North Irish Sea Array Windfarm Limited,
Building 4200,
Cork Airport Business Park,
Co. Cork

15th November 2021

[redacted],
Foreshore Section,
Department of Housing, Local Government and Heritage,
Newtown Road,
Wexford.

Dear [redacted],

RE: FS007358 – FORESHORE LICENCE APPLICATION BY NORTH IRISH SEA ARRAY WINDFARM LIMITED., SITE INVESTIGATION

North Irish Sea Array Windfarm Limited (NISA Ltd.) would like to thank the prescribed bodies for their review of the Foreshore Licence Application and welcome the observations made.

The following table summarises the list of the prescribed bodies that the foreshore licence application was sent out to, along with the details of who responded.

Ref	Prescribed Body Consultee	Response Received
1	Marine Institute	Yes
2	Marine Advisor – Department of Housing, Local Government and Heritage – Ecology	Yes
2A	Marine Advisor – Department of Housing, Local Government and Heritage – Engineering	Yes
3	Marine Survey Office	Yes
4	Department of Housing, Local Government and Heritage – Underwater Archaeology and Nature Conservation Units	Yes
5	Department of Agriculture, Food and the Marine (DAFM)	Yes
6	Sea Fisheries Protection Authority (SFPA)	Yes
7	Inland Fisheries Ireland (IFI)	Yes
8	Louth Co. Co.	Yes
9	Fingal County Council	Yes

Submission and Responses

Prescribed Body	Comments	Response
Marine Institute (through DAFM)	The proposed site investigation methods are standard and have been used in similar investigations in Irish waters and internationally. It is intended that the proposed survey works would be phased over a period of 3 years following award of the licence. There are no licenced aquaculture sites within the proposed site investigation area on the Foreshore and therefore impacts on aquaculture are not considered likely. There is commercial fishing activity within the proposed site investigation area on the Foreshore and therefore some interaction with fishing activity may occur. Considering the scale, timing and duration of the proposed investigation it is considered that such interaction will be limited and overall, will not be significant. Notwithstanding this, it is noted that the applicant has appointed a Fisheries Liaison Officer who had engaged with the fishing community in the area. It is recommended that the Fisheries Liaison Officer should, on an ongoing basis, engage with the fishing community and other relevant stakeholders and this should be a specific condition on any licence that may be granted.	NISA Ltd acknowledges the submission from the Marine Institute. [redacted] and [redacted] of Fisheries Liaison Limited have been appointed as Fisheries Liaison Officer (FLO) for the project and has been actively engaging with the fishing community and fisheries groups since late 2019. The FLO will continue to undertake ongoing engagement with fisheries communities and the applicant commits to give as much notice as is practical in advance of undertaking survey works. NISA Ltd has no objection to the condition as proposed.
Marine Institute (Directly)	The proposed site investigation methods are standard and have been used in similar investigations in Irish waters and internationally. It is intended that the proposed survey works would be phased over a period of 3 years following award of the licence. There are no licenced aquaculture sites within the proposed site investigation area on the Foreshore and therefore impacts on aquaculture are not considered likely.	NISA Ltd acknowledges the submission from the Marine Institute. [redacted] and [redacted] of Fisheries Liaison Limited have been appointed as Fisheries Liaison Officer (FLO) for the project and has been actively engaging with the fishing community and fisheries groups since late 2019. The FLO will undertake ongoing engagement with fisheries communities and the applicant commits to give as much notice as is practical in advance of undertaking survey works. NISA Ltd. began engagement with groups such as regional inshore fisheries forums (RIFF's) sought advice and discussed the fisheries stakeholder approach with Bord Iascaigh Mhara (BIM) in the early

