9	696465.5	53.01887	-7.94875	74.6	Sensitive
111	Receptor	604986.5	694813.7	53.00401	-7.92571	74.7	Sensitive
214	Receptor	605024.8	694756.8	53.0035	-7.92514	74.8	Sensitive
105	Receptor	606220.4	697489.7	53.02805	-7.90727	74.9	Sensitive
54	Receptor	605004.8	694785.4	53.00376	-7.92543	75	Sensitive
104	Receptor	604947.8	694824	53.00411	-7.92628	75	Sensitive
153	Receptor	604887.1	694943.8	53.00518	-7.92719	75	Sensitive
264	Receptor	605092.2	694539.2	53.00155	-7.92414	75.1	Sensitive
144	Receptor	604916.3	694848.1	53.00432	-7.92675	75.2	Non_Sensitive
245	Receptor	604892	693913	52.99592	-7.92713	75.3	Sensitive
39	Receptor	603362.1	696762.5	53.02154	-7.94989	75.4	Sensitive
35	Receptor	601137.9	698846.6	53.04028	-7.98303	75.5	Sensitive
117	Receptor	604896	694864.1	53.00447	-7.92705	75.5	Sensitive
185	Receptor	604859.4	694953.4	53.00527	-7.9276	75.5	Sensitive
130	Receptor	604494.2	694100.4	52.99761	-7.93305	75.6	Sensitive
226	Receptor	606554.5	697406.8	53.0273	-7.90229	75.6	Non_Sensitive
260	Receptor	604721.4	694977.5	53.00549	-7.92965	75.6	Sensitive
164	Receptor	604775.3	694956.1	53.0053	-7.92885	75.7	Sensitive
200	Receptor	604683.7	694986.6	53.00557	-7.93022	75.7	Sensitive
110	Receptor	604677.6	694958.1	53.00531	-7.93031	75.8	Sensitive
271	Receptor	602307.5	698126.2	53.0338	-7.9656	75.8	Sensitive
29	Receptor	604868.1	694881	53.00462	-7.92747	75.9	Non_Sensitive
41	Receptor	604668.5	694927.3	53.00504	-7.93044	75.9	Sensitive
218	Receptor	603177.5	697008.1	53.02375	-7.95264	75.9	Sensitive
119	Receptor	604853.5	694902.2	53.00481	-7.92769	76	Sensitive
66	Receptor	604810.1	694920.8	53.00498	-7.92833	76.2	Sensitive
49	Receptor	604824.1	693974.4	52.99647	-7.92814	76.3	Sensitive
116	Receptor	603328.3	696916.9	53.02293	-7.95039	76.4	Sensitive
273	Receptor	604879.4	693952.3	52.99627	-7.92731	76.4	Sensitive
312	Receptor	603329.7	696917.9	53.02294	-7.95037	76.5	Sensitive
270	Receptor	603156.1	697041.9	53.02405	-7.95296	76.7	Sensitive
139	Receptor	603041.7	697051.3	53.02414	-7.95466	76.8	Sensitive
40	Receptor	603071.6	697119.2	53.02475	-7.95422	77.2	Sensitive
186	Receptor	603134.1	697072.1	53.02433	-7.95328	77.2	Sensitive
204	Receptor	604630.9	694755.9	53.0035	-7.93101	77.2	Sensitive
217	Receptor	603229.9	695650.2	53.01155	-7.95187	77.7	Non_Sensitive
120	Receptor	604625.2	694696.2	53.00296	-7.93109	77.8	Non_Sensitive
163	Receptor	604989.1	694604.5	53.00213	-7.92567	78	Sensitive
103	Receptor	604999.8	694502.7	53.00122	-7.92551	78.1	Sensitive
16	Receptor	604959.9	694556.9	53.00171	-7.92611	79.1	Sensitive
132	Receptor	604184.4	695117.7	53.00675	-7.93765	79.2	Sensitive

286	Receptor	603237.8	695587.7	53.01098	-7.95175	79.2 Sensitive
138	Receptor	603633.6	695266.8	53.0081	-7.94586	79.5 Sensitive
15	Receptor	603326.4	695518.3	53.01036	-7.95043	79.9 Sensitive
74	Receptor	603434.2	695356	53.0089	-7.94883	80.2 Sensitive
278	Receptor	603023.1	695683.1	53.01184	-7.95495	80.9 Sensitive
173	Receptor	605622.4	698580.8	53.03786	-7.91617	81 Sensitive
162	Receptor	606035.8	697933.3	53.03204	-7.91002	81.2 Sensitive
168	Receptor	604318.6	694249.7	52.99895	-7.93567	81.4 Sensitive
128	Receptor	605609.6	698640.8	53.0384	-7.91636	81.6 Sensitive
143	Receptor	605618.9	698616.2	53.03818	-7.91622	81.6 Sensitive
69	Receptor	602870.8	695875.5	53.01357	-7.95722	81.8 Sensitive
133	Receptor	603693.7	695183.4	53.00735	-7.94496	82.1 Sensitive
72	Receptor	604933.3	694301.4	52.99941	-7.92651	82.2 Sensitive
199	Receptor	604772.2	694321.9	52.9996	-7.92891	82.2 Sensitive
96	Receptor	604919.4	694269.9	52.99913	-7.92671	82.3 Sensitive
249	Receptor	605559.2	698859.1	53.04037	-7.91711	82.3 Sensitive
281	Receptor	601205	698374.8	53.03604	-7.98203	83 Sensitive
127	Receptor	602731.5	695948	53.01422	-7.95929	83.1 Sensitive
182	Receptor	606984.8	697436.4	53.02756	-7.89588	83.1 Sensitive
209	Receptor	601041.8	698075.5	53.03335	-7.98447	83.1 Sensitive
71	Receptor	601043.5	698186.8	53.03435	-7.98444	83.3 Sensitive
237	Receptor	601254.4	698614.4	53.03819	-7.9813	83.5 Sensitive
129	Receptor	602671	696111.7	53.0157	-7.9602	83.6 Sensitive
169	Receptor	604714.3	694473.6	53.00096	-7.92977	83.6 Sensitive
230	Receptor	604663.7	694398.7	53.00029	-7.93052	84.3 Sensitive
60	Receptor	601105.5	698033.5	53.03297	-7.98352	84.9 Sensitive
263	Receptor	602719.9	695830	53.01316	-7.95947	85.3 Sensitive
20	Receptor	607045.7	697441.4	53.02761	-7.89497	85.5 Sensitive
240	Receptor	606799.6	697855.2	53.03133	-7.89863	86.6 Sensitive
282	Receptor	603915.2	695202	53.00751	-7.94166	86.7 Sensitive
51	Receptor	604069.7	694734.1	53.00331	-7.93937	86.8 Sensitive
166	Receptor	603989.1	695114.2	53.00672	-7.94056	86.8 Sensitive
179	Receptor	606942.1	697656.2	53.02954	-7.89651	87.8 Sensitive
63	Receptor	603822.2	695295.9	53.00836	-7.94305	88 Sensitive
288	Receptor	605678	698754	53.03942	-7.91533	88.1 Sensitive
135	Receptor	603660.1	695475.6	53.00997	-7.94546	88.3 Sensitive
33	Receptor	602520.2	696107	53.01566	-7.96244	89.2 Sensitive
6	Receptor	606582.1	697983	53.03248	-7.90187	90.9 Sensitive
191	Receptor	605746.1	698741.3	53.03931	-7.91432	91.6 Sensitive
212	Receptor	606557.7	698038.3	53.03298	-7.90223	91.9 Sensitive
76	Receptor	606577.4	698068.3	53.03325	-7.90194	92.7 Sensitive
124	Receptor	606589.6	698089.9	53.03344	-7.90176	93.2 Sensitive
304	Receptor	605694	698873.4	53.04049	-7.91509	93.8 Sensitive
301	Receptor	606626.9	698163	53.0341	-7.9012	94 Sensitive
85	Receptor	606648.5	698123.4	53.03374	-7.90088	94.5 Sensitive
65	Receptor	605782.7	698805.1	53.03988	-7.91377	94.7 Sensitive
106	Receptor	606626.9	698497.5	53.0371	-7.90119	95.4 Sensitive
265	Receptor	606431.1	698888.2	53.04062	-7.9041	96.7 Sensitive

82	Receptor	606481.5	698993.9	53.04157	-7.90335	96.9	Sensitive
176	Receptor	606688.5	698272.3	53.03508	-7.90028	97.1	Sensitive
125	Receptor	606634.1	698800.1	53.03982	-7.90108	97.2	Non_Sensitive
154	Receptor	606676.7	698710.4	53.03902	-7.90044	97.6	Sensitive
7	Receptor	606526.5	699002.3	53.04164	-7.90268	97.9	Sensitive
158	Receptor	606678.6	698744.2	53.03932	-7.90042	98.5	Sensitive
3	Receptor	606679.5	698777.9	53.03962	-7.9004	99.4	Sensitive
208	Receptor	606330.5	698903.8	53.04076	-7.9056	100	Sensitive
262	Receptor	606611.9	698968.5	53.04134	-7.90141	100.5	Sensitive
12	Receptor	606630.6	698947.9	53.04115	-7.90113	101.6	Sensitive
161	Receptor	606669.9	698834.1	53.04013	-7.90054	101.8	Sensitive
62	Receptor	606642.8	698927.3	53.04097	-7.90095	102.4	Sensitive
108	Receptor	605849	698872	53.04048	-7.91278	102.5	Sensitive
1	Receptor	606649.4	698902.3	53.04074	-7.90085	102.6	Non_Sensitive
100	Receptor	601843.5	697525.5	53.02841	-7.97252	103.7	Sensitive
299	Receptor	602107.4	695966.5	53.01439	-7.9686	109.7	Sensitive
126	Receptor	602019.8	696235.5	53.01681	-7.9699	110.2	Sensitive
11	Receptor	606157.6	698770.7	53.03956	-7.90818	110.4	Sensitive
118	Receptor	606765.9	698261.7	53.03498	-7.89912	110.4	Sensitive
187	Receptor	602078.4	695941.4	53.01417	-7.96903	110.8	Non_Sensitive
79	Receptor	605989.3	698816.3	53.03998	-7.91069	111	Non_Sensitive
159	Receptor	606093.8	698857.9	53.04035	-7.90913	112.1	Sensitive
148	Receptor	606870.5	698401	53.03623	-7.89756	120.8	Non_Sensitive
81	Receptor	601553.7	697092.7	53.02452	-7.97684	122.7	Sensitive
19	Receptor	606804.1	698311.3	53.03543	-7.89855	124.3	Sensitive

Appendix 8-3 Review of Applicant Photomontage Locations

Table 3- Suitability of View Point Locations -a Visual Assessment

VP	Location	Km's - nearest turbine	Suitable	Moderate	Unsuitable	Comments
1	**Meelick Harbour**	16.3km			X	Not a suitable location. It's too far away and no turbines can be seen. It is from a View Point (VP) location that has no relevance to the local community. It should not have been added.
2a	**Ballyegan**	1.8km - T1	X			Suitable location. Close proximity to the wind farm and shows true scale of the turbines in the landscape.
2b	**Ballyegan**	1.8km - T1	X			Suitable location. Close proximity to the wind farm and shows true scale of the turbines in the landscape.
3	**Moynure**	6.0km - T11			X	Not a suitable location. Taken in hazy sunlight. Turbines blend into the background and are on the horizon behind the hill with 7 turbines partially visible.
4	**Clonlee**	13.4km -T9			X	Not a suitable location. Taken in hazy sunlight. Turbines blend into the background and are barely visible behind the hill. Image could have been zoomed in on, to better reflect the turbines.
5	**Ballinree**	10.1km -T1			X	Not a suitable location. Taken in hazy sunlight. Turbines blend into the background and 7 are barely visible behind the hill. Image could have been zoomed in on, to better reflect the turbines.
6	**Birr Rugby Club**	5.3km -T1			X	Not a suitable location. Turbines obscured by local ground level rise and 2 and 3 storey buildings and mature trees are obscuring the turbines at that exact location.
7	**Aglish**	8.4km - T3			X	Not a suitable location. Image taken with ground rising in the foreground and obscured by hedgerows resulting in no turbines being visible. This image should not have been included
8	**R489 at junction with L5052**	12.8km - T3			X	Not a suitable location. Image taken on partially sunny day with haze in the distance. Turbines obscured by mature vegetation and only partially sticking up through the trees. Image could have been zoomed in on to better reflect the turbines.
9	**L1092 at junction with N52**	13.2km - T1			X	Not a suitable location. Photo conveniently has mature trees obscuring the 3 turbines on the right side of the image. Turbines would have been visible if the image was taken a few 100m up the road, on the crest of the hill.
10	**R445 at Limerick Road Roundabout**	10.9km - T11			X	Not a suitable location. Taken on a bright sunny day- all turbines are visible but blend into the blue-sky background and horizon, making them difficult to see.
11	**Local road at Rathnaveoge at M7 overpass**	12.5km - T11		X		Partially suitable. Photo taken from a higher elevated VP, but taken on a bright sunny day. All turbines are visible, but blend into the blue sky on the horizon background making them difficult to see.
12	**Moneygall GAA Club**	15.1km - T11			X	Not a suitable location. From that distance almost nothing is visible. Also taken on a sunny day so the 2 slightly visible turbines blend in to the blue- sky background. Could have been zoomed in to provide more detail with the house in the forefront for context.

13	**Toomevara Road at Brickanagh**	12km - T11			X	Not a suitable location. Turbines shown on the wireline view at 12km distance are hardly visible. Adding in a line of trees and they are not visible at all. This adds to the false sense of security that these turbines are visually insignificant.
14	**Local road at Borrisokane GAA Club**	12.4km				Baseline and Wireline images only were provided. **Composite Photomontage VP14 was not included in the RWE package.**
15	**Knockshigowna GAA Club**	5.4km			X	Not a suitable location. Taken from the bottom of the Knockshigowna hill with elevation of +-134m height, with hedgerows and some trees further obscuring the turbines. Turbines not visible.
16	**L4019 at Kilcomin**	5.9km – T11			X	Not a suitable location. Image is taken from the bottom of the hill. 5 turbines are partially visible and provide some idea of the scale, with buildings in the foreground. Other 6 turbines are obscured. Less direct sunlight so the turbines are slightly more visible.
17	**L8079 outside Ettagh**	3.7km – T11		X		Partially suitable. 5 turbines are visible and the scale of them can be seen. Note:- the remaining 6 are behind rubble wall. Moving the VP to the left a few meters, would have resulted in more being visible.
18	**L4006 at Coolderry**	5.9km – T11			X	Not a suitable location. Taking this image at 110m above the ground is deceptive. Although 7 are visible, all of those turbines are partially obscured by the treeline, and rising ground in the distance.
19	**L4007 at Castletown**	7.3km -T1			X	Not a suitable location. Most of the turbines shown have blades only 50% partially sticking up above the horizon. Adding in vegetation and the hazy blue-sky results in the turbine blades that are visible to fade in to the photo, making it less onerous than what it actually is.
20a	**L1071 at Doughkill**	1km - T3	X			Suitable location. This is the closest viewpoint to the turbines and provides a house in it that shows the scale of the turbines in it.
20b	**L1071 at Doughkill**	1km - T3	X			Suitable location. This is the closest viewpoint to the turbines. It would have been preferable to have a house in it, to provide scale of the turbines.
21a	**R492 at Sharavogue**	1.3km – T9	X			Suitable location. Note the turbine blades are 'side-on', minimizing what they look like when the wind blows from the VP direction.
21b	**R492 at Sharavogue**	1.3km – T9				We were able to find more representative images along the R492. Only 2 turbines are visible with 4 partially obscured by hedgerows and trees. Also, some of the white turbine's blend into the light blue skyline making them look less prominent.
22a	**L1072 at Ballinamoe**	1km – T7	X			This is a suitable location. It clearly shows 4 of the turbines against a light grey background. Note:- it could have been taken with a building in the foreground to show the scale.
22b	**L1072 at Ballinamoe** *(there are 2 x 22b images provided)*	1km – T7			X	Not a suitable location. Although 1km away from the nearest turbine. The VP was taken from +-50 away from a mature forest in the foreground. So, no turbines are visible.
22b	**L1072 at Ballinamoe**	1km – T7	X			Suitable location.
23a	**L80283 at Rathbeg Lane**	1km – T7	X			Suitable location. We have the same image taken as part of our photo montages. This distance is not

						correct. At this point to the nearest turbine is +- 1.9km away. As can be seen, the turbines are overpowering the landscape even at this distance.
23b	**L80283 at Rathbeg Lane**	1.9km – T8			X	Not a suitable location. Note:- The distance is corrected here but the VP is disingenuously obscured by trees and hedgerows. Moving another 100m down the road would allow for almost 150-degree angle views of the Sharavogue Bog and most of the 11 turbines.
24	**R489 at Riverstown**	3.8km - T1			X	Not a suitable location. VP conveniently has a treeline obscuring most of the turbines except 1 turbine blade. This is not representative of what can be seen at this general location.
25	**N62 at Boolinarrig**	9.7km			X	Not a suitable location. Turbines are barely visible on the wireline view. Adding in vegetation on the horizon means the turbines are not visible at all.
26	**Birr Castle Demesne**	5.4km			X	Not a suitable location. VP taken a few meters away from mature trees in the Castle gardens. It would be impossible to see any turbines, even if the turbines were only a few 100m away.
27	**L3013 at Banagher**	14.4km		X		Partially suitable. Turbines partially shown. Image taken on a sunny -hazy day with some turbines blending into the blue-sky background
28	No image provided					No image provided
	TOTAL	**31**	**8**	**3**	**20**	
	% of Total		**25.8 %**	**9.7 %**	**64.5 %**	

Examples of issues found with some of the RWE photomontages

To be read with table above.



