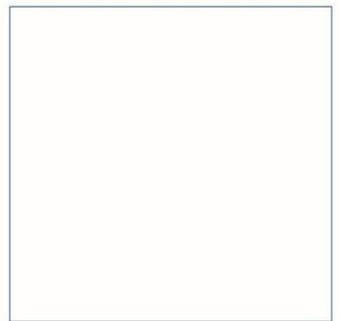
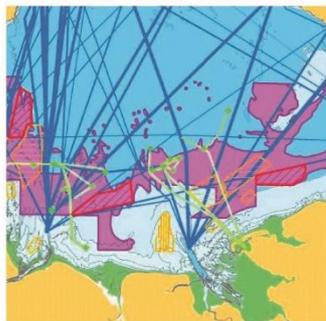
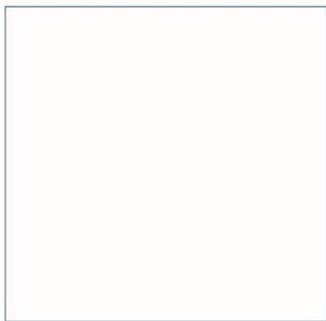
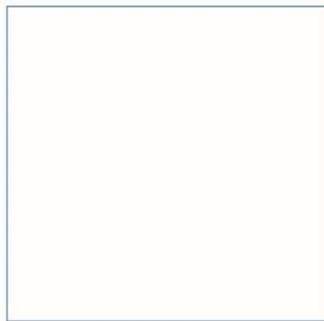


# Welsh Government

## Sustainable Management of Marine Natural Resources – Mapping Natural Resources

Overview

October 2020



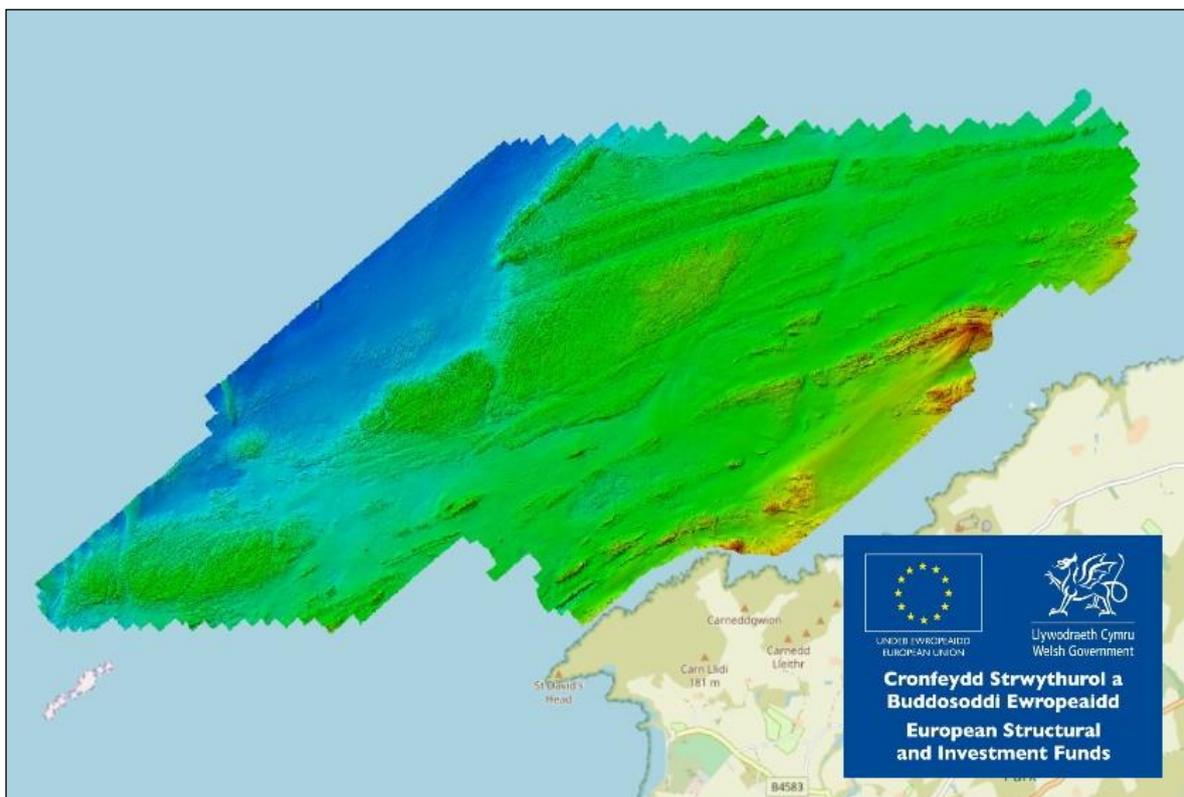
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# Sustainable Management of Marine Natural Resources – Mapping Natural Resources

Overview

October 2020



# Document Information

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## ABPmer

Quayside Suite, Medina Chambers, Town Quay, Southampton, Hampshire SO14 2AQ  
T: +44 (0) 2380 711844 W: <http://www.abpmer.co.uk/>

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# 1 Introduction

The **Sustainable Management of Marine Natural Resources (SMMNR)** project has received funding through the European Maritime and Fisheries Fund (EMFF), which is funded by the European Union and the Welsh Government. The project is part of a broader suite of spatial work to support the implementation of the **Welsh National Marine Plan (WNMP)**.

