

APPENDIX 2 – SEA WORKSHOPS

A2.1 INTRODUCTION

A key element of the SEA process is stakeholder consultation. In addition to ongoing consultation with the SEA Steering Group, several targeted workshops were held to gain stakeholder input to inform the assessment and production of the Environmental Report. These targeted workshops included:

- **Assessment workshop (Bristol)** - participants included the SEA Steering Group, members of the SEA team, the authors of the underpinning technical reports and selected stakeholder representatives.
- **Three sector-specific workshops for navigation, fisheries and offshore windfarm developer interests (London)** - participants included several DECC representatives, members of the SEA team and invited stakeholders.
- **Three wider stakeholder workshops (Cardiff, Glasgow, London)** - participants included a wide variety of potential stakeholders such as UK regulators, government advisors, local authorities, other industry representatives, academics, non-governmental organisations, potential international stakeholders and those who registered with the SEA website.

The assessment workshop aimed to bring together the expertise of the participants to consider the key issues to be addressed in the assessment for the Offshore Energy SEA. The sector-specific and wider stakeholder workshops aimed to gather industry perspectives and stakeholder input on the key issues to be addressed in the assessment for the Offshore Energy SEA, along with input to and comments on the information and analysis on which the SEA is being based.

All workshops were run under the Chatham House rule to allow free discussion, with issues and outputs captured without attribution. This Appendix compiles the outputs of the various workshops; full lists of attendees are provided at the end of each of these reports in Tables A2.1-A2.4 and Table A2.13.

A2.2 ASSESSMENT WORKSHOP

A2.2.1 Introduction

An expert assessment workshop for the DECC Offshore Energy SEA was held in Bristol from 3rd-4th September 2008. The participants were the SEA Steering Group, members of the SEA team, the authors of the underpinning technical reports and selected stakeholder representatives with the aim of bringing this expertise together to consider the key issues to be addressed in the assessment for the Offshore Energy SEA. The workshop was chaired by Paul Kingston of Heriot Watt University.

The objectives of the assessment workshop were to:

- Discuss the key environmental issues for the elements of the draft plan
- Discuss gaps in information and understanding, and assess their influence on the confidence with which the assessment of likely effects and necessary mitigation can be made
- Review areas, sites and features to identify any requiring specific mitigation

- Discuss issues of spatial overlap and cumulative effects and
- Finalise the objectives and associated indicators for the SEA

The workshop was structured as follows:

Day 1

- Agreement of ground rules and workshop processes
- Overview of energy policy context, Offshore Energy SEA background and workshop objectives
- Presentations from authors of underpinning reports and other experts on receptor groups; focus on key issues and data gaps of relevance to SEA

Day 2

- Compile and discuss data gaps identified in day 1 presentations
- Overview of oil and gas licensing and offshore wind leasing context
- Working session 1: finalise SEA objectives and associated indicators (plenary discussion)
- Working session 2: offer of blocks for oil & gas licensing - consideration of issues (group work and plenary discussion)
- Working session 3: offer of areas for wind leasing - consideration of issues (group work and plenary discussion)
- Working session 4: consideration of spatial overlap and cumulative issues (group work and plenary discussion)
- Roundup

Outputs from the sessions are summarised below.

A2.2.2 Key issues and data gaps

Hydrography

No key data gaps identified, although it was noted that regional changes in hydrographic conditions would have the following implications for SEA:

- More extreme metocean conditions
- Shifting ecological baseline, complicating assessment of local and far-field effects
- Cumulative ecological effects (may be very indirect)

Seabed Sediments and sub-surface geology

Attention was drawn to the following issues/data gaps:

- The existing offshore sediment map series is of low resolution and no longer meets present day use requirements
- A collation of existing multibeam survey information is recommended as a precursor to developing a national programme of multibeam survey coverage
- In relation to future gas storage development, there is a need to generate maps showing distribution and thickness of sub-surface salt layers and obtain information on the mineral composition of the sub-surface salt strata
- In relation to future energy storage development, there is/may be a need to generate maps showing distribution and thickness of sub-surface layers in which caverns may be constructed for energy storage (e.g. caverns in the Chalk are used to store LPG 190 m

below ground at Killingholme (Lincs), and 'hard rocks' may be used for compressed air storage, lined rock caverns for fuel/air storage etc.)

Any such national multibeam survey programme should co-operate with archaeological stakeholders to make the most efficient use of sea time (and utilise other data gathering techniques at the same time, where possible). It was acknowledged that although the SEA had generated a significant amount of new data, a wider collaborative effort would be needed to establish such a national programme.

Fish

The following data gaps were identified:

- Limited understanding of behavioural responses to offshore activities (e.g. sources of noise, EMF)
- Limited understanding of the reproductive biology of non-commercial fish species
- Ichthyoplankton surveys are generally *ad hoc*, a more focused programme is required
- Basking shark distribution throughout UK waters; detailed studies for the southwest of England could be expanded to other areas

It was noted that the use of commercial fisheries data should be considered as a guide to important fishing areas. The issue of the potential effects of scour on spawning grounds was raised.

Benthos

The benthic communities of the UKCS are relatively well understood at a regional scale, although there are local data gaps and the distribution of some specific habitats (particularly deep-water) is less well documented.

Attention was drawn to the following key issues/data gaps:

- More information is required in relation to the sensitivity/recoverability of specific habitats, communities and species (perhaps through further development of the MarLIN or similar sensitivity assessment).
- Large-scale and long-term changes associated with climate change are difficult to quantify and distinguish from natural variability/other anthropogenic effects.
- Cumulative effects - ecological interactions at a population level; constraints on population recovery resulting from cumulative impacts.

The issue of widespread and numerous offshore structures (i.e. wind turbines) facilitating the spread of non-native species was raised. It was generally agreed that there is a long history of natural and anthropogenic hard structures in the UK marine environment (wrecks, oil and gas infrastructure, cables, glacial boulders, natural reefs) and such effects have not been confirmed; it would not be possible to carry out a study to effectively address this issue.

Seabirds

Attention was drawn to the following key issues/data gaps:

- Recent data (i.e. WWT aerial surveys) needs to be incorporated into the European Seabirds at Sea (ESAS) database
- The seabird vulnerability index should be updated to reflect recent survey data

- Spatial and temporal gaps in ESAS coverage exist – a prioritised programme of survey should be initiated to fill these gaps
- Targeted repeat surveys should be carried out in areas of particular interest to offshore energy development (NB requirement to provide contextual information as well as data pertaining to potential development areas)
- There is a need for a long-term surveillance strategy to enable detection of changes in seabird distribution
- Methods of assessing of cumulative impacts from offshore wind farms on birds need to be addressed

A Research Advisory Group (RAG) project is underway to produce an up-to-date atlas incorporating all relevant, available bird distribution data. An updated gap analysis is underway to incorporate an assessment of the more recently collected data which are complementary to ESAS. Studies of bird foraging movements have been ongoing for some time; these should be considered in the SEA. A workshop on cumulative impact assessment will take place in October 2008; outputs from this should be considered in the SEA.

Aerial bird surveys

Attention was drawn to the following key issues/data gaps:

- A co-coordinated, strategic approach to aerial bird surveys is strongly recommended as this would be more economical, easier to implement, cover wider areas and better inform future monitoring needs. The survey coordination undertaken through the RAG & SEA programmes provide a template.
- There is an urgent requirement for scoping of survey effort for winter 08/09, although the outputs of such surveys would not be available in time to inform the current SEA.

Marine mammals

Attention was drawn to the following key issues/data gaps:

- A large, widespread decline has been observed in harbour seal populations; reasons for this are unknown.
- A pronounced southerly shift in the distribution of harbour porpoises in the North Sea has been observed; reasons for this are unknown.
- At present, there are no offshore cetacean surveys (underway or planned) with the power to detect population-level changes.
- Understanding of harbour porpoise occurrence at sites of interest to offshore energy development is currently insufficient to provide the baseline information that would be required for impact assessment or monitoring studies (e.g. those carried out at Danish offshore wind farms).
- Recommend further identification of harbour porpoise 'hotspots'.
- Marine mammal and basking shark observation data acquired during WWT aerial bird surveys, if analysed, would form a useful addition to other datasets.
- SEA may be the most appropriate level to assess cumulative impacts of noise on European Protected Species. This is particularly important considering the recent changes to the Habitats Regulations.

The SEA may provide a tool for the assessment of cumulative effects on European Protected Species, particularly marine mammals. The need to improve our understanding of bottlenose dolphins in Cardigan Bay was raised; however, it was noted that there is currently a lack of interest in offshore energy development in this area.

It was raised that WWT aerial bird surveys collect data on sightings of marine mammals and other megafauna, and emphasised that these could provide a valuable resource for the SEA. It was suggested that the SEA programme could ensure the continuation of such data collection throughout future aerial bird survey programmes.

Conservation sites

Attention was drawn to the following key issues/data gaps:

- In UK offshore waters, there are currently 5 candidate Special Areas of Conservation (cSACs), 2 possible SACs (North Norfolk Sandbanks and Wyville Thomson Ridge) and 2 draft SACs (Northwest Rockall and Dogger Bank). Work is underway to identify possible SACs within English territorial waters. Further consultations on both inshore and offshore Natura 2000 sites will take place from 2009-2010.
- The JNCC will produce a discussion paper on sandbank features in a UKCS context to address concerns of designations being recommended on a 'piecemeal' basis.
- Seaward extensions to coastal SPAs containing specific qualifying species have been recommended, with SNH undergoing public consultation on these sites in Scottish territorial waters.
- SPA recommendations will be made for: inshore aggregations of non-breeding birds (45 areas of interest identified, all within 12nm), offshore areas, and other types (e.g. tern feeding areas, important migratory areas), with public consultation expected to take place from 2010-11 and site designation in 2012.
- Boundaries for Marine Conservation Zones will not be available for this SEA, but sites will be designated by the time Round 3 developments would begin construction.
- SSSIs will be key features of consideration for effects at cable landfall and other associated onshore infrastructure.

BERR are currently considering options for the most suitable way to carry out appropriate assessment for the wind leasing element of the Draft Plan.

Archaeology

Attention was drawn to the following key issues/data gaps:

- Available data on 'known' sites is very poor.
- The location and distribution of air crash sites are poorly known, although they have automatic legal protection once identified.
- A considerable amount of potentially useful geophysical data is available, but it has yet to be looked at for archaeological features.
- There are 4 national inventories of archaeological features; a UK-wide dataset is lacking. This presents many difficulties, and inhibits determining the importance of any one particular receptor at a UK-wide level.
- The benefits of co-ordinated seabed survey are great; collaboration between fields (e.g. geophysical and archaeological survey) is strongly encouraged.

Other users and spatial issues

Attention was drawn to major lack of available information on fisheries activities, although these gaps can be filled through further co-operation with fisheries organisations. Discussion was brief in light of the opportunities which will be presented by forthcoming working meetings with fisheries, navigation and wind industry stakeholders in October.

A2.2.3 Working session 1

This session aimed to finalise SEA objectives and associated indicators through plenary discussion.

It was noted that the word 'significant' should be added to several of the indicators, as zero effects seemed unrealistic.

