EIA Screening Report

To accompany Foreshore Licence Application on behalf of DesignPro Ltd

For the temporary installation of a tidal test device in the Fergus Estuary

5th April 2018

Table of Contents

Table of Figures

1.0 Introduction

Clare County Council are assisting Design Pro Ltd in their application for a Foreshore Licence with respect to the installation of a Tidal Test Device in the Fergus Estuary. Clare County Council have undertaken an Environmental Impact Assessment (EIA) screening exercise to accompany the Foreshore Application in relation to the proposed deployment of the device on a temporary basis for a 12 month period adjacent to Canon Island in the Fergus Estuary.

This EIA screening exercise was undertaken to determine if EIA is required for the proposed deployment as set out in the mandatory and discretionary provisions of the Planning and Development Act, 2000 (as emended)(the Act) and set in Schedule 5 of the Planning and Development Regulations, 2001 as amended (regulations). Certain projects, listed in Schedule 5 of the regulations, due to their always having the potential for significant environmental effects, require mandatory EIA. Others, also listed in Schedule 5 of the regulations, contain threshold levels and for projects that fall below these thresholds it is the decision of the competent authority to decide if an EIA (and the associated EIAR) is required.

Whether a 'sub threshold' development should be subject to EIA is determined by the likelihood that the proposed development would result in significant environmental effects. Significant effects may arise due to the nature of the proposed development, its scale or extent and its location in relation to the characteristics of the receiving area, particularly sensitive environments.

This reports documents the methodology employed to complete the screening exercise, having regard to the relevant legislation and guidance documents. It also sets out a clear rationale for each decision made in the process.

The Foreshore Application of also accompanied by an "Article 6(3) Appropriate Assessment Screening Report", which was prepared by Aquafact, Ltd. The findings of this report and the relevant site and desk studies are referenced where appropriate in this EIA Screening Report.

2.0 Description of Proposed Development

2.1 Site Location and Description

2.1.1 Proposed Tidal Test Device Location

G-Kinetic (www.G-Kinetic.com) was founded in 2014 by Vincent McCormack and is based in Newcastle West, County Limerick. GKinetic Ltd. is an Irish developer of a submerged tidal energy device composed of twin, vertical-axis turbines mounted either side of a teardrop shaped bluff body that will be moored to the seabed. The full scale device is intended to be of the order of 500kW and the system could potentially address a number of weaknesses traditionally associated with vertical-axis turbines.

The concept has undergone staged development, in-time with industry best practice. Previous testing has been undertaken at NUI Galway, the IFREMER flow tank facility in France, Limerick Docks and numerical modelling for design optimisation. Funding has previously been secured through the EU FP7 MaRlNET programme which included scientific evaluation and is an additional sign of technical quality. GKinetic has been working with DesignPro since 2014 on the manufacture of the turbine and control system; DesignPro have recently secured €2m funding through the competitive H2020 SME instrument and are using the GKinetic IP to develop and qualify market ready DPR (DesignPro Renewables) turbine systems.

This Phase 2 funding will be used to commercialise their small scale river devices using GKinetic's technology. GKinetic are therefore looking to deploy a 60kW device in the water for at least 90 days starting from September 2018. This device will be removed from the water mid way through 2019. 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.

The proposed 12 months of testing in this project is further to a series of tow testing of an 8 kW machine that was carried out in Limerick Docks in late-2015/early-2016 and in August through October 2017. Prior to deployment in Clare a 25 kW machine has been deployed at the SEENEOH test site in Bordeaux France. The testing in France will provide further information on Environmental Impacts and will establish protocol for deployment systems and monitoring.

The Shannon Estuary and in particular the Islands at the mouth of the River Fergus Estuary provide the best possible opportunity for testing this device from GKinetic's perspective. The Islands at the mouth of the River Fergus Estuary have several advantages as a demonstration site for tidal energy devices. In particular, they provide sheltered stretches of water with relatively high flow speeds. These locations are close to land and therefore close to electricity grid infrastructure. There is a substantial public pier at Cahircon (3 km) that will allow a shore side office/ monitoring station as

well as storage of equipment. Foynes harbour (7 km), a tier one port, has a multicat vessel and substantial cranage facilities which are also quite close and this can be used for the launching of turbines.