Through the **WNMP** Wales has, for the first time, a statutory strategic policy framework to support the sustainable development of our seas, supporting those who wish to use the marine environment while ensuring the resilience of our marine ecosystems and protecting our rich and varied maritime heritage.

The WNMP is our first marine plan and our understanding of the spatial distribution of marine natural resources and the associated opportunities and constraints, in relation to their sustainable use, continues to evolve. The aim of the SMMNR project is to contribute towards the marine planning related evidence base in line with the WNMP which states:

*'Opportunities should be taken to identify and address strategic evidence needs in line with the Plan's priorities to help de-risk future investment and consenting decisions. Reasonable steps should be taken to fill strategic evidence gaps to underpin decision making by planning authorities, regulators and sea users'.*

This project constitutes part of the wider work on developing the **spatial approach** to marine planning and concentrates on exploring and developing the ecological evidence base in relation to three focus sectors; **tidal stream energy, wave energy** and **aquaculture** in the Welsh marine area. Through this developing evidence base it will help support the sustainable development of these sectors.

As set out in the WNMP, Welsh Government policy is to support the sustainable growth of emerging marine sectors such as these whilst ensuring marine ecosystems are protected and enhanced to provide for their resilience and provision of benefits for future generations. In particular, the project is examining how the distribution and potential use of these resources may relate to Marine Protected Areas (MPAs), and other sensitive habitats and species, while identifying opportunities for sustainable development.

Within the SMMNR project, the **'focus sectors'** are recognised as having significant potential to contribute towards to the continued sustainable growth of Welsh marine industry but lacking an existing and/or easily accessible evidence base.

The SMMNR project was split into two distinct parts by Welsh Government (Part 1 and Part 2). Part 1 was completed in early 2019 and encompassed the sourcing, consolidation and standardisation of the existing environmental evidence for the focus sectors while also identifying knowledge gaps (ABPmer, 2019a)<sup>1</sup>.

Part 2 of the SMMNR project builds upon the outputs from Part 1, with the core activities driven by the recommendations and conclusions from the initial phase of work, which included:

- The collection of ecological data that would inform the knowledge and evidence base and thus aid site selection and baseline characterisation; and

<sup>1</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

- Take steps to encourage and facilitate the provision of publicly available evidence and data relevant to the development of the focus sectors.

Hence, the over-arching aim of Part 2 of this project was to **enhance** and **apply** the marine evidence to support the sustainable development of the focus sectors. This being achieved through the mapping of natural resources and ecological constraints relevant to these sectors. The benefits of which are clear at the planning level, however, through the supplementation of relevant evidence and information, will also be realised at the project level.

To address the recommendations from **Part 1** the following tasks were carried out:

- **Data Collection** - collection of focussed ecological data to inform identified evidence gaps;
- **Ecological Opportunities and Constraints** - development of an approach to understand the ecological opportunities and constraints specific to the development of each of the focus sectors; and
- **Evidence Packages** - production of evidence packages as an online tool providing developers, regulators and interested stakeholders with ecologically focussed information relevant to the sector and crucially to support high-level decision making and planning.

Stakeholder engagement underpinned delivery of these tasks and throughout the process interested stakeholders have been informed on the work, updated on progress and presented with example of the evidence packages to elicit feedback.

This document provides an overview of the project, an outline of each of the core tasks and the deliverables which they encompass. The deliverables include multibeam data, drop-down video footage, selected datasets, ecological constraint mapping outputs, evidence packages and discrete reports (e.g. survey report). Each section of this document covers a different task, providing a description of the aim, a summary of the outputs and signposting to the detailed deliverable.

## 2 Data Collection



Figure 1. Drop down video camera (left image) and camera cage (right image) being deployed at Pembrokeshire (August 2019)

Recommendations from Part 1 indicated the need for ecological surveys and studies which were key to increasing the evidence base in Welsh waters (**ABPmer, 2019a**<sup>2</sup>). Among the ecological work highlighted was the specific requirement for directed benthic surveys. This element of the project contributes towards our understanding of the marine environment with the gathering of new data relevant to the focus activities and areas of identified suitable resource.

