

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Formal objection to Spiord na mara wind farm
Date: 06 May 2026 07:48:11

Please find attached

Unassessed Onshore Impacts and Breach of Statutory Rights of Crofters: Granting offshore consent while onshore impacts on irreplaceable machair and deep peatland remain unassessed, directly contravenes **NPF4 Policy 3**, which requires biodiversity (including irreplaceable habitats) to be left in a demonstrably better state. In addition the proposal fails to engage the statutory rights of crofters under the **Crofters (Scotland) Act 1993**.

NMP Para. 4.77 'There should be a presumption in favour of publishing applications for marine and terrestrial components of a development together during consenting processes.'

Irreparable Harm to the Tourism Economy and Coastal Character: The Spiord na Mara wind farm would permanently industrialise the unspoiled coastal scenery and dark skies on the Isle of Lewis, destroying the very qualities that attract visitors to the island. Local residents have consistently warned during consultation that this visual impact would decimate the tourist industry on which so many islanders depend. Tourism is built on the area's landscape, seascape, heritage, nature, and dark skies. This development risks long-term damage to local businesses and the wider economy, contrary to **NPF4 Policy 30**.

NMP Para. 12.28 'An unspoiled environment, high quality landscape and a sense of closeness to nature are important to many people. Scenery and environmental quality are key factors in attracting visitors to Scotland's coasts.'

Community Opposition and Lack of Community Empowerment: The Community Opinion Survey on the Spiord na Mara Offshore Wind Farm Development (N4) published by www.emg-lewis.co.uk in April 2026 found that 88% of residents from Ness to Uig opposed the N4 development. Approving this project against such overwhelming local consensus would directly contravene the National Islands Plan's commitment to community empowerment.

The National Islands Plan, page 65, para. 5 'Our vision is for islanders to be empowered to shape their own priorities, build their futures, and protect what makes their communities unique.'

My further objection points: I OBJECT TO THIS BECAUSE I FEEL WE HAVE NOT BEEN CONSULTED ON ALL OF THIS AND I FEEL IT WOULD NOT DIRECTLY BENEFIT THE LOCALS, FOR EXAMPLE CUMULATIVE ELECTRIFICATION FOR US.

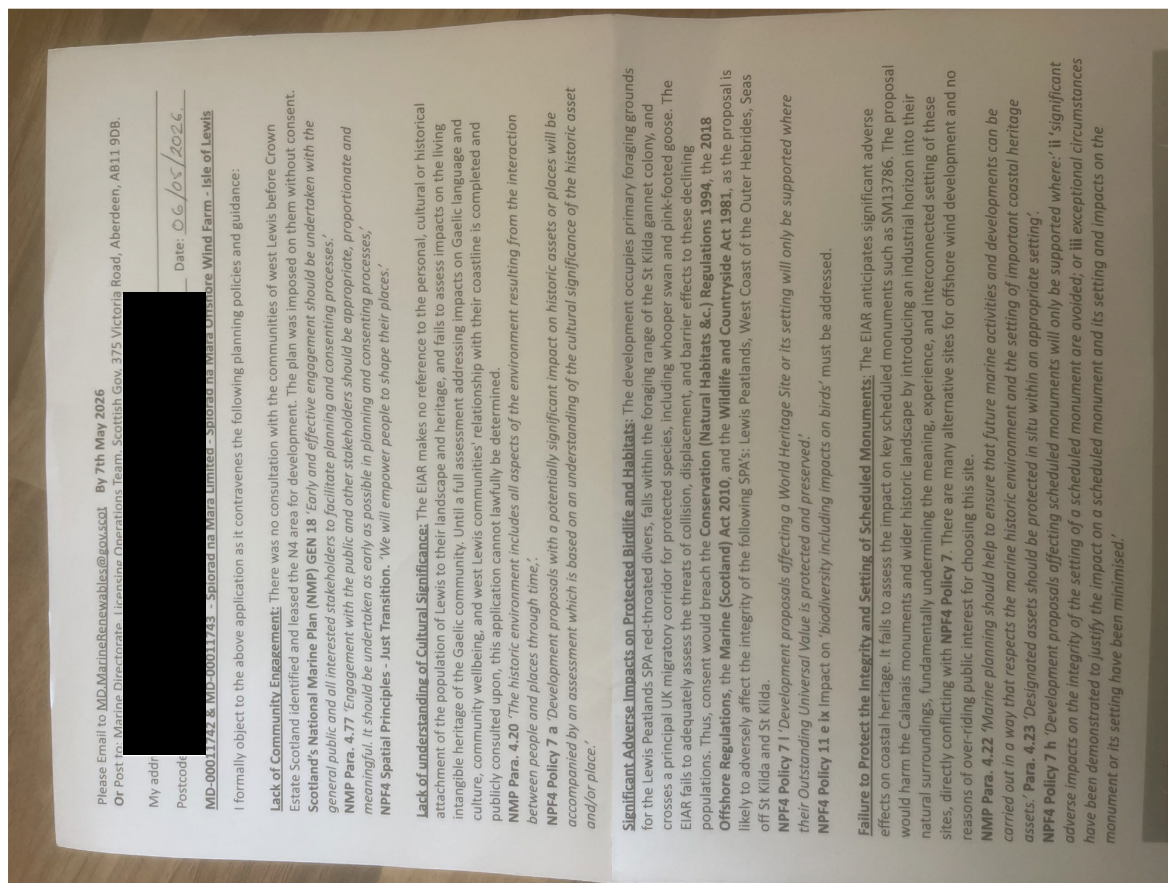
This planning decision is about the long-term future and the character of a landscape and community that cannot be replaced once altered at this scale. Spiord na Mara Offshore Wind Farm would cause significant, cumulative and largely irreversible harm to landscape and seascape character, heritage setting, and the tourism economy. I respectfully request that this application is rejected.



To edit this document in Word, scan this QR code

Signature: [REDACTED]

Print name: [REDACTED]



Many thanks

[Sent from the all-new AOL app for iOS](#)

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Objection - Spiorad na Mara Offshore Wind Farm (MD-00011742 & MD-00011743)
Date: 06 May 2026 08:24:07

I formally object to the above application as it contravenes the following planning policies and guidance: Lack of Community Engagement: There was no consultation with the communities of west Lewis before Crown Estate Scotland identified and leased the N4 area for development. The plan was imposed on them without consent. Scotland's National Marine Plan (NMP) GEN 18 'Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.' NMP Para. 4.77 'Engagement with the public and other stakeholders should be appropriate, proportionate and meaningful. It should be undertaken as early as possible in planning and consenting processes,' NPF4 Spatial Principles - Just Transition. 'We will empower people to shape their places.' Lack of understanding of Cultural Significance: The EIAR makes no reference to the personal, cultural or historical attachment of the population of Lewis to their landscape and heritage, and fails to assess impacts on the living intangible heritage of the Gaelic community. Until a full assessment addressing impacts on Gaelic language and culture, community wellbeing, and west Lewis communities' relationship with their coastline is completed and publicly consulted upon, this application cannot lawfully be determined. NMP Para. 4.20 'The historic environment includes all aspects of the environment resulting from the interaction between people and places through time,'. NPF4 Policy 7 a 'Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place.' Significant Adverse Impacts on Protected Birdlife and Habitats: The development occupies primary foraging grounds for the Lewis Peatlands SPA red-throated divers, falls within the foraging range of the St Kilda gannet colony, and crosses a principal UK migratory corridor for protected species, including whooper swan and pink-footed goose. The EIAR fails to adequately assess the threats of collision, displacement, and barrier effects to these declining populations. Thus, consent would breach the Conservation (Natural Habitats &c.) Regulations 1994, the 2018 Offshore Regulations, the Marine (Scotland) Act 2010, and the Wildlife and Countryside Act 1981, as the proposal is likely to adversely affect the integrity of the following SPA's: Lewis Peatlands, West Coast of the Outer Hebrides, Seas off St Kilda and St Kilda. NPF4 Policy 7 i 'Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved.' NPF4 Policy 11 e ix Impact on 'biodiversity including impacts on birds' must be addressed. Failure to Protect the Integrity and Setting of Scheduled Monuments: The EIAR anticipates significant adverse effects on coastal heritage. It fails to assess the impact on key scheduled monuments such as SM13786. The proposal would harm the Calanais monuments and wider historic landscape by introducing an industrial horizon into their natural surroundings, fundamentally undermining the meaning, experience, and interconnected setting of these sites, directly conflicting with NPF4 Policy 7. There are many alternative sites for offshore wind development and no reasons of overriding public interest for choosing this site. NMP Para. 4.22 'Marine planning should help to ensure that future marine activities and developments can be carried out in a way that respects the marine historic environment and the setting of important coastal heritage assets.' Para. 4.23 'Designated assets should be protected in situ within an appropriate setting'. NPF4 Policy 7 h 'Development proposals affecting scheduled monuments will only be supported where:' ii 'significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or iii exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.' Unassessed Onshore Impacts and Breach of Statutory Rights of Crofters: Granting offshore consent while onshore impacts on

irreplaceable machair and deep peatland remain unassessed, directly contravenes NPF4 Policy 3, which requires biodiversity (including irreplaceable habitats) to be left in a demonstrably better state. In addition the proposal fails to engage the statutory rights of crofters under the Crofters (Scotland) Act 1993. NMP Para. 4.77 'There should be a presumption in favour of publicising applications for marine and terrestrial components of a development together during consenting processes.' Irreparable Harm to the Tourism Economy and Coastal Character: The Spiorad na Mara wind farm would permanently industrialise the unspoiled coastal scenery and dark skies on the Isle of Lewis, destroying the very qualities that attract visitors to the island. Local residents have consistently warned during consultation that this visual impact would decimate the tourist industry on which so many islanders depend. Tourism is built on the area's landscape, seascape, heritage, nature, and dark skies. This development risks long-term damage to local businesses and the wider economy, contrary to NPF4 Policy 30. NMP, Para. 12.28 'An unspoiled environment, high quality landscape and a sense of closeness to nature are important to many people. Scenery and environmental quality are key factors in attracting visitors to Scotland's coasts,' Community Opposition and lack of Community Empowerment: The Community Opinion Survey on the Spiorad na Mara Offshore Wind Farm Development (N4) published by www.emg-lewis.co.uk in April 2026 found that 88% of residents from Ness to Uig opposed the N4 development. Approving this project against such overwhelming local consensus would directly contravene the National Islands Plan's commitment to community empowerment. The National Islands Plan, page 65, para. 5 'Our vision is for islanders to be empowered to shape their own priorities, build their futures, and protect what makes their communities unique.' Significant Adverse Impacts on Marine Mammals and Protected Marine Habitats: The Outer Hebrides are described by the Scottish Government's own scientists as "probably the richest area of the UK for marine mammals with around 20 species of cetacean recorded in the region over the last 30 years" (Scottish Marine and Freshwater Science Vol. 5 No. 9). The site lies adjacent to the Inner Hebrides and Minches SAC - the largest harbour porpoise SAC in Europe - within the wider range of the North-east Lewis MPA for Risso's dolphin, within documented fin and sperm whale migration corridors (Blue Corridors initiative), and within the wider feeding and habitat range of minke, humpback and sei whales, and within the foraging range of the Monach Isles grey seal colony (the largest in Europe). The EIAR fails to reflect this internationally significant baseline in its significance conclusions and cannot demonstrate, to the legal standard required, that adverse effects on these protected sites and species will be avoided. Under the Habitats Regulations Appraisal process, consent must be refused unless Scottish Ministers are satisfied beyond reasonable scientific doubt that the integrity of European sites will not be adversely affected (NatureScot HRA guidance). That standard has not been met. Construction noise: The developer's own noise modelling (EIAR Appendix 19.2) provides for up to 5.5 hours of percussive piling per day, up to 10,635 strikes per pile per day, hammer energies up to 5,000 kJ, and 1,563 pin piles across two consecutive construction years (April–October). The EIAR itself acknowledges that "harbour porpoises are widely regarded as the most sensitive marine mammal receptor to underwater noise" and that behavioural disturbance can occur up to 70 km from piling (Bailey et al., 2010, cited in Chapter 13). The proposed piling window coincides with peak cetacean seasonal density and with harbour seal pupping (June–July), triggering the prohibition on deliberate disturbance of European Protected Species during breeding and rearing periods under the Conservation of Habitats and Species Regulations 2017 and Section 9 of the Wildlife and Countryside Act 1981. The developer's own underwater noise modelling (EIAR Appendix 13.3) confirms that, even with noise mitigation applied, percussive piling at the northernmost foundation location generates a PTS (permanent auditory injury) range of up to 1,500 m for low-frequency cetaceans and a TTS (temporary auditory injury) range of up to 49 km. These are the developer's own figures, after mitigation. Low-frequency cetaceans include minke, fin, sei and humpback whales - all species documented in these waters. A 49 km auditory

injury zone, repeated across an April–October piling window for two consecutive years, cannot credibly be reconciled with a classification of effects as "not significant." NMP Policy GEN 13: development should avoid significant adverse effects of man-made noise and vibration on species sensitive to such effects. The EIAR predicts disturbance to 9.186% of the Risso's dolphin management unit population and 27.7% of the coastal bottlenose dolphin population from piling noise, yet classifies these effects as "not significant." GEN 13 sets an avoidance standard, not a tolerance threshold. The developer's own EPS and Basking Shark Risk Assessment (submitted to Marine Scotland, 22 February 2023) formally acknowledges risk of disturbance to minke whale, harbour porpoise, common dolphin, bottlenose dolphin, grey seal and basking shark from survey work alone. Full construction at this scale cannot credibly be claimed to present a lesser risk. The 2023 Tolsta Stranding: In July 2023, 54 of 55 long-finned pilot whales died on Traigh Mhòr beach while geophysical surveys were being carried out at this lease area. The Scottish Government investigation could not rule out anthropogenic contribution and explicitly acknowledged limitations in the acoustic detection capability of the recorders used. This recent and devastating event must weigh heavily in this decision. Priority Marine Features and seabed disturbance: Kelp beds - confirmed present across 10 km² within the Study Area and designated as a PMF and blue carbon habitat - are assessed as sustaining "minor adverse" impact, with no compensatory measures proposed. Maerl beds, horse mussel beds, fan mussel aggregations and cold-water coral reefs (all Scottish PMFs) are either excluded on the basis of decade-old desktop data (Tyler-Walters et al., 2016) or not mentioned at all. The developer concedes that its primary mitigation - micro-siting of turbines and cables - "cannot be quantified until detailed design and further site-specific investigations are complete." NMP GEN 5: safeguard natural carbon sinks including kelp beds. NMP GEN 9: do not result in significant impact on the national status of Priority Marine Features, and protect and enhance the health of the marine area. Cumulative and in-combination effects: The Habitats Regulations require assessment of cumulative effects with other plans and projects. The Scottish Government's own 2026 ICIA Screening Report concedes that Scottish offshore wind plans are "likely...to undergo the derogations process under the Habitats Regulations." Spiorad na Mara is one of several large developments proposed in or adjacent to these waters; the cumulative assessment does not rigorously meet this requirement. NMP GEN 21 requires cumulative impacts affecting the ecosystem to be addressed. Inadequate assessment and deferred mitigation: The joint representation from the Hebridean Whale and Dolphin Trust and Whale and Dolphin Conservation states that baseline cetacean data is "severely lacking." Proposed mitigation (MMOs, PAM, soft-start) is designed to address acute physical injury, not behavioural displacement; JNCC guidance confirms PAM has "limited range" for harbour porpoise and is "not suitable" for seals and baleen whales. Key mitigation is deferred to a post-consent Marine Mammal Mitigation Protocol, preventing Scottish Ministers from assessing adequacy at the point of determination - contrary to the beyond-reasonable-scientific-doubt standard required under the Habitats Regulations. Peer-reviewed monitoring at Scottish offshore wind farm construction sites (Benhemma-Le Gall et al. 2021, *Frontiers in Marine Science*) observed harbour porpoise displacement up to 12 km from pile-driving and 4 km from construction vessels alone - distances that no MMO, PAM or soft-start zone can address. The EPS licence contradiction: The EIAR identifies that activities may require an EPS licence due to disturbance at a level requiring legal derogation, while simultaneously concluding residual effects are "negligible or minor." Under the Conservation of Habitats and Species Regulations 2017, an EPS licence can only be granted where no satisfactory alternative exists, imperative reasons of overriding public interest apply, and favourable conservation status is maintained. The EIAR demonstrates none of these. Basking sharks (IUCN Endangered) were recorded by the developer's own July 2023 aerial survey (EIAR Appendix 13.1). The EIAR does not adequately assess EMF impacts from subsea cables on elasmobranchs, despite Scottish Government ScotMER research identifying this as an unresolved evidence gap (FF.07). No alternative solutions: Under the Habitats

Regulations, consent cannot be granted if alternative solutions exist. Other ScotWind sites are available in waters without the same density of European Protected Species and designated habitats, and the existence of those alternatives is directly relevant to whether consent for this site can lawfully proceed. Consent would therefore breach or inadequately address the Conservation (Natural Habitats &c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017, the Marine (Scotland) Act 2010, Section 9 of the Wildlife and Countryside Act 1981, NMP Policies GEN 5, GEN 9, GEN 13 and GEN 21, and ASCOBANS Resolution 7.6 (2016) on underwater noise. My further objection points: We must protect our wildlife and fellow humans from the negative effects of these so called 'green' industrial monstrosities. There is nothing environmentally friendly about the construction process which must have a devastating effect on marine life as well as the people onshore. Then the ongoing effects of infrasound, light flicker, as well as the visual impact, will cause huge distress to the community and ruin any tourist industry. Common sense must prevail. This planning decision is about the long-term future and the character of a landscape and community that cannot be replaced once altered at this scale. Spiorad na Mara Offshore Wind Farm would cause significant, cumulative and largely irreversible harm to landscape and seascape character, heritage setting, and the tourism economy. I respectfully request that this application is rejected. Yours sincerely, [REDACTED]

[REDACTED]

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Objection - Spiorad na Mara Offshore Wind Farm (MD-00011742 & MD-00011743)
Date: 06 May 2026 08:04:07

I formally object to the above application as it contravenes the following planning policies and guidance:

Lack of Community Engagement: There was no consultation with the communities of west Lewis before Crown Estate Scotland identified and leased the N4 area for development. The plan was imposed on them without consent.

Scotland's National Marine Plan (NMP) GEN 18 'Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.'

NMP Para. 4.77 'Engagement with the public and other stakeholders should be appropriate, proportionate and meaningful. It should be undertaken as early as possible in planning and consenting processes.'

NPF4 Spatial Principles - Just Transition. 'We will empower people to shape their places.'

Lack of understanding of Cultural Significance: The EIAR makes no reference to the personal, cultural or historical attachment of the population of Lewis to their landscape and heritage, and fails to assess impacts on the living intangible heritage of the Gaelic community. Until a full assessment addressing impacts on Gaelic language and culture, community wellbeing, and west Lewis communities' relationship with their coastline is completed and publicly consulted upon, this application cannot lawfully be determined.

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Failure to Protect the Integrity and Setting of Scheduled Monuments: The EIAR anticipates significant adverse effects on coastal heritage. It fails to assess the impact on key scheduled monuments such as SM13786. The proposal would harm the Calanais monuments and wider historic landscape by introducing an industrial horizon into their natural surroundings, fundamentally undermining the meaning, experience, and interconnected setting of these sites, directly conflicting with NPF4 Policy 7. There are many alternative sites for offshore wind development and no reasons of over-riding public interest for choosing this site.

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The developer's own underwater noise modelling (EIAR Appendix 13.3) confirms that, even with noise mitigation applied, percussive piling at the northernmost foundation location generates a PTS (permanent auditory injury) range of up to 1,500 m for low-frequency cetaceans and a TTS (temporary auditory injury) range of up to 49 km. These are the developer's own figures, after mitigation. Low-frequency cetaceans include minke, fin, sei and humpback whales - all species documented in these waters. A 49 km auditory injury zone, repeated across an April–October piling window for two consecutive years, cannot credibly be reconciled with a classification of effects as "not significant."

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The 2023 Tolsta Stranding: In July 2023, 54 of 55 long-finned pilot whales died on Traigh Mhòr beach while geophysical surveys were being carried out at this lease area. The Scottish Government investigation could not rule out anthropogenic contribution and explicitly acknowledged limitations in the acoustic detection capability

of the recorders used. This recent and devastating event must weigh heavily in this decision.

Priority Marine Features and seabed disturbance: Kelp beds - confirmed present across 10 km² within the Study Area and designated as a PMF and blue carbon habitat - are assessed as sustaining "minor adverse" impact, with no compensatory measures proposed. Maerl beds, horse mussel beds, fan mussel aggregations and cold-water coral reefs (all Scottish PMFs) are either excluded on the basis of decade-old desktop data (Tyler-Walters et al., 2016) or not mentioned at all. The developer concedes that its primary mitigation - micro-siting of turbines and cables - "cannot be quantified until detailed design and further site-specific investigations are complete."

