Submission: Review of the EIA (Agriculture) Regulations.

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Introduction

Hedgerows Ireland is a Non-Governmental Organisation, dedicated to the preservation and proper management of Irish hedgerows. We are a constituent member of the Irish Environmental Network (IEN), funded by the IEN and the Heritage Council. Since 2004, we have worked directly with farmers to conserve and rejuvenate hedgerows through hedge laying and other nature-friendly management practices.

This submission to the Department of Agriculture, Food and the Marine (DAFM) on the EIA (Agriculture) Regulations is based on our first-hand experience with the actions needed to protect farm hedgerows as a climate and biodiversity action tool (Montgomery et al., 2020).

It is also a considered response to the announcement of the review by the Minister for Agriculture, Food and the Marine, Mr Charlie McConalogue, in Dáil Eireann on 23rd May 2023. This review provides an "opportunity to consider and update the Regulations as necessary to ensure they are balanced in terms of allowing agricultural changes which do not significantly affect the environment while also providing protection for land and biodiversity features of environmental importance".

The invitation to submit as part of the review covers the EIA (Agriculture) Regulations in their entirety. Given our specific focus, we have taken the liberty of commenting on the following:

- Irish hedgerows, which are directly affected by projects considered under restructuring of rural land holdings (first part of the regulations).
- The evidence underpinning the ecological and environmental importance of hedgerows – and a selection of biodiversity-related examples, and the associated imperative to protect and rejuvenate hedgerows. In addition, this section addresses the heritage and functional role of hedgerows in the Irish landscape.
- Experience arising from the implementation of the EIA (Agricultural) Regulations to date.
- Recommendations arising.
- Additional concerns and questions arising regarding the Irish implementation of the EIA Directives, and the DAFM's approach to this review.

Irish Hedgerows

Irish Hedgerows are an integral part of the Irish landscape. They range from ancient hedgerows to new hedgerows planted under agri-environmental schemes over the past 30 years. However, most of our hedgerows are several hundred years old, with hedgerows becoming common in Ireland in the 18th century (Feehan, 2003). They are both evidence of - and a means of establishing boundaries.

But hedgerows are also much more than mere boundaries - or living fences! They are a vital component of Irish biodiversity, hosting habitats for much of Irish wildlife and conveying many benefits for landowners and farmers.

Hedgerows help to mitigate carbon emissions by sequestering and storing carbon in their woody biomass and soil (Black et al., 2014; Biffi et al., 2022; Black et al., 2023). They also help Irish farmers adapt to climate change by slowing overland flow, increasing shade, and sheltering crops and livestock during harsh weather (Collier, 2021; Holden et al., 2019). Irish farms are already experiencing dry summer conditions, with still more frequent flooding, intense winter storms, heatwaves, and higher water stress predicted as a result of climate change (EPA, 2023).

Older, wider, and taller hedgerows are ideally suited to help farmers mitigate and adapt to these changes through flood management and as shelterbelts (Biffi et al., 2022; Black et al., 2023). Such heterogeneous hedgerows provide more forage, habitat, and healthier soils for bats, farmland birds, pollinators, and soil invertebrates (Graham et al., 2018). For example, the Countryside Bird Survey has previously recorded that 55 of 110 regularly recorded bird species utilise hedgerows, with 35 of these using them as nest sites (Teagasc, 2020).

Hedgerows also facilitate greater insect abundance and hence food availability for birds and bats due to their bare earth and higher soil organic carbon (Montgomery et al., 2020). Increased insect abundance has additional benefits for tillage and horticultural farms by reducing pest populations (Montgomery et al., 2020). We learned about this first-hand from a Teagasc researcher monitoring aphid populations during a farm walk in May 2023 at a tillage farm taking part in the Protecting Farmland Pollinators EIP.

Environmental and Ecological Imperatives

Our recommendations are underpinned by research on the benefits of hedgerows for flood management, carbon sequestration, biodiversity, and other contributions to people.