The creation of two separate objectives for Natura 2000 sites (including undesignated habitats) and national sites was discussed, with Marine Conservation Zones falling under the national sites objective.

It was agreed that the landscape/seascape objective text would be revised, as some text was more of an assessment consideration than a distinct SEA objective.

It was agreed that the objective and indicator for cultural/archaeological heritage would be revised through discussions with archaeological stakeholders.

A2.2.4 Working session 2

The session addressed four main questions in relation to the offer of blocks for oil & gas licensing. Attendees split into three groups of approximately 10 persons to discuss the above questions, with a nominated person from each group reporting back to the chair in a plenary discussion at the end. Key issues raised are summarised below (in no particular order of importance)¹.

What are the top five issues and sensitivities for oil and gas licensing?

- Spatial conflict with other users (including nature conservation features)
- Noise effects on marine mammals and fish spawning grounds
- Aesthetic and visual impacts for nearshore developments
- Impacts on designated sites
- Impacts associated with pipelines - particularly landfalls
- Drill cuttings
- Oil spills - updated contingency plans
- Decommissioning
- Benthic habitats
- Spawning grounds
- Assessment of cumulative effects
- Produced water
- Early consultation with fisheries interests

Are there any areas which you feel should not be offered for licensing and why?

- Areas which are particularly favourable for wind farms.
- Some MoD areas (e.g. firing/bombing ranges), due to the major incompatibility of activities.

¹ NB: the first question lists the top issues sensitivities identified with some degree of consensus between participants within each group, although their perception as a top issue/sensitivity may not have been shared by all participants. For the remaining three questions, all responses are listed regardless of the degree of their consensus between participants.

- Shipping lanes, due to the importance of safe passage for commercial shipping.
- Areas of particular importance for commercial fisheries, to avoid significant socio-economic impact to the fishing industry.
- Blocks within and adjacent to the Moray Firth and Cardigan Bay SACs, due to their importance for marine mammals.

It was raised that almost all areas could be offered for licensing, as SEA and Appropriate Assessment provide tools to identify likely significant effects and licensing will be subsequent to these.

Are there any spatial/temporal controls necessary on activities in blocks offered for licensing?

- Existing block restrictions on drilling and seismic survey should continue, although drilling restrictions should be revised in accordance with an updated bird oil spill vulnerability index when available.
- Spatial controls for blocks/parts of blocks particularly favourable for wind farms.
- Spatial controls for technological mitigation (i.e. directional drilling) to avoid sensitivities (e.g. Annex I habitat, shipping lanes).
- Spatial/temporal controls for inshore aggregations of breeding marine mammals.
- Spatial controls for areas of importance for bottlenose dolphins.
- Temporal controls to reflect seasonal patterns in fishing (site and activity specific).
- Temporal controls to allow prompt utilisation of hydrocarbon resources from an area prior to subsequent wind farm development.

It was raised that spatial/temporal controls would be better applied at the consenting stage than rather than during licensing.

Do you feel that there should be any additional operational controls introduced?

- No flaring.
- Assessment and adaptive management with respect to archaeology.
- Rig lighting controls (e.g. use of 'bird-friendly' lights).
- Use of chemicals.
- Adopt a risk-based approach.
- Re-injection of produced water for all new developments.
- Oil and gas installations to be powered by renewables.

A2.2.5 Working session 3

The session addressed four main questions in relation to the offer of areas for wind leasing, again in group session flowed by feedback to plenary. Key issues raised are summarised below (in no particular order of importance)².

What are the top five issues and sensitivities for offshore wind leasing?

- Construction noise, particularly with regard to marine mammals and fish - what is biologically significant?
- Bird displacement and collisions - what is biologically significant?

² NB: the first question lists the top issues sensitivities identified with some degree of consensus between participants within each group, although their perception as a top issue/sensitivity may not have been shared by all participants. For the remaining three questions, all responses are listed regardless of the degree of their consensus between participants.

- Incorporation of feedback from Round 1 and 2 studies
- How to assess cumulative effects
- Landscape/seascape
- Habitat loss/change
- Spatial planning
- Military radar
- Conflicts with fisheries, particularly inshore
- Navigation - shipping and recreational boating
- Potential landfall impacts of cables
- Grid availability and accessibility
- Timeframe - meeting energy targets
- Location adjacent to salt layers with potential for cavern construction and energy storage

Are there any areas which you feel should not be offered for leasing and why?

- Areas of high environmental sensitivity; inshore areas with high densities of seabirds.
- Cardigan Bay, due to high environmental sensitivity (particularly landscape/seascape and marine mammals).
- Areas within a variable coastal buffer (for landscape, bird movement and fisheries sensitivities).
- Waters less than 10m depth where important numbers of common scoter are present, as these provide key foraging areas.
- IMO channels, due to the importance of safe passage for commercial shipping.
- Areas of importance to local fishing communities vulnerable to economic decline, due to the dependence of such communities on the fishing industry.
- Areas not of interest to developers.

Are there any spatial/temporal controls necessary on activities in areas offered for leasing?

- Temporal controls on piling activities, including regional co-ordination for consideration of cumulative effects.
- No piling in areas of seasonal importance to basking sharks or seal pup haul-out sites.
- Use of acoustic deterrents in certain areas.
- Increased monitoring effort in particularly sensitive areas.
- Spatial/temporal controls in relation to local and/or seasonal fishing grounds and spawning grounds.

Do you feel that there should be any additional operational controls introduced?

- Shut-down during periods of high risk to bird collisions - e.g. certain weather affecting bird flight characteristics³ or visibility of turbines⁴, mass migration events, other key periods.
- Restrictions on fishing activities within wind farms.
- Alternative methods of installation i.e. not piling
- Sharing of cable routes.
- Cumulative noise assessments.
- Any operational controls should be site/project specific.

³ In storm force winds (prior to turbines stopping operation), manoeuvrability and flight elevation of birds will be affected.

⁴ e.g. due to conditions such as fog; however, it was noted that many turbines are unlikely to be turning in fog.

The issue was raised that imposing shut-down periods to offshore wind farms may make them economically unattractive/unfeasible.

It was noted that as wind farms move to deeper waters, turbine foundations may consist of jacket structures attached to the seabed by a number of narrow piles or “pins” (e.g. Beatrice Wind project) which are typically less noisy to install than monopole foundations.

A2.2.6 Working session 4

This session considered how to address overlap and cumulative issues in relation to other plans. Other plans and key issues raised are summarised below (in no particular order of importance).

What other plans (proposed or in progress), in combination with these draft plans for offshore wind leasing and offshore oil and gas licensing, have the potential to impact cumulatively? In what way and on what receptor(s) or other user group(s) in particular?

- Marine Spatial Planning (UK Marine Bill) and establishment of Marine Conservation Zones
- Scottish Marine Bill
- Sea Fisheries Committees' SEAs
- Severn tidal power SEA
- Nuclear new-build SEA - may have particular influence on grid issues
- MRESF Wales - may have positive influence in terms of information acquisition
- Carbon capture and storage
- Marine Aggregate Regional Environmental Assessments
- Aggregate plans - spatial/temporal controls to place wind farms on recently relinquished aggregate extraction areas?
- Port expansion, including dredging - may have particular influence on cable routes
- Marine Environmental High Risk Areas
- Onshore renewables - may have particular influence on birds, landscape, landfall issues
- LNG and gas import infrastructure, including interconnectors
- Natura 2000 offshore
- OSPAR Marine Protected Areas
- Marine Strategy Framework Directive
- Strategic grid connections and upgrades
- Military activities/testing (particularly noisy activities)
- Regional Development Plans
- Shoreline management plans
- River basin plans
- Fisheries policy
- International developments
- Thames Gateway (urban regeneration of east London and the Thames estuary area).

A2.2.7 Other issues raised during plenary

The following other issues/topics were raised during the final plenary discussions.

Bird migration

It was emphasized that this is a complex topic. The following issues were brought to the attention of the workshop:

- Whilst much migration is on a broad front there are topographical (as well as weather) features that influence migration, notably a tendency to concentrate in particular where short sea crossings can be made - a migration bottleneck.
- Flight elevation is generally determined by flight energy efficiency and so is influenced by weather conditions; for example, a tendency to fly lower into headwinds and higher in tailwinds.
- Bird ringing has historically provided a lot of information about origins and destinations of migrants but cannot provide information about the exact route taken. Such information has been pieced together for some species by means of count data and ad hoc records at intermediate sites, but recently available technology (e.g. satellite tracking) is starting to reveal more information about routes taken and variability in such routes.

Fishing

The orientation of turbines has little influence on fishing within a wind farm. Spacing is more important; sufficiently wide spacing may enable fishing to take place within the wind farm, but if fishing within the farm is dangerous/unadvisable (effectively creating an exclusion zone) then smaller spacing is better in order to keep the overall wind farm area smaller.

Exposed cables are a hazard to towed gear fishing activities; buried cables are better from a safety perspective, although EMF remains a concern.

Archaeology

Most archaeological issues can be dealt with on a site-specific basis. However, there are many advantages in early consideration at a strategic level - particularly in terms of survey planning and formulation of guidance.

Hydrography/ecology

Hydrographic fronts are important ecological features with which important feeding aggregations of marine animals can be associated. However, these are highly mobile features and our understanding of them from an ecological perspective is limited.

Table A2.1 - Assessment workshop attendees

Name		Organisation
Kevin	O'Carroll	BERR
Emma	Cole	BERR
Dave	Evans	BGS
Martyn	Quinn	BGS
Duncan	Ayling	BWEA
Andrew	Hill	CCW
Adrian	Judd	CEFAS
Ian	Gloyne-Phillips ¹	CMACS Ltd
Terry	Holt ¹	CMACS Ltd
Colin	Barton	Cork Ecology
Stuart	Anderson ¹	Hartley Anderson Ltd

Name		Organisation
Alex	Brown ¹	Hartley Anderson Ltd
John	Hartley ¹	Hartley Anderson Ltd
Susan	Hartley ¹	Hartley Anderson Ltd
Stephen	King ¹	Hartley Anderson Ltd
Paul	Kingston	Heriot Watt University
Craig	Bloomer	JNCC
Melissa	Moore	MCS and WCL
Victoria	Copley	Natural England
John	Butterwith	NFFO
Dale	Rodmell	NFFO
Rowena	Langston	RSPB
Sinéad	Murphy	SMRU
George	Lees ²	SNH
Danielle	Lane ²	The Crown Estate
David	Tudor ³	The Crown Estate
Mike	Cummings ²	Welsh Assembly Government
Antony	Firth	Wessex Archaeology
John	Gribble	Wessex Archaeology
Rebecca	Woodward	WWT Consulting

Notes: ¹ SEA team; ² present on day 2 only; ³ present on day 1 only.

A2.3 SECTOR-SPECIFIC WORKSHOPS

A2.3.1 Navigation workshop

As part of the DECC Offshore Energy SEA, a sector-specific navigation workshop was held in London on 27th October 2008. The participants comprised several DECC representatives, members of the SEA team and various invited navigation stakeholders with the aim of gathering industry perspectives on the key issues to be addressed in the assessment for the Offshore Energy SEA.

