

Natural heritage evidence to support planning for marine renewable energy in Wales

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Marine Evidence & Advice Section



The Countryside Council for Wales

The Countryside Council for Wales is the Government's statutory advisor on sustaining natural beauty, wildlife and the opportunity for outdoor enjoyment in Wales and its inshore waters

- Biodiversity & Nature Conservation
- Landscape & Cultural Heritage
- Recreation & Access



CCW and marine renewables

Strategic & project level advice on potential impacts:

- Marine ecology (birds, mammals, benthos, fish, coastal processes, etc)
- Landscape (visual, cultural, historic) & recreation
- Protected sites (biodiversity, geological, landscape)
- Protected species

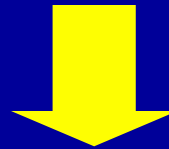


A strategic approach

Step 1

**Identify key
information
requirements**

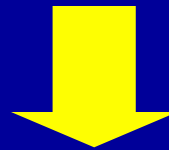
*Based on a review of
current understanding*



Step 2

**Produce key
evidence**

*In a format compatible
with strategic planning
processes*



Step 3

**Provide robust
advice**

*Based on a sound
evidence base*

Step 1: Identify key information requirements



**Protected sites
& landscapes**



**Sensitive
seabed habitats**



Diving seabirds



Marine mammals

**Key sensitive
receptors**

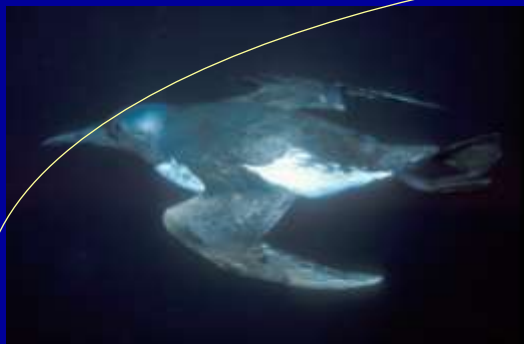
Step 2: Production of key evidence



**Protected sites
& landscapes**



Seabed habitats



Diving seabirds



Marine mammals

**Key sensitive
receptors**

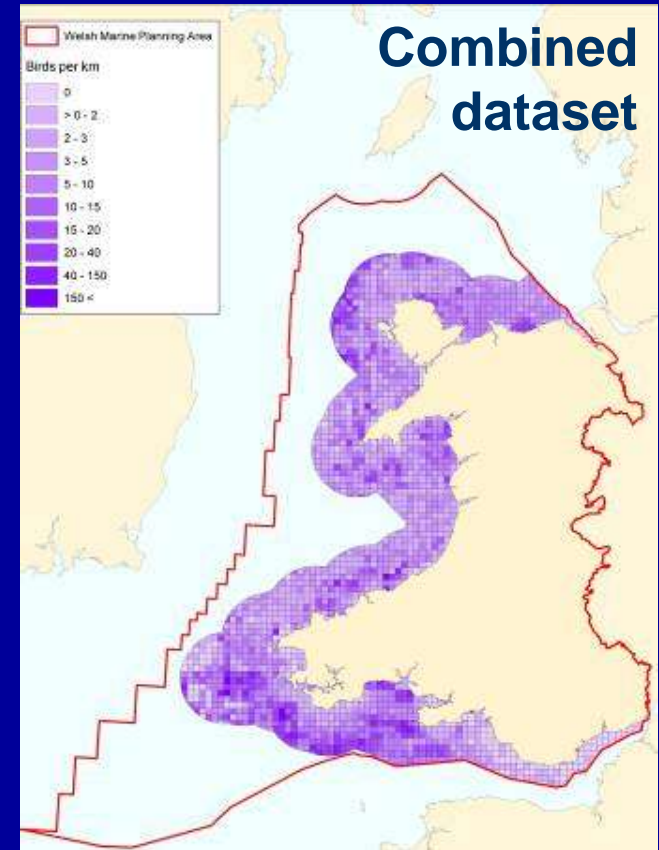
Diving seabirds

Existing data on distribution:

- JNCC European Seabirds at Sea (1979 to 1999)
- WWT aerial surveys (2001 to 2010)



Mapped at different resolutions
Not just diving seabirds



Data mapped at common scale (3km²)

Sensitive species only

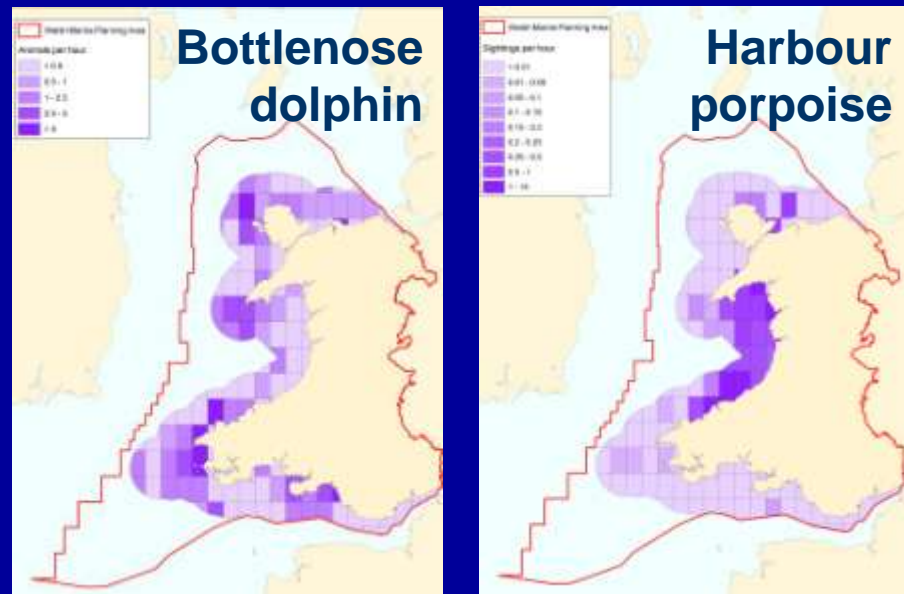
Marine mammals

Existing data on distribution:

- CCW Atlas of Marine Mammals of Wales
- Compiles 22,000 + sighting records collected 1990 to 2007



Combined datasets:



*Data mapped at common scale
(10' x 10')*

*Individual species & 'composite'
cetaceans*

Mobile species vulnerability

Considerations:

- How likely is an impact?
- What is the sensitivity of the species?
- What would be the significance of any impacts?

Factors affecting vulnerability:

- Distribution & abundance of species
- Ecology & life history traits of species
- Population status of species
- Conservation status of species



Seabird vulnerability to tidal stream devices

Factors affecting vulnerability:

- Distribution
- Foraging range from protected sites
- Diving depth
- Adult survival rate
- Habitat flexibility
- Biogeographical population size
- Population status (Welsh BOCC)
- Protected species status



Mammal vulnerability to tidal stream devices

Factors affecting vulnerability:

- Distribution (including juveniles and season)
- Length of breeding cycle
- Female age at sexual maturity
- Average longevity
- Biogeographical population size
- Proportional importance of Welsh population
- Protected species status



Mobile species vulnerability models

Quantifying factors:

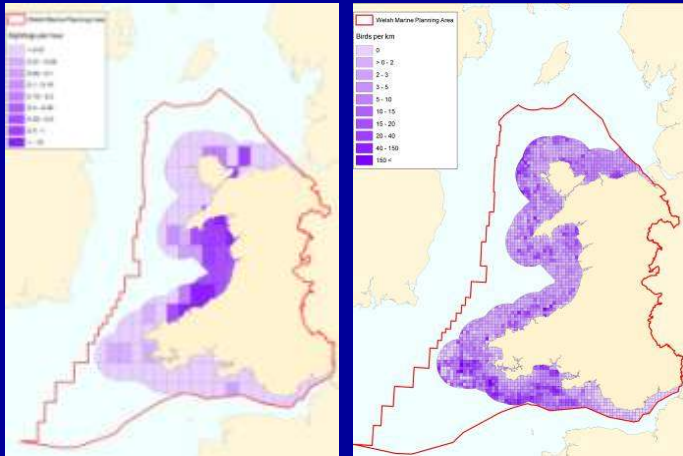
- Review available data
- Review literature
- Expert judgement
- Confidence in factors and associated data is important

Only factors for which there was a reasonable degree of certainty and confidence were included. For example: no behavioural factors incorporated.