Fig. RWE -VP9 taken from the bottom of the hill moving +-200m up the hill to the crest would likely have made the turbines visible

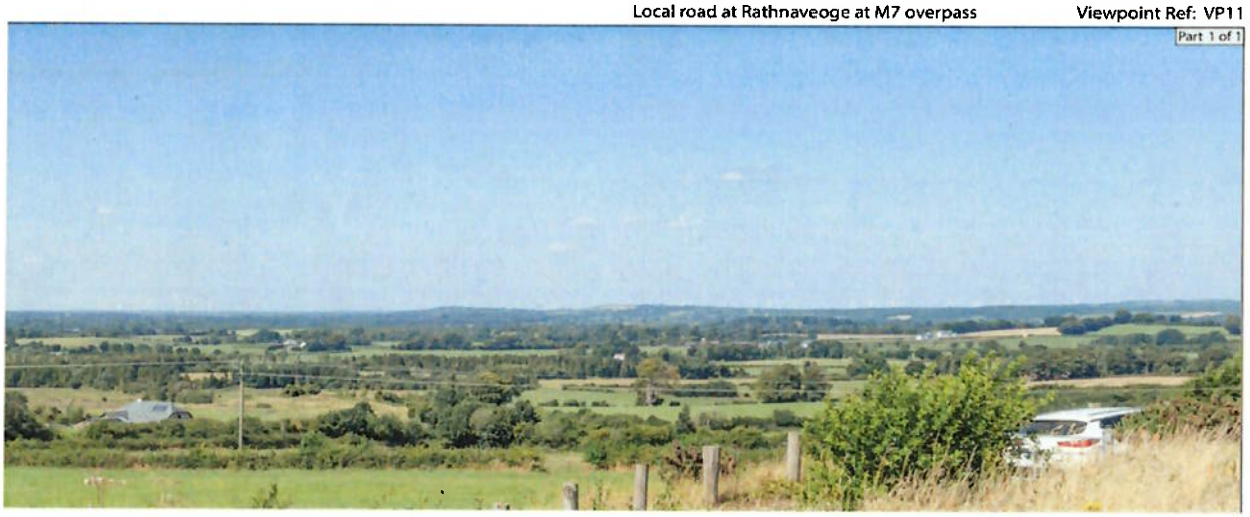


Fig. RWE -VP11 taken from 12.5km -turbines hardly visible against the blue sky & haze in the distance



Fig. RWE -VP11 -Zooming in from the exact position would have provided more detail for the reader



Fig. RWE -VP22b taken 1km away from T7 but fully obscured by mature forest +-50m away.



Fig. RWE -VP25 taken from 9.7km away showing in the wireview that the turbines will not be visible, but included to increase the number of not visible turbines.



Fig. RWE -VP26 taken a few meters from mature trees. In this image it would be impossible to see any turbines even if they were just behind the trees.



Fig. RWE -VP10 R445 at Limerick Road Roundabout

In VP10 the photomontage's wind turbines are almost not visible, at that distance, due to atmospheric conditions, they fade into light blue background. It gives the reader a false sense that views from this general VP location will provide negligible visual impact, which is incorrect.



Fig. When zoomed in from the same VP, but still using the barn and electrical pole in the foreground, the turbines now come into focus and the reader can judge the scale against the structures. They would likely come to a different conclusion that the wind turbines will impact the community from this general location. This logic applies to a large number of the RWE photomontages.

APPENDIX 8-4 : DATASET - BY RECEPTOR (PART C)

R ID	Distance to nearest T (km)	Nearest Turbine	Assigned VP Cluster	Distance to VP (km)	Total Ballincor Visible	Total Lacka Visible	Total Carrig Visible	Combined Total	Classification (Ballincor)	Classification (Cumulative)
14	1.1	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
24	0.9	T1	SV1 -Pallas-Cahorleigh off L1071	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
38	1.3	T1	SV1 -Pallas-Cahorleigh off L1071	0.4	9	8	7	24	Profound-Substantial	Profound-Substantial
57	0.9	T1	SV1 -Pallas-Cahorleigh off L1071	0.6	9	8	7	24	Profound-Substantial	Profound-Substantial
61	1.2	T1	SV1 -Pallas-Cahorleigh off L1071	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
123	1.2	T1	SV1 -Pallas-Cahorleigh off L1071	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
137	1.1	T1	SV1 -Pallas-Cahorleigh off L1071	0.0	9	8	7	24	Profound-Substantial	Profound-Substantial
149	1.0	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
157	1.3	T1	SV1 -Pallas-Cahorleigh off L1071	0.4	9	8	7	24	Profound-Substantial	Profound-Substantial
183	1.1	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
219	0.9	T1	SV1 -Pallas-Cahorleigh off L1071	0.2	9	8	7	24	Profound-Substantial	Profound-Substantial
225	0.8	T1	SV1 -Pallas-Cahorleigh off L1071	0.4	9	8	7	24	Profound-Substantial	Profound-Substantial
239	1.3	T1	SV1 -Pallas-Cahorleigh off L1071	0.4	9	8	7	24	Profound-Substantial	Profound-Substantial

243	1.0	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
279	1.1	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
284	0.9	T1	SV1 -Pallas-Cahorleigh off L1071	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
314	1.0	T1	SV1 -Pallas-Cahorleigh off L1071	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
10	0.6	T4	SV10A-Ballimanoe Lane & Cloonheed Lane	0.5	11	6	0	17	Profound-Substantial	Profound-Substantial
53	0.9	T6	SV10A-Ballimanoe Lane & Cloonheed Lane	0.7	11	6	0	17	Profound-Substantial	Profound-Substantial
136	1.0	T3	SV10A-Ballimanoe Lane & Cloonheed Lane	0.1	7	6	0	13	Profound-Substantial	Profound-Substantial
140	0.9	T6	SV10A-Ballimanoe Lane & Cloonheed Lane	0.4	5	4	0	9	Profound-Substantial	Substantial
188	0.9	T6	SV10A-Ballimanoe Lane & Cloonheed Lane	0.4	5	4	0	9	Profound-Substantial	Substantial
246	0.9	T5	SV10A-Ballimanoe Lane & Cloonheed Lane	0.1	8	6	0	14	Profound-Substantial	Profound-Substantial
285	0.8	T6	SV10A-Ballimanoe Lane & Cloonheed Lane	0.7	11	5	0	16	Profound-Substantial	Profound-Substantial
313	0.9	T6	SV10A-Ballimanoe	0.2	11	5	0	16	Profound-Substantial	Profound-Substantial

			Lane & Cloonheed Lane								
39	1.1	T7	SV11A&B-off Gortvally Road (2 images)	0.2	8	8	0	16	Profound-Substantial	Profound-Substantial
40	0.9	T6	SV11A&B-off Gortvally Road (2 images)	0.2	0	8	0	8	Slight/Imperceptible	Substantial
109	0.8	T6	SV11A&B-off Gortvally Road (2 images)	0.4	11	8	3	22	Profound-Substantial	Profound-Substantial
116	1.0	T7	SV11A&B-off Gortvally Road (2 images)	0.1	11	8	0	19	Profound-Substantial	Profound-Substantial
139	1.0	T6	SV11A&B-off Gortvally Road (2 images)	0.2	0	8	0	8	Slight/Imperceptible	Substantial-moderate
180	0.8	T10	SV11A&B-off Gortvally Road (2 images)	1.0	8	6	0	14	Profound-Substantial	Profound-Substantial
186	0.9	T6	SV11A&B-off Gortvally Road (2 images)	0.2	0	0	0	0	Slight/Imperceptible	Slight/Imperceptible
202	0.9	T6	SV11A&B-off Gortvally Road (2 images)	0.6	8	8	0	16	Profound-Substantial	Profound-Substantial
218	1.0	T6	SV11A&B-off Gortvally Road (2 images)	0.1	5	8	0	13	Profound-Substantial	Profound-Substantial
244	1.0	T10	SV11A&B-off Gortvally Road (2 images)	1.1	6	8	0	14	Substantial	Substantial
250	0.8	T6	SV11A&B-off Gortvally Road (2 images)	0.7	11	8	0	19	Profound-Substantial	Profound-Substantial
270	1.0	T6	SV11A&B-off Gortvally	0.1	0	8	0	8	Slight/Imperceptible	Substantial

			Road (2 images)							
289	0.7	T10	SV11A&B-off Gortvally Road (2 images)	0.7	11	0	0	11	Profound-Substantial	Profound-Substantial
294	0.8	T10	SV11A&B-off Gortvally Road (2 images)	0.8	11	0	0	11	Profound-Substantial	Profound-Substantial
297	1.2	T10	SV11A&B-off Gortvally Road (2 images)	0.5	8	8	0	16	Profound-Substantial	Profound-Substantial
311	0.8	T10	SV11A&B-off Gortvally Road (2 images)	0.8	8	8	0	16	Profound-Substantial	Profound-Substantial
312	1.0	T7	SV11A&B-off Gortvally Road (2 images)	0.1	11	8	0	19	Profound-Substantial	Profound-Substantial
16	1.7	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
26	0.8	T11	SV12 - off Galbally Road	0.7	7	4	0	11	Profound-Substantial	Profound-Substantial
28	1.8	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
29	1.4	T11	SV12 - off Galbally Road	0.2	7	4	0	11	Substantial	Substantial
41	1.3	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
46	1.5	T11	SV12 - off Galbally Road	0.1	7	4	0	11	Substantial	Substantial
47	0.9	T11	SV12 - off Galbally Road	1.3	7	4	0	11	Profound-Substantial	Profound-Substantial
51	1.7	T11	SV12 - off Galbally Road	1.0	7	4	0	11	Substantial	Substantial
54	1.5	T11	SV12 - off Galbally Road	0.0	7	4	0	11	Substantial	Substantial

63	1.4	T11	SV12 - off Galbally Road	1.3	7	4	0	11	Substantial	Substantial
66	1.3	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
75	1.6	T11	SV12 - off Galbally Road	0.1	7	4	0	11	Substantial	Substantial
84	1.2	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
98	0.8	T11	SV12 - off Galbally Road	0.8	7	4	0	11	Profound-Substantial	Profound-Substantial
102	1.8	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
103	1.7	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
104	1.4	T11	SV12 - off Galbally Road	0.1	7	4	0	11	Substantial	Substantial
107	1.9	T11	SV12 - off Galbally Road	0.6	7	4	0	11	Substantial	Substantial
110	1.3	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
111	1.4	T11	SV12 - off Galbally Road	0.0	7	4	0	11	Substantial	Substantial
117	1.4	T11	SV12 - off Galbally Road	0.1	7	4	0	11	Substantial	Substantial
119	1.3	T11	SV12 - off Galbally Road	0.2	7	4	0	11	Substantial	Substantial
120	1.6	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
131	1.9	T11	SV12 - off Galbally Road	0.5	7	4	0	11	Substantial	Substantial
132	1.3	T11	SV12 - off Galbally Road	0.9	7	4	0	11	Substantial	Substantial

133	1.6	T11	SV12 - off Galbally Road	1.4	7	4	0	11	Substantial	Substantial
134	1.9	T11	SV12 - off Galbally Road	0.5	7	4	0	11	Substantial	Substantial
135	1.5	T11	SV12 - off Galbally Road	1.5	7	4	0	11	Substantial	Substantial
138	1.6	T11	SV12 - off Galbally Road	1.5	7	4	0	11	Substantial	Substantial
144	1.4	T11	SV12 - off Galbally Road	0.1	7	4	0	11	Substantial	Substantial
151	0.8	T11	SV12 - off Galbally Road	1.1	7	4	0	11	Profound-Substantial	Profound-Substantial
153	1.3	T11	SV12 - off Galbally Road	0.2	7	4	0	11	Substantial	Substantial
163	1.6	T11	SV12 - off Galbally Road	0.2	7	4	0	11	Substantial	Substantial
164	1.3	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
166	1.4	T11	SV12 - off Galbally Road	1.1	7	4	0	11	Substantial	Substantial
185	1.3	T11	SV12 - off Galbally Road	0.2	7	4	0	11	Substantial	Substantial
194	1.3	T11	SV12 - off Galbally Road	0.7	7	4	0	11	Substantial	Substantial
196	2.2	T11	SV12 - off Galbally Road	1.0	7	4	0	11	Substantial-moderate	Substantial-moderate
200	1.3	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
203	1.3	T11	SV12 - off Galbally Road	0.8	7	4	0	11	Substantial	Substantial
204	1.5	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial

214	1.5	T11	SV12 - off Galbally Road	0.0	7	4	0	11	Substantial	Substantial
222	2.2	T11	SV12 - off Galbally Road	1.0	7	4	0	11	Substantial-moderate	Substantial-moderate
238	0.8	T11	SV12 - off Galbally Road	0.7	7	4	0	11	Profound-Substantial	Profound-Substantial
259	1.7	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
260	1.3	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
264	1.7	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
266	1.8	T11	SV12 - off Galbally Road	0.4	7	4	0	11	Substantial	Substantial
282	1.4	T11	SV12 - off Galbally Road	1.2	7	4	0	11	Substantial	Substantial
290	0.7	T11	SV12 - off Galbally Road	0.8	7	4	0	11	Profound-Substantial	Profound-Substantial
292	0.7	T11	SV12 - off Galbally Road	0.8	7	4	0	11	Profound-Substantial	Profound-Substantial
296	0.7	T11	SV12 - off Galbally Road	1.4	7	4	0	11	Profound-Substantial	Profound-Substantial
306	0.8	T11	SV12 - off Galbally Road	0.9	7	4	0	11	Profound-Substantial	Profound-Substantial
307	1.7	T11	SV12 - off Galbally Road	0.3	7	4	0	11	Substantial	Substantial
309	0.9	T11	SV12 - off Galbally Road	0.9	7	4	0	11	Profound-Substantial	Profound-Substantial
18	2.4	T11	SV13 - Junction of L8029 & R492	0.3	3	4	0	7	Moderate	Moderate
49	2.3	T11	SV13 - Junction of	0.1	3	4	0	7	Moderate	Moderate

			L8029 & R492							
72	1.9	T11	SV13 - Junction of L8029 & R492	0.3	3	4	0	7	Substantial-moderate	Substantial-moderate
96	2.0	T11	SV13 - Junction of L8029 & R492	0.2	3	4	0	7	Substantial-moderate	Substantial-moderate
114	2.4	T11	SV13 - Junction of L8029 & R492	0.2	3	4	0	7	Moderate	Moderate
130	2.2	T11	SV13 - Junction of L8029 & R492	0.3	3	4	0	7	Moderate	Moderate
168	2.1	T11	SV13 - Junction of L8029 & R492	0.5	3	4	0	7	Moderate	Moderate
169	1.8	T11	SV13 - Junction of L8029 & R492	0.4	3	4	0	7	Substantial-moderate	Substantial-moderate
199	1.9	T11	SV13 - Junction of L8029 & R492	0.3	3	4	0	7	Substantial-moderate	Substantial-moderate
211	2.3	T11	SV13 - Junction of L8029 & R492	0.3	3	4	0	7	Moderate	Moderate
230	1.9	T11	SV13 - Junction of L8029 & R492	0.4	3	4	0	7	Substantial-moderate	Substantial-moderate
245	2.3	T11	SV13 - Junction of L8029 & R492	0.2	3	4	0	7	Moderate	Moderate
257	2.3	T11	SV13 - Junction of L8029 & R492	1.0	3	4	0	7	Moderate	Moderate
273	2.3	T11	SV13 - Junction of	0.1	3	4	0	7	Moderate	Moderate

