Marine Renewables Industry Association (MRIA) submission on

OFFSHORE WIND CONSULTATION TO INFORM A GRID DEVELOPMENT POLICY FOR OFFSHORE WIND IN IRELAND

July 22nd, 2020

1 Introduction

The Marine Renewables Industry Association (MRIA) represents the Marine Renewables Emerging Technologies (MRETs - wave, tidal, floating wind and 'hybrids') on the island of Ireland. More details may be found at www.mria.ie. Our members include companies engaged along the spectrum of offshore renewable energy development including Equinor, Parkwind Oriel, SSE, Simply Blue Energy, ESB and DP Energy.

The Association welcomes the *Offshore Wind Consultation to Inform a Grid Development Policy for Offshore Wind in Ireland* (hereinafter, 'Consultation') which directly impacts on our remit inter alia for floating offshore wind but, also, in recognition that the grid development model which emerges in due course will be enduring and will impact on future technologies. We welcome too the flexibility in the models presented which should enable an optimum, and (ideally) consensus-based combination of elements of them, to emerge following this Consultation.

The Association notes that, as this Submission was being finalised, the EU Commission approved Ireland's new Renewable Energy Support Scheme (RESS) including an auction system and provision for offshore renewables[1].

2. Overriding Issues

MRIA welcomes the reference to zoning at 3.1d: '.....*Sites will be located within zones.....these will be large areas (e.g. the Irish East Coast), typically including several sites*' MRIA italics. This early broad-brush approach to zoning is appropriate and should accommodate the needs of the forthcoming consenting legislation and the National Marine Planning Framework (NMPF). A more developed approach - the Strategic Marine Activity Zones (SMAZs) model signalled in recent policy documents - can be considered in the future *Offshore Renewable Energy Development* Plan number 2 (OREDP 2) and the proposed project in the *Programme for Government* to develop a plan for Atlantic Coast offshore

[1] See statement by Minister Eamon Ryan TD: *www.gov.ie/en/press-release/af713-renewable-technologies-wind-solar-and-community-energy-get-the-green-light-as-ireland-receives-eu-approval-for-renewable-electricity-support-scheme/*

renewables. The SMAZs are unlikely to be in place to guide developments off the east coast which are already substantially underway. We return to this issue at 3. below.

The Association is concerned, however, with the statement that, in the context of Option 2, '.... *the State defines a minimum distance to shore to enhance public support for offshore wind developments*.' This approach has been discussed at length in the past with the Department of Housing, Planning and Local Government (DHPLG) and, perhaps as a partial consequence of those discussions, played no part in the recent, documented evolution of the consenting legislation (Marine Planning and Development Management - MPDM - Bill) and the marine spatial plan, the NMPF.

We recommended before, in a major Paper on the topic[2], that:

> •*Any proposal for a buffer zone should be considered only with great care and should be locally site specific.*
>
> •*The governing principle in examining 'seascape impact' issues should be to generate competitively priced electricity with the minimum possible impact on local seascapes and in broad partnership with local interests*
>
> •*Visualisation Techniques (VTs) that take many factors into account - type of technology, configuration and capacity of devices etc - should be employed to evaluate consenting applications*
>
> •*An expert group (perhaps under the aegis of the Marine Institute who have undertaken already significant background research and evaluation work on MSP on behalf of the MSP Competent Authority, the Department of Housing, Planning and Local Government) should be convened to design a Code of Practice and Standards for VTs.* We are aware that the Marine Institute has since commenced background work in this regard.
>
> •*As part of the consenting process, developers should be required to submit Visualisations, based on an approved VTs Code of Practice and Standards, of likely impacts on local communities of their planned projects.*

The reintroduction of the buffer zone argument at this stage is unhelpful and the consequences need to be considered before any further steps are taken in this regard. As we said in our 2018 Paper:

> *MRIA believes that the application of a blanket national 'buffer zone' (e.g., no renewables development within the buffer zone boundaries) out to, for example, 12nm would freeze and paralyse development of renewable offshore energy....*