Climate Crisis Mitigation & Adaptation

Hedgerows are a nature-based solution for extreme weather events that will increase in frequency with climate change in Ireland (Collier, 2021; EPA, 2023). On farms, flooding will become more likely as the ground's water infiltration capacity will reduce during dry spells and result in greater overland flow or surface run-off during subsequent heavy rain, which can cause flooding. Soils under hedgerows have greater micropore flow than other soils and after rainfall, reach maximum moisture content an hour later than nearby arable or pasture fields and margins (Holden et al., 2019). They promote infiltration and store run-off from overland flow which reduces the risk of flooding on farmland and delays the time to peak in storm events (Holden et al., 2019). However, in a study of 1-year-old hedgerows, this post-rainfall delay was minimal at 15 minutes which suggests that younger hedgerows do not provide this benefit as effectively (Kingsbury-Smith et al., 2023). This emphasises the need to retain older hedgerows rather than relying on replanting as a mitigation measure.

Carbon sequestration is another factor that increases with age. Soil organic carbon below hedgerows compared to adjacent fields was 3.3% higher at 2-4 years old, 14.4% higher at 10 years old, 45.2% higher at 37 years old, and 57.2% for older hedgerows (Biffi et al., 2022). Over time, hedgerows which are rejuvenated through hedge laying also have more woody material at the base which can increase above-ground carbon storage (Black et al., 2023). Hedgerows are an important carbon sink in Ireland and store 0.66–3.3 tCO_2/ha/year together with other non-forest woodlands (Black et al., 2014).

Ireland does not currently report these figures in its greenhouse gas (GHG) inventory to the United Nations Framework Convention on Climate Change but a LiDAR-based methodology has been tested and recommended for this use (Black et al., 2014). Once Ireland begins reporting this data, the length and quality of the national hedgerow network will determine whether it is an overall carbon sink or source. Research of hedgerows in Co. Wexford and Waterford suggests that they are a net emitter of -0.3 tC ha^{-1} $year^{-1}$ due to hedgerow removals and management (Black et al., 2023). Therefore, well-designed and enforced EIA (Agriculture) Regulations will ensure that hedgerows contribute positively to Ireland's GHG inventory at the national scale.

Biodiversity Benefits

Most of Ireland's mammals use hedgerows at some point in their life cycle (Feehan, 2003). Older hedgerows with nature-friendly management provide more biodiversity benefits due to their height and width (Hickie, 2004). Planning permission for a housing development in Rathcoole that required 674m of hedgerow to be removed was recently overturned for this reason, as Mr Justice Humphrey's said that "Mature or indeed ancient hedgerows are just not equivalently replaceable by freshly created ones" (BreakingNews.ie, 2023).

Nesting birds prefer how the increased vegetation cover reduces the predation of chicks (both in the hedgerow itself and at the base for ground-nesting birds) and provides greater berry and insect abundance (Graham et al., 2018).

At the landscape scale, higher hedgerow connectivity is associated with a higher density of mammals such as wood mice and bank voles (Gelling et al., 2007). Local habitat structure also affects pollinators; for example, some bumblebee species forage a maximum of 312m *(Bombus pascuorum*) to 625m (*Bombus terrestris*) from their nest (Darvill et al., 2004). A study of solitary bee species in

Germany found their foraging range to be within 150-600m of their nesting site (Gathmann & Tscharntke, 2002). Solitary bees also nest in hedgerows, as evidenced in the Protecting Farmland Pollinators EIP (Garratt et al., 2017; NBDC, 2022). The removal of even short sections can therefore negatively affect declining bumblebee and solitary bee populations. For context, the Hedgerow Appraisal System marks a hedgerow with unfavourable continuity if more than 10% is made of gaps or if any one gap is greater than 5m long (Foulkes et al., 2013).

Hedgerows & Irish Bats

All Irish bat species are protected under the European Union (EU) Habitats Directive (92/43/EEC), Wildlife Act (1976) and Wildlife Amendment Acts (2000 & 2010) which make it an offence to harm a bat or their resting site.

Seasonal roosts and satellite roosts are also protected even when not occupied (Magistrat der Stadt Wien (Grand Hamster), 2021). Bats often return to their roosts and so hedgerows with empty roosts are still of high importance. The European Commission Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) and the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979), set out to conserve all species and their habitats.

