

# **A Strategic Environmental Assessment for Wave & Tidal Energy**

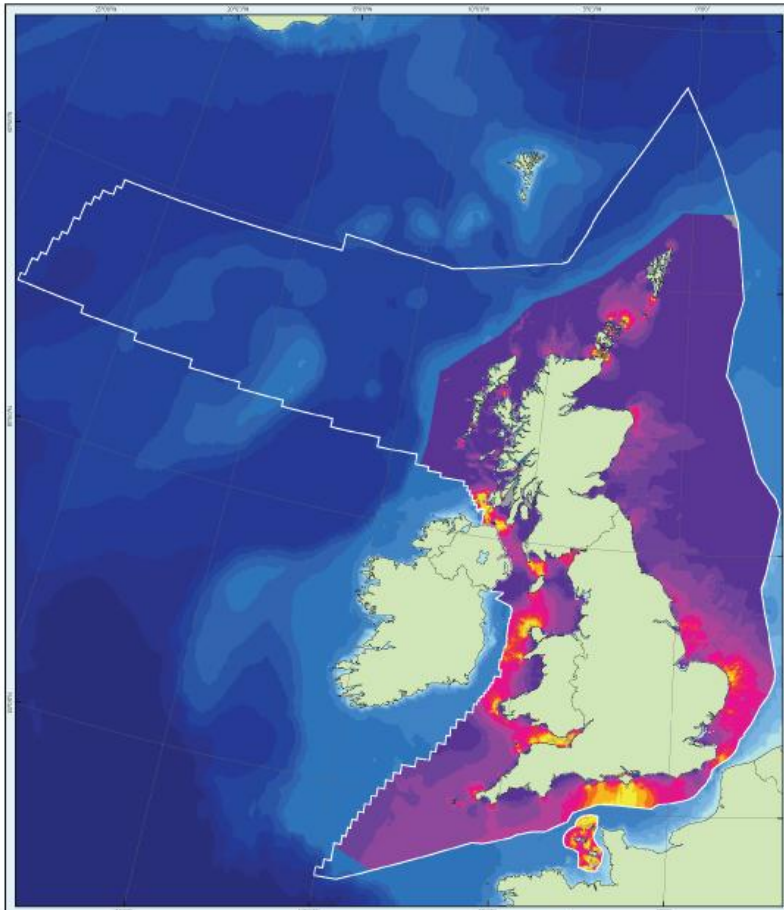
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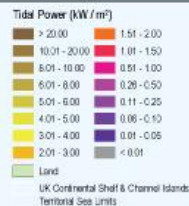
Department of Energy and Climate Change

- To put ourselves on a path to cutting the UK's carbon dioxide emissions - the main contributor to global warming - by some 80% by about 2050, with real progress by 2020
- To maintain the reliability of energy supplies
- To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity and
- To ensure that every home is adequately and affordably heated