NMP GEN 5: safeguard natural carbon sinks including kelp beds. NMP GEN 9: do not result in significant impact on the national status of Priority Marine Features, and protect and enhance the health of the marine area.

Cumulative and in-combination effects: The Habitats Regulations require assessment of cumulative effects with other plans and projects. The Scottish Government's own 2026 ICIA Screening Report concedes that Scottish offshore wind plans are "likely...to undergo the derogations process under the Habitats Regulations." Spiorad na Mara is one of several large developments proposed in or adjacent to these waters; the cumulative assessment does not rigorously meet this requirement. NMP GEN 21 requires cumulative impacts affecting the ecosystem to be addressed.

Inadequate assessment and deferred mitigation: The joint representation from the Hebridean Whale and Dolphin Trust and Whale and Dolphin Conservation states that baseline cetacean data is "severely lacking." Proposed mitigation (MMOs, PAM, soft-start) is designed to address acute physical injury, not behavioural displacement; JNCC guidance confirms PAM has "limited range" for harbour porpoise and is "not suitable" for seals and baleen whales. Key mitigation is deferred to a post-consent Marine Mammal Mitigation Protocol, preventing Scottish Ministers from assessing adequacy at the point of determination - contrary to the beyond-reasonable-scientific-doubt standard required under the Habitats Regulations. Peer-reviewed monitoring at Scottish offshore wind farm construction sites (Benhemma-Le Gall et al. 2021, *Frontiers in Marine Science*) observed harbour porpoise displacement up to 12 km from pile-driving and 4 km from construction vessels alone - distances that no MMO, PAM or soft-start zone can address.

The EPS licence contradiction: The EIAR identifies that activities may require an EPS licence due to disturbance at a level requiring legal derogation, while simultaneously concluding residual effects are "negligible or minor." Under the Conservation of Habitats and Species Regulations 2017, an EPS licence can only be granted where no satisfactory alternative exists, imperative reasons of overriding public interest apply, and favourable conservation status is maintained. The EIAR demonstrates none of these.

Basking sharks (IUCN Endangered) were recorded by the developer's own July 2023 aerial survey (EIAR Appendix 13.1). The EIAR does not adequately assess EMF impacts from subsea cables on elasmobranchs, despite Scottish Government ScotMER research identifying this as an unresolved evidence gap (FF.07).

No alternative solutions: Under the Habitats Regulations, consent cannot be granted if alternative solutions exist. Other ScotWind sites are available in waters without the same density of European Protected Species and designated habitats, and the existence of those alternatives is directly relevant to whether consent for this site can lawfully proceed.

Consent would therefore breach or inadequately address the Conservation (Natural Habitats &c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017, the Marine (Scotland) Act 2010, Section 9 of the Wildlife and Countryside Act 1981, NMP Policies GEN 5, GEN 9, GEN 13 and GEN 21, and ASCOBANS Resolution 7.6 (2016) on underwater noise.

My further objection points:

This is pure madness and greed

This planning decision is about the long-term future and the character of a landscape and community that cannot be replaced once altered at this scale. Spiorad na Mara Offshore Wind Farm would cause significant, cumulative and largely irreversible harm to landscape and seascape character, heritage setting, and the tourism economy.

I respectfully request that this application is rejected.

Yours sincerely,





Sent from my iPhone

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Spiorad na mara objection
Date: 06 May 2026 06:58:21

Dear Sir/Madam,

I am writing to formally object in the strongest possible terms to the proposed Spiorad na Mara offshore wind farm off the west coast of Lewis.

I am a local fisherman and fishing boat owner based in Lewis. I operate a crab and lobster creeling boat, and we also fish nets for high-value species such as turbot and monkfish. My business employs three full-time crew, along with several part-time crew, and supports additional work ashore through people involved in maintaining and mending creels and gear.

The area identified for this development lies directly within the fishing grounds that we depend on. These are not easily replaceable areas—they are productive, well-established grounds that we rely on for shellfish and high-quality fish supplying premium markets. Losing access to these grounds, or having them disrupted, would have a serious and immediate financial impact not just on myself, but on everyone whose livelihood depends on this operation.

I also have a new fishing vessel currently on the way—an investment made in good faith in the future of my business and the sustainability of fishing in these waters.

This development would directly undermine that investment and put my future earnings at risk, along with the security of the jobs I provide.

However, my objection is not only about displacement from fishing grounds. I do not want this wind farm anywhere near our coast.

The west coast of Lewis is a unique and largely unspoilt marine environment. It supports sustainable fishing practices, fragile ecosystems, and a way of life that has existed here for generations. The introduction of a large-scale industrial development of this kind would permanently alter that environment, with uncertain but potentially serious consequences for marine life, including the shellfish stocks we depend on. There are also significant safety concerns. Working creels and nets in proximity to offshore structures, subsea cables, and increased vessel traffic presents real risks, particularly in the challenging weather conditions we regularly face. Safe navigation, gear conflict, and the potential loss of equipment are all serious issues that cannot be overlooked.

In addition, I do not believe that the concerns of working fishermen have been properly taken into account. Developments of this scale risk undermining long-established industries, while the benefits are often felt elsewhere. The fishing sector is being asked to carry too much of the burden.

Renewable energy has an important role to play, but not at the expense of sustainable local industries, food production, and the natural heritage of our islands. This proposal is in the wrong place and poses unacceptable risks to our livelihoods and environment.

For all of these reasons, I strongly oppose the Spiorad na Mara wind farm and urge that this application is refused in full.

Yours faithfully, 

[REDACTED]

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: MD-00011742 & MD-00011743 - Spiorad na Mara Limited - Spiorad na Mara Offshore Wind Farm - Isle of Lewis
Date: 05 May 2026 23:39:05
Attachments: [Appendix 1 Health impacts from infrasound, case law and recommended safe distances from wind turbines \(May 2026 update\).pdf](#)
[Objection to Spiorad na Mara.pdf](#)

Dear Licensing Operations Team

I submitted my objection to the Spiorad na Mara wind farm proposal earlier this evening, but forgot to attach a literature review which is referred to as an Appendix in the letter. I am attaching this Appendix now, and also attach the letter again (this time with my email address included) so that both documents are received together - I hope this doesn't cause confusion. Please delete my earlier letter.

Could you please acknowledge receipt?

Kind regards

[REDACTED]

Marine Directorate
Licensing Operations Team
Scottish Government
375 Victoria Road
Aberdeen
AB119DB
MD.MarineRenewables@gov.scot

[Redacted]

(CONFIDENTIAL: PLEASE REDACT PRIVATE DETAILS FROM PUBLIC RECORD)

5th May 2026

MD-00011742 & MD-00011743 - Spiorad na Mara Limited - Spiorad na Mara Offshore Wind Farm - Isle of Lewis

Dear Case Officer

I formally object to the proposed Spiorad na Mara Offshore Wind Farm (MD-00011742 & MD-00011743), submitted by Spiorad na Mara Limited under Section 36 of the Electricity Act 1989 and associated marine licensing provisions. This representation is made following review of the Environmental Impact Assessment Report (EIAR) and supporting documentation submitted as part of the application. I object on all of the following grounds:

DISEMPOWERMENT OF THE PEOPLE OF WEST LEWIS

Crown Estate Scotland did not consult with the people of the west coast of Lewis before auctioning the N4 site, and it is unclear how this nearshore site became an Option Area, the only one in Scotland to be sited so aggressively close to communities. This contravenes Scotland's National Marine Plan (NMP) GEN 18 '*Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.*'

NMP Para. 4.77 '*Engagement with the public and other stakeholders should be appropriate, proportionate and meaningful. It should be undertaken as early as possible in planning and consenting processes,*' and NPF4 Spatial Principles - Just Transition. '*We will empower people to shape their places.*'

The west side of Lewis is unusual in western Europe in that many of its Gaelic-speaking people believe that we have lived in the same place '*bho riamh*' – from time immemorial. My family have lived in Bragar, on the west coast of Lewis, for hundreds and perhaps thousands of years – in Gaelic, we say that we belong to Bragar (rather than Bragar belonging to us). We belong to a particular place, and that place is an integral part of our identity. My full name within my own community is

[Redacted]

[Redacted]

Each

name represents a generation and all these people lived in Ceann a' Tuath Bhràdhagair (North Bragar) with the exception of my mother's paternal ancestors, who came from Àrnol (Arnol). My family is not unusual: marrying outwith the community has only recently become commonplace. Genealogical relationships are central to Gaelic society, as is the bond to ancestral land. John Macinnes (Dùthchas nan Gàidheal, 2006, p. 279) elucidates this:

*'The native Gael carries in his imagination not so much a landscape, not a sense of geography alone, nor of history alone, but a formal order of experience in which these are all merged. The native sensibility responds not to landscape but to dùthchas. And just as 'landscape', with its romantic aura, cannot be translated directly into Gaelic, so 'dùthchas' and, indeed, 'dùthaich' cannot be translated into English without robbing the terms of their emotional energy. The complexity involved can be appreciated by reflecting on the range of meanings: dùthchas is ancestral or family land; it is also family tradition; and, equally, it is the hereditary qualities of an individual.'*¹

The people of rural Lewis, like other Gaelic-speakers in the Highlands and islands, have been disempowered for hundreds of years, and have suffered from successive waves of exploitative schemes to extract wealth and resources from their land and sea. This has been the case in Lewis ever since James VI awarded the right to colonise Lewis to a group of 'gentlemen' from Fife in 1598. Successive schemes to extract wealth from our seas (Fife Adventurers), land (sheep farming), foreshore (kelp industry), people (the British Army and Navy), and air (energy companies) have been planned in the south and often administered from the town of Stornoway. The proposed Spiorad na Mara wind farm is the latest of these schemes.

RIGHTS OF THE INDIGENOUS COMMUNITY

UNESCO states: *"Indigenous" refers to the original inhabitants of a region, particularly those who maintain cultural, social, and historical ties to their ancestral lands. This term is significant as it highlights the unique identities and traditions of Indigenous Peoples. Understanding these perspectives is crucial in promoting cultural diversity and environmental stewardship.* The Gaelic-speaking communities of the west coast of Lewis meet all these criteria, having a distinct culture, language, history and relationship with land and sea: our ancestors' names are written into the land and the sea, for those who can read them. Like other indigenous peoples we have maintained cultural and environmental biodiversity, reflected in environmental designations and in the number of tourists who visit every year to experience such an unspoilt, richly diverse environment.

The west Lewis communities also meet the definition of Indigenous Peoples as set out in the International Finance Corporation (IFC) Performance Standard 7 (PS7) and reflected in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), to which the Scottish Government has expressed its commitment. The relevant criteria include:

- Self-identification as a distinct cultural group;
- Collective attachment to ancestral lands, marine areas, and natural resources;
- Distinct social, cultural, and economic institutions; and
- A unique language, traditions, and practices.

¹ Macinnes, J. 2006. *Dùthchas nan Gàidheal. Selected essays of John Macinnes.* (ed. Newton, M.). Edinburgh: Birlinn. (page 279)

Our traditions, history, cultural and economic practices are inextricably linked to the land, the seas, and the marine resources of the west Lewis coast, including the fishing grounds and the inshore marine environment that this project seeks to appropriate. The proposed development lies directly within areas of traditional use.

IFC PS7, while formally applicable to projects financed by the International Finance Corporation or equivalent development banks, represents the internationally recognised standard for the protection of Indigenous Peoples' rights and is a material consideration under Scotland's international human rights obligations. The applicant has itself committed in the EIAR to meeting international standards including the IFC Performance Standards. PS7 requires that projects:

- Avoid adverse impacts on Indigenous land, resources, and cultural heritage wherever possible;
- Obtain Free, Prior and Informed Consent (FPIC) where impacts cannot be avoided;
- Maintain ongoing Informed Consultation and Participation with Indigenous communities throughout the project lifecycle; and
- Minimise, restore or compensate for unavoidable impacts in a culturally appropriate manner.

None of these requirements have been met. No evidence has been provided that Free, Prior and Informed Consent has been meaningfully sought. The applicant's own Focus Group Summary Report acknowledges that a recurring theme in feedback was the perception that consultation was more of a public relations exercise than a genuine attempt to engage with community concerns. A recent community survey conducted by Eilean mo Ghaoil found that 88% of respondents on the west side of Lewis oppose the project², a finding that is entirely inconsistent with any claim that community consent has been obtained.

The applicant has adopted the Gaelic name "Spiorad na Mara" for this project. The use of Gaelic language and folklore for commercial purposes, without demonstrable community consent and in respect of a project that the community has overwhelmingly rejected, is inconsistent with PS7 and with the principles of UNDRIP. It compounds the applicant's failure to engage with the Gaelic community on its own terms and in its own language.

Approving this project in its current form would be inconsistent with the principles of IFC PS7 and UNDRIP, would threaten the cultural, economic and spiritual rights of the Gaelic community, and would set a precedent for the exploitation of Indigenous cultural heritage without consent. The failure to assess intangible and living heritage contravenes NPF4 Policy 7 and the Historic Environment Policy for Scotland.

The project is also contrary to the Scottish Government's 'Scottish Land Rights and Responsibilities Statement 2022', Principle 1: *'1. The overall framework of land rights, responsibilities and public policies should promote, fulfil and respect relevant human rights in relation to land, contribute to public interest and wellbeing, and balance public and private interests. The framework should support sustainable economic development, protect and enhance the environment, support a just transition to net zero, help achieve social justice and build a fairer society for the common good.'*

² <https://www.emg-lewis.co.uk/news-1/community-opinion-survey-delivers-resounding-verdict>

No compliant Island Communities Impact Assessment (ICIA) has been submitted. This is a legal requirement under the 2018 Act: failure to submit an ICIA prevents a lawful determination. The fact that the development was presented to the host communities as a 'done deal' that could not be stopped compounds the disempowerment of the indigenous communities of west Lewis. It feels as though, as so often in history, the Gaelic communities are being disregarded and treated as 'other', as less important than other people.

HEALTH AND WELLBEING IMPACTS

My health has already been adversely affected by the Spiorad na Mara development. The plan was brought to my community by Northland Power accompanied by [Redacted] of Comhairle nan Eilean Siar (CnES) at a 'consultation' event in Grinneabhat on 18th May 2022 and presented as a 'done deal', with a Memorandum of Understanding already in place with five of the west side estates.

[Redacted] headed up the local authority's Energy Unit at that time and has since been promoted to Chief Planning Officer: I believe that he wrote the misleading response from CnES to the draft SMP-OWE (see below). I left this event shaking, feeling sick, powerless and upset. My sleep has been disrupted through stress and worry about this development ever since. My community fought a long battle with Amec/British Energy against a huge and highly inappropriate windfarm on the Lewis Peatlands SPA, and it is devastating to be faced with this new gigantic project on our doorstep: I can't help wondering whether it has been sited so close to our coast and villages partly to punish the communities of the west side because of the pivotal role played they played in the campaign against the Amec/British Energy plan.

I have attended all the Northland 'consultations' on the west side, seen many people in tears and having to leave the room, and noticed that there were fewer people at each consultation as the feeling of utter powerlessness and not being listened to grew. This is not a place that we are just passing through, that we can move on from – this is our home, and for many of us the home of our ancestors. We have fought over generations to stay here and protect this place for future generations. It feels as though each generation has to waste years of our lives fighting exploitation, rather than engaging in productive, positive activities.

The National Islands Plan: Annual Report 2021 says "*An inclusive Plan will promote genuine community empowerment at the local level enabling decisions to be taken as close as possible to where their impact will be felt.*" This whole proposal is the very opposite of that promise. The area that will be directly affected by this proposal – from Bernera to Ness - is one of the the biggest, if not the biggest, remaining Gaelic speaking community in the world, and this proposal continues the disempowerment of these people and communities. It promotes a feeling of hopelessness and will drive people away from these townships, further weakening Gaelic in its remaining communities of native speakers.

Northland Power commissioned a full Social Impact Assessment (SIA) which included focus groups with local residents, yet they have refused to publish the full report. This prevents the public and decision-makers from seeing the true scale of social risks identified by the developer's own research and is a major omission from the EIAR. Preliminary data contained within Appendix 6.2 (Focus Group Summary) explicitly identifies existing adverse impacts on community mental health and wellbeing and a sense of cultural loss due to the unprecedented scale of the industrial proposal and its proximity to our homes, yet these human costs have been sidelined in the main application.

A project cannot claim to support "wellbeing" when the evidence of the harm it is causing—documented by the developer's own consultants—is being withheld from the public. By withholding the full SIA results, the developer cannot prove compliance with the health and wellbeing mandates of NPF4 Policy 14. The lack of transparency regarding social data undermines the ability of the competent authority to perform a robust socio-economic and health evaluation as required under the EIA Regulations.

The EIA details adverse mental and physical health impacts on residents near to the offshore project due to noise, visual impacts and the incoming workforce, during construction, from operational turbines, and during decommissioning. For example: *'Noise generated during construction activities, particularly piling, has the potential to affect human health through susceptibility to annoyance, stress, and sleep disturbance. These effects are most relevant for residential population receptors along the northwest coast of the Isle of Lewis/Eilean Leòdhais, where the Offshore Project is closest to shore and where background sound levels can be relatively low during calmer conditions, increasing the potential for noticeable changes in the acoustic environment.'* *'Noise - Long-term exposure may contribute to annoyance or stress'* *'Visual impacts - Mental wellbeing impacts and connection with place due to landscape change'* and so on. It goes on to say that these effects will be mitigated for but fails to explain how they will be mitigated. I cannot see that there is any way to mitigate, for example, for the pile-driving only 6km from our homes – I find the prospect terrifying. Key protection plans such as these should not be deferred until after permission is granted (Planning and Infrastructure Act 2025).

When the survey work for Spiorad na Mara was ongoing, noise and light pollution from the survey vessels was a problem along our coasts. Sounds of the water, birds and insects on calm still summer nights were replaced by engine sounds carrying over and through the water. At some points my dog would not go on our usual walk to the shore although I could hear nothing – I assume that he was hearing the same sounds from seismic surveying, etc, that disturb cetaceans. Lights from the survey vessels were bright enough to throw light into my house, which has never needed curtains on the ocean-facing side. I dread the prospect of 24/7 sound and light pollution, possibly for the rest of my life.

The Draft Updated Sectoral Marine Plan for Offshore Wind Energy, May 2025, says: *'The populated areas of land within 15 km from N4 have the potential to be affected during construction, operation and decommissioning of arrays within the OA through noise, vibration, light and shadow flicker effects.'* It suggests restrictions on piling during antisocial hours. It suggests mitigation of flicker effects through consideration of turbine size. I do not think any of these mitigations have been put in place, and even if they have *'The residual risk associated with noise, vibration, light and shadow flicker effects from development in N4 is assessed as minor to moderate adverse, dependent on the turbine and foundation designs, and the level of mitigation applied.'*

Infrasound has been scoped out of the EIA on the basis of a 1997 methodology, but recent studies show stress-related symptoms and profound health harms from infrasound – in excess of 90 dB – several kilometres away from operational wind turbines. Projected levels of infrasound for the Spiorad na Mara development, with its enormous blades of 140m in length, are extremely high. The >95 dB range is predicted to extend over 10km away from the turbines, and infrasound and physiology research suggests that people living in the west side coastal communities would be

placed at elevated risk of compromised cardiac function. Information on the most recent studies has been gathered together in the paper '*Health impacts from infrasound, case law and recommended safe distances from wind turbines*' Cambrian Environmental Research (cambrianenvironmental.org) March 2026 (updated May 2026), attached as Appendix I. NPF Policy 23 b) states: '*Development proposals which are likely to have a significant adverse effect on health will not be supported. A Health Impact Assessment may be required.*' The precautionary principle should apply, and the development must not be given permission until all health impacts, including those from infrasound, are investigated and ruled out.

ADDITION OF N4 NEARSHORE DPO ALTHOUGH IT WAS INITIALLY SCOPED OUT AS AN AREA OF SEARCH

No information is publicly available as to why the N4 inshore site, which was not initially identified in the Sectoral Marine Plan for Offshore Wind Energy as an Area of Search, was added at a later stage as a Draft Plan Option despite having been initially scoped out. SMP-OWE states that '*powers introduced under Part 6 of the Islands (Scotland) Act 2018 allow Scottish Ministers to establish a scheme to license development adjacent to, or within, 12 nautical miles of an island, in respect of designated island licensing areas. Island licensing areas may only be designated upon application by a Local Authority.*³ CnES have stated that they did not ask for the N4 area to be designated as a DPO - its addition without local authority approval is contrary to the Islands (Scotland) Act 1918.

ASSESSMENT OF ALTERNATIVES

The development is in the wrong place – it is far too big, far too close to shore, and located much too far from the market for the power generated. By law, a developer must show they have explored different ways and locations to build a project to ensure the least damaging option is chosen. In this case, the developer has provided a narrative of project history instead of a structured, side-by-side comparison of different locations based on environmental damage. There is no evidence of any attempt to move the turbines further out to sea or to find a cable path that avoids sensitive areas like Barvas Cemetery, a site of deep spiritual and cultural importance. For a site located off such a culturally sensitive coastline, the failure to compare alternatives means it cannot be proven that this is the least harmful way to proceed – a key requirement for a project of this scale.