The application of a buffer zone along the lines outlined in the Consultation could hinder the Relevant Projects and fails to take into account the reality of the seabed depths around the Irish coast as illustrated in the map attached as an Appendix to this Submission: the limit for

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[2] *Marine Spatial Planning Needs of Marine Renewables Emerging Technologies Discussion Paper* 2018, available at www.mria.ie

existing offshore wind technology is a water depth of 50-55m and the associated contour line for this water depth is close to the entire Irish coast. This is an important issue for both current forms of wind turbines - Bottom Fixed and Floating - and for wave devices (which are likely to have a limited or no above-water impact, depending on technology approach) because inter alia of the increased cost of mooring in deeper water. To put the matter in perspective, the 50m isobath is less than 5KM in many places off the west coast alone.

Regardless of which Option is chosen, the VTs approach (which is referenced in the recent official documentation associated with MPDM/NMPF) must be advanced as the chosen instrument to deal with local sensitivities.

3. Response to Questions posed by the Consultation

1. WITH RESPECT TO KEY DRIVER (I), COST LEVELS, WHICH OF MODELS 1,2,3,4, OR VARIANT OF THESE, DELIVERS THE MOST SATISFACTORY RESULTS? WHICH FEATURES OF THE MODEL, OR VARIANT, ARE THE MOST INFLUENTIAL FOR YOUR GIVEN CHOICE?

There are two main issues at stake here. First, the Relevant Projects essentially lie, for historical reasons, in Option 1 - *Developer-led model* - and it would be unwise (delay, legal considerations) to consider radical changes to their situation in light of their vital importance to the realisation of the Climate Action Plan's RES-E target for 2030. MRIA believes that, for future developments, Option 2 - *Plan-defined, developer consents and builds* - represents the best choice and will lead to the most cost-effective outcomes as it will generate competition among project developers.

BUT IT MUST BE AMENDED IN THREE CRUCIAL RESPECTS: first, the requirement for a minimum distance from the shoreline (so-called 'buffering') as dealt with in section 2 of this Submission must be removed; second, there should be no role for TSO's in determining the *readiness* of projects to participate in RESS auctions; third, the issue of Strategic Marine Activity Zones proposed under the MPDM must be sorted out in OREDP 2 i.e. a system must be determined to provide locational signals to developers. However, the Relevant Projects in the Irish Sea are, for the most part, at an advanced stage of preparation and should be regarded collectively as a zone. Ireland's approach to the designation of SMAZs needs to be developed carefully, taking account of OREDP 2, the principles outlined in the NMPF and consultation with relevant stakeholders to ensure zones identified are suitable for offshore wind and other forms of renewables development.

The overarching policy and legal arrangements (e.g. MPDM, RESS rules etc) being put in place for offshore renewables should be sufficient to determine which projects are 'ready for auction' alongside the developers' own financial and engineering judgements. It would be unreasonable to confer a de facto 'veto' right in this regard to the TSO which would lessen the pressure on such bodies to provide infrastructure in a timely fashion although, of course, a constructive working relationship between developers and the TSO is a paramount requirement. Moreover, such a process would be perceived as further increasing the risk and complexity of projects and, thus, affect their capacity to achieve financial close, a topic we return to under Q8 below.

The TSOs are already fully challenged to acquire the expertise to deal with their obvious responsibilities (e.g. onshore grid) concerning offshore renewables and this should not be added to with unnecessary demands to 'judge' projects and developers who in most instances already have substantial experience in the field and have a clear incentive to get their projects 'right' and at minimum cost It should be noted that the TSO sets the technical specification for offshore transmission assets and that alone will confer considerable power and influence. The boundary lines in regard to ownership of assets and decision taking e.g. in regard to auction readiness need to be clear or projects will fail to reach financial 'close': banks will not accept the ambiguity and, therefore, risk associated with anything less. As a working principle, the developer of an offshore renewable energy project should bear the cost and responsibility offshore (where the main developers in this industry already have significant expertise and experience) while the TSO focuses on the onshore domain from the onshore substation connection point.