	There is commercial fishing activity within the proposed site investigation area on the Foreshore and therefore some interaction with fishing activity may occur. Notwithstanding this, it is noted that the applicant has appointed a Fisheries Liaison Officer who had engaged with the fishing community in the area. The NIS submitted identifies a number of risks to conservation features (e.g. marine mammals) likely to result from the proposed activity. As mitigation a number of actions are suggested that should reduce the risk. Foremost among these is the use of marine mammal observers (MMO) during operations including a soft start protocol. The MI is satisfied that such measures will mitigate any risk to marine mammals during the site investigations. It is advised that DHLGH identify any similar geophysical surveys that may be carried along the coast and that they not coincide with this survey. It would be important that any geophysical surveys be carried out in isolation so as to avoid cumulative effects on marine mammals. On the basis of the above and considering the scale and location of proposed site investigations the Marine Institute is satisfied that the site investigations will not have a significant impact on the marine environment in the survey area and will not have a significant impact on other legitimate uses/users of the area and therefore has no objections to a licence being granted. It is recommended that the following specific conditions should be attached to any licence that may issue: 1. The Licensee shall use that part of the Foreshore the subject matter of this licence for the purposes as outlined in the application and for no other purposes whatsoever. 2. The licensee shall ensure that the works are carried out and completed in accordance with the plans and particulars lodged with the application. 3. The Licensee shall appoint a Fisheries Liaison Officer who shall consult with the SFPA, relevant fishermen's groups and charter boat skippers in order that appropriate actions	stages of the application process for the application for the main array area which NISA hopes will conclude the consent process shortly. The FLO has been working to build relationships and lines of communication between the NISA project and the fishing industry from the very earliest stages of development, and will continue to do so through to SI works and on to construction and operation. During the Covid-19 crisis, the FLO has endeavoured to continue this engagement despite the restrictions through phone calls and virtual meetings. Since restrictions have eased, fortnightly port visits have been established, re-engaging with the fishing communities in person. In addition to this, Irish Naval Service Fisheries Monitoring Centre (FMC) has been contacted for guidance on expected fishing activity levels within the application area. Vessel monitoring data (VMS Data) has been obtained and analysed. A further application was made to the Marine Institute for inshore tracking data to build on this knowledge base. The fundamental ethos of this communication process is to establish positive and proactive engagement with the fishing industry. As part of this process, engagement will be held with the SFPA and relevant fishermen's groups in relation to the SI works. Indicative timelines will be provided well in advance of any works being carried out with confirmation of activities proposed being shared once the information is available. Through the collaborative engagement proposed, the aim will be to avoid or minimise any interactions with ongoing fishing activities in the area. NISA Ltd has no objection to the conditions as outlined in the submission.

	can be taken to avoid or minimize any interactions with ongoing fishing activities in the area during the course of the site investigation works on the Foreshore. 4. The licensee will engage the services of an MMO who will ensure the Protocols specified in the Marine Mammal Mitigation Plan are fully implemented.	
Marine Advisor – Department of Housing, Local Government and Heritage – Ecology	The Marine Advisor (Ecology) to the Department of Housing, Local Government and Heritage has provided comments in which they give a summary description of the project including referencing the numbers of SPAs and SACs which fall within the zone of influence of the proposed activities The Marine Advisor describes the assessment process including with respect to Appropriate Assessment under Article 12 of the Habitats Directive (92/43/EEC) and with respect to a Risk Assessment for Annex IV Species under Article 12 of the Habitats Directive (92/43/EEC). In addition the Marine Advisor provides commentary with respect to the relevancy of the EIA Directive and states. "The proposed project is not of a type/class that is included in Annex I and II of the EIA Directive (Schedule 5 to the Planning & Development Regulations). However, an EIA Pre-Screening process is a requirement to demonstrate this analysis. Accordingly, **please find attached an EIA Pre-Screening** for the proposed project (please see Appendix II to this response). **The Marine Advisor also states:** "Where projects do not fall under a class that require an EIA, in-keeping with good governance, a Non-Statutory Environmental Report assessing the environmental effects of the proposed works on the receiving environment is required. This report will document the current state of the environment in the vicinity of the proposed activity in order to quantify the effects, if any, on the environment and if applicable to highlight how mitigation will be implemented to minimise impacts on the environment. The EPA *Guidelines on the*	NISA Ltd. would like to thank the Marine Advisor for their comments. NISA Ltd agrees that the activities proposed under the licence application are not of a category that would fall under either Annex I or Annex II of the EIA Directive and agree to provide a non-statutory environmental report in support of the application.

