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10 January 2018

RE: Foreshore Licence

Dear Sheila,

Further to your letter dated 8<sup>th</sup> January (REF: Pre-App/08/01/18) regarding an investigative foreshore license for testing a tidal energy device

We have no evidence that this site is used by bottlenose dolphins in the Shannon. Acoustic monitoring using CPODs from the old pier on the north side of Foynes Island has detected dolphins on 40% of days but usually for short durations, consistent with dolphins passing the site and not using it as a foraging site. Although dolphins have been recorded up the Fergus estuary, we have no evidence that this is a frequent pattern. From our informed opinion. Site 1 is the area least likely to be used by dolphins, but we would not have major concerns over Sites 2 and 3. *Notes: Site 1 is the site which has been taken forward for deployment*

Tidal energy devices have the potential to disturb or displace marine mammals through their physical presence or operational noise or to incur collisions or entanglements. The GKinetic design does not appear to pose a collision risk and entanglement in mooring lines is very unlikely.

Short term deployment as that proposed should have no long term impact on dolphins if they do use the site but we would recommend static acoustic monitoring of the site, ideally before deployment as well as during and for a period, post-deployment to log dolphin occurrence and explore the potential effect of any of the device.

In summary, while tidal energy devices may pose a threat to marine mammals, we feel this short term deployment of GKinetic tidal device at a site not known to be used by bottlenose dolphins would not impact on the dolphins or the conservation objectives of the site. We would recommend a precautionary approach and encourage some acoustic monitoring before deployment to assess its use by dolphins and during and post to ensure there is no displacement.

Thank you for consulting with the SDWF/IWDG.

Yours sincerely

A handwritten signature in blue ink, appearing to read "S Berrow".

Dr Simon Berrow

Project Manager



# AQUAFAC

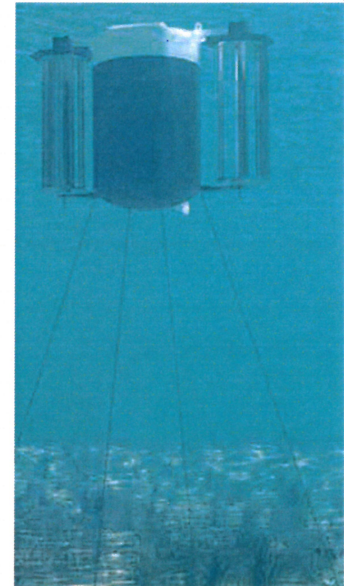
INTERNATIONAL SERVICES LTD.

The Manager,  
Development Applications Unit,  
Department of Arts, Heritage and the Gaeltacht,  
Newtown Road,  
Wexford  
Our Ref: JN1468  
06/02/2018

Dear Sir/Madam,

**RE: Foreshore Licence Application for Tidal Energy Test Site in the Shannon Estuary**

AQUAFAC have been appointed by DesignPro Ltd. in partnership with GKinetic and Clare County Council to carry out an Appropriate Assessment to accompany a Foreshore Licence application for the deployment of a 60kW floating platform with submerged turbines extending to a depth of 3.6m. The tidal energy device is composed of twin, vertical-axis turbines mounted either side of a teardrop shaped bluff body that will be moored to the seabed with 4 small anchors. It is intended to deploy the device for 9 months starting from September 2018 and it will be removed from the water mid-way through 2019. No connection/cabling along the foreshore to land is required.



The unique concept is made up of two vertical axis turbines placed on either side of a buoyant deployment vessel, the "bluff body". The shape of the vessel accelerates the flow of water into the turbines. The combination of this accelerated flow and the "blade Pitch Control System" allows for significant energy to be generated in low flows. The device is designed in such a way so as to exploit flow acceleration, it naturally diverts objects away from the device thereby removing the collision



risk with marine mammals or fish, it is easy to deploy and recover using a floating deployment system and can self-start and generate power in velocities as low as 0.5m/s.

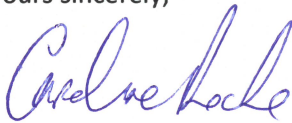
The proposed test site (20.59ha) is located in the Fergus Estuary, which forms part of the Lower River Shannon SAC (Site Code: IE002165) and the River Shannon and River Fergus Estuaries SPA (Site Code: IE04077) (see attached map). The proposed test site is located in the channel west of Canon Island and east of Inishtubbrid. Water depths in the area range from 2 to 32m and benthic habitats and substrate type consists of sand and mixed sediments with intertidal reef on Inishtubbrid (NPWS, 2012<sup>1</sup>). The proposed test site covers 20.59ha (205,900m<sup>2</sup>) and is 200m wide at its narrowest point and 740m in length. It is anticipated that the device will be located in waters a distance of 50-100m from shore, which would allow a 100m minimum passage for other craft. The device will be deployed in waters of c. 8m depth and will occupy a very small portion of the proposed test site (the total device under water swept area is 23.8m<sup>2</sup>). The mooring system which will consist of 4 small anchors is currently being designed.