The Association recognises that the TSO/developer relationship will be a complex one which will require continuous and intense 'investment' by both sides. EirGrid in particular will have to execute two challenging roles simultaneously. The State body will be intrinsically involved with all offshore developments as the provider of onshore grid. EirGrid also, however, will play a key part in the auction process: *'EirGrid will implement and operate the auctions with CRU providing competition advice as well as auditing and monitoring the auction process'*[3]

Option 2 with amendments will lead to the most cost-effective outcomes as it will generate competition among developers and ensure a reasonable inducement for the TSO to deliver on their part of a project. Ireland, as the Navigant report points out, is an emerging market for offshore renewables and it should benefit from a grid delivery model (Options 1 and 2 with amendments) where experienced developers could deploy offshore wind transmission assets at attractive cost levels quickly. The precedents for the assertion (that Option 2 with amendments will be the most cost-effective approach) in Irish economic experience are abundant. For example, up to the late 1980s, the State exercised control over air travel - controlling the infrastructure and the main airline, setting fares and controlling market access. The introduction of competition, private sector innovation and appropriate regulation and State involvement has transformed the Irish air travel landscape. Although, there is not a strict parallel between air travel and offshore energy, there are lessons of the former experience that are worth bearing in mind.

Finally, the evolving offshore policy 'literature', notably the MPDM General Scheme, places great store on the identification of Strategic Marine Activity Zones. The main Relevant Projects are in the Irish Sea and are, for all practical purposes, they already form a SMAZ. However, it is understood that the criteria to identify future SMAZs will be dealt with in OREDP 2 and the MRIA would welcome that development provided that it is accompanied by a constructive consultation with industry. It is important that developers and other stakeholders get a clear 'signal' about which areas will be opened up. It is important too from a policy perspective that grid development etc can be planned in an orderly fashion. As stated above, MRIA supports a broad-brush approach to zoning in the early years, one

[3] Ibid, Minister Eamon Ryan statement

which draws on the extensive work that has already been carried out to produce Ireland's OREDP 1 while OREDP 2 should set the scene for the longer-term following consultation with

Overall, MRIA is against the adoption of either Option 3 (*Plan-led, developer build*) or Option 4 (*Plan-led*). Option 3 will simply delay the Relevant Projects and indeed others as it may involve the creation of a new State Body and/or further broadening the role of an extant agency which would also involve delays; the State and its bodies become involved in 'picking winners' which is generally not regarded as prudent or effective in any walk of economic life; the competitive element is lessened compared to Options 1 and 2. Option 4 appears to involve little scope for private enterprise and has no discernible merit on cost or other grounds.

Nonetheless, the Consultation points out that there are many options and that those chosen for discussion are selected from a wide spectrum. While Option 1 de facto will apply to the Relevant Projects, **Option 2 with amendments** appears to be the best choice for all others but no policy doors should be bolted. Ireland is starting in the offshore renewables business with three advantages: a huge resource; a blank development sheet, apart from the 25MW wind farm off Arklow; and a positive working relationship between industry and policymakers. Accordingly, while Option 2 with amendments appears to be the right choice under all drivers, all germane parties must keep a watching brief as experience builds up and lessons are learned. Option 2 with amendments is a good starting point, not a destination set in stone.

2. WITH RESPECT TO KEY DRIVER (II), ENVIRONMENTAL IMPACT, WHICH OF MODELS 1,2,3,4, OR VARIANT OF THESE, DELIVERS THE MOST SATISFACTORY RESULTS? WHICH FEATURES OF THE MODEL, OR VARIANT, ARE THE MOST INFLUENTIAL FOR YOUR GIVEN CHOICE?

All offshore energy developments that do not yet have consent will be undertaken under the legal umbrella of the Marine Planning and Development Management legislation which will deliver extensive provision for environmental impact issues. It is difficult to identify any significant difference in this regard between the four Options presented. Each Option in practice should prompt close liaison with the TSO who could seek to promote synergies and coordination in relation to landing points where possible. There are advantages and disadvantages associated with each model. We believe the benefits of the developer-led approach outweigh those of a centralised model.