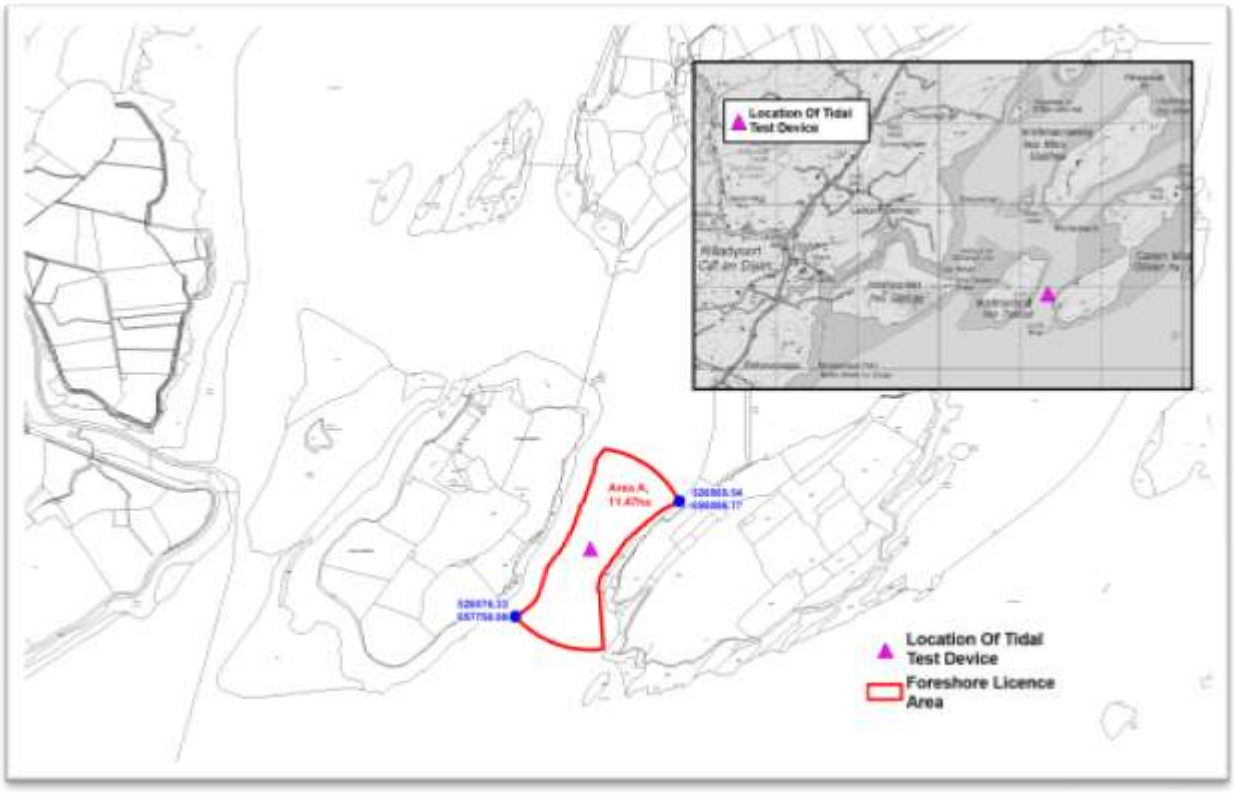

Figure 1 **Proposed Location for Potential Tidal Test Device at the mouth of the River Fergus**

3.0 EIA Screening Exercise

3.1 Relevant EIA Legislation

EIA requirements derive from Council Directive 85/337/EEC (as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC) and as codified and replaced by Directive 2001/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment (and as amended in turn by Directive 2014/52/EU).

3.2 Methodology

Screening is a process used to establish whether an EIA is required for a proposed development. There are a number of steps in the screening process.