As part of the Appropriate Assessment, AQUAFACt are proposing to carry out benthic grab sampling and a drop-down video survey to inform the baseline data and resultant impact assessment. In addition, consultations are also taking place with IWDG and IFI.

AQUAFACt would like to take this opportunity to request the scoping opinion of the Department on the proposed test site application and we welcome any advice or commentary that you may have.

If you require any additional information please do not hesitate to contact me,

Yours sincerely,



Dr. Caroline Roche

[caroline@aquafact.ie](mailto:caroline@aquafact.ie)

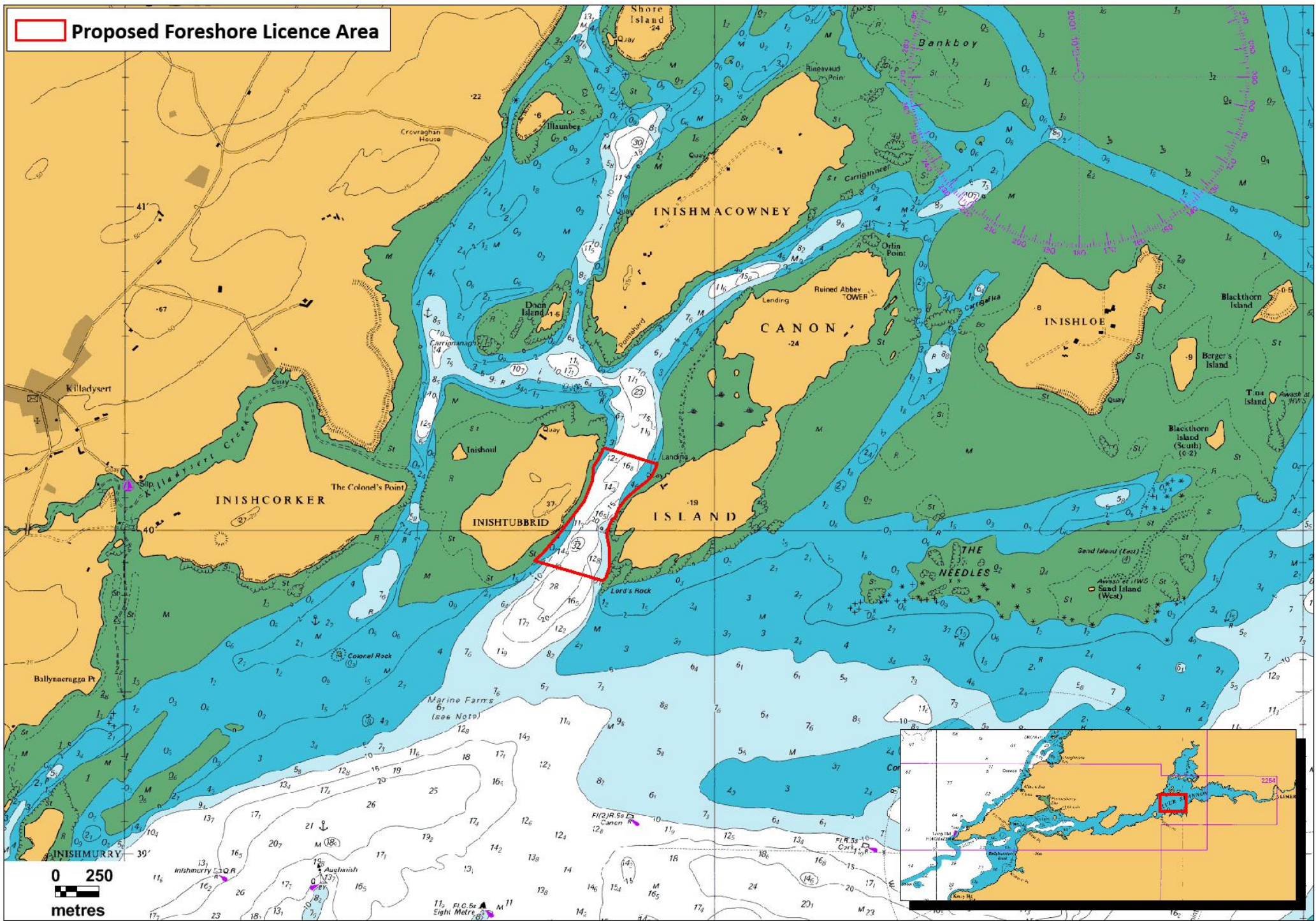
091-756812

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<sup>1</sup> NPWS (2012) Lower River Shannon SAC (site code: 2165) Conservation objectives supporting document marine habitats and species. Version 1 March 2012.



 Proposed Foreshore Licence Area



0 250  
metres



**From:** Julie Fossitt [<mailto:Julie.Fossitt@chg.gov.ie>]  
**Sent:** 14 February 2018 14:43  
**To:** [caroline@aquafact.ie](mailto:caroline@aquafact.ie)  
**Cc:** Manager Dau  
**Subject:** Tidal device in the Fergus Estuary - G Pre00024/2018

Dear Caroline

I refer to your recent scoping request concerning the development/deployment of a test tidal device in the Fergus Estuary, and within the European sites, Lower River Shannon SAC (site code 002165) and River Shannon and River Fergus Estuaries SPA (004077).

