



DigsFish Services Pty Ltd  
32 Bowsprit Cres, Banksia Beach  
Bribie Island, QLD 4507,  
AUSTRALIA

Ph/fax +61 7 3408 8443  
mob [REDACTED]  
[REDACTED]  
www.digsfish.com

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9 September 2021

Re: Senate Environment and Communications Legislation Committee Inquiry into *Offshore Electricity Infrastructure (Regulatory Levies) Bill 2021* and *Offshore Electricity Infrastructure Bill 2021*

To whom it may concern,

Please find following my submission to the Senate Environment and Communications Legislation Committee Inquiry into the *Offshore Electricity Infrastructure (Regulatory Levies) Bill 2021* and *Offshore Electricity Infrastructure Bill 2021*.

More information on this process can be found at:

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Environment\\_and\\_Communications/OffshoreElectricity](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/OffshoreElectricity)

Installation of large scale offshore renewable energy infrastructure for generation of electrical power harnessing wave and wind energy is likely to become an increasingly important component of Australia's energy mix in the future as we transition towards a renewable energy economy. It is obvious, and indeed desirable, that renewable energy will become an increasing part of the future energy mix in Australia, as by definition, non-renewable forms of energy are not sustainable and will eventually run out. Furthermore, threats posed by burning of fossil fuels include pollution of aquatic food chains (e.g. methylmercury from coal burning), CO<sub>2</sub> induced warming as well as ocean acidification, all of which can inflict significant, but as yet not fully understood, damage to ocean ecosystems. Renewable energy projects clearly offer the opportunity to reduce these impacts on the aquatic environment, which is why I fully support the concepts behind the introduction of the *Offshore Electricity Infrastructure Bill 2021*.

What may not be widely recognised, however, is that offshore renewable energy projects not only have great promise for reducing the various problems listed above, they also have massive potential to provide sites for offshore aquaculture as well as large scale artificial reef or Fish Attraction Device (FAD)-like habitat. They could, therefore, contribute significantly to aquaculture, commercial fisheries production and recreational fishing opportunities and provide substantial "bonus" economic and food production benefits to Australia both during and after development and operation of offshore renewable energy infrastructure projects.

However, on the downside, the *Declared Areas*, *Safety Zones* and *Protection Zones* set aside for installation of offshore infrastructure represent a significant threat to fisheries access and production, especially if fishers are excluded from large areas of ocean that are set aside for offshore renewable energy infrastructure. Furthermore, the proposed removal of these structures at the end of their working lives is also not desirable in most cases, as this would kill enormous numbers of marine animals and destroy their ecological function as artificial reefs. Removing reefs to other locations may also be contraindicated by the fact that offshore energy projects are recognized as potential biosecurity threats as they allow opportunities for "stepping stone colonisation" of new regions by marine pests (Adams et al. 2014), and potentially, also disease agents (Diggles 2017).

This submission has been provided to highlight several issues that are presented in the initial draft of this Bill which would have severe detrimental impacts on offshore fisheries access, and which would largely eliminate the potential to derive “win -win” fisheries and aquaculture benefits from offshore renewable energy infrastructure. These issues will need to be addressed in future drafts of the *Offshore Electricity Infrastructure Bill 2021*, in order to realise the potential “win win” to enhance and maximise fisheries and aquaculture benefits during design and implementation of offshore energy infrastructure projects in Australia, which can certainly be done whilst minimizing the inherent biosecurity and public safety risks.

**1. The need for requirements to consider designs which maximise fisheries benefits within Licensing conditions, and/or under General Provisions about licences.**

While offshore renewable energy projects have great promise for broadening our low CO2 energy mix, they also have the potential to provide sites for offshore aquaculture (Abhinav et al. 2020) as well as large scale artificial reef/FAD-like habitat which could contribute significantly to commercial fisheries production and recreational fishing opportunities. However, their value as reef habitat will vary enormously depending on the designs used for the relevant infrastructure. Some wind farm designs may have minimal underwater surface area and include no horizontal structure (Figure 1). These designs are likely to have a relatively low fisheries production value. On the other hand, alternative designs which incorporate multiple pylons, horizontal bracing and large internal void areas (Figure 2) will have significantly higher habitat value for fisheries production, because all of these features (particularly internal void area and horizontal cover) are characteristics of effective purpose-built artificial reefs (Florisson et al. 2018).

In order to realise and maximise the potential to derive “win -win” fisheries and aquaculture benefits from offshore renewable energy infrastructure, I propose that the Bill and subsequent legislation should include Licensing conditions or General Provisions within licences that require (or at the least encourage) proponents of offshore electricity infrastructure projects to include fisheries production considerations within their design processes. The Federal Government approval process for offshore energy infrastructure projects should also favour designs that are most likely to maximise fisheries production benefits. Similarly, the Bill should also specifically allow the inclusion of offshore aquaculture infrastructure as part of this approval process (Blue Economy CRC 2020).

**2. The need for requirements to maximise public access in order to realise potential fisheries benefits**

A clear downside of installation of offshore infrastructure is the significant threat of exclusion of fishers by the *Declared Areas*, *Safety Zones* and *Protection Zones*. These may see recreational and commercial fishers excluded from large areas of ocean that are set aside for offshore renewable energy projects. Indeed, based on community feedback for Australia’s first offshore wind project (‘Star of the South’) located off the south coast of Gippsland, 50% of respondents were recreational anglers, and their main concern was regarding exclusion zones (Star of the South 2020). The project proponents in that case believed that “many types of fishing, particularly recreational fishing, could continue within an operational wind farm. This already occurs in other countries like the UK, where offshore wind has been in use for over a decade” (Star of the South 2020). However, they also stated that “As the regulator of Commonwealth waters, the (Federal) Government will ultimately decide if the project can go ahead and what fishing activities could occur inside an offshore wind farm. We will abide by any government regulations and work closely with government, industry and individual fishers” (Star of the South 2020).