Offshore wind is an emerging market in Ireland with the potential to transform our national fortunes in tackling climate change. With the industry seeking to establish itself, there are significant benefits in enabling a developer-led grid delivery model. Experienced developers are ready to deploy offshore wind transmission assets and to undertake associated Environmental Impact Assessments (EIAs). It does not appear, however, that the State is currently equipped to deliver the initial wave of *offshore* wind transmission assets. The time that would be needed to prepare for this would slow the industry down and put the delivery of projects needed to meet our 5GW offshore by 2030 target at risk. Offshore wind developers have already undertaken significant investment in the assessment and early

development of offshore windfarm sites and are now ready to invest in the establishment of Ireland's offshore wind sector. While the State has experience in the delivery of interconnection assets, it does not have experience of offshore wind connections and associated EIAs. From the experience gained with previous investments, developers will have deep knowledge and experience of developing EIAs in offshore environments. This knowledge and experience should be harnessed.

3. WITH RESPECT TO KEY DRIVER (III), FUTURE PROOFING AND TECHNOLOGIES, WHICH OF MODELS 1,2,3,4, OR VARIANT OF THESE, DELIVERS THE MOST SATISFACTORY RESULTS? WHICH FEATURES OF THE MODEL, OR VARIANT, ARE THE MOST INFLUENTIAL FOR YOUR GIVEN CHOICE?

Competition drives innovation and this is best delivered by Option 2 with amendments.

Key points:

- It will be important to ensure that flexibility is shown in consenting, cable provision etc to enable the location of *pilot projects in new technologies* within sites being developed principally for a more established technology.
- Infrastructure will have to be built to Eirgrid's technical specifications - will this limit innovation? Can an agreed pathway be found to 'bake-in' innovation to Eirgrid's processes and requirements?
- In any event, early engagement with developers by Eirgrid is vital to enabling the optimum technical solutions to be employed.
- Looking to the long-term, there is a need to 'future proof' policy and market design e.g. a route to market needs to be identified for the generation capacity (beyond that required to meet Irish targets and market needs) which is possible if we are to fully exploit our offshore resources. This would involve a roadmap to dealing with issues such as wave energy, hydrogen production, 'supergrids', interconnectors etc.

Care must be taken in setting future proofing requirements so as not to add to cost or development timelines. For example, EirGrid often requires extra bays to be built in sub-stations ashore for future proofing purposes. The cost is normally modest. However, the cost of providing extra capacity in an offshore substation could be considerable and adversely alter the economics of affected projects.

4. WITH RESPECT TO KEY DRIVER (IV), REQUIRED INFRASTRUCTURE, WHICH OF MODELS 1,2,3,4, OR VARIANT OF THESE, DELIVERS THE MOST SATISFACTORY RESULTS? WHICH FEATURES OF THE MODEL, OR VARIANT, ARE THE MOST INFLUENTIAL FOR YOUR GIVEN CHOICE?

Each suggested model involves both consenting under the Marine Planning and Development Management legislation and engagement with the TSO. Option 2 with amendments, our chosen model, represents a good choice under key driver (iv), 'required infrastructure'. Care must be exercised during the project construction phase under 'Responsibilities' such as 'Detailed design, offshore wind transmission assets' to ensure a positive and close coordination between all of the bodies - developers, EirGrid and ESB Networks - involved.

An advantage of Option 2 with amendments is that it provides for the parallel development of onshore grid in comparison with the more reactive approach to grid provision suggested in Option 1. Offshore developers must be given the confidence that their projects will have a firm grid connection by an agreed date.

Looking to the longer term, EirGrid has undertaken a capacity study in respect of the east coast and an early announcement of their plans for similar work off the south coast and then the Atlantic coast is desirable.

5. With respect to key driver (v) compatibility with Relevant Projects, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

The State agencies face a Hobson's choice here. The Relevant Projects lie largely within the realm of Option 1 and any effort to complicate that position at this stage could seriously delay Irish offshore wind development. The Relevant Projects and well progressed enduring projects are vital to the achievement of the baseline 5 GW offshore contribution to the 2030 target and at least some of them are at an advanced stage of planning and all of them need to stay focused on delivery without the distraction of a major change in development model. A developer-led approach will also be vital to the delivery of the projects that will come after the Relevant Projects to ensure Ireland is able to meet its 2030 targets.