	Information to be contained in Environmental Impact Assessment Reports (2017) indicates the relevant topics to be covered in this report." The Marine Advisor also recommends that the Department of Housing, Local Government and Heritage engage the services of an External Environmental Consultant and states: "Owing to the scale and complexity of the environmental assessment required, and taking account of the available resources within the Department, I recommend that Foreshore Section of DHLGH engage a suitable qualified IEC. The IEC must conduct an independent assessment of the information provided by the Applicant, having regard to the Habitats Directive, the Birds Directive, the Birds and Natural Habitats Regulations, the EIA Directive, Non-statutory Environmental Reports and relevant jurisprudence of the EU and Irish courts. The IEC shall ensure that The Minister has all the environmental assessments required to allow them to make decisions on applications under The Foreshore Act 1933, as amended, in accordance with the requirements set out in Directive 92/43/EEC (**Habitats Directive**), Directive 2009/147/EC (**Birds Directive**) and Directive 2011/92/EU, as amended by Directive 2014/52/EU (**EIA Directive**)." In conclusion the Marine Advisor states: "In principle I have no objections to this application. As outlined above, I recommend that Foreshore Section of DHLGH engage a suitable qualified IEC. On completion of the Public and Prescribed Bodies Consultation and the work of the IEC, I will furnish my Final Environmental Report with Determinations which may include any case specific conditions identified through the environmental assessments."	
Marine Advisor – Department of Housing, Local Government and Heritage – Engineering	An engineer of the Marine Advisory unit provided comments on the application. These comments included a description of the project and the following specific comments: **Coastal Processes**	NISA Ltd would like to thank the Marine Advisor for their comments and has no objections to the conditions as proposed.

	The proposed site investigation works will have no impact on the existing coastal processes. **Estate Management** All foreshore is presumed state owned unless proven otherwise. In this case there are no known established claims of private ownership of the foreshore at this location. Subject to no claims of private ownership arising out of the public consultation process, the foreshore the subject of this application is state owned. Section 3 of the Foreshore Act applies for the proposed site investigation. I inspected the relevant sites associated with the cable landing locations on the 05/11/2021. The licence area for the proposed works is shown outlined on the following map submitted by the applicant: Drg. No. D-21005-A3-002 entitled 'NISA Cable Assessment Area - Foreshore License Map', Rev 02 dated 16/08/2021. The proposed area of foreshore associated with the works is 10,623.33ha. The site investigation will have no permanent impact on other legitimate users or existing access arrangements. The works, if completed as proposed and in accordance with conditions as set out below, will not have significant adverse impacts on the public use of, access to and enjoyment of the foreshore. The applicant shall use that part of the foreshore, the subject matter of the application for the purposes as outlined in the application and for no other purposes whatsoever. Where relevant the foreshore and adjacent seashore area shall be restored to its natural state on completion of the works to the satisfaction of the Department of Housing, Local Government and Heritage. **Public Interest** Section 2 and 3 of the 1933 Foreshore Act, as amended, states that a lease or licence of state foreshore may be granted "If, in the opinion of the Minister, it is in the public interest". As foreshore is a finite and valuable national resource and public amenity, it is important that each plan and project is fully assessed to ensure, that	

	if consented to, it is a sustainable and proper use of that finite and valuable resource. Having considered and assessed the relevant issues associated with the proposed site investigation, while taking note that the state owned foreshore is finite resource which must be utilised sustainably, I am satisfied that the proposed works are in the Public Interest. **Conclusion/Recommendation** I have no objection to the granting of a Foreshore Licence subject to the following conditions: 1. The Licensee shall use that part of the foreshore, the subject matter of this licence for the purposes as outlined in the application and for no other purposes whatsoever. 2. The works shall be located as outlined on Drg No. D-21005-A3-002 entitled 'NISA Cable Assessment Area - Foreshore License Map', Rev 02 dated 16/08/2021 3. The Licensee shall notify the Department of Housing, Local Government and Heritage at least 14 days in advance of the commencement of any works on the foreshore. This notification shall include an up to date Programme of Works for the completion of the works. 4. During the course of the works the Licensee shall ensure that existing public access arrangements are maintained, where possible, and all necessary precautions are put in place to protect the public in accordance with relevant Health and Safety Legislation. 5. On completion of the works, the surrounding foreshore shall be returned to its natural state to the satisfaction of the Department of Housing, Local Government and Heritage. 6. The Licensee shall ensure that contractors, and their subcontractors, are made aware of all conditions and project specific requirements and they are required to have briefings on these to ensure all parties are fully aware of these requirements.	
Marine Survey Office	After careful consideration, the Marine Survey Office has no objection to the above referenced application from a navigational safety perspective. However, the following points shall be of note;	NISA Ltd acknowledges the comments of the Marine Survey Office and NISA Ltd has no objection in principal to the conditions as proposed however NISA Ltd would like to clarify that this application