Figure 1. An example of a windfarm design (single poles) which provides minimal value for enhancing fisheries production, due to reduced surface area and lack of horizontal cover.



Figure 2. An example of a desirable windfarm design (multiple pole platforms) which would have a much greater fisheries enhancement effect compared to Figure 1, due to greatly increased internal void area and abundant horizontal cover. These installations are effectively true artificial reefs.

Now we have had a chance to view the first draft of this Bill, it is clear that the fears of those recreational fishers in Gippsland have been realised. The relevant sections outlining the proposed public access restrictions were found in Part 3, Division 3 of the bill under the heading “Safety Zones”, and Part 3, Division 4 (under the heading “Protection Zones”), as follows:

*Part 3, Division 1. Introduction*

*A safety zone is an area around the infrastructure that must not be entered by vessels, or by particular kinds of vessel. Under Division 4, the Regulator may determine protection zones in the Commonwealth offshore area. Certain activities posing a risk to safety or a risk of damage to infrastructure may be restricted or prohibited in a protection zone*

and

*Part 3, Division 3 Safety Zones, Subdivision A – Safety Zones, Determination (5) A safety zone specified in a determination under subsection (2): (a) may, subject to paragraph (b) of this subsection, extend to a distance of 500 metres around the eligible safety zone infrastructure specified in the determination, where that distance is measured from each point of the outer edge of the infrastructure; and (b) must be entirely within the Commonwealth offshore area.*

So the draft Bill indicates that the proposed size of the safety zone around each individual piece of offshore infrastructure is 500 meters. Depending on the size and shape of each infrastructure array, this suggests that commercial and recreational fishers are likely to be completely “locked out” of large areas of ocean under these conditions. This will be unacceptable to local communities which rely on fishing tourism as it would be incompatible with generating “win win” economic opportunities to benefit from increased fisheries production around these artificial reef-like structures. Furthermore, without extensive use of large numbers of marker buoys it will be impossible for the average person to accurately determine what constitutes a 500 meter exclusion distance, which will greatly increase their risk of prosecution for inadvertently straying within the exclusion zone. Such a large exclusion zone is also inconsistent with the advice from proponents of the Star of the South project in Gippsland, who have stated that “many types of fishing, particularly recreational fishing, could continue within an operational wind farm” (Star of the South 2020).

On the other hand, all of these negative and community polarising outcomes could be completely avoided if a smaller safety zone exclusion distance (within the quantum of 50 to a maximum of 100 meters) was proposed. Exclusion distances under 100 meters (preferably 50-75 meters) would be much easier to judge and police, easier to enforce and allow physical marking on the water using marker buoys which would be able to be lined up visually by people in small boats. All of these would greatly increase community acceptance and compliance, whilst allowing fishers closer access to within “casting distance” of the fisheries resources which tend to reside directly under or within the immediate vicinity (20-30 meters) of these artificial reefs (Florisson et al. 2018).

**3. The need to recognise that compulsory removal of infrastructure is not desirable, as this kills large numbers of animals and decreases fisheries productivity**

My final observation regarding the draft Bill relates to provisions outlined in Chapter 4, Division 3—Operations: Maintenance and removal of property etc.

*Removal of property etc.*

*(2) A licence holder must remove from the licence area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the activities:*

*(a) in which the holder is or will be engaged; and*

*(b) that are authorised or required by or under this Act*

My understanding of this clause is that it requires the proponents to remove all infrastructure once it is no longer being used. However, given that these offshore renewable energy infrastructures will represent highly productive, large scale artificial reef or Fish Attraction Device (FAD)-like habitat, it makes no sense spending more money to remove them at the end of their working life. This is because their removal not only would kill large numbers of aquatic organisms (not only the invertebrates which colonise the structures, but also fishes which use the structures as habitat), the process of their removal actively reduces fisheries productivity, at a time when fisheries authorities and communities around Australia are working very hard and spending large amounts of money as they desperately try to increase fisheries productivity in various jurisdictions. Furthermore, the removal of these structures inshore or to other locations could have biosecurity implications by translocation of marine pests and/or diseases within the biofouling on the structures themselves (Adams et al. 2014, Diggles 2017).

I have had personal experience with various “rig to reef” programs in the USA and parts of Asia where disused oil rigs are repurposed to provide artificial reef habitat (IMSA Amsterdam 2013). They indeed provide massive boosts to fish populations and recreational fishing and diving opportunities when done right. The rig structures generate an entire food chain by the way they are designed due to the large internal void area surrounded by significant horizontal structure, so these rigs do not just attract fish, they produce them just like purpose built artificial reefs. Thus, when you pull them out of the water after many years of operation you kill off large numbers of animals and destroy fisheries productivity. Like oil rigs, it will almost always be better to leave the offshore renewable energy infrastructure in the water in place and use them as artificial reefs, as they will boost fisheries productivity for many decades. The fishing industries throughout Australia find it hard to raise the many 100s of millions of dollars that are needed to develop offshore artificial reef structures of sufficient size and complexity to work as proper fish production areas. However, the oil and gas industry regularly spend that money, while offshore renewable energy proponents will also have access to pools of money that Australia’s fisheries industries could only dream of.

So in short, it makes no sense to make it compulsory to require every one of these offshore renewable energy structures to be taken out of the water at the end of their working lives, and the bill should be adjusted to recognise this fact. Finally, please note I would be happy to discuss maximising these potential “win win” benefits of offshore electricity infrastructure in more detail with the Senate and/or Federal Environment Minister at any time.

Sincerely

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Dr Ben Diggles , Director, DigsFish Services Pty Ltd

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