MOTT MACDONALD

An Bord Pleanála
64 Marlborough Street
Dublin 1
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**Your Reference**
ABP-307798-20

**Our Reference**
229379408

**Proposed 400 kV electricity transmission cables, extension to the existing Kilpaddoge Electrical Substation and associated works, between the existing Moneypoint 400 kV Electrical Substation in the townland of Carrowdoita South County Clare and existing Kilpaddoge 220/110kV Electrical Substation in the townland of Kilpaddoge County Kerry. The development includes work in the foreshore**

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**For the attention of:** [redacted]

Dear Secretary

An Bord Pleanála, by letter dated 23 October 2020, invited EirGrid plc to provide further information in relation to submission from Department of Culture Heritage and Gaeltacht, Kerry and Clare and County Councils. Mott MacDonald submit this response on behalf of EirGrid.

## POTENTIAL IMPACTS - CONSTRUCTION

### 1 Department of Culture, Heritage and the Gaeltacht and Kerry Co. Council

The Department acknowledges the proposal in the Underwater Archaeology Impact Assessment accompanying the planning application to undertake archaeological testing in advance of any construction works commencing on landing sites S1 and N2.

Kerry County Archaeologist refers to six Neolithic houses/structures excavated under licences 14E0039 and 13E0465 and the potential for further significant early pre-historic archaeological potential both within and immediately above the intertidal area. The Archaeologist's recommendation is that testing of all proposed ground disturbance, both within the intertidal zone and along the cable routes is essential.

Additional requirements arising from both submissions are dealt with below:

*Dive Survey – SS12 exclusion zone*

The Department recommends an exclusion zone of 100m. If this is not possible it is recommended that a dive survey of the anomaly and the general area is carried out to discover any visible material or features on the channel bed. This survey is to include assessment with a hand-held metal detector.

An exclusion zone of 60m, measured from the centre of Anomaly SS12, is currently provided. The water depth at SS12 is 50m. This depth precludes investigation by diver inspection, as this depth is at the limits for safe diving in ordinary circumstances. Given the dynamic location of the Shannon estuary, dive inspection at this depth is not a safe means of assessment. To assess the location further, the project can include a remote-sensing survey licensed by the Department of Housing, Local Government and Heritage. The remote sensing survey will form part of pre-construction survey work required to micro-site the cable route. Such work will include the wider area around SS12 to facilitate a detailed assessment of the archaeological risk of this location. The dive survey will include assessment of the area with a hand held metal detector as recommended.

*Dive Survey - M10 and S1*

The localised cluster of magnetometer anomalies M10 in the onshore area of N2 lies approximately 114m offshore from the High Water Mark in water depths of the 20–25m. The location is submerged at Low Water. It is proposed that archaeological testing will be carried out by remote-sensing survey, as per the survey methodology for SS12 detailed above. The South Landing site S1 will be included in the remote sensing survey. Details of proposed test trenches at both sites will be included in a licence application report to the Department.

*Archaeological Testing*

The results of any dive surveys will be submitted to the Underwater Archaeology Unit of the National Monuments Service for review in advance of any proposed works taking place. The dive survey reports will include details of proposed location and extent of test trenches as requested. The report will also include a finds retrieval strategy and will form the basis of a licence application to the Department.

EirGrid/ESB will appoint a suitably qualified and experienced underwater archaeologist to advise the project team, to apply for the necessary archaeological consents and to conduct the archaeological work that is required post-consent, pre-construction and during construction activities.

## 2 Natural Heritage - Birds

EirGrid notes the submission of the Department of Culture, Heritage and the Gaeltacht.

An extensive water-bird survey of the River Shannon and River Fergus Estuaries was carried out in 2017/18 by McCarthy Keville O'Sullivan (MKO, 2019). The survey was commissioned under the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary 2013-2020.

The SIFP survey data were considered to determine the level of importance for bird numbers and usage of the proposed cable route and landfall sites at Moneypoint on the Clare coast and Kilpaddoge on the Kerry coast.

The majority of the shoreline at the Moneypoint landfall is not exposed at low tide and the area is therefore of reduced significance for waterfowl in terms of a feeding resource or a roosting site, relative to extensive areas of exposed intertidal habitat elsewhere in the Shannon Estuary.