In 2019, an options appraisal identified where data collection should be prioritised in Welsh waters along with consideration of the most appropriate survey methodology to carry out this task. A fully detailed description of the appraisal process is provided in the **Detailed Work Plan (ABPmer, 2019b)** available on the Welsh Government website<sup>3</sup>.

Informed by the conclusions of the options appraisal, ABPmer carried out a benthic survey programme off the coast of West Anglesey and to the north west of Pembrokeshire, during the summer months of 2019 (Figure 2).

The work focussed on determining the presence and extent of Article 17<sup>4</sup> and Section 7<sup>5</sup> habitat features in these locations. In Welsh waters, marine habitat features under Article 17 are habitats (or sub-habitats) which are listed under Annex I of the Habitats Directive and can be found in Wales, while the presence of such features has the potential to significantly increase the consenting complexity for marine developments.

<sup>2</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

<sup>3</sup> <https://gov.wales/sites/default/files/publications/2019-11/sustainable-management-of-marine-natural-resources-part-2.pdf>

<sup>4</sup> <https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019/>

<sup>5</sup> <https://www.biodiversitywales.org.uk/Environment-Wales-Act>

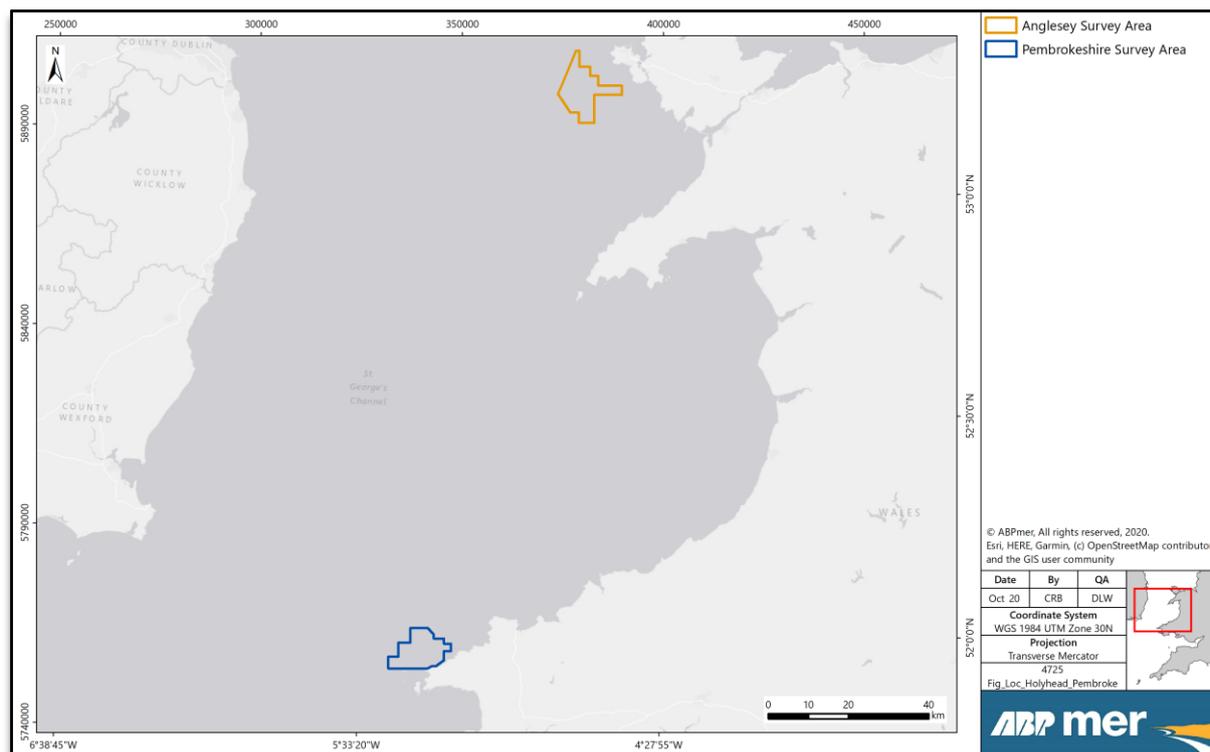
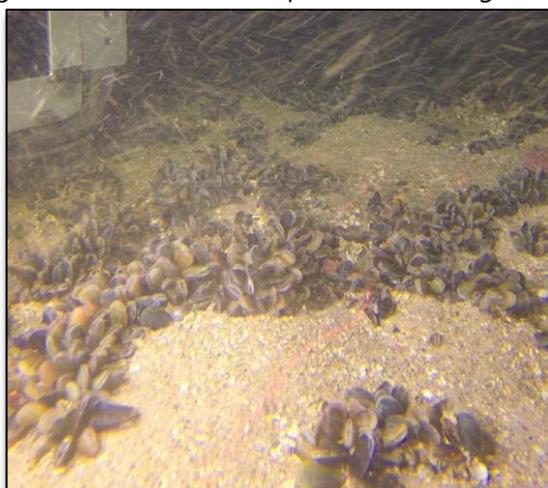