VISUAL & ENVIRONMENTAL IMPACT

[Schedule 9 of the Electricity Act 1989](#) sets out a range of consideration and mitigation measures that an applicant should take into account when applying for consent:

“(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and

³ Sectoral Marine Plan Offshore Wind Energy - Final Island Communities Impact Assessment, October 2020, Scottish Government.

(b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.”

The Spiorad na Mara proposal fails to meet these criteria. It is located on the west coast of the Outer Hebrides, a coastline defined by its ‘edge of Europe’ feel and its vast Atlantic horizons. Beyond lies Iceland, Greenland and the American continent. The Atlantic was and is a source of awe and wonder for many of us who grew up here, and for many of those who choose to live here. This project would replace the magnificent natural ocean views with a massive, constantly moving, industrial presence, looming over the coastline and our villages day and night.

Because the turbines are so tall and located so close to shore, they would dominate the views from beaches and family homes, destroying the sense of remoteness that has existed for generations, and the sense of being ‘closer to heaven’ on the islands that many have spoken of. There would be no relief during the night, when our magnificent starry ‘dark skies’, some of the darkest in Europe, would be ruined by an array of flashing bright lights. I don’t think many people who have stood on the west coast of Lewis watching the aurora borealis dancing over the sea would wish this scheme to go ahead. It is too easy to make decisions to destroy the environment from afar, and impossible to reverse these decisions once made.

The project is unprecedented in its size and its proximity to the shoreline. Because the developer has left out many critical details, it is impossible for the public to truly understand the full extent of the damage the project would do to nature, local culture, and daily life in these unique coastal townships. The scale of visual change cannot be mitigated: the size and proximity of the turbines would permanently transform and industrialise one of Scotland’s most iconic coasts. This directly conflicts with NPF4 Policy 4 (Natural Places) and with Schedule 9 of the Electricity Act 1989.

The application is inconsistent with relevant provisions of the National Marine Plan, the EIA regime, and where relevant the policy objectives of NPF4 in relation to biodiversity, landscape, cultural heritage, and health. The documents provided do not allow for a full or informed understanding of the environmental, cultural, or community impacts. The developer relies on “mitigation measures” that have not yet been defined, making it impossible to verify if they will be effective. There are significant inconsistencies in the reported environmental effects and clear limitations in the baseline data used for the assessment.

The plan directly conflicts with National Planning Framework 4 (NPF4) regarding the Climate and Nature Crises, Biodiversity, Natural Places, Historic Assets, Energy, and Health and Wellbeing. The EIAR is deficient due to gaps in baseline data and a failure to demonstrate that a realistic worst-case scenario has been consistently applied. The heavy reliance on post-consent mitigation and monitoring plans prevents the competent authority from making a robust and lawful determination at this stage.

Under Landscape, Seascape and Visual Amenity, the Draft Updated Sectoral Marine Plan for Offshore Wind Energy, May 2025, says of the N4 area: *‘Overall, the residual effect on landscape / seascape is assessed as moderate to major adverse, dependent on the array design and turbine design of development within the OA. This topic is subjective in nature and therefore it may be possible for the significance of the effect to be reduced through local engagement and the community’s acceptance of development within N4.’* The community are not accepting of it, as demonstrated by the only survey

of community views on N4, carried out by the Eilean mo Ghaoil group, showing 88% opposition⁴ and the development should not be allowed to proceed.

ECONOMIC IMPACTS

I am a Trustee of a charity which runs a busy and successful community hub, providing much-needed services to my community which lost its school, Post Office, nursery, old people's day care centre and shop in quick succession. The community took matters into its own hands, raised money to buy the former school building and refurbish it, and have been running a diverse programme of activities and social events, providing local employment, and welcoming visitors to the community ever since. The building is a busy social hub and has given the community renewed energy and vitality.

The economic engine which keeps our community building open is tourism: we run a modern, comfortable, four-room 12-bed hostel, and the revenue from this allows us to pay the bills to keep the building open for community use. The accommodation brings new people into the community, including artists in residence, researchers and others who want to learn about our culture, language and environment. We host groups from other indigenous communities from across the world, as well as running residential Gaelic language courses. We market the accommodation on our wild, edge of Europe, Atlantic coastal setting: [Redacted] The Spiorad na Mara proposal puts the success of our community hub into jeopardy. At no point have we been approached by Northland Power for our views on their development.

[Redacted]

Tourism in Lewis is built upon its wild coastline, pristine beaches, dark skies and sense of remoteness, with the benefits for mental health and wellbeing that these bring. The developer's own report admits that 86% of visitors travel here specifically for the scenery and landscape. This industry is a cornerstone of our economy, growing from £65 million in 2017 to over £81.5 million today, and supporting more than 1,000 local jobs. All the top visitor attractions in Lewis are on the West Side and Ness – the Calanais Stones, Carloway Broch, Gearreannan Village, Arnol Blackhouse, Butt of Lewis, beaches, etc. Despite this, the developer has refused to calculate how many tourists will stop visiting once the western seascape is industrialised. A landscape that is the primary "product" for the island's economy - now accounting for up to 16% of all economic activity – must not be permanently transformed without first measuring the financial cost to local livelihoods.

Tourism has seen a 25% increase in value since 2017 and is a designated "priority growth sector"; industrialisation threatens the "unspoiled" character required to meet 2035 economic targets. Ministers cannot satisfy their duty under the Islands (Scotland) Act 2018 without a full assessment of the project's impact on the island's economic wellbeing and tourism-dependent jobs.

The developer talks of downstream supply chain opportunities, community benefits, and jobs. These may or may not come to pass. What is important to our communities is the real jobs and real people who make a living right now based on the unspoilt environment of the West Side and the rest of Lewis. The Creative Industries are one of Highlands & Islands Enterprise's Key Growth Areas: as of 2013/2015, the creative industries across the Highlands and Islands generated roughly £171 million in GVA. Many households in Lewis derive all or part of their income from the arts and other creative industries. If this proposal were to go ahead many of the people who live and work

here now, who have built successful tourism and arts businesses in Lewis, will find their income reduced or lost completely. The shops and services that rely on the extra income from visiting tourists will close and village populations will fall, with the most mobile young people and families moving away first. The development has already cast a shadow over our communities with people delaying or abandoning plans to build and renovate, and some more mobile people already having moved away because of the threat to their homes and livelihoods.

The EIAR fails to model how the "high magnitude of change" to the seascape will reduce Tourism Gross Value Added (GVA) (NPF4 Policy 30; LDP Policy ED1). The lack of a compliant Island Communities Impact Assessment (ICIA) means the vulnerability of the vital tourism sector hasn't been legally evaluated (Islands (Scotland) Act 2018; NPF4 Policy 4). Industry cannibalisation, where the project causes labour displacement from our vital care and tourism sectors, has not been assessed (NPF4 Policy 30). The effect on creative practitioners and the possibility of driving them away from the Isle of Lewis has not been assessed. The development fails the NPF4 Policy 25 mandate for Community Wealth Building. (NPF4 Policy 25)

CULTURAL HERITAGE: ARCHAEOLOGY

IMPACTS ON SCHEDULED MONUMENTS

There are approximately 53 Scheduled Monuments in the coastal areas most directly affected by the Spiorad na Mara plan, from Ness to Gallan Head, and more within the ZTV – for example those on the Point Peninsula and on North Rona.

Schedule 9 of the Electricity Act 1989 states that an applicant should take into account when applying for consent: "(a) *shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest, and (b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.*"

NPF4 Policy 7 (h): *'Development proposals affecting scheduled monuments will only be supported where significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.'*

Scotland's Marine Plan, 4.22: *'Marine planning should help to ensure that future marine activities and developments can be carried out in a way that respects the marine historic environment and the setting of important coastal heritage assets.'* 4.23: *'Designated assets should be protected in situ within an appropriate setting.'*

LDP Policy NBH5: *'Development proposals that will adversely impact upon scheduled archaeological remains or the integrity of their settings will only be permitted in exceptional circumstances where there is no practical alternative site and where there are imperative reasons of overriding public interest.'*

UNESCO define the setting of a monument thus: *'The setting of a heritage structure, site or area is defined as the immediate and extended environment that is part of, or contributes to, its significance'*

and distinctive character. Beyond the physical and visual aspects, the setting includes interaction with the natural environment; past or present social or spiritual practices, customs, traditional knowledge, use or activities and other forms of intangible cultural heritage aspects that created and form the space as well as the current and dynamic cultural, social and economic context.'

Historic Environment Scotland (HES) defines 'Setting' as: '*the way the surroundings of a historic asset or place contribute to how it is understood, appreciated and experienced.*' HES has published a list of factors to consider when trying to assess the impact of a development upon the setting of a historic asset or place (Managing Change in the Historic Environment, Setting. HES, 2016). These are:

- Whether key views to or from the historic asset or place are interrupted
- Whether the proposed change would dominate or detract in a way that affects our ability to understand and appreciate the historic asset
- The visual impact of the proposed change relative to the scale of the historic asset or place and its setting
- The visual impact of the proposed change relative to the current place of the historic asset in the landscape
- The presence, extent, character and scale of the existing built environment within the surroundings of the historic asset or place and how the proposed development compares to this
- The magnitude of the proposed change relative to the sensitivity of the setting of an asset – sometimes relatively small changes, or a series of small changes, can have a major impact on our ability to appreciate and understand a historic asset or place. Points to consider include:
 - The ability of the setting to absorb new development without eroding its key characteristics
 - The effect of the proposed change on qualities of the existing setting such as sense of remoteness, current noise levels, evocation of the historical past, sense of place, cultural identity, associated spiritual responses
 - Cumulative impacts: individual developments may not cause significant impacts on their own, but may do so when they are combined

The EIAR anticipates significant effects to the setting of the designated archaeology and cultural heritage assets of Teampall Eòin, chapel, graveyard and settlement at Port Mhór Bragar and Dun Borge, broch, as a result of the change of views to the seascape due to the construction and operation of the Offshore Project. However, given the scale and proximity of the N4 windfarm, every single one of the points above is a cause for concern for every archaeological site from Uig to Ness with a line of sight to the turbines. This includes most if not all the Scheduled Monuments including the Calanais Stones, one of the most important monuments in Britain.

The conclusions of the EIAR that the magnitude of impact on the majority of Scheduled Monuments is Low is not supported by the evidence. The peaceful 'edge of Europe' setting of the monuments, with unobstructed views over the Atlantic Ocean, is key to their appreciation. These views would be interrupted and spoilt by the turbines; the turbines would dominate the settings of the historic assets, affecting our ability to understand and appreciate them; the magnitude of change would be extremely high, affecting key characteristics of the settings such as sense of remoteness, current noise and night-time light levels, sense of place, etc.

The development is without precedent anywhere in the United Kingdom. No offshore wind farm of this scale has been consented or built at this proximity to shore, let alone in proximity to a landscape with this concentration of nationally significant monuments. The assessment at no point acknowledges this unprecedented character: it applies the same methodology and the same significance thresholds that have been used for offshore wind farms at greater distance and with turbines of substantially lesser height. The result is a series of conclusions that effects on multiple heritage assets of national importance are ‘not significant in EIA terms’ which are not credible when set against the physical reality of what is being proposed. Altering the settings of these monuments, giving them an industrial backdrop of mega-turbines with their associated noise, movement, vibration and shadow flicker would be a change of extremely HIGH magnitude, dominating the settings and the monuments themselves.

THE CULTURAL CONTEXT OF THE MONUMENTS

The people who live in the surrounding land should also be considered as part of the context of the Scheduled Monuments. According to the UNESCO definition, they are an important part of the setting: *‘Beyond the physical and visual aspects, the setting includes interaction with the natural environment; past or present social or spiritual practices, customs, traditional knowledge, use or activities and other forms of intangible cultural heritage aspects that created and form the space as well as the current and dynamic cultural, social and economic context.’*

The west side villages of Lewis are some of the last majority Gaelic speaking communities in the world, with an indigenous population that is deeply rooted in place. There is an unbroken lineage with these sites in Gaelic culture and knowledge, language and familial history. Any corrosion of a culture that is already under pressure will leave behind a myriad of archaeological sites stripped of their human context. For an example of this we need look no further than Hiort/St Kilda, where archaeologists often struggle in vain to make sense of the various stone structures with no surviving member of the public to simply ask. The people who live on the west side of Lewis matter and should not be disregarded.

INCOMPLETE EIAR CULTURAL HERITAGE SETTINGS ASSESSMENT



SM13786 'Dun, Stac a' Chaisteil'.

HES wrote to the Marine Directorate in December 2023 informing them that the site of Stac a' Chaisteil (Dalmore/Gearreannan) was being considered for designation and asking that the information be passed to the applicant so that the cultural heritage assessment could be undertaken in a fully informed manner. The site was designated as a Scheduled Monument in May 2024.

The EIAR fails to consider the impact on the setting of this Scheduled Monument (SM13786 'Dun, Stac a' Chaisteil'), a coastal promontory fort on a sea stack in the midst of the N4 array area (NB2022045460). The monument is '*located on a sea stack partially attached to the mainland by a fallen and degraded promontory spine and surrounded by high vertical cliffs and broken bays*' (HES).

HES describes the '*Contextual characteristics (how a site or place relates to its surroundings and/or to existing knowledge of the past)*' thus: '*There are few comparable examples to Stac a' Chaisteil in the Western Isle; it is unusual because of its multiperiod phasing and very remote location. There is potential for comparative study of these sites on a local and national scale to better understand the function of such monuments, their interrelationship and the significance of their placing within the landscape, in particular in relation to our understanding of Iron Age social hierarchy, changing settlement patterns and systems of inheritance.*

The monument is located on a difficult to access coastal promontory to the northeast of Na Gearrannan/ Garenin. The monument uses the natural topography as part of its defences and in the past this location may have been chosen also to give access to the sea.'

This nationally important monument is inseparable from its remote coastal setting with panoramic views across the Atlantic Ocean: its omission renders the EIAR assessment incomplete and therefore the planning application cannot lawfully be progressed to determination.

TEAMPALL EÒIN

Teampall Eòin is one of the few Scheduled Monuments which the EIAR assesses to be significantly affected in EIA terms. Teampall Eòin (SM3926) is a chapel, graveyard and settlement at Port Mhòr, Bragar, situated on the west Lewis coast directly facing the proposed turbine array. The single photomontage produced for this site (VPI6, Plate 3-1 of Appendix I5.2) is described as "Looking south at the remains of Teampull Eoin." It shows the site with the viewer's back to the sea — and therefore with the turbine array entirely absent from the frame.

This is not a methodological accident. It is a systematic choice that fundamentally misrepresents the visual experience of this site. Teampall Eòin is a coastal site. Its graveyard faces the sea. The people who use it — for burial, for remembrance, for the ongoing cultural practices described in a separate objection on intangible cultural heritage — face the sea when they are there. The photomontage that represents the visual impact of this project on this site has been taken in the one direction in which the project is invisible. NPF4 Policy 7(a) requires that the assessment "*identify the likely visual or physical impact of any proposals for change.*" A photomontage taken looking away from the development does not identify the visual impact of the development. It conceals it. This is not compliance with Policy 7(a). It is its opposite.



SM3926 Teampall Eoin chapel and cemetery looking north-west towards the array area

The applicant also fails to assess impacts on the intangible and living heritage of sites such as Teampall Eòin chapel and cemetery, which receives a constant stream of people visiting relatives and ancestors graves and enjoying the quiet, contemplative atmosphere of a place which has been sacred to the community for many centuries. This contravenes NPF4 Policy 7, Historic Environment Policy for Scotland (HEPS), The Islands (Scotland) Act 2018 and LDP Policy EHI.

SYSTEMATIC SELECTION BIAS IN VIEWPOINT ORIENTATION FROM SCHEDULED MONUMENTS

The selection bias in viewpoint orientation - specifically regarding Scheduled Monuments - risks a significant underestimation of the magnitude of change. The assessment fails to utilise "worst-case" photomontages and wireframes from the most sensitive elevations of these protected assets. The pattern runs through the entire Appendix 15.2 and once seen is impossible to ignore - the plate captions tell the story:

- Plate 3-1: "Looking south at the remains of Teampull Eòin" — away from the sea
- Plate 3-3: "Looking northeast at dùn on Loch Arnol" — away from the sea
- Plate 3-5: "Looking east toward the remains of the dùn at Loch an Dùna" — away from the sea
- Plate 3-8: "Looking south toward Calanais" — away from the sea
- Plate 3-10: "Looking south at Ceann a' Gharaodh" — away from the sea
- Plate 3-11: "Looking south at Cnoc Fillibhir Bheag" — away from the sea
- Plate 3-14: "Looking north toward Luchruban" — away from the sea
- Plate 3-15: "Looking east at Barvas Church of Scotland" — away from the sea

The overwhelming majority of the site photography throughout the assessment looks inland, away from the proposed development. Where a seaward view is included — as at Plate 3-9, "Looking northwest from Calanais toward the location of the Turbine Area" — it is a wireline only, not a photomontage, and therefore does not show the visual reality of the turbines in the landscape.

This is not a balanced assessment of visual impact. It is a systematic programme of viewpoint selection designed to minimise the apparent visual impact of the development on heritage assets. The applicant has visited each site and taken photographs looking away from their own project. Failing to adequately assess the likely effects of the development on the settings of scheduled monuments contravenes NFF4 Policy 7a and Schedule 9 of the Electricity Act 1989 and renders the EIAR incomplete: therefore, the application cannot be lawfully consented.

Selection bias in viewpoint orientation - specifically regarding Scheduled Monuments - risks a significant underestimation of the magnitude of change. The assessment fails to show the "worst-case" scenarios from the most sensitive elevations of these protected assets.



SM13787 'Dun, Eilean Loch Arnol', looking north-west towards the array area.

THE CALANAIS ASSESSMENT USES THE GEOMETRY OF THE STONES TO MINIMISE APPARENT IMPACT

The Calanais Standing Stones (SM90054) are among the most significant prehistoric monuments in Europe, comparable in international importance to Stonehenge. They sit approximately 18.5 kilometres from the array boundary, and should the development go ahead turbines would dominate the skyline looking to the north and west from Calanais.

The assessment at paragraph 2.4.1.7 of Appendix 15.2 states that views from Calanais II to Calanais I "are aligned to the northwest and so any visibility of the offshore infrastructure would be peripheral in the view and so WTGs would not be visible directly beyond Calanais I in this view." The single photomontage produced for the complex (VP37) is described as "looking south toward Calanais" — again, a direction in which the turbines are not visible.

The effect of this methodology is that the assessment consistently evaluates the Calanais complex from viewpoints that look away from, or at right angles to, the turbine array, and then concludes that the turbines are peripheral or absent. The assessment entirely fails to evaluate the experience of standing at Calanais and looking west or northwest toward the sea — the direction in which the

turbines will be fully and prominently visible, rising to 338 metres above the horizon across a wide arc of the seascape.

There is no credible planning or heritage assessment methodology that would justify choosing the viewpoints that minimise visibility of a proposed development as the basis for concluding that impact is not significant. The Calanais Setting Document produced by HES and CnES, which the applicant references, identifies the importance of the wider landscape setting of the complex, including its relationship with the western horizon and the sea. The applicant has not assessed impact on that relationship. They have assessed impact on internal sightlines within the complex and concluded those are unaffected, while the relationship with the western seascape — which will be dominated by 338-metre turbines for the entire operational lifetime of the project — goes entirely unassessed. The application should not be considered until the impact on Calanais sightlines are adequately assessed in accordance with the Calanais Standing Stones Setting Document, 2014 (HES & CnES).

NON-SCHEDULED ARCHAEOLOGICAL SITES

Sites of regional or local importance, while lacking the same legal protection as Scheduled sites, are significant in the planning process. Destruction of these sites by development often necessitates archaeological evaluations or excavations. Considering the concentration of such sites on the West Side, the entire area can be viewed as a cultural landscape of considerable age. For example, like a giant Russian Doll it contains multitudes of sites from at least the Neolithic (although there are likely to be undiscovered Mesolithic sites) - there are existing standing examples in the area from every era up to the present day. These sites can be visited, and the surrounding area looks similar to when the sites were in use. This is a rare thing in today's world, where increasingly every part of the world is built up and the past overwritten.

HIORT/ST KILDA

World Heritage Status is a legal designation made by UNESCO for sites judged to have '*cultural and natural heritage.. considered to be of outstanding value to humanity*'. These would include such sites as the Pyramids of Giza, the Taj Mahal, Angkor Watt and Hiort/St Kilda, which is in fact a dual world heritage site – once for the Natural Environment and once for the Cultural Heritage. There is no higher measure of importance in the world.

The developer states that '*Although there may be theoretical visibility from elevated areas of St Kilda/Hiort, at distances of >105 km the WTGs within the Array Area would not be distinguishable to the eye to any significant degree and that there would be no potential for significant effects on the Outstanding Universal Value of the St Kilda World Heritage Site at such long range.*' Hiort is clearly visible from high ground in Lewis, so the turbines will be equally visible from Hiort. All effects on this double World Heritage site should be assessed, whether considered significant by the developer or not. The development will also have a potentially devastating impact on the bird life for which St Kilda is designated – see below,

The application should not be considered until the impact on St Kilda is adequately assessed.