An enduring grid development model, which will leverage the experience of all of the parties engaged with the Relevant Projects, is vital to our long-term ambitions in offshore renewables. A key feature must be a close alignment, a tight parallel, between the pace of offshore development and the provision of appropriate new onshore grid assets.

6. With respect to key driver (vi), social acceptance, which of models 1,2,3,4, or variant of these, delivers the most satisfactory results? Which features of the model, or variant, are the most influential for your given choice?

Every offshore wind or other form of offshore renewable energy project requires a *Social License to Operate (SLO)* - 'a free prior and informed consent of local communities and stakeholders'[4]. The development of marine renewables in Ireland will be driven in part by a successful relationship-based engagement with interest groups and communities on whom the industry depends.

There may be a perception that Options 3 and 4 with their emphasis on the involvement of State bodies will lead more *readily* than Options 1 and 2 to an SLO for offshore renewable energy projects in light of their experience, resources and the 'halo' effect of State ownership. If such a view exists, then it is based on weak foundations as the recent experiences of EirGrid in regard to overland transmission networks and the Marine Institute's experience in regard to the renewal of the lease on the SmartBay test site in Galway Bay bear witness.

[4] Ibid, MRIA Discussion Paper

Acquisition of a Social License to Operate for offshore renewables and individual projects alike will be based on at least four firm foundations. First, a robust consenting process in which the public has confidence. The positive engagement of the public and interest groups in the various consultations about the National Marine Planning Framework and the Marine Planning and Development Management Bill augurs well in this regard. Second, Government and its agencies must continue, once new legislation such as in the consenting area is dealt with, to promote the industry. The development of offshore renewables must be supported by a public awareness campaign at a national level to inform public opinion and assuage concerns. Third, there must be a well-resourced partnership framework put in place for all affected coastal areas. This may prove challenging to set up formally at this stage in regard to the Relevant Projects as they are already in train but, nonetheless, a partnership framework of some type will prove of value in their localities as well. The MRIA has been consistent in advocating a Coastal Partnership model and notes with approval the plans of the Department of Housing, Planning and Local Government to establish pilot models in at least two counties presently. Finally, project developers must regard the community dimension to their projects as being 'mission critical' and resource it accordingly.

It is challenging to identify the most suitable Option in regard to social acceptance - projects advanced under *any* of the Options must address the issues just outlined. However, we believe that Option 2 with amendments represents the best choice in light of its focus on developer-responsibility for delivery (including the SLO) and the engagement of the TSO in potential flash points (such as choice of landing points) which will support coordination between a number of projects in the same area.

7. WITH RESPECT TO KEY DRIVER (VII), FACILITATING THE TIMELY DEVELOPMENT OF OFFSHORE WIND CAPACITY TO ACHIEVE THE 2030 TARGET, WHICH OF MODELS 1,2,3,4, OR VARIANT OF THESE, DELIVERS THE MOST SATISFACTORY RESULTS? WHICH FEATURES OF THE MODEL, OR VARIANT, ARE THE MOST INFLUENTIAL FOR YOUR GIVEN CHOICE?

The 'heavy lifting' towards the 2030 targets will be carried by the Relevant Projects and, as pointed out elsewhere in this Submission, these largely fall within Option 1. Other projects will also be required to reach the Government's new 5GW target e.g. the Enduring Projects. Given the time required to implement any offshore renewables project, radical 'surgery' at this stage to their delivery model will inevitably delay them.

The RES-E offshore target, now set at 5GW by 2030 by the new Government, may need to be increased further if some of the various projects required to deliver the 8.5GW of RES-E on land target run into difficulties in acquiring a Social License to Operate. In any event, Option 2 with amendments, with its combination of competition between various developers and the engagement of the TSO at relevant points, is the best model to ensure the achievement of the 2030 offshore target.