Figure 2. SMMNR benthic survey areas off the coast of Pembrokeshire and Anglesey

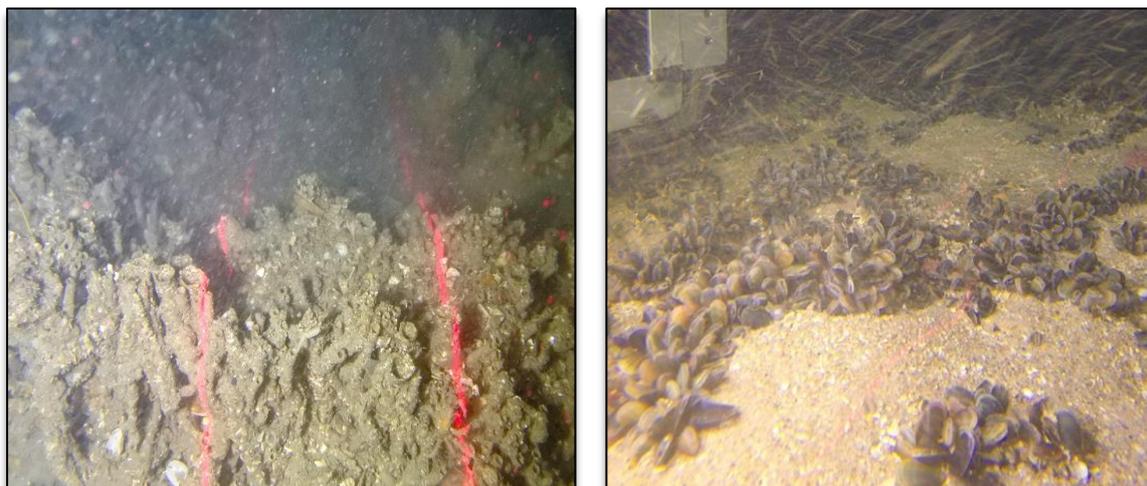
Preliminary results from the drop-down video surveys are available on the Welsh Government website<sup>6</sup>. Following analysis and interpretation of collected data, spatial mapping outputs were generated that identified a range of habitats and biotopes, such as biogenic *Sabellaria* reef and blue



mussel (*Mytilus edulis*) beds (Figure 3). The survey outputs encompassed an area of ~30 km<sup>2</sup> off the west coast of Anglesey and ~35 km<sup>2</sup> off the north west coast of Pembrokeshire (ABPmer, 2020a<sup>7</sup>).

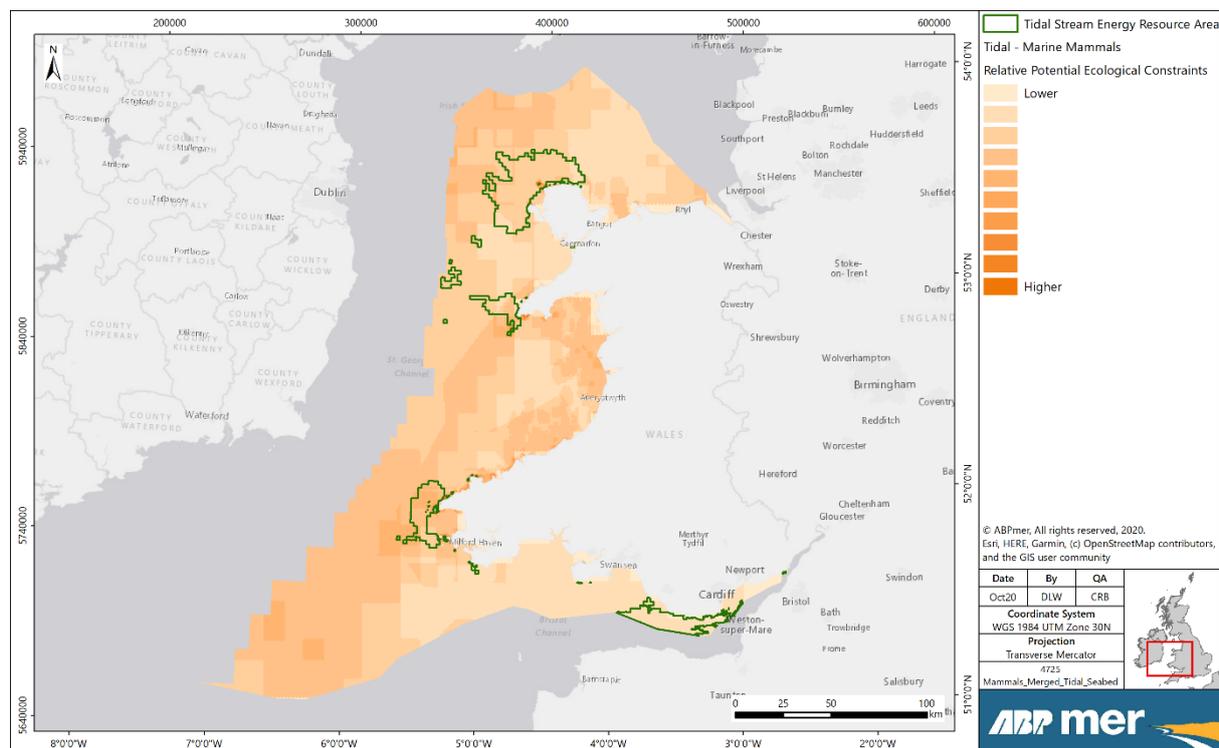
<sup>6</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