CULTURAL HERITAGE: ARCHAEOLOGY CONCLUSION

The conclusion that these impacts are not significant in EIA terms is not supported by the evidence. The proposed development would give rise to severe visual effects and fundamentally alter how the heritage assets of West Lewis are understood, appreciated and experienced, thereby substantially diminishing their heritage value. The Seascope Landscape and Visual Impact Assessment (SLVIA) fails to address the relationship between coastal monuments, treating their settings as static and localised. It ignores the inter-visibility between multiple Scheduled Monuments and their shared historical connection to the open Atlantic horizon. It ignores the relationship between the people of west Lewis and the monuments. By industrialising the seascope, the project severs the functional and spiritual link between these heritage assets and the sea. The impact would be transformative, permanent, and highly adverse.

No effective mitigation has been identified to address these effects. Furthermore, alternative solutions are available, and no overriding justification has been demonstrated for selecting this site.

ORNITHOLOGY AND SEABIRD IMPACTS

One of the great joys of living on, or visiting, the west coast of Lewis, is the abundant birdlife, with many Red List species breeding, wintering, or migrating through. This is the first/last landfall for birds migrating to Iceland and Greenland: this project risks sustained mortality for species with small global populations by placing a wall of turbines across this primary migration route. Many west side villages including North and South Bragar, benefit financially from breeding birds, particularly waders, divers and corncrake, by taking part in Agri-Environment Climate Scheme (AECS) agreements with Naturescot and the Scottish Government. Key qualifying and protected species—including red-throated diver (*Gavia stellata*), corncrake (*Crex crex*), white-tailed sea eagle (*Haliaeetus albicilla*), breeding waders, seabirds, migratory species, and marine mammals (European Protected Species)—may be affected. The red-throated diver is especially sensitive to offshore wind projects. Potential impacts include: displacement from feeding areas; disturbance during foraging; increased energetic costs. These effects may reduce foraging efficiency and, in turn, affect breeding success. This would affect our AECS schemes, which are designed to protect birds and increase breeding success.

The developer claims no significant harm to these birds, yet the application contains a fundamental contradiction: it claims "no impact" while simultaneously preparing a Habitats Appraisal Derogation Case to bypass protections because the damage is expected to be significant. The local extinction of species cannot be risked on the basis of such conflicting evidence. Turbines are located in feeding waters used by birds from the Lewis Peatlands and St Kilda protected sites, yet no proof has been provided that these birds will remain unharmed. The "beyond reasonable scientific doubt" threshold for the Habitats Regulations has not been reached.

The project is inconsistent with the 2008 AMEC/Lewis Wind Power Ministerial Precedent, which established that the Lewis Peatlands SPA constitutes a 'national interest', carrying a 'weight of importance' that outweighed the benefits of energy production; a conservation priority further strengthened by NPF4 Policy I, which mandates that significant weight must be given to the climate and nature crises in all planning decisions (Ministerial Decision 2008; NPF4 Policy I).

DRAFT SECTORAL MARINE PLAN RESPONSE FROM THE LOCAL AUTHORITY

The response from CnES to the Consultation on the draft Sectoral Marine Plan for Offshore Wind Energy contained many errors. I have copied extracts from the response below, with comments.

'1. 'The local population has accepted the considerable visual impact of these Onshore deployment on the tacit understanding that the next generation of energy production will be in the marine environment. The local population is therefore prepared for, and supportive of, large scale deployment of Offshore Wind off Lewis and has not reacted negatively to the potential visual impact in the way other coastal regions in Scotland have.'

Every measure of public opinion showed strong opposition from the island's people towards the large onshore windfarm proposals (average 88% against). They were driven through by energy companies with the support of CnES, politicians and public agencies, despite strong public protest. There had been no consultation with the proposed host communities on offshore wind at the time the above statement was made, and there was no evidence of support. A population cannot react negatively to something it has no knowledge of. The recent survey carried out by Eilean mo Ghaoil showed that the opposition to the offshore plans locally still stands at 88%, almost 20 years after the surveys on onshore wind.

'10. The principal tourist 'hot spots' with sight lines to the development are Gearrannan Blackhouse Village, Carloway (direct sight line from the village is to the south of DPO N1) and Arnol Blackhouse (primary sight line is inland across the island rather than out to sea). Across the coastal area adjacent to DPO N4, the main A858 road winds slightly inland and there are no ocean viewpoints to speak of. Visitors will only have full view of DPO N4 deployments from pretty inaccessible clifftops well off the main A858 road. No concern has been registered with the Comhairle by local residents in respect of future Offshore Wind development.'

The developers EIA shows the ZTV of the Spiorad na Mara turbines stretches from the Minch across Lewis, as far as South Harris, and out across the ocean to the Flannan Isles and beyond. The principal tourist route in the Isle of Lewis (and therefore the Western Isles, as 74% of visits are to Lewis) is the circular West Side route which takes in the Calanais Stones, Carloway Broch, Gearrannan Blackhouse Village, Shawbost Norse Mill and Kiln, and Arnol Blackhouse, all of which will have full views of the turbines. The Hebridean Way Cycle Route follows the west coast. The statement that there would only be a full view of DPO N4 from 'pretty inaccessible clifftops' is wildly incorrect, and it is concerning that CnES reported such inaccurate information to the Scottish Government.

The local population had no opportunity to express concern in respect of Offshore deployment, as they had not been consulted on the matter.

11. 'While recognising the inevitable constraints to wider development, the Comhairle is satisfied that the latest Guidance reflects the views of the Western Isles community.'

There was no consultation with the Western Isles community, therefore CnES had no means of knowing what the views of the community were. I don't know whether this consultation response influenced the selection of the N4 site, but it should not have done so.

POLLUTION RISKS

Seabed preparation and cable installation in these powerful Atlantic waters carry high risks of sediment disturbance and accidental chemical or oil spills. While the developer acknowledges these risks, they have not provided a completed plan to prevent them. Instead, they are asking for permission now and promising to write safety and emergency plans later. It is impossible to know if water quality and marine life will be safe until the specific safety measures are presented and reviewed. The accelerated erosion of the turbine blades in the stormy north Atlantic environment is also of concern.

FISHERIES AND MARINE LIFE

The waters off West Lewis are both a workplace for local fishermen and a home to some of the most abundant and diverse whale and dolphin populations in the UK. The developer assumes fishermen can simply move to other grounds but provides no evidence that those areas are available or can support the extra pressure. Furthermore, the plan to drive giant piles into the seabed with massive hammers will create noise loud enough to disturb dolphins up to 70km away. You cannot claim to protect the marine environment while causing such extreme disturbance to the creatures that live in it.

The impact on fisheries fails to demonstrate compliance with NPF4 Policy 11 and National Marine Plan Policy GEN 4. Nearly 28% of the local bottlenose dolphin population is predicted to be disturbed, yet the developer dismisses this as "not significant". The developer admits the need for "harm" licenses (EPS) while claiming the effects are "negligible". An Appropriate Assessment cannot conclude "no adverse effect" given the scale of predicted marine mammal disturbance.

ONSHORE INFRASTRUCTURE

The offshore turbines and onshore infrastructure are a single project, yet they are being treated separately. This hidden part of the development involves digging up miles of RAMSAR designated blanket bog across the Isle of Lewis, building a massive substation outside Stornoway, and running roads through active crofts and rare coastal machair habitat. By leaving these details out of the current application, the developer is obscuring the true damage to peatlands - which are vital carbon stores - and the traditional crofting way of life.

Risks to the machair and peatlands have not been subject to a full Habitats Regulations Appraisal. Destroying peatlands which have grown over 1000s of years in the name of 'low carbon' energy is hypocritical. Machair is one of Europe's rarest habitats, occurring only on the west coasts of Scotland and Ireland. The severance of offshore and onshore consents breaches National Marine Plan Policy GEN 1.

DARK SKIES AND NOCTURNAL WILDLIFE

The West Lewis coast is one of the darkest places in Europe, and its pristine night skies are a major part of the island's identity and tourism appeal. This project would place a permanent "wall of light" on the western horizon, with red aviation lights visible for nearly 40km every night for 35 years. Beyond ruining the view of the stars and Northern Lights, these lights pose a lethal risk to rare seabirds. Species such as the Manx Shearwater, European Storm Petrel, and Leach's Storm Petrel are strictly nocturnal when near land; they are fatally attracted to artificial lights (a phenomenon known as phototaxis). Also, while primarily active by day, Kittiwakes often forage and migrate at night, but lacking night vision, they are highly vulnerable to red aviation lights, which can disorientate them and draw them into the path of moving turbine blades - a risk the developer has failed to assess.

There is a significant gap in the environmental evaluation regarding the nocturnal baseline. The EIAR fails to assess mortality pathways for SPA (Special Protection Area) species that are active at night. By relying on diurnal (daytime) observations, the applicant has systematically underestimated collision risk. There has been no site-specific study on the "attraction effect" of aviation lighting on nocturnal seabirds. This is not compliant with NPF4 Policy 4: The "beyond reasonable scientific doubt" threshold required by the Habitats Regulations cannot be met while the impacts of high-intensity lighting on night-flying protected species remain unstudied. The Precautionary Principle should be followed: scientific uncertainty regarding how these species navigate industrialised night skies necessitates a refusal of consent until robust night-time impact modelling is provided.

INADEQUACY OF ENVIRONMENTAL IMPACT ASSESSMENT

The EIAR does not provide a full or transparent picture of the damage this project could cause to the West Lewis coast: instead of providing clear facts, the developer has used a "flexible" design that makes it impossible to determine the true impact. Specific turbine sizes and layouts have not been decided. The location/s of substations have not been decided. This makes it impossible to know if the worst-case scenario for the environment has been studied. Furthermore, permission is being sought now while promising to devise ways to address environmental damage later. The lack of defined worst-case scenarios and refusal to commit to specific turbine dimensions undermines the reliability of the entire assessment, so that the public and decision-makers cannot be sure that the listed impacts represent the true extent of the potential consequences. A project cannot be safely or legally approved when the solutions to the problems it creates have not yet been written.

The reliance on post-consent mitigation and monitoring is unlawful. Because mitigations are not defined within the application, their effectiveness cannot be tested, preventing a robust assessment of residual effects at the decision stage. The developer has not proven that national requirements to protect nature and climate can be met, having failed to provide a complete and reliable assessment.

The application therefore fails the "beyond reasonable scientific doubt" standard required under the Habitats Regulations. It also fails the "satisfactory manner" threshold of NPF4 Policy 11 and the biodiversity mandates of NPF4 Policy 3. This absence of evidence necessitates refusal based on the Precautionary Principle. The application also runs contrary to Schedule 9 of the Electricity Act 1989: *"(an applicant) (b) shall do what he reasonably can to mitigate any effect which the proposals would*

have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

CONCLUSION

This proposal would be damaging to nature, to wildlife and wild places, to cultural and natural heritage, to tourism and the economy of the west coast of Lewis. It would be detrimental to the physical and mental health of people who live in the communities of the west coast of Lewis. It would drive people to leave the area, especially families with young children who are unwilling to risk the health of their children. The precautionary principle has not been followed, and it has not been demonstrated that no alternatives are available.

I respectfully request that this application is rejected in its entirety.

Yours faithfully

[REDACTED]

[REDACTED]

Health impacts from infrasound, case law and recommended safe distances from wind turbines

Cambrian Environmental Research cambrianenvironmental.org

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Summary

Infrasound is generated from natural sources such as wind, volcanoes, avalanches, and earthquakes, as well as man-made sources, including wind turbines, diesel engines, and ventilation systems. Infrasound generated by wind turbines is distinctive, in having a persistent, repetitive pattern, making it stand out from other sources of low frequency sound.

Emerging research advances, published in early 2026, have filled fundamental gaps in two key areas of knowledge relevant to the siting of wind turbines, firstly in our understanding of the physiological processes underpinning the specific health impacts from infrasound; and separately, in measurement of the levels of infrasound produced by large, modern wind turbines.

The combination of recent advances in our understanding of the reception of infrasound by pressure sensitive ion channels and the vestibulo-cochlear pathway, that cause the resulting stress-related syndrome and profound health harms, with the confirmation of markedly higher infrasound outputs from wind turbines - in excess of 90 decibels (dB) to several kilometres away operating at typical wind speeds - is radically altering the foundations to the regulatory landscape for positioning of large wind turbines near to dwellings.

For large wind turbines, there is currently no single, universally mandated legal safe set-back distance, but rather a complex combination of emerging standards and case law focusing on noise (including infrasound), shadow flicker, and visual amenity. Though authorities have maintained for many years that wind turbines present no credible health risk, international case law is beginning to reflect a different narrative. The enhanced comprehension of the detrimental health effects of wind turbine infrasound is being reflected in a greater legal understanding, illustrated by several key legal decisions.

Set-back distances are examined in light of the findings of recent infrasound research and current planning policy regarding minimisation of health impacts, prevention of physical and mental illnesses, considering the impacts of new developments on existing communities, maximising health protection and wellbeing and safeguarding amenity.

It is clear that wind energy development proposals should incorporate accurate assessments of infrasound tailored to the specific terrain and the designation of safe set-back distance from dwellings for large turbines should be informed by the range of harmful infrasound indicated by the latest research, that is, at between 5 km and 10 km for existing turbines according to the wind turbine infrasound researchers, but as far as 15 km or more for modern, 220-230 m mega-turbines if the limit of 90 dB indicated by the health research is applied, and over 45 km for the proposed offshore developments comprised of 383 m turbines.

The new generation onshore turbines with 230 m tip height would generate infrasound in excess of 95 dB, associated with interference of cardiac function, to around 3.6 km away. The projected levels of infrasound for the proposed developments possessing blades of 140 m in length, are extremely high, and the >95 dB range is predicted to extend to over 10 km away from the turbines.

Introduction

Physical Nature of Infrasound

Infrasound, physically defined as sound at frequencies below 20 Hertz, can travel long distances with minimal attenuation and permeate biological tissues due to its marked particle displacement and deep penetration (Dastan et al., 2026).

Natural environment sources of infrasound include geomagnetic and seismic activity, winds, thunder and microbaroms (atmospheric infrasonic waves generated in marine storms due to the interaction of ocean waves with the atmosphere), while anthropogenic sources include duct systems within buildings, large machinery, underground nuclear tests, aviation and wind turbines, as well as unknown sources (Persinger, 2014). Infrasound generated by wind turbines is distinctive, in having a persistent, repetitive pattern, making it stand out from other sources of low frequency sound.

The increase in human exposure to infrasound is historically unprecedented and has led to growing concerns among the public regarding its safety along with a wide spectrum of complaints, which have been reported worldwide (Baliatsas et al., 2016).

Due to its very nature, infrasound has a specific capacity to affect human health. This is because its frequencies and amplitudes overlap and can therefore converge with those generated by the human body, such as inaudible vibrations of muscles and body systems. Frequencies below 10 Hz are considered particularly potent for interacting with internal organs and structures. The general range of external sources of infrasound is 0.1 to 20 Hz.

Amplitude modulation (AM) of wind turbine noise is a periodic fluctuation in sound level, often described as a "whoosh," "swish," or "thump," occurring at the blade-passing frequency (typically 0.4-1 Hz). It represents a rise and fall in noise levels, sometimes described as "Enhanced Amplitude Modulation" (EAM) when it becomes particularly intrusive. The typical amplitudes of the oscillations are between 1–50 micrometres, equivalent to a pressure of about 1 Pa and energy in the order of $10^{-11} \text{ W m}^{-2}$ (Persinger, 2014).

The primary cause is aerodynamic noise, specifically when blades pass through different wind speeds (wind shear) or when they pass through the tower's wake. The noise is generally produced by the trailing edge of the blades. It has been shown that wind turbine noise propagates most notably between the blades and the ground on the downward movement (UKAN+ Aeroacoustics Webinar: Wind Turbine Noise Stefan Oerlemans, Siemens Gamesa, 2021 (<https://www.youtube.com/watch?v=MXwaApwP9iM>)).

While close to a turbine it is heard as a "swish," at greater distances (often over 1 km) and near residential buildings, it can manifest as a lower-frequency "thumping". Meteorological factors such as atmospheric stability and wind direction affect how AM propagates. High ambient turbulence can, in some cases, reduce the perception of AM.

AM is quantified by the modulation depth, which measures the difference in decibels between the "peak" and "trough" of the sound level. There is no single universal standard for measuring AM, but researchers use various methods, including assessing the "peak-to-trough" levels at the blade passing frequency. Techniques for reducing AM include operational adjustments like reducing the rotational speed of the turbine or implementing pitch control.

The pressure and energy units are the way to think about infrasound, not in the same way as we think of clearly audible sound, but rather as pressure pulses in the air. With wind turbines, these pressure pulses are repeated in a broadly similar pattern for hours on end. The persistence of these patterns of pressure “beats” result in the perception of a constant thumping with detrimental health effects for many people. People often describe infrasound as a deep humming vibration through their body, or sensed in external objects around them (Møller and Lydolf, 2002).

It is important for us to differentiate the awareness or experience of infrasound from its effects, as it is possible for it to be perceived without deleterious effect, as well as not to be perceived but with substantial harmful effects. As well as acute aversion to being in a given area, correlations have been determined between incidences of infrasound and reports of nausea, malaise, fatigue, non-specific pain, and sleep disturbances when pressure levels exceed about 50 dB for protracted periods. This has led some researchers to suggest that traditional standards for infrasound set for safety and quality of living might not be appropriate and may require optimisation (Persinger, 2014)

Sleep disorders and migraine headaches have been reported (Ambrose et al., 2012; Mattsson et al., 2026). Other symptoms attributed to effects of infrasound include concentration deficit, mood change, depression, pulsation and panic disorders, especially for individuals who experience chronic exposure due to occupation or as a result of their homes being near industrial sources (Møller and Lydolf, 2002; Leventhall, 2004)

Some people believe that they are able to hear it - though acoustic frequencies less than 20 Hz are generally understood to be inaudible, long established research has shown that infrasound can still be perceived when the pressure level is high enough (Brecher, 1934; Von Békésy, 1936; Møller and Lydolf, 2002; Leventhall, 2009). Inaudible infrasound has been widely noted by specialists in otoneurology and otolaryngology for the potential to trigger migraines in people with a more sensitive nervous system (Salt and Hullar, 2010; Salt and Kaltenbach, 2011; Salt and Lichtenhan, 2014), about one in three people (Pluess et al., 2018; Lionetti et al., 2018).

The level of sensitivity is highly individual, but inaudible infrasound is thought to be linked to brain activity in all people (Weichenberger et al., 2017; Forlim et al., 2024). Not just humans are affected, as many animals, especially deer and birds, are found to move more than 5 km away from wind turbines (Tolvanen et al, 2023).

Other studies suggest that infrasound from wind turbines does not affect health measurably. However, Maijala et al., (2021) [37], exposed 27 participants to 89 dB of infrasound for only 10 minutes in a laboratory, while Marshall et al., (2023) exposed 37 participants to (only) 87 dB for three days. These studies were not designed by experts in otoneurology or otolaryngology and did not include participants who were prone to migraines.

The observations of poor health outcomes are given validity by quantitative biophysics. Because of the convergent frequencies, cells interact through the exchange of minute quanta of energy that corresponds with remarkably low levels of sound pressure produced by infrasound upon the body and its cavities.

More serious acute effects have been demonstrated on heart cell function. In 1985, Danielsson and Landström showed that infrasound at levels of 95 dB for 1 h of exposure causes an increase in diastolic blood pressure and decreases in systolic blood pressure and pulse rate. Laboratory experiments on the contractility of human myocardial (heart muscle) cells have shown that exposure to high levels of infrasound (more than 100 dB) interferes with cardiac muscle contractile ability, as early as one hour after exposure (Chaban et al., 2021). The authors suggest that

environmental regulations should be reconsidered to set a maximum tolerated level of chronic exposure to infrasound no higher than 90 dB, to avoid interference with cardiac function.

A review of the need for safety limits for infrasound based on global occupational health guidelines recommended a level of 90 dB for one day of exposure and 85 dB for long-term infrasound caused by wind turbines (Pawlaczyk-Łuszczynska et al., 2025). This review concluded that infrasound generated by wind turbines does not pose a direct threat to human health and wellbeing because the sound pressure levels are below the threshold of auditory perception, especially since normal pressure changes in the body associated with heartbeat and breathing result in higher levels of infrasound in the inner ear than wind turbines (though this cited research is from 2007 (Leventhall, 2007)). However, the review also reported that auditory research and complaints about environmental noise indicate that there exists a significant, small subgroup within the population which is sensitive to infrasound and low frequency noise.

This review was presented before the recent advances in our understanding of the causation and physiology of the resulting stress-related syndrome and profound health harms (Kaula, 2026), and the confirmation of markedly higher infrasound dB outputs from modern, larger wind turbines (Mattsson et al., 2026).