However, it will not suffice to depend totally on the Relevant Projects to deliver the 2030 5GW target as it may well be increased for the reasons outlined. It would be a high-risk strategy to assume that the target can be achieved solely in the Irish Sea. We welcome the

recognition given to opportunities off the south coast in the new Programme for Government. Work needs to commence by an early date to lay out plans to develop offshore renewables in the Celtic Sea and later the Atlantic even if the latter resource area in particular is only called on at scale in the 2030s - offshore renewable investments and associated terrestrial grid developments are both remarkably time extensive. It may be possible to engage projects off the south coast prior to 2030 as they are close to existing 220kV nodes and to the locations envisaged for the Celtic and Greenlink interconnectors.

The forthcoming *Offshore Renewable Energy Development Plan No.2* has a demanding agenda in front of it. Among other issues, it must set out outline targets for 2030+, consider electricity export requirements; reset and reenergise the drive to support early stage emerging technology projects; consider Floating Offshore Wind/hydrogen demonstration projects for the Celtic Sea and for the Atlantic; set out the criteria to identify Strategic Marine Activity Zones; etc

8. RANK THE KEY DRIVERS IN ORDER OF IMPORTANCE 1-7, WHICH HAVE THE GREATEST IMPACT ON THE CHOICE OF MODE

It is difficult to make a ranking decision between the seven key drivers. Instead, MRIA has divided them into two groups, ranked them within those groups and regards the two groups as being of equal importance.

The overall policy approach and the treatment of all drivers must be coloured by the need, given the safeguards of our forthcoming rigorous consenting regime and a Social License to Operate, of meeting a further and vital test: the ability of projects to get financed. Every offshore renewable energy project will, at an absolute minimum, cost hundreds of millions of Euros and all will require loan finance. The financial institutions will not accept any undue delays or unreasonable conditions (leading to increased risk) in projects. A bad experience in just one development could adversely influence their view on all Irish projects with consequent jeopardy to the 2030 targets.

Moreover, 'Cost levels' are a priority under all headings in both groups.

The first group focuses on technical capacity and consists of compatibility with Relevant Projects /required infrastructure/facilitating the timely development of offshore wind and capacity to achieve the 2030 targets. Fulfilment of this group is vital to delivery of projects, particularly the Relevant Projects, if the 2030 RESS-E target is to be attained. We rank them within this group, as follows:

1. Facilitating the timely development of offshore wind and capacity to achieve the 2030 targets;
2. Compatibility with the Relevant Projects;
3. Required infrastructure

The headings above are needed to achieve the 2030 targets and build the overall (wind+wave+hybrids+...) industry and a change to a plan led model (Options 3 and 4) will

impede this. They are the considerations which should have a high impact on grid delivery model selection.

The second group- environmental impact/social acceptance/future proofing of technologies and policies - is vital to the social acceptance of offshore wind and to the development of future technologies and we rank them as follows:

1. Environmental impact and social impact rank equally - these need to be rigorous regardless of model selected
2. Future proofing - this will become a high priority as experience grows and new technologies (n.b. wave) mature but care must be exercised not to impose undue 'future proofing' costs on projects, particularly at this pioneering stage in the industry's development.

Overall, delivery of any of the four modes offered in the Consultation requires a cost-effective and financier-attractive delivery of both groups of drivers and they will all contribute to the complex tapestry involved in delivering offshore energy.

9. How important is it for Ireland to develop an indigenous offshore wind energy industry? How best can an indigenous industry be developed?

It is important for several reasons.

First, Ireland's targets under the Climate Action Plan and the *Programme for Government* absolutely need offshore renewable energy. Indeed, the 8.5GW terrestrial renewable energy target will be challenging to achieve in light of possible public reaction and it is quite possible that more offshore renewable capacity - in bottom fixed wind, floating wind (and, from c2030, wave and hybrid energy) - may be required to achieve the RESS-E target of 70% by 2030.

Second, the vast scale and quality of Ireland's offshore wind and wave capacity is well established and represents a major opportunity to develop electricity exports with significant economic benefits (new jobs, particularly in coastal communities) and Exchequer income (lease fees, for example).

A detailed assessment of Ireland's wave energy resource was performed in 2005. This study looked at the theoretical and accessible levels of wave energy in Irish waters. It indicated that a theoretical wave energy resource of up to 525TWh exists within the limits of Irish waters. For comparison, in 2017, the Total Electricity Requirement for the Republic of Ireland was 26TWh.