<sup>7</sup> <https://gov.wales/sustainable-management-marine-natural-resources>



**Figure 3. *Sabellaria* sp. reef (left image) and blue mussel beds (right image) identified from benthic surveys off the Pembrokeshire coast (August 2019) and Anglesey coast (September 2019)**

The survey data has been quality assessed by Natural Resources Wales (NRW) and will be amalgamated with existing benthic datasets. It will be used to inform future iterations of the ecological opportunities and constraints analysis as well as contributing towards the broader marine planning related evidence base and more generally, increase understanding of the Welsh marine environment.



**Figure 4. Seabed sediments identified at Pembrokeshire following geophysical data interpretation**

The **SMMNR Survey report (ABPmer, 2020a)** is available on the Welsh Government website<sup>8</sup>.

<sup>8</sup> <https://gov.wales/sustainable-management-marine-natural-resources>



### 3 Ecological Opportunities and Constraints

A key aspect of this project involves taking a 'spatial approach' to understanding potential opportunities for future sustainable resource use in Welsh waters. Understanding the spatial ecological opportunities and constraints will inform decision-making on practical, sustainable development and future planning in relation to the focus sectors in Welsh waters.

Relative to development of each focus sector, a plan level methodology indicating the potential 'high level ecological constraints' in Welsh waters was developed by ABPmer with technical input from NRW and Welsh Government. For the purpose of the study, the 'ecological constraints' were defined as those features that are directly associated with the natural environment and have the potential to add to the complexity of marine licence determination for certain types of developments. Recognising that additional complexity can lead to an increased risk in the consenting process.



Figure 5. Puffins at Skomer Island

Ecological features were divided into four broad categories:

- Marine habitats and their associated communities;
- Seabirds;
- Marine and migratory fish; and
- Marine mammals

These being referred to as **habitats, birds, fish and marine mammals**.

The outputs of the analysis provide a visual representation of the relative ecological constraint for each of the focus sectors or sector technology/activity (see Figure 6 and Figure 7). Overlapping the outputs with areas of suitable resource for a given sector (pre-defined as 'Resource Areas' (RAs) in the WNMP<sup>9</sup>) provided a broad indication of where suitable resource intersects with areas of relatively lower ecological constraint, in relation to a sector.