			L8029 & R492							
21	1.9	T1	SV15 - Tinnakilly off R492	0.6	6	8	3	17	Substantial	Profound-Substantial
23	2.1	T1	SV15 - Tinnakilly off R492	0.8	6	8	3	17	Substantial-moderate	Substantial
58	1.5	T1	SV15 - Tinnakilly off R492	0.8	6	8	3	17	Substantial	Profound-Substantial
59	2.5	T1	SV15 - Tinnakilly off R492	0.6	6	8	3	17	Substantial-moderate	Substantial
64	1.8	T1	SV15 - Tinnakilly off R492	0.7	6	8	3	17	Substantial	Profound-Substantial
172	2.5	T1	SV15 - Tinnakilly off R492	0.4	6	8	3	17	Substantial-moderate	Substantial
220	2.3	T1	SV15 - Tinnakilly off R492	0.1	6	8	3	17	Substantial-moderate	Substantial
224	2.1	T1	SV15 - Tinnakilly off R492	0.6	6	8	3	17	Substantial-moderate	Substantial
229	1.9	T1	SV15 - Tinnakilly off R492	0.4	6	8	3	17	Substantial	Profound-Substantial
231	2.2	T1	SV15 - Tinnakilly off R492	0.5	6	8	3	17	Substantial-moderate	Substantial
233	1.8	T1	SV15 - Tinnakilly off R492	0.6	6	8	3	17	Substantial	Profound-Substantial
248	1.5	T1	SV15 - Tinnakilly off R492	0.8	6	8	3	17	Substantial	Profound-Substantial
256	1.8	T1	SV15 - Tinnakilly off R492	0.7	6	8	3	17	Substantial	Profound-Substantial
315	2.3	T1	SV15 - Tinnakilly off R492	0.1	6	8	3	17	Substantial-moderate	Substantial
4	1.7	T1	SV16 - off N52 outside of Carrig Village	0.6	8	4	7	19	Profound-Substantial	Profound-Substantial

32	1.7	T1	SV16 - off N52 outside of Carrig Village	0.2	8	4	7	19	Profound-Substantial	Profound-Substantial
70	2.2	T1	SV16 - off N52 outside of Carrig Village	1.0	8	4	7	19	Substantial	Substantial
122	1.7	T1	SV16 - off N52 outside of Carrig Village	0.0	8	4	7	19	Profound-Substantial	Profound-Substantial
190	1.7	T1	SV16 - off N52 outside of Carrig Village	0.1	8	4	7	19	Profound-Substantial	Profound-Substantial
232	1.7	T1	SV16 - off N52 outside of Carrig Village	0.1	8	4	7	19	Profound-Substantial	Profound-Substantial
241	1.7	T1	SV16 - off N52 outside of Carrig Village	0.5	8	4	7	19	Profound-Substantial	Profound-Substantial
268	1.7	T1	SV16 - off N52 outside of Carrig Village	0.1	8	4	7	19	Profound-Substantial	Profound-Substantial
287	2.3	T1	SV16 - off N52 outside of Carrig Village	1.1	8	4	7	19	Substantial	Substantial
300	1.8	T1	SV16 - off N52 outside of Carrig Village	0.7	8	4	7	19	Profound-Substantial	Profound-Substantial
13	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	1.3	8	5	7	20	Substantial	Substantial
30	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.4	8	5	7	20	Substantial	Substantial
44	2.0	T1	SV17 -off N52 outside of Carrrig	0.1	8	5	7	20	Profound-Substantial	Profound-Substantial

			Village - Church							
50	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.3	8	5	7	20	Substantial	Substantial
52	2.2	T3	SV17 -off N52 outside of Carrrig Village - Church	1.5	8	5	7	20	Substantial	Substantial
55	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
56	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.2	8	5	7	20	Substantial	Substantial
78	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	1.3	8	5	7	20	Substantial	Substantial
86	2.4	T3	SV17 -off N52 outside of Carrrig Village - Church	0.9	8	5	7	20	Substantial	Substantial
88	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.2	8	5	7	20	Substantial	Substantial
97	2.3	T1	SV17 -off N52 outside of Carrrig Village - Church	0.6	8	5	7	20	Substantial	Substantial
112	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.2	8	5	7	20	Substantial	Substantial
113	2.0	T1	SV17 -off N52 outside of Carrrig	0.3	8	5	7	20	Substantial	Substantial

			Village - Church								
115	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Profound-Substantial	Profound-Substantial
142	2.4	T3	SV17 -off N52 outside of Carrrig Village - Church	1.8	8	5	7	20	Substantial	Substantial
145	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.3	8	5	7	20	Substantial	Substantial
155	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	1.1	8	5	7	20	Substantial	Substantial
165	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	1.2	8	5	7	20	Substantial	Substantial
171	1.8	T1	SV17 -off N52 outside of Carrrig Village - Church	0.4	8	5	7	20	Profound-Substantial	Profound-Substantial
174	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	0.8	8	5	7	20	Substantial	Substantial
175	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
181	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.3	8	5	7	20	Substantial	Substantial
184	1.8	T1	SV17 -off N52 outside of Carrrig	0.2	8	5	7	20	Profound-Substantial	Profound-Substantial

			Village - Church								
195	2.1	T3	SV17 -off N52 outside of Carrrig Village - Church	1.1	8	5	7	20	Substantial	Substantial
197	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
198	2.2	T3	SV17 -off N52 outside of Carrrig Village - Church	1.5	8	5	7	20	Substantial	Substantial
206	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
207	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.3	8	5	7	20	Substantial	Substantial
215	2.3	T1	SV17 -off N52 outside of Carrrig Village - Church	0.6	8	5	7	20	Substantial	Substantial
234	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
235	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
247	2.2	T3	SV17 -off N52 outside of Carrrig Village - Church	0.7	8	5	7	20	Substantial	Substantial
251	2.3	T3	SV17 -off N52 outside of Carrrig	1.5	8	5	7	20	Substantial	Substantial

			Village - Church							
276	2.1	T1	SV17 -off N52 outside of Carrrig Village - Church	0.2	8	5	7	20	Substantial	Substantial
291	2.0	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Substantial	Substantial
293	1.9	T1	SV17 -off N52 outside of Carrrig Village - Church	0.1	8	5	7	20	Profound-Substantial	Profound-Substantial
298	2.5	T1	SV17 -off N52 outside of Carrrig Village - Church	0.6	8	5	7	20	Substantial	Substantial
25	2.4	T1	SV19 - off Clonkelly Lane	0.1	7	5	4	16	Substantial-moderate	Substantial
27	2.3	T1	SV19 - off Clonkelly Lane	0.1	7	5	4	16	Substantial-moderate	Substantial
121	2.4	T1	SV19 - off Clonkelly Lane	0.1	7	5	4	16	Substantial-moderate	Substantial
147	2.4	T1	SV19 - off Clonkelly Lane	0.1	7	5	4	16	Substantial-moderate	Substantial
152	2.4	T1	SV19 - off Clonkelly Lane	0.7	7	5	4	16	Substantial-moderate	Substantial
177	2.0	T1	SV19 - off Clonkelly Lane	0.5	7	5	4	16	Substantial	Profound-Substantial
228	2.3	T1	SV19 - off Clonkelly Lane	0.0	7	5	4	16	Substantial-moderate	Substantial
252	2.2	T1	SV19 - off Clonkelly Lane	0.2	7	5	4	16	Substantial-moderate	Substantial
277	2.4	T1	SV19 - off Clonkelly Lane	0.5	7	5	4	16	Substantial-moderate	Substantial

283	2.1	T1	SV19 - off Clonkelly Lane	0.4	7	5	4	16	Substantial-moderate	Substantial
303	2.4	T1	SV19 - off Clonkelly Lane	0.1	7	5	4	16	Substantial-moderate	Substantial
42	1.4	T3	SV2 - off L1071 - Cronekill	0.7	9	8	5	22	Profound-Substantial	Profound-Substantial
43	1.0	T3	SV2 - off L1071 - Cronekill	0.4	9	8	5	22	Profound-Substantial	Profound-Substantial
83	0.8	T1	SV2 - off L1071 - Cronekill	0.3	9	8	5	22	Profound-Substantial	Profound-Substantial
90	1.3	T3	SV2 - off L1071 - Cronekill	1.1	9	8	5	22	Profound-Substantial	Profound-Substantial
95	0.9	T1	SV2 - off L1071 - Cronekill	0.4	9	8	5	22	Profound-Substantial	Profound-Substantial
141	1.0	T3	SV2 - off L1071 - Cronekill	0.4	9	8	5	22	Profound-Substantial	Profound-Substantial
146	1.0	T3	SV2 - off L1071 - Cronekill	0.4	9	8	5	22	Profound-Substantial	Profound-Substantial
150	1.5	T3	SV2 - off L1071 - Cronekill	1.2	9	8	5	22	Profound-Substantial	Profound-Substantial
167	1.8	T3	SV2 - off L1071 - Cronekill	1.3	9	8	5	22	Profound-Substantial	Profound-Substantial
170	1.5	T3	SV2 - off L1071 - Cronekill	1.2	9	8	5	22	Profound-Substantial	Profound-Substantial
192	1.1	T1	SV2 - off L1071 - Cronekill	0.1	9	8	5	22	Profound-Substantial	Profound-Substantial
193	2.2	T3	SV2 - off L1071 - Cronekill	1.8	9	8	5	22	Substantial	Substantial
201	1.8	T3	SV2 - off L1071 - Cronekill	1.3	9	8	5	22	Profound-Substantial	Profound-Substantial
210	1.6	T3	SV2 - off L1071 - Cronekill	1.3	9	8	5	22	Profound-Substantial	Profound-Substantial

236	1.6	T3	SV2 - off L1071 - Cronekill	0.6	9	8	5	22	Profound-Substantial	Profound-Substantial
253	0.9	T1	SV2 - off L1071 - Cronekill	0.5	9	8	5	22	Profound-Substantial	Profound-Substantial
258	1.6	T3	SV2 - off L1071 - Cronekill	0.6	9	8	5	22	Profound-Substantial	Profound-Substantial
267	1.6	T3	SV2 - off L1071 - Cronekill	1.2	9	8	5	22	Profound-Substantial	Profound-Substantial
275	1.4	T3	SV2 - off L1071 - Cronekill	1.2	9	8	5	22	Profound-Substantial	Profound-Substantial
6	1.9	T9	SV23 - close to Black Bull intersection	0.4	2	0	0	2	Moderate	Moderate
19	2.2	T9	SV23 - close to Black Bull intersection	0.0	11	8	0	19	Substantial	Substantial
20	2.2	T9	SV23 - close to Black Bull intersection	0.9	6	8	0	14	Substantial-moderate	Substantial-moderate
76	1.9	T9	SV23 - close to Black Bull intersection	0.3	2	0	0	2	Moderate	Moderate
85	2.0	T9	SV23 - close to Black Bull intersection	0.2	2	0	0	2	Moderate	Moderate
106	2.2	T9	SV23 - close to Black Bull intersection	0.2	2	0	0	2	Moderate	Moderate
118	2.2	T9	SV23 - close to Black Bull intersection	0.1	11	8	0	19	Substantial	Substantial
124	2.0	T9	SV23 - close to Black Bull intersection	0.3	2	0	0	2	Moderate	Moderate
148	2.3	T9	SV23 - close to Black Bull intersection	0.1	11	8	0	19	Substantial	Substantial
176	2.1	T9	SV23 - close to Black Bull intersection	0.1	11	8	0	19	Substantial	Substantial
179	2.2	T9	SV23 - close to Black Bull intersection	0.7	6	8	0	14	Substantial-moderate	Substantial-moderate

182	2.2	T9	SV23 - close to Black Bull intersection	0.9	6	8	0	14	Substantial-moderate	Substantial-moderate
212	1.9	T9	SV23 - close to Black Bull intersection	0.4	2	0	0	2	Moderate	Moderate
240	2.1	T9	SV23 - close to Black Bull intersection	0.5	6	8	0	14	Substantial-moderate	Substantial-moderate
301	2.0	T9	SV23 - close to Black Bull intersection	0.2	2	0	0	2	Moderate	Moderate
2	1.8	T1	SV3 - Ballegan Lane -next to shed	0.2	9	8	7	24	Profound-Substantial	Profound-Substantial
9	1.7	T1	SV3 - Ballegan Lane -next to shed	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
48	1.7	T1	SV3 - Ballegan Lane -next to shed	0.1	9	8	7	24	Profound-Substantial	Profound-Substantial
99	1.9	T1	SV3 - Ballegan Lane -next to shed	0.4	9	8	7	24	Profound-Substantial	Profound-Substantial
205	1.6	T1	SV3 - Ballegan Lane -next to shed	0.2	9	8	7	24	Profound-Substantial	Profound-Substantial
255	1.8	T1	SV3 - Ballegan Lane -next to shed	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
302	1.5	T1	SV3 - Ballegan Lane -next to shed	0.3	9	8	7	24	Profound-Substantial	Profound-Substantial
11	2.0	T8	SV4A- Rathbeg Lane - Upper	0.3	7	0	0	7	Substantial-moderate	Moderate
65	1.7	T8	SV4A- Rathbeg Lane - Upper	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial

79	1.9	T8	SV4A-Rathbeg Lane - Upper	0.1	7	0	0	7	Substantial	Substantial-moderate
108	1.8	T8	SV4A-Rathbeg Lane - Upper	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
159	2.0	T8	SV4A-Rathbeg Lane - Upper	0.2	7	0	0	7	Substantial-moderate	Moderate
191	1.7	T8	SV4A-Rathbeg Lane - Upper	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
208	2.2	T9	SV4A-Rathbeg Lane - Upper	0.5	7	0	0	7	Substantial-moderate	Moderate
304	1.7	T8	SV4A-Rathbeg Lane - Upper	0.2	11	8	7	26	Profound-Substantial	Profound-Substantial
128	1.5	T8	SV4B - Rathbeg Lane - Middle	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
143	1.5	T8	SV4B - Rathbeg Lane - Middle	0.0	11	8	7	26	Profound-Substantial	Profound-Substantial
173	1.5	T8	SV4B - Rathbeg Lane - Middle	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
249	1.6	T8	SV4B - Rathbeg Lane - Middle	0.3	11	8	7	26	Profound-Substantial	Profound-Substantial
288	1.6	T8	SV4B - Rathbeg Lane - Middle	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
73	1.1	T8	SV4C - Rathbeg Lane - Lower	0.2	11	8	7	26	Profound-Substantial	Profound-Substantial

91	1.2	T8	SV4C - Rathbeg Lane - Lower	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
162	1.4	T9	SV4C - Rathbeg Lane - Lower	0.7	11	8	7	26	Profound-Substantial	Profound-Substantial
15	1.7	T10	VP12 - Wingfield-Co Tipperary	1.3	7	8	0	15	Substantial	Substantial
33	2.1	T6	VP12 - Wingfield-Co Tipperary	0.4	11	8	0	19	Substantial	Substantial
69	1.9	T10	VP12 - Wingfield-Co Tipperary	0.7	11	8	0	19	Profound-Substantial	Profound-Substantial
74	1.7	T10	VP12 - Wingfield-Co Tipperary	1.5	0	8	0	8	Slight/Imperceptible	Substantial-moderate
126	2.3	T6	VP12 - Wingfield-Co Tipperary	0.2	11	8	0	19	Substantial	Substantial
127	2.0	T10	VP12 - Wingfield-Co Tipperary	0.6	11	8	0	19	Profound-Substantial	Profound-Substantial
129	2.0	T10	VP12 - Wingfield-Co Tipperary	0.5	11	8	0	19	Profound-Substantial	Profound-Substantial
187	2.5	T6	VP12 - Wingfield-Co Tipperary	0.2	0	0	0	0	Slight/Imperceptible	Slight/Imperceptible
217	1.7	T10	VP12 - Wingfield-Co Tipperary	1.2	0	8	0	8	Slight/Imperceptible	Substantial-moderate
263	2.0	T10	VP12 - Wingfield-Co Tipperary	0.6	11	8	0	19	Substantial	Substantial
278	1.8	T10	VP12 - Wingfield-Co Tipperary	1.0	0	5	0	5	Slight/Imperceptible	Substantial-moderate
286	1.7	T10	VP12 - Wingfield-Co Tipperary	1.2	0	8	0	8	Slight/Imperceptible	Substantial-moderate
299	2.4	T6	VP12 - Wingfield-Co Tipperary	0.1	0	0	0	0	Slight/Imperceptible	Slight/Imperceptible
81	2.2	T6	VP14-Loughkeen	0.4	0	0	0	0	Slight/Imperceptible	Slight/Imperceptible