The objectives of the assessment workshop were to:

- To update navigation stakeholders on the Offshore Energy SEA progress and issues
- To facilitate access to accurate and up to date information on navigation interests for use in the SEA
- To facilitate discussion and gather stakeholder input and comments

The workshop was structured as follows:

Session 1

This consisted of two presentations: overview of energy policy context (DECC), and offshore Energy SEA background and workshop objectives (SEA team), followed by a question and answer session.

Session 2

Presentation of posters illustrating navigation information base for the Offshore Energy SEA, followed by plenary discussion. It was emphasised that participants were free to initiate

discussion as desired, although the following potential topics were suggested in the agenda as a base for discussions:

- Legally defined formal routeing measures
- Commonly used shipping lanes
- Areas of safe anchorage (vessel refuges)
- Charted anchorages
- Areas of embarkation or disembarkation for pilots etc.
- Areas for inwater repairs and surveys
- Recreational cruising/racing routes
- Coastal vessels
- Interactions with vessel radar and other navigational aids
- Safe navigation
- Port expansions and other future issues
- Perspectives on hard constraints for offshore windfarm siting

Outputs from the sessions are summarised below.

A2.3.1.1 Session 1

This session invited questions from participants on any issues raised during presentations. Those captured below are those specifically relating to navigation issues.

The issue of offshore energy developments causing deviations to existing shipping routes was raised, with a suggestion that the increase in passage journey could increase CO₂ emissions from the vessels themselves. It was noted that the Offshore Energy SEA aimed to highlight the major shipping routes in order to encourage the appropriate locating of new offshore wind sites to minimise significant deviations in shipping routes. It was also noted that the shipping industry changes over time and that any study of assessing the effects of deviations on CO₂ emission totals would have a limited shelf-life. The possibility of large commercial vessels reducing emissions by various engine efficiency and other mechanical devices was briefly discussed.

It was emphasised that the siting of offshore windfarms needed to be based on realistic assessments using the best information available at the time of the assessment.

Clarification was provided on the rationale for decision to omit the assessment of wave and tidal energy technologies from the current Offshore Energy SEA. It was explained that as there was no defined plan or programme on which to base an assessment, that it would more appropriate to continue to collect baseline data that could be used as and when it was decided to commence an SEA for wave and tidal technologies. A comment was made that many tidal energy demonstrator devices look relatively problem-free from a navigation perspective, however others expressed differing views.

With regard to tidal stream energy devices, it was noted that currently technology limits the tidal resources which may be economically exploited to a few relatively small areas of the sea with very high velocity flows. As technological improvements allowed devices to operate in lower velocity flows, the area which may be exploited by tidal power technology may increase.

A2.3.1.2 Session 2

This session consisted of plenary discussion; these have been grouped into broad topic headings for ease of presentation.

Information base

The importance and value of UKHO Admiralty charts (particularly in a digital format) was emphasised by several participants. These describe numerous features of importance with regard to navigation, and are a primary source of information to the industry.

Attention was drawn to the potential value of harbour radar; this typically operates to a range of approximately 10 miles and would provide valuable information on the movements of smaller vessels without AIS and other vessel movements to and from harbours.

A lack of information on non-UK registered fishing vessels was raised; some UK waters are of particular significance to foreign vessels.

Attention was drawn to the Maritime Database website as a tool for sourcing data and to inform offshore developers of associated navigational issues and sensitivities.

OREI zones and AIS data

Discussions took place regarding the credibility and accuracy of an unpublished report provided to the MCA. It was stated that the report identified categories of varying degrees of potential conflict between shipping and potential offshore renewable energy installation (OREI) sites. Clarification was provided on the three types of category:

- OREI 1 – ‘siting not recommended’
- OREI 2 – ‘siting potential with comprehensive assessment’
- OREI 3 – ‘siting potential with local assessment’

The MCA explained that a contractor had divided the categories based on shipping routes derived from a snapshot of AIS (Universal Automatic Identification System) data and added buffers, of varying size, alongside key shipping routes, derived from consideration of a number of factors. It was generally felt that the shipping route zones, shown within the report, provided a reasonable approximation of key shipping routes. However, it was noted that the zones in the report had not incorporated the Dover-Calais ferry route.

It was highlighted that detailed vessel traffic studies were recommended to help inform the fine tuning of locating OREI sites as well as being required in any consent application for a proposed project.

However, it was recommended that closer inspection of AIS data would enable the extent of the zones to be fine-tuned and that this would be a worthwhile exercise to inform both the Offshore Energy SEA and the Government Decision.

Attendees were informed that MCA had recently supplied the SEA team with 4 weeks of AIS data, representing one week of data per quarter across a year. **Action:** it was agreed that this data would be worked into a range of maps that, following clearance from Government and MCA, could be circulated amongst the attendees for comment.

Discussions took place over the availability and accessibility of AIS data; are developers sufficiently informed prior to submitting an application for lease? It was suggested that the

data presented in the Offshore Energy SEA will provide sufficient strategic information to avoid any major surprises at project-specific level. However, Government were encouraged to make available a selection of informative AIS maps publicly available. **Action:** DECC agreed to explore this suggestion further with DFT and MCA, following current work to use the AIS data in the Offshore Energy SEA. It was noted that efforts are ongoing to improve the level of information available via the Maritime Database website, and that any AIS maps produced from the SEA should be made available on the database.

Attention was drawn to the following caveats of AIS data:

- AIS is not fitted to all vessels⁵, so only shows a proportion of the actual number and type of vessels navigating the seas.
- AIS data do not represent the distribution of recreational vessels. The draft atlas of recreational boating, being produced by the Royal Yachting Association, will provide information on this.
- AIS data do not represent the distribution of fishing vessels. Attention was drawn to the forthcoming fisheries workshop to improve our understanding of the distribution of fishing vessels, particularly smaller vessels not subject to VMS.
- Attention was drawn to the omission of 'vessel diversity' information from much AIS data; routes showing high densities of traffic may only be used by a small number of vessels on a regular 'to and fro' basis.
- AIS data can contain errors; a certain degree of caution must be exercised when interpreting the data.
- AIS data are only collected within the range of VHF radio (i.e. line of sight between antennae), up to approximately 80km off the coast. Relays could be placed offshore to extend this range when/where necessary.

Areas to avoid

Clarification was provided on the following terminology:

- Shipping lanes: areas with mandatory traffic separation schemes (i.e. IMO routeing measure areas).
- Shipping routes: routes outwith traffic separation schemes used by vessels in transit; routes with the highest densities of traffic are often those linking traffic separation scheme areas.

While other activities do take place in shipping lanes (e.g. aggregate extraction), these are generally areas that attendees believed should be avoided for fixed infrastructure such as offshore windfarms. It was noted that with better information sources, such as AIS data, the MCA are helping to define/refine IMO routeing measure areas.

⁵ Regulation 19 of SOLAS (International Convention on Safety of Life at Sea) Chapter V requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size. The requirement became effective for all ships by 31 December 2004. Any other type or size of vessel may however voluntarily fit AIS. "Class B" systems are being developed primarily for this purpose.

Attendees did stress that, while not subject to compulsory routing measures, shipping routes should also be considered as very important features and given very careful consideration when trying to locate OREIs.

The issue of navigating and manoeuvring vessels in close vicinity to wind turbines was raised. It was noted that a large proportion of UK shipping traffic consisted of foreign vessels; the majority of these may not be familiar with offshore wind farms and their navigation implications - the high ship densities experienced in certain UK waters and corresponding close proximity of vessels may exaggerate the risk associated with such situations. In terms of increasing ship density due to displacement of previous routes, it was considered an important factor when selecting a windfarm site.

A certain buffer zone is required either side of a major shipping route; such that vessels may safely detect the presence of other vessels or obstacles and, if experiencing problems, manoeuvre or anchor outside of the main traffic route. Annex 3 of Marine Guidance Note 371⁶ provides the MCA template for assessing risks associated with distances between windfarm boundaries and shipping routes.

It was suggested that it would not be wise to locate windfarms within deep-water routes that are used by large vessels with limited manoeuvrability.

The issue of building windfarms on areas of safe anchorage was raised. Many vessels use these areas to anchor safely to 'standby', entering port only when necessary to avoid unnecessary mooring fees.

The question was raised: are port authority areas to be avoided? It was noted that there are existing windfarms within port authority areas, and that these are not necessarily areas to be avoided; however, case-by-case consideration should be given as appropriate.

Windfarm layout

The issue of windfarm layout and turbine spacing was raised, with the specific question posed: if turbine spacing becomes sufficiently wide, could vessels safely navigate between them? While it was felt that navigation stakeholders would welcome discussions on turbine spacing and other mitigation measures to facilitate conflict resolution, stakeholders emphasised that a precautionary approach to safety must always be taken. Attention was brought to the following issues:

- Wind turbines have a large radar signature; this could make it more difficult to identify other vessels in the area. Many vessels will not be familiar with radar use in the vicinity of wind turbines.
- Search and Rescue operations are easier where turbine spacing is wider.
- It can be easy to become disorientated when navigating within windfarms; turbine arrangement in a regular, square grid pattern assists orientation.
- Windfarms consisting of a square/rectangular block of turbines are potentially considered safer from a navigational perspective; depending on the location, odd shapes and single turbines pose a greater navigational risk.

It was also noted that documentation of the behaviour of vessel traffic in and around existing offshore windfarms was limited. Such studies could provide valuable information on the likely impacts of future windfarms on vessel traffic.

⁶ MCA Marine Guidance Note 371: Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response Issues.

The spacing of wind turbines influences their radar signature; wider spacing is better as it reduces the likelihood of radar shadows merging to create large 'blindspots'.

Construction phase issues

It was noted that the construction phase is potentially the most dangerous period from a navigational safety perspective; lessons learnt have shown that construction activities can run for a considerable length of time, with incomplete structures being inadequately lit. It was recommended that developers learn from this and ensure that they address this issue as part of their navigational risk assessments.

Some construction sites have had policed safety zones, while others have not. Safety zones during construction and decommissioning were, in principle, supported by some of the attendees. It was also stressed that in planning applications for any safety zone, developers need to emphasize why they want an exclusion zone (or why not) on a case-by-case basis.

Stakeholders emphasised the need for planning applications to include detailed information on the activities and timeframe involved during construction.

Other issues

Where windfarms are located far from land, where visual impacts are less of/not a concern, it is best to make turbines as visible as possible to assist navigation.

It was noted that there is overlap between offshore windfarm lighting for maritime and aviation navigational safety, with potentially confusing results. It was noted that work was already underway to explore this issue.

It was recommended that surveys of recreational vessel traffic should be carried out at various intervals during the year, particularly during summer months when vessel activity is at its greatest.

The issue of underwater noise emissions from operational windfarms was raised. Concerns were voiced over the potential impacts of such noises on vessel sonar, fish finders, survey boat operations, submarine operations and other navy operations. Such issues may become more pertinent and widespread as windfarms are developed in deeper waters; they are likely to be site-specific considerations in water depths of up to approximately 60m. Particular concerns were raised over the potential cumulative noise effects of extensive renewables development west of Scotland. Recommendations were made for the publication of baseline data on the frequency and magnitude of operational noise emissions from wind turbines and windfarms.