There is some intertidal habitat both upstream and downstream of the generating station with the predominant substrate being gravel and stones and this type of substrate is used by only a small number of waterbird species, and a small number of individuals. For instance, surveys during conditions of clear visibility at mid-tide on 4 November 2020, EirGrid's ecologist recorded only a single oystercatcher within c. 1 km of the Moneypoint landfall and a single grey heron in the nearby quarry.

There is some muddy shoreline at low water at Killimer and this provides some potential feeding and roosting habitat for a variety of waterbirds including dabbling ducks, waders and gulls. However, as for the Moneypoint site, these areas offer reduced value to wetland birds, relative to other areas of the Shannon Estuary with significant areas of exposed substrates at low water. On 4 November 2020 EirGrid's ecologist recorded, within approximately 1 km of the proposed Killimer landfall at low tide, a peak of two oystercatcher roosting/feeding amongst rocks, a single feeding curlew and a single Red throated diver in near shore waters.

The Conservation Objectives report (NPWS 2012[1]) and the Conservation Objectives Backing Document (NPWS, 2012[2]) prepared by NPWS for the Lower River Shannon SAC (Site code: 002165) maps the intertidal area at the Killpaddoge landfall as the marine community type (MCT) Fucoid-dominated intertidal reef community complex within the Qualifying Interest habitats of Estuaries (1130) and Reef (1170).

Walkover surveys revealed that the intertidal habitat at the Kilpaddoge substation comprises rocks, stones and gravel and some exposed bed rock. The fucoid species *F. vesiculosus Pelvetia canaliculate* and *Ascophyllum nodosum* are present on the upper shore as are littorinids and barnacles.

There is some terrestrial habitat at both landfall sites on which some waterbird species could forage and roost. There are 21 bird species which are Species of Conservation Interest (SCI) for the River Shannon and River Fergus Estuaries Special Protection Area (SPA). With the exception of the cormorant, whooper swan and black-headed gull, the remainder of the 21 SCIs feed on mudflats, grasslands and sandflats or dabble at low water on similar substrates. Cormorants feed on fish in open water, while whooper swans feed either on freshwater vegetation or on

[1] NPWS 2012 Conservation Objectives Series. Lower River Shannon SAC Site Code: 002165.

[2] NPWS 2012 Lower River Shannon SAC (site code: 2165) Conservation objectives supporting document marine habitats and species Version 1 March 2012

grasses on land and black-headed gulls are omnivorous scavengers not restricted to intertidal habitats.

The SIFP data presented in the MKO (2019) report show that the area where the proposed cables will cross is not an important site for total numbers of birds. The area scored low to medium in terms of mean species richness and mean total numbers per count. The same area was also shown to be of limited use as bird flocking and roosting sites. The reasons for the area not being an important area for waterbirds is most likely due to the lack of suitable substrate e.g. sand or mud flats that are exposed at low water. Another factor for the Clare side is potentially due to disturbance due to shipping coming in and out of Moneypoint and the ferry service at Killimer, which is noted by MKO (2019).

The relevant SIFP survey subsites in the MKO (2019) report are 0N023 on the Clare coast and ONO11 on the Kerry coast. Of the 31 no. species recorded at subsite 0N023 and 0N011, 22no. species[3] are waders, dabbling ducks or species whose feeding habitat and/or roosting preferences are intertidal or coastal grasslands. These species will not be found at either landfall site nor along the route of the cable.

The six remaining of the 31 species are gull species (black-headed gull, common gull, herring gull, iceland gull, great black-backed gull and lesser black-backed gull) which are not restricted to intertidal habitats for either feeding or roosting. Their feeding ecology or roosting preferences will not be significantly compromised by either landfall site nor by the cable route. The remaining three species (cormorant, great-crested grebe and great northern diver) are deep diving species that do not typically occur in intertidal habitats and will therefore not be significantly impacted by activities at the landfall sites. They will however experience temporary disturbance effects if present along the cable route during the construction period. As a result, these species may be temporarily displaced to alternative foraging areas. It should be noted, however, that given the short duration of the construction phase and the large alternative foraging areas available to the species near the cable route, significant disturbance effects will not occur.