As you may not be aware, the proposed location is within the plan area of the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary, which has been given effect by Clare County Council as part of Clare County Development Plan. The current proposal appears to come within the remit of the SIFP by virtue of its location, the type of activity (tidal energy generation, albeit on a test basis), and the involvement of the Council. The location, however, is not an 'area of opportunity' site for tidal energy within the SIFP. At this early stage, it would be advised to confirm with the Council whether the proposal is in accordance with the SIFP and, accordingly, with the County Development Plan.

You should also note that there is specified plan-level mitigation for tidal energy developments in the Shannon Estuary, and within the European sites. You are advised to consult the SIFP (section 5.6) and the associated volume of mitigation measures (volume 2) to establish which apply in this case and which are of relevance to the scope of the assessments required.

When the mitigation measures have been reviewed, and the Council/developer is satisfied that the proposal is consistent with the SIFP, NPWS can be consulted further about specific aspects of assessments that may be required (noting that it seems likely that AquaFact will be producing an NIS and that DHPLG will be carrying out the appropriate assessment). The case reference allocated by DAU - G Pre00024/2018 – should be quoted in all correspondence.

Kind regards,  
Julie

Julie Fossitt BA, PhD, MCIEEM  
Divisional Ecologist, Ecological Assessment Unit  
National Parks and Wildlife Service  
Department of Culture, Heritage and the Gaeltacht  
2nd Floor, Custom House, Druid Lane, Flood Street, Galway H91 XV2C  
Direct line: 0761 002608; extn 8608. Mobile: 087 9223330

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From: Caroline [<mailto:caroline@aquafact.ie>]  
Sent: 08 February 2018 09:32  
To: Manager Dau  
Subject: JN1468 Scoping Request

Dear Sir/Madam,

Please find attached a scoping request for the deployment of a test tidal device in the Shannon Estuary for a period of approximately 9 months. AQUAFACt have been commissioned by DesignPro Ltd. in partnership with Clare Co. Co. and GKinetic Ltd. to prepare an Appropriate Assessment to accompany their foreshore licence application. Also included is a site location map.

If you require any further information please do not hesitate to contact me,

Dr. Caroline Roche,  
Senior Manager

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# AQUAFACT

INTERNATIONAL SERVICES LTD.

Julie Fossitt,

Divisional Ecologist, Ecological Assessment Unit

National Parks and Wildlife Service

Department of Culture, Heritage and the Gaeltacht

2nd Floor, Custom House, Druid Lane, Flood Street, Galway H91 XV2C

Our Ref: JN1468

Your Ref: G Pre00024/2018

21/02/2018

Dear Julie,

Many thanks for your response. I have been in contact with Sheila Downes in Clare County Council in relation to your observations which you emailed to me on the 14<sup>th</sup> February 2018.

As you have correctly indicated the proposed location for the testing of this tidal energy device is within the remit of the Strategic Integrated Framework Plan for the Shannon Estuary which has been afforded statutory backing through its adoption into the Clare County Development Plan 2017-2023.

### **Policy support for Renewable Energy Development within the Shannon Estuary**

Clare County Council is fully supportive of the setting up of a tidal energy test site at this location on the Fergus Estuary for a limited period of time. The Government Integrated Marine Plan for Ireland 'Harnessing Our Ocean Wealth' (HOOW) estimates that the national asset that is the ocean could support a diverse marine economy with vast potential to tap into a €1.2 billion global marine market across a wide range of sectors. The recently established Marine Development Team, a Government initiated taskforce focused on maximising marine growth opportunities together with development agencies with a marine interest, Enterprise Ireland, the IMDO and the IDA Ireland are working together to achieve targets for the development of the sector set out in HOOW. The Shannon Estuary is strategically placed to exploit this potential with the Strategic Integrated Framework Plan (SIFP) providing it with a distinct advantage to other locations in Ireland and across Europe. Goal I of the Integrated Marine Plan is to harness market opportunities to deliver a thriving maritime economy built around the concept of sustainable development of the marine resource. The Shannon Estuary is one of Ireland's premier maritime resources that already host a number of long-established and successful marine enterprises including ports and nationally significant industries and economic centres. The challenge for all users and the key statutory agencies, who act as custodians of the Estuary, is how to nurture and cultivate a place where local, regional and international activities dependant on it, can grow and expand to sustain its local communities and its economy, whilst protecting and enhancing the environmental qualities which underpin its exceptional and internationally valued ecological status.

## Consistency with the SIFP and the Clare County Development Plan

As you correctly indicate the current proposed location within the Shannon Estuary is not within one of the four areas of opportunity identified for renewable energy under the SIFP. This is primarily down to the specification of the device. The four sites identified in the SIFP arose from the SEAI Report '*Tidal & Current Energy Resource in Ireland*' which identified these sites as having tidal flows on a commercially viable scale. The Islands at the mouth of the River Fergus Estuary have several advantages as a demonstration site for this specific tidal energy device in comparison to the four areas of opportunity identified in the SIFP. In particular, they provide sheltered stretches of water with fairly high flow speeds. The testing of this device relates primarily to the demonstration of its functionality as opposed to a commercial scale device. The device is aimed at developing countries where there is a lack of grid infrastructure which requires distributed energy solutions this is particularly relevant for supplying remote island communities around the world with energy.