The mandatory requirement for an EIA is generally based on the nature or scale of a proposed development, as set out in EU Directive 85/337/EEC (as amended by Directive 97/11/EC). This is transposed into Irish Law in the Planning and Development Act 2000, as amended, and the Planning and Development Regulations 2001, as amended. These identify certain types and scales of development, generally based on thresholds of scale, for which EIA is mandatory. In addition, there is sometimes a requirement for EIA 'sub-threshold' developments and, in this respect, it may be necessary to undertake a screening exercise to assess whether the proposed development requires the preparation of an EIAR.

A methodology was developed to formally screen the proposed development, which was based on *Environmental Impact Assessment (EIA), Guidance for Consent Authorities regarding Sub-threshold Development (EPA, 2003).* The screening exercise is divided into a section on mandatory EIA and another on sub-threshold or discretionary EIA. In each section below a screening matrix is presented which examines the requirement for EIA according to the criteria set out in the relevant legislation. The rationale behind the responses within the matrix is provided at the end of each section.

3.3 Mandatory EIA

Section 172 of the Planning and Development Act 2000, as amended, provides the legislative basis for mandatory EIA. It states the following:

"An environmental impact assessment shall be carried out by a planning authority or the Board, as the case may be, in respect of an application for consent for:

(a) Proposed development of a class specified in Schedule 5 of the Planning and Development Regulations 2001 which exceeds a quantity, area or other limit specified in that Schedule, and

(b) Proposed development of a class specified in Schedule 5 to the Planning and Development Regulations 2001 which does not exceed a quantity, area or other limit specific in that Schedule but which the planning authority or the Board determines would be likely to have significant effects on the environment"

Further to the above, Schedule 5 of the Planning and Development Regulations 2001, as amended sets out at number of classes and scales of development that require EIA. Under the provisions of Schedule 5 the closest type of project (Tidal Energy) to the proposed development is,

3 (j) Installations for hydroelectric energy production with an output of 20 megawatts or more, or where the new or extended superficial area of water impounded would be 30 hectares or more, or where there would be a 30 per cent change in the maximum, minimum or mean flows in the main river channel.

Having regard to the above, it is therefore concluded that EIA is not mandatory for the proposed testing of the tidal energy device which will have an output of only 60kW and in this instance will not be connected to the grid or be used to store the energy and is Hydrokinetic based as opposed to Hydroelectric. The application is solely for the testing of the device only.

3.4 Sub-Threshold Development

Section 172 of the Planning and Development Act, 2000, as amended, also sets out the basis for EIA for developments which may not be of a scale included in Schedule 5 of the Planning and Development Regulations 2001, as amended. This allows a consenting authority to require EIA where it is of the opinion that the proposed development (although sub-threshold) is likely to have significant effects on the environment and therefore should be subject to EIA. In this context, the consideration of 'significant effects' should not be determined by reference to size only and the nature and location of a project must also be taken into account.

Class 15 of Schedule 5 provides for EIA/EIAR for developments under the relevant threshold, where the works would be likely to have significant effects on the environment. This states the following:

" Any project listed in this Part which does not exceed a quantity, area of other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7."

It is considered that the type of project subject to EIA remains those listed in Schedule 5 of the Planning & Development Regulations 2001, as amended. The proposed Tidal Test Device, as outlined in Section 3.0 above is not a project type listed in either Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended and therefore does not constitute a 'Project' that falls beneath any of the specified thresholds in Part 2.

As the proposed development is not a 'Project' listed in Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended, EIA is not required.

Notwithstanding the above an evaluation of the Class 15 criteria is provided below for completeness.