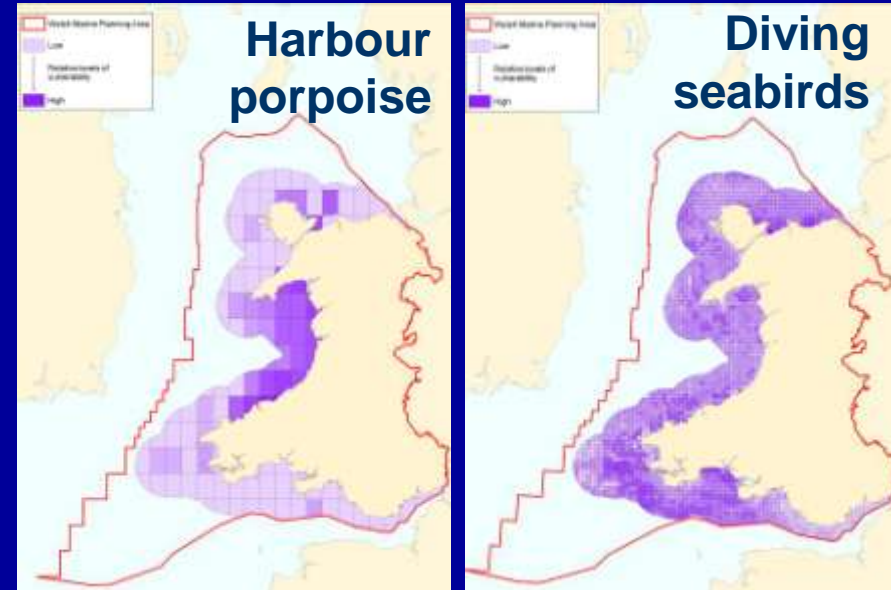


Mobile species vulnerability models

Species distribution



Species vulnerability



Combined with factors

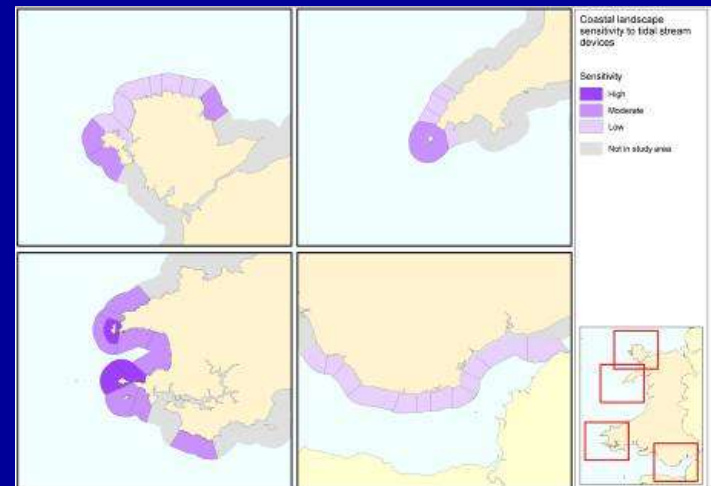
- Species attributes
- Life history traits
- Population status
- Conservation status

- Show relative vulnerability to impacts in Welsh inshore waters
- Individual species & composite seabirds and cetacea

Additional CCW evidence layers

Other evidence layers produced:

- Location of sensitive habitat features within protected sites
- Sensitivity of seabed habitats to physical disturbance
- Sensitivity of local seascapes & coastal landscapes to visual impacts



Step 3: Advice based on robust evidence

CCW natural heritage evidence:

- Designed to complement and support existing initiatives
- Provides key evidence and advice to marine planners
- Communicates level of environmental risk
- Helps to identify lower risk / less sensitive areas
- Help reduce consenting uncertainties faced by developers?