The device would be similar to a mooring, would have 4 small anchors and does not require a connection to the foreshore. The unique concept is made up of two vertical axis turbines placed on either side of a buoyant deployment vessel, the "bluff body". The shape of the vessel accelerates the flow of water into the turbines. The combination of this accelerated flow and the "blade Pitch Control System" allows for significant energy to be generated in low flows. The device is designed in such a way so as to exploit flow acceleration, it naturally diverts objects away from the device there by removing the collision risk with marine mammals or fish, it is easy to deploy and recover using floating deployment system and can self start and generate power as low as 0.5m/s.

Other key elements of design relating to environmental impact include:

1. Low blade tip speed, the rotational speed and aspect of the turbine blades is such that the blades do not travel faster than the water moving around them. This reduces risk of damage to both the equipment and marine life.
2. All immersed bearing are manufactured from specialised plastic bush's. No lubricants are used in immersed components. This eliminated the risk of pollution from such lubricants. The only lubricant used on the device is in the gearbox. This gearbox is a sealed unit with an IP 68 rating. The gearbox is itself housed in a protective housing and sealed housing that separates it from the marine environment.
3. An approved anti-fouling paint system specified by "Jotun Paints" will be applied to the required standards.

To date Limerick Docks have been used as a test site. The shipping area of the dock is operated by Shannon Foynes Port Company, while the test site itself is operated by GKInetic and is located on the banks of the River Shannon in Limerick City. The testing is carried out in a secure, enclosed wet dock facility with controlled water levels maintained at a minimum of 5 meters. GKInetic are partly funded by the Sustainable Energy Authority of Ireland to carry out testing in the Limerick Docks facility.

The Clare County Development Plan 2017-2023 contains specific economic development objectives for the Marine Related Industry site at Cahiracon which seeks to harness the economic potential of the Estuary at this location and to capitalise on its natural deepwater characteristics for enhanced maritime activity. The proposed location of this tidal energy device for testing lies adjacent to the zoned Marine Related Industry site with a substantial public pier at Cahiracon (3 km away) that will allow a shore side office/ monitoring station as well as storage of equipment. Foynes harbour (7 km away), a tier one port, has a multicat vessel and substantial crange facilities in quite close proximity and this can be used for the launching of turbine. The favourable location utilising the existing infrastructure in place will negate the requirement for any construction and/or associated impacts to the environment.



The SIFP contains a specific objective in relation to Research and Development (SIFP RD 1.1) which seeks to explore the potential sustainable development and promotion of the Shannon Estuary as a centre of excellence in research and development of renewable energy technologies. In addition, SIFP objective RE 1.8 looks to support and facilitate the sustainable development of renewable energy developments within and along the Shannon Estuary, in supporting Ireland’s legally binding obligations under EU Directives. Lastly, objective RE 1.9 looks to explore the potential of tidal energy as a viable renewable energy resource within the estuary.

### Clare County Development Plan

<b>Development Plan Objective: Renewable Energy</b>	
<b>CDP8.40</b>	<p><b>It is an objective of the development plan:</b></p> <ul style="list-style-type: none"> <li>a) To encourage and to favourably consider proposals for renewable energy developments and ancillary facilities in order to meet national, regional and County renewable energy targets, and to facilitate a reduction in CO<sub>2</sub> emissions and the promotion of a low carbon economy;</li> <li>b) To assess future renewable energy-related development proposals having regard to the Clare Renewable Energy Strategy 2017-2023;</li> <li>c) To assess proposals for wind energy development and associated infrastructure having regard to the Clare Wind Energy Strategy and the associated SEA and AA, or any subsequent updated adopted strategy;</li> <li>d) To prepare an updated Wind Energy Strategy for County Clare during the lifetime of this development plan;</li> <li>e) To strike an appropriate balance between facilitating renewable and wind energy-related development and protecting the residential amenities of neighbouring properties;</li> <li>f) To support and facilitate the development of new alternatives and technological advances in relation to renewable energy production and storage, that may emerge over the lifetime of this Plan;</li> <li>g) To ensure that all proposals for renewable energy developments and ancillary facilities in the County are in full compliance with the requirements of the SEA and Habitats Directives and Objective CDP2.1;</li> <li>h) To promote and market the County as a leader of renewable energy provision;</li> <li>i) To support the implementation of ‘Ireland’s Transition to a Low Carbon Energy Economy 2015-2030’.</li> </ul>