3.5 Sub-Threshold Assessment

The 1997 amending Directive (97/11/EC) introduced guidance for Member States in terms of deciding whether or not a development is likely to have 'significant effects on the environment'. The criteria have been transposed in full into Irish legislation, in the Third Schedule to the EC EIA (Amendment) Regulations 1999 (S.I. No. 93 of 1999) and in Schedule 7 to the Planning and Development Regulations 2001 (S.I. No. 600 of 2001) as amended. The criteria, as transposed in Irish legislation, are grouped under three headings, as follows:

1. Characteristics of the Proposed Development
2. Location of the Proposed Development
3. Characteristics of the Potential Impacts

Each of the above groupings includes a number of criteria for consideration. The assessment of the likelihood of significant environmental effects is based on the overall consideration of all criteria and requires clear and rational judgement. The DoEHLG Guidance Document 'Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-threshold Development' states that '*those responsible for making the decision must exercise their best professional judgement, taking account of considerations such as the nature and size of the proposed development, the environmental sensitivity of the area and the nature of the potential effects of the development. In general, it is not intended that special studies or technical evaluations will be necessary for the purpose of making a decision*'

The Schedule 7 criteria to be reviewed are discussed in more detail, with reference to the proposed development, in the following subsections. The screening questions are based on the criteria listed under each grouped heading in Schedule 7.

3.5.1 Sub-Threshold Assessment

Table 1 Characteristics of the Proposed Development

Characteristics of the Proposed Development – Screening Questions	Comment
Could the scale of the proposed works be considered significant?	No. The device is a floating tidal turbine of approximate dimensions 11.5m x 10m x 6 m high (4m submerged and 2m high above the surface) with a dry weight of approx. 20T. When installed it will have a draught of approx. 4m. The device is moored at the surface with the rotor and bluff body section facing into the current and the deployment platform will be free to rotate in the reversing tide direction. The bluff body diverts flow into the rotors and thereby increases the inflow current speed to the rotors. The blades, which are self-aligning to the flow, rotate a central drive shaft which is connected to the AC generators contained within the housings. The electricity produced

	within the generators is conditioned using the onboard switch gear, and this power is dissipated using an on-board load bank. The installation will be temporary in its nature and will likely be removed and reinstalled several times over the operational phase of the project, (particularly during times of poor weather). The device can be installed or removed quickly on a single tidal cycle and can be done with minimum to no impact on harbour operations, or other vessels operating in the area.
Considered cumulatively with other adjacent proposed development, would the size of the proposed works be considered significant?	No. There are no other projects within the zone of influence of the proposed deployment location which could potentially lead to cumulative impacts.
Is the nature of the proposed works significant?	No. All works relating the deployment of the device will be carried out in accordance with the Preliminary Marine Installation Manual which has been assessed to ensure there is no potential for significant impacts or where identified risks have either been eliminated or reduced to low risk.
Will the proposed works utilise a significant quantity of natural resources?	No. There is no requirement to remove, disturb or temporarily displacement any natural resources through the deployment of the device.
Will the proposed works produce a significant quantity of waste?	No. There will be no waste produced as a result of the deployment. All immersed bearing are manufactured from specialised plastic bush's. No lubricants are used in immersed components. This will eliminate the risk of pollution from such lubricants to the marine environment. 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. An approved anti-fouling paint system specified by "Jotun Paints" will be applied to the required standards.
Will the proposed works create a significant amount or type of pollution?	No. No significant water or air borne pollution is envisaged as a result of the deployment. All works will be carried out in accordance with methodologies to ensure any potential for significant impacts are either eliminated or reduced to low.
Will the proposed works create a significant amount of nuisance?	No. An area within a 75-meter radius would be the zone in which the machine would be