**POTENTIAL IMPACT - OPERATION**

**3 Clare County Council - Strategic Integrated Framework Plan**

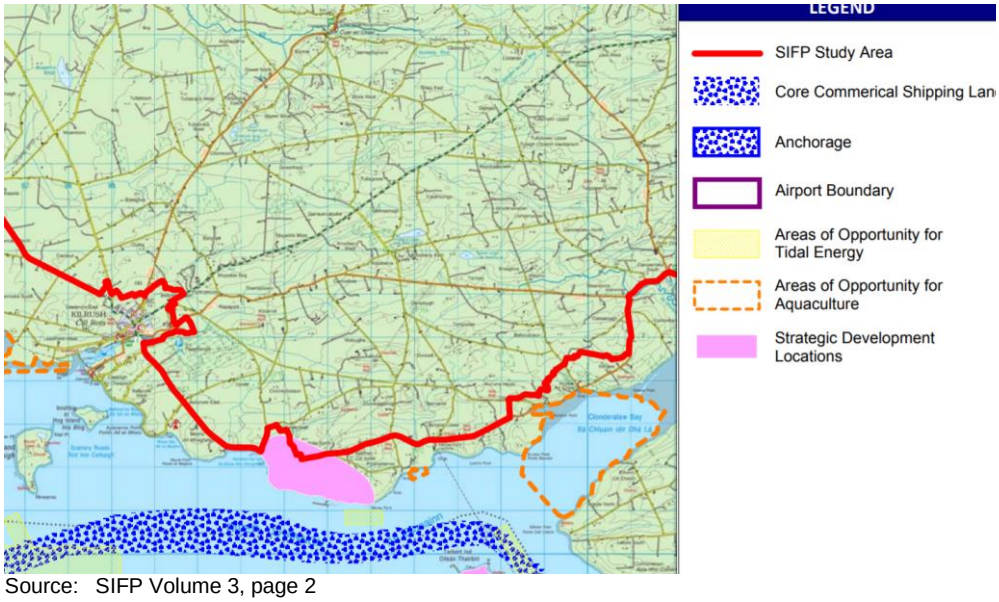
The Planning Authority (PA) response to the SID application identifies significant policy support for the subject development in its development plan. Having regard to the established use of the site for power generation, the PA states that the principle of development is considered acceptable.

However the PA contends that EirGrid's proposed development is not in accordance with the objectives of the Shannon Estuary Strategic Integrated Framework Plan (incorporated into the current development plan) and a proposal in the SIFP to use this deep water part of the estuary to test tidal energy devices. The PA concludes by stating that EirGrid's proposed development may potentially prejudice the development of the "*opportunity site for tidal testing"*.

The SIFP (2013) identifies Opportunity Site J close to Moneypoint – see Figure 1 below.

[3] Bar-tailed godwit, black-tailed godwit, curlew, dunlin, little egret, greenshank, golden plover, grey heron, knot, lapwing, mallard, oystercatcher, light-bellied brent goose, pochard, redshank, ringed plover, snipe, shelduck, teal, turnstone, whimbrel and wigeon

**Figure 1: Strategic Development Location and Area of Opportunity**




Source: SIFP Volume 3, page 2

Figure 2 below contains the site layout for the Cross Shannon Cable as per the SID application. It is clear that the cable route traverses the Area of Opportunity for Tidal Energy indicated in the SIFP.