<b>Development Plan Objective: Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary</b>	
<b>CDP11.2</b>	<p><b>It is an objective of the development plan:</b></p> <ul style="list-style-type: none"> <li>a) To support and implement the inter-jurisdictional Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary in conjunction with the other relevant local authorities and agencies. All proposed developments shall be in accordance with the Birds and Habitats Directive, Water Framework Directive and all other relevant EU Directives. All proposed developments shall incorporate the Mitigation Measures as contained in the SIFP – Volume 7 of this Plan - for ensuring the integrity of the Natura 2000 Network;</li> <li>b) To proactively market the Strategic Development Locations in County Clare at Inishmurry/Cahiracon and Moneypoint as potential locations for future economic development.</li> </ul>

<b>Development Plan Objective: Marine-Related Industry/Large-Scale Industry on the Estuary</b>	
<b>CDP11.3</b>	<p><b>It is an objective of the development plan:</b></p> <p>To capitalise on the natural deep water potential and existing port and maritime infrastructure, by facilitating and proactively encouraging the environmentally-sustainable development of maritime industries at appropriate locations within the Shannon Estuary, while seeking to improve and promote the road and rail connectivity of the deepwater ports in the County. All proposed developments shall be in accordance with the Birds and Habitats Directive, Water Framework Directive and all other relevant EU Directives;</p> <p>All development associated with marine-related industry shall incorporate the sector and site specific Mitigation Measures as contained in the SIFP – Volume 7 of this plan - for ensuring the integrity of the Natura 2000 Network.</p>

<b>Development Plan Objective: Strategic Development Locations</b>	
<b>CDP11.4</b>	<p><b>It is an objective of the development plan:</b></p> <p>a) To safeguard the role and function of the Strategic Development Locations, which are identified on Map 11A and Map 11B;</p> <p>b) To support economic development by encouraging the sustainable growth, development and appropriate diversification of Strategic Development Locations;</p> <p>All proposed developments shall be in accordance with the Birds and Habitats Directive, Water Framework Directive and all other relevant EU Directives.</p>

This clearly demonstrates the correlation of the proposal at this location with the SIFP and the Clare County Development Plan.

### **Application of Mitigation Measures as identified through the SIFP**

#### **Tidal Energy Mitigation Measures (arising from the SEA)**

While the proposed location for testing of the tidal device does not lie within one of the areas of opportunity as identified through the SIFP, in assessing the applicability of the measures associated with those four sites to this proposal we have ascertained that the following apply.

#### ***BFF MM 21 (SEA)***

*The FLOWBEC project aims to improve the understanding of how the physical behaviour of the water such as currents, waves and turbulence at tide and wave energy sites influences the behaviour of marine wildlife, and how tide and wave energy devices might alter the behaviour of such wildlife. The output from these site investigations which are being undertaken by DEFRA and the Natural Environment Research Council should inform the locating of such a device within the site together with the type of device.*

#### **Renewable Energy Mitigation Measures (arising from the SIFP NIR)**

In line with the requirements under the SIFP, the current assessment will determine, what (if any), direct and indirect impacts are likely from the short-term deployment of a uniquely designed test tidal device on the Qualifying Interests of the Natura 2000 sites. Table 6.4 documents the renewable



energy mitigation measures arising from the SIFP NIR which will be utilised to inform the current assessment. Habitat surveys to characterise the seabed and identify sensitive habitats and species within the area will be undertaken as part of the initial assessments.

**Table 6.4 Theme - Renewable Energy Mitigation Measures**

Interested Features	Potential Effect	Suggested Project Level Mitigation Measures
<b>Habitats</b> <b>RE MM 1</b>	Direct physical loss / damage to habitats	<ul style="list-style-type: none"> <li>- Careful site selection within areas of opportunity avoiding sensitive features for devices and export cables within the Shannon Estuary</li> <li>- Habitat surveys to characterise the seabed and identify sensitive habitat and species within the area of opportunity</li> <li>- Avoid installation during sensitive seasons</li> </ul>
	Indirect disturbance or loss of habitats	<ul style="list-style-type: none"> <li>- Avoid device / infrastructure placement within 500m of areas of known sediment contamination</li> <li>- Habitat surveys to characterise the seabed and identify sensitive habitat and species</li> </ul>
	Toxic effects	<ul style="list-style-type: none"> <li>- Design devices to minimise risk of leakage of pollutants</li> <li>- Risk assessment and contingency planning</li> <li>- Implementation of SOPEP (Shipboard Oil and Pollution Energy Plan) in line with MARPOL 73/78 on all vessels associated with the development of this theme.</li> <li>- Incorporation and up-dating of the equipment held and operations deployed by the Shannon Estuary Anti-Pollution Team to combat any potential incidents associated with the investigation, research, construction, operation and decommissioning of renewable energy devices in the Shannon Estuary.</li> </ul>
	Biological disturbance	<ul style="list-style-type: none"> <li>- Careful site selection avoiding sensitive features for devices and export cables within the areas of opportunity</li> <li>- Habitat surveys to characterise the seabed and identify sensitive habitat and species</li> </ul>
<b>Marine Mammals</b> <b>RE MM 2</b>	Direct physical damage to mobile species	<ul style="list-style-type: none"> <li>- Detailed surveys would be required to examine the marine mammal (primarily Bottlenose Dolphin) distribution and use around, and within, the areas of opportunity identified in the Plan in order to fully understand and mitigate for this risk</li> <li>- Avoid sites for sensitive species</li> <li>- Avoid installation during sensitive seasons</li> <li>- Design device for minimal impact</li> <li>- Avoid siting devices in sensitive areas such as feeding and breeding areas</li> <li>- Increase device visibility</li> <li>- Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to marine mammals during research associated with the investigations for the potential development of the renewable industry, construction and activities together with any long term decommissioning activities. This code of conduct should also apply to vessels in transit to construction area if entering areas of high abundance</li> <li>- Use of protective netting or grids</li> <li>- Seasonal restrictions on the operation of devices to avoid impacting on marine mammals at vulnerable times of the year</li> <li>- Consider the use of acoustic deterrents such as pingers or acoustic harassment devices.</li> <li>- Soften collision by adding smooth edges or padding</li> <li>- Protect against entrapment by incorporating escape hatches into device design.</li> <li>- No marine mammal mortalities occur as a consequence of physical interaction with the tidal device components</li> <li>- The tidal device operates in such a way as to stop when marine mammals are within 50m of the device</li> <li>- Prior to the introduction of this measures further research would be</li> </ul>