	deployed. The device itself has an underwater swept area of 33.5m^2 and the total area of the turbines is 10.60m^2 allowing a 50-meter passage for small craft to pass along the eastern shore of Inishtubbrid. Sailing and fishing craft can also use alternative passages to get by. Whilst this may represent a very slight nuisance to local fisherman it is deemed to be low to negligible and will not be of a permanent nature.
Will there be a risk of accidents, having regard to substances or technologies used?	No. This deployment and associated testing of the tidal device is extremely low risk. The turbines will be launched from Foynes Port and towed into place on the Fergus Estuary. The device will be held in place through the use of a multiple point anchoring system which extends up to 300m radially from the device. The anchor blocks will be connected to the machine using both heavy duty chain, and high performance synthetic rope. All elements of this system remain submerged at all times and will not interfere with vessels at the surface. The anchor system is designed to ensure the device remains within 10m of its nominally installed position, particularly at the times of both high and low slack water. An exclusion zone of 75m radius will be set in order to ensure adequate room remains for passing traffic and other marine users in the 200m channel. The DPR 60 will contain navigational aids for both the installation, and operational phase of the project to provide hazard identification, channel and waypoint marking to other seafarers. The navigational marked used will be to the recommendations, and satisfaction of Shannon Foynes Port Company Harbour Master. Once in operation, the device itself will be fitted with a yellow light on the masthead with a minimum of 2Nautical mile visibility. The area upstream and downstream of the test site will be marked with special markings which create the boundary of the proposed exclusion zone around the device. The functionality of an electrical cable connection will be tested in a simulation mode. There will be no electrical connection from the cable to the shore. There will be no

	electrical connection from the cable to the platform. The electrical cable will be tested in a simulation mode. This simulation mode will require that cable (which is not live) is terminated and attached at a fixed position seabed anchor while the tidal turbine is allowed to move around its mooring as necessary.
Would any combination of the above factors be considered likely to have significant effects on the environment?	No, given that individually there is no potential for significant effects on the environment to arise.

Conclusions: It is concluded that the nature of the proposed development would not be considered likely to have significant effects on the environment.

Reasoning:

The scale of the works when viewed individually and cumulatively is small to negligible when viewed in the context of both the EIA threshold criteria and types of projects listed in the regulations which require EIA.

The proposed deployment will not give rise to any waste matter and will be carried out in accordance with construction methodologies designed to reduce or eliminate the potential of environmental impacts.

3.5.2 Location of the Proposed Development

Table 2 Location of the Proposed Development Matrix

Location of the Proposed Development – Screening Questions	**Comment**
Have the proposed works the potential to impact directly or indirectly on ant site designated for conservation interest (e.g. SAC, SPA, pNHA)?	A detailed Article 6(3) Appropriate Assessment Screening Report has been prepared on the proposed deployment of the tidal energy device. The conclusions of this report find that *"No significant adverse effects are likely as a result of the proposed project on the conservation objectives or overall integrity of any European Site"*
Has the proposed development the potential to impact directly or indirectly on any habitats listed as Annex I in the EU Habitats Directive?	No. The AA Screening Report includes detailed site-specific habitat mapping and confirms that sensitive habitats will not be affected. Figure 3.8 of the AA Screening Report shows the marine habitats in the survey area derived from NPWS Conservation Objective mapping for Lower River Shannon cSAC (IE002165). The habitat that overlaps the proposed test site is limited to the 'subtidal sand to mixed sediment with *Nephtys* spp. community

	complex'. In total it is estimated that 2850m^2 (0.29ha) of the estuarine habitat will be temporarily disturbed. This represents 0.00119% of the estuarine habitat in the SAC (24,273ha). While the loss of habitat and species cannot be mitigated, the actual area temporarily lost is so small that the impact on the benthic community will be **negligible**. In addition, following the removal of the anchors the impacted areas will immediately begin to recover through recruitment from neighbouring undisturbed areas. The proposed test site does not overlap with the mud and sandflat habitat or with the reef habitat.
Has the proposed development the potential to impact directly or indirectly on any habitats listed as Priority Annex I in the EU Habitats Directive?	No. The AA Screening Report includes detailed site-specific habitat mapping and confirms that sensitive habitats will not be affected.
Has the proposed development the potential to impact directly or indirectly on any species listed as Annex II in the EU Habitats Directive?	No. The AA Screening report includes detailed site specific information and confirms that Annex II species will not be impacted by the proposed deployment. The most prominent Annex II species is the Bottlenose Dolphin however as the proposed deployment will not be located within a critical area or a known breeding or calving site and given the design of the device does not represent a collision risk or risk of entanglement in mooring lines there is no potential for significant effects on this species.
Has the proposed development the potential to impact directly or indirectly on any species listed as Annex IV in the EU Habitats Directive?	No. The AA Screening report includes detailed site specific information and confirms that Annex IV species will not be impacted by the proposed deployment.
Has the proposed development the potential to impact directly or indirectly on any species listed as Annex I of the EU Birds Directive?	No. The AA Screening report includes detailed site specific information and confirms that Annex I bird species will not be impacted by the proposed deployment.
Has the proposed development the potential to impact directly or indirectly on the breeding places of any species protected under the Wildlife Act?	No. The AA Screening report includes detailed site specific information and confirms that Annex I bird species will not be impacted by the proposed deployment.
Has the proposed development the potential to impact directly or indirectly on existing land use?	No. The deployment will take place solely within the Fergus Estuary with land based element or connection to the grid infrastructure. The only land based element will be the placement of a temporary cabin