**Figure.2: SIFP Area of Opportunity J**

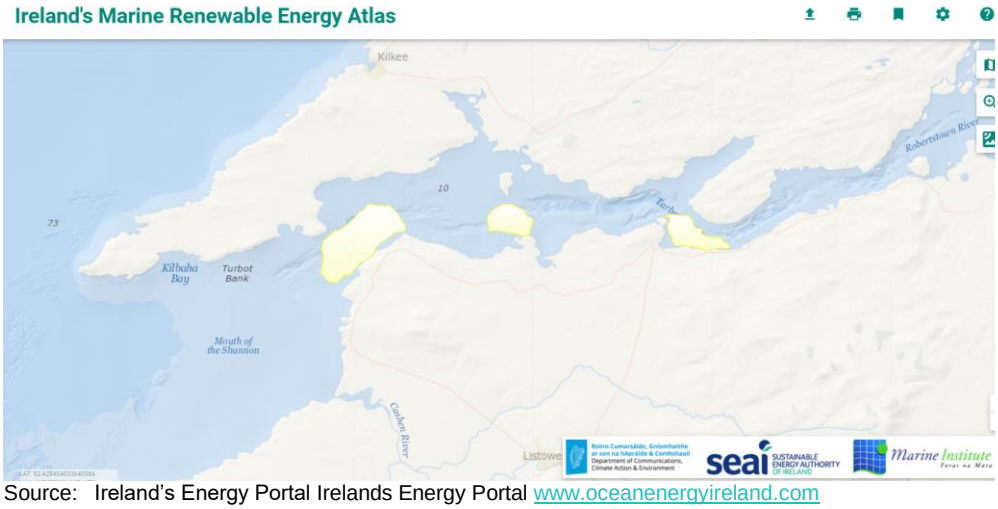

Source: SIFP Volume 3, page 28

In relation to the cable route crossing the Area of Opportunity the PA have commented:

*"While the Planning and Environmental Report which accompanies the application acknowledges the SIFP, the conclusions are based in terms of acceptability of the loss of between a quarter to a half of this Area of Opportunity (taking the route corridor into consideration) on the fact that the SIFP acknowledges that this framework needs to "provide sufficient flexibility to accommodate projects of potential national and regional significance that cannot be developed at the proposed Strategic Development locations". The Planning Authority was co-author of the SIFP and whilst this was indeed the intention it was not the intention that development associated with a Marine Related Industry site would be located within an Area of Opportunity thereby potentially prejudicing the development of the site for the testing of tidal devices".*

The Area of Opportunity identified in the SIFP is at variance with government sponsored documentation identifying suitable locations for tidal energy development in the Shannon Estuary. See Figure 3 below.

**Figure 3: Tidal Resource Potential**




Source: Ireland's Energy Portal Irelands Energy Portal www.oceanenergyireland.com

The Interim Review of the Offshore Renewable Energy Development Plan (2018) *Action 6: Communicate that Ireland is Open for Business* identifies *Ireland's Ocean Energy Portal* (that produced a map of Tidal Resource Potential in Ireland) as a valuable tool in communicating the opportunities and supports available in Ireland to the international sector. The portal was developed by the SEAI and the Marine Institute under the framework of the OREDP. The portal provides access to marine data, maps, tools, funding notices and information relevant to ORE site assessment, development and management. The portal is intended as the "first stop shop" to which all developers can engage with relevant support sectors in Ireland and from where they can obtain the most relevant and up-to-date information.

It can be seen in Figure 3 that the sites of tidal resource potential identified on Ireland's Energy Portal website are located on the southern shores of the Shannon Estuary and therefore will not be impacted upon by the Cross Shannon Project.

The OREDP (2014) *Action 2: Increase Exchequer Support for Ocean Research, Development and Demonstration* has led to the development of a suite of test site facilities for developers of offshore renewable energy technology:

- Lir National Test Facility, Cork – provides laboratory test facilities for developers
- Galway Bay – quarter scale test bed
- Atlantic Marine Energy Test Site (AMETS), Belmullet, Mayo – full scale test facility
- Centre for Marine and Renewable Energy (MaREI) - SFI Research Centre for Energy, Climate and Marine research and innovation co-ordinated by the Environmental Research Institute (ERI) at University College Cork

**Figure 4: Ireland's test facilities for offshore renewable energy**


Source: Northern & Western Regional Assembly RSES

The OREDP (Dept. of Environment, Climate and Communications) is the Government's policy document in relation to the promotion and development of offshore renewable energy in Ireland. The original OREDP was published in 2014 and an Interim Review was carried out in 2018.

In the intervening four year period considerable progress has been made on advancing test sites and research capability for offshore renewable energy generation funded by Government and the SEAI. Although areas of tidal resource potential have been identified in the Shannon Estuary on Ireland's Energy Portal they

have not been the focus of research funding or test sites. The Shannon Estuary sites of potential as identified remain available for development.