Interested Features	Potential Effect	Suggested Project Level Mitigation Measures
		<p>required as to its effects on marine mammals in terms of noise impact. Establishment of an active sonar system which detects marine mammals at sufficient range from the turbine to a precautionary shut-down to occur automatically. The use of active sonar systems have been incorporated into trials such as SeaGen in Strangford Lough. The results for the SeaGen EMP and other such programmes should be reviewed to assess the potential effects prior to the adoption of this mitigation measure.</p> <ul style="list-style-type: none"> <li>- Any device should not present a barrier effect to the free passage of marine mammals within the estuary.</li> <li>- Relative abundance, or use of the site, of marine mammals in the Shannon Estuary should not be significantly modified by the operation of any tidal energy device.</li> <li>- Sub-surface noise generated by any tidal energy device should not cause a level of disturbance to marine mammals sufficient to displace them from areas important for foraging and social activities.</li> </ul>
	Indirect disturbance or loss of species	<ul style="list-style-type: none"> <li>- Minimise the use of high noise emission activities such as impact piling and blasting</li> <li>- Avoid installation during sensitive periods</li> <li>- Soft starting piling activities / passive acoustic deterrents – gradually increasing noise produce do allow mammals to move away from activities</li> <li>- Underwater noise during the operation may be beneficial in alerting species to the presence of the device, reducing the risk of collisions. However, this requires further research as to the potential negative effects on marine mammals within the area</li> <li>- Noise from operating turbines can be reduced by using isolators. However this has not been tested in the long term and to account for cumulative effects and therefore will need to be first considered and appropriately mitigated.</li> <li>- Use of bubble curtains (this may only be effective in shallow water)</li> <li>- Prior to the introduction of this measures further research would be required as to its effects on marine mammals in terms of noise impact. The use of prototype devices which don't move could be considered to assess these effects. Use of acoustic deterrent or disturbance devices to scare sensitive species away</li> <li>- Use of mammal observers and passive acoustic monitoring to facilitate implementation of exclusion area during noisy activities</li> <li>- Adherence to the risk assessment and menu of management options outlined in the NPWS Draft Guidance to manage the risk to Marine Mammals from Man-Made Sound Sources in Irish Waters<sup>12</sup></li> <li>- Development of similar guidance to the draft NPWS Guidance on Man-Made sounds specifically for the Shannon Estuary which can be used across all sectors.</li> </ul>
	EMF	<ul style="list-style-type: none"> <li>- Cable configuration and orientation can reduce field strength</li> <li>- Cable burial, where possible to minimise field effect at the seabed</li> </ul>
<b>Fish and Freshwater</b>	Direct physical damage to	<ul style="list-style-type: none"> <li>- Design device for minimal impact</li> <li>- Do not site devices in particularly sensitive sites e.g. migratory</li> </ul>

<sup>12</sup> [http://www.npws.ie/media/npwsie/content/files/Guidance\\_Consultation%20Draft.pdf](http://www.npws.ie/media/npwsie/content/files/Guidance_Consultation%20Draft.pdf)