The Physics of Wind Turbine Infrasound

There are four types of infrasound emission from wind turbines.

Emission 1: Primary aerodynamically gated volume-flow emission. These are wind-driven pressure pulses due to rotor-induced modulation of the wind passing through the turbine.

Rotor blades modulate what would otherwise be a continuous flow, producing a periodically gated wind. This emission remains within the flow, is non-acoustic, and propagates with wind speed along the rotor wake, rather than spreading out as an acoustic field.

However, when these pressure differences caused by the gated flow interacts with obstacles or structures that disrupt the local flow field—such as the turbine tower itself or the roofs of buildings within the rotor wake, energy within the flow is locally decelerated and converted into alternating compression and decompression. The pressure builds up on the windward side of the moving blade, with lower pressure on the leeward side. As the blades rotate, the pressure oscillates. In this way, there is a transition from wind flow, which when neutralised at the blades, converts to pulses of pressure.

Emission 2: Initial impulsive, volume-flow–driven pressure transients.

Where the rapid deceleration happens, at the gating of the flow, localised pressure gradients lead to other short pulses that do not follow a beat pattern, soft implosion-type pressure transients resulting from localised energy conversion, such as over the roof of a building.

Emission 3: Transition to propagating, acoustically describable impulsive infrasound.

With increasing distance and dissipation, these initially flow-bound pressure transients detach from the local volume-flow field and evolve into propagating pressure impulses, impulse dominated pressure waves. These impulses can be detected by the human ear.

Emission 4: Dissipation, spectral transformation, and observational effects

With further propagation, high-gradient signal components are progressively attenuated, resulting in a greater dominance of lower-frequency components. Even at distances of several tens of kilometres, however, the impulse character often remains evident (Kaula, 2026).

NASA utilises these characteristics in their LAR-TOPS 106 microphone that detects infrasound over hundreds of miles, stating in the patent that “infrasound propagates hundreds of miles and can penetrate walls, mountains and other obstacles without loss.” (<https://technology.nasa.gov/patent/LAR-TOPS-106>)

In real-world exposure, individuals may be simultaneously or intermittently exposed to multiple emission forms along this cascade, depending on distance, meteorological conditions, and site-specific propagation characteristics. In this situation, the human brain is continually detecting and attempting to process this messy set of signals, which can vary considerably.

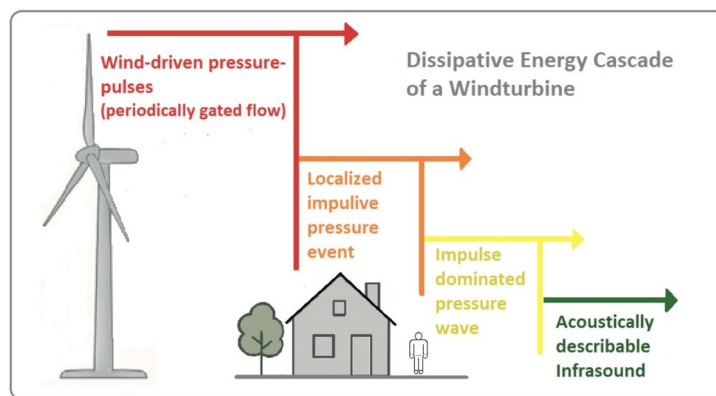


Figure 2. Conceptual illustration of the dissipative energy cascade of wind turbine emissions, showing successive airborne emission forms and transformation pathways from flow-bound dynamics to impulse-dominated pressure signals.

Figure reproduced from Kaula, 2026.

Site-specific aerodynamic and propagation effects, including wake dynamics, superposition, interference, and boundary interactions, can produce pronounced spatial variability of wind turbine emission signatures, resulting in localised exposure maxima at individual structures while nearby locations experience substantially lower levels (Keith et al., 2018). Deep-sided valleys beneath ridge lines can act as funnels to the various emission types, the passage of the pressure impulses and waves being guided by the topography and locally enhanced.

High-resolution field studies have examined the temporal structure and functional relevance of low-frequency wind turbine emissions under real-world exposure conditions. Ambrose, Rand and Krogh reported dynamically modulated low-frequency and infrasonic pressure fluctuations associated with blade-passage events. These included pronounced amplitude modulation and impulsive pressure sequences detectable below auditory perception thresholds, being detected by the vestibulo-cochlear system. They found that adverse effects, including sleep disturbance, were experienced at indoor sound levels well below commonly applied guideline values, with marked temporal variability and indoor amplification of infrasound (Ambrose et al., 2012).

Functional neuroimaging demonstrates that infrasonic stimulation can evoke measurable central nervous system responses, even in the absence of conscious auditory perception. (Weichenberger et al., 2017). These effects were more pronounced under near-threshold than supra-threshold stimulation, suggesting a distinct sub-perceptual processing pathway, and the idea that low-frequency pressure stimuli can engage vestibulo-cochlear and autonomic pathways without conscious perception. Not consciously heard, but leading to a notable physiological response nevertheless.

Physiology of Infrasound

From a physiological perspective, infrasound signals are believed to interact with the vestibulo-cochlear system, which is highly sensitive to low-frequency pressure gradients and fluid displacement, even below auditory perception thresholds (Kaula, 2026). The vestibulo-cochlear nerve, cranial nerve VIII (CN VIII) transmits sound and equilibrium (balance) information from the inner ear to the brain and serves a dual function of mediating hearing (cochlear branch) and equilibrium/balance (vestibular branch). It is this combination of incorporation within the auditory system and response to fluid displacement due to vibration that allows the system its unique interfacing function.

The evolution of this nerve is inextricably tied to the development of the inner ear, which transitioned from a primitive balance organ to a specialised system capable of detecting both high-frequency sound and low-frequency vibration, with the cochlear nerve evolving to handle higher frequencies, while the vestibule maintained low-frequency sensitivity.

The nerve is a purely sensory nerve consisting of two distinct branches that share a common nerve sheath, connecting the inner ear to the brainstem. The cochlear nerve (hearing) transmits auditory information from the hair cells in the cochlea to the cochlear nuclei in the brainstem. It is tonotopically organised, with fibres from the apex of the cochlea handling low frequencies and the base handling high frequencies. The vestibular nerve (balance) transmits positional information from the utricle, saccule, and semicircular canals to the vestibular nuclei. This includes static gravity, linear acceleration, and dynamic angular motion.

While the cochlear nerve is generally recognised for processing high-frequency sounds, the vestibular system (particularly the sacculus) retains an ancestral ability to detect low-frequency vibrations, a vestige of a more primal auditory organ. The evolutionary development of the mammalian middle ear, including the conversion of jaw elements into ossicles, allowed for increased high-frequency sensitivity, while the mammalian vestibular system developed to mediate the detection of low-frequency sounds (below the sensitivity range of the cochlea).

The development of CN VIII was critical for vertebrate survival, enabling the separation of auditory and balance information, while ensuring continued interplay. The cochlear division evolved to handle, with increasing complexity, the wide range of auditory signals needed for communication and danger detection, while the vestibular division maintains the foundational role of managing spatial orientation and posture.

The evolution of the vestibulo-cochlear nerve is marked by the increased sensitivity of the inner ear to detect both auditory and seismic signals. This would have offered distinct survival advantages in terms of awareness of abnormal environmental activity such as unusual seismic activity or approaching storms. The vestibulo-cochlear nerve remains deeply connected to primitive vestibular receptors that process low-frequency sounds as part of a protective, whole-body startle reflex.

As human beings, we are therefore “hard-wired” to respond to infrasound, which in our evolution would have been intermittent or rare in our environment, signalling a danger and eliciting a protective response mediated through the nervous system. The much elevated levels of exposure in modern environments therefore evokes persistent, functionally inappropriate nervous response.

Autonomic Nervous System Overload

Over-stimulation of the autonomic nervous system leads to autonomic overload, called dysautonomia or autonomic dysfunction. In this situation, the body's involuntary control system malfunctions, leading to symptoms like dizziness, rapid heart rate, fatigue, digestive issues, or blood pressure swings, stemming from an imbalance between "fight-or-flight" (sympathetic) and "rest-and-digest" (parasympathetic) signals. This can be triggered by severe emotional stress, illness, physical trauma, sensory overload (especially in neurodivergent individuals), or underlying conditions like diabetes, Parkinson's disease, autoimmune diseases or viral infections.

Dysautonomia can result in:

- cardiovascular issues - dizziness or lightheadedness, fainting (orthostatic intolerance), rapid heart rate (tachycardia), slow heart rate (bradycardia), blood pressure changes;
- gastrointestinal issues - nausea, vomiting, bloating, constipation, diarrhoea, changes in bowel movements, difficulty swallowing;
- neurological / cognitive issues - sleeping problems, fatigue, brain fog, difficulty focusing, forgetfulness, migraines, mood swings or anxiety, light / sound sensitivity, vertigo, balance problems;
- thermoregulation issues - excessive or reduced sweating, hot / cold flashes, dry mouth / eyes;
- urinary and sexual issues - urinary urgency, incontinence, retention, erectile dysfunction, vaginal dryness;
- respiratory issues - shortness of breath, exercise intolerance.

There is striking overlap with the symptoms most widely associated with wind turbine infrasound.

Sleep disturbance is one of the most frequently reported functional manifestations of vestibulo-cochlear-autonomic activation at low-level environmental exposure. This is partly due to the higher relevance of low-level vestibular and autonomic stimulation being increased, as sensory masking by environmental noise and voluntary motor activity is reduced. In these conditions, unperceived pressure fluctuations may gain functional priority (Basner et al., 2014), as vestibular activation proceeds without conscious awareness and reflexive responses are elicited through brainstem nuclei and their projections to hypothalamic and autonomic control centres. The repetitive, structured pattern of the pressure impulses associated with wind turbine emissions during the vulnerable state of sleep promotes the interference of sleep continuity without auditory perception. (Todd et al., 2014).

Repetitive, pulsating sounds are known to be perceived as more disturbing than continuous sounds of the same frequency and average sound level (Schäffer et al., 2018; Virjonen et al., 2019). As a wind turbine blade passes the tower, a sharp, pressure pulse is generated, which propagates as infrasound. The blade passage frequency (BPF) is determined by counting the number of blade passes per minute and dividing by 60. The BPF decreases with greater turbine

blade size, and larger blades also produce stronger pressure pulses, resulting in more intense infrasound. For modern wind turbines, the BPF typically ranges between 0.2 and 0.5 Hz, whereas older turbines exhibit a higher BPF of around 0.7 to 0.9 Hz (Mattsson et al., 2026). The BPF and its harmonics (multiples of the BPF) appear as distinct spikes in sound pressure spectra (Ambrose et al., 2012). This pattern is very different to natural sources of infrasound, such as those related to weather events, which is more spread out in terms of frequency and lacks sharp spikes.

It has consequently been hypothesised that humans are much less affected by natural infrasound, while the unnatural “synthesised” repetitive pulse characteristics of wind turbine infrasound results in the symptoms that people report in the vicinity of wind turbines (Mattsson et al., 2026). In evolutionary terms, while all infrasound will initiate a response in the human brain, our nervous systems will likely have formed a tolerance to natural “random” bursts of “broadband” infrasound, but not have developed the capacity to deal with sustained, regular, rhythmic patterns at a specific frequency and sharp intensity.

Reported symptoms that fit in with this idea of low-frequency, impulse-dominated mechanical stimulation acting on highly sensitive regulatory systems include difficulties initiating or maintaining sleep, nocturnal arousals, or non-restorative sleep that can not be attributed to a consciously perceived sound or a psychological reason.

It has been shown that wind turbine infrasound diminishes concentration and cognitive performance and that this is correlated with the sleep disturbances, increased annoyance, and stress. EEG and fMRI show that people find it harder both to relax and to concentrate as infrasound levels increase. Proximity to wind turbines is therefore associated with diminished cognitive function (Dumbrille et al., 2021). Brain functional connectivity studies demonstrate changes in specific brain networks, including the default mode, sensorimotor, and executive control networks (Forlim et al., 2024).

In essence, continuous stimulation of the autonomic nervous system by infrasound leads for many people to chronic sleep deprivation and a perpetual state of anxiety by physiological mechanisms that cannot be controlled or alleviated. In this situation, the environment is constantly triggering the fight-or-flight response leading to a syndrome of physiological stress associated with a raft of secondary conditions. The work of Kaula (2026) provides for the first time a mechanism that links the physical phenomenon of infrasound with the physiological responses observed in human beings and formulates this as a stress-related syndrome.

Molecular Mechanisms

Cellular and animal studies, as well as limited human studies show that high-intensity infrasound can activate mechanosensitive structures at the cellular level, particularly pressure-sensitive ion channels such as PIEZO1, TRPV4, and Connexin 43 (Cx43) hemichannels, leading to intracellular calcium influx and accumulation. The calcium influx initiates signalling cascades that modulate proliferation, differentiation, and apoptosis (cell death) (Gao et al., 2022). While PIEZO1 transduces low-frequency stimuli within the 0.5–50 Hz range (Lewis et al., 2017), TRPV4 is strongly activated around 16 Hz, particularly in glial cells in the brain (Sianati et al., 2021; Folwaczny et al., 2023). Cx43 hemichannels act downstream of PIEZO1 or TRPV4, mediating ATP and glutamate (a neurotransmitter) release, sustaining cell to cell communication (Shahidullah and Delamere, 2023). The interactions between these channels form a coordinated mechanosensitive network, which responds to infrasound and can influence tissue physiology and cellular homeostasis.

The activation of these molecular pathways explains the multi-organ effects of infrasound, as emerging research on PIEZO channels in particular is increasingly revealing their importance in a number of organs. These responses vary according to sound pressure levels, frequencies, exposure duration, and tissue type.

Infrasound induces oxidative stress, mitochondrial dysfunction, calcium accumulation, and activation of apoptotic (cell death) pathways. In the cardiovascular system, higher sound pressures are linked specifically with mitochondrial injury and fibrosis. Prolonged or intense exposure to infrasound has been shown to induce neuroinflammatory responses and memory impairment in animal models, ultimately leading to tissue damage and functional disorders in cardiovascular, nervous, and other systems. Less stringent studies in humans also indicate vascular and neurophysiological sensitivities at higher levels and chronic exposure (Danstan et al., 2026).

There is substantial evidence to suggest that infrasound widely modulates mechanical and biological pathways, affecting the homeostasis of the body, mediated through oxidative stress, altered intercellular communication, and in some settings, apoptosis.

The exciting developments in the research allow us to link up the observed physiological and molecular effects that result in the harmful health impacts of infrasound, as the mechanosensitive ion channels, PIEZO1 and TRPV4, also play critical roles in the mechanotransduction processes of the inner ear, including the vestibular system (balance organs). While PIEZO1 is expressed in the inner ear, specifically as part of the mechanosensitive complex in hair cells, and acts as a primary, rapid sensor of physical forces, TRPV4 is expressed in the vestibular ganglion neurons, supporting the “hair cells” and is involved in modulating sustained cellular responses and homeostasis in the vestibular and cochlear structures.

PIEZO1 activation by fluid shear stress (such as in endolymph movement in response to low frequency sound) initiates the calcium signal that triggers the opening of TRPV4, which in turn leads to a sustained, longer-term calcium elevation. TRPV4 in vestibular ganglion neurons acts as both an osmoreceptor and a mechanoreceptor, contributing to vestibular neurotransmission. PIEZO1 and TRPV4 together mediate how the vestibular system detects and responds to movement and pressure, with TRPV4 acting to regulate the sustained, adaptive responses within vestibular cells.

This establishes, for the first time, a joined-up mechanistic molecular, cellular and pathophysiological pathway for the disorder caused by infrasound.

Case Law and Legal Developments

Our increasing comprehension of the detrimental health effects of wind turbine infrasound is being reflected in a greater legal understanding, illustrated by several key legal decisions. Authorities have maintained for many years that wind turbines present no credible health risk. However, international case law is beginning to reflect a different narrative.

In France, three separate court decisions - across different regions and different courts - have recognised harm linked to turbine operation.

At the Toulouse Court of Appeal (2017), the court accepted that a couple living near a wind farm who had developed headaches, dizziness, tachycardia and sleep disturbance were suffering “wind turbine syndrome” and awarded €128,000 in damages.

The Montpellier Administrative Court (2021) judged that persistent noise and severe shadow flicker were “abnormal nuisances.” The court ordered operational shutdowns during certain hours.

At the Somme, Hauts-de-France, Amiens Judicial Court (2023/24), a teacher living approximately 500 m from a 12-turbine wind farm in the Somme department of France suffered headaches, insomnia and anxiety, which a neurologist confirmed disappeared when she left the area. She reported experiencing debilitating symptoms beginning around 2009, coinciding with the wind farm’s construction. The court recognised a “direct and certain” link between turbine operation, infrasound, visual stress and illness.

The Somme case ultimately moved up to the European court in Strasbourg, and in November 2025 reached what many regard as a landmark ruling that could substantially alter the health debate around renewable energy. The court found a “clear cause” between wind turbines and the reported health problems of nearby residents, including headaches, tinnitus, dizziness, sleep disturbances, anxiety, and difficulty concentrating. The court confirmed a direct link between wind turbine operation and physical and mental health disorders.

The plaintiff’s lawyer, Philippe Bodereau, emphasised the role of infrasound and presented a neurologist’s report detailing headaches that appeared shortly after the turbines were installed and subsided when the patient was away from the area or the turbines were not in operation. The woman’s husband also received damages, in acknowledgement of the serious impact on their quality of life. The symptoms are increasingly referred to as “wind turbine syndrome”.

The challenge in identifying when individuals are suffering a syndrome is explained by Professor Frank Kameier, an expert in fluid dynamics and acoustics at Düsseldorf University of Applied Sciences, who stresses the importance of long-term studies. “Short-term exposure in studies often isn’t enough to detect potential effects,” he explains. “Health reactions to infrasound can take time to manifest.”

Energy companies, like EnBW, maintain that wind turbines are “relatively weak infrasound sources” compared to other environmental and man-made sources. They claim that infrasound is barely perceptible beyond 150 metres and is masked by ambient noise beyond that. The North Rhine-Westphalia Ministry of the Environment supports this, stating measurable influence from infrasound dissipates around 300 metres. <https://www.archyde.com/court-sees-clear-cause-for-health-consequences/>

The most relevant regulatory guideline to the court cases in France is provided by the French Agency for Food, Environmental and Occupational Health and Safety (ANSES) that stated in 2017 that exposure to infrasound and low frequency sounds for local residents and homes beyond the minimum distance of 500 metres is below the commonly accepted hearing threshold. <https://www.anses.fr/en/system/files?file=AP2013SA0115EN.pdf>

Despite these assurances, the Strasbourg court decided otherwise, underlining the gap opening up between existing regulatory frameworks on the one hand, and the real life experience and growing scientific evidence on the other. Indeed, in the three cases, French courts acknowledge health harms associated with sound and infrasound and gave the medical evidence and lived experience precedence over the views of energy companies and the existing regulatory frameworks, with an emphasis on the right of people to live a healthy life in their own homes.

In March 2024, the Irish High Court delivered a landmark ruling regarding noise pollution from wind turbines, establishing that they can cause a private nuisance even if they comply with planning permission conditions. This decision, and subsequent rulings in 2025, confirmed that "amplitude modulation", the periodic variation in the frequency of aerodynamic sound, described as a "whooshing", caused severe disturbance, such as sleep deprivation and anxiety, that an "objectively reasonable" person should not have to tolerate.

A landmark case was *Byrne and Moorhead v ABO Energy Ltd and Ors* (2025), IEHC 330. In the June 2025 judgement, following the preliminary ruling in early 2024, the Irish High Court ordered a major intervention for a wind farm in County Wexford. Three of the six Nordex turbines at the Gibbet Hill wind farm near Bunclody were ordered to be permanently shut down.

The plaintiffs' home was located approximately 1 kilometre (1,050 metres) away from the nearest turbine. Residents Raymond Byrne and Lorna Moorhead brought a private nuisance action alleging that the noise, vibration, and shadow flicker from the turbines (operational since 2013) caused significant disturbance to their home and, consequently, their health and quality of life. During the six-week trial in 2025, the defendants admitted liability for nuisance.

The operators (ABO Energy Ireland, ABO Energy O&M Ireland, and Wexwind Ltd) were ordered to pay over €360,000 in damages, including €60,000 in aggravated damages, to residents Raymond Byrne and Lorna Moorhead. The court acknowledged the noise impact, that noise, described as a "low rumble" or "a washing machine continually turning", i.e. infrasound, had caused a 12-year, "serious" nuisance. In June 2025, the operator was also ordered to pay €950,000 within two weeks towards the estimated €2.3 million legal costs.

<https://www.irishtimes.com/crime-law/courts/2025/06/22/wexford-wind-farm-must-pay-almost-1m-towards-legal-costs-of-couple-who-won-noise-nuisance-case/>

The court rejected the argument that the "public interest" need for renewable energy allows for the continuation of a nuisance. So in short, health trumps economic considerations. On the companies' request for nocturnal shutdowns only, the court refused a stay on the order, rejecting a proposal for only partial shutdown.