More recently, the *Offshore Renewable Energy Development Plan Number 1* identified a total development potential of 31.1GW of wave energy off Ireland that could be extracted without having likely significant adverse effects on the environment.

Similarly, the European Commission has identified the large potential in wave and tidal energy in Europe and worldwide. There is a potential to supply 10% of Europe's electricity by 2050 with an installed capacity of 100GW. The European *Strategic Energy Technology*

(SET) Plan supports this energy supply potential for wave and tidal energy as well as the economic potential. DG MARE has also identified this potential in its Blue Growth Agenda for Europe and Ocean Energy (wave and tidal) is expected to feature in the EU's imminent *Green Deal* policy.

Third, there is scope for Ireland to create jobs and supply chain opportunities for Irish companies if it tackles offshore wind at scale and deepens its ambitions in developing new technologies to build on the success to date for e.g. of the MaREI programme and our leading edge R&D facilities at the LíR National Ocean Test Facility and the Beaufort complex in Ringaskiddy, Co Cork. Again, there would be a significant spin off in terms of jobs and income creation as well as greater public appreciation of the social benefits of developing offshore renewables. With support, the Irish supply chain can grow to serve areas beyond where Ireland is traditionally strong. Enterprise Ireland and IDA Ireland should be enabled to grow their efforts in developing offshore supply chain clusters companies located in Ireland.

Fourth, growing our ambitions in offshore wind and renewables generally will help change our current economic development model, with its huge dependence on Foreign Direct Investment from the US, towards a more balanced one with substantial job and income creation opportunities arising from both offshore renewable energy and its associated supply chain, as outlined above.

Finally, our drive to offshore wind and beyond will improve our energy security and strengthen our integration with the EU which in time could develop as a significant market for Irish offshore renewable energy and the allied supply chain.

The current approach, quite apart from the important but focused area of a grid development model, to develop an indigenous offshore renewables industry in Ireland is a broadly correct one. Priority is being given to a range of interlinked and demanding issues: consenting legislation; establishment of a RESS system; Relevant Projects; etc.

However, the forthcoming *Offshore Renewable Energy Development Plan Number 2* will be the opportunity to deal with other matters, notably support in terms of policies, facilities and special incentives for the emerging technologies e.g. wave and tidal; establishing criteria to select offshore renewable energy Strategic Marine Activity Zones -SMAZs - arising from the Marine Planning and Development Management Bill; refreshing and resourcing the Sustainable Energy Authority of Ireland's mandate in support of the emerging technologies; and plans for the development of a substantial Irish supply chain for offshore renewables which will require the State's able development agencies - Enterprise Ireland and IDA Ireland - to give priority to the area

10. How should onshore and offshore grid connections be optimised? For example, should consideration be given to common hubs for adjacent projects

Ireland has a population of just under 5 million people with a further 1.8 million in Northern Ireland. Consequently, Ireland has a small electricity system and there is a background danger from the perspective of security (e.g. danger of a natural disaster such as a major storm) in concentrating the electricity infrastructure. However, the indications are that

offshore wind and other renewable developments will be located in areas around the coast over time and that should certainly be an outcome of the proposed SMAZs policy.

There is, of course, merit in common hubs for adjacent projects while the new offshore tapestry - notably the National Marine Planning Framework, the new consenting legislation and OREDP 2 - may contribute to securing a cost-effective hub-approach. Whilst recognising the potential savings opportunity with such hubs, shared infrastructure is likely to require longer offshore transmission networks, putting upwards pressure on project costs. Importantly, large single in-feeds could represent a significant challenge to the TSO and may result in significant ongoing cost to the consumer.

As the Navigant report highlights, the pipeline of projects on the East Coast are relatively close to each other and close to the shore. Therefore, the opportunities to leverage the advantages of combining projects on a single hub are likely limited. Onshore landing points can be managed with a proactive approach from the TSO. The TSO should work with developers to find synergies between projects when it comes to grid connection. A coordinated, hub-based approach should be explored for projects coming onstream post 2030 along the west coast where conditions may require greater state involvement.