	• An appropriate Marine Notice detailing the works and vessels engaged in said works shall be published for the information of all marine users in the sea area covered by the application. • Safety notices for mariners shall be promulgated by all available means appropriate during the duration of the subsea cable operations to ensure the safety of navigation is maintained. • The applicant should seek guidance from the Department of Defense as some of the works are within the Gormanstown Firing Practice Area.	is for site investigation works only and there will no cable laid as part of the proposed works. NISA Ltd suggests amending the second condition to read as: Safety notices for mariners shall be promulgated by all available means appropriate during the duration of the **site investigation activities** to ensure the safety of navigation is maintained. NISA Ltd has made initial contact with the Department of Defense with regards to the Gormanstown Firing Practice Area with the aim of establishing two-way communication with the DoD to ensure that all parties are aware of all planned activities within the area and ensuring that all necessary procedures are put in place that will allow the safe operation of the survey operators over the entire Foreshore Licence Site Investigation Area.
Department of Housing, Local Government and Heritage – Underwater Archaeology	It is noted that the proposed site investigation area is located in an area of high underwater archaeological potential. The Wreck Inventory of Ireland Database (WIID) lists numerous wrecks for the proposed development area, which are subject to statutory protection under section 3 of the 1987 National Monuments (Amendment) Act. Given the location of the proposed site and the nature of the works it is possible that underwater archaeology may be impacted by these operations. It is therefore recommended that the following be attached as conditions to the foreshore licence: 1. The proposed geophysical surveys should be licenced under the National Monuments Acts 1930-2014. 2. The proposed marine geophysical surveys shall be carried out in compliance with the with the Department's guidelines "General Requirements for a Geophysical Survey for Archaeological Purposes". 3. It is recommended that the geophysical surveys be carried out in advance of the site investigation and geotechnical works taking place.	NSA Ltd acknowledges the comments received from the Underwater Archaeology Unit of the National Monuments Service within the Department of Housing, Local Government and Heritage. NISA Ltd has numbered the comments received from UAU to allow NISA Ltd to respond to individual comments where necessary. 1. NISA Ltd has no objection to this condition and will ensure that the surveys are licenced as required. 2. NISA Ltd has no objection to the condition and will engage with UAU as necessary in relation to survey specification. 3. NISA Ltd seeks clarification on what exactly is meant by site investigations as it has been differentiated from geotechnical works in this case. 4. NISA Ltd intends to avoid any known areas of archaeological interest through establishing a standard avoidance zone around known or suspected features of archaeological interest. Per items 3, Nisa Ltd requests clarity as to the reference to "site investigations". NISA Ltd will use a drop-down camera or video in advance of

	4. The geophysical data for all proposed SI and geotechnical investigation locations and grab sample locations etc. should be assessed by a suitably qualified archaeologist to ensure that the proposed works do not negatively impact on locations where there is known or potential archaeology. 5. A report summarising the assessment of the geophysical data should be forwarded to this office for review prior to the SI and geotechnical works taking place. Where archaeological material/features are shown to be present, preservation in situ, avoidance, preservation by record (archaeological excavation) or archaeological monitoring may be required. The applicant shall be prepared to be advised by the Department of Housing, Local Government and Heritage in this regard. 6. It is also recommended that an intertidal and metal detection survey should be carried out of all landfall areas where SI works and grab samples are to be taken. Both surveys should be licensed under the National Monuments Acts 1930-2014 and carried out by an archaeologist suitably qualified in maritime archaeology. 7. The results of the geotechnical investigations should be assessed by a suitably qualified archaeologist and this assessment should feed into the overall archaeological assessment of the proposed wind farm project. If any clarification is required on any of the above do not hesitate to contact this office. An officer from this office would also be available to meet to discuss the above. It should be borne in mind, that if significant archaeological remains are found, further archaeological mitigation might be required.	undertaking benthic grab samples as is standard practice to avoid areas of either ecological or archaeological sensitivity. NISA Ltd will engage the services of an experience marine archaeologist when identifying the locations for benthic ecology sampling. 5. NISA Ltd seeks clarification on what is meant by SI works and geotechnical works as they have been differentiated in this condition. 6. 6. NISA Ltd has no objection to the condition as stated and will ensure that any intertidal archaeological survey is licenced as neccessary7. NISA Ltd seeks clarification on the request for an archaeologist to assess the results of the geotechnical site investigations as this is not standard practice, is concerned with soil properties of the collected cores and is a geological as opposed to an archaeological aspect of the development. NISA Ltd has no objection to the conditions as proposed.
Department of Housing, Local Government and Heritage – Nature Conservation Units	The proposed site survey to support the development of the North Irish Sea Array windfarm has been evaluated by a Natura Impact Statement (NIS) and other documents. The conclusion of the Natura Impact Statement document is that the proposed works are unlikely to pose a significant likely risk to nature conservation interests in	NISA Ltd acknowledges the comments and agrees to implement the mitigation measures as outlined in Section 6.2 of the Foreshore Licence Application for Site Investigation Work – NISA Cable Assessment Area Natura Impact Statement in full.