This means that hedgerows are protected not only in the presence of roosts but also as habitats in themselves.

Other international legislation that Ireland is subject to since the Bonn Convention that support the case for hedgerow protection are the Agreement on the Conservation of Populations of European Bats (EUROBATS) and the Convention on the Conservation of Migratory Species of Wild Animals. The latter protects migrant species across all European boundaries. Previously, this applied to bats migrating between the Republic of Ireland and Northern Ireland but this may change following BREXIT.

Hedgerow height, width, field length, and the total length at the farm and landscape level are essential factors influencing bat activity (Finch et al., 2020; Graham et al., 2018). Ireland has nine confirmed resident bat species and two migrant species (Brandt's bat *Myotis brandtii* and the Greater Horseshoe bat *Rhinolophus ferrumequinum*). The likelihood of the latter occurring in a hedgerow reduces with gaps below 38m and more rapidly with gaps above 50m (Pinaud et al., 2018). Some Irish bat species even have difficulty traversing a gap above 10m (Bat Conservation Ireland, 2014). The M17/M18 Gort to Tuam PPP Scheme is one case study where the impact of gaps on a protected bat species influenced project design.

Among Ireland's obligations under the EU Habitats Directive, it is obliged to "maintain a favourable conservation status" of Annex-listed species. All Irish bats are listed in Annex IV of the EU Habitats Directive while the Lesser Horseshoe bat (*Rhinolophus hipposideros*) is also listed under Annex II, leading to it being allocated 41 Species Areas of Conservation.

Of the nine resident species, the Lesser Horseshoe bat only occurs along the western seaboard of Ireland in six counties. Precedence illustrates the measures taken to protect such bats. For example, to avoid fragmenting the species' movement from their feeding grounds in Coole Park Nature Reserve to a roosting site species, an overpass green bridge was planted with hedgerows to connect what would have been a 60m gap (ARUP, 2023).

The Lesser Horseshoe bat is annually faithful to their roosts and relies on linear features to navigate to feeding areas and seasonal roosts (NPWS, 2019). They also need occasional intermediate roosts for nighttime feeding, such as hedgerow trees. At higher light levels, the Lesser Horseshoe bat flies close to vegetation to avoid being attacked by predators (Verboom & Spoelstra, 1999). One survey

found that the Lesser Horseshoe bat rapidly adapted to street lights, including red lights, by switching to the dark side of a hedgerow (Zeale et al., 2018). If the hedgerow is removed, there is no alternative route for the bat.

Roadside hedgerows are particularly important for reducing light pollution from street lamps and car headlights. The use of hedgerows to combat light pollution impacts on bats has been recommended for all bat species (Stone et al., 2015).

During bat surveys, it has been observed that bats usually operating in total darkness will not even cross a small red-filtered torch beam of 50cm. They generally fly within 5m of a landscape feature such as a hedgerow and any sudden opening that increases the light level, such as a hedgerow removal, is detrimental to their flight pattern.

Concerns about habitat loss and landscape connectivity led to an “inadequate” and “deteriorating” overall assessment of the Lesser Horseshoe bat’s conservation status in the latest Article 17 report to the EU Commission (NPWS, 2019). One of the top threats includes the “removal of small landscape features for agricultural land parcel consolidation”, particularly at the local scale (NPWS, 2019).

For all Irish bat species, if their commuting routes are severed, bats can be cut off from their foraging habitats, leading to wasted energy in terms of flight distance and duration while they find new routes to their habitual feeding area. Bats need to eat at least one-third of their body weight per night to survive, which can become challenging with higher flight energy expenditure on longer commuting routes. This factor becomes even more important when lactating female bats are rearing juveniles, as they tend to travel shorter distances to forage (Clark et al., 1993). Any increased travel time can negatively impact juvenile growth and survival rate.