11 ARE THERE ANY FURTHER CONSIDERATIONS WHICH MIGHT REDUCE THE COST TO THE CONSUMER?

The points made at 10. above apply here.

12. CURRENTLY, DEVELOPER COMPENSATION IS NOT PROVIDED FOR DELAYED DELIVERY OF GRID CONNECTIONS TO RENEWABLE GENERATORS CONNECTING TO THE NETWORK. SHOULD DEVELOPER COMPENSATION ARRANGEMENTS BE PROVIDED FOR DELIVERY OF OFFSHORE GRID CONNECTIONS TO RENEWABLE PROJECTS? SIMILARLY, WHO IS BEST PLACED TO BEAR THE OUTAGE RISKS UNDER THE VARIOUS OPTIONS?

The sea is a fearsome and unforgiving work place. Offshore renewables projects - whether involving bottom fixed and floating wind turbines or emerging technologies such as wave - are complex, time consuming, hugely expensive and always, given the role of Nature in their success and indeed survival, high risk.

Therefore, a failure to provide guarantees in regard to grid delivery, backed up by compensation, will add immeasurably to the risk level of offshore renewables and could stop planned investment, perhaps beyond the Relevant Projects where a proportion of the grid required is already available, in its tracks.

Under Options 1, 2 and 3, the offshore transmission assets are owned and operated by the developer who manages and bears the risk of delays and outages. Developers, therefore, have control over the build of these assets and are incentivised to maximise availability but do not receive any compensation. If a system operator's outage liabilities and penalties are capped (as is currently the case in the UK), it limits the incentive for them to minimise the outage period. Accordingly, MRIA believes that there should be a compensation scheme for outages but this should ideally be arrived at following consultation and, ideally consensus,

between the TSO providers, the offshore renewables industry and the regulators. This complex, strategic and high-risk new industry has worked so far in a spirit of cooperation between the key stakeholders and it is important that this continues.

13. ARE THERE ANY FURTHER DRIVERS 1. WHICH SHOULD BE CONSIDERED WHEN ASSESSING A GRID DELIVERY MODEL SUITABLE FOR OFFSHORE WIND DEVELOPMENT IN IRELAND?

The grid development model must keep the door open to change based on experience and, also, the move from one form of technology to another. For example, one model might work for close to shore, fairly proximate to one another, bottom fixed offshore wind farms in the Irish Sea with some variations required for spaced out, deep offshore floating arrays in the Celtic Sea or wave farms off the West coast. A national model must be identified but scope must always be there to take account of changing circumstances and lessons from experience with early projects

14. OVERALL, WHICH MODEL, OR MODEL VARIANT, IS MOST APPROPRIATE AS AN ENDURING GRID DELIVERY MODEL FOR OFFSHORE WIND IN THE IRISH CONTEXT?

MRIA endorses Option 2 with amendments as the model most likely to deliver offshore wind and other forms of renewables and to enable the 2030 targets. No effort should be made to 'shoehorn' the Relevant Projects into a 'pure' Option 2. They lie largely in Option 1.

15. IT IS ACCEPTED THAT A TRANSITION TOWARDS THE CHOSEN ENDURING GRID DELIVERY MODEL WILL BE REQUIRED TO LEVERAGE THE DEVELOPMENT OF THE RELEVANT PROJECTS IN THE SHORT TERM. TAKING INTO ACCOUNT THE HIGH-LEVEL ROADMAPS SET OUT AT FIGURES 5 AND 6 ABOVE, WHAT SHOULD THIS TRANSITION LOOK LIKE?

The overarching need is to get the Relevant Projects up and running via the special transition arrangement and with support from the new consenting legislation and the RESS system. Quite apart from their planned contribution to the RES-E 2030 target, they are critical to mobilising the supply chain, building capacity and expertise, experience in the broad Irish energy 'system' of offshore renewables and enabling the emergence of new technologies, notably wave and 'hybrids'.

APPENDIX: 50m contour line (lightly shaded and close to shore)