100	1.8	T6	VP14-Loughkeen	0.7	0	3	0	3	Slight/Imperceptible	Moderate
271	1.2	T3	VP15 - Eamon Ryan's House	0.0	11	0	0	11	Profound-Substantial	Substantial
5	0.7	T3	VP16 - Eoin Doorley Home	0.2	5	3	7	15	Profound-Substantial	Profound-Substantial
8	1.1	T3	VP16 - Eoin Doorley Home	0.6	5	3	0	8	Substantial	Substantial-moderate
31	1.2	T3	VP16 - Eoin Doorley Home	0.9	5	3	0	8	Substantial	Substantial-moderate
35	1.7	T3	VP16 - Eoin Doorley Home	1.1	0	3	7	10	Slight/Imperceptible	Substantial
60	2.1	T3	VP16 - Eoin Doorley Home	1.2	0	8	7	15	Slight/Imperceptible	Substantial-moderate
67	1.2	T3	VP16 - Eoin Doorley Home	1.0	4	1	7	12	Substantial-moderate	Substantial
68	1.1	T3	VP16 - Eoin Doorley Home	0.6	5	3	0	8	Substantial	Substantial-moderate
71	2.1	T3	VP16 - Eoin Doorley Home	1.2	0	8	7	15	Slight/Imperceptible	Substantial-moderate
77	1.4	T3	VP16 - Eoin Doorley Home	0.9	0	7	7	14	Slight/Imperceptible	Substantial
80	1.0	T3	VP16 - Eoin Doorley Home	0.6	5	3	0	8	Substantial	Substantial-moderate
87	0.8	T3	VP16 - Eoin Doorley Home	0.2	4	0	0	4	Substantial	Substantial-moderate
89	1.0	T3	VP16 - Eoin Doorley Home	0.2	11	3	7	21	Profound-Substantial	Profound-Substantial
92	2.4	T3	VP16 - Eoin Doorley Home	2.0	9	3	7	19	Substantial	Substantial
93	1.5	T3	VP16 - Eoin Doorley Home	0.8	0	3	0	3	Slight/Imperceptible	Moderate

94	2.4	T3	VP16 - Eoin Doorley Home	2.0	9	3	7	19	Substantial	Substantial
101	0.9	T3	VP16 - Eoin Doorley Home	0.0	5	3	0	8	Profound-Substantial	Substantial
156	1.1	T3	VP16 - Eoin Doorley Home	0.5	6	3	0	9	Substantial	Substantial-moderate
209	2.1	T3	VP16 - Eoin Doorley Home	1.3	0	8	7	15	Slight/Imperceptible	Substantial-moderate
221	0.9	T3	VP16 - Eoin Doorley Home	0.2	5	0	0	5	Profound-Substantial	Substantial
223	2.4	T3	VP16 - Eoin Doorley Home	2.0	9	3	7	19	Substantial	Substantial
237	1.7	T3	VP16 - Eoin Doorley Home	0.9	0	0	0	0	Slight/Imperceptible	Slight/Imperceptible
242	2.4	T3	VP16 - Eoin Doorley Home	2.0	9	3	7	19	Substantial	Substantial
269	1.2	T3	VP16 - Eoin Doorley Home	1.0	11	0	7	18	Profound-Substantial	Profound-Substantial
274	1.2	T3	VP16 - Eoin Doorley Home	1.0	11	3	7	21	Profound-Substantial	Profound-Substantial
280	1.0	T3	VP16 - Eoin Doorley Home	0.2	11	0	0	11	Profound-Substantial	Profound-Substantial
281	1.8	T3	VP16 - Eoin Doorley Home	1.0	0	8	7	15	Slight/Imperceptible	Substantial
1	2.5	T9	VP17 - Kilcolman Hill	0.4	11	8	7	26	Substantial	Substantial
3	2.4	T9	VP17 - Kilcolman Hill	0.3	11	8	7	26	Substantial	Substantial
7	2.4	T9	VP17 - Kilcolman Hill	0.6	11	8	7	26	Substantial	Substantial
12	2.5	T9	VP17 - Kilcolman Hill	0.5	11	8	0	19	Substantial	Substantial

62	2.5	T9	VP17 - Kilcolman Hill	0.4	11	8	0	19	Substantial	Substantial
82	2.4	T9	VP17 - Kilcolman Hill	0.6	11	8	0	19	Substantial	Substantial
125	2.4	T9	VP17 - Kilcolman Hill	0.4	11	8	0	19	Substantial	Substantial
154	2.4	T9	VP17 - Kilcolman Hill	0.3	11	8	0	19	Substantial	Substantial
158	2.4	T9	VP17 - Kilcolman Hill	0.3	11	8	0	19	Substantial	Substantial
161	2.4	T9	VP17 - Kilcolman Hill	0.4	11	8	0	19	Substantial	Substantial
262	2.5	T9	VP17 - Kilcolman Hill	0.5	11	8	0	19	Substantial	Substantial
265	2.3	T9	VP17 - Kilcolman Hill	0.6	11	8	0	19	Substantial	Substantial
17	1.0	T11	VP18 - Pat Mann- field	0.3	11	8	7	26	Profound-Substantial	Profound-Substantial
22	2.3	T11	VP18 - Pat Mann- field	1.5	6	8	0	14	Substantial-moderate	Substantial-moderate
34	1.2	T9	VP18 - Pat Mann- field	0.2	11	8	7	26	Profound-Substantial	Profound-Substantial
36	1.8	T11	VP18 - Pat Mann- field	1.2	6	8	0	14	Substantial	Substantial
37	1.1	T9	VP18 - Pat Mann- field	0.0	11	8	7	26	Profound-Substantial	Profound-Substantial
45	1.9	T11	VP18 - Pat Mann- field	1.4	6	8	0	14	Substantial	Substantial
105	1.4	T9	VP18 - Pat Mann- field	0.6	11	8	7	26	Profound-Substantial	Profound-Substantial
160	0.7	T9	VP18 - Pat Mann- field	0.3	11	8	7	26	Profound-Substantial	Profound-Substantial
178	1.1	T9	VP18 - Pat Mann- field	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
189	2.3	T11	VP18 - Pat Mann- field	1.5	6	8	0	14	Substantial-moderate	Substantial-moderate
213	2.4	T11	VP18 - Pat Mann- field	1.5	6	8	0	14	Substantial-moderate	Substantial-moderate
216	0.9	T11	VP18 - Pat Mann- field	0.4	11	8	7	26	Profound-Substantial	Profound-Substantial

226	1.7	T9	VP18 - Pat Mann- field	0.8	11	8	7	26	Profound-Substantial	Profound-Substantial
227	2.2	T11	VP18 - Pat Mann- field	1.4	6	8	0	14	Substantial-moderate	Substantial-moderate
254	1.1	T9	VP18 - Pat Mann- field	0.1	11	8	7	26	Profound-Substantial	Profound-Substantial
261	1.0	T11	VP18 - Pat Mann- field	0.2	11	8	7	26	Profound-Substantial	Profound-Substantial
272	1.2	T9	VP18 - Pat Mann- field	0.2	11	8	7	26	Profound-Substantial	Profound-Substantial
295	1.0	T11	VP18 - Pat Mann- field	0.4	11	8	7	26	Profound-Substantial	Profound-Substantial

APPENDIX 9-1: Gurteen Sunshine Fraction — Independent Verification

9-1.1 Purpose

Part A of this submission contends that the Expected (Realistic) shadow flicker values in the applicant's Table 16-1 are built on a sunshine fraction derived from **Birr 1981–2010** data — a station 18 km from the site whose 30-year normal has a mid-period of 1995 — while the nearest available Met Éireann station, **Gurteen (station 1475)**, located 4.5 km west of the site, was never used, cited, or acknowledged.

This appendix sets out the independent verification of the claim that Gurteen records **27.5% more annual sunshine** than the Birr figure entered into the WindPRO model. The calculation was performed directly from Met Éireann's published daily radiation data for Gurteen (file dly1475_daily.xltx) using the standard Angström–Prescott conversion method. This method is the international standard, FAO-endorsed approach for deriving sunshine duration and global solar radiation from daily measurements, ensuring the Gurteen and Birr figures are compared on a consistent, scientifically defensible basis.

9-1.2 Source Data

9-1.2.1 Gurteen Daily Radiation File

Parameter	Value
Station name	**Gurteen**
Station number	1475
Location	Latitude 53.035°N, Longitude 8.009°W, elevation 75 m
Distance from site	4.5 km west of the Ballincor turbine cluster
File downloaded	data.met.ie — Daily Data, station 1475 (dly1475_daily.xltx)
Radiation column	glorad — Global Radiation (J/cm²)
Record start	8 February 2008
Total daily records	6,650 (to 30 April 2026)
Years used	17 complete calendar years: 2009–2025 (2008 and 2026 excluded as incomplete)

9-1.2.2 Birr Comparator

The Birr comparator values are taken directly from the WindPRO model header, identical across all three scenario appendices submitted with the EIAR:

"Sunshine probability S (Average daily sunshine hours) [BIRR] Jan 1.57 — Feb 2.08 — Mar 2.82 — Apr 4.36 — May 5.20 — Jun 4.37 — Jul 4.15 — Aug 3.90 — Sep 3.54 — Oct 2.68 — Nov 1.94 — Dec 1.23"

These values match the published Met Éireann climatological normals for Birr, 1981–2010, to two decimal places in every month. Multiplied by the days in each month, they sum to **1,152.6 sunshine hours per year**.

9-1.3 Conversion Method

9-1.3.1 The Angström–Prescott Formula

Global radiation is converted to estimated sunshine hours using the Angström–Prescott formula as specified in the FAO-56 Penman–Monteith reference evapotranspiration methodology (Allen et al., 1998). This is the standard conversion used by Met Éireann and by meteorological agencies internationally:

$$n / N = (Rs / Ra - a) / b$$

Symbol	Value	Definition
n	—	Actual sunshine hours per day (the output)
N	—	Maximum possible daylight hours (calculated from latitude and day of year)
Rs	—	Measured global radiation (MJ/m²/day). Met Éireann glorad is in J/cm²; converted by multiplying by 0.01
Ra	—	Extraterrestrial radiation (MJ/m²/day) — calculated from latitude and day of year using FAO-56 equations
a	0.25	Angström regression coefficient (FAO-56 default for Ireland)
b	0.50	Angström regression coefficient (FAO-56 default for Ireland)

9-1.3.2 Calculation Steps Applied to Each Day

For each of the 6,650 daily records:

Step 1 Convert units: Multiply glorad (J/cm²) × 0.01 to obtain Rs in MJ/m²/day.

Step 2 Calculate Ra: Apply FAO-56 equations using Gurteen latitude (53.035°N) and the Julian day number to derive extraterrestrial radiation Ra (MJ/m²/day).

Step 3 Calculate N: Derive maximum daylight hours N from the sunset hour angle, itself a function of latitude and day of year.

Step 4 Apply formula: Compute n/N = (Rs/Ra − 0.25) / 0.50. Values below 0 are set to 0; values above 1 are capped at 1 (physically bounded).

Step 5 Derive n: Multiply n/N by N to obtain actual estimated sunshine hours for that day.

Step 6 Aggregate: Sum daily values to monthly totals; sum monthly totals to annual totals for each complete calendar year.

Step 7 Average: Calculate the mean annual total across the 17 complete years 2009–2025.

9-1.4. Results

Table 4.1 sets out the estimated annual sunshine hours for each complete year derived from the Gurteen radiation record.

Table 4.1 Annual Sunshine Totals, Gurteen 2009–2025

Year	Annual Sunshine (hrs)	vs 17-yr Mean	Description
2009	1338	**-132 hrs**	Dull
2010	1510	**+41 hrs**	Sunny
2011	1297	**-173 hrs**	Very dull
2012	1212	**-258 hrs**	Very dull
2013	1493	**+24 hrs**	Near average
2014	1440	**-30 hrs**	Near average
2015	1461	**-9 hrs**	Near average
2016	1372	**-98 hrs**	Dull
2017	1314	**-156 hrs**	Dull
2018	1570	**+100 hrs**	Sunny
2019	1513	**+44 hrs**	Sunny
2020	1519	**+49 hrs**	Sunny
2021	1589	**+119 hrs**	Sunny
2022	**1718**	**+248 hrs**	Exceptionally sunny
2023	1529	**+60 hrs**	Sunny
2024	1403	**-67 hrs**	Near average
2025	**1708**	**+239 hrs**	Exceptionally sunny
Mean	**1469.7**	—	17 complete years

Table 4.1. Annual estimated sunshine hours, Gurteen station 1475, 2009–2025. Green deviation = above mean; red = below mean.

Table 4.2 compares the Gurteen monthly averages (2009–2025) against the Birr 1981–2010 monthly values that were entered into the WindPRO model.

Table 4.2 Monthly Comparison: Gurteen vs Birr

Month	Gurteen Avg 2009–2025 (hrs)	Birr 1981–2010 (hrs)	Difference (hrs)	Difference (%)
January	57.5	48.7	**+8.8**	**+18.0%**
February	73.2	58.2	**+15.0**	**+25.7%**
March	129.8	87.4	**+42.4**	**+48.5%**
April	174.3	130.8	**+43.5**	**+33.2%**
May	202.5	161.2	**+41.3**	**+25.6%**
June	179.5	131.1	**+48.4**	**+37.0%**
July	159.4	128.7	**+30.7**	**+23.9%**
August	150.2	120.9	**+29.3**	**+24.3%**
September	128.7	106.2	**+22.5**	**+21.2%**
October	98.0	83.1	**+14.9**	**+18.0%**
November	70.6	58.2	**+12.4**	**+21.3%**
December	46.0	38.1	**+7.9**	**+20.8%**
Annual total	**1469.7**	**1152.6**	**+317.1**	**+27.5%**

Table 4.2. Monthly comparison: Gurteen estimated sunshine hours (17-year mean, 2009–2025) versus Birr 1981–2010 normals as used in WindPRO. Gurteen exceeds Birr in every month without exception.