The natural migration of deeper channels used for navigation was discussed. It was suggested that in some cases the channels might migrate into the footprint of offshore windfarms over time. While it was acknowledged that studies of existing windfarms have shown scour from turbines to not be a significant wide-scale process, it was noted that information on scour effects from large windfarms (i.e. 40+ turbines) is still limited. It was noted that further results from monitoring of existing windfarms would be useful in informing the discussion in the future.

The question was raised whether any offshore areas could be disregarded as potential development areas for OREIs due to a lack of wind resource. It was noted that in offshore

waters, the wind resource is relatively uniform, and that no areas could be disregarded for potential development on this basis alone.

The topic of siting windfarms on areas relinquished by oil and gas development due to decommissioning of infrastructure was raised. It was noted that this could potentially prove an opportunity, and that indicative decommissioning forecasts were being considered, although the development of carbon capture and storage may also influence such forecasts.

Attention was drawn to the existing RESTATS website as a source of information on renewable energy development and aviation and radar interests. It was noted that a website-based tool is being developed to provide further advice to developers on potential conflicts between radar interests (mostly MoD) and the locating of windfarms.

Attendees wished to draw the attention of offshore windfarm developers to the MCA Marine Guidance Note 371 as a key source of information for navigational issues relevant to OREIs.

Table A2.2 - Navigation workshop attendees

Name		Organisation
Stuart	Anderson	Hartley Anderson Ltd ¹
Roger	Barker	Trinity House
Colin	Brown	DECC – Navigation Risk Theme Leader (RAG)
Alex	Brown	Hartley Anderson Ltd ¹
Chris	Edwards	Royal Yachting Association
Harry	Gale	Nautical Institute
John	Hartley	Hartley Anderson Ltd ¹
Archie	Johnstone	Northern Lighthouse Board
Katherine	MacNeill	DECC
Mark	Russell	British Marine Aggregate Producers Association
Saurabh	Sachdeva	Chamber of Shipping
Paul	Townsend	Maritime and Coastguard Agency
Jonathan	Wilson	Ministry of Defence
Angela	Wratten	DECC

Notes: ¹ SEA team.

A2.3.2 Fisheries workshop

As part of the DECC Offshore Energy SEA, a sector-specific fisheries workshop was held in London on 28th October 2008. The participants comprised several DECC representatives, members of the SEA team and various fisheries stakeholders with the aim of gathering industry perspectives on the key issues to be addressed in the assessment for the Offshore Energy SEA.

The objectives of the assessment workshop were:

- To update fisheries stakeholders on the Offshore Energy SEA progress and issues
- To facilitate access to accurate and up to date information on fishing interests for use in the SEA
- To facilitate discussion and gather stakeholder input and comments

The workshop was structured as follows:

Session 1

This consisted of two presentations: overview of energy policy context (DECC), and offshore Energy SEA background and workshop objectives (SEA team), followed by a question and answer session.

Session 2

Presentation of posters illustrating fisheries information base for the Offshore Energy SEA, followed by plenary discussion. It was emphasised that participants were free to initiate discussion as desired, although the following potential topics were suggested in the agenda as a base for discussions:

- Distance offshore that day boats fish
- Main fishing areas for larger vessels
- Shellfish potting areas
- Areas in less than 60m where pelagics are targeted
- New stocks which may potentially be exploited
- Prime areas to be avoided in offshore windfarm siting
- Gear that can be used within an offshore windfarm
- Mitigation of offshore windfarm-fishing interactions.

Outputs from the sessions are summarised below.

A2.3.2.1 Session 1

This session invited questions from participants on any issues raised during presentations. Those captured below are those specifically relating to fisheries issues.

Lots of knowledge on key areas for fishing is held locally; concerns were raised that there may be insufficient fisheries representatives present to give detailed information on fisheries throughout UK waters. Concerns were raised that the Offshore Energy SEA has not had the time or resources to extensively consult fishermen to obtain this detailed knowledge. It was noted that not all stakeholders could be present, but that the 3 month public consultation period following the publication of the Environmental Report will give considerable opportunity for wider stakeholder input. It was also emphasised that there should be many further opportunities for consultation on a site/zone-specific basis; scoping for sites within zones will give much opportunity for this.

Consulting with fisheries stakeholders to choose the best location for turbines within broader zones was welcomed. However, concerns were raised over the apparent lack of consideration of fisheries interests in the identification of the Crown Estate Round 3 zones. It was emphasised that the Crown Estate zones are only indicative and dependent upon the recommendations of the SEA, and that developers will have greater flexibility over site selection than in Round 2.

Waters 0-6nm from the coast are exploited by UK vessels only, 6-12nm sees some foreign vessels while waters beyond 12nm are exploited by vessels from a variety of nations. The question was raised: to what extent is the SEA considering foreign vessels? It was acknowledged that fisheries exploited by foreign vessels are more of an issue now we are considering development further offshore. The SEA process has and will continue to consult stakeholders from other nations; no adverse feedback has been received to date. Attention was drawn to ongoing annual workshops between DECC and European and North Sea interest groups.

Attention was drawn to a forthcoming COWRIE fisheries report. This will not be produced in time for inclusion in the Environmental Report of the Offshore Energy SEA, but any new perspectives of relevance would be reflected in the SEA post consultation report which would be an input to any government decision.

A2.3.2.2 Session 2

This session consisted of plenary discussion; points raised have been grouped into broad topic headings for ease of presentation.

Offshore Energy SEA scope

Clarification was provided on the scope of the Offshore Energy SEA with regard to Scottish waters; where possible, the SEA will consider cumulative effects of offshore wind leasing in Scottish waters beyond territorial waters in relation to potential leasing within territorial waters. It was noted that Scottish Ministers will be announcing interest in windfarm development within Scottish territorial waters very soon.

The consultation process

It was emphasised that consultation with fisheries stakeholders was essential from the earliest stage possible.

Concerns were raised over the lack of consultation with fishermen prior to the establishment of Round 2 zones; will the SEA consult with fishermen who operate in the Round 3 zones? It was emphasised that the SEA considers all areas, it is not restricted to the indicative Round 3 zones. The SEA is consulting with fisheries stakeholders to identify strategic-level issues, and will continue to do so throughout the process; this should eliminate any high-level 'show-stopping' issues arising after Round 3 areas are finalised.

The issue of exclusion from fishing grounds was raised; this is a major concern to fishermen. It was felt that consultation following submission of planning applications was too late, and that consultation with fishermen to identify key fishing grounds was required well in advance of this.

There was a request for a notice to all sea fisheries committees following release of the Environmental Report, highlighting key questions to be addressed in consultation responses.

The distribution of fishing effort

It was widely noted that almost everywhere is fished by someone.

Recommendations were made to obtain more recent VMS data.

It was noted that since fishing vessels are "navigating" vessels within the meaning of the Collision Regulations⁷ regardless of the particular operation they happen to be carrying out at any time, it is important to get accurate vessel numbers, routes and operational areas to establish the general interactive navigational risk potentially posed by an offshore renewable energy installation.

⁷ Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs).

It was noted that extensive inshore fisheries take place throughout most UK waters to approximately 25nm offshore. Offshore windfarms may have cumulative effects on fisheries in these areas through their influence on the locations of other activities such as aggregate extraction, conservation sites etc. Inshore vessels are typically quite restricted in areas which they may fish due to substrate types and areas dominated by other incompatible gear types.

VMS data only documents the distribution of vessels >15m length; the industry is dominated by vessels small than this, primarily <10m length - other mechanisms are required to document the distribution of these smaller vessels. It was noted that many Sea Fisheries Committees (SFCs) may have useful information on this, although it would generally only extend to 6nm offshore. The 0-6nm zone is generally quite well understood. The 6-12nm zone, however, is an area of typically high fishing effort but comparatively poorly understood - many foreign vessels operate in this area. It was suggested that aerial surveillance data would give some indication of the distribution of vessels beyond 6nm, although coverage is temporally and spatially uneven in many areas.

It was noted that information on the distribution of inshore vessels is available through patrol boat observations. While the processing of this information into useful formats is not consistent across SFCs, useful datasets do exist.

Discussions took place on the typical range of inshore vessels. It was noted that any single value of range for inshore vessels (e.g. 25nm) would be a simplification. The range over which vessels typically operate is dependent upon many factors, including: gear type, target species, quota, and season. Therefore, there is considerable variation in the typical range of vessels both within and between ports. Some information on the typical ranges of inshore fleets may be obtained through SFCs, although more detailed and accurate information could be obtained by direct consultation with fishermen.

Attention was drawn to a study of approximately 8 trawlers operating out of Fleetwood, with a typical range within an approximately 30nm radius from port. One attendee noted that some vessels of 10m length routinely operate up to 60nm offshore.

It was noted that inshore vessels may be present in high densities in the traffic routes indicated in the BMT Vessel Traffic Study. Greater understanding of their distribution is essential for effective mitigation of conflicts; honest and comprehensive information on fishing vessels is urgently required.

Attention was drawn to the project entitled Environmentally Responsible Fishing, where approximately 30 vessels <10m length in the Thames area have been fitted with VMS. The project commenced in August 2008, with the aim of gaining greater understanding of the distribution of fishing effort in the area. The resulting data is currently being provided to CEFAS.

Attention was drawn to a Regional Advisory Council study (with CEFAS involvement) in the eastern Channel, using VMS data.

A call was made from the SEA team for stakeholders to provide any potentially useful material on the distribution of fishing effort. Paper maps illustrating the distribution of inshore vessels derived from SFC inspections were provided by one SFC, and attention was drawn to several potentially useful sources of information. Additionally, the SEA team were shown and made notes from a high-level hand annotated map of important fishing areas in English and Welsh waters.

Areas potentially suitable for offshore windfarm development

The north Norfolk sandbanks are not subject to heavy fishing pressure and large areas of them are unsuitable for shipping traffic. It was suggested that this area may be suitable for offshore windfarms - why exclude all development due to conservation interests? It was noted that Special Areas of Conservation are not 'no-go' areas in terms of all development, and that lack of developer interest was the primary driver behind the removal of a zone over the north Norfolk sandbanks in the Crown Estate's latest the revision of indicative Round 3 zones.

The idea was suggested that priority might be given to old aggregate extraction areas for offshore windfarm development.

Trends and new/developing fisheries of increasing importance

It was noted that the fishing industry is constantly undergoing change - it is experiencing decline, trying to diversify, and subject to political drivers. Fishing patterns could be very different in a few years time when leases are awarded, and even more different by the time construction begins.

The Cornwall Sea Fisheries Committee area has seen large increases in the number of pots fished, increasing by up to three fold every five years. The number of nets has also increased substantially. There are a large number of ports in the region, and any suitable surface is trawled. A trend was noted of smaller vessels being pushed closer to shore (<6nm) by foreign vessels operating in the 6-12nm zone. Foreign vessels tended to fish different areas than UK vessels; however, if foreign vessels were displaced by offshore wind development there could be knock-on effects on UK vessels.

A Cornish sardine (pilchard) fishery is developing, exploited by purpose-built vessels operating gear similar to purse-seines. They always fish at night, generally within 6nm of the shore and are familiar with working around obstacles.

Pelagic fisheries in relatively shallow (<60m depth) waters are considered a potential growth area, with opportunities for inshore fisheries to develop these in the future. Species include mackerel, herring, anchovy (particularly in the English Channel) and bass.