	the vicinity. It is noted that potential interaction with marine mammals can be ameliorated by the application of "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters". National Parks & Wildlife Service concur with this conclusion and request that mitigation outlined in Section 6.2 of the NIS document is implemented in full.	
Department of Agriculture, Food and the Marine (DAFM)	"Although this area is not generally noted for seed mussel it is important to point out that the seed resource is scarce currently and if seed beds develop in this area in the future the mussel operators must have access to the resource."	NISA Ltd acknowledges the submission from DAFM. NISA Ltd has appointed an FLO to the project and has been undertaking engagement with commercial fisheries relevant to the project since late 2019. Through our engagement with fisheries NISA Ltd is aiming to develop a long-term working relationship with this important user of the marine space. This extends to the shellfish industry. Should NISA Ltd become aware of any seed mussel beds within the Foreshore Licence Site Investigation Area NISA Ltd will engage with the shellfish industry and fisheries organisations in relation to their location prior to commencing any survey activity.
Sea Fisheries Protection Authority (SFPA)	Site investigation application for a landfall hook up for the proposed wind farm (NISA Statkraft). 10,623.33 hectares is the applied are where the investigations will take place. Skerries is the main port which falls within the applied area . The documentation refers to fisheries surveys and all information including the appointed Fisheries Liaison Officer contact details should be sent to myself in advance of any surveys commencing. Results of such surveys also are required to be forwarded to the SFPA Howth office. 1. Wild Fisheries The application falls within commercial fishing grounds for crustaceans and live bivalve molluscs. The operation of the proposed jack up barge should not restrict the SFPA conducting official control duties at sea with the razorclam and inshore potting fleet while the investigations are being carried out. There is an active razor fleet which operate from Howth, Balbriggan, Skerries and Clogherhead which operate in the applied area.	NISA Ltd acknowledges the comments received from SFPA and provide the following response: 1. Wild Fisheries NISA Ltd would like to assure SFPA that the proposed works will not restrict SFPA from undertaking official duties in relation to the razorclam and inshore fisheries fleet. 2. Shellfish production areas NISA Ltd would like to assure SFPA that the proposed works will not restrict SFPA from undertaking official duties in relation to the sampling by SFPA officers of the shellfish 3. Seafood Safety NISA Ltd would like to assure SFPA that vessels used for the proposed works as well as any operating procedures in relation to the proposed works will comply with all relevant National and International statutes including ensuring that all vessels comply

	2. Shellfish Production Areas The applied area within Skerries Classified shellfish production area. The investigations should cause an issue when official shellfish sampling is being conducted. The razor clams are sold for direct human consumption. 3. Seafood Safety There is not expected to be any issues with seafood safety while the investigations are being conducted. The shellfish is sold for direct human consumption and the applicant must notify the SFPA Howth Office immediately should a pollution event during investigations occur.	with the requirements of the MARPOL Convention which makes an incidence of pollution unlikely. However in the unlikely event that an incidence of pollution were to occur NISA Ltd agrees to notify the SFPA Howth Office as soon as is practicable.
Inland Fisheries Ireland (IFI)	The NIS raises concerns about the in-combination effects with the Braymore Point Offshore Wind Farm (FS006973) with the potential that works are ongoing at the same time. While the NIS raises concerns for marine mammals the local fish population will be subjected to these on-going disturbances also. The mitigation measures to engage with Braymore Point is operators is welcomed with every effort made to reduce the impact on the local fish population. 1. Migratory Fish Species A number of migratory fish species are associated with the rivers located along this coastline including Atlantic Salmon, sea trout, European eel, sea and river lamprey. Life stages of these species may be traversing the study area both-during upstream migration to freshwater and during the outmigration to the sea. Sound generation and transmission during the proposed surveys here would disperse widely in water and could propagate into the migration paths of these fish life stages. 2. Marine Fish Sport Zone The overall area has a high value as a marine sport fish zone, both for shore angling and for boat fishing. The shoreline from Skerries to Rush up to Balbriggan are important angling locations. All of the target fish species as well as the angling facility are likely to be	NISA Ltd acknowledges the comments of IFI and has numbered them both the submission from IFI for ease of response. 1. Migratory fish species The proposed works will result in sound pressure being dispersed into the marine area. Therefore only those fish species with specially adapted hearing receptors which are sensitive to sound pressure are capable of being affected by the proposed survey works. None of the fish included by IFI in its response are capable of being affected by sound pressure. With respect to those species that are capable of being affected (e.g. Twaite Shad) in most instances the surveys are outside their hearing range. Where the surveys fall within their hearing range they are of relatively low power and would be expected to illicit a very short-term startle response should fish be in the immediate vicinity of the sound source as opposed to leading to injury or death of any fish. Please see Appendix I to this response for further detail. 2. Marine Fish Sport Zone NISA Ltd does not agree that the target fish species or the angling facility are likely to be impacted adversely by the sound generating and propagating marine surveys. I draw your attention again to