<sup>9</sup> <https://gov.wales/welsh-national-marine-plan-document>

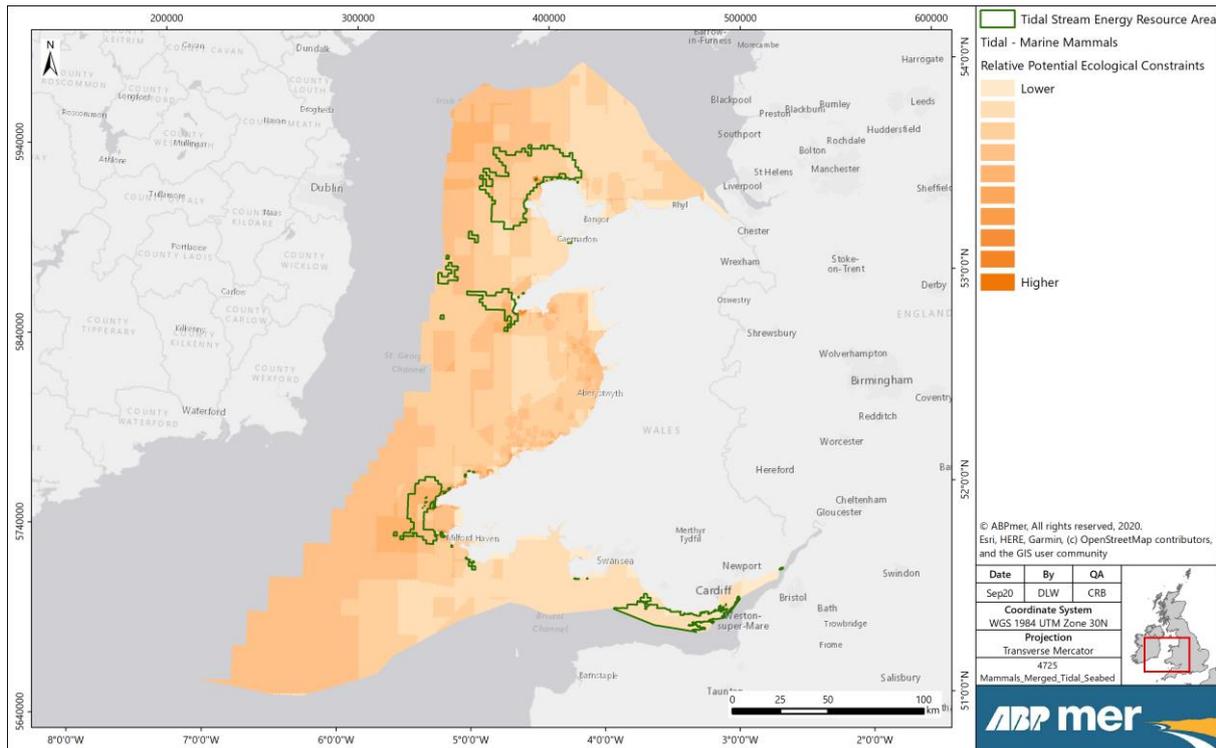


Figure 6. Relative potential ecological constraints for tidal stream energy in relation to marine mammal features

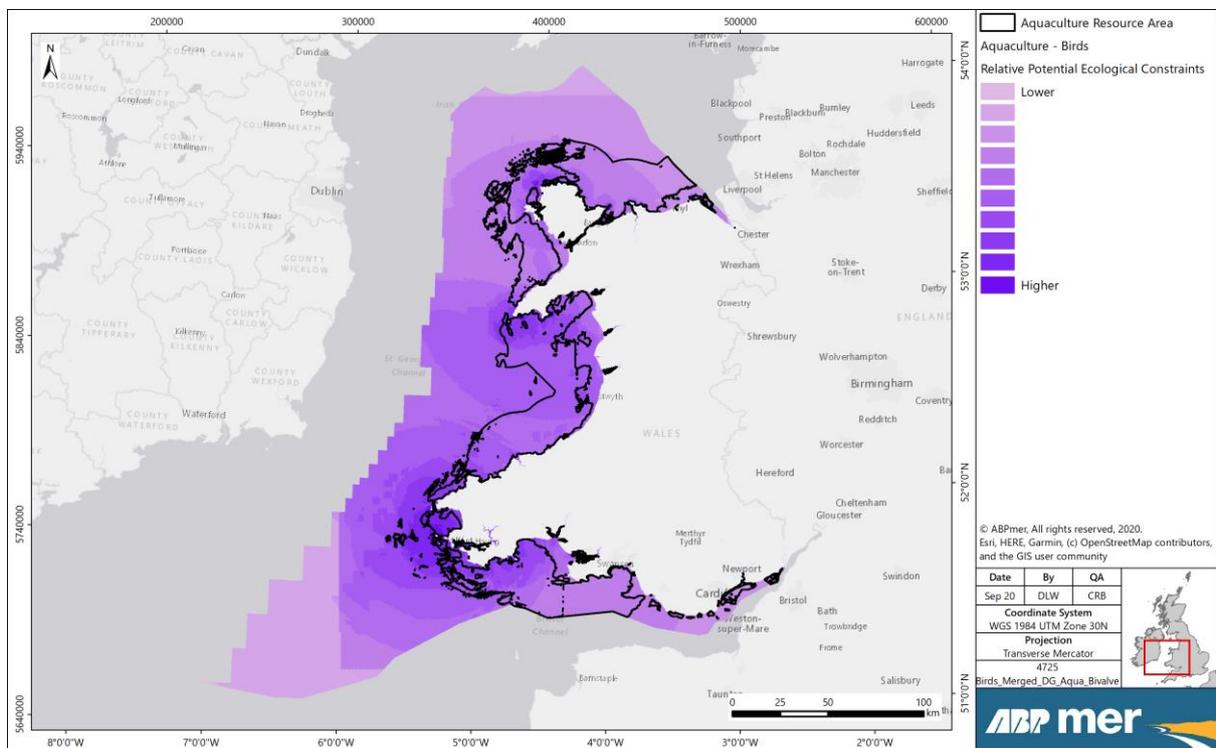
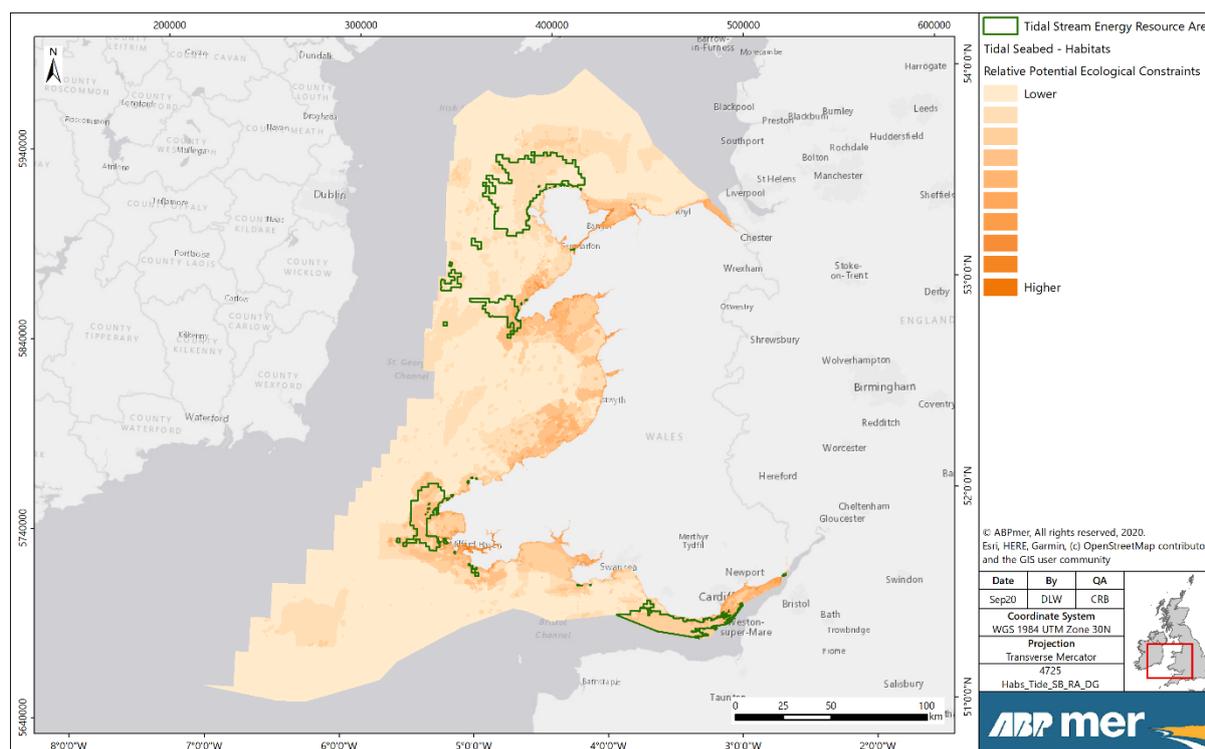