	adjacent to Cahiracon pier to house monitoring equipment and for staff use on an intermittent basis. There is no potential for direct or indirect impacts on land use from these elements.
Has the proposed development the potential to impact directly or indirectly on any protected structures or Recorded Monuments and Places of Archaeological Interest?	No. The The Archaeological Diving Company Ltd. (ADCO) was appointed on behalf of the Strategic Integrated Framework Project for the Shannon Estuary, to undertake a cultural heritage assessment of the Shannon Estuary study area based on a desktop study. ADCO reviewed existing information and compiled a sequence of GIS-based data sets that absorb other information. The primary source for use is the Sites and Monuments Record (SMR) maintained by the Department of Arts, Heritage and the Gaeltacht (DAHG). Other sources examined include The Historic Shipwreck Inventory, the published record of The Discovery Programme's intertidal archaeological survey on the upper estuary area, and the unpublished The Fergus Estuary study by Aidan O'Sullivan. In addition, ADCO has carried out new desk-based research by extracting all foreshore features recorded on the Ordnance Survey First Edition six-inch series of maps around the estuary. The foreshore includes many features that are not traditionally recorded as archaeological monuments. In current practice, such features are considered to be archaeologically significant. Those that are recorded in the mid-1800s are now considered to fall under archaeological protection. Following this review it was shown that there are no archaeological or cultural heritage features located within close proximity to the proposed location of the tidal test device west of Canon Island. In addition, given the nature of the device which will not sit on the seabed there is no potential for disturbance of any unrecorded feature.
Has the proposed development the potential to impact directly or indirectly on listed or scenic views or protected landscapes as outlined in the County Development Plan?	No

Conclusions: It can be concluded that there will be no significant direct or indirect impacts by virtue of the location of the proposed deployment on the receiving environment.

Reasoning: The European Communities (Natural Habitats) Regulations, 2011 requires that an Article 6(3) assessment be carried out where it is considered that a development is likely to have a significant effect on a European Site. In this regard an Article 6(3) Screening Report has been completed for the proposed deployment of the tidal test device. This report concludes that based on a consideration of the likely impacts arising from the proposed deployment, no likely significant impacts on the conservation objectives of any European Site has been identified. There will be no impacts on any other designated sites such as pNHAs as a result of the proposed development.

Indirect impacts, which may potentially affect any other designated sites have been discounted provided the proposed construction methodologies are employed during the proposed deployment. The risk of any significant negative impacts on any European Site can be excluded.

No sensitive habitats considered to qualify as Annex I habitat under the EU Habitats Directive will be affected by the proposed developmet. No EU Habitats Directive Annex II species will be affected by the proposed development. In terms of landuse, the deployment will take place solely within the Fergus Estuary with land based element or connection to the grid infrastructure. The only land based element will be the placement of a temporary cabin adjacent to Cahiracon pier to house monitoring equipment and for staff use on an intermittent basis. There is no potential for direct or indirect impacts on land use from these elements.

The natural environment at this location on the Fergus Estuary can easily accommodate this temporary deployment without any significant impacts.