	impacted adversely by the sound generating and propagating marine surveys. We recommend engaging with local clubs in advance of surveys. 3. Mitigation Measures Mitigation measures in regard to the timing or works also in regard to levels and duration of noise generating and potential for adverse impact on fish species should be agreed with Foreshore Division of DHLGH and form part of any foreshore licence. IFI would point out that that the mitigation measures and guidance of NPWS in regard to marine mammals is not transferable to fish species. The fish remain invisible to any shore or boat-based observer. Mitigation measures should aim to reduce the sound generated, in intensity and duration. Seasonality of the sampling and a short sampling window may also provide some mitigation. The comments of IFI in this regard relate to fish species of conservation significance and of leisure angling significance all of which constitute part of IFI's brief. These mitigations should cover: • Use of soft-start and ramp up procedures for any sound generating surveys undertaken – both on a day to day basis and on restart after any stoppages within any day • Duration of noise generating surveys to be reduced to the minimum necessary to collect results of sufficient quality • Agreed timing of works so as not to interfere with migration times of fish life stages or with scientific studies currently in place in the proposed survey area 4. Other issues raised The IFI comments above do not cover commercial marine fish and the advice of SFPA should be sought in regard to impacts on the eggs/larvae and adult life stages of commercially important fish species in the area of the proposed works. The ecological surveys should capture the biodiversity of the area and be designed so that any benefits from the windfarm i.e. reef formation for marine species can be captured over time.	Appendix A provided with this response for information in relation to hearing sensitivity in fish species. This shows that marine fish sport species tend to fall within groups 1 and 2 and are not likely to be affected by the proposed sound generating survey works. In addition with regards to the angling facility the survey vessels including any jack up barge would only be located in the one place for a very short period of time (hours) therefore any disturbance to the angling facility would be very localised and temporary and not significant. In addition NISA Ltd has appointed an FLO to the project and will engage with all users of the marine space such as the Irish Federation of Sea Anglers (IFSA) and the European Federation of Sea Anglers (EFSA) along with the Irish Charter Skipper Association in advance if undertaking any works. 3. Mitigation Measures NISA Ltd agrees that the NPWS 2014 guidance aimed at marine mammals is not directly transferrable to fish species. NISA Ltd agrees that the soft-start/ramp-up procedure is suitable to deter fish species that are sensitive to sound pressure from the sound generating source. However NISA Ltd has established in its response (including Appendix I to this response) that this does not apply to the fish species as raised by IFI in its submission. The presence of the survey vessels themselves which will be mostly stationary or slow moving would not be expected to cause significant disturbance to fish species as the Foreshore Licence Site Investigation Area is within an area that is subject to reasonable levels of marine traffic from a range of sources including fishing, commercial and leisure users. The proposed survey works are not expected to interfere with any scientific studies in the area. 4. Other issues raised The views of SFPA have been sought and responded to as part of the prescribed body consultation process. The survey works are of such low power that they are not expected to have any affect on commercial fish species (see Appendix I to this response).