The legal precedents and principles are notable. The High Court established that compliance with planning permission does not mean a wind farm cannot be found to be causing a "nuisance" under common law. Additionally, the distance from the turbines was of note. While 1 km is well beyond the 500 metre minimum "set-back" distance usually recommended in Irish planning (2006 guidelines), the court determined that the noise and nuisance were still unacceptable.

The court specifically identified "amplitude modulation" (low-frequency noise/vibrations, i.e. infrasound) as a key aspect of noise, distinct from simple dBA decibel measurements. This is important in our reading of how UK and Welsh law might be interpreted.

The emphasis on the link between turbines and health and wellbeing is central, the case accepted evidence that infrasound caused symptoms such as headaches, insomnia, heart irregularities, depression, and dizziness.

The judge described the operator's response to complaints as "seriously unimpressive" and noted they failed to properly engage with the residents or act on potential mitigation measures for over a decade, 12 years. The court found that if operators engage early and provide evidence-based mitigation plans, they may avoid full shutdowns.

The ruling is also considered significant in environmental law, particularly because it resulted in a permanent injunction (shutdown) of turbines for noise nuisance, rather than just damages, even at a distance of 1 km.

Other relevant cases in Ireland include: The Ballyduff Wind Farm (2024/2025) - (*Webster & Ors v Meenacloghspar (Wind) Ltd*), where the High Court ordered that a turbine at a different Wexford site be shut down at night during certain wind speeds due to its potential to disturb sleep, specifically targeting low-frequency noise, i.e. infrasound; and The Cork Settled Case (2020): A case regarding a Cork wind farm was settled out of court, with operators paying undisclosed damages to families who had to leave their homes.

These rulings have significant implications for the Irish and European wind industry, indicating that future developments must consider more robust, comprehensive, and up-to-date noise assessments (e.g. amplitude modulation) to avoid litigation. There is a growing emphasis placed on identifying where wind turbines interfere with the day-to-day amenity of property or enjoyment of a home.

The challenge for courts is increasing, as the tension between the two opposing imperatives sharpens. While wind energy has emerged as a significant component in the global pursuit of sustainable energy, offering clean and renewable electricity generation, wind energy parks featuring progressively larger turbines bring more intrusive impacts to local communities.

This dichotomy was fully tested in a legal case involving a wind farm operated by a company in Torres Vedras, Portugal, which was brought before the European Court of Human Rights.

In the case of *Eólica De S. Julião, LDA c. Portugal* 33545/14 before the European Court of Human Rights, the Court in Portugal had previously ordered the company to remove the wind turbines and award damages to the local residents, because of the noise pollution that the wind park was producing. The company complained to the European Court of Human Rights under Article 1 of Protocol No. 1 of the European Convention of Human Rights that the Supreme Court failed to strike a fair balance between the interests of the residents and the right to respect for the applicant's possessions, i.e. the turbines.

The Torres Vedras Town Council and Directorate-General for Energy and Geology had granted the applicant a permit to build a wind farm in January 2005, and in 2006 the applicant was granted a provisional license to operate the wind farm.

In 2008, the local residents, alleging nuisance caused by the wind turbines (a constant buzz and glare), applied to the court of Torres Vedras to remove the turbines and award damages. The court dismissed the claim in 2011, maintaining that the operation of the turbines was in accordance with the law. The following year the Lisbon Court of Appeal partially found for the residents, ordering the shutdown of one of the turbines and suspending the operation of the other three in the evening and at night. Both parties made appeals to the Supreme Court, which ordered the immediate shutdown and removal of the four wind turbines. The applicant lodged a claim for annulment but this was dismissed. In March 2015, the company removed the wind turbines.

In the Supreme Court case, the company submitted that by ordering the removal of the turbines at the wind farm that it operated under a valid authorisation, the Supreme Court ruling had infringed rights for respect for their property, invoking Article 1 of Protocol No. 1 to the Convention: "Every natural or legal person has the right to have their property respected. No one may be deprived of their property except for reasons of public interest and under the conditions provided for by the law and the general principles of international law."

However, the Government maintained that the company was not the owner of “property” within the meaning of Article 1 of Protocol No. 1 to the Convention, arguing that in the absence of having provided a report on the acoustic impact of the wind farm, although it had been invited to do so on several occasions, it did not satisfy one of the conditions imposed when it issued the operating authorisation for the park, meaning that the company only had a precarious (failed conditional) right, which it could not rely on before the Court.

The Court examined the noise measurements, and applied the World Health Organization’s Environmental Noise Guidelines of 1999, when determining the standards, as well as the regulations of the European Union. The Court observed that the final operating authorisation was issued conditionally to the company “subject to the presentation of a report on the noise impact in the area where the park was located”, noting that the conditions for the authorisation were not met since the report had not been presented.

The case emphasises the importance of dedicated planning and consideration for the needs of local communities when developing renewable energy projects and the need for comprehensive assessment of potential impacts, clear communication with stakeholders, and proactive measures to mitigate adverse effects. The ECHR ruling reaffirms that development and property rights must be balanced with societal interests and personal wellbeing.

In our push towards economies driven by sustainable renewable energy, the judgements raise a raft of questions about turbine placement, restricted operational protocols (like nighttime shutdowns), and more effective mitigation strategies. As the wellbeing of communities living near wind developments becomes increasingly prioritised, clear communication with local people, proactive protection measures, and an ability to keenly adapt to emerging scientific findings are essential for the establishment of the trust necessary for ensuring a just transition to a cleaner energy future. As well as the undeniable need to work towards reliable renewable energy, there is evidently an undeniable need to maintain and improve public health. Achieving both is eminently possible, with one of the key stipulations resting on the distances between turbines and homes.

The coming generation of turbines is notably larger with greater infrasound. Without regulatory frameworks based firmly on the science, the legal disputes, damages and retrospective windfarm closures will very likely grow even further, which brings the desirability of statutory mandatory safe distances from wind turbines (set-back distances) to the fore, with the imperative that these are based on sound up-to-date science.

Safe Set-back Distances

For 230-metre wind turbines, (“super tall” or “mega” turbines), there is no single, universally mandated legal safe distance, but rather a combination of emerging, standards and case law focusing on noise, shadow flicker, and visual amenity. Legal precedent and planning guidelines for turbines of this magnitude (approx. 200 m+) generally suggest distances ranging from 1,000 metres to over 2,000 metres, depending on jurisdiction.

In some regions, particularly in Europe, the “10x Height” or “10H” rule is applied. In Bavaria, Germany, a rule of 10 times the tip height is used, so for a 230m turbine, this would equate to a 2.3 kilometre set-back.

Parliamentary proposals in the UK (2012-2013), though not made law, suggested that turbines over 150m in height should have a minimum distance requirement of 3,000 meters from residential premises. A common, frequently cited minimum for very large turbines in planning discussions is

1,000 metres (1 km) to avoid substantial noise and visual issues. Safety regulations often require a distance of at least 10 times the rotor diameter (not the total height) to mitigate shadow flicker. For a 230 m tall turbine, the rotor diameter could be 150-170 m, making the flicker zone 1,500-1,700 m. <https://scottishpowerrenewables.com>.

As turbines grow progressively larger, planning assessments usually require much larger distances (1-3 km) to be legally and socially acceptable. For 200-230 m turbines, the set-back distances by purpose are around 280m–350m (approx. 1.1x to 1.5x height) for safety or structural failure, around 1500-1700 m for shadow flicker (based on 10x rotor diameter), and 1,000 m to 3,000 m (based on emerging regulations and local policy) for visual / noise amenity. <https://savestraitonforscotland.com/>

Local authorities in the UK have attempted to introduce a set-back distance of between 1.5 and 2 km. Internationally, the range is between 2km and 3.2km. However, these guidelines for set-back distances have evolved without full understanding of the threat to human health, psychological wellbeing and effects on communities due to the lack of *a priori* research into the effects of industrial wind turbines, and application of acoustic standards that did not consider infrasound. For the same reasons, the existing guidelines are non-statutory, not legally binding, as governments have not imposed or even recommended safe set-back distances between turbines and residences, whether for humans or livestock.

In recent years, with the proliferation of larger turbines in operation, as evidence has steadily accrued from scientific and medical experts worldwide, local authorities, governments, surveyors, and acoustic consultants, safe precautionary distances are being increasingly recommended.

This is being driven by the advances in physics and physiology research into infrasound, with the emerging understanding that it is caused by all wind turbines when in operation, that create Heightened Noise Zones (HNZs). Complexities include the way in which the low frequency waves only begin to dominate at distances over 1 km away and that it is the erratic and sudden changes in frequency levels (amplitude modulation) that contribute to the psycho-acoustic annoyance. In addition, multiple arrays add to the noise levels, and further the range of low frequency impact. It is now accepted by developers that a 3 dB oscillation should be applied, rather than the 10-20 dB fluctuation previously regarded as safe.

The World Health Organisation (WHO) has extended its definition of Public Health to include “social wellbeing,” to safeguard against the distress and annoyance caused by wind farms in particular. In its 2018 Environmental Noise Guidelines for the European Region, it recommends reducing noise from wind turbines to below 45 dB, to prevent adverse health effects. While acknowledging that evidence regarding direct physical health damage is limited or of low quality, the WHO notes that excessive noise can cause annoyance and potentially sleep disturbance.

<https://cdn.who.int/media/docs/default-source/who-compendium-on-health-and-environment/who-compendium-noise-01042022.pdf>

Groundbreaking Research of Mattsson and Colleagues

Professor Ken Mattsson and colleagues at Uppsala University, Sweden, have developed a high-fidelity simulation tool for accurate acoustic modelling across a wide range of applications, based on over 25 years of research in sound propagation and computational acoustics.

Three-dimensional atmospheric and topographic data are directly incorporated into the simulations, verified through convergence studies against highly resolved benchmark problems in both two and three spatial dimensions. High-quality infrasound measurements have been carried out at two modern wind farms in Sweden, with 200 m turbines.

The SoundSim360 simulation tool is different to widely used commercial noise simulation software, such as Nord2000, that are based on ray-tracing techniques that require numerous adjustable parameters. SoundSim360 is a significant advance on the previous tools as it resolves the full three-dimensional acoustic wave equation.

The findings reveal fundamental flaws in previous wind-turbine noise models, showing that infrasound and low-frequency noise are systematically underestimated — and that official measurement methods such as Nord2000 cannot reflect real conditions.

The results of the application to wind turbines show that modern, large wind turbines generate infrasound levels significantly higher than those reported for older, smaller turbines. The infrasound levels recorded are astounding.

With light wind speed of 1 m/s (2.2 mph), the level of infrasound at 1 km away from the turbines was around 95 dB, at 5 km away it was 83 dB during the day and 85 dB at night. With a more typical wind speed of 8 m/s (18 mph), at 1 km away was 97-99 dB, and at 5 km away was around 93 dB. At this higher wind speed, the level was higher than 93 dB at 7.5 km, and remained higher than 91 dB, even at 13.5 km away. Table 5 and the corresponding Figure 20 from the paper (Mattsson et al., 2026) are reproduced here.

Table 5

Simulated SPL at five sensitive points (A-E) around the Tvinnesheda and Karskruv wind farms for daytime and nighttime atmospheric profiles with wind speeds of 1 m/s and 8 m/s at 10 m height. Corresponding weather data are shown in Fig. 19. Distances from each point to the nearest wind turbine are included.

Atmosphere	Point A	Point B	Point C	Point D	Point E
Day profile 1 m/s	95.2 dB	88.7 dB	82.6 dB	81.2 dB	76.7 dB
Day profile 8 m/s	97.5 dB	94.6 dB	92.9 dB	93.3 dB	91.1 dB
Night profile 1 m/s	95.8 dB	90.2 dB	85.1 dB	84.1 dB	80.1 dB
Night profile 8 m/s	99.0 dB	96.3 dB	93.5 dB	93.6 dB	91.2 dB
The nearest turbine	1085 m	2924 m	5005 m	7478 m	13,460 m

Reproduced from Mattsson et al., 2026.

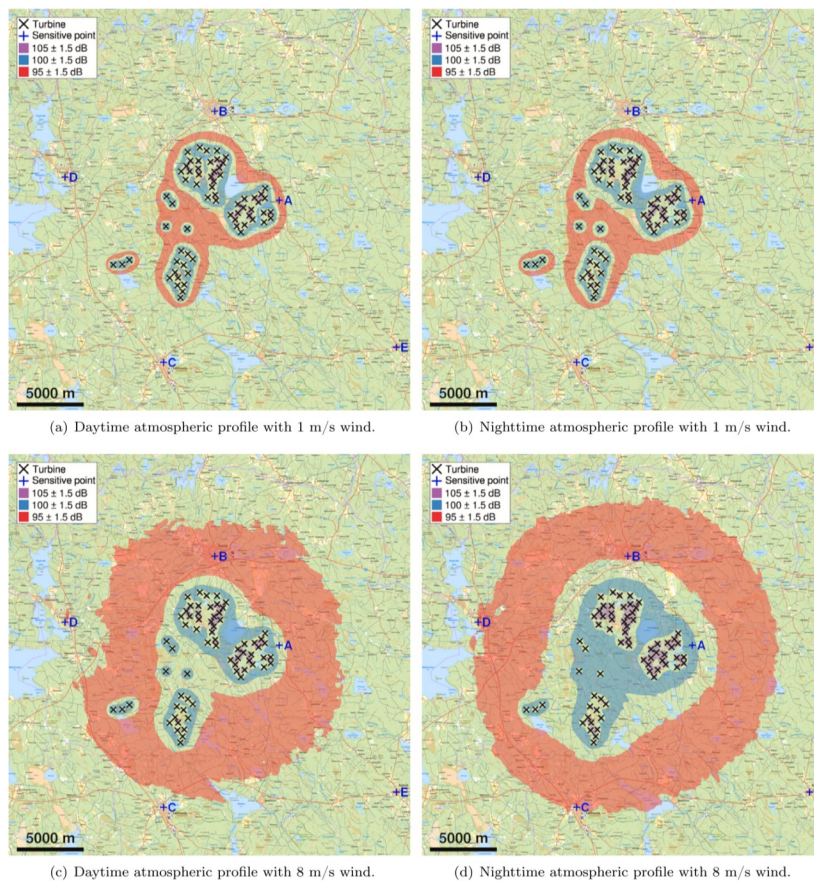


Fig. 20. SPL at 1 Hz around the Tvinnesheda and Karskruv wind farms under different atmospheric conditions (a)-(d). Daytime and nighttime profiles are considered, with wind scaled to 8 m/s and 1 m/s at 10 m height, respectively. SPL values at five sensitive points (A-E) near residences and towns are listed in Table 5. Maps are from Lantmäteriet [59].

Reproduced from Mattsson et al., 2026.

The findings indicate that the intensity and range of infrasound generation by wind turbines has been drastically underestimated.

It is important to recall that Chaban et al., (2021) when reporting on myocardial cell contractility in the presence of infrasound, suggested that environmental regulations should set a maximum tolerated level of chronic exposure to infrasound no higher than 90 dB, to avoid interference with cardiac function.

The team's findings advance the understanding of the acoustic characteristics of modern wind turbines and provide important guidance for assessing their potential health impacts.

On October 8, 2025, Professor Mattsson presented a lecture in Copenhagen "Separating Myth from Fact on Wind Turbine Noise". Key points from the lecture were that wind turbines emit infrasound that spreads at least 10 km, at levels proven to affect humans; Atmospheric factors and pulsating noise make the disturbance stronger and that infrasound power levels can vary by more than 20 dB during a single day. The most revealing conclusion was that the safe distance from large turbines should be 5–10 km. <https://www.youtube.com/watch?v=gpHDJPcqCQY>

However, the data from the paper show that typical wind speeds are associated with turbine-generated infrasound in excess of 90 dB more than 13 km away. The 90 dB level is significant as this is the recommended maximum tolerated level of chronic exposure suggested by Chaban et al., (2021) to avoid interference with cardiac function, and also the recommended safety limit for just a

single day of exposure based on global occupational health guidelines, with the limit of 85 dB emerging for long-term infrasound caused by wind turbines (Pawlaczyk-Łuszczńska et al., 2025).

To attain a wholistic view of safe set-back distances, and to understand the main driver of the problem, we need to consider the profound effects of the growing size of turbines and in particular the length of turbine blades, and draw comparisons with smaller turbines. If we take 90 dB as the reasonable limit, we know from Mattsson and colleagues that the night profile at 1085m from the nearest turbine is 99 dB at 8 m/s wind speed, falling away to around 91 dB at 13.46 km away. Audible range sound would fall away much more rapidly.

Decibel units are measured on a log10 scale, which means that 99 dB is 10 to the power of 1.1, (i.e. 12.6) times louder than the recommended 90 dB.

The infrasound generated by different sized turbines is in proportion to the power generated, which of course is the primary motivation for the construction of progressively larger turbines.

The best overall formula for the power derived from a wind turbine (in Watts) is:

$$P = 0.5 C_p \rho \pi R^2 V^3,$$

where C_p is the coefficient of performance (efficiency factor, in percent), ρ is air density (in kg/m^3), R is the blade length (in metres) and V is the wind speed (in metres per second).

This means that at a given wind speed the power output varies in proportion to the square of the radius (blade length). This square law is applied in the following table of examples, which details the predicted 90 dB limit distance for turbines of different sizes and blade lengths, which can be used to inform recommended set-back distances.

The Tvinnesheda wind farm studied by Mattsson and colleagues consists of 47 Vestas V150-4.3 MW wind turbines, and the Karskrv wind farm consists of 20 Vestas V150-4.5 MW wind turbines. Both turbine types have a hub height of 116 m and a total height of $116 + 75 = 191$ m. Tvinnesheda and Karskrv began operation in 2022 and 2023, respectively (Mattsson et al., 2026).

	Tip Height (m)	Rotor Diameter (m)	Blade Length (m)	>90 dB Range (km)
Tvinnesheda / Karskrv (2022/23)	191	150	75	13.46 (measured)
Gibbet Hill (2013)	125	90	45	4.84
	100	75	37.5	3.36
	80	60	30	2.15
	65	50	25	1.50
	55	40	20	0.96
New Generation	230	166	83	16.48
N4 Spiorad na Mara	338	280	140	46.90

The 125 m turbines that were closed down at Gibbet Hill, Bunclody, had 45m blades corresponding to a 90 dB range of 4.85 km. This means that at only 1.05 km away, Raymond Byrne and Lorna

Moorhead were probably enduring infrasound levels around 95 dB. A 20 metre blade would possess a 90 dB range of around 1 km and so would have been more fitting for that set-back.

The conundrum for the wind energy industry is in the much diminished economic viability of the smaller turbines. The new generation of mega-turbines at 230 m tip height and possessing 83 metre long blades require a 90 dB set-back distance of 16.5 km. Sites that provide a 16 kilometre zone free of dwellings in all directions from its outer perimeter are few and far between.

For the N4 Spiorad na Mara proposed development offshore to the Isle of Lewis, Scotland, the projected >90 dB range is more than 45 km for the 338 m high turbines. The closest turbine would be only 6 km from the shore. This suggests that the level of infrasound is an increasing concern in the safe location of offshore wind energy developments too, as a result of the immense size of turbines being proposed.

The average day / night measurement at a wind speed of 8 m/s from the Mattsson et al. paper was in excess of 95 dB at 2.9 km away from the Tvinnesheda / Karskruv turbines. This provides a valuable benchmark for estimation of the >95 dB range with different sized turbines, shown in the following table. The 95 dB level is of consequence due to the more serious acute effects on heart function (Danielsson and Landström, 1985) with exposure to infrasound at levels of 95 dB for only 1 hour shown to cause an increase in diastolic blood pressure and decreases in systolic blood pressure and pulse rate. These levels are 5 dB higher than the recommended maximum tolerated level of 90 dB for chronic exposure suggested by Chaban et al., (2021) to avoid interference with cardiac function, and also 10 dB higher than the recommended limit of 85 dB for long-term infrasound caused by wind turbines (Pawlaczyk-Łuszczńska et al., 2025).

The new generation onshore turbines with 230 m tip height would generate infrasound in excess of 95 dB to around 3.6 km away. The physiology research suggests that occupants of dwellings within that range would be at a notably elevated risk of compromised cardiac function.

Due to the power square law, the projected levels of infrasound for the proposed N4 Spiorad na Mara development, possessing blades of 140 m in length, are extremely high. The >95 dB range is predicted to extend to over 10 km away from the turbines. As the closest turbine would be only 6 km from the shore, the infrasound and physiology research suggests that many people living on the Isle of Lewis would be placed in elevated risk of compromised cardiac function.