Spider crab is a developing fishery. Squid have become an increasingly important species in recent years, with the Moray Firth and Bristol Channel mentioned specifically.

Razorfish are increasingly harvested from sandbanks - this may develop to features far from shore where the American species *Ensis directus* has colonised. Very inshore fisheries of increasing importance include mussels and cockles, and there is the potential to harvest other species such as surf clams.

It was noted that, in some areas, rising fuel costs have led to an increase in use of static gear to conserve fuel.

Fishing activities within offshore windfarms

Discussions took place on fishing activities which may or may not be possible within windfarms. Fishing involves risk; the risk increases significantly if fishing within a windfarm. Different fishermen have different perceptions of risk, with some willing to take more risks than others - it is inappropriate to define one type of gear as compatible with offshore

windfarms and another as incompatible. Initially, it is better to assume that no fishing can take place within an offshore windfarm and locate it sensibly to minimise conflict.

Concerns were raised over the implications of an accident occurring within a windfarm, particularly if the vessel involved was carrying out an activity defined as 'compatible with offshore windfarms'.

Mobile gears such as trawls or drift netting are generally not considered possible. However, it was later noted that observations have shown vessels to be able to fish specific areas with good accuracy; there could be some scope for fishing mobile gears within offshore windfarms if the layout is suitable. Depending on ground conditions, the nature of the fleet concerned, and their assessment of risk, fishermen may consider it safe to carry out potting activities within a wind farm.

Attention was drawn to observations of fishing activity within the Barrow offshore windfarm: trawling within the windfarm is widely considered hazardous and does not occur; however, potting activities are carried out. Catches from pots in the footprint of the windfarm are significant, with different boats now exploiting this area - not vessels which previously trawled the area. Fleets of 20-30 pots are being set within the windfarm. It was also noted that trawling and drift-netting used to occur in the area now developed as the Kentish Flats offshore windfarm, but has ceased since the windfarm was constructed.

It was raised that studies are lacking on how existing offshore windfarms have affected fishing activities; specifically in relation to Round 2 sites. Valuable information could be obtained on the level of displacement and what fishing activities may be taking place within the windfarm. It was agreed that the matter would be raised at the next FLOWW (Fisheries Liaison with Offshore Wind and Wet Renewables) meeting.

It was raised that if fishing is to be displaced by offshore windfarms, could 'set-aside' policies (comparable to those used in the agricultural industry) be considered?

Mitigation measures

While mitigation measures would be welcomed, it was stressed that the focus at present should be to avoid key fishing grounds. Regarding the issue of turbine spacing to minimise fisheries conflict, there is a trade-off between total windfarm footprint and potential fisheries compatibility; it is not clear whether tight or wide turbine spacing is likely to be better from a fishing perspective on any given site. In order for conflicts to be minimised, communication between fishermen and developers at an early stage is essential.

It was suggested that offshore windfarm developers should compensate for negative effects to fisheries, for example by making offshore windfarms suitable for shellfish species such as lobster, including seeding initiatives. There was a suggestion that advice should be given to developers on such potential mitigations.

Attention was brought to a DECC Research Advisory Group (RAG) commissioned study into the potential reef effects of offshore windfarms. Such potential reef effects and increases in fisheries productivity are welcomed; however, the increased risk associated with fishing closer to/within windfarms must be considered.

It was emphasised that cables must be buried - exposed cables are a major hazard to towed gears.

Other issues

Concerns were expressed over noise impacts from windfarm construction and operation; figures from a CEFAS poster⁸ were quoted, including ranges over which windfarm noise may be audible to certain commercial species. It was noted that audibility does not necessarily qualify as disturbance; however, noise is a key issue which will be given much consideration in the SEA.

It was noted that some of the information presented on the posters showed sole nursery areas to be restricted to a coastal strip. Sole nursery areas can extend far offshore, wherever shallow banks are present.

The issue of coastal buffers (for visual impact and other coastal sensitivities) was raised. It was noted that the size of any such buffers would have a major influence on the nature and level of potential fisheries conflicts.

Table A2.3 - Fisheries workshop attendees

Name		Organisation
Stuart	Anderson	Hartley Anderson Ltd ¹
Stephen	Atkins	North Western and North Wales Sea Fisheries Committees
Colin	Brown	DECC - Navigational Risk Theme Leader (RAG)
Alex	Brown	Hartley Anderson Ltd ¹
Elizabeth	Burkhard	Marine and Fisheries Agency and Minerals Management Service
John	Butterwith	North Devon Fishermen's Association and NFFO
Robert	Clark	Sussex Sea Fisheries Committee
Emma	Cole	DECC
Tim	Dapling	Sussex Sea Fisheries Committee
Edwin	Derriman	Cornwall Sea Fisheries Committee
John	Hartley	Hartley Anderson Ltd ¹
Merlin	Jackson	Thanet Fishermen's Association
Katherine	MacNeill	DECC
Chris	Morris	Guernsey Sea Fisheries
Dale	Rodmell	National Federation of Fishermen's Organisations (NFFO)
Barrie	Smart	Marine and Fisheries Agency
Judith	Stoutt	Eastern Sea Fisheries Joint Committee
Michael	Sutherland	Scottish Fishermen's Federation
Vicky	Swales	Welsh Assembly Government
David	Vale	Hartley Anderson Ltd ¹
Karema	Warr	CEFAS
John	Watt	Scottish Fishermen's Federation
Joss	Wiggins	Kent and Essex Sea Fisheries Committee
Andy	Woolmer	Shellfish Association of Great Britain

Notes: ¹ SEA team.

⁸ Thomsen *et al.* (2007). Potential effects of offshore wind farm noise on fish. CEFAS.
<http://www.cefass.co.uk/publications/posters/33794web.pdf>

A2.3.3 Offshore windfarm developer workshop

As part of the DECC Offshore Energy SEA, sector-specific offshore windfarm developer workshops were held in London on 31st October 2008. The participants comprised several DECC representatives, members of the SEA team and invited offshore windfarm developers with the aim of gathering industry perspectives on the key issues to be addressed in the assessment for the Offshore Energy SEA.

As a result of substantial interest in the meeting, two identical (am and pm) workshop sessions were held.

The objectives of the assessment workshop were to:

- To update developers on the Offshore Energy SEA progress and issues
- To facilitate access to accurate and up to date information for use in the SEA
- To facilitate discussion and gather stakeholder input and comments

Each session was structured as follows:

Initial presentations: overview of energy policy context (DECC), and offshore Energy SEA context and progress (SEA team), followed by a question and answer session.

Plenary discussion. It was emphasised that participants were free to initiate discussion as desired, although the following potential topics were suggested in the agenda as a base for discussions:

- Turbine spacing
- Turbine size
- Turbine footings
- Comments (of relevance to the SEA) on the Crown Estate Zones
- SEA relevant comments on the Carbon Trust report
- Comments on the BWEA areas of interest survey of members
- Hard constraints for windfarm siting
- Likely Round 3 development timescales

Both sessions invited questions from participants on any issues raised during presentations and were followed by plenary discussion. Outputs from the sessions are summarised below.

A2.3.3.1 Session 1

Q&A

Clarification was sought on the consultation process between the present (end October) and publication of the SEA Environmental Report (ER) (early January 2009). It was confirmed that a draft ER would not be published; and that the ER publication would be followed by a public consultation period, after which a post-consultation report would be prepared prior to a Government decision.

Further discussion of the SEA process clarified that:

- The “end-point” was a Government decision, reached at cabinet level and relating to the draft plan (i.e. licensing and leasing)

- The ER would provide alternatives / recommendations on potential for relaxation of constraints, with the objective of allowing the Crown Estate (CE) to offer leasing sufficient for a determined total generation capacity (in GW). This represents a scenario, not a target.
- The competitive process leading to leasing would be determined and implemented by CE
- Supporting studies for the SEA would be published and placed on the SEA website in the near future
- Posters from the stakeholder dialogue process would be published (in pdf format) on the SEA website; attention was also drawn to previous SEA ERs as indicative of format and content

The requirement for specific assessment for each leased zone was confirmed, and it was queried whether the SEA would allow shortcuts to this process. In response, it was confirmed that the SEA will provide a comprehensive information base and strategic assessment of significant issues. Zone- or project-specific EA would have a different focus. The importance of the assessment scoping stage to identify “show-stoppers” was discussed, together with the role of statutory advisors.

The definition of most suitable areas was discussed, with developers seeking robust guidance in relation to hard constraints. It was confirmed that the ER would provide alternatives (in terms of the interaction between constraints and total generating capacity) which would also be dependent on technology (e.g. turbine size and spacing)

Identification/ranking of most suitable areas was discussed, with clarification on terminology of “zones” – the ER has a wider spatial remit than the currently proposed CE zones. The SEA conclusions would not be prescriptive (in terms of Government decision), and that developers would need to assess risk in applying for/developing lease areas. CE may iterate the zones on offer, following publication of the ER.

The level of involvement of CE in the SEA process was queried, and concern expressed that developers may expend effort in consideration of “wrong” zones. It was confirmed that work was ongoing to align the information base and zone identification; and that the leasing and SEA programmes were progressing in parallel to minimise the overall timeframe. All ER information would be available prior to the application deadline.

Clarification was requested on how the SEA conclusions would be defined (in terms of hard constraints and boundaries); in response it was stated that the expectation was that hard constraints would be defined, with subsequent “shades of grey” to reflect the relative number of constraints and their significance.

The variable buffer zone study funded through RAG was discussed. The starting point is a review of the buffer zones established in the Round 2 SEA, with a review international experience and expansion of the seascape information base to England, building on the Scottish and Welsh experiences. The second phase will complete the seascape characterisation of the English coastline.

Further discussion of the total generation capacity contained in the SEA plan, and relationship between the SEA and Renewable Energy Strategy (RES) noted that balancing of RES objectives with other areas of Government policy would be considered in the decision process (and has already been considered in SEA scoping). The SEA remit therefore went further than strict requirements of the SEA Directive, for example in its

consideration of grid issues and potential for spatial conflicts. The various grid studies in progress were explained.

Turbine spacing

The BWEA briefing note, recommending a generating density of 5MW/km², was discussed and the various qualifications noted, in particular that this was based on there being no other constraints on windfarm development within the area, and that larger arrays would need to be subdivided giving an overall density of 2.5MW/km². Further discussion noted that:

- Turbine spacing was very dependent on individual developer attitude to risk
- Round 1 & 2 developments included some higher densities; either because of small scale, or spatial constraints
- It was difficult to generalise between zones; a conservative approach should be taken
- Density would likely vary substantially within a windfarm / area / zone
- Recent research on wake effects suggested stronger effects
- Carbon Trust was undertaking further work on wake effects

Experience in Belgium was discussed, where the principal regulatory criterion was installed capacity, resulting in driver towards increased density. This was considered to be potentially distorting, with a preference for MWh/km². From a developer perspective, key issues included site-specific wind characteristics, spacing related to blade diameter (5D or 7D) in response to manufacturer specifications, and wake effects (which could be influenced by turbine positioning).

Also in Belgium, the timing of leasing and consenting in relation to grid availability was very important, with experience of speculative applications in advance of grid reinforcement. Different approaches to grid ownership and regulation in Belgium and Germany were highlighted. It was confirmed that in the UK, grid reinforcement would be a regulated activity with a competitive, non-exclusive regime.