Maintaining the genetic diversity of the Lesser Horseshoe bat in Ireland is especially crucial for its long-term survival. The retention of hedgerows within at least 2.5km, but preferably 5km, of Lesser Horseshoe bat roosts with twenty or more bats is essential to counteract the documented genetic differentiation within the species throughout its Irish distribution (NPWS & VWT, 2022). Research has shown that bats construct internal geographical maps by using their echolocation technique to locate their summer, winter and breeding roosts each year (Graham et al., 2018).

Hedgerows are therefore highly valuable landscape features for mapping their topographical routes and necessary to access other sub-groups to sustain a healthy gene pool. Although the focus in this section was primarily on the Lesser Horseshoe bat, the same challenges exist for many Irish bat species.

Other Contributions to People

Besides the climate and biodiversity benefits outlined above, hedgerows provide many other contributions to people. For example, they shelter livestock and crops from wind, rain, and sun; intercept pollutants; screen buildings and human activities; provide a link to our cultural heritage; and, create Ireland’s distinctive landscape (Collier, 2021; Wolton, 2018).

Many of these benefits arise from their physical size which acts as a shelterbelt and reduces wind speed which consequently reduces evapotranspiration and therefore, water stress (Wolton, 2018). This may result in particularly shaded areas of fields remaining wet for longer after rain. However, the additional shade in the summer months also reduces mortality and heat stress in livestock, thus improving farm outputs (Wolton, 2018).

These benefits will allow farmers to adapt to climate change in Ireland (EPA, 2023). Hedgerows can also prevent excess nitrate from the soil reaching - and thereby reduce the pollution of watercourses. This is especially important in the south, east, and midlands of Ireland, where nitrate concentrations

remain too high (Grimaldi et al, 2012; EPA, 2023). As a result, the latest Environmental Protection Agency (EPA) Water Quality report found that only 54% of Ireland's surface waters were in satisfactory health (Trodd et al., 2021). The relative importance of denitrification in hedgerows to water quality varies depending on whether the watercourse is primarily fed by groundwater or overland flow (Grimaldi et al., 2012). This requires hydrology studies to be completed on the interaction of groundwater and surface water in the area.

Hedgerows also hold aesthetic and cultural values in Ireland's landscape. Ireland ratified the European Landscape Convention in 2004 and produced the National Landscape Strategy 2015-2025 (DAHG, 2015). The Strategy aims to recognise landscapes in law, develop landscape policies, and strengthen landscape awareness (DAHG, 2015). These changes have the potential to formally protect hedgerows for their contribution to landscape character. As well as screening buildings and human activities to create a more visually appealing view and to reduce traffic noise, the resulting field mosaic creates a sense of place and of being at home in the countryside (Feehan, 2003; Hickie, 2004).

Hedgerows became common in Ireland from the 18th century onwards and are now an integral part of our landscape that is not found in most of Europe (Feehan, 2003; Hickie, 2004). They are also celebrated in our cultural heritage with the history of hedge schools, people sheltering by them during the Great Famine and the folk stories associated with hawthorn trees (Hickie, 2004). The latter is currently being celebrated by the Leitrim Hawthorn Project, funded by the Heritage Council and Leitrim County Council Heritage Office.

Due to their rarity in most of Europe, hedgerows are an asset to Ireland's tourism industry and have the potential to draw visitors into rural areas to rejuvenate local economies.

These wide-ranging contributions to people create a shared duty of care for hedgerows.

Hedgerow removal does not only impact the farm itself but also the people in the wider landscape, both from a functional and aesthetic point of view. For example, we received anecdotal evidence from Co. Tipperary, where noise pollution from road traffic at residential homes increased after a number of hedgerows were removed on land recently purchased for equestrian use.

In summary, hedgerows are part of our heritage. They shape and reflect the Irish experience, and illustrate the anthropological history of society on this island.

Hedgerow Removal

Unfortunately, hedgerow removal continues despite these benefits and the fact that since 2009, hedgerows in Ireland are protected as designated landscape features under GAEC 7 in Cross Compliance (DAFM, 2016).