The SIFP was published in 2013 and is now out of date as the Regional Spatial and Economic Strategy (RSES) for the Southern Regional Assembly has been published. It is a statutory requirement that all land use plans at a local level (which would include the SIFP for the Shannon Estuary) are in accordance with Regional and National Strategy. Therefore to remain relevant, the SIFP must be updated to align with the RSES and the OREDP. The review of the SIFP will require alignment of areas of opportunity/ sites of potential produced by Ireland's Energy Portal.

Clare County Council Development Plan is currently under review and this will also require revision and update of the SIFP. EirGrid requests that An Bord Pleanála considers comments from Clare Co. Council in the context of progress made on implementation of the OREDP (2014). Please also note that a representative from EirGrid sits on the Steering Group for Shannon Estuary SIFP.

## 4 Other Issues Arising from Submissions

### Coastal Erosion

With respect to coastal erosion the Department queried "*whether more extensive and higher rock armouring of the shoreline is likely, within this century, in order to protect the proposed infrastructure from coastal erosion*".

The initial assessment of coastal erosion risk completed by the Office of Public Works (OPW) did not identify the study area as being at significant risk of erosion. Both landfalls are on rock/till coastlines and are relatively sheltered from significant wave actions. At the landfall locations, it has been assumed that the crest elevation of the rock protection and gabion wall would likely be designed for present day HAT (Highest Astronomical Tide) (+5.5mCD) plus an allowance for the sea level rise over the cables design life. This will require further consideration, assessment and design at detailed design stage.

During the detailed design stage, it would also be determined whether a further allowance would be required for storm surges and waves, to minimise effects of overtopping. We would expect that the detailed design would be such that once the final design and construction has taken place it would be unlikely that that more extensive or higher rock armour would be required in its design life (incorporating a 50 year design life with allowance for sea level rise is often standard practice in such coastal infrastructure). A maintenance schedule would however be expected (at regular intervals, as well as after significant storms etc.) to be set out and followed, as is common for such assets, which may require localised rock replacement of displaced units within its design life.

It should be noted that the reinforced concrete ramp and cable channels would also provide erosion protection to the proposed slope. The design elevation of both the transition joint bay and substation extension are well above HAT and are not considered to be at risk of flooding from sea level rise.

### Electromagnetic Fields

The Department queried scientific sources supporting the conclusion that there are no negative electromagnetic fields (EMF) effects recorded on migrating sea lamprey and other fish. For your reference we have provided a list of scientific sources in response to this query.

Electric transmission cables are known to produce both electric and magnetic fields in the marine environment. Together, these fields are known as electromagnetic fields (EMFs). The environmental assessment of the potential

effect of EMF fields on behaviours of marine species was informed by a review of available literature.

Reviews of studies on the effects of EMF emissions in migratory fish species have reported a lack of data on Atlantic salmon (*Salmo salar*) and sea trout (*Salmo trutta*) (*e.g.* Waterside Ecology, 2017; Gill and Bartlett 2011). To overcome this lack of data, Gill and Bartlett (2010) appraised the likely responses of Atlantic salmon and sea trout to EMF based on documented responses of other salmonid species (*e.g.* Lohmann *et al*., 2008; Putman *et al*., 2014). Studies undertaken by Lohmann *et al*. (2008) and Putman *et al*. (2014) on salmonid species including sockeye salmon (*Oncorhynchus nerka*), chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*) suggested that earth's magnetic field combined with other directional information, such as stellar cues, are used to identify particular coastal or oceanic regions. If salmonids do use magnetic cues for orientation or navigation it is likely that these cues are used at a large spatial scale and during the oceanic phase of outward and homeward migrations (Lohmann *et al*. 2008; Putman *et al*. 2014).

Once an appropriate coastal region is identified, migration to home (natal) rivers is likely dependent on olfactory cues, with chemical cues extending from natal rivers strongly implicated in the final phases of salmonids migrations (Stabell 1984; Jonstone *et al*.2012).

Thorstad *et al*. (2011) suggested that once salmon have reached sheltered fjords and sea lochs olfactory cues are the most important sense for homing. Given that the last phase of the spawning migration in salmonids is primarily governed by olfactory cues (Thorstad *et al*. 2011) it can be concluded that salmonid species migration will not be significantly affected by EMF produced by the Cross Shannon cable.