Turbine size

Developers were asked to confirm that anticipated increase in individual turbine size from 3 to 10MW over the course of Round 3 was likely. Discussion noted that:

- Reliability issues increased in importance further offshore and there was need for additional testing prior to commercial scale deployment of larger turbines with a real need for further demonstrator projects (cf Beatrice). It was noted that these projects could be consented outside the SEA process.
- Manufacturers aimed to market a 10MW machine by 2015; however 3MW machines would also still be in production at that time
- Consensus view was that 3.6MW machines would be installed up to 2015 with 5-10MW machines by 2020
- Interactions between turbine size, spacing and density were further discussed, along with foundation type and height

The required air gap was queried; developers responded that existing 22-25m air gap was principally in relation to recreational sailing vessels and might be reduced in areas of low recreational activity. Air gap was also related to structural economics, with general incentive to reduce, balanced by avoidance of salt spray.

Foundations

Developers were asked whether steel monopiles would be the predominant type of foundation structure. Discussion noted that:

- Soil type had a strong influence e.g. Bank (Belgium) used gravity based structures due to the nature and strength of the sediment
- Life cycle (i.e. longevity and maintenance requirements) and decommissioning issues also need to be factored in
- “Future-proofing” was also a factor – i.e. capability to replace initial turbines with larger ones
- Queried whether SEA would provide information on soil characteristics – yes but only at a general level, and site-specific assessment would still be essential to inform engineering and other decisions
- View was expressed that so many variables were involved that generalisation on foundation types was impossible – notably because of wave climate and geotechnical factors
- Consensus was that industry will generally use jacket structures >30m water depth; suction caissons have been considered (including hybrids with containers for ballast), but are considered unproven for turbines since the required diameters are large in comparison to oilfield structures
- In deeper water, foundation costs will become key commercial driver affecting generation density (MWh/km²)
- Mitigation of piling noise was briefly discussed – noted German research indicating a 10dB reduction was feasible
- The environmental effects of gravity based and piled jackets were queried, although little evidence was offered. The need for dredging (seabed flattening or pre-sweeping) and disposal of spoil was noted for gravity based structures. Scour was also felt to be a potential issue with gravity bases (as with monopiles).
- View was expressed that water depths in excess of 60m could be developed by 2015 using tethered floating structures

Carbon Trust (CT) report

Support was expressed for the CT conclusion that rigorous application of spatial constraints would result in almost total exclusion, with exception of north Dogger Bank.

Hard constraints were considered to include IMO shipping lanes, existing windfarms and MOD danger areas including firing ranges.

It was generally noted that CT had identified potential for large cost savings if spatial constraints could be relaxed.

Other issues

MOD were actively involved in consultation and it was likely that some defence/national interest factors would be considered in the SEA, but without public release of source information in the ER.

It was noted that MOD would likely need extension of ranges in future, due to increase in weapons range.

The availability of GIS layers from the BERR Maritime database was discussed, and an interactive tool for assessment of potential radar conflicts was in development, primarily for onshore windfarms.

The evolution of conservation site designations and locations was noted – the SEA will use the most recent information and will consider potential constraints associated with Natura 2000 sites, as well as identifying important issues/information gaps.

Overall progress and timeframe for Round 3 was discussed. It was confirmed that the SEA and RAG research programmes would be ongoing following completion of the SEA; other DECC work may include:

- Regional workgroups to take issues forward in the interval between the SEA decision and consenting stage
- Clearer guidance to developers on consenting requirements
- Support for regional environmental assessment (speeding up critical path to consenting)
- Scoping and facilitation

A2.3.3.2 Session 2

Q&A

The main issues to come out of stakeholder dialogue meetings were queried – it was noted that reports from these would be posted on the SEA website over the next ten days.

An apparent discrepancy between spatial coverage of the aerial bird surveys and SEA area was queried – it was noted that:

- Aerial surveys were necessarily limited to nearshore areas
- Extensive offshore bird data already exists, with updates from new coverage in 3 areas selected on the basis of a gap analysis

It was further noted that the repeat SCANS survey had described a apparently major shift in distribution of harbour porpoise in the North Sea, and that this emphasised the need for long term data.

Developers want the SEA to facilitate project-specific EA; in relation to this, it was queried whether sufficient (2-3 years) bird data were available. It was noted that the map presented had shown only new bird survey effort; considerable data had been acquired previously, and it is anticipated that further work would be undertaken under a rolling SEA programme. COWRIE is also considering further work on this topic.

A query was raised in relation to expected changes in Crown Estate round 3 zones following the SEA (and other considerations). In response, it was noted that:

- CE objectives are different (and more commercially driven) than those of the SEA
- There was reasonable correspondence between the CE zones and the results of the BWEA survey of members areas of interest – most likely that the SEA would enlarge the total available area
- It is expected that CE will take the SEA's findings into account (little point in leasing areas which DECC would be unlikely to consent)

Turbine spacing

As previously, $2.5\text{MW}/\text{km}^2$ was considered to be realistic for larger developments, with a preference expressed for conservative estimates. It was noted that the agreed value was a “reality check” and not a constraint. Other useful metrics could be MWh/km^2 or $\text{cost}/\text{MWh}/\text{km}^2$.

Energy capture was felt to be the key issue (rather than turbulence-induced fatigue). In general, onshore spacing was 3D across, 5D downwind; offshore 5D/7D were more appropriate (giving $10\text{MW}/\text{km}^2$, but this value is not applicable over a large area).

Attention was drawn to Horns Rev, which experienced ca.12% losses due to wake effects and that the effect of scaling development size several times is currently unknown. Work is ongoing, but significant improvement in understanding will need a large Round 2 development to be operational.

Some commercial sensitivity around this issue was noted. Additional, confidential contributions to the SEA programme would be welcomed, both prior to the ER and during the consultation period.

Turbine size

A progression from 3-5 to 5-10MW by 2015-2020 was considered a reasonable assumption.

Foundations

It was considered likely that a combination of monopile/gravity base/jacket/suction caisson designs might be used within an area; dependent on site survey and characteristics.

Floating designs were not considered likely to be viable in water depths $<60\text{m}$; although the possibility should be included since design work was ongoing for 45-50m. Deeper water depths would likely be considered by future SEAs.

Monopile designs were looking non-viable even at 30m, for larger turbines.

Mitigation of piling noise – developers’ views were invited, but little practical experience could be offered. Relevant experience from offshore oil & gas was noted, with mitigation tending to consist of temporal measures such as avoidance of a particularly sensitive period or season. However, the duration of activities needed for major windfarm development may make such temporal measures operationally and commercially challenging.

As previously, it was noted that some types of foundation required considerable ground preparation; the SEA therefore needs to consider spoil disposal. However, where there was detailed seabed topographic information, gravity based structures can be pre-engineered to fit the seabed minimising ground preparation.

The need to consider decommissioning was also noted, together with the disparity of views on artificial reef construction.

A development in Hong Kong using suction caissons was noted: trial installation and removal has been carried out successfully.

Hybrid structures were likely to be developed and used by 2015-2020; most likely in <100MW demonstrator sites. The need to demonstrate larger turbine sizes was also noted in this context.

The possibility of vertical axis machines was discussed, although the timescale and commercial viability was uncertain. DECC funding of a project with 2020 context was noted.

The issue of scour was discussed, although this had not been identified as a significant problem in previous UK windfarm developments or stakeholder dialogue meetings.

SEA coverage

It was queried whether the SEA would cover port development (i.e. land reclamation etc). In response, it was considered that although landward developments could be considered as consequent on the proposed plan, the SEA Steering Group had reached the view that the SEA would not consider these. The ongoing ports capacity study on behalf of DECC was noted.

The SEA relationship with Scottish territorial seas was queried. It was confirmed that key issues, such as cumulative effects, were under consideration and that discussions were ongoing to ensure consistency between the two programmes. The SEA would consider potential effects arising within Scottish territorial seas.

Developers queried whether the SEA was considering Round 2 areas, i.e. extension of existing R2 projects. It was noted that some R2 projects already had consent for more generation capacity than was currently leased; but that active consideration was being given to how to extend capacity targets and spatial extent of R2 projects within this SEA. The current SEA could also consider overall capacity >25GW.

Other issues

It was queried whether bird conservation would be considered a hard constraint; in response it was noted that bird issues could be partially addressed through coastal buffer zones, and considered the offshore SPAs would be a constraint, but not absolute.

It was noted that although the Carbon Trust report had factored higher load factors (45%) in offshore areas, it was not clear how additional operational maintenance costs had been included. In discussion, it was queried how applicable Round 1 experience on reliability and maintenance issues was; and noted that it was distance from port (rather than from coast) which was the relevant factor (Robin Rigg and Horns Rev phase 2 were contrasted in this respect).

It was noted that the SEA would consider competing issues but that the final decision would be the Government's. The potential value of a Strategic Economic Assessment was noted - this was under consideration by DECC (building on the Carbon Trust study).

It was queried whether a Round 3 application in greater than 60m water depth could be considered – The view was that a demonstration-scale project could be consented; otherwise further SEA would be needed. Offshore grid extensions and upgrade could also require SEA, if a strategic plan was developed, although this needed specific consideration of the SEA Directive requirements.

Perspectives on the Appropriate Assessment requirements for Round 3 were described, with the following points noted:

- A screening assessment would be needed following the SEA decision (to identify potential interactions with designated sites)
- Legal advice was in preparation, and should be available by the time of publication of the ER
- DECC was considering a Habitats Directive screening on a zone-specific basis, during summer 2009, based on bids submitted to CE. This could be a 6-7 month process.
- Appropriate Assessment screening was seen as facilitating effective management of developments (e.g. through identification of cumulative effects) rather than as a regulatory constraint.