Research using County Hedgerow Surveys and aerial photographic images from 1995, 2005 and 2015 showed a net hedgerow removal rate of 0.16-0.3% per annum in this time period (Green et al, 2019). Although the new protections did result in a much slower rate in the second half of 1995-2015, 93% of the 480 hedgerow removal applications that were submitted to DAFM between 2011-2016 were approved (Foulkes, 2017; Green et al., 2019). These were only the removals that exceeded the EIA (Agriculture) Regulations' screening threshold, with those under the threshold going unmonitored.

Updating these numbers based on the DAFM's own reports indicates that there were 210 applications for screening between 2018 and the end of May 2023. Of these 82% were approved. However, these approvals represent 89% of the volume of metres of hedgerow removal for which screening applications were made.

Of greater importance, the hedgerows removed following such decision-making were only those that exceeded the screening threshold implemented in Ireland's response to the EIA Directive (2011/14):

- Over 5 hectares affected or over 500 metres field boundary being removed, whichever is the lesser
- Sub-thresholds;
    - where the proposed works are to be carried out within (or may effect) a proposed NHA or a nature reserve or
    - the proposed works may have a significant effect on the environment

Any restructuring of field boundary projects involving hedgerow removal which do not rise to the stated threshold do not require screening, and therefore decision making is almost entirely within the landowners remit. Therefore, cases involving the removal of hedgerows which fall under the threshold - and are therefore not submitted for screening - are simply not recorded. We have no central data on the scale of such removal.

Some additional guidance is provided by the DAFM in the EIA (Agriculture) Regulations Guide to Farmers document:

- "With regard to sub-threshold works that may have a significant effect on the environment, matters to consider include the rarity of the landscape feature that may be lost as a result of the proposed works, quality of the field boundary being removed (e.g. species diversity of hedgerow being removed), impact on archaeological monument etc."
- You should always apply for screening where the removal of hedgerows that are important commuting routes or feeding habitats for bat species is contemplated. Likewise, you should always apply for screening where you propose to re-contour land that may be the habitat of protected species or flora."

However, this creates a situation where the landowner - who has a vested interest in the outcome - is in a position to choose whether or not any external or objective consideration occurs. This cannot be considered transparent or objective!

As illustrated in the statistics, where the threshold is reached, and screening applications submitted, approximately 89% of the length of hedgerow considered for removal are approved.

It is also clear from a review of the statistics, that there may be inconsistent application of decision making under the regulation. There appears to be a wide disparity in approval rates. Applications originating in Wexford, Leitrim, & Kilkenny over the period were 100% approved, whereas those from Donegal, Kerry & Roscommon were only approved in 33% or fewer cases.

An independent review of the scale of both hedgerow removal and the standards and approach applied in decision-making should be undertaken.

Without such assurances, it is our view that the current approach demonstrates a potentially problematic application of the EIA Directive in Ireland.

Recommendations

In order to ensure the long-term provision of these benefits, we first recommend updating the screening thresholds and guidance on the proximity to environmentally sensitive areas or significant effects on the environment. Secondly, we recommend reducing the consent application thresholds, adding criteria on Heritage Hedgerows, and considering the local or regional ecological conditions. Thirdly, we recommend that the DAFM adopts a standard and verifiable assessment methodology. Finally, a quality assurance and peer review system for approved applications would ensure compliance, reduce assessor bias, and strengthen confidence in the EIA (Agriculture) Regulations. Each of these recommendations has sub-recommendations, as detailed in the following sections.

Our aim is to reduce the overall rate of approval for hedgerow removal and to conserve our 224,787-ha network of hedgerows for biodiversity, climate action, and human well-being (Táillte, 2023). Our recommendations are based on the precautionary principle that any removal negatively impacts wildlife and that replanting is an inadequate substitute. John Feehan, an expert on the Irish landscape, said that “no hedge should be removed without careful consideration and evaluation…it takes at least 20 years for an effective replacement to develop” (Feehan, 2003). Professional hedge layers working with Hedgerows Ireland echoed this sentiment, estimating that it takes 8-10 years for a hedgerow to become a basic functional habitat but up to 15-20 years for a hedgerow to reach maturity. Factors include soil preparation, soil quality, type of hedge, species used, quality of plants, as well as management and suppression of competing vegetation during early growth.