	The local IFI office should be informed 5 days in advance before surveys commence.	A full suite of surveys including a benthic ecology survey is planned to feed into an EIA and the design of the wind farm. NISA Ltd agrees to inform the local IFI office 5 days in advance of survey works commencing.
Louth Co. Co.	The purpose of the Foreshore licence application is to facilitate site investigation surveys and as such Louth County Council has no objection to same. The mitigation measures outlined in the application documentation should be implemented in full, in particular the public consultation and engagement proposals should be implemented in a timely manner. It is acknowledged at this juncture that it is not proposed to have any landfall within County Louth for the export cables. It is noted that the Appropriate Assessment does not reference the Clogher Head SAC which is located just outside the 15km radius. Having regard to the qualifying interests of this European site and the nature of the works proposed in this application it is not considered that there would be any likely significant effects on this European site or its conservation objectives. However should investigative works be proposed in the future closer to the Louth coastline the effects on this site in combination with other sites should be considered in more detail.	NISA Ltd acknowledges the comments from Louth County Council and wishes to assure Louth County Council that no works will take place closer to the Louth Coastline which lies both outside the Foreshore Licence Site Investigation Area and the identified zone of influence of the activities proposed under the application. Should NISA Ltd propose at any time in the future to undertake works for which Clogher Head SAC would fall within the zone of influence of the proposed works (taking into account the identified impacts of the proposed works) those works will be consented under a separate licence and will be subject to an Appropriate Assessment Stage 1 screening exercise and Stage 2 Appropriate Assessment (if required) as part of any future application for consent.

To confirm, Fingal County Council was also sent the NISA Foreshore Licence Application for comment however they did not respond.

Yours sincerely,

[redacted]

[redacted]

On behalf of Statkraft Ireland

APPENDIX I

Fish and Underwater Noise Sources

All fish species studied to date have been found to use either particle motion or sound pressure for detecting sound; these studies suggest that all fish have similar particle motion hearing and that it is the presence of ancillary hearing structures that differentiates their hearing sensitivity. While all fish detect and use particle motion, only a subset can detect sound pressure (Putland et al, 2018).

In general, fish species without a swim bladder (sharks, flatfish and some tunas), or those that have small or reduced swim bladders (such as many benthic species, including some flatfish), tend to have relatively poor auditory sensitivity and generally cannot hear sounds at frequencies above 1 kHz. These are also known as hearing generalists and hearing only involves particle motion, not sound pressure (NOAA, 2016).

Popper et al, 2014 recommended classifying fish by their hearing abilities into one of 5 categories which are sown in Table A1-1 below:

Table A1-1 Classification of fish species by hearing sensitivity (Popper et all, 2014)

Group	Characteristics
1	Fishes lacking swim bladders that are sensitive only to sound particle motion and show sensitivity to only a narrow band of frequencies (e.g., flatfishes, Pleuronectiformes; sharks skates and rays, Chondrichthyes).
2	Fishes with a swimbladder where that organ does not appear to play a role in hearing. These fish are sensitive only to particle motion and show sensitivity to only a narrow band of frequencies. This group includes salmonids (Salmonidae) and some tunas and mackerels (Scombridae), but many other species are likely to fit into this category as well.
3	Fishes with swim bladders that are close, but not intimately connected, to the ear. These fishes are sensitive to both particle motion and sound pressure and show a more extended frequency range than groups 1 or 2, extending up to about 500 Hz. This group includes cod fishes (Gadidae), eels (Anguillidae), some drums and croakers (Sciaenidae), and perhaps other fishes.
4	Fishes that have special structures mechanically linking the swim bladder to the ear. These fishes are primarily sensitive to sound pressure, although they also detect particle motion. They have a wider frequency range, extending to several kHz and generally show higher sensitivity to sound pressure than fishes in groups 1, 2, or 3. The group includes some of the squirrelfishes (Holocentridae), drums and croakers (Sciaenidae), herrings (Clupeidae) and the large group of otophysan fishes.
5	Eggs and larvae.

Fish species with anatomical specializations between the swim bladder and the ear generally have lower thresholds and wider hearing bandwidths than species without such specializations and may have greater ability to detect, and therefore respond to, sound pressure. This is the case of fish belonging to clupeiform species (e.g., shad, herring, sardines, and alewives). Although at least three species of herring-like fish (but not the Atlantic herring *Clupea harengus* itself) detect sounds above 20 kHz, for most species sensitivity to sound occurs from below 100 Hz to 1 kHz (Mann et al, 2001).

There are many other fish that possess swim bladders, but with no special adaptations, which often do not have a high degree of hearing sensitivity compared to those described above. For example,

Atlantic salmon (*Salmo salar*) have poor hearing sensitivity and are only capable of detecting low frequency tones (below 380 Hz) and particle motion rather than sound pressure (NOAA, 2016).