Table A2.4 - Offshore windfarm developer workshop attendees

Name		Organisation
Katherine	MacNeill	DECC
Emma	Cole	DECC
Angela	Wratten	DECC
John	Hartley	Hartley Anderson Ltd ¹
Stuart	Anderson	Hartley Anderson Ltd ¹
Session 1		
Duncan	Ayling	BWEA
Nicola	Baberis Negra	DONG Wind (UK) Ltd
Neil	Budd	Watson, Farley & Williams LLP
John	Buswell	Clipper Windpower Marine
Dean	Cooper	Ambrian
Jonnie	Cox	Ambrian
David	Crowther	Centrica Energy
Robert	East	Airtricity
Dan	Finch	Sea Energy Renewables
Luuk	Folkerts	Ecofys
Ferdinando	Giammichele	DONG Wind (UK) Ltd
Ben	Gowers	Nuon Renewables
Henriette	Haavik	Statkraft AS
Nick	Haley	FreeStream Offshore
Chris	Hill	Main Stream Renewables
Julian	Horn	Falck Renewables
Anja	Husebye	Statkraft AS
Jesper	Karup Holst	DONG Wind (UK) Ltd
Sandra	Leece	Shepperd & Wedderburn LLP
Jason	Martin	Scottish Power Renewables
Graham	Mason	Fluor Ltd
Bob	Meijer	Ecofys
Simon	Morgan	Acciona Energy UK Ltd
Matt	Partridge	Ecotricity
Peter	Rafferty	Airtricity
James	Roy	Banks Developments Ltd
Mike	Scott	Fluor Ltd
Shahan	Shaikh	Bank of Ireland Corporate Banking
Christian	Stevens	UK National Grid

Name		Organisation
Dean	Travers	Electrabel
Marc	Van de Perre	Power@SEA
Session 2		
Chris	Banks	RES Offshore
Bjørn	Bergemo	StatoilHydro ASA
Birgit	Böhme	Plambeck Neue Energien AG
Peter	Clusky	UK Trade & Investment
Andrew	Craig	Ambrian
Peter	Crone	Farm Energy Ltd
Glen	Evertsen	Amec
Peter	Fish	SLP Energy
David	Flood	SLP Energy
Steve	Freeman	Emu Ltd
Ed	Frost	Renewable Energy Systems
David	Garner	Dong Wind (UK) Ltd
Richard	Hatton	REpower Systems AG
Patricia	Hawthorn	Shepperd & Wedderburn LLP
Carolyn	Heeps	Fred Olsen Renewables
John	Houghton	Bond Pearce LLP
Joseph	Hussey	Wind Prospect Group
Laura	Jeffs	Centrica Energy
Patricia	Jehle-Hanke	Plambeck Neue Energien AG
Vicky	Kennard	SeaRoc
G	Kruger	Eurus Energy UK Ltd
Carol	Lim Apel	Hammonds LLP
Colin	Morgan	Garrad Hassan Ltd
Tom	Newcombe	Eversheds LLP
Simon	Page	Platina Partners LLP
Andy	Paine	ESBI Investments
John	Picken	Mitsubishi
Wilfried	Pimentade	OceanWind AS
Mike	Prowse	A2SEA Ltd
Taylor	Roark	Mainstream Renewable Power
Motoyasu	Sakamoto	Eurus Energy UK Ltd
Giles	Sibun	E.ON Climate & Renewables
Edwina	Sleightholme	Vattenfall
Dave	Such	Xanthus Energy Ltd
Ian	Taylor	Good Energies (UK) LLP
Tom	Thorogood	Noble Denton
Bruce	Valpy	UK Renewables
David	Wilson	Wind Energy Services

Notes: ¹ SEA team.

A2.4 STAKEHOLDER WORKSHOPS

A2.4.1 Introduction

A series of three stakeholder workshops took place during the preparation of the environmental report; these were held in Cardiff, Glasgow and London on the 16th, 23rd and 29th of October 2008 respectively. A wide variety of potential stakeholders were invited to the workshops, these included UK regulators, government advisors, local authorities, other industry representatives, academics, non-governmental organisations, potential international stakeholders and those who registered with the SEA website.

A2.4.2 Aims and structure

All workshops followed the same aims, structure and agenda. The workshops had two key objectives:

- To provide stakeholders with an overview of the energy policy context and background to the Offshore Energy SEA.
- To gather stakeholder input to and comments on the information and analysis on which the Offshore Energy SEA is being based.

The workshop was structured into three sessions:

Session 1

Session 1 comprised a series of introductory presentations covering:

- Energy policy, supply and security; renewable energy strategy; climate change context
- Offshore Energy SEA scope, activities and issues
- Licensing, leasing and permitting context

A question and answer session followed to allow delegates to clarify any issues.

Session 2

Session 2 took the format of a poster session with the delegate feedback questionnaires providing a framework for stakeholders to capture feedback.

Posters were divided into the following themes:

- Offshore Energy SEA background, scope and purpose
- Offshore wind, consents and controls
- Offshore oil and gas, prospectivity, sources of effects, controls and mitigation
- Information base - physical and chemical environment, ecology, conservation
- Information base - material assets, human users, seascape considerations

Delegates were asked to capture feedback under the following headings:

- A. Points for discussion in plenary.
- B. Information base for the Offshore Energy SEA - Are there any studies, reports, or other information which should be considered for the Environmental Report?
- C. Key considerations for the Offshore Energy SEA - Based on the information presented and on the posters, consider the following questions:
 - (1) What do you view as hard constraints for siting of offshore windfarms in the context of the multiple uses/designations of the seas around the UK, together with the need for security of supply and response to climate change?

- (2) Similarly, are there any temporal/spatial controls necessary on activities in blocks offered for oil and gas licensing?
- (3) Are there any activities associated with oil and gas exploration and production and offshore windfarm construction and operation for which you feel require additional operational controls?
- D. Other comments - Are there any other comments which you would like to make for consideration in the Offshore Energy SEA?

Session 3

Session 3 was a facilitated discussion in plenary. Discussions were initiated by the SEA team on frequently occurring topics/issues in feedback questionnaires, followed by the opportunity for stakeholders to raise any other issues they wished to discuss.

A2.4.2.1 Outputs

Plenary discussions were captured and are summarised below for each individual workshop in Tables A2.5-A2.7. Written feedback in response to questions B and C is tabulated below in Tables A2.8 and A2.9-A2.11 respectively, also separated for each individual workshop and with feedback listed in no particular order of importance. Responses to question D are listed in Table A2.12. Where two or more stakeholders provided very similar feedback, these are displayed as one representative comment followed by information on the number of stakeholders making the comment e.g. "(x3)".

Table A2.5 - Cardiff workshop plenary discussion

Cardiff workshop
<p>Giving a weighting to factors in the assessment - which do stakeholders feel are most important / not being given adequate consideration?</p> <p>Recreational water use and tourism were both mentioned as important factors. Stakeholders were assured they were being considered in the assessment.</p> <p>Concern was expressed about the validity of judging seascape effects from the office and the impact that this would have on visibility buffers.</p> <p>There was much concern expressed that wet renewable energy sources are not being given enough consideration. Stakeholders were told that the technology was not currently considered advanced enough for large scale use.</p>
<p>Engaging with the public - does "out of sight" really mean "out of mind"?</p> <p>It was commented that further developments in marine spatial planning would make decision making easier and improve public understanding of issues.</p> <p>It was suggested that the public response may be unpredictable and not always based on a full understanding of the issues. It is possible that there will be a public backlash against offshore windfarms which would hinder development - developers should be prepared for this. Examples were given of the public engaging in the debate about the siting of windfarms.</p>
<p>How do we learn best from previous licensing rounds and SEAs?</p> <p>It was commented that learning simply by demonstration was a necessarily slow process and that if there is a gap to design better monitoring systems, it should be exploited.</p>
<p>Is there adequate baseline monitoring?</p> <p>There was a debate about whether current baseline assessments were adequate to allow conclusions</p>

Cardiff workshop
to be drawn regarding the effects of an installation on a habitat. The general feeling was that there was a necessary trade-off between obtaining fully conclusive baseline assessments and making good progress.
Where are data gaps being found / filled?
Recent mapping of offshore bird distributions was mentioned as an example of an important data gap that has been filled.
Stakeholders were informed of the forthcoming consultation workshops with the navigation and fishing industries at which it is hoped further data and information will be obtained.
A point was made about the importance of drawing developments in research from the academic world more effectively and rapidly into consideration in assessments.

Table A2.6 - Glasgow workshop plenary discussion

Glasgow workshop
How will Appropriate Assessment (AA) be approached following this SEA?
The issue of how best to achieve Appropriate Assessment of licensing and leasing following the SEA in a timely fashion is currently under discussion within DECC. It was noted that one idea under consideration was a scoping assessment of Round 3 zones to confirm which may require AA; by this stage activity scenarios should be known.
Omission of Scottish territorial waters for offshore wind from this SEA
A SEA for offshore wind in Scottish territorial waters will be announced in the near future. Stakeholders were informed that the Offshore Energy SEA is being written in a manner which could feed into such a Scottish SEA.
How will conflicts with navigation interests be addressed?
Stakeholders were informed of a forthcoming sector-specific navigation workshop to address this.
To what extent will the SEA perform a social/economic assessment?
The SEA is considering human uses of the marine environment. The question of finding a balance between human and conservation issues was raised; conclusions may be different for different interests - how will priority be assigned to socio-economic and global or local environmental objectives? Stakeholders were informed that there will have to be some compromise; such decisions will be taken by DECC, with the final say coming from Cabinet.
Ensuring the best use of SEA resources: an integrated approach to data gathering
The SEA team noted that the SEA programme already includes a considerable amount of information gathering and sharing. The question was posed to stakeholders: do we need a nation-wide programme?
One stakeholder felt that communication and collaboration between government departments could be better. Extensive collaboration and information sharing with respect to Round 3 was suggested. Several stakeholders acknowledged that integration would be valuable.
Is it wise to exclude waters >60m depth from consideration for offshore wind?
One stakeholder noted that technology was advancing rapidly, and suggested that floating turbines could be available within 5-10 years. It was noted that such technology was not really a consideration for this SEA.
Is the SEA website the best method of communicating SEA outputs?
It was noted that the website is a valuable resource which will be supplemented by widespread public

Glasgow workshop
<p>notices and other initiatives; a communications plan is currently under development. Communication events may be held once the Environmental Report is released for consultation.</p> <p>Some stakeholders raised concerns that while a useful resource, the website might be missed by people unaware of this topic and much of the general public. Public exhibitions (specifically in areas where people take a particular interest in the marine environment) and a documentary were suggested as potential initiatives for reaching the wider public.</p>
The cumulative effects of multiple, simultaneous offshore windfarm construction
<p>It was noted that cumulative effects are very difficult for advisors/regulators to consider and address. Mitigation must look beyond specific projects.</p> <p>It was noted that studies in Denmark had shown displacement of a marine mammal (harbour porpoise) from an offshore windfarm area during construction, but that animals eventually returned some time after construction activities ceased.</p> <p>More studies on the actual effects noise were called for. It was noted that COWRIE have been doing some work towards this.</p> <p>At present, the guidelines for minimising disturbance to marine mammals, incorporating visual and acoustic monitoring and soft-start procedures, are the best option for project-specific mitigation.</p>
Layout of the Environmental Report and date of release
<p>The SEA team noted that the layout (in terms of assessment and overall presentation) was not yet confirmed, but that it would be publicly available for consultation from the 1st or 2nd week of January.</p>
Future wave and tidal SEA
<p>Several stakeholders emphasised that ‘the sooner the better’ with regard to SEA of wave and tidal leasing. It was acknowledged that this need addressing, with attention drawn to the demonstrator projects currently deployed and being monitored to shed light on environmental effects.</p> <p>It was emphasised that the Offshore Energy SEA, while not considering a plan for wave and/or tidal leasing, was doing widespread data gathering, much of which will be of considerable value to any future wave and tidal SEA. One stakeholder questioned this, suggesting that much information was tidal-stream specific and that information gathering these issues were lacking.</p>
Can we categorise certain activities as environmentally benign?
<p>One stakeholder raised the issue: from the results of assessment and monitoring, can we exclude certain activities from lengthy assessment and monitoring programmes? They suggested that the SEA ought to be able to ‘cross off’ some effects where appropriate.</p>
Are any new issues relating to gas storage likely to arise in the SEA?
<p>It was emphasised that gas storage will take place in previously/currently licensed oil and gas areas, using tried and tested technology; major new issues are not expected.</p>