Recommendation 1: Updating the screening application process

1. We recommend **eliminating the screening threshold** because the removal of even short sections has negative impacts on the environment. The removal of any mature hedgerow will take significantly longer to be replaced, given the decades necessary for some ground flora to become established. Simple replacement by planting - even on a 2-for-1 basis under Cross Compliance will not achieve anywhere near equality in terms of biodiversity, habitat and carbon loss. Screening all removals facilitates a less fragmented hedgerow network in a favourable condition for flood management, carbon sequestration and biodiversity.
2. If the DAFM opts not to eliminate the screening threshold, we recommend **reducing it to an ecologically-relevant figure between 10-50m** for a single length removed. This considers the behaviour of the Greater Horseshoe Bat and Irish bat species that are not likely to cross a gap above 10m (Bat Conservation Ireland, 2014; Pinaud et al., 2018). In fact, the Guide for Farmers already states that “You should always apply for screening where the removal of hedgerows that are important commuting routes or feeding habitats for bat species is contemplated.” As we evidenced earlier, all hedgerows are important habitats for bats.
3. The **cumulative impact threshold should equal the individual case screening threshold as above.** If the cumulative length of hedgerow removed and planned over a rolling 10 year period is likely to exceed the above threshold, then a screening application must be submitted. This requirement addresses the time requirement for a mature hedgerow to become established in our experts’ estimation.
4. We recommend clear guidance in the application form on **how close the hedgerow has to be to environmentally sensitive areas to qualify**. For example, a distance of 20m from monuments is currently in the Guide for Farmers but should also be included in the application form.
5. There should be **clear guidance on qualifying a “significant effect on the environment” with a list of the sections and resources to be considered**. It should not be assumed that applicants will independently consider all potential effects. Particularly, if hiring an ecological consultant to assist them is optional (since this is an additional cost). As it stands, the guidance in section 6.3 and Annex II of the Guide for Farmers is not easily accessible for

people without an environmental background. It should be an easy-to-follow process with set questions accompanied by direct links to webpages containing maps and surveys (such as the Hedgerow Appraisal System) that they can use at each step. These resources are otherwise difficult to find and follow for people not already aware of them.

6. If the "**nature and extent of the proposed works**" in the application form is **not detailed enough, it should be more readily sent back for further information**.
7. Ahead of any changes, an acceleration of hedge removal will almost certainly take place based on our experts' anecdotal evidence from past policy changes. If the DAFM opts for the reduction and not the elimination of the screening threshold, we recommend a **temporary requirement for all removals to undergo screening** to mitigate excess removals.

Recommendation 2: Updating the consent application process

1. The length and area-based criteria for mandatory EIA should be significantly reduced from the current thresholds of 4km and 50ha. We suggest a **threshold of 500m or 25ha for mandatory EIA**, but ideally lower, considering the foraging behaviour of bumblebees and solitary bees (Darvill et al., 2004; Gathmann & Tscharntke, 2002).
2. Thresholds lead to a standardised and objective approach, but they need to be ecologically relevant (Pinho et al., 2010). **Adding ecological criteria to the mandatory EIA thresholds** will better capture potential impacts on wildlife benefiting from older hedgerows (Graham et al., 2018; Hickie, 2004). A mandatory EIA should be required if the hedgerow is found to be an ancient or Heritage Hedgerow. Using the Hedgerow Appraisal System, this requires either:
    a. A score of 4 in one of the following five categories, Historical Significance; Species Diversity Significance; Landscape Significance' Habitat Connectivity Significance; or Structure, Construction & Associated Features (Foulkes et al., 2013);
    b. A cumulative score of 6 in the Historical, Species Diversity or Structural Categories (Foulkes et al., 2013);
    c. Or a cumulative score of 16 over all five categories above (Foulkes et al., 2013).
3. These thresholds should **consider local or regional ecological conditions** so that in higher-risk areas, a mandatory EIA is required under lower thresholds because of the hedgerow's higher relative importance to local biodiversity and ecosystem services (Pinho et al., 2010). For example, high-risk criteria may include:
    a. Counties with a lower hedgerow density in the Teagasc Hedge Map (Green, 2011);
    b. A higher rate of hedgerow removal mapped in County Hedgerow Surveys and using trends in screening applications (Foulkes, 2017);
    c. Populations of protected species mapped by the National Parks & Wildlife Service (NPWS) and the National Biodiversity Data Centre (NPWS, 2019);
    d. Or lower water quality mapped by the EPA (Trodd et al., 2021).