# UK marine resource



Mean Spring Tidal Power



0 50 100 200 300 400 Kilometres

Projection Transverse Mercator  
WGS 1984 UTM Zone 31 N

Scale 1:6,250,000  
when printed A3

Map Designed and Produced by AEPner

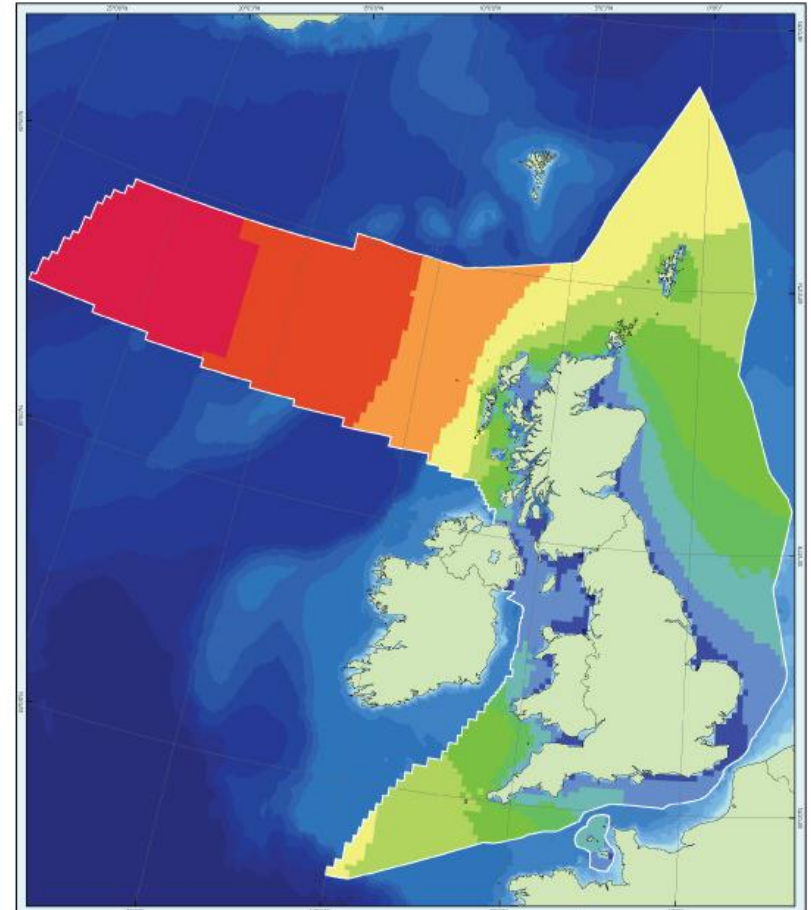
**BERR** Department for Business, Enterprise & Regulatory Reform

Atlas of UK Marine Renewable Energy Resources

Note:

1. Model accuracy is less robust in areas closer than 12m to land.
2. Tidal model based on data derived for an average tidal year.
3. Tidal power is calculated in kilowatts per square metre of vertical water column.
4. Tidal power is calculated at mid depth in the water column.

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Annual Mean Wave Power - Full Wave Field



0 50 100 200 300 400 Kilometres

Projection Transverse Mercator  
WGS 1984 UTM Zone 31 N

Scale 1:6,250,000  
when printed A3

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Note:

1. North of 63° N and West of 12° W, model cell size approximately 60m
2. Model cell size approximately 12m in all other areas.
3. Modelled wave data will be less robust in shallow water (<20m) and areas of complex bathymetry.
4. Wave data are based on hourly model best-fit values over 7 years.
5. Full Wave Field Power is calculated using the summation of wave power attributed to wind-wave and swell components.
6. Wave power is calculated for each horizontal metre of wave crest using the energy period calculation (T<sub>e</sub>).
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For the proposed draft deployment plan to:

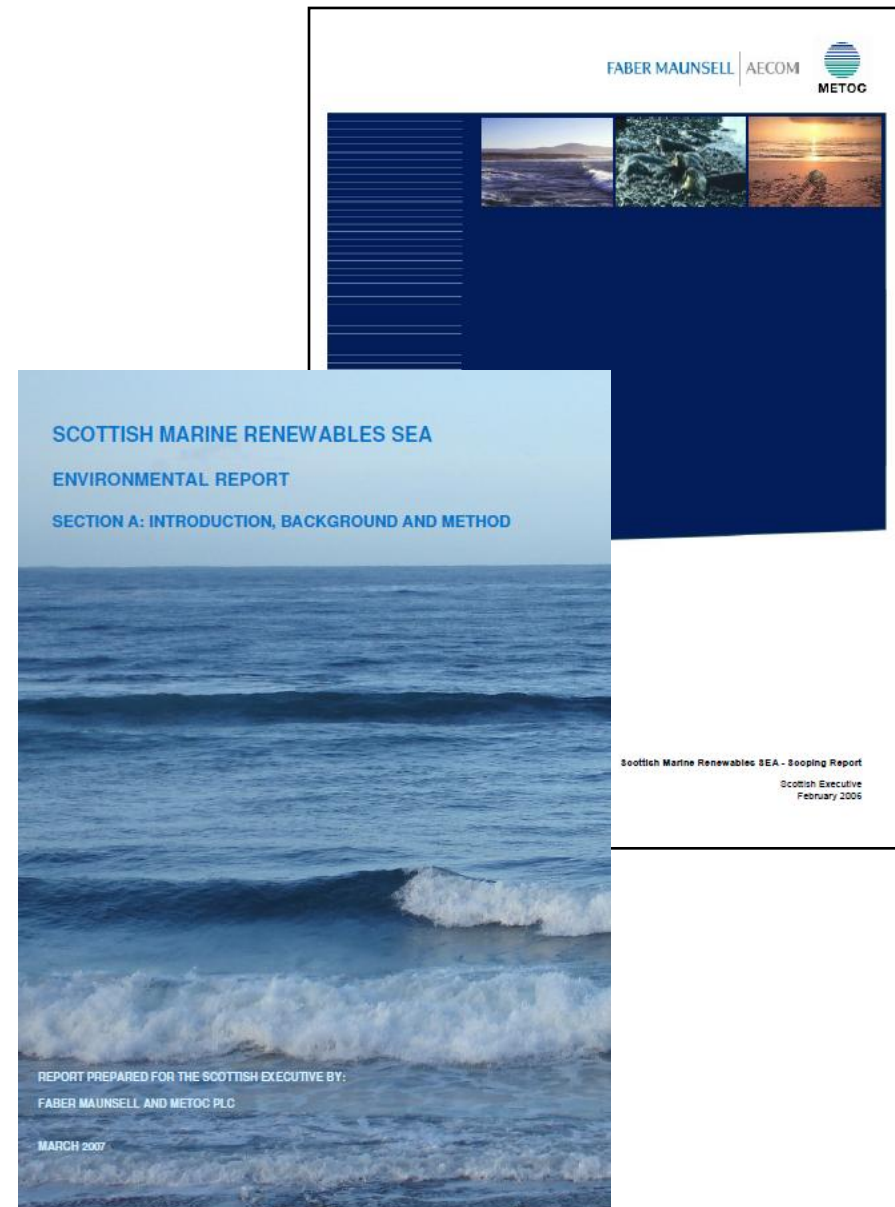
- Consider environmental implications (including spatial conflicts) of licensing and leasing for offshore marine energy (wave and tidal)
- Inform the UK Government's decisions on levels and spatial distribution of marine energy deployment
- Provide routes for public and stakeholder participation in the process

# What is covered an SEA?

- In accordance with the SEA Regulations, the following potentially affected receptors will be included within the scope of any assessment:
  - Biodiversity, habitats, flora and fauna
  - Geology and sediments
  - Landscape/seascape
  - Water environment
  - Air quality
  - Climatic factors
  - Population and human health
  - Other users, material assets (infrastructure, other natural resources)
  - Cultural heritage, including architectural and archaeological heritage
  - Interrelationships of the above

# What work has already been done?

- Scottish Government already done preliminary work towards an SEA
- Has facilitated the discussion of future commercial licensing in Pentland Firth
- Government now thinks it's the right time to begin work towards an SEA for English and Welsh Waters – starting screening exercise



- Archaeology
- Marine Mammals
- Plankton
- Benthos
- Mapping of known areas of interest
- Hydrography
- Geology
- Non-commercial fish
- Recreational users
- Conservation
- Contaminants
- Effects in other users
- Seabirds
- Aerial bird surveys
- Bivalve identification
- Marine renewables atlas
- Boat based bird surveys
- Large cetaceans - SOSUS
- Marine mammals
- Seal tagging
- Grid studies
- Ports studies

- The Report concluded that ***there are no overriding environmental considerations to prevent the achievement of the offshore wind element of the plan/programme*** of an additional 25GW of generation capacity, ***albeit with a number of mitigation measures to reduce adverse impacts on the environment and other users of the sea.*** A series of recommendations were made regarding precautions, areas to be withheld, operational controls and certain data gaps.