Figure 7. Relative potential ecological constraints for aquaculture in relation to bird features

The outputs were derived through consideration of the best available and most suitable data following agreement with specialists from Welsh Government and NRW. Where data gaps existed for a given dataset then these were clearly identified.

As highlighted above, the focus sectors for this project were tidal stream energy, wave energy and aquaculture. However, it was necessary in some instances to further categorise these sectors down into technology types or, in the case of aquaculture, activity types for the purposes of this analysis. This was done to capture the clear differences in the responses of certain species and habitat features to the various sector technologies/activities and the potential variability to consenting complexity (see Figure 8).



**Figure 8. Relative potential ecological constraints for tidal stream (seabed technology) in relation to habitat features**

Aquaculture was divided into bivalve aquaculture and seaweed aquaculture. These aquaculture types have been identified within the WNMP as having potential for commercial development in Welsh waters. Tidal stream was divided into three major types (surface, mid-water and seabed mounted), as these have the potential for quite different levels of exposure to ecological features. Similarly, wave energy technology was subdivided into surface and seabed technologies.

Acknowledging the variability in scale between potential developments, this plan level work required the scope of the methodology to assume that the development of the sectors would be at a commercial scale. Hence, the constraints mapping outputs represent highly conservative (albeit relevant) analyses when considered in relation to demonstration level proposals.

The outputs are primarily a tool to support high level decision making and sector planning initiatives, in order to facilitate sustainable development of the focus sectors. They may also be used to inform the development of sector locational guidance which may be produced by Welsh Government (which would incorporate ecological evidence alongside relevant socio-economic evidence) or the

identification of Strategic Resource Areas to safeguard areas of resource, as set out in the WNMP, where appropriate.

Additional work, beyond the scope of this project will consider potential social and economic opportunities and constraints as they relate to these sectors.

In 2019 Welsh Government established Expert Panels comprising stakeholders with an interest in the focus sectors to input to marine planning spatial work. To elicit feedback from stakeholders, example mapping outputs were presented at Expert Panel meetings and an interactive PDF (Portable Document Format) sent out to stakeholders. Feedback from stakeholders on the mapping outputs were then discussed with Welsh Government in August 2020 and acknowledged accordingly.