Like salmonid species, cross ocean migration in European eel (*Anguilla anguilla*) is likely to be influenced by the species ability to detect the earth's magnetic field (Durif *et al*., 2013; Naissbett-Jones *et al*., 2017), when located closer to the coast olfaction play a large part in locating river and streams (Waterside Ecology, 2017).

A number of studies have reported no evidence that EMF presents obstructions to eel migrations. Westerberg and Lagenfelt (2008) assessed migration behaviour of the European eel passing an underwater high voltage cable extending between the Swedish mainland and the island Öland. The study reported that while eel reduced its swimming speed when crossing the cable there was no evidence that the cable was acting as an obstruction to migration. Similarly, a two year field study of migrating Silver eels passing the Baltic Cable showed the species crossed the cable with the same probability as if it were absent. While a number of individuals changed their course slightly when passing the cable it was concluded that the cable did not pose a threat to migration. Given the above, it can be concluded that European eel migration will not be significantly affected by the proposed development.

The review by Gill and Bartlett (2011) reported that there was no evidence that sea lampreys possess an ability to detect magnetic fields. Furthermore, the review reported no evidence that EMF plays any role in species migration during their homeward migrations to coasts and estuaries. Once at the coast lamprey appear to locate streams using a three-phase strategy (Vrieze et al 2011). The first phase is the initial vertical and horizontal exploration of shorelines. This brings the species close to the mouth of rivers. Once at a river mouth the species turn to face into oncoming currents (rheotaxis). The last phase involves using olfactory cues, whereby adult sea lampreys 'sniff out' rivers populated with juvenile lampreys

(Bjerselius et al 2000; Polkinghorne et al. 2001; Waterside Ecology, 2017). Given the above, sea lamprey migration will not be significantly affected by the proposed development.

In studies investigating the effect of EMF on the decapod crab *Cancer pagurus*, Scott et al. (2019) investigated reported crabs showed a clear attraction to EMF and significantly reduced their time spent roaming. Experiments have reported varied responses in elasmobranchs to EMF. For example, Gill *et al*. (2009) reported the lesser spotted dogfish (*Scyliorhinus canicula*) were more likely to be found close to the energized cable. The study also showed some Thornback Ray (*Raja clavata*) individuals moved more in the vicinity of the EMF. Hutchison et al., (2018 and 2020) investigated the effect of EMF associated with high voltage cables on the decapod lobster *Homarus americanus* (American lobster) and the elasmobranch *Leucoraja erinacea* (Little stake). The studies showed that when exposed to EMF lobster exhibited a subtle change in exploratory behavioural activity while Little skate exhibited a strong exploratory/ foraging behavioural activity. While the behavioural changes are likely to have biological relevance in terms of how the animals will move around and be distributed within a cable EMF zone, it is considered that EMFs did not constitute a barrier to movements across the cable for either lobsters or skates. Consequently, it can be concluded that EMF produced by the proposed development is unlikely to significantly affect decapod or elasmobranch species.

**Traffic**

The submission by Kerry County Council notes the proposed development "*will not have a negative impact on the carrying capacity and safety of the road network in the area subject to compliance with the mitigation measures outlined in the planning application documentation submitted and subject to compliance with the suggested conditions attached hereunder*". The planning conditions related to traffic are considered reasonable.

**Conclusion**

Kerry County Council, Clare County Council and the Department of Culture, Heritage and the Gaeltacht have concluded that the proposed development will not have an adverse impact on the Lower River Shannon SAC and the application documentation has demonstrated that the proposed development will not have an adverse impact on the River Shannon and River Fergus Estuaries Special Protection Area (SPA).

Please note that a draft CEMP has been submitted with the planning application.

The proposed development is critically important to EirGrid Strategy, Ireland's Climate Change Strategy and to achieving a goal of 70% renewable energy on the Grid by 2030. The proposed development will facilitate the transfer of offshore renewable energy to demand centres across the country. EirGrid urges An Bord Pleanála to grant permission for this essential infrastructure.

MOTT MACDONALD

Should the Board have any queries in respect of the documentation, please contact the undersigned.

Yours faithfully,

[redacted]

[redacted]
Mott MacDonald