- **Screening process** – identify geographical areas for more concentrated work, identify gaps in the data available and the steps needed to obtain the data. Determine if the time is right to begin further work on an SEA for marine energy
- Timescale – approximately 6 months
- Where the industry is now – megawatt scale devices now being tested, more devices being deployed at EMEC this year, plans being set out for multi-megawatt arrays

# Next steps, post-screening...

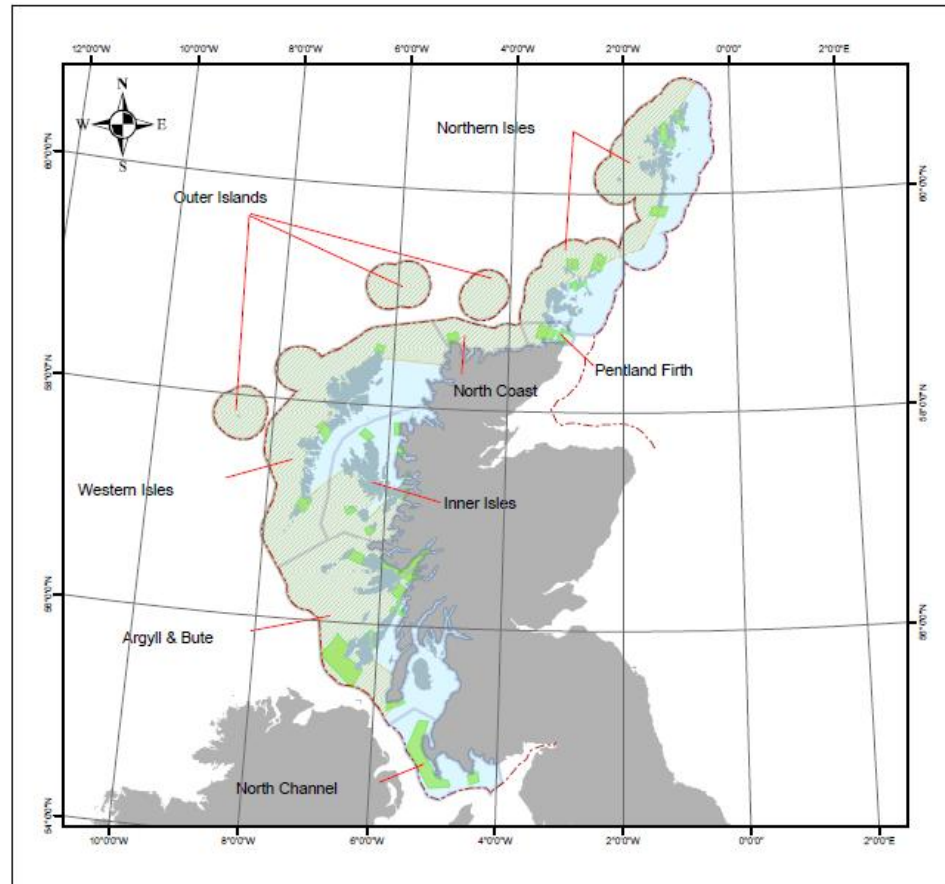
- Typically, an SEA can take up to two years to complete from the initial scoping through to the consultation report. The steps normally taken to complete the process are:
  - **Scoping the SEA**
  - **Studies and Surveys**
  - **Assessment Workshops**
  - **Stakeholder Dialogue Workshops**
  - **Consultation on the Environmental report**
  - **Post consultation report**

# Is a similar conclusion feasible?

- We would hope that the anticipated development of devices and early array deployment over the next two to three years will assist in producing a meaningful report
- **Current gaps in knowledge:**
  - Where devices will be deployed and on what scale,
  - The nature of the devices to be deployed
  - The effects on the environment of individual and larger scale deployment of wave and tidal devices
  - Others?
- Should become clearer in next few years...

# Benefits of developing an SEA now

- Scottish work towards an SEA has facilitated Crown Estate to begin looking at commercial leasing and licensing in Scotland
- For example, the continuing calls for interest in the Pentland Firth
- Hope that work in English and Welsh waters will facilitate similar approaches



# Useful references and contacts

- Offshore SEA website – <http://www.offshore-sea.org.uk/site/index.php>
- Maritime Database – <http://www.maritimedata.co.uk/>
- Renewables Marine Atlas – <http://www.renewables-atlas.info/>
  
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# QUESTIONS?