	Tip Height (m)	Rotor Diameter (m)	Blade Length (m)	>95 dB Range (km)
Tvinnesheda / Karskruv (2022/23)	191	150	75	2.924 (measured)
Gibbet Hill (2013)	125	90	45	1.05
	100	75	37.5	0.73
	80	60	30	0.47
	65	50	25	0.32
	55	40	20	0.21
New Generation	230	166	83	3.58
N4 Spiorad na Mara	338	280	140	10.19

The French Agency for Food, Environmental and Occupational Health and Safety (ANSES) stated in 2017 that at the time, current knowledge did not necessitate changes to wind farm regulations, but acknowledged the need for further research. The Opinion Report stated that the Expert Committee (CES) considers that limit values already guarantee that exposure to infrasound and low frequency sounds for local residents and homes is below the commonly accepted hearing threshold of 85 dB <https://www.anses.fr/en/system/files?file=AP2013SA0115EN.pdf>.

This highlights the gap between current regulatory understanding and the real-world levels of infrasound produced by wind turbines. However, the new research advances coincide with growing political momentum in the European Parliament's Committee on Petitions (PETI), which recently acknowledged the need for new EU rules and measurement standards on wind turbine noise.

Petition 0482/2021, supported by numerous European associations, was submitted to the European Parliament. It calls for specific, strict legislation to assess and minimise wind turbine noise, including low-frequency noise (infrasound), which petitioners argue is not properly covered by existing EU environmental laws. https://nlvow.nl/system/files/article-files/2025-07/petition_482-2021_on_wind_turbine_noise_-_29_04_2021.pdf

On September 25, 2025, the PETI Committee unanimously supported this petition, voting to keep it open. The committee requested that the European Commission provide detailed clarification on how it can strengthen the measurement and management of wind turbine noise. The petition identifies a legal gap, highlighting that the Environmental Noise Directive (2002/49/EC) and other regulations often fail to address the specific, pulsating noise characteristics of modern, larger wind turbines, which can cause sleep disturbances and health issues for residents. The petition urges the adoption of the World Health Organization (WHO) guidelines, which recommend reducing noise levels from wind turbines, to avoid health issues related to noise pollution above 45 dB.

It is likely that the petition will be converted into new legislative measures, such as amendments to existing law to include new, strict, and consistent noise limits for wind turbines under the Industrial Emissions Directive or as an annex to the Environmental Noise Directive, as well as standardised measurement for turbine noise including infrasound, which is not currently regulated by standardized EU methods, and a call for urgent research and regulation on the potential dangers of infrasound.

Though wind turbine noise has previously been a matter for individual Member States, the sustained efforts by the PETI committee aim to compel a more proactive EU-wide approach to protect residents near wind farms.

In some regions, specific planning conditions (e.g., the "Den Brook" condition in the UK) are used to limit the allowable amount of amplitude modulation (AM) but not the overall level of infrasound.

The Den Brook AM condition, Condition 20 of the decision, states:

20. At the request of the local planning authority following the receipt of a complaint the wind farm operator shall, at its expense, employ a consultant approved by the local planning authority, to assess whether noise immissions at the complainant's dwelling are characterised by greater than expected amplitude modulation.

Amplitude modulation is the modulation of the level of broadband noise emitted by a turbine at blade passing frequency. These will be deemed greater than expected if the following characteristics apply:

a) A change in the measured L_{Aeq}, 125 milliseconds turbine noise level of more than 3 dB (represented as a rise and fall in sound energy levels each of more than 3 dB) occurring within a 2 second period.

b) *The change identified in (a) above shall not occur less than 5 times in any one minute period provided the L Aeq, 1 minute turbine sound energy level for that minute is not below 28 dB.*

c) *The changes identified in (a) and (b) above shall not occur for fewer than 6 minutes in any hour.*

Noise at the complainant's dwelling shall be measured not further than 35m from the relevant building and not closer than within 3.5m of any reflective building or surface, or within 1.2m of the ground.

At first glance this condition appears complex and it has invited controversy, in part because it has been argued that it is difficult to distinguish wind farm AM noise from other noises in the environment. The Renewable Energy Foundation believes that the Den Brook noise condition is a useful contribution to the understanding of wind farm infrasound relevant to potential applications when used to assess actual, i.e. real and empirical, wind farm noise data.

[https://www.ref.org.uk/publications/242-the-den-brook-amplitude-modulation-noise-condition#:~:text=a\)%20A%20change%20in%20the,empirical%2C%20wind%20farm%20noise%20data.](https://www.ref.org.uk/publications/242-the-den-brook-amplitude-modulation-noise-condition#:~:text=a)%20A%20change%20in%20the,empirical%2C%20wind%20farm%20noise%20data.)

Research indicates that AM is a significant factor in noise complaints and that modern, larger turbines are more prone to this phenomenon. However, in contrast to Europe, there are no protections specific to wind turbines for the overall levels of infrasound being considered in Wales or the UK. Nevertheless, in Wales, general protection is provided by section 3.21 of the Planning Policy Wales document (Edition 12, February 2024), and the importance placed on prevention of health impacts.

<https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf>

In particular: "Planning authorities have a role to play in the prevention of physical and mental illnesses caused, or exacerbated, by pollution...The planning system must consider the impacts of new development on existing communities and maximise health protection and well-being and safeguard amenity...Health impacts should be minimised in all instances, and particularly where new development could have an adverse impact on health, amenity and well-being. In such circumstances, where health or amenity impacts cannot be overcome satisfactorily, development should be refused."

Noise pollution is explicitly considered as a major form of pollution within the planning system in Wales. As in the countries featured in the case law examples, it is treated as a material consideration in development management, capable of affecting amenity, health, and quality of life. In terms of environmental protection, noise is recognised as an "airborne pollutant" that should be managed alongside air quality, particularly in relation to transport and industrial sources.

While planning aims to prevent issues before they happen, excessive noise can also be investigated as a "statutory nuisance" under the Environmental Protection Act 1990.

6.7.3 Problematic forms of sound are generally experienced as noise pollution and can affect amenity and be prejudicial to health or a nuisance. Noise action plans drawn up by public bodies aim to prevent and reduce noise levels where necessary and preserve soundscape quality where it is good. Noise levels used to identify priority areas contained in noise action plans are usually set quite high in order to focus resources on the most polluted areas and noise must meet a number of tests before it qualifies as a statutory nuisance. Lower levels of noise, however, can still be annoying or disruptive and impact on amenity and as such should be protected through the planning process wherever necessary. The planning system must protect amenity and it is not acceptable to rely on statutory nuisance under the Environmental Protection Act 1990 to do so.

Wales is moving towards a "soundscape" approach, which balances reducing harmful noise with protecting positive, tranquil, or quiet sound environments, rather than focusing solely on reducing decibel levels.

6.7.4 Framework for Addressing Air quality and Soundscape

The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

Planning guidance in Wales incorporates the "agent of change" principle. This means developers introducing a new land use (e.g., new residential flats) near pre-existing businesses (e.g., a music venue) are responsible for mitigating noise issues, ensuring the existing business can continue to operate. The same arguments surrounding new land use apply to new wind turbines affecting existing businesses involved in farming or tourism.

6.7.5 In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments.

Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.

6.7.6 In proposing new development, planning authorities and developers must, therefore:

- address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- not create areas of poor air quality or inappropriate soundscape; and*
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.*

Noise is not just considered as a nuisance in Welsh planning; it is a significant environmental factor that must be managed to ensure sustainable development.

There are robust guidelines regarding the appropriate levels of information required at planning application stage, with the onus placed upon the developer to provide appropriate assessments.

6.7.7 To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer.

The issue of appropriate set-back distances is dealt with in the section on good design.

6.7.8 Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process.

In the event that adverse effects on amenity, health and the environment cannot be mitigated and that it is not possible to safeguard local amenity in terms of the acoustic environment, permission for developments can be refused.

6.7.14 Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission.

The lack of guidelines addressing infrasound from wind turbines is an international problem. Wales is selected as a case due to being the country of the author and due to having particularly transparent environmental legislation and planning policy, for which the Welsh Government should be commended.

Societal Dilemma

For most regions of the UK, Ireland and many parts of Europe, society is consequently left with an almost binary decision, the dilemma in choosing between investing in onshore wind energy generation with economically viable, large modern turbines, or safeguarding the health and wellbeing of citizens, which of course avoids substantial health and social costs in years to come.

The energy-first course of action is ultimately fraught with potential pitfalls. It is increasingly clear that with the current rapid expansion of wind energy, the arrival of turbines widely brought too close to dwellings will lead to ill health for many, initiating a growing number of legal actions brought by affected residents.

Due largely to the advances in the science surrounding infrasound, these now have much improved prospects of success. Knowingly bringing harm to communities in order to benefit commercially is not a favourable long-term public position for the companies involved or for the whole wind energy sector. Lengthy proceedings followed by costly compensation programmes look a highly probable eventuality should the energy and economy-first course of action be taken.

The health-first option is a much more convenient route for countries with extensive territorial waters, where offshore siting is the obvious solution if large turbines are deemed necessary. For the infrasound consideration taken on its own, for land-based wind farms, the employment of larger turbines will need to be restricted to remote areas, with the largest turbines in the most remote regions. There may of course be many other reasons for not locating large turbines at a given site.

Current guidelines relating to infrasound are either absent or woefully inadequate, and current safeguards are not fit for purpose in terms of protecting public health. This is the result of an inadvertent oversight due to the advice not being able to keep up with the advancing understanding of the phenomenon of infrasound itself, and the sheer pace of the development of scale in the wind energy sector towards progressively larger and more productive turbines. There has also been a reluctance on the part of the wind energy industry to engage with the emerging research evidence base relating to modern, large turbines. This is likely encouraged by the immense financial incentive.

Concluding Remarks

The combination of recent advances in our understanding of the reception of infrasound by pressure sensitive ion channels and the vestibulo-cochlear pathway, that cause the resulting stress-related syndrome and profound health harms, with the confirmation of markedly higher infrasound outputs from wind turbines - in excess of 90 dB to several kilometres away operating at typical wind speeds - is radically altering the foundations to the regulatory landscape for positioning of large wind turbines near to dwellings.

With this knowledge available in the public domain prior to future developments (post-January 2026) taking place, these factors, along with the emerging case law, establish a broad premise for legal and financial reparations being sought from developers and authorities should developments take place without appropriate safeguards in place for the health and wellbeing of affected communities.

In Denmark, developers are required to compensate residents for any decreases in their property value as a result of proximity to wind energy developments. In Texas and Australia, developers can be sued for both loss of property values and threats to their health and amenities. The new government in Australia is considering introduction of legislation (based on the mis-selling of bank products), that would give retrospective compensation to residents from developers.

In light of the early 2026 advances, in the emerging research and enhanced capabilities to more accurately measure infrasound, the fundamental scientific premise upon which planning decisions are made has clearly changed, both in our new understanding of the magnitude of infrasound generated by modern wind turbines and the mechanistic pathway to specific health harms.

International precedents highlight a greatly increased appetite for litigation, which can be lengthy. Legal or financial redress can be sought directly from energy companies, planning authorities and government if it can be shown that these agencies have wilfully acted without appropriate regard to the latest disseminated peer-reviewed science, in particular when this is in contravention of the applicable national planning policy.

To avoid a barrage of complex and very expensive legal cases, much better collaboration is required between policymakers, energy developers, and communities, in order to achieve a future that is sustainable both in terms of clean energy and public health and wellbeing.

As a first step, in light of the emerging research and capabilities to measure infrasound, it would be a very reasonable expectation for a report on the simulated levels of infrasound to be submitted prior to wind energy development applications being approved. These assessments should be based on real world measurements of comparably sized turbines and be reflected appropriately in development-specific set-back distances. There will be an imperative for these assessments to find accurately and to be tailored to the terrain of each proposed development.

In the absence of such assessments being presented by developers, the fixing of safe set-back distances from dwellings for large turbines should be informed by the range of harmful infrasound indicated by the latest research, that is, as of early 2026, at between 5 km and 10 km for existing turbines according to the wind turbine infrasound researchers, and as high as 15 km or more for modern, 230 m mega-turbines if the power square law is applied along with the recommended infrasound limit of 90 dB indicated by the health research.

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From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Application ref MD-00011742 & MD-00011743
Date: 05 May 2026 23:00:21

Re: Application ref MD-00011742 & MD-00011743 - Spiorad na Mara Limited - Spiorad na Mara Offshore Wind Farm - Isle of Lewis

Dear Sir

I write to OBJECT to this planning application.

On a personal level, I live in a noisy, post-industrial, congested area of South Yorkshire where there are the constant stresses of noise, pollution, traffic and urbanisation. It is a relief and healthy relaxation for me to be able to spend our fortnight's holiday renting a cottage from local people and hear nothing but birds, sheep and sea. With wide landscapes away from commercial and industrial activity.

If this electricity generating industrial site is built just off the west coast here, then I'm afraid I will never return.

I value the peace, tranquility, and absence of industrial activity. This construction and its ongoing presence and noise and flashing lights will effectively destroy the landscape, seascape, community and natural ecology of this precious area.

How can sea eagles and gannets fly and feed their young amongst 100+ meter rotating blades?

It contravenes many planning policies relating to protection of moorland and maritime wildlife; community engagement; cultural heritage; and local economic sustainability.

It is a continuation of the age-old process whereby people and offices who are based hundreds of miles away have exploited the Highlands and Islands of Scotland for their own benefit.

They have consistently disregarded the needs, traditions, wishes and livelihoods of those living in this area.

They have consistently forced them off their land and away from their homes and heritage. This project will have major detrimental effects on local fishing and tourism industries which are important to the local economy and livelihoods.

This will be yet another episode in the long history of 'clearance' of Gaelic communities from their historic homelands.

I request that this application is rejected.

Yours faithfully

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Objection - Spiorad na Mara Offshore Wind Farm (MD-00011742 & MD-00011743)
Date: 06 May 2026 09:19:43

I formally object to the above application as it contravenes the following planning policies and guidance:

Lack of Community Engagement: There was no consultation with the communities of west Lewis before Crown Estate Scotland identified and leased the N4 area for development. The plan was imposed on them without consent.

Scotland's National Marine Plan (NMP) GEN 18 'Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.'

NMP Para. 4.77 'Engagement with the public and other stakeholders should be appropriate, proportionate and meaningful. It should be undertaken as early as possible in planning and consenting processes.'

NPF4 Spatial Principles - Just Transition. 'We will empower people to shape their places.'

Lack of understanding of Cultural Significance: The EIAR makes no reference to the personal, cultural or historical attachment of the population of Lewis to their landscape and heritage, and fails to assess impacts on the living intangible heritage of the Gaelic community. Until a full assessment addressing impacts on Gaelic language and culture, community wellbeing, and west Lewis communities' relationship with their coastline is completed and publicly consulted upon, this application cannot lawfully be determined.

NMP Para. 4.20 'The historic environment includes all aspects of the environment resulting from the interaction between people and places through time.'

NPF4 Policy 7 a 'Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place.'

Significant Adverse Impacts on Protected Birdlife and Habitats: The development occupies primary foraging grounds for the Lewis Peatlands SPA red-throated divers, falls within the foraging range of the St Kilda gannet colony, and crosses a principal UK migratory corridor for protected species, including whooper swan and pink-footed goose. The EIAR fails to adequately assess the threats of collision, displacement, and barrier effects to these declining populations. Thus, consent would breach the Conservation (Natural Habitats &c.) Regulations 1994, the 2018 Offshore Regulations, the Marine (Scotland) Act 2010, and the Wildlife and Countryside Act 1981, as the proposal is likely to adversely affect the integrity of the following SPA's: Lewis Peatlands, West Coast of the Outer Hebrides, Seas off St Kilda and St Kilda.

NPF4 Policy 7 l 'Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved.'

NPF4 Policy 11 e ix Impact on 'biodiversity including impacts on birds' must be addressed.

Failure to Protect the Integrity and Setting of Scheduled Monuments: The EIAR anticipates significant adverse effects on coastal heritage. It fails to assess the impact on key scheduled monuments such as SM13786. The proposal would harm the Calanais monuments and wider historic landscape by introducing an industrial horizon into their natural surroundings, fundamentally undermining the meaning, experience, and interconnected setting of these sites, directly conflicting with NPF4 Policy 7. There are many alternative sites for offshore wind development and no reasons of over-riding public interest for choosing this site.

NMP Para. 4.22 'Marine planning should help to ensure that future marine activities and developments can be carried out in a way that respects the marine historic environment and the setting of important coastal heritage assets.' Para. 4.23 'Designated assets should be protected in situ within an appropriate setting'.

NPF4 Policy 7 h 'Development proposals affecting scheduled monuments will only be supported where: ii 'significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or iii exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.'

Unassessed Onshore Impacts and Breach of Statutory Rights of Crofters: Granting offshore consent while onshore impacts on irreplaceable machair and deep peatland remain unassessed, directly contravenes NPF4 Policy 3, which requires biodiversity (including irreplaceable habitats) to be left in a demonstrably better state. In addition the proposal fails to engage the statutory rights of crofters under the Crofters (Scotland) Act 1993. NMP Para. 4.77 'There should be a presumption in favour of publicising applications for marine and terrestrial components of a development together during consenting processes.'

Irreparable Harm to the Tourism Economy and Coastal Character: The Spiorad na Mara wind farm would permanently industrialise the unspoiled coastal scenery and dark skies on the Isle of Lewis, destroying the very qualities that attract visitors to the island. Local residents have consistently warned during consultation that this visual impact would decimate the tourist industry on which so many islanders depend. Tourism is built on the area's landscape, seascape, heritage, nature, and dark skies. This development risks long-term damage to local businesses and the wider economy, contrary to NPF4 Policy 30.

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The National Islands Plan, page 65, para. 5 'Our vision is for islanders to be empowered to shape their own priorities, build their futures, and protect what makes their communities unique.'

Significant Adverse Impacts on Marine Mammals and Protected Marine Habitats: The Outer Hebrides are described by the Scottish Government's own scientists as "probably the richest area of the UK for marine mammals with around 20 species of cetacean recorded in the region over the last 30 years" (Scottish Marine and Freshwater Science Vol. 5 No. 9). The site lies adjacent to the Inner Hebrides and Minches SAC - the largest harbour porpoise SAC in Europe - within the wider range of the North-east Lewis MPA for Risso's dolphin, within documented fin and sperm whale migration corridors (Blue Corridors initiative), and within the wider feeding and habitat range of minke, humpback and sei whales, and within the foraging range of the Monach Isles grey seal colony (the largest in Europe). The EIAR fails to reflect this internationally significant baseline in its significance conclusions and cannot demonstrate, to the legal standard required, that adverse effects on these protected sites and species will be avoided. Under the Habitats Regulations Appraisal process, consent must be refused unless Scottish Ministers are satisfied beyond reasonable scientific doubt that the integrity of European sites will not be adversely affected (NatureScot HRA guidance). That standard has not been met.

Construction noise: The developer's own noise modelling (EIAR Appendix 19.2) provides for up to 5.5 hours of percussive piling per day, up to 10,635 strikes per pile per day, hammer energies up to 5,000 kJ, and 1,563 pin piles across two consecutive construction years (April–October). The EIAR itself acknowledges that "harbour porpoises are widely regarded as the most sensitive marine mammal receptor to underwater noise" and that behavioural disturbance can occur up to 70 km from piling (Bailey et al., 2010, cited in Chapter 13). The proposed piling window coincides with peak cetacean seasonal density and with harbour seal pupping (June–July), triggering the prohibition on deliberate disturbance of European Protected Species during breeding and rearing periods under the Conservation of Habitats and Species Regulations 2017 and Section 9 of the Wildlife and Countryside Act 1981.

The developer's own underwater noise modelling (EIAR Appendix 13.3) confirms that, even with noise mitigation applied, percussive piling at the northernmost foundation location generates a PTS (permanent auditory injury) range of up to 1,500 m for low-frequency cetaceans and a TTS (temporary auditory injury) range of up to 49 km. These are the developer's own figures, after mitigation. Low-frequency cetaceans include minke, fin, sei and humpback whales - all species documented in these waters. A 49 km auditory injury zone, repeated across an April–October piling window for two consecutive years, cannot credibly be reconciled with a classification of effects as "not significant."

NMP Policy GEN 13: development should avoid significant adverse effects of man-made noise and vibration on species sensitive to such effects. The EIAR predicts disturbance to 9.186% of the Risso's dolphin management unit population and 27.7% of the coastal bottlenose dolphin population from piling noise, yet classifies these effects as "not significant." GEN 13 sets an avoidance standard, not a tolerance threshold. The developer's own EPS and Basking Shark Risk Assessment (submitted to Marine Scotland, 22 February 2023) formally acknowledges risk of disturbance to minke whale, harbour porpoise, common dolphin, bottlenose dolphin, grey seal and basking shark from survey work alone. Full construction at this scale cannot credibly be claimed to present a lesser risk.

The 2023 Tolsta Stranding: In July 2023, 54 of 55 long-finned pilot whales died on Traigh Mhòr beach while geophysical surveys were being carried out at this lease area. The Scottish Government investigation could not rule out anthropogenic contribution and explicitly acknowledged limitations in the acoustic detection capability

of the recorders used. This recent and devastating event must weigh heavily in this decision.