Interested Features	Potential Effect	Suggested Project Level Mitigation Measures
<b>RE MM 3</b>		routes feeding and breeding areas
<b>Otters</b>	Direct physical loss / damage to habitats	<ul style="list-style-type: none"> <li>- Detailed otter surveys would be required in order to fully understand and mitigate for this risk</li> <li>- Avoid sensitive habitat areas</li> <li>- Design device for minimal impact on habitat</li> </ul>
	Direct physical damage to mobile species	<ul style="list-style-type: none"> <li>- Detailed otter surveys would be required in order to fully understand and mitigate for this risk</li> <li>- Underwater noise during the operation may be beneficial in alerting species to the presence of the device, reducing the risk of collisions. However, this requires further research.</li> <li>- Avoid installation during the sensitive seasons</li> <li>- Increase device visibility, or use of acoustic deterrent devices</li> <li>- Use of protective netting or grids</li> <li>- Protect against entrapment by incorporating escape hatches into device design.</li> <li>- Seasonal restrictions on the operation of devices to avoid impacting on otters at vulnerable times of the year</li> <li>- Soften collision by adding smooth edges or padding</li> </ul>
	<b>RE MM 4</b>	
	Indirect disturbance or loss of habitats	<ul style="list-style-type: none"> <li>- Avoid siting devices in sensitive areas such as feeding and breeding areas</li> <li>- Minimise the use of high noise emission activities such as impact piling and blasting</li> <li>- Enforce speed limits for vessels used in construction and establish a code of conduct to avoid disturbance to otters both during construction activities and in transit to construction area if entering areas of high abundance</li> <li>- Avoid installation during sensitive periods</li> <li>- Use of sound insulation on equipment</li> <li>- Soft starting piling activities / passive acoustic deterrents – gradually increasing noise produce do allow otters to move away from activities</li> </ul>
	Toxic effects	<ul style="list-style-type: none"> <li>- Design devices to minimise risk of leakage of pollutants</li> <li>- Risk assessment and contingency planning</li> <li>- Implementation of SOPEP (Shipboard Oil and Pollution Energy Plan)</li> </ul>
<b>Bats</b>	Direct physical damage to mobile species	<ul style="list-style-type: none"> <li>- Avoid siting the devices within sensitive sites</li> <li>- Site specific surveys at project level to identify the presence of key commuting/foraging flightlines to aid site selection</li> <li>- Appropriate siting of developments e.g. away from roost sites and commuting/foraging flightlines</li> <li>- Avoiding large-scale continuous illuminations and only use appropriate sensitive lighting suitable for bats</li> </ul>
	<b>RE MM 5</b>	
	Indirect disturbance or loss of species	<ul style="list-style-type: none"> <li>- Avoid installation during sensitive periods</li> </ul>
<b>Birds</b>	Direct physical damage to mobile species	<ul style="list-style-type: none"> <li>- Avoid siting the devices within sensitive sites</li> <li>- Avoid installation during sensitive seasons (i.e. breeding and moulting)</li> <li>- Site specific surveys at project level to identify the presence of key foraging hotspots and / or resting areas and to aid site selection within the area of opportunity</li> <li>- Appropriate siting of developments e.g. away from breeding colonies, important feeding and roosting areas, near shore areas</li> </ul>
	<b>RE MM 6</b>	



Interested Features	Potential Effect	Suggested Project Level Mitigation Measures
		<ul style="list-style-type: none"> <li>- and migration corridors</li> <li>- No construction of devices between resting and foraging areas</li> <li>- Shut down of devices at night with bad weather / visibility and high migration intensity</li> <li>- Avoiding large-scale continuous illuminations</li> <li>- Measures to make wind turbines more recognisable to birds</li> </ul>
	Indirect disturbance or loss of species	<ul style="list-style-type: none"> <li>- Minimise the use of high noise emission activities such as impact piling or blasting</li> <li>- Avoid installation during sensitive periods</li> <li>- Review and consideration of noise reduction techniques (e.g. bubble curtains around the pile)</li> <li>- Use of sound insulation on plant equipment and device design.</li> </ul>

As there are no infrastructural requirements, dredging, maintenance or dumping at sea requirements or the location of underwater features such as shipwrecks at this location all other mitigation measures under this heading are not deemed to be relevant. In addition, as there are no requirements other than to launch a small boat from the existing pier at Chairacon the mitigation measures identified for the Strategic Development Location at Inishmurry do not apply.

Following consultation with Clare County Council and an analysis of the proposal against the objectives and mitigation measures of the SIFP we are satisfied that the proposal is consistent with the ethos and requirements of the SIFP.

Finally, since issuing my initial consultation letter, a revision to the project plan has been made and the deployment duration is now expected to be 12 months as opposed to 9 months in the initial letter. There may be periods of time within this 12 month window where the device will be removed from the water, however 12 months will cover all stages of the testing as required by the Horizon 2020 funding.

We trust that this satisfies your concerns, however should you require any further information please do not hesitate to contact me at any time,

Yours sincerely,



Dr. Caroline Roche

**From:** Julie Fossitt [Julie.Fossitt@chg.gov.ie]  
**Sent:** 20 March 2018 13:52  
**To:** Caroline  
**Cc:** Manager Dau; Sheila Downes; David Lyons  
**Subject:** RE: G Pre00024/2018

Caroline

Thank you for your response.

You may be aware that I spoke to Sheila Downes, Clare County Council, about the matters raised regarding the relationship of your proposal with the SIFP, including, in particular, the details of SIFP mitigation measures which require review and/or apply in the case of the type of development and location in question. In this case, the proposed development is located within two European sites and within:

1. habitats which are qualifying interests of the SAC
2. habitats of species which are qualifying interests of the SAC
3. habitats of bird species which are special conservation interests of the SPA
4. wetlands which is a special conservation interest of the SPA

The point I was making in my original email was that the SIFP and associated mitigation measures, and other key information, should be reviewed and taken into account to inform and optimise consultations with this Department, and so that more focused matters or queries can be raised, e.g. in relation to 'scoping opinions' or the scope of the NIS, if required. In this case, the SAC and SPA have site specific conservation objectives which, together with supporting documents and data on certain habitats and species, are available on the NPWS website.

