

## **SUPER DTP Call Year 1 - Aquatera areas of research suggestions**

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### **Title: Eco-enhancement of Offshore Renewable Energy Structures**

#### Aims/objectives

- Promote positive impacts associated with deployment of offshore renewable energy (ORE) devices
- Design and deploy optimal habitat for *in situ* seeding of hatchery-raised juvenile lobsters in ORE mooring systems
- Optimise monitoring systems used to determine efficacy of eco-enhancement strategies

Description: In areas under development for offshore renewable energy (ORE) extraction, deployment of marine infrastructure has the potential to positively impact benthic ecosystems. In addition to the 'reef' or 'reserve' effect, where structures may enhance fish stock, mooring systems used by the ORE sector may create enhanced habitats for commercially-valuable species, such as lobster and crab. This Studentship involves a partnership with expertise in engineering, fisheries, and ORE deployments to develop 'multi-use' moorings, which provide both functionality to the ORE sector and are eco-engineered to promote crustacean fisheries.

Potential Partners: AQT, HWU, EMEC, OSF

### **Title: Multi-use of the marine space: Improving understanding of artificial reef structures to allow Marine Renewable Energy developments to best act as de-facto Marine Protected Areas**

#### Aims / Objectives:

- Promote the adoption of a multi-use framework for marine developments
- Improve understanding of artificial reef effects and how to adapt structures to ensure that ecosystem services and benefits are maximised
- Optimise monitoring and modelling of ecosystem services within these areas to ensure that impacts of climate change are understood to allow for effective mitigation
- Optimise monitoring and modelling of ecosystem services within these areas to ensure that blue carbon resources are best managed
- Develop a holistic management framework for marine space

Description: Marine infrastructure of Marine Renewable Energy (MRE) developments creates opportunities for artificial reef effects to improve local biodiversity and ecosystem function. If marine space is taken up by MRE developments, improving understanding of these effects and using these areas as de-facto Marine Protected Areas (MPAs), with offshoot benefits to local fisheries, is essential to ensure that limited resources are best used. Understanding the variables that affect the biodiversity of artificial reefs and their impacts on ecosystem services allows a better informed management of these areas with benefits which may include, but are not limited to, fishery enhancement, climate change mitigation, blue carbon growth and tourism to promote 'win-win'

ecology. This Studentship involves a partnership with expertise in engineering, fisheries, climate change, blue carbon and MRE development to promote the multi-use of marine space for local, regional and national requirements.

Potential partners: AQT, HWU, ICIT, EMEC, OSF