Priority Marine Features and seabed disturbance: Kelp beds - confirmed present across 10 km² within the Study Area and designated as a PMF and blue carbon habitat - are assessed as sustaining "minor adverse" impact, with no compensatory measures proposed. Maerl beds, horse mussel beds, fan mussel aggregations and cold-water coral reefs (all Scottish PMFs) are either excluded on the basis of decade-old desktop data (Tyler-Walters et al., 2016) or not mentioned at all. The developer concedes that its primary mitigation - micro-siting of turbines and cables - "cannot be quantified until detailed design and further site-specific investigations are complete."

NMP GEN 5: safeguard natural carbon sinks including kelp beds. NMP GEN 9: do not result in significant impact on the national status of Priority Marine Features, and protect and enhance the health of the marine area.

Cumulative and in-combination effects: The Habitats Regulations require assessment of cumulative effects with other plans and projects. The Scottish Government's own 2026 ICIA Screening Report concedes that Scottish offshore wind plans are "likely...to undergo the derogations process under the Habitats Regulations." Spiorad na Mara is one of several large developments proposed in or adjacent to these waters; the cumulative assessment does not rigorously meet this requirement. NMP GEN 21 requires cumulative impacts affecting the ecosystem to be addressed.

Inadequate assessment and deferred mitigation: The joint representation from the Hebridean Whale and Dolphin Trust and Whale and Dolphin Conservation states that baseline cetacean data is "severely lacking." Proposed mitigation (MMOs, PAM, soft-start) is designed to address acute physical injury, not behavioural displacement; JNCC guidance confirms PAM has "limited range" for harbour porpoise and is "not suitable" for seals and baleen whales. Key mitigation is deferred to a post-consent Marine Mammal Mitigation Protocol, preventing Scottish Ministers from assessing adequacy at the point of determination - contrary to the beyond-reasonable-scientific-doubt standard required under the Habitats Regulations. Peer-reviewed monitoring at Scottish offshore wind farm construction sites (Benhemma-Le Gall et al. 2021, *Frontiers in Marine Science*) observed harbour porpoise displacement up to 12 km from pile-driving and 4 km from construction vessels alone - distances that no MMO, PAM or soft-start zone can address.

The EPS licence contradiction: The EIAR identifies that activities may require an EPS licence due to disturbance at a level requiring legal derogation, while simultaneously concluding residual effects are "negligible or minor." Under the Conservation of Habitats and Species Regulations 2017, an EPS licence can only be granted where no satisfactory alternative exists, imperative reasons of overriding public interest apply, and favourable conservation status is maintained. The EIAR demonstrates none of these.

Basking sharks (IUCN Endangered) were recorded by the developer's own July 2023 aerial survey (EIAR Appendix 13.1). The EIAR does not adequately assess EMF impacts from subsea cables on elasmobranchs, despite Scottish Government ScotMER research identifying this as an unresolved evidence gap (FF.07).

No alternative solutions: Under the Habitats Regulations, consent cannot be granted if alternative solutions exist. Other ScotWind sites are available in waters without the same density of European Protected Species and designated habitats, and the existence of those alternatives is directly relevant to whether consent for this site can lawfully proceed.

Consent would therefore breach or inadequately address the Conservation (Natural Habitats &c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017, the Marine (Scotland) Act 2010, Section 9 of the Wildlife and Countryside Act 1981, NMP Policies GEN 5, GEN 9, GEN 13 and GEN 21, and ASCOBANS Resolution 7.6 (2016) on underwater noise.

My further objection points:

Energy should be generated close to where it's needed. Unspoiled areas of natural beauty and habitats for wildlife should be protected rather than dug up and filled with concrete for the benefit of large corporates and to satisfy the net zero ambitions of politicians hundreds of miles away. We have the same problems in the Isle of Man and our islands must stick together!

This planning decision is about the long-term future and the character of a landscape and community that cannot be replaced once altered at this scale. Spiorad na Mara Offshore Wind Farm would cause significant, cumulative and largely irreversible harm to landscape and seascape character, heritage setting, and the tourism economy.

I respectfully request that this application is rejected.

Yours sincerely,

[Redacted signature]

Sent from my iPhone

Member of Public 2362

From: [Redacted]
To: [MD Marine Renewables](#)
Subject: Off shore wind farm
Date: 06 May 2026 09:21:54

I [Redacted]

Reject this application for wind turbines off the Barvas coast

Yet another ruination for the island

Without listening to the people of the island

Yours

[Redacted]

Sent from my iPhone

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: MD-00011742 & MD-00011743 Spiorad na Mara Offshore Wind Farm - Isle of Lewis OBJECTION
Date: 06 May 2026 08:52:59
Attachments: [MD-00011742 & MD-00011743 Spiorad na Mara Wind Farm Objection.pdf](#)

To whom it may concern,

Please find attached my objection to the below planning application.

MD-00011742 & MD-00011743

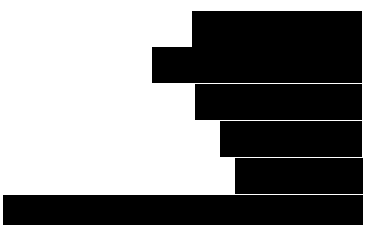
Spiorad na Mara Limited

Spiorad na Mara Offshore Wind Farm - Isle of Lewis

Please let me know you have received my objection.

Yours Sincerely,

[REDACTED]



Marine Directorate
Licensing Operations Team
Scottish Government
375 Victoria Road
Aberdeen
AB11 9DB
MD.MarineRenewables@gov.scot

Sent by email on 6 May 2026

MD-00011742 & MD-00011743
Spiorad na Mara Limited
Spiorad na Mara Offshore Wind Farm - Isle of Lewis

I formally object to the above application on the grounds that it contravenes the following planning policies and guidance.

There was no effective consultation with the communities of west Lewis before Crown Estate Scotland identified and leased the N4 area for development. The N4 area is unprecedented in both its proximity to shore (located in **inshore** waters) and the scale and number of proposed wind turbines (at 338m above sea level this would make them the tallest turbines in UK waters). The N4 area is unsuitable as a location for this development, and the community had no opportunity to contribute their opinions during the early stages of project planning. The plan has been imposed without valid consultation or consent from the island communities that would be severely affected by the proposed development. According to Scotland's National Marine Plan (NMP) GEN 18 *'Early and effective engagement should be undertaken with the general public and all interested stakeholders to facilitate planning and consenting processes.'* Also cited in Para. 4.77 is that *'Engagement with the public and other stakeholders should be appropriate, proportionate and meaningful. It should be undertaken as early as possible in planning and consenting processes.'* This lack of engagement should warrant a public enquiry.

There is widespread community opposition to the project. The Community Opinion Survey on the Spiorad na Mara Offshore Wind Farm Development (N4) published by www.emg-lewis.co.uk in April 2026 found that 88% of residents from Ness to Uig oppose the N4 development. The National Islands Plan outlines a commitment to community empowerment, page 65, paragraph 5 *'Our vision is for islanders to be empowered to shape their own priorities, build their futures, and protect what makes their communities unique.'* However, we are being disempowered as a community. The Social Impact Assessment has not been disclosed before the planning application deadline, preventing a transparent assessment of the project's risks (NPF4 Policy 14; Aarhus Convention).

The proposal will have a documented adverse impact on mental health and wellbeing, which is a material violation of NPF4 Policy 14 (NPF4 Policy 14 (Health and Wellbeing)). The impact of infrasound has been excluded from the EIAR on the basis of a 1997 methodology, which is now outdated. New peer-reviewed research published in 2026 by Cambrian Environmental Research predicts that infrasound from turbines at this scale would exceed safe cardiac health thresholds as far away as 46km, whilst also causing harm through sleep disturbance, anxiety and cognitive impairment.

In planning terms, the Environmental Impact Assessment Report (EIAR) is deficient because it lacks site-specific data and fails to assess a realistic worst-case scenario. The application represents a deficient EIAR

because it contains significant gaps in baseline data regarding local species. (National Marine Plan; NPF4 Policy 1). The use of the Rochdale Envelope principle in this sensitive location is inappropriate as it masks the scale of environmental harm (NPF4 Policy 4; Marine Scotland Guidance).

This application is only part of a number of projects in the process of seeking planning which will cumulatively cause irreparable damage to the Isle of Lewis. The assessment fails to account for the total carbon store degradation caused by digging up the Barvas Moor peatlands (NPF4 Policy 1; NPF4 Policy 5 (Soils)). Failure to assess impacts on irreplaceable machair habitats at the landfall point constitutes a direct breach of NPF4 Policy 3. Given the significant "Information Deficiencies," the developer has failed to prove, "beyond reasonable scientific doubt," that the environment will not be irreparably harmed (Habitats Regulations). The project is also notably inconsistent with the 2008 AMEC/Lewis Wind Power Ministerial Precedent, which established that the Lewis Peatlands SPA constitutes a "national interest" carrying a "weight of importance" that outweighed the benefits of energy production; a conservation priority further strengthened by NPF4 Policy 1, which mandates that significant weight be given to the global climate and nature crises in all planning decisions (Ministerial Decision 2008; NPF4 Policy 1).

It is problematic to rely on post-consent mitigation. The project cannot be judged safe if the solutions are not provided before the decision is made. I object to the reliance on post-consent mitigation, as the effectiveness of these measures cannot be scrutinized now (NPF4 Policy 3; Habitats Regulations). The proposal suffers from procedural uncertainty, as key protection plans have been deferred until after permission is granted (Planning and Infrastructure Act 2025). The pre-determination of mitigation without evidence-based results fails the test of a robust planning application (NPF4 Policy 1).

The Environmental Impact Assessment Report makes no reference to the personal, cultural or historical attachment of the population of Lewis to their landscape and heritage, and fails to assess impacts on the living intangible heritage of the Gaelic community. Until a full assessment addressing impacts on Gaelic language and culture, community wellbeing, and west Lewis communities' relationship with their coastline is completed and publicly consulted upon, this application cannot lawfully be determined. NMP Para. 4.20 states *'The historic environment includes all aspects of the environment resulting from the interaction between people and places through time,'* and NPF4 Policy 7 states *'Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place.'* This assessment has not been adequately undertaken.

The development occupies primary foraging grounds for the Lewis Peatlands SPA red-throated divers, falls within the foraging range of the St Kilda gannet colony, and crosses a principal UK migratory corridor for protected species, including whooper swan and pink-footed goose. NPF4 Policy 11 states the impact on *'biodiversity including impacts on birds'* must be addressed. The EIAR fails to adequately assess the threats of collision, displacement, and barrier effects to these declining populations. Thus, consent would breach the Conservation (Natural Habitats &c.) Regulations 1994, the 2018 Offshore Regulations, the Marine (Scotland) Act 2010, and the Wildlife and Countryside Act 1981, as the proposal is likely to adversely affect the integrity of the following SPA's: Lewis Peatlands, West Coast of the Outer Hebrides, Seas off St Kilda and St Kilda. NPF4 Policy 7 states *'Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved.'*

The developer's study of West Lewis waters does not take into account the full impact on the local fishing industry and marine life. The proposal fails to provide a robust evidence base for marine mammals and ignores the displacement of the local fishing fleet. "The application contains significant methodological deficiency by using biased aerial surveys that ignore established land-based basking shark data." (National Marine Plan Policy GEN 9). "The requirement for European Protected Species (EPS) licenses proves that environmental impacts are not 'negligible' as claimed." (NPF4 Policy 3; EPS Regulations).

The developer's own Habitats Appraisal Derogation Case proves that the project cannot be completed without damaging protected nature sites (Habitats Regulations; NPF4 Policy 3). The proposal fails the

Precautionary Principle, as there is no evidence beyond reasonable scientific doubt that local bird populations will survive (National Marine Plan Policy GEN 9). I object on the grounds that the project poses an unacceptable risk to the integrity of Special Protection Areas (NPF4 Policy 4; Birds Directive). The developer has failed the mandatory Enhancement test required by NPF4. The project fails the NPF4 Policy 3 mandate, which requires a measurable net gain for biodiversity, not just mitigation (NPF4 Policy 3). The proposal offers no genuine biodiversity enhancement and fails to contribute to our local Nature Network.

The EIAR anticipates significant adverse effects on coastal heritage. It fails to assess the impact on key scheduled monuments such as SM13786. The proposal would harm the Calanais monuments and wider historic landscape by introducing an industrial horizon into their natural surroundings, fundamentally undermining the meaning, experience, and interconnected setting of these sites, directly conflicting with NPF4 Policy 7. There are many alternative sites for offshore wind development and no reasons of over-riding public interest by choosing this site. The National Marine Plan states in Para. 4.23 *'Designated assets should be protected in situ within an appropriate setting'*.

Granting offshore consent while onshore impacts on irreplaceable machair and deep peatland remain unassessed, directly contravenes NPF4 Policy 3, which requires biodiversity (including irreplaceable habitats) to be left in a demonstrably better state. In addition, the proposal fails to engage the statutory rights of crofters under the Crofters (Scotland) Act 1993. NMP Para. 4.77 states *'There should be a presumption in favour of publicising applications for marine and terrestrial components of a development together during consenting processes.'*

In planning terms, the developer has failed to assess intangible heritage and the living landscape, violating the requirement to protect the unique cultural identity of our island communities. The assessment fails NPF4 Policy 7 by ignoring the intangible and living heritage of the West Side community. (NPF4 Policy 7; Historic Environment Policy for Scotland (HEPS)) · There has been an inadequate Island Communities Impact Assessment (ICIA) regarding the impact on Gaelic culture and local traditions. (Islands (Scotland) Act 2018) · The project fails to respect the Cultural Landscape as a whole, treating historic sites as isolated objects rather than a living environment (LDP Policy EH1; NPF4 Policy 7).

The project would cause irreparable harm to the tourism economy and coastal character. The Spiorad na Mara wind farm would permanently industrialise the unspoiled coastal scenery and dark skies on the Isle of Lewis, destroying the very qualities that attract visitors to the island. Local residents have consistently warned during consultation that this visual impact would decimate the tourist industry on which so many islanders depend. Tourism is built on the area's landscape, seascape, heritage, nature, and dark skies. This development risks long-term damage to local businesses and the wider economy, contrary to NPF4 Policy 30. The National Marine Plan states in Para. 12.28 *'An unspoiled environment, high quality landscape and a sense of closeness to nature are important to many people. Scenery and environmental quality are key factors in attracting visitors to Scotland's coasts.'*

There are many alternative sites for offshore wind development and it is immoral, unjust and undemocratic to over-ride public interest by choosing this site. This planning application is deeply exploitative of our island and immoral in its colonial approach. The damage it would cause to the culture, heritage and rich natural environment of our island will be irreparable. As a community we have nothing to gain and everything to lose from this proposed project.

I respectfully request that this application is rejected.

Yours sincerely,



The views expressed in this email are my own and I intend for this typed name to act as my signature.

Please keep my personal details confidential.

From: [REDACTED]
To: [MD Marine Renewables](#)
Subject: Objection - Spiorad na Mara Offshore Wind Farm (MD-00011742 & MD-00011743)
Date: 06 May 2026 08:04:07

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Construction noise: The developer's own noise modelling (EIAR Appendix 19.2) provides for up to 5.5 hours of percussive piling per day, up to 10,635 strikes per pile per day, hammer energies up to 5,000 kJ, and 1,563 pin piles across two consecutive construction years (April–October). The EIAR itself acknowledges that "harbour porpoises are widely regarded as the most sensitive marine mammal receptor to underwater noise" and that behavioural disturbance can occur up to 70 km from piling (Bailey et al., 2010, cited in Chapter 13). The proposed piling window coincides with peak cetacean seasonal density and with harbour seal pupping (June–July), triggering the prohibition on deliberate disturbance of European Protected Species during breeding and rearing periods under the Conservation of Habitats and Species Regulations 2017 and Section 9 of the Wildlife and Countryside Act 1981.

The developer's own underwater noise modelling (EIAR Appendix 13.3) confirms that, even with noise mitigation applied, percussive piling at the northernmost foundation location generates a PTS (permanent auditory injury) range of up to 1,500 m for low-frequency cetaceans and a TTS (temporary auditory injury) range of up to 49 km. These are the developer's own figures, after mitigation. Low-frequency cetaceans include minke, fin, sei and humpback whales - all species documented in these waters. A 49 km auditory injury zone, repeated across an April–October piling window for two consecutive years, cannot credibly be reconciled with a classification of effects as "not significant."

NMP Policy GEN 13: development should avoid significant adverse effects of man-made noise and vibration on species sensitive to such effects. The EIAR predicts disturbance to 9.186% of the Risso's dolphin management unit population and 27.7% of the coastal bottlenose dolphin population from piling noise, yet classifies these effects as "not significant." GEN 13 sets an avoidance standard, not a tolerance threshold. The developer's own EPS and Basking Shark Risk Assessment (submitted to Marine Scotland, 22 February 2023) formally acknowledges risk of disturbance to minke whale, harbour porpoise, common dolphin, bottlenose dolphin, grey seal and basking shark from survey work alone. Full construction at this scale cannot credibly be claimed to present a lesser risk.

The 2023 Tolsta Stranding: In July 2023, 54 of 55 long-finned pilot whales died on Traigh Mhòr beach while geophysical surveys were being carried out at this lease area. The Scottish Government investigation could not rule out anthropogenic contribution and explicitly acknowledged limitations in the acoustic detection capability

of the recorders used. This recent and devastating event must weigh heavily in this decision.

Priority Marine Features and seabed disturbance: Kelp beds - confirmed present across 10 km² within the Study Area and designated as a PMF and blue carbon habitat - are assessed as sustaining "minor adverse" impact, with no compensatory measures proposed. Maerl beds, horse mussel beds, fan mussel aggregations and cold-water coral reefs (all Scottish PMFs) are either excluded on the basis of decade-old desktop data (Tyler-Walters et al., 2016) or not mentioned at all. The developer concedes that its primary mitigation - micro-siting of turbines and cables - "cannot be quantified until detailed design and further site-specific investigations are complete."

NMP GEN 5: safeguard natural carbon sinks including kelp beds. NMP GEN 9: do not result in significant impact on the national status of Priority Marine Features, and protect and enhance the health of the marine area.

Cumulative and in-combination effects: The Habitats Regulations require assessment of cumulative effects with other plans and projects. The Scottish Government's own 2026 ICIA Screening Report concedes that Scottish offshore wind plans are "likely...to undergo the derogations process under the Habitats Regulations." Spiorad na Mara is one of several large developments proposed in or adjacent to these waters; the cumulative assessment does not rigorously meet this requirement. NMP GEN 21 requires cumulative impacts affecting the ecosystem to be addressed.

Inadequate assessment and deferred mitigation: The joint representation from the Hebridean Whale and Dolphin Trust and Whale and Dolphin Conservation states that baseline cetacean data is "severely lacking." Proposed mitigation (MMOs, PAM, soft-start) is designed to address acute physical injury, not behavioural displacement; JNCC guidance confirms PAM has "limited range" for harbour porpoise and is "not suitable" for seals and baleen whales. Key mitigation is deferred to a post-consent Marine Mammal Mitigation Protocol, preventing Scottish Ministers from assessing adequacy at the point of determination - contrary to the beyond-reasonable-scientific-doubt standard required under the Habitats Regulations. Peer-reviewed monitoring at Scottish offshore wind farm construction sites (Benhemma-Le Gall et al. 2021, *Frontiers in Marine Science*) observed harbour porpoise displacement up to 12 km from pile-driving and 4 km from construction vessels alone - distances that no MMO, PAM or soft-start zone can address.

The EPS licence contradiction: The EIAR identifies that activities may require an EPS licence due to disturbance at a level requiring legal derogation, while simultaneously concluding residual effects are "negligible or minor." Under the Conservation of Habitats and Species Regulations 2017, an EPS licence can only be granted where no satisfactory alternative exists, imperative reasons of overriding public interest apply, and favourable conservation status is maintained. The EIAR demonstrates none of these.

Basking sharks (IUCN Endangered) were recorded by the developer's own July 2023 aerial survey (EIAR Appendix 13.1). The EIAR does not adequately assess EMF impacts from subsea cables on elasmobranchs, despite Scottish Government ScotMER research identifying this as an unresolved evidence gap (FF.07).

No alternative solutions: Under the Habitats Regulations, consent cannot be granted if alternative solutions exist. Other ScotWind sites are available in waters without the same density of European Protected Species and designated habitats, and the existence of those alternatives is directly relevant to whether consent for this site can lawfully proceed.

Consent would therefore breach or inadequately address the Conservation (Natural Habitats &c.) Regulations 1994, the Conservation of Habitats and Species Regulations 2017, the Marine (Scotland) Act 2010, Section 9 of the Wildlife and Countryside Act 1981, NMP Policies GEN 5, GEN 9, GEN 13 and GEN 21, and ASCOBANS Resolution 7.6 (2016) on underwater noise.

My further objection points:

This is pure madness and greed

This planning decision is about the long-term future and the character of a landscape and community that cannot be replaced once altered at this scale. Spiorad na Mara Offshore Wind Farm would cause significant, cumulative and largely irreversible harm to landscape and seascape character, heritage setting, and the tourism economy.

I respectfully request that this application is rejected.

Yours sincerely,





Sent from my iPhone