I note that you are meeting David Lyons tomorrow in relation to the proposal and certain marine ecology issues. If you have any other queries about specific aspects of assessments that may be required, please feel free to direct these to me, quoting the reference number above.

Regards,  
Julie

**From:** Caroline [caroline@aquafact.ie]  
**Sent:** 21 March 2018 16:37  
**To:** David Lyons  
**Cc:** Sheila Downes  
**Subject:** Meeting minutes

Hi Dave,  
Thanks for meeting with us earlier. Here are a few notes on our understanding of things.  
Any additions/amendments, just let me know,  
All the best,  
Caroline

*Summary of Meeting with David Lyons NPWS, Sheila Downes Clare Co. Co. and Caroline Roche AQUAFACt re Shannon Tidal NIS*

*SD summarised the project and the relevance to SIFP and its mitigation measures.*

*CR explained the workings of the device.  
DL asked about the spacings between the blades in the rotor. SD to confirm.*

*DL raised concerns in relation to otter and their use of the site and their possible interactions with the device. Suggested survey effort before application is made.*

*DL had concerns about the bottlenose dolphin and the lack of empirical data on their usage of the site. SD/CR referred to letter from Simon Berrow indicating no collision risk and no evidence of frequent use of the Fergus Estuary by dolphins. SD indicated that SAM would be carried out before, during and after deployment of the device to log dolphin occurrence and explore potential effect of any device. DL suggested SAM throughout the summer and into autumn prior to submitting the application. Concerned about their interaction and displacement due to the device.*

*A discussion was undertaken in relation to the potential approach within the screening for appropriate assessment which is currently being undertaken by Aquafact on behalf of DesignPro to accompany the Foreshore Licence Application. DL outlined that the assessment should look at the conservation objectives and how they may be impacted by the deployment of the tidal test device. SD proposed that through the use of the existing data relating to Bottlenose Dolphin use within the SAC it could be shown that there is little to no usage of this area of the estuary by Bottlenose Dolphins and that in addition there is no potential for impact through the deployment of the device that subsequently it may be possible to prove that there are no implications for the conservation objectives of the European Site, and in addition that there will be no adverse effects on the integrity of that site.*

*DL indicated that it would be up to the applicants to prove this within the assessment as part of the application.*

*SD highlighted the timing issues involves (device has to be in the water in September 2018 for H2020 funding). DL did not see this timeline as realistic for MLVC and Foreshore Unit decisions.*

*DL raised the issue of fish species. SD said she had consultation with Mike Fiitzsimmons and Dr. Jimmy King (IFI) who had no concerns about impacts on fish.*



*DL had no concerns about the impact on benthic communities from the temporary placement of moorings on the seabed.*

*DL asked about the noise level and frequency of the device. SD to confirm.*

Dr. Caroline Roche,  
Marine Ecologist

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15<sup>th</sup> December 2017

To Whom it may concern,

**POTENTIAL TIDAL ENERGY DEMONSTRATION SITE ON THE SHANNON ESTUARY**

Shannon Foynes Port Company (SFPC) has Statutory responsibility for all commercial traffic on the Shannon Estuary, with responsibility extending from an imaginary line between Loop Head and Kerry Head to seaward, and the Shannon Bridge in Limerick City to landward.

SFPC has conducted a navigation assessment of the proposed tidal energy demonstration site(s) and has determined that the proposed site(s) will NOT interfere with commercial traffic. The proposed site(s) are adjacent to the main shipping channel for traffic bound for terminals at RUSAL Aughinish, Shannon Airport and Limerick. However, there is an approximate separation in excess of 600m between the site(s) and the commercial shipping channel. The commercial shipping channel is well buoyed in that area, so this separation will be safely achieved.

In regard to small craft, while this area of activity falls outside the scope of SFPC, our experiences in interactions between commercial shipping and leisure and other users suggests this is a quiet area for such activity.

If the proposed site(s) are suitably charted and marked with appropriate lights and shapes, the impact on leisure and other users will be minimised, with a low risk existing. SFPC have advised G-Kinetic that the Commissioners of Irish Lights are the Statutory Body with responsibility for such markings. SFPC will assist G-Kinetic in the submission of any Statutory Sanction required for suitable lights and shapes under our remit as a Local Lighthouse Authority.

SFPC is supportive of such initiatives on the Shannon Estuary and will provide appropriate advice and assistance as required, including developing any protocols to ensure that the impact on commercial and other traffic is minimised and that potential risks are identified and suitable mitigation measures agreed.

**M. KENNELLY**  
**Harbour Master**  
**Shannon Foynes Port Company**

Tel: +353 69 73103

E-Mail: [mkennelly@sfpc.ie](mailto:mkennelly@sfpc.ie)