Recommendation 3: The assessment process should adopt a more standardised and verifiable methodology.

1. Field and desktop ecology and hedgerow surveys should be completed by **accredited ecological consultants and sectoral specialists with a standard reporting methodology**. The required methodology is already mostly outlined in Schedule 3 of the EIA (Agriculture) Regulations but must be enforced. This will reduce inconsistent reporting where impacts are difficult to assess and summarise. Additional attention should also be given to areas near Ireland's UNESCO Global Geoparks due to bat species' preference for areas with caves.
2. Hydrological surveys should be done **in areas that are prone to flooding, where the hedgerow's role in slowing overland flow becomes more important**. This should take into

consideration surrounding water quality as hedgerows can reduce nutrient and pollutant loads entering rivers from farmland. Hence, their removal can further reduce water quality.

3. Any assessment of impacts on Lesser Horseshoe bats should be based on the Vincent Wildlife Trust methodology (McAney et al., 2013). **All bat surveys should only be carried out by a specialist, not a general ecologist**, given bat species' strong protection under legislation plus their vulnerability to changes in hedgerow structure and new gaps.
4. **Bat surveys should be conducted from April to November** whilst bats are active at appropriate intermittent times in each month from dusk to dawn.
5. **Such surveys should be conducted at regular intervals**, similar to bat surveys guidelines for wind farms, covering at least a 10-15 km stretch from the section of hedgerow proposed for removal and/or from known and discovered roosts in either direction sections along the main hedgerows and connecting ones, farm, domestic and industrial buildings, natural and artificial structures, caves and souterrains.
6. For the **Lesser Horseshoe bat in Special Areas of Conservation, a Roost Buffer Zone of 2.5km is recommended by the NPWS** for the succession of maternity colonies for these bats as there is a lack of information on how the colony utilised the surrounding habitat at the time of designation. If bats are present, a derogation licence from the NPWS is required to complete the works.
7. If field surveys are not possible during screening, we recommend that **high-quality photos and videos** taken by the applicant should be used to assess the thresholds based on the Hedgerow Appraisal System. These files should be **time- and GPS-verified, as well as cross-checked with satellite imagery** using the methodology of Black et al. (2014) or Green et al. (2019). These files should be submitted to a hedgerow expert or ecologist to assess the condition of the hedgerow. Assessments completed in this way should be differentiated from field surveys so that they are prioritised during the quality assurance process in our fourth recommendation.
8. Officers in the **DAFM should be briefed on the standard reporting methodology so they can spot missing or contradictory information**. They should readily ask for any missing information. For example, one EIA report listed that nine out of ten bat species on the east coast were present, which all have different ecological requirements and thus indicate high biodiversity. However, the report stated: 'low biodiversity'. In another report, a report stated that no green connectivity was present to consider (including to the local Special Area of Conservation), despite maps showing hedgerows from five separate locations leading to one hilltop. In other cases, computer models used to predict future environmental outcomes had incorrectly keyed in and assessed data. Important local environmental data from the EPA or National Biodiversity Data Centre has also been incorrectly represented in past EIAs. For example, hydrological data has been given despite there not being sampling stations at that river or field surveys were not checked against data stored with national agencies. Although these examples are not specifically from the EIA (Agriculture) Regulations, the outlined issues are generally applicable. In these scenarios, surveys and data would be incorrectly assessed and thus incorrect recommendations are given.
9. **Public consultation must be better advertised** to ensure that the public, environmental non-governmental organisations and governmental bodies such as the NPWS have adequate time to make submissions.
10. The **DAFM should more readily prescribe mitigation measures for approved applications.** For example, requiring them to apply the **Hedgerows Ireland** Hedge Code on any re-planted or remaining hedgerows.