The mapped outputs, along with the details of the approach and methodology used for the ecological opportunities and constraints analysis is provided within a discrete report (ABPmer, 2020b) available on the Welsh Government website<sup>10</sup>. However, to fully realise the benefits of this work the mapping outputs are available online as a component of the evidence packages (see below). Within the evidence packages, it is possible to understand the derivation of the level of constraint, the source of the data and limitations to the dataset(s) applied. Thus, they provide an interactive tool for interested stakeholders to interrogate the outputs and datasets.

Aspects of the mapping outputs are also made available through the Welsh Marine Planning Portal<sup>11</sup>; however, additional functionality is available within the mapping outputs embedded within the evidence packages. Importantly, as an online dynamic tool, the evidence packages allow the outputs to be updated in line with changes to the knowledge/evidence base and as new and relevant data becomes available. There is also the potential for the work to encompass additional sectors in future iterations.

The **SMMNR Ecological Constraints and Opportunities report (ABPmer, 2020a)** is available on the Welsh Government website<sup>12</sup>.

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<sup>10</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

<sup>11</sup> <http://lle.gov.wales/apps/marineportal/#lat=52.5145&lon=-3.9111&z=8>

<sup>12</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

## 4 Evidence Packages

The main outputs from the SMMNR project are the evidence packages specific to each focus sector. The packages represent the culmination of Part 1 (data collation and evidence review) and Part 2 (enhance and apply evidence), taking the core outputs and placing them within an easily accessible online tool.

The packages provide ecological evidence related to the focus sectors, allowing regulators, developers and other interested parties access to sources of information relevant to the sector, to support high-level decision making and planning.

As previously discussed, the constraints mapping outputs are provided within an interactive online platform in order to facilitate access and interaction with the material presented and the information that supports the outputs.



This means the evidence packages can be updated by the custodian to incorporate changes and updates to information and supporting evidence, as required. Considering the evolving nature of the focus sectors, particularly the emerging wet renewable sectors, it is important that the packages can evolve as necessary. As future focus may encompass other sectors, the development of tailored evidence packs will be best achieved through an online resource and easily placed to sit alongside other packages.

Similarly, providing a readily accessible source for information relevant to the sector, such as links to related websites, dataset sources and studies, means an online platform is the most appropriate mechanism for the packages,

An early concept of the evidence packages was introduced within the **Detailed Work Plan** (ABPmer, 2019a). Since this time, the format and content of the packages has been discussed with Welsh Government and NRW. The evolution of the packages has aligned with the work, in particular, the requirements for the constraints mapping outputs which necessitates an interactive dynamic platform.

To elicit feedback from stakeholders, an example of the evidence package was presented at several Expert Panel meetings, as well as a Consenting Strategy Action Group (CSAG) meeting, in 2020. Their feedback was discussed with Welsh Government and considered within the final design of the evidence packages.

To sufficiently cover the variety of information and resources required for the evidence packages as a one-stop shop, the final iteration resulted in packages discrete to a sector and supported as a collection of ArcGIS Storymaps. These Storymaps encompass a combination of embedded web maps, apps and text (Figure 10).



Figure 10. Indicative representation of tidal stream evidence package with information tabs

In addition to adding value at plan level, benefits can also be realised from this work at the project level stage. The outputs will complement baseline characterisation, highlighting gaps and/or deficiencies with existing ecological data, while indicating areas of opportunity at a regional level. As an iterative process, future reviews of the outputs can be updated in line with changes to the evidence base. Understanding the evidence available and the level of confidence in the data may minimise the requirements for specific baseline surveys and allow more meaningful focussed work to be carried out to support developments. Thus, although the outputs from this work do not substitute the requirement for project level assessment, they will provide supplementary and relevant information to support regulators and developers during this process.

A link to the **SMMNR evidence packages** is available on the Welsh Government website<sup>13</sup>

<sup>13</sup> <https://gov.wales/sustainable-management-marine-natural-resources>

## 5 References and Websites

ABPmer (2019a) Sustainable Management of Marine Natural Resources, Work Package 1, ABPmer Report No. R.3065. A report produced by ABPmer for Welsh Government, February 2019.

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<http://lle.gov.wales/apps/marineportal/#lat=52.5145&lon=-3.9111&z=8>

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<https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019/>

<https://www.biodiversitywales.org.uk/Environment-Wales-Act>

## Contact Us

ABPmer

Quayside Suite,  
Medina Chambers  
Town Quay, Southampton  
SO14 2AQ

T +44 (0) 23 8071 1840

F +44 (0) 23 8071 1841

E [enquiries@abpmer.co.uk](mailto:enquiries@abpmer.co.uk)

[www.abpmer.co.uk](http://www.abpmer.co.uk)