Sound outputs from geophysical survey devices are over a range of frequencies: Sidescan sonar (SSS) and Multi-beam echosounder (MBES) are typically high frequency (>200kHz) and therefore outside the hearing threshold of fish. Sub-bottom profiler (SBP) sound level outputs are at lower frequencies (2 – 20kHz, and up to 150kHz depending on device type, manufacturer and power settings) which are audible to the most hearing specialist fish species, although the SBP sound pressure levels are typically much lower than those from seismic airgun surveys, are more directed towards the seafloor, and attenuate much more rapidly thereby reducing the ensonified zone (Southall et al., 2007).

Geotechnical survey devices emit sound at lower frequencies and sound intensities: geotechnical drilling is in the range 0.002 – 50 kHz and <145 dB re 1µPa rms (Erbe & McPherson, 2017), and it therefore may be audible to fish; vibracoring has been measured in the frequency range of 10 - 20 kHz and 187.4 dB re 1µPa rms (Chorney et al., 2011), so only detectable by the most hearing specialist species. Sound measurements for Cone Penetration Testing (CPT) are not available in the literature but is not considered to exceed levels at which are harmful or harassing to marine mammals (NMFS, 2017). Shipping noise (50 – 300 Hz) is also audible to fish, though at relatively low sound pressure levels.

Several studies cited in Popper & Hawkins (2019) showed that even exposure to very high intensity low and mid-frequency sonars resulted in no mortality in fish, nor did exposure to seismic airguns, and that only fish receiving high intensity and particularly impulsive sounds experienced damage to body tissues, known as barotrauma. This is not the case for any of the equipment to be used in either the geotechnical or geophysical surveys proposed, so it is highly unlikely that death or barotrauma would occur to any fish species as a result of the site investigation activities.

Temporary threshold shift (TTS) is a non-injurious temporary reduction in hearing sensitivity caused by exposure to intense sound, and it has been documented in some fish only after multiple exposures to intense sounds (e.g., 190 dB re 1 µPa rms) or as a result of long-term exposure (e.g., tens of minutes or hours) to somewhat less intense sounds (Popper & Hawkins, 2019). Furthermore, several studies cited in Popper & Hawkins (2019) have showed that sensory hair cells are constantly added in fish and replaced when damaged, and that both hearing specialists and generalists were able to recover from varying levels of substantial TTS in less than 18 hours after exposure. Permanent hearing loss has not been documented in fish (NOAA, 2016).

Vibracoring emits sound above the intensity observed to have caused recoverable injury in goldfish (170 bB re 1µPa rms after 48h of continuous exposure) and TTS in goldfish and catfish (158 dB re 1 µPa rms after 12h of continuous exposure) (Popper et al, 2014). These are two of the most hearing specialist species, with enhanced sensitivity to sound pressure, and the duration of the exposure to noise in these studies was particularly long. The proposed vibracore sampling activities will have a maximum duration of 2 hours in each sampling site, and sampling locations will be kilometres apart from one another. Vibrocoring is not likely to result in any TTS effects for fish species in the area given the short period for each vibrocore site investigation. It should also be noted that while provision for vibrocores was included in the original application, only boreholes and CPTs are planned for the geotechnical campaign.

Various field studies cited in Hastings and Popper (2005) and Popper and Hawkins (2019) examined changes in the distribution of wild fish in the presence of an actual seismic survey, showing that the

horizontal and vertical distributions of both pelagic and demersal fish changed during and after airgun operations, although they generally returned to the original site within hours or days after the end of the seismic operation; other studies have shown that fish may respond to approaching vessels by diving towards the seafloor or by moving horizontally out of the vessel's path, with reactions often initiated well before the vessel reaches the fish. No seismic airguns are planned for this site as given the level of information already available they are not required.

Given the brief and localised nature of the site investigation activities proposed, and the technical characteristics of the equipment involved we consider, given the available literature, that the effects of the surveys on fish would be imperceptible, if any, and would be extremely localised to the immediate vicinity of the underwater noise source.

Furthermore, the seabird and waterbird species that constitute the Qualifying Interests of the SPAs in the vicinity of the proposed activities are highly mobile (as are their prey species) and have access to a wide foraging area. Therefore, we consider that the proposed site investigation activities will not result in any impact on the prey fish abundance or availability, and therefore will not result in any significant effects on the QI species of the SPAs assessed in the AA Screening.