9-1.4.1 Summary Findings

Gurteen station 1475 — 17-year mean annual sunshine (2009–2025)

```
Gurteen (Angström-Prescott):   1,469.7 hrs/year
Birr 1981-2010 (WindPRO input):   1,152.6 hrs/year
Difference:                       +317.1 hrs/year  (+27.5%)
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This figure is derived from 17 complete years of Met Éireann daily radiation data for Gurteen (2009–2025) using the standard Ångström–Prescott conversion method. The full working is set out in Sections 3 and 4 above.

9-1.5 Interpretation

Because the relationship between sunshine fraction and Expected shadow hours is directly linear in WindPRO, applying Gurteen data in place of Birr data would increase the Expected value at every receptor by approximately 27.5 %. This proportional uplift is applied consistently across all receptors and does not depend on any assumption specific to any individual property.

The Gurteen figure is higher than Birr in every single month. The largest gaps occur in spring (March +48.5 %, April +33.2 %, June +37.0 %), which are months with significant shadow flicker exposure. The winter months, where shadow flicker is most intense, show a more moderate but consistent surplus of +18 % to +22 %.

It should be noted that the Gurteen sunshine figure is an estimated value derived via the Angström–Prescott conversion, because Gurteen operates a pyranometer (radiation sensor) rather than a Campbell–Stokes sunshine recorder. The Birr figure is a directly measured sunshine duration. Both are standard and accepted inputs to shadow flicker modelling. The conversion method is the one Met Éireann itself uses; the FAO-56 coefficients (a = 0.25, b = 0.50) are the published standard for Irish conditions; and 17 years of data comfortably exceeds the WMO minimum of 10 years required for a reliable climatological normal.

9-1. 6. References

Allen, R.G., Pereira, L.S., Raes, D. & Smith, M. (1998). Crop evapotranspiration — Guidelines for computing crop water requirements. FAO Irrigation and Drainage Paper 56. Food and Agriculture Organisation of the United Nations, Rome.

Angström, A. (1924). Solar and terrestrial radiation. Quarterly Journal of the Royal Meteorological Society, 50, 121–126.

Met Éireann. Daily Climatological Data, Gurteen Station No. 1475. Downloaded from data.met.ie. File: dly1475_daily.xltx.

World Meteorological Organisation (2017). Guidelines on the Calculation of Climate Normals. WMO-No. 1203. Geneva.

Appendix 9-2 : TECHNICAL SHADOW FLICKER APPENDIX

Compound Flicker and Elevation Geometry — Case Study Verification

Ballincor Wind Farm Shadow Flicker Submission

9-2.1. Purpose and Methodology

This Technical Appendix sets out the geometric analysis underlying the case studies in Section 9 of the main submission, together with supporting analysis of Receptor 296. It provides the full calculations for each property: distances to turbines, blade bottom elevations, elevation geometry, bearing calculations, and compound flicker window derivations. Every figure is cross-checked against the applicant's own submitted data.

All receptor coordinates and ground elevations are taken from the Shadow receptor-Input table in WindPRO Appendix 16-1. All turbine base elevations are taken from the WTG-Input table in the same appendix. The blade bottom clearance of 17 metres above turbine base is derived from the tip height (180m) and rotor diameter (163m) stated in EIAR Chapter 16 §16.2.4 for Scenario 1 (N163). All distances and bearings are calculated from the ITM coordinates using standard trigonometry (Euclidean distance and arctangent bearing). No external data source is used anywhere in this appendix.

METHODOLOGY SUMMARY
Distance between two points: $d = \sqrt{((E_2-E_1)^2 + (N_2-N_1)^2)}$ where E,N are ITM Easting and Northing
Bearing from receptor to turbine: θ = arctan2((E_turbine − E_receptor), (N_turbine − N_receptor)) mod 360°
Absolute blade bottom elevation: turbine base (m OD) + 17m
Observer eye level: receptor ground elevation Z (m OD) + 2m
Angle from eye to blade bottom: arctan((blade_bottom − eye_level) / distance) — negative means blade bottom is below the horizon
Compound window duration: bearing separation (°) ÷ 0.25°/minute solar azimuth rate
Shadow arc: bearings 0–130° and 230–360° (±130° of north) per IWEA Best Practice Guidelines
Study boundary: 1,630m (applicant's stated boundary, Chapter 16 Section 16.2.3)

B. Receptor 285 — Full Technical Profile

B.1 Receptor Identification

Parameter	Value	Source
Receptor number	285	Appendix 16-1, Shadow receptor-Input table
ITM Easting	602,872	Appendix 16-1
ITM Northing	697,545	Appendix 16-1
Ground elevation (Z)	70.3m OD	Appendix 16-1
Observer eye level (Z + 2m)	72.3m OD	Standard convention

B.2 Shadow Flicker Results

Metric	Value	Source	Appears in Chapter 16?
Worst case annual	80h 45min	Appendix 16-1 / Table 16-1	Yes
Maximum daily (worst case)	49 minutes	Appendix 16-1 / Table 16-1	Yes
Total shadow days per year	146 days	Appendix 16-1 only	NO
Days exceeding 30min/day	94 days	Table 16-1	Yes
Expected annual (contested)	14h 26min	Table 16-1	Yes

B.3 Turbines Within 1,630m Study Boundary

Turbine	Distance	Turbine base (m OD)	Blade bottom (m OD)	Eye vs blade bottom	Angle to blade bottom	Bearing from receptor
T06	812m	62.4	79.4	−7.1m BELOW	+0.50° (above horizon)	64.9°
T05	1,098m	50.6	67.6	+4.7m ABOVE	−0.25° (below horizon)	38.7°
T07	1,109m	52.2	69.2	+3.1m ABOVE	−0.16° (below horizon)	85.9°
T04	1,576m	48.3	65.3	+7.0m ABOVE	−0.25° (below horizon)	21.7°
T08	1,627m	48.9	65.9	+6.4m ABOVE	−0.23° (below horizon)	87.0°

Turbines outside 1,630m boundary (excluded from analysis): T03 at 1,690m, T09 at 1,974m, T10 at 1,959m, T02 at 2,081m, T11 at 2,412m, T01 at 2,775m.

Eye above blade bottom: 4 of 5 turbines within the study boundary. T06 is the exception — it has the highest base on the entire site at 62.4m OD, placing its blade bottom at 79.4m OD, 7.1m above the observer's eye level. For the remaining four turbines (T04, T05, T07, T08) the observer's eye level is between 3.1m and 7.0m above the blade bottom.

The angle to the blade bottom of T05, T07, T04 and T08 is between −0.16° and −0.25° — fractionally below the horizontal. Shadow flicker from these four turbines arrives when the sun is low, producing the most intense, longest and most penetrating shadows.

B.4 Compound Flicker Analysis

All five turbines within the study boundary lie within the shadow arc (0–130° and 230–360° of north). Bearing separations between adjacent turbines:

Turbine pair	Bearing separation	Compound overlap window	Both turbines above eye level?
T07 / T08	1.1°	~4 minutes	Yes — T07 +3.1m, T08 +6.4m
T05 / T06	26.2°	~105 minutes	Partial — T05 above, T06 below

The T07/T08 pair at 1.1° separation is the tightest turbine pair as seen from any receptor anywhere on the Ballincor site. This is the operative compound figure for Receptor 285. The wider bearing separations between other turbine pairs at this receptor produce sequential rather than genuinely simultaneous compound exposure and are not included in this table. During the 4-minute compound window, blade shadows from T07 and T08 arrive alternately at close to double the single-turbine frequency. Both turbines are ones whose blade bottoms are below the observer's eye level.

C. Receptor 296 — Full Technical Profile

C.1 Receptor Identification

Parameter	Value	Source
Receptor number	296	Appendix 16-1, Shadow receptor-Input table
ITM Easting	604,236	Appendix 16-1
ITM Northing	695,925	Appendix 16-1
Ground elevation (Z)	64.3m OD	Appendix 16-1
Observer eye level (Z + 2m)	66.3m OD	Standard convention

C.2 Shadow Flicker Results

Metric	Value	Source	Appears in Chapter 16?
Worst case annual	77h 21min	Appendix 16-1 / Table 16-1	Yes
Maximum daily (worst case)	55 minutes	Appendix 16-1 / Table 16-1	Yes
Total shadow days per year	109 days	Appendix 16-1 only	NO
Days exceeding 30min/day	90 days	Table 16-1	Yes
Expected annual (contested)	13h 49min	Table 16-1	Yes

C.3 Turbines Within 1,630m Study Boundary

Turbine	Distance	Turbine base (m OD)	Blade bottom (m OD)	Eye vs blade bottom	Angle to blade bottom	Bearing from receptor
T11	730m	48.9	65.9	+0.4m ABOVE	−0.03° (effectively horizontal)	64.9°

Turbine	Distance	Turbine base (m OD)	Blade bottom (m OD)	Eye vs blade bottom	Angle to blade bottom	Bearing from receptor
T10	762m	46.9	63.9	+2.4m ABOVE	−0.18° (below horizon)	27.5°
T09	1,457m	47.5	64.5	+1.8m ABOVE	−0.07° (below horizon)	23.8°

Turbines outside 1,630m boundary (excluded from analysis): T07 at 1,718m, T08 at 1,725m, T06 at 2,062m, and all remaining turbines beyond that.

Eye above blade bottom: 3 of 3 turbines — all three turbines within the study boundary have blade bottoms below the observer's eye level. The critical case is T11 at 730 metres: its blade bottom of 65.9m OD is just 0.4 metres below the observer's eye level of 66.3m OD. The angle from the observer's eye to T11's blade bottom is −0.03° — effectively zero degrees, meaning the blade bottom is at the horizon. Shadow flicker from T11 arrives when the sun is low in the sky, when the flicker is at its most intense.

C.4 Compound Flicker Analysis

All three turbines within the study boundary lie within the shadow arc. Bearing separations:

Turbine pair	Bearing separation	Compound overlap window	Both above eye level?
T09 / T10	3.7°	~15 minutes	Yes — T09 +1.8m, T10 +2.4m
T10 / T11	37.4°	~150 minutes	Yes — T10 +2.4m, T11 +0.4m

The T09/T10 compound window of 15 minutes occurs on every suitable shadow day. Both turbines appear below the observer's horizon. The compound episode arrives when the sun is low — the conditions under which the flicker is most intense. The T10/T11 separation of 37.4° produces a much longer theoretical compound window but at separations of this size the practical simultaneous overlap is less concentrated.

D. Receptor 261 — Full Technical Profile

D.1 Receptor Identification

Parameter	Value	Source
Receptor number	261	Appendix 16-1, Shadow receptor-Input table
ITM Easting	605,768	Appendix 16-1
ITM Northing	696,807	Appendix 16-1
Ground elevation (Z)	67.3m OD	Appendix 16-1
Observer eye level (Z + 2m)	69.3m OD	Standard convention

D.2 Shadow Flicker Results

Metric	Value	Source	Appears in Chapter 16?
Worst case annual	75h 40min	Appendix 16-1 / Table 16-1	Yes
Maximum daily (worst case)	42 minutes	Appendix 16-1 / Table 16-1	Yes
Total shadow days per year	185 days	Appendix 16-1 only	NO — highest of any case study
Days exceeding 30min/day	65 days	Table 16-1	Yes
Expected annual (contested)	12h 07min	Table 16-1	Yes

D.3 Turbines Within 1,630m Study Boundary

Turbine	Distance	Turbine base (m OD)	Blade bottom (m OD)	Eye vs blade bottom	Angle to blade bottom	Bearing from receptor
T11	1,043m	48.9	65.9	+3.4m ABOVE	−0.19° (below horizon)	236.7°
T09	1,045m	47.5	64.5	+4.8m ABOVE	−0.26° (below horizon)	295.6°
T10	1,198m	46.9	63.9	+5.4m ABOVE	−0.26° (below horizon)	260.1°
T08	1,514m	48.9	65.9	+3.4m ABOVE	−0.13° (below horizon)	302.9°

Turbines outside 1,630m boundary: T07 at 1,968m and all remaining turbines beyond that.

Eye above blade bottom: 4 of 4 turbines — every turbine within the study boundary has its blade bottom below the observer's eye level. The margins range from 3.4 metres (T08, T11) to 5.4 metres (T10). All four turbines appear below the observer's horizon. For all four, shadow flicker arrives when the sun is low in the sky, producing the most intense and most penetrating shadows.

Note on bearings: All four turbines lie to the west and south-west of this receptor (bearings 236–303°). All fall within the valid shadow arc (230–360° of north). For all four turbines the blade bottom sits below the observer's eye level, so shadow flicker onset occurs when the sun is low in the sky, when the flicker is most intense.

D.4 Compound Flicker Analysis

Turbine pair	Bearing separation	Compound overlap window	Both above eye level?
T09 / T08	7.4°	~29 minutes	Yes — T09 +4.8m, T08 +3.4m
T11 / T10	23.4°	~94 minutes	Yes — T11 +3.4m, T10 +5.4m
T10 / T09	35.5°	~142 minutes	Yes — both above

The T09/T08 compound window of 29 minutes is the most significant for this property. It occurs on every suitable shadow day and arrives when the sun is low and the flicker is most intense. Both turbines are well above the observer's eye level in terms of elevation geometry.

E. Data Sources and Verification Statement

Every figure in this Technical Appendix has been independently calculated and cross-checked. The following table identifies the source of each data type:

Data type	Source document	Location in document
Receptor ITM coordinates (E, N)	WindPRO Appendix 16-1	Shadow receptor-Input table
Receptor ground elevations (Z)	WindPRO Appendix 16-1	Shadow receptor-Input table, column Z
Turbine base elevations	WindPRO Appendix 16-1	WTG-Input table
Blade bottom clearance (17m)	EIAR Chapter 16	Section 16.2.4, Scenario 1 N163
Shadow flicker results	WindPRO Appendix 16-1 and Table 16-1	Chapter 16, pages 16-13 to 16-18
Total shadow days column	WindPRO Appendix 16-1 only	Shadow calculation results table
Study boundary (1,630m)	EIAR Chapter 16	Section 16.2.3
Shadow arc (±130° of north)	IWEA Best Practice Guidelines (2012)	Cited by applicant in Chapter 16
Solar azimuth rate (0.25°/min)	Standard astronomical value at Irish latitudes	Used in all shadow flicker assessments

All distances are calculated as Euclidean distance from ITM coordinates: $d = \sqrt{((E_2-E_1)^2 + (N_2-N_1)^2)}$. All bearings are calculated as: $\theta = \arctan2((E_t - E_r), (N_t - N_r)) \bmod 360°$. Angles to blade bottom are calculated as: arctan((blade_bottom − eye_level) / distance) with negative values indicating the blade bottom is below the observer's horizon.