Recommendation 4: A quality assurance and peer review system for approved applications.

1. The DAFM should **prioritise in-person inspections** for approved applications rather than relying on desktop inspections. Greater oversight from the DAFM on the farmer and consultants will build trust in the process. It will ensure that results submitted in regard to the Hedgerow Appraisal System survey for Heritage Hedgerows are credible and accurate, and that appropriate re-planting has taken place to compensate for hedgerow removal.
2. Additionally, incorporating a **peer-review system** within the DAFM as a form of quality assurance would build consistency and ensure the standard methodology is being followed. Peer exposure is particularly important if the consultants are not accredited. Quality assurance reports should determine that standard techniques and procedures were used, that clear methodologies were described, and that any interpretation or opinion of results was credited to named experts who should be the best available authoritative source. The EIA reports must be incontestable and completed following thorough and open scoping.
3. The **DAFM should more readily serve prohibition and reinstatement notices** if work has been carried out without the necessary screening or it is discovered that the information provided by the applicant in the screening or consent application was inaccurate.
4. The **DAFM should increase the fines for offences** to discourage landowners from intentionally not submitting the correct information at their known risk of paying a fine.

Additional Considerations, Questions & Comments

The very nature of this review is flawed.

It was announced by the Minister in Dáil Eireann, citing a 6 week period. Yet no publication of the review appeared for a further 2 weeks. This had the effect of compressing any time for an effective consultation on the effectiveness or otherwise of current practice.

This creates the opportunity for communities and concerned groups to infer that the DAFM has no clear desire to assess current practice. It could further be assumed that this approach precipitates deregulatory efforts – at a time when there is clear evidence and public desire for improvements by governments – including our own – in respect of environmental protection, and combating the climate crises.

The speed of, and obfuscation potentially enabled by this review, serve to distract from a considered assessment of the effectiveness and legality of the State's response to the EIA Directive. Have we effectively applied the EIA Directive in Irish law and regulation? Does our practice meet the standards required under Article 2, 3, 4 & 5 of the EIA Directive?

Does the current 5 hectare / 500 metre threshold – below which a landowner has sole discretion to make a decision as to whether the proposed project satisfies the criteria Annex 3, and therefore the objectives of the EIA Directive?

Should any potential project which targets hedgerow removal be considered under the planning laws – irrespective of whether the hedgerow is a boundary or internal hedge?

Even the nature of the thresholds set – should these not allow for regional or local variations or considerations - such as the clearly mapped "hot spots" for the protected Lesser Horseshoe Bat? Should neighbouring landowners have an input opportunity given the importance of pollinators, and other systemic ecological imperatives?

These questions – among others - deserve much greater consideration, and should be addressed with a fuller consideration of Ireland's implementation of the EIA Directive. The narrow window for this review precludes such consideration of these important – and potentially expensive questions.

Therefore we echo the concerns as expressed by the IEN's Environmental Law Officer, who also acts as the facilitator for the Environmental Law Implementation Group, in her separate submission.

We endorse the ethos and concerns of that submission, which expresses significant concerns over the Irish State's implementation of the EU's Environmental Impact Assessment Directive 2011, and its amending EIA 2014 Directive.

Conclusion

Ireland's hedgerows are an environmentally and culturally important landscape feature and must be retained.

Under the precautionary principle, the assumption is made that every hedgerow removal has negative impacts. Hence we recommend eliminating the screening threshold or at a minimum, reducing it to between 10-50m with consideration of cumulative removals over 10 years.

The length and area-based consent application thresholds should be reduced to 500m or 25ha, plus accompanied by a threshold for Heritage Hedgerows and the consideration of local or regional ecological conditions.

Our recommendation to introduce a more standardised and verifiable methodology that is subject to inspection and quality assurance review for approved applications is also essential to build trust in the EIA (Agriculture) Regulations.

Finally, we express our concern at the haste with which this process has occurred. It ill-serves considered and broad inputs into the effectiveness of our implementation of the vital EIA Directives.

Ireland can do better.

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