3.5.3 Characteristics of Potential Impacts

A further screening exercise was completed to assess the most significant potential impacts, as outlined in Table 3.3 below. There are the sections that would be covered in any EIA as specific in the EU Directive 85/337/ EEC (as amended by Directive 2014/52/EU). The assessment draws on the Appropriate Assessment Screening Report prepared by Aquafact Ltd on behalf of DesignPro and all other site surveys and desk based information. In particular, it draws upon the wealth of information which is contained within the volumes of the Strategic Integrated Framework Plan for the Shannon Estuary (including both the SEA ER and the Natura Impact Report) together with the current survey work being undertaken on the bird usage of the Shannon Estuary by the SIFP Implementation Group.

Table 3.3 Significance of Impact According to Theme (as in EIA)

EIA Section	Brief Assessment of Impacts
Population and Human Health	There are no potential impacts arising from the deployment of the tidal energy device in the Fergus Estuary which could lead to significant impacts on population or Human Health. There are no emissions, wastes or noise impacts

	associated with the proposed deployment, testing or decommissioning phases of the proposal. The placement of the device will not impede local fisherman or anglers accessing the Fergus Estuary with only a 75m exclusion zone provided for around the device which will be appropriately marked with aids to navigation. Sufficient space for other marine users will be provided to allow for safe passage at high and low water on the eastern side of Innistubbrid, west of Canon. Letters of support have been provided from both Kildysart Currachs and Kildysart Boat Group in support of the application (**See Attachment 4.4**)
Biodiversity	No biodiversity of ecological significance or sensitivity were recorded on the site of the proposed deployment. It was noted through public consultation that seals often haul out on the Southwest tip of Canon Island. This was further assessed through the retrieval of records from the Biodiversity Data Centre as shown in Figure 4. Both the common and grey seal are not listed as species of interest for the Shannon Estuary. The haul location on Canon Island is at a point which faces out onto the Shannon Estuary and is away from the proposed location of the GKinetic Tidal Device. Studies relating to Harbour seals around an operational tidal turbine in Strangford Narrows found any impacts to be minor and collision risk to be reduced by the behaviour of the seals. The turbine did not prevent transit of the animals through the channel and therefore did not result in a 'barrier' effect. The SeaGen turbine in Strangford represents a far more potentially damaging device than the GKinetic device does in terms of design. As per the findings of the Screening for Appropriate Assessment there will be no negative effects on marine mammals either directly or in directly through the deployment. Designated sites in the vicinity will not be impacted upon as set out in the Article 6(3) Appropriate Assessment Screening Report submitted as part of the Foreshore Application.
Soils and Geology	There will be no associated excavation or disturbance of soils or impacts on geology associated with this proposed development.
Water	The deployment phase will be carried out in accordance with detailed methodologies and mitigation proposals to ensure that potential impacts on water are eliminated.

Air and Climate Change	No impact. There are no associated emissions to air or impacts that may arise which would lead to negative impacts on Climate Change or Air Quality.
Noise & Vibration	There will be no noise or vibrations generated through the proposed launch, deployment, testing or decommissioning of the device.
Landscape	There will be no significant impacts on the landscape. Visually the device will have a very small footprint and will not be visible from the landward side of the estuary given its proposed deployment location just west of Canon Island. Inishtubbrid Island will serve to screen the device further from view during the stage of testing. In relation to Canon Island, there is one derelict farmhouse on the island which is over 200 years old. The house on the island has not been habituated in a number of years. Given the orientation and location of the farmhouse on the island coupled with the screening which is provided through the presence of mature trees there is no potential for visual impacts arising from the temporary placement of the device within the channel between Inishturbid and Canon Island. (Please see Appendix 1 for Plates 1 & 2 and Figure 2 Location of Farmhouse with respect to tidal device). The 2013 Business and Tourism Feasibility Study on the Shannon Fergus Islands also highlighted that *"much of Canon Island is heavily overgrown with scrub and woodland and is currently very difficult to access".* This further emphasises the screening provided to the tidal device. The location of Canon Island must be taken in the context of its location within the Shannon Estuary in terms of visual impacts within a highly industrialised environment. Canon Island is located within close proximity and visual impact of Aughinish Alumina and Foynes Port. Visually both of these industrial facilities represent a significant impact from Canon Island which far out weight any impact from such a small temporary tidal device.
Material Assets	No requirement and no impact.
Cultural Heritage	No impact on protected structures or archaeological features. An archaeological watching brief will be employed where relevant during the deployment phase.
Interaction of Foregoing	None anticipated.