No figure in this appendix or in the main submission requires external data, expert opinion, or site measurement. Every calculation follows from coordinates and elevations published in the applicant's own Appendix 16-1.

Appendix 9-3 — Unassessed Sensitive Receptors and References

This appendix supports Section 4 of the main submission. All receptor numbers and distances are derived from the applicant's own Appendix 5-1 (ITM coordinates). All turbine positions are from WindPRO Appendix 16-1. Distances calculated using the Haversine formula from ITM coordinates, verified against the applicant's own distance data.

The applicant's stated study boundary is 1,630 metres (10 × N163 rotor diameter). The following categories of sensitive receptor were not assessed.

Part 1 — Receptors at Exactly 1,630m: Not Assessed, Not Explained

Two sensitive receptors sit at precisely the stated boundary distance. Neither appears in Table 16-1. The EIAR provides no explanation for their exclusion. Properties at the exact limit of the stated study area were omitted without acknowledgement.

Receptor	Nearest Turbine	Distance	Status
R258	T3	1630m	AT boundary — not assessed
R288	T8	1630m	AT boundary — not assessed

Part 2 — Receptors Beyond the 1,630m Boundary: Never Assessed

The following 56 sensitive receptors lie between 1,630m and 1,905m. All appear in the applicant's own Appendix 5-1 dataset. None appear in Table 16-1. The applicant's own WindPRO software calculated shadow flicker to distances exceeding 1,630m in every scenario — establishing that these properties were within the software's own calculation range.

Note on Receptor 217: This receptor appears on the applicant's own Figure 16-1 shadow flicker map but was never modelled. Its distance of 1,658m places it within the N163 calculation range of 1,789m. See Section 6.6 of the main submission.

Receptor	Nearest Turbine	Distance	Scenario Gap
R163	T11	1632m	N163 gap (>1,630m–1,789m)
R217	T10	1658m	N163 gap (>1,630m–1,789m) — Appears on applicant's Figure 16-1 but never modelled — see Section 6.6
R307	T11	1662m	N163 gap (>1,630m–1,789m)
R4	T1	1663m	N163 gap (>1,630m–1,789m)
R15	T10	1663m	N163 gap (>1,630m–1,789m)
R191	T8	1672m	N163 gap (>1,630m–1,789m)
R122	T1	1677m	N163 gap (>1,630m–1,789m)
R9	T1	1678m	N163 gap (>1,630m–1,789m)
R16	T11	1678m	N163 gap (>1,630m–1,789m)
R286	T10	1688m	N163 gap (>1,630m–1,789m)

R237	T3	1693m	N163 gap (>1,630m–1,789m)
R74	T10	1697m	N163 gap (>1,630m–1,789m)
R264	T11	1706m	N163 gap (>1,630m–1,789m)
R268	T1	1706m	N163 gap (>1,630m–1,789m)
R51	T11	1713m	N163 gap (>1,630m–1,789m)
R241	T1	1721m	N163 gap (>1,630m–1,789m)
R232	T1	1725m	N163 gap (>1,630m–1,789m)
R304	T8	1726m	N163 gap (>1,630m–1,789m)
R190	T1	1730m	N163 gap (>1,630m–1,789m)
R32	T1	1731m	N163 gap (>1,630m–1,789m)
R103	T11	1734m	N163 gap (>1,630m–1,789m)
R259	T11	1734m	N163 gap (>1,630m–1,789m)
R35	T3	1736m	N163 gap (>1,630m–1,789m)
R226	T9	1736m	N163 gap (>1,630m–1,789m)
R65	T8	1742m	N163 gap (>1,630m–1,789m)
R48	T1	1748m	N163 gap (>1,630m–1,789m)
R171	T1	1752m	N163 gap (>1,630m–1,789m)
R64	T1	1753m	N163 gap (>1,630m–1,789m)
R300	T1	1767m	N163 gap (>1,630m–1,789m)
R36	T11	1768m	N163 gap (>1,630m–1,789m)
R169	T11	1770m	N163 gap (>1,630m–1,789m)
R2	T1	1772m	N163 gap (>1,630m–1,789m)
R102	T11	1774m	N163 gap (>1,630m–1,789m)
R201	T3	1776m	N163 gap (>1,630m–1,789m)
R256	T1	1788m	N163 gap (>1,630m–1,789m)
R266	T11	1789m	N163 gap (>1,630m–1,789m)
R167	T3	1798m	N149 additional (>1,789m–1,823m)
R100	T6	1802m	N149 additional (>1,789m–1,823m)
R278	T10	1814m	N149 additional (>1,789m–1,823m)
R255	T1	1815m	N149 additional (>1,789m–1,823m)
R28	T11	1818m	N149 additional (>1,789m–1,823m)
R233	T1	1821m	N149 additional (>1,789m–1,823m)
R184	T1	1828m	V150 additional (>1,823m–1,905m)
R108	T8	1836m	V150 additional (>1,823m–1,905m)

R281	T3	1838m	V150 additional (>1,823m–1,905m)
R230	T11	1850m	V150 additional (>1,823m–1,905m)
R134	T11	1855m	V150 additional (>1,823m–1,905m)
R99	T1	1860m	V150 additional (>1,823m–1,905m)
R69	T10	1864m	V150 additional (>1,823m–1,905m)
R131	T11	1865m	V150 additional (>1,823m–1,905m)
R21	T1	1866m	V150 additional (>1,823m–1,905m)
R229	T1	1866m	V150 additional (>1,823m–1,905m)
R107	T11	1892m	V150 additional (>1,823m–1,905m)
R45	T11	1900m	V150 additional (>1,823m–1,905m)
R212	T9	1900m	V150 additional (>1,823m–1,905m)
R6	T9	1901m	V150 additional (>1,823m–1,905m)

All distances calculated using Haversine formula from ITM coordinates in Appendix 5-1 (receptors) and WindPRO Appendix 16-1 (turbines). Scenario boundaries: N163 = 1,789m; N149 = 1,823m; V150 = 1,905m. Source: applicant's own submitted documents.

Summary

Category	Count
At exactly 1,630m — not assessed	2
N163 gap (>1,630m–1,789m)	36
N149 additional (>1,789m–1,823m)	6
V150 additional (>1,823m–1,905m)	14
Total beyond stated boundary	56
Total unassessed (including boundary)	58

APPENDIX C.2 — REFERENCES

References are listed alphabetically. References relating solely to health impacts (migraine, epilepsy, tinnitus research) are contained in the separate Health Chapter submission.

- An Coimisiún Pleanála — Inspector's Report, Case 317227-23 (recommendation on cumulative shadow flicker assessment between neighbouring operators).
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- EIA Directive 2014/52/EU amending Directive 2011/92/EU.
- Harding, G., Harding, P. & Wilkins, A. (2008). Wind turbines, flicker, and photosensitive epilepsy: Characterising the flicker stimulus, associated risk, and its potential mitigation. Epilepsy and Behavior, 13(3), 1–6.
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- Linden, S. & Fouquet, R. (2011). Shadow flicker threshold derivation: Origins and adequacy across European jurisdictions. Energy Policy.
- Met Éireann. Climatological Normals for Birr Station, 1981–2010. www.met.ie
- Met Éireann. Daily Global Radiation Data, Gurteen Station, 2008–2026.
- Midland Tribune / Offaly Express (November 2023). 'Cloghan residents say local Wind Farm is affecting their physical and mental health.' [Operator statement: shadow flicker control system 'currently operating as per the planning condition.']
- Offaly Express (January 2026). 'Environmental protection group welcomes Offaly County Council's stance on Wind Farm problems.' [Cross-party Council motion forwarding all complaints to HSE.]
- Offaly Express (May 2025). 'Huge number of complaints made against Offaly Wind Farms.' [270 complaints released under FOI.]
- Offaly Express (November 2025). 'Offaly Wind Farm is not compliant with its planning conditions, claims CEPA.'
- Planning and Development Act 2000 (as amended).
- UK Department of Energy and Climate Change (DECC) (2011). Understanding and Addressing the Impact of Wind Turbine Shadow Flicker — Technical Guidance. London: DECC.
- Voicescu, S.A. et al. (2016). Shadow flicker annoyance, daily peak exposure, and health outcomes near wind farms.
- Wind Energy Development Guidelines. Department of Housing, Planning and Local Government, Ireland (2006).
- Wind Energy Development Guidelines, Draft Revised (December 2019), Sections 5.8 and 7.16. Department of Housing, Planning and Local Government, Ireland.
- World Meteorological Organisation (WMO). Guidelines on the Calculation of Climate Normals (WMO-No. 1203). Geneva.

This submission is presented in good faith on behalf of affected residents and forms part of a broader group submission to An Coimisiún Pleanála. The residents reserve the right to submit further technical evidence should the applicant provide supplementary material in response.

Appendix 9-4 – Receptor Elevation Geometry

Receptors whose observer eye level lies at or above turbine blade bottom elevation

A. Purpose

This Appendix identifies every assessed sensitive receptor whose observer eye level sits at or above the bottom of the rotor swept area (the blade bottom) of the nearest turbine within the applicant's stated study boundary. Where the eye level is at or above the blade bottom, the lowest portion of the rotor — and therefore the onset of shadow flicker — occurs at or below the observer's horizon. Shadow flicker at these properties arrives when the sun is low in the sky — the conditions that produce the longest, most horizontal and most penetrating shadows, and the most intense flicker.

Every figure in this Appendix is derived solely from the applicant's own submitted data. Receptor coordinates and ground elevations are taken from the Shadow receptor-Input table in WindPRO Appendix 16-1. Turbine base elevations are taken from the WTG-Input table in the same appendix. No external data source is used.

B. Methodology

Blade bottom clearance: 17 m above turbine base, derived from the tip height (180m) and rotor diameter (163m) stated in EIAR Chapter 16 §16.2.4 for Scenario 1 (N163).

Absolute blade bottom elevation: turbine base (m OD) + 17 m.

Observer eye level: receptor ground elevation Z (m OD) + 2 m (the eye height applied in the applicant's own WindPRO receptor input).

Distance: Euclidean distance from ITM coordinates, $d = \sqrt{((E_2-E_1)^2 + (N_2-N_1)^2)}$.

Study boundary: 1,630 m (10 rotor diameters of the N163), the applicant's stated boundary, Chapter 16 Section 16.2.3.

Test applied: for each receptor, the nearest turbine within 1,630 m is identified; the receptor is flagged where eye level ≥ blade bottom elevation (margin ≥ 0).

C. Summary of Findings

Category	Count
Total receptors in Appendix 16-1 Shadow receptor-Input table	129
Receptors with eye level AT OR ABOVE nearest turbine blade bottom	**65**
Receptors with eye level below nearest turbine blade bottom	64

Of the **129** sensitive receptors in the applicant's own shadow flicker model input table, **65** have an observer eye level at or above the blade bottom of the nearest turbine within the 1,630 m study boundary. At each of these **65** properties the onset of shadow flicker occurs at or near the observer's horizon — when the sun is low and the resulting flicker is at its most intense.

D. Receptors At or Above Blade Bottom (65 receptors)

The 65 receptors below are highlighted in the final column. Margin is eye level minus blade bottom; a positive value means the eye is above the blade bottom.

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
14	62.0	64.0	T01	1061	62.8	+1.2 ABOVE
29	74.3	76.3	T11	1353	65.9	+10.4 ABOVE
31	59.9	61.9	T03	1164	59.5	+2.4 ABOVE
34	68.5	70.5	T09	1228	64.5	+6.0 ABOVE
37	72.9	74.9	T09	1095	64.5	+10.4 ABOVE
39	75.0	77.0	T07	1059	69.2	+7.8 ABOVE
41	74.9	76.9	T11	1327	65.9	+11.0 ABOVE
46	72.1	74.1	T11	1499	65.9	+8.2 ABOVE
47	66.6	68.6	T11	870	65.9	+2.7 ABOVE
54	73.8	75.8	T11	1453	65.9	+9.9 ABOVE
57	64.3	66.3	T01	851	62.8	+3.5 ABOVE
63	88.1	90.1	T11	1427	65.9	+24.2 ABOVE
66	75.1	77.1	T11	1316	65.9	+11.2 ABOVE
75	72.9	74.9	T11	1572	65.9	+9.0 ABOVE
77	59.2	61.2	T03	1420	59.5	+1.7 ABOVE
87	63.7	65.7	T03	844	59.5	+6.2 ABOVE
89	71.5	73.5	T03	1026	59.5	+14.0 ABOVE
93	70.7	72.7	T03	1500	59.5	+13.2 ABOVE
101	59.9	61.9	T03	857	59.5	+2.4 ABOVE
104	74.2	76.2	T11	1411	65.9	+10.3 ABOVE
105	71.8	73.8	T09	1414	64.5	+9.3 ABOVE
110	74.9	76.9	T11	1295	65.9	+11.0 ABOVE
111	74.1	76.1	T11	1423	65.9	+10.2 ABOVE
116	76.9	78.9	T07	960	69.2	+9.7 ABOVE
117	73.4	75.4	T11	1370	65.9	+9.5 ABOVE
119	74.0	76.0	T11	1333	65.9	+10.1 ABOVE
120	76.0	78.0	T11	1562	65.9	+12.1 ABOVE
132	77.5	79.5	T11	1324	65.9	+13.6 ABOVE
133	82.1	84.1	T11	1597	65.9	+18.2 ABOVE
135	90.4	92.4	T11	1451	65.9	+26.5 ABOVE
136	61.0	63.0	T03	980	59.5	+3.5 ABOVE
138	78.8	80.8	T11	1591	65.9	+14.9 ABOVE
143	81.4	83.4	T08	1494	65.9	+17.5 ABOVE
144	73.6	75.6	T11	1386	65.9	+9.7 ABOVE
151	64.8	66.8	T11	848	65.9	+0.9 ABOVE
153	73.9	75.9	T11	1290	65.9	+10.0 ABOVE
160	65.1	67.1	T09	744	64.5	+2.6 ABOVE

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
162	82.0	84.0	T09	1386	64.5	**+19.5 ABOVE**
164	74.9	76.9	T11	1284	65.9	**+11.0 ABOVE**
166	86.6	88.6	T11	1442	65.9	**+22.7 ABOVE**
173	81.0	83.0	T08	1473	65.9	**+17.1 ABOVE**
178	73.4	75.4	T09	1085	64.5	**+10.9 ABOVE**
180	67.5	69.5	T10	846	63.9	**+5.6 ABOVE**
185	75.0	77.0	T11	1282	65.9	**+11.1 ABOVE**
194	73.6	75.6	T11	1324	65.9	**+9.7 ABOVE**
200	75.0	77.0	T11	1265	65.9	**+11.1 ABOVE**
203	72.2	74.2	T11	1262	65.9	**+8.3 ABOVE**
204	76.2	78.2	T11	1502	65.9	**+12.3 ABOVE**
221	64.3	66.3	T03	866	59.5	**+6.8 ABOVE**
244	72.9	74.9	T10	1036	63.9	**+11.0 ABOVE**
249	83.1	85.1	T08	1624	65.9	**+19.2 ABOVE**
254	72.0	74.0	T09	1130	64.5	**+9.5 ABOVE**
260	74.2	76.2	T11	1268	65.9	**+10.3 ABOVE**
261	67.3	69.3	T11	1043	65.9	**+3.4 ABOVE**
271	72.5	74.5	T03	1225	59.5	**+15.0 ABOVE**
272	68.5	70.5	T09	1214	64.5	**+6.0 ABOVE**
280	66.8	68.8	T03	963	59.5	**+9.3 ABOVE**
282	86.0	88.0	T11	1425	65.9	**+22.1 ABOVE**
289	64.6	66.6	T10	733	63.9	**+2.7 ABOVE**
292	66.3	68.3	T11	729	65.9	**+2.4 ABOVE**
294	69.7	71.7	T10	789	63.9	**+7.8 ABOVE**
296	64.3	66.3	T11	730	65.9	**+0.4 ABOVE**
297	75.0	77.0	T10	1157	63.9	**+13.1 ABOVE**
312	76.9	78.9	T07	958	69.2	**+9.7 ABOVE**
314	61.2	63.2	T01	1028	62.8	**+0.4 ABOVE**

E. Complete Receptor Schedule (all 129 receptors)

The full schedule below lists every receptor in the applicant's input table in numerical order. Receptors at or above blade bottom are highlighted in the final column.

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
5	55.9	57.9	T03	739	59.5	-1.6 below
8	52.8	54.8	T03	1083	59.5	-4.7 below
10	54.9	56.9	T04	563	65.3	-8.4 below
14	62.0	64.0	T01	1061	62.8	**+1.2 ABOVE**
17	63.6	65.6	T11	1001	65.9	-0.3 below