Application of CCW evidence

Marine Renewable Energy Strategic Framework (MRESF)



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

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The Marine Renewable Energy Strategic Framework project has investigated the potential marine renewable energy resource of Welsh Territorial Waters (TWs) and considered potential scenarios for the sustainable development of that resource primarily as an aid to policy development and also an indicator of resource for potential developers.

The project has been undertaken by RPS Group in three stages, starting in 2007 with Stage 1, which was focused on the initial literature reviews, data gathering, stakeholder engagement and GIS mapping. Stage 2 was conducted primarily in 2009-2010 and involved a number of discrete reports, each aimed at increasing the knowledge base for a number of key data gaps in Welsh TWs identified as part of Stage 1. Stage 3 has drawn on the findings of Stages 1 and 2 to develop the Framework.

The analysis and GIS mapping has been undertaken in five steps, designed to consider and apply a range of siting criteria for marine renewable energy devices within Welsh TWs. As a component of this, the GIS also provides spatial mapping of existing socio-economic uses and environmental interests and the potential constraint on consent associated with such. These steps have been termed the 'Approach to Sustainable Development' with an overall aim of enabling the potential energy resource available in areas of different levels of constraint to be assessed to provide an evidence base for determining the sustainability of different levels of wave and tidal stream power generation from Welsh TWs.

The Approach to Sustainable Development Report presents the final outputs of the Marine Renewable Energy Strategic Framework (MRESF). The MRESF will be an essential management tool for the sustainable development of wave and tidal energy in Wales.



**Marine Renewable Energy
Strategic Framework**

**Approach to Sustainable
Development**

March 2011



**Marine Renewable Energy
Strategic Framework**

Technical Addendum

March 2011

Reports and publications

Full report:

Smith K, Briggs J, Hamer J, Hill A and Walker P (2011). Natural heritage evidence to support strategic planning for marine renewable energy. CCW Policy Research Report No 11/3.

www.ccw.gov.uk

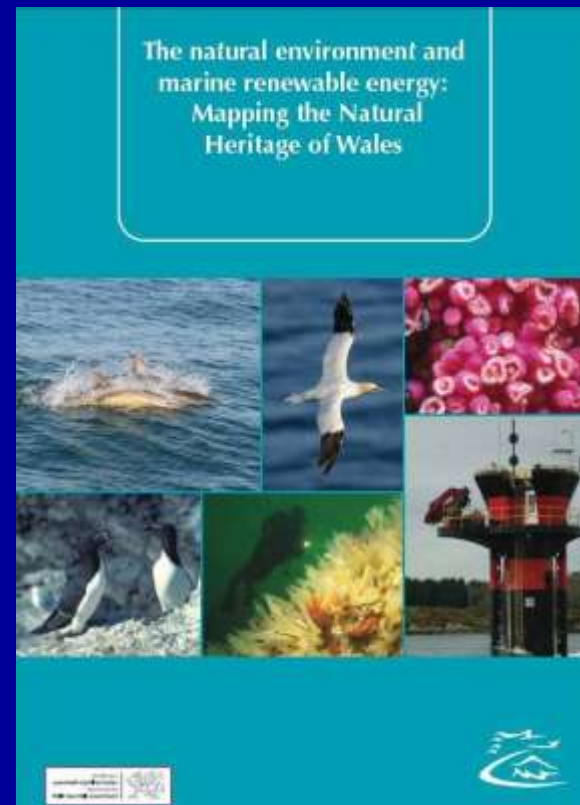
search: marine renewables

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Summary booklet:



Next steps

- Improve understanding for actual impacts – research and monitoring is crucial
- Refine sensitivity & vulnerability assessments and models
- CCW priorities for research (available on web www.ccw.gov.uk search: marine renewables)
- Update and refine natural heritage evidence and advice



Thank you
Diolch yn fawr

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