The characteristics of the impacts are discussed below, with particular reference to the potential impacts as outlined in the table above.

Table 3 Characteristics of the Potential Impacts Matrix

Characteristics of Potential Impacts – Screening Questions	
Would a large geographical area be impacted as a result of the proposed development?	No. The device is a floating tidal turbine of approximate dimensions 11.5m x 10m x 6 m high (4m submerged and 2m high above the surface) with a dry weight of approx. 20T. When installed it will have a draught of approx. 4m. The device is moored at the surface with the rotor and bluff body section facing into the current and the deployment platform will be free to rotate in the reversing tide direction. The bluff body diverts flow into the rotors and thereby increases the inflow current speed to the rotors.
Would a large population of people be affected as a result of the proposed development?	No one should be affected as a result of the proposed development as it is outside of any heavily or populated area.
Are any transboundary impacts likely to arise as a result of the proposed development?	No.
Would the magnitude of impacts associated with the proposed development be considered significant?	No. There is no potential for areas of ecological sensitivity to be impacted by the proposed testing of the tidal energy device at the chosen location on the Fergus Estuary. Full details of the ecology of the site is presented in the Article 6(3) Appropriate Assessment Screening Report that has been prepared.
In considering the various aspects of the environment, would the impacts of the proposed development be considered complex?	No.
Is there a high probability that the effects will occur?	N/A
Will the effects continue for a long time?	N/A
Will the effects be permanent rather than temporary?	N/A
Will the impacts be irreversible?	N/A
Will it be difficult to avoid, or reduce or repair or compensate for the effects?	N/A

Conclusions: It is concluded that there are no potential impacts which would be considered significant. There are not considered to be any long-term negative impacts and, indeed, the proposed deployment and testing of the tidal device are considered to represent a long-term and permanent positive impact on Climate Change and Air Quality in particular as the

aim is to reduce the reliance on diesel powered generators in island communities through the use of such tidal devices. No likely significant long-terms or permanent negative environmental impacts have been identified in the course of the screening process.

Reasoning: All works are proposed within or adjacent to the existing port at Foynes in relation to the launching of the device. In terms of deployment this will take place on a single tidal cycle and can be done with minimum to no impact on harbour operations, or other vessels operating in the area.

4.0 Conclusions and Recommendations

A summary of conclusions is presented below:

The project (testing of tidal hydrokinetic device) is not a development for which EIA is mandatory. It is also considered that the proposed development is not a sub-threshold development. The relevant legislation makes no reference to Hydrokinetic energy or to the generation of electricity within the kilowatt range.

An EIA Screening exercise was however carried out to determine the potential for the proposed project to have significant environmental impacts or not. This exercise has been informed by Screening for Appropriate Assessment completed as part of the Foreshore Licence Application in conjunction with other surveys and desktop studies.

The nature and characteristics of the proposed development are not considered likely to have significant effects on the environment. The geographic extent or footprint of the device in the Fergus Estuary is very small.

The project has been reviewed in the Article 6(3) Appropriate Assessment Screening Report which has concluded that the proposals will not significantly adversely impact sensitive habitats nor will there be adverse impacts arising from the proposals on any European Sites.

The overall conclusion of this screening exercise is that there is no specific requirement for an Environmental Impact Assessment of the proposed project.

Appendix 1

Plate 1 Farmhouse on Canon Island

Plate 2 Dappled view through mature trees

Figure 2 Location of farmhouse with respect to tidal device

Figure 3 Location of Canon Island within the wider context of the industrial sites located in close proximity.

Figure 4 Records of Common and Grey Seal from the Fergus Estuary