24	56.4	58.4	T01	888	62.8	-4.4 below
26	56.0	58.0	T11	820	65.9	-7.9 below
29	74.3	76.3	T11	1353	65.9	**+10.4 ABOVE**
31	59.9	61.9	T03	1164	59.5	**+2.4 ABOVE**
34	68.5	70.5	T09	1228	64.5	**+6.0 ABOVE**
37	72.9	74.9	T09	1095	64.5	**+10.4 ABOVE**
38	55.0	57.0	T01	1299	62.8	-5.8 below
39	75.0	77.0	T07	1059	69.2	**+7.8 ABOVE**
41	74.9	76.9	T11	1327	65.9	**+11.0 ABOVE**
42	49.0	51.0	T03	1373	59.5	-8.5 below
43	50.7	52.7	T03	997	59.5	-6.8 below
46	72.1	74.1	T11	1499	65.9	**+8.2 ABOVE**
47	66.6	68.6	T11	870	65.9	**+2.7 ABOVE**
53	72.0	74.0	T06	854	79.4	-5.4 below
54	73.8	75.8	T11	1453	65.9	**+9.9 ABOVE**
57	64.3	66.3	T01	851	62.8	**+3.5 ABOVE**
58	45.5	47.5	T01	1501	62.8	-15.3 below
61	56.9	58.9	T01	1246	62.8	-3.9 below
63	88.1	90.1	T11	1427	65.9	**+24.2 ABOVE**
66	75.1	77.1	T11	1316	65.9	**+11.2 ABOVE**
67	57.2	59.2	T03	1221	59.5	-0.3 below
68	54.3	56.3	T03	1071	59.5	-3.2 below
73	49.1	51.1	T08	1116	65.9	-14.8 below
75	72.9	74.9	T11	1572	65.9	**+9.0 ABOVE**
77	59.2	61.2	T03	1420	59.5	**+1.7 ABOVE**
80	53.6	55.6	T03	1025	59.5	-3.9 below
83	47.7	49.7	T01	757	62.8	-13.1 below

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
84	63.6	65.6	T11	1186	65.9	-0.3 below
87	63.7	65.7	T03	844	59.5	**+6.2 ABOVE**
89	71.5	73.5	T03	1026	59.5	**+14.0 ABOVE**
90	48.1	50.1	T03	1336	59.5	-9.4 below
91	56.4	58.4	T08	1194	65.9	-7.5 below
93	70.7	72.7	T03	1500	59.5	**+13.2 ABOVE**
95	55.7	57.7	T01	882	62.8	-5.1 below
98	52.8	54.8	T11	782	65.9	-11.1 below
101	59.9	61.9	T03	857	59.5	**+2.4 ABOVE**
104	74.2	76.2	T11	1411	65.9	**+10.3 ABOVE**
105	71.8	73.8	T09	1414	64.5	**+9.3 ABOVE**
109	73.5	75.5	T06	754	79.4	-3.9 below
110	74.9	76.9	T11	1295	65.9	**+11.0 ABOVE**
111	74.1	76.1	T11	1423	65.9	**+10.2 ABOVE**
116	76.9	78.9	T07	960	69.2	**+9.7 ABOVE**
117	73.4	75.4	T11	1370	65.9	**+9.5 ABOVE**
119	74.0	76.0	T11	1333	65.9	**+10.1 ABOVE**
120	76.0	78.0	T11	1562	65.9	**+12.1 ABOVE**
123	54.1	56.1	T01	1225	62.8	-6.7 below
132	77.5	79.5	T11	1324	65.9	**+13.6 ABOVE**
133	82.1	84.1	T11	1597	65.9	**+18.2 ABOVE**
135	90.4	92.4	T11	1451	65.9	**+26.5 ABOVE**
136	61.0	63.0	T03	980	59.5	**+3.5 ABOVE**
137	60.6	62.6	T01	1068	62.8	-0.2 below
138	78.8	80.8	T11	1591	65.9	**+14.9 ABOVE**
139	76.8	78.8	T06	1011	79.4	-0.6 below
140	65.2	67.2	T06	864	79.4	-12.2 below
141	51.6	53.6	T03	1002	59.5	-5.9 below
143	81.4	83.4	T08	1494	65.9	**+17.5 ABOVE**
144	73.6	75.6	T11	1386	65.9	**+9.7 ABOVE**
146	49.0	51.0	T03	993	59.5	-8.5 below
149	58.0	60.0	T01	1039	62.8	-2.8 below
150	49.9	51.9	T03	1503	59.5	-7.6 below
151	64.8	66.8	T11	848	65.9	**+0.9 ABOVE**
153	73.9	75.9	T11	1290	65.9	**+10.0 ABOVE**
156	56.0	58.0	T03	1050	59.5	-1.5 below
157	55.4	57.4	T01	1344	62.8	-5.4 below

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
160	65.1	67.1	T09	744	64.5	**+2.6 ABOVE**
162	82.0	84.0	T09	1386	64.5	**+19.5 ABOVE**
164	74.9	76.9	T11	1284	65.9	**+11.0 ABOVE**
166	86.6	88.6	T11	1442	65.9	**+22.7 ABOVE**
170	49.7	51.7	T03	1537	59.5	-7.8 below
173	81.0	83.0	T08	1473	65.9	**+17.1 ABOVE**
178	73.4	75.4	T09	1085	64.5	**+10.9 ABOVE**
180	67.5	69.5	T10	846	63.9	**+5.6 ABOVE**
183	57.5	59.5	T01	1101	62.8	-3.3 below
185	75.0	77.0	T11	1282	65.9	**+11.1 ABOVE**
186	76.0	78.0	T06	945	79.4	-1.4 below
188	63.2	65.2	T06	882	79.4	-14.2 below
192	47.0	49.0	T01	1060	62.8	-13.8 below
194	73.6	75.6	T11	1324	65.9	**+9.7 ABOVE**
200	75.0	77.0	T11	1265	65.9	**+11.1 ABOVE**
202	72.1	74.1	T06	867	79.4	-5.3 below
203	72.2	74.2	T11	1262	65.9	**+8.3 ABOVE**
204	76.2	78.2	T11	1502	65.9	**+12.3 ABOVE**
205	48.9	50.9	T01	1594	62.8	-11.9 below
210	50.3	52.3	T03	1613	59.5	-7.2 below
216	59.0	61.0	T11	941	65.9	-4.9 below
218	75.2	77.2	T06	981	79.4	-2.2 below
219	56.5	58.5	T01	931	62.8	-4.3 below
221	64.3	66.3	T03	866	59.5	**+6.8 ABOVE**
225	53.2	55.2	T01	799	62.8	-7.6 below
236	49.0	51.0	T03	1599	59.5	-8.5 below
238	55.4	57.4	T11	802	65.9	-8.5 below
239	55.0	57.0	T01	1321	62.8	-5.8 below
243	58.4	60.4	T01	953	62.8	-2.4 below
244	72.9	74.9	T10	1036	63.9	**+11.0 ABOVE**
246	55.3	57.3	T05	862	67.6	-10.3 below
248	46.0	48.0	T01	1480	62.8	-14.8 below
249	83.1	85.1	T08	1624	65.9	**+19.2 ABOVE**
250	71.3	73.3	T06	845	79.4	-6.1 below
253	59.9	61.9	T01	869	62.8	-0.9 below
254	72.0	74.0	T09	1130	64.5	**+9.5 ABOVE**
260	74.2	76.2	T11	1268	65.9	**+10.3 ABOVE**

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
261	67.3	69.3	T11	1043	65.9	**+3.4 ABOVE**
267	49.4	51.4	T03	1571	59.5	-8.1 below
269	54.4	56.4	T03	1187	59.5	-3.1 below
270	75.9	77.9	T06	960	79.4	-1.5 below
271	72.5	74.5	T03	1225	59.5	**+15.0 ABOVE**
272	68.5	70.5	T09	1214	64.5	**+6.0 ABOVE**
274	49.0	51.0	T03	1177	59.5	-8.5 below
275	50.8	52.8	T03	1430	59.5	-6.7 below
279	59.6	61.6	T01	1112	62.8	-1.2 below
280	66.8	68.8	T03	963	59.5	**+9.3 ABOVE**
282	86.0	88.0	T11	1425	65.9	**+22.1 ABOVE**
284	55.0	57.0	T01	895	62.8	-5.8 below
285	70.3	72.3	T06	812	79.4	-7.1 below
289	64.6	66.6	T10	733	63.9	**+2.7 ABOVE**
292	66.3	68.3	T11	729	65.9	**+2.4 ABOVE**
294	69.7	71.7	T10	789	63.9	**+7.8 ABOVE**
295	61.3	63.3	T11	971	65.9	-2.6 below
296	64.3	66.3	T11	730	65.9	**+0.4 ABOVE**
297	75.0	77.0	T10	1157	63.9	**+13.1 ABOVE**
302	48.6	50.6	T01	1535	62.8	-12.2 below
306	51.6	53.6	T11	756	65.9	-12.3 below
312	76.9	78.9	T07	958	69.2	**+9.7 ABOVE**
314	61.2	63.2	T01	1028	62.8	**+0.4 ABOVE**

F. Data Sources

Receptor ITM coordinates and ground elevations (Z): WindPRO Appendix 16-1, Shadow receptor-Input table.

Turbine base elevations (Z): WindPRO Appendix 16-1, WTG-Input table.

Blade bottom clearance (17 m): EIAR Chapter 16, Scenario 1 (N163).

Study boundary (1,630 m): EIAR Chapter 16, Section 16.2.3.

Directors
C. O'Neill (Chairman)
J. Hannelly
D.J. Histon
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E. Husbands
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E. McEvoy
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The Association of Irish Racecourses

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Chief Executive: Paul Hensey.

To:
An Coimisiún Pleanála
64 Marlborough Street
Dublin 1
D01 V902

Our reference no: 25-99DVL01

RE: Proposed Windfarm development of 7 Turbines, 110kV substation and associated works within the townlands of Leitrim, Lumville, Ballinla, Clarkeville, Ballyfore Big, Ballyfore Little, Ballyeakin and Ballykilleen, in (Coolestown By) Co. Offaly

An Coimisiún Pleanála - Case reference: PAX19.323579

Dear Sir/Madam,

The Association of Irish Racecourses (AIR) is the representative body for the 26 racecourses operating across the island of Ireland. We write to express our strong concern regarding the proposed Ballinla Wind Farm development and its potential implications for the wider horse racing and breeding industries — sectors which are of exceptional cultural, economic, and social importance to rural Ireland.

Horseracing in Ireland is not only a deeply rooted part of our national heritage and rural identity, but it is also an area in which this country excels on the global stage. The industry employs over 30,000 people, both directly and indirectly, and attracts more than 1.25 million attendees to racecourses annually. These events and venues provide a vital platform to showcase the success of Irish-bred horses, trainers, jockeys, and stable staff, reinforcing Ireland's international reputation for excellence in equine sports and breeding.

The continued viability of racecourses and the wider equine sector is intrinsically dependent on the health, wellbeing, and performance of horses. Any development that has the potential to affect animal welfare, breeding outcomes, or the environmental stability of equine lands must therefore be approached with utmost caution.

The proposed Ballinla Wind Farm lies in an area associated with pedigree and performance breeding, where horses of significant value are reared and trained. Internationally, concerns have been raised about the potential impacts of wind turbine noise, low-frequency vibration, and flicker on animal behaviour and stress levels. Given Ireland's position as a world leader in thoroughbred production, such risks merit strong consideration to refusal of this proposed development.

We also wish to highlight the current decline in Ireland's foal crop, a matter of growing concern across the industry. Protecting the breeding environment, herd health, and genetic potential of the Irish thoroughbred is critical to ensuring the long-term sustainability of this sector. Any disruption to animal health or behaviour arising from industrial-scale wind energy developments in key breeding regions could have a serious knock-on effect on the entire horse racing and bloodstock ecosystem.

In light of these factors, the Association of Irish Racecourses respectfully requests that the planning authority give full and careful consideration to the potential implications of the Ballinla Wind Farm for Ireland's equine industry.

We believe that safeguarding the welfare of horses, the integrity of rural landscapes, and the sustainability of Ireland's global reputation in horseracing should be a primary consideration.

Yours sincerely,

Sent by Email and therefore bears no signature.

Conor O'Neill
Chairman
Association of Irish Racecourses (AIR)

APPENDIX C.2 — REFERENCES

References are listed alphabetically. References relating solely to health impacts (migraine, epilepsy, tinnitus research) are contained in the separate Health Chapter submission.

- An Coimisiún Pleanála — Inspector's Report, Case 317227-23 (recommendation on cumulative shadow flicker assessment between neighbouring operators).
- Ångström, A. (1924). Solar and terrestrial radiation. Quarterly Journal of the Royal Meteorological Society, 50, 121–126. [Basis for Ångström-Prescott formula used to convert global radiation to sunshine hours.]
- Court of Justice of the European Union — Case C-50/09, Commission v Ireland.
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- EIA Directive 2014/52/EU amending Directive 2011/92/EU.
- Harding, G., Harding, P. & Wilkins, A. (2008). Wind turbines, flicker, and photosensitive epilepsy: Characterising the flicker stimulus, associated risk, and its potential mitigation. Epilepsy and Behavior, 13(3), 1–6.
- LAI Hinweis Optische Immissionen (2002, revised 2012). Technischer Hinweis zur Bestimmung und Beurteilung der optischen Immissionen von Windkraftanlagen. Germany.
- Linden, S. & Fouquet, R. (2011). Shadow flicker threshold derivation: Origins and adequacy across European jurisdictions. Energy Policy.
- Met Éireann. Climatological Normals for Birr Station, 1981–2010. www.met.ie
- Met Éireann. Daily Global Radiation Data, Gurteen Station, 2008–2026.
- Midland Tribune / Offaly Express (November 2023). 'Cloghan residents say local Wind Farm is affecting their physical and mental health.' [Operator statement: shadow flicker control system 'currently operating as per the planning condition.']
- Offaly Express (January 2026). 'Environmental protection group welcomes Offaly County Council's stance on Wind Farm problems.' [Cross-party Council motion forwarding all complaints to HSE.]
- Offaly Express (May 2025). 'Huge number of complaints made against Offaly Wind Farms.' [270 complaints released under FOI.]
- Offaly Express (November 2025). 'Offaly Wind Farm is not compliant with its planning conditions, claims CEPA.'
- Planning and Development Act 2000 (as amended).
- UK Department of Energy and Climate Change (DECC) (2011). Understanding and Addressing the Impact of Wind Turbine Shadow Flicker — Technical Guidance. London: DECC.
- Voicescu, S.A. et al. (2016). Shadow flicker annoyance, daily peak exposure, and health outcomes near wind farms.
- Wind Energy Development Guidelines. Department of Housing, Planning and Local Government, Ireland (2006).
- Wind Energy Development Guidelines, Draft Revised (December 2019), Sections 5.8 and 7.16. Department of Housing, Planning and Local Government, Ireland.
- World Meteorological Organisation (WMO). Guidelines on the Calculation of Climate Normals (WMO-No. 1203). Geneva.

This submission is presented in good faith on behalf of affected residents and forms part of a broader group submission to An Coimisiún Pleanála. The residents reserve the right to submit further technical evidence should the applicant provide supplementary material in response.

Appendix 9-4 – Receptor Elevation Geometry

Receptors whose observer eye level lies at or above turbine blade bottom elevation

A. Purpose

This Appendix identifies every assessed sensitive receptor whose observer eye level sits at or above the bottom of the rotor swept area (the blade bottom) of the nearest turbine within the applicant's stated study boundary. Where the eye level is at or above the blade bottom, the lowest portion of the rotor — and therefore the onset of shadow flicker — occurs at or below the observer's horizon. Shadow flicker at these properties arrives when the sun is low in the sky — the conditions that produce the longest, most horizontal and most penetrating shadows, and the most intense flicker.

Every figure in this Appendix is derived solely from the applicant's own submitted data. Receptor coordinates and ground elevations are taken from the Shadow receptor-Input table in WindPRO Appendix 16-1. Turbine base elevations are taken from the WTG-Input table in the same appendix. No external data source is used.

B. Methodology

Blade bottom clearance: 17 m above turbine base, derived from the tip height (180m) and rotor diameter (163m) stated in EIAR Chapter 16 §16.2.4 for Scenario 1 (N163).

Absolute blade bottom elevation: turbine base (m OD) + 17 m.

Observer eye level: receptor ground elevation Z (m OD) + 2 m (the eye height applied in the applicant's own WindPRO receptor input).

Distance: Euclidean distance from ITM coordinates, $d = \sqrt{((E_2-E_1)^2 + (N_2-N_1)^2)}$.

Study boundary: 1,630 m (10 rotor diameters of the N163), the applicant's stated boundary, Chapter 16 Section 16.2.3.

Test applied: for each receptor, the nearest turbine within 1,630 m is identified; the receptor is flagged where eye level ≥ blade bottom elevation (margin ≥ 0).

C. Summary of Findings

Category	Count
Total receptors in Appendix 16-1 Shadow receptor-Input table	129
Receptors with eye level AT OR ABOVE nearest turbine blade bottom	**65**
Receptors with eye level below nearest turbine blade bottom	64

Of the **129** sensitive receptors in the applicant's own shadow flicker model input table, **65** have an observer eye level at or above the blade bottom of the nearest turbine within the 1,630 m study boundary. At each of these **65** properties the onset of shadow flicker occurs at or near the observer's horizon — when the sun is low and the resulting flicker is at its most intense.

D. Receptors At or Above Blade Bottom (65 receptors)

The 65 receptors below are highlighted in the final column. Margin is eye level minus blade bottom; a positive value means the eye is above the blade bottom.

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
14	62.0	64.0	T01	1061	62.8	+1.2 ABOVE
29	74.3	76.3	T11	1353	65.9	+10.4 ABOVE
31	59.9	61.9	T03	1164	59.5	+2.4 ABOVE
34	68.5	70.5	T09	1228	64.5	+6.0 ABOVE
37	72.9	74.9	T09	1095	64.5	+10.4 ABOVE
39	75.0	77.0	T07	1059	69.2	+7.8 ABOVE
41	74.9	76.9	T11	1327	65.9	+11.0 ABOVE
46	72.1	74.1	T11	1499	65.9	+8.2 ABOVE
47	66.6	68.6	T11	870	65.9	+2.7 ABOVE
54	73.8	75.8	T11	1453	65.9	+9.9 ABOVE
57	64.3	66.3	T01	851	62.8	+3.5 ABOVE
63	88.1	90.1	T11	1427	65.9	+24.2 ABOVE
66	75.1	77.1	T11	1316	65.9	+11.2 ABOVE
75	72.9	74.9	T11	1572	65.9	+9.0 ABOVE
77	59.2	61.2	T03	1420	59.5	+1.7 ABOVE
87	63.7	65.7	T03	844	59.5	+6.2 ABOVE
89	71.5	73.5	T03	1026	59.5	+14.0 ABOVE
93	70.7	72.7	T03	1500	59.5	+13.2 ABOVE
101	59.9	61.9	T03	857	59.5	+2.4 ABOVE
104	74.2	76.2	T11	1411	65.9	+10.3 ABOVE
105	71.8	73.8	T09	1414	64.5	+9.3 ABOVE
110	74.9	76.9	T11	1295	65.9	+11.0 ABOVE
111	74.1	76.1	T11	1423	65.9	+10.2 ABOVE
116	76.9	78.9	T07	960	69.2	+9.7 ABOVE
117	73.4	75.4	T11	1370	65.9	+9.5 ABOVE
119	74.0	76.0	T11	1333	65.9	+10.1 ABOVE
120	76.0	78.0	T11	1562	65.9	+12.1 ABOVE
132	77.5	79.5	T11	1324	65.9	+13.6 ABOVE
133	82.1	84.1	T11	1597	65.9	+18.2 ABOVE
135	90.4	92.4	T11	1451	65.9	+26.5 ABOVE
136	61.0	63.0	T03	980	59.5	+3.5 ABOVE
138	78.8	80.8	T11	1591	65.9	+14.9 ABOVE
143	81.4	83.4	T08	1494	65.9	+17.5 ABOVE
144	73.6	75.6	T11	1386	65.9	+9.7 ABOVE
151	64.8	66.8	T11	848	65.9	+0.9 ABOVE
153	73.9	75.9	T11	1290	65.9	+10.0 ABOVE
160	65.1	67.1	T09	744	64.5	+2.6 ABOVE

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
162	82.0	84.0	T09	1386	64.5	**+19.5 ABOVE**
164	74.9	76.9	T11	1284	65.9	**+11.0 ABOVE**
166	86.6	88.6	T11	1442	65.9	**+22.7 ABOVE**
173	81.0	83.0	T08	1473	65.9	**+17.1 ABOVE**
178	73.4	75.4	T09	1085	64.5	**+10.9 ABOVE**
180	67.5	69.5	T10	846	63.9	**+5.6 ABOVE**
185	75.0	77.0	T11	1282	65.9	**+11.1 ABOVE**
194	73.6	75.6	T11	1324	65.9	**+9.7 ABOVE**
200	75.0	77.0	T11	1265	65.9	**+11.1 ABOVE**
203	72.2	74.2	T11	1262	65.9	**+8.3 ABOVE**
204	76.2	78.2	T11	1502	65.9	**+12.3 ABOVE**
221	64.3	66.3	T03	866	59.5	**+6.8 ABOVE**
244	72.9	74.9	T10	1036	63.9	**+11.0 ABOVE**
249	83.1	85.1	T08	1624	65.9	**+19.2 ABOVE**
254	72.0	74.0	T09	1130	64.5	**+9.5 ABOVE**
260	74.2	76.2	T11	1268	65.9	**+10.3 ABOVE**
261	67.3	69.3	T11	1043	65.9	**+3.4 ABOVE**
271	72.5	74.5	T03	1225	59.5	**+15.0 ABOVE**
272	68.5	70.5	T09	1214	64.5	**+6.0 ABOVE**
280	66.8	68.8	T03	963	59.5	**+9.3 ABOVE**
282	86.0	88.0	T11	1425	65.9	**+22.1 ABOVE**
289	64.6	66.6	T10	733	63.9	**+2.7 ABOVE**
292	66.3	68.3	T11	729	65.9	**+2.4 ABOVE**
294	69.7	71.7	T10	789	63.9	**+7.8 ABOVE**
296	64.3	66.3	T11	730	65.9	**+0.4 ABOVE**
297	75.0	77.0	T10	1157	63.9	**+13.1 ABOVE**
312	76.9	78.9	T07	958	69.2	**+9.7 ABOVE**
314	61.2	63.2	T01	1028	62.8	**+0.4 ABOVE**

E. Complete Receptor Schedule (all 129 receptors)

The full schedule below lists every receptor in the applicant's input table in numerical order. Receptors at or above blade bottom are highlighted in the final column.

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
5	55.9	57.9	T03	739	59.5	-1.6 below
8	52.8	54.8	T03	1083	59.5	-4.7 below
10	54.9	56.9	T04	563	65.3	-8.4 below
14	62.0	64.0	T01	1061	62.8	**+1.2 ABOVE**
17	63.6	65.6	T11	1001	65.9	-0.3 below
24	56.4	58.4	T01	888	62.8	-4.4 below
26	56.0	58.0	T11	820	65.9	-7.9 below
29	74.3	76.3	T11	1353	65.9	**+10.4 ABOVE**
31	59.9	61.9	T03	1164	59.5	**+2.4 ABOVE**
34	68.5	70.5	T09	1228	64.5	**+6.0 ABOVE**
37	72.9	74.9	T09	1095	64.5	**+10.4 ABOVE**
38	55.0	57.0	T01	1299	62.8	-5.8 below
39	75.0	77.0	T07	1059	69.2	**+7.8 ABOVE**
41	74.9	76.9	T11	1327	65.9	**+11.0 ABOVE**
42	49.0	51.0	T03	1373	59.5	-8.5 below
43	50.7	52.7	T03	997	59.5	-6.8 below
46	72.1	74.1	T11	1499	65.9	**+8.2 ABOVE**
47	66.6	68.6	T11	870	65.9	**+2.7 ABOVE**
53	72.0	74.0	T06	854	79.4	-5.4 below
54	73.8	75.8	T11	1453	65.9	**+9.9 ABOVE**
57	64.3	66.3	T01	851	62.8	**+3.5 ABOVE**
58	45.5	47.5	T01	1501	62.8	-15.3 below
61	56.9	58.9	T01	1246	62.8	-3.9 below
63	88.1	90.1	T11	1427	65.9	**+24.2 ABOVE**
66	75.1	77.1	T11	1316	65.9	**+11.2 ABOVE**
67	57.2	59.2	T03	1221	59.5	-0.3 below
68	54.3	56.3	T03	1071	59.5	-3.2 below
73	49.1	51.1	T08	1116	65.9	-14.8 below
75	72.9	74.9	T11	1572	65.9	**+9.0 ABOVE**
77	59.2	61.2	T03	1420	59.5	**+1.7 ABOVE**
80	53.6	55.6	T03	1025	59.5	-3.9 below
83	47.7	49.7	T01	757	62.8	-13.1 below

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
84	63.6	65.6	T11	1186	65.9	-0.3 below
87	63.7	65.7	T03	844	59.5	**+6.2 ABOVE**
89	71.5	73.5	T03	1026	59.5	**+14.0 ABOVE**
90	48.1	50.1	T03	1336	59.5	-9.4 below
91	56.4	58.4	T08	1194	65.9	-7.5 below
93	70.7	72.7	T03	1500	59.5	**+13.2 ABOVE**
95	55.7	57.7	T01	882	62.8	-5.1 below
98	52.8	54.8	T11	782	65.9	-11.1 below
101	59.9	61.9	T03	857	59.5	**+2.4 ABOVE**
104	74.2	76.2	T11	1411	65.9	**+10.3 ABOVE**
105	71.8	73.8	T09	1414	64.5	**+9.3 ABOVE**
109	73.5	75.5	T06	754	79.4	-3.9 below
110	74.9	76.9	T11	1295	65.9	**+11.0 ABOVE**
111	74.1	76.1	T11	1423	65.9	**+10.2 ABOVE**
116	76.9	78.9	T07	960	69.2	**+9.7 ABOVE**
117	73.4	75.4	T11	1370	65.9	**+9.5 ABOVE**
119	74.0	76.0	T11	1333	65.9	**+10.1 ABOVE**
120	76.0	78.0	T11	1562	65.9	**+12.1 ABOVE**
123	54.1	56.1	T01	1225	62.8	-6.7 below
132	77.5	79.5	T11	1324	65.9	**+13.6 ABOVE**
133	82.1	84.1	T11	1597	65.9	**+18.2 ABOVE**
135	90.4	92.4	T11	1451	65.9	**+26.5 ABOVE**
136	61.0	63.0	T03	980	59.5	**+3.5 ABOVE**
137	60.6	62.6	T01	1068	62.8	-0.2 below
138	78.8	80.8	T11	1591	65.9	**+14.9 ABOVE**
139	76.8	78.8	T06	1011	79.4	-0.6 below
140	65.2	67.2	T06	864	79.4	-12.2 below
141	51.6	53.6	T03	1002	59.5	-5.9 below
143	81.4	83.4	T08	1494	65.9	**+17.5 ABOVE**
144	73.6	75.6	T11	1386	65.9	**+9.7 ABOVE**
146	49.0	51.0	T03	993	59.5	-8.5 below
149	58.0	60.0	T01	1039	62.8	-2.8 below
150	49.9	51.9	T03	1503	59.5	-7.6 below
151	64.8	66.8	T11	848	65.9	**+0.9 ABOVE**
153	73.9	75.9	T11	1290	65.9	**+10.0 ABOVE**
156	56.0	58.0	T03	1050	59.5	-1.5 below
157	55.4	57.4	T01	1344	62.8	-5.4 below

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
160	65.1	67.1	T09	744	64.5	**+2.6 ABOVE**
162	82.0	84.0	T09	1386	64.5	**+19.5 ABOVE**
164	74.9	76.9	T11	1284	65.9	**+11.0 ABOVE**
166	86.6	88.6	T11	1442	65.9	**+22.7 ABOVE**
170	49.7	51.7	T03	1537	59.5	-7.8 below
173	81.0	83.0	T08	1473	65.9	**+17.1 ABOVE**
178	73.4	75.4	T09	1085	64.5	**+10.9 ABOVE**
180	67.5	69.5	T10	846	63.9	**+5.6 ABOVE**
183	57.5	59.5	T01	1101	62.8	-3.3 below
185	75.0	77.0	T11	1282	65.9	**+11.1 ABOVE**
186	76.0	78.0	T06	945	79.4	-1.4 below
188	63.2	65.2	T06	882	79.4	-14.2 below
192	47.0	49.0	T01	1060	62.8	-13.8 below
194	73.6	75.6	T11	1324	65.9	**+9.7 ABOVE**
200	75.0	77.0	T11	1265	65.9	**+11.1 ABOVE**
202	72.1	74.1	T06	867	79.4	-5.3 below
203	72.2	74.2	T11	1262	65.9	**+8.3 ABOVE**
204	76.2	78.2	T11	1502	65.9	**+12.3 ABOVE**
205	48.9	50.9	T01	1594	62.8	-11.9 below
210	50.3	52.3	T03	1613	59.5	-7.2 below
216	59.0	61.0	T11	941	65.9	-4.9 below
218	75.2	77.2	T06	981	79.4	-2.2 below
219	56.5	58.5	T01	931	62.8	-4.3 below
221	64.3	66.3	T03	866	59.5	**+6.8 ABOVE**
225	53.2	55.2	T01	799	62.8	-7.6 below
236	49.0	51.0	T03	1599	59.5	-8.5 below
238	55.4	57.4	T11	802	65.9	-8.5 below
239	55.0	57.0	T01	1321	62.8	-5.8 below
243	58.4	60.4	T01	953	62.8	-2.4 below
244	72.9	74.9	T10	1036	63.9	**+11.0 ABOVE**
246	55.3	57.3	T05	862	67.6	-10.3 below
248	46.0	48.0	T01	1480	62.8	-14.8 below
249	83.1	85.1	T08	1624	65.9	**+19.2 ABOVE**
250	71.3	73.3	T06	845	79.4	-6.1 below
253	59.9	61.9	T01	869	62.8	-0.9 below
254	72.0	74.0	T09	1130	64.5	**+9.5 ABOVE**
260	74.2	76.2	T11	1268	65.9	**+10.3 ABOVE**

Receptor No.	Ground Z (m OD)	Eye level Z+2m (m OD)	Nearest WTG	Distance (m)	Blade bottom (m OD)	Eye vs blade bottom (m)
261	67.3	69.3	T11	1043	65.9	**+3.4 ABOVE**
267	49.4	51.4	T03	1571	59.5	-8.1 below
269	54.4	56.4	T03	1187	59.5	-3.1 below
270	75.9	77.9	T06	960	79.4	-1.5 below
271	72.5	74.5	T03	1225	59.5	**+15.0 ABOVE**
272	68.5	70.5	T09	1214	64.5	**+6.0 ABOVE**
274	49.0	51.0	T03	1177	59.5	-8.5 below
275	50.8	52.8	T03	1430	59.5	-6.7 below
279	59.6	61.6	T01	1112	62.8	-1.2 below
280	66.8	68.8	T03	963	59.5	**+9.3 ABOVE**
282	86.0	88.0	T11	1425	65.9	**+22.1 ABOVE**
284	55.0	57.0	T01	895	62.8	-5.8 below
285	70.3	72.3	T06	812	79.4	-7.1 below
289	64.6	66.6	T10	733	63.9	**+2.7 ABOVE**
292	66.3	68.3	T11	729	65.9	**+2.4 ABOVE**
294	69.7	71.7	T10	789	63.9	**+7.8 ABOVE**
295	61.3	63.3	T11	971	65.9	-2.6 below
296	64.3	66.3	T11	730	65.9	**+0.4 ABOVE**
297	75.0	77.0	T10	1157	63.9	**+13.1 ABOVE**
302	48.6	50.6	T01	1535	62.8	-12.2 below
306	51.6	53.6	T11	756	65.9	-12.3 below
312	76.9	78.9	T07	958	69.2	**+9.7 ABOVE**
314	61.2	63.2	T01	1028	62.8	**+0.4 ABOVE**

F. Data Sources

Receptor ITM coordinates and ground elevations (Z): WindPRO Appendix 16-1, Shadow receptor-Input table.

Turbine base elevations (Z): WindPRO Appendix 16-1, WTG-Input table.

Blade bottom clearance (17 m): EIAR Chapter 16, Scenario 1 (N163).

Study boundary (1,630 m): EIAR Chapter 16, Section 16.2.3.

Directors
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J. Hannelly
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The Association of Irish Racecourses

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To:
An Coimisiún Pleanála
64 Marlborough Street
Dublin 1
D01 V902

Our reference no: 25-99DVL01

RE: Proposed Windfarm development of 7 Turbines, 110kV substation and associated works within the townlands of Leitrim, Lumville, Ballinla, Clarkeville, Ballyfore Big, Ballyfore Little, Ballyeakin and Ballykilleen, in (Coolestown By) Co. Offaly

An Coimisiún Pleanála - Case reference: PAX19.323579

Dear Sir/Madam,

The Association of Irish Racecourses (AIR) is the representative body for the 26 racecourses operating across the island of Ireland. We write to express our strong concern regarding the proposed Ballinla Wind Farm development and its potential implications for the wider horse racing and breeding industries — sectors which are of exceptional cultural, economic, and social importance to rural Ireland.

Horseracing in Ireland is not only a deeply rooted part of our national heritage and rural identity, but it is also an area in which this country excels on the global stage. The industry employs over 30,000 people, both directly and indirectly, and attracts more than 1.25 million attendees to racecourses annually. These events and venues provide a vital platform to showcase the success of Irish-bred horses, trainers, jockeys, and stable staff, reinforcing Ireland's international reputation for excellence in equine sports and breeding.

The continued viability of racecourses and the wider equine sector is intrinsically dependent on the health, wellbeing, and performance of horses. Any development that has the potential to affect animal welfare, breeding outcomes, or the environmental stability of equine lands must therefore be approached with utmost caution.

The proposed Ballinla Wind Farm lies in an area associated with pedigree and performance breeding, where horses of significant value are reared and trained. Internationally, concerns have been raised about the potential impacts of wind turbine noise, low-frequency vibration, and flicker on animal behaviour and stress levels. Given Ireland's position as a world leader in thoroughbred production, such risks merit strong consideration to refusal of this proposed development.

We also wish to highlight the current decline in Ireland's foal crop, a matter of growing concern across the industry. Protecting the breeding environment, herd health, and genetic potential of the Irish thoroughbred is critical to ensuring the long-term sustainability of this sector. Any disruption to animal health or behaviour arising from industrial-scale wind energy developments in key breeding regions could have a serious knock-on effect on the entire horse racing and bloodstock ecosystem.

In light of these factors, the Association of Irish Racecourses respectfully requests that the planning authority give full and careful consideration to the potential implications of the Ballinla Wind Farm for Ireland's equine industry.

We believe that safeguarding the welfare of horses, the integrity of rural landscapes, and the sustainability of Ireland's global reputation in horseracing should be a primary consideration.

Yours sincerely,

Sent by Email and therefore bears no signature.

Conor O'Neill
Chairman
Association of Irish Racecourses (AIR)