Table A2.7 - London workshop plenary discussion

London workshop
What level of co-ordination with the oil and gas sector has taken place, specifically regarding the relaxation of the 6nm exclusion zone for wind turbines where it is safe to do so?
<p>It was noted that the 6nm exclusion zone was not necessarily a hard constraint, and modifications to this may be agreed between developers and oil and gas operators. Risk assessment and consultation is required for each specific platform.</p>
Consideration of recreational boating is completely lacking in material presented within the

London workshop
posters
Attention was drawn to ongoing input to the SEA process from the Royal Yachting Association (RYA), with the SEA to use the existing RYA atlas of recreational boating and hopefully a revised version if available in time.
Has the Offshore Energy SEA commissioned a technical report specifically for the historic environment?
It was confirmed that Wessex Archaeology has been commissioned to produce a UK-wide technical report which will inform the SEA.
To what extent are onshore impacts being considered in the SEA?
It was noted that a landward limit of 10km from the coast had been specified as a limit for consideration of effects to onshore conservation sites.
How will the timing of Appropriate Assessment (AA) be linked into the SEA process?
The issue of how best to achieve Appropriate Assessment of licensing and leasing following the SEA in a timely fashion is currently under discussion within DECC. It was noted that one idea under consideration was a scoping assessment of Round 3 zones to confirm which may require AA. It was emphasised that an AA of the SEA itself could not be achieved as the location and nature of developments within Round 3 are currently unknown.
Cumulative impacts need to be considered e.g. impacts on marine mammals of piling multiple windfarms simultaneously
Cumulative effects will be considered in the SEA. Attention was drawn to EIA guidance on offshore windfarms and cumulative effects in preparation. It was noted that assessment of cumulative effects of noise on marine mammals was very challenging; our understanding of effects, particularly the noise levels at which they can be expected, is limited. Cumulative effects will be covered as in previous SEAs, although will incorporate new information where available.
How early can SEA be used for Carbon Capture and Storage (CCS)?
It was noted that SEA will be applied to CCS at some point in the future; however, at present the information on which to base such an environmental assessment is lacking.
Grid access is crucial - how will this be achieved quickly? Should grid investments be made ahead of wind developments?
A balance is required between what development is likely to occur (i.e. where grid upgrades will be required) and improving grid access to reduce the risk for developers and encourage applications. It was noted that more decisions on grid upgrades would be made following finalisation of the Round 3 zones. This SEA is considering a wide area, beyond the Round 3 zones, so that further rounds of oil and gas licensing and offshore wind leasing may be based upon it.
How will wider energy policies be managed in relation to the SEA?
DECC will provide advice to ministers following the SEA; decisions will then be made on how energy develops in the UK.
Lessons learned: the extent of consideration of monitoring results from existing offshore windfarms.
Results of monitoring from existing UK windfarms have been considered as much as possible, in addition to monitoring from sites overseas and academic studies.
Discussions took place on the comparisons which can be made between Round 1 and 2 studies and the larger scale, further offshore developments which will characterise Round 3. Such differences are acknowledged, with extrapolations often based on best judgement. With regard to sites further offshore, lots of experience from the oil and gas industry is being drawn upon. In such areas, the

London workshop
knowledge base for simple temporal controls on activities such as piling is limited; alternative forms of mitigation may have to be used.
It was raised that offshore windfarm construction is subject to a wide range of temporal constraints such as weather and rig availability; if additional temporal constraints (e.g. for species conservation) are imposed it may prove very difficult to meet EU targets.
Much of the data used in the SEA has a limited shelf life; what work is ongoing to address this?
The adequacy and currency of the information base is constantly reviewed. Projects are ongoing to identify gaps in understanding and fill them - this will continue long beyond publication of the Environmental Report. This SEA is intended to inform further licensing and leasing beyond the current draft plan; the information base will be extensively reviewed before this.
It was emphasised that data is constantly being gathered, including data which are of relevance to all energy industries. Attention was drawn to the DECC Research Advisory Group (RAG) and its contributing studies into marine renewable energy. It was also noted that a further SEA may be required in the future with an expanded scope to address technological developments such as offshore windfarms in waters >60m depth.
How does the SEA relate to marine spatial planning?
The SEA is essentially an exercise in marine spatial planning, comparable to the tasks which will be performed by any forthcoming Marine Management Organisation, only on a smaller scale.
Availability of spatial information presented in the SEA
Discussions took place on the availability and format of the spatial information which will be presented in the Environmental Report. Some stakeholders requested that all spatial data should be publicly available in a GIS-ready format.

Table A2.8 - Question B

Are there any studies, reports, or other information which should be considered for the Environmental Report?
Cardiff workshop
<ul style="list-style-type: none"> Existing Round 1 and Round 2 Environmental Statements and conclusions from existing monitoring. Information obtained by scientific cruises run by non-UK bodies in UK waters. How are bats and their barotraumas to be included? Suggestion that all baselines should be based on ten-year surveys. Continued data-exchange between the Welsh MRESF project and Severn tidal power. Impacts of offshore energy projects on recreational water users. Water quality impacts of a Severn barrage. British Geological Survey information of possible offshore CO₂ storage sites (mainly off east England), to avoid compromising them by constructing wind farms on top of them. Witt M & Godley B (2007). A step towards seascape scale conservation: using VMS to map fishing activity. PLoS ONE 2(10):e11111.doi:10.1371/journal.pone.0001111 Witt M et al. (2007). Prey landscapes help identify potential foraging habitats for leatherback turtles in the NE Atlantic. Marine Ecology Progress Series 337: 231-243. Pesante G et al. (2007). Abundance and life history parameters of bottlenose dolphin in Cardigan Bay: Monitoring 2005-2007. CWW Monitoring Report 61. Grimsell D, Kiersch L & Foster E (2008). Response to the 2007 BERR Appropriate Assessment with regard to the 24th Offshore Oil and Gas licensing round: Blocks 160/30, 107/21 and 107/22.
Glasgow workshop
<ul style="list-style-type: none"> Further studies into the ongoing effects (if any) of offshore wind farms on the environment.

Are there any studies, reports, or other information which should be considered for the Environmental Report?

- Before/After control-impact (BACI) studies carried out in Denmark to assess the effects of construction and operation of wind farms on marine mammals - see Tougaard *et al.* (2006).
- COWRIE funded reports carried out a desk based study to assess the effects of wind farm construction on marine mammal behaviour. SMRU Ltd (2007) COWRIE report on the use of acoustic harassment devices and Niels *et al.* (2007) COWRIE report on the use of mitigation strategies for reducing noise emissions during piling.
- OGFA 'Sound and Marine Life' international studies- may provide useful reference documents. Contact Frank Beibour to check on timescales and potential availability.
- Regional Environmental Assessment for Aggregates – Particularly REA for eastern channel region (ECR) "Blueprint" and future monitoring undertaken by EMU Ltd. Thames area commenced (surveys underway) and Humber Area in pipe-line.
- Aggregates extraction prospecting areas - these are, so far as JNCC are aware, are not made public but indicate interest in a potential resource plus therefore future resource areas.
- New legislation and ballast water discharge areas will soon be required to transpose the ballast water management convention (IMO) These may be adjacent to shipping lanes and could well be in the SW approaches to the English channel or similar. Contact MCA although UK discussion on appropriate areas has not yet commenced (they need to be 200m deep and greater than 50nm from shore where possible),
- Information from MEDIN (Marine Environment Data Information Network) currently founded by NERG, Defra, Scottish Government.
- Marine Information Alliance (includes Fugro, shell, IMarEST) brings together private sector and public sector data gatherers.
- Huge data resource held by BODC (British Oceanographic Data Centre).
- Need to make more use of environmental information collected for site studies by the offshore industry and conservation bodies etc.
- Military underwater noise assessments – available?
- Marine Bill
- Oil and Gas UK are collating environmental survey reports from the oil and gas industry which may be of value.
- Regulatory Impact Assessment of Scottish SPA marine extensions.
- South West Development Agency - offshore windfarm capacity study.
- Scottish Marine Bill.
- Water Framework Directive in Scottish coastal waters.
- Guidance on deliberate disturbance of marine mammals.

London workshop

- UK coastal atlas of recreational boating - applies to all UK waters and is currently being updated. Information is GIS-ready and is available now, although a final revised version should be ready in January 2009. Available from RYA.
- Environment Agency SEA Good Practice Guidelines.
- Marine aggregate Regional Environmental Assessments - scoping reports for Thames and south coast regions.
- The Strategic Importance of the Marine Aggregate Industry (available from BGS).
- Monitoring reports from offshore windfarms across Europe.
- CCW land/seascape value maps and sensitivity assessment.
- CCW marine mammal database - both Irish Sea and Bristol Channel areas.
- Assessments of effects on the historic environment from other sectors e.g. Marine Aggregates Dredging and the Historic Environment Guidance Note.
- Report generated by ALSF e.g. England's Shipping (digital atlas); England's Historic Landscapes; Modelling Exclusion Zones for Dredging; On the Importance of Shipwrecks; Assessment of archaeology with marine aggregate environmental assessments; Artefacts from the Seabed. See: <http://www.english-heritage.org.uk/maritime> for a full list of reports.
- For coastal archaeology and submerged sites, refer to English Heritage's National Monument Record and Historic Environment Records for local authorities.
- Defra: Irish Sea Pilot Project; Charting Progress 1 & 2 (in prep); marine environment R&D

Are there any studies, reports, or other information which should be considered for the Environmental Report?
<p>programme; MALSF, Marine Bill publications.</p> <ul style="list-style-type: none"> • Thames Estuary Partnership/Thames Dredging Liaison Group. • Shipping AIS surveys from Round 1 and Round 2 project EIAs - as a condition for Crown Estate agreement for lease this data must be supplied to COWRIE data room. • AIS tracking of fishing vessels would quickly inform areas of conflict e.g. data from Anatec, Scottish Fishermen's Federation. • Relevant data held by oil and gas operators which is not in the public domain - could DECC access this through negotiations or license clauses? • Consultation with international governments/agencies/stakeholders regarding assessing cross-border issues/impacts, particularly for the Dogger Bank. • Guidance on the assessment of cumulative impacts to birds.

Table A2.9 - Question C.1

What do you view as hard constraints for siting of offshore windfarms in the context of the multiple uses/designations of the seas around the UK, together with the need for security of supply and response to climate change?
Cardiff workshop
<ul style="list-style-type: none"> • Key conservation sites, specifically Natura 2000 sites (x3). • Existing wind farms and key navigational channels (x3). • Existing offshore structures, military and security areas, grid connection capacity, supply chain constraints (e.g. turbine manufacture) and pipelines. • MoD danger areas. • Existing undersea cables. • Position of wave and tidal resource areas, to protect the potential of the wet renewable sector. • Temporal and spatial variation in wind climates to ensure continuity of supply. • Dredging areas. • Identifiable marine mammal populations.
Glasgow workshop
<ul style="list-style-type: none"> • Important areas for navigation (commercial and recreational), including shipping lanes, routes and areas of radar conflict (x8). • UK defence interests, including radar (x7). • Nature conservation designations, specifically current and future Natura 2000 sites (x6). • Major seabird and marine mammal concentrations (for breeding, feeding, migration) (x6). • Grid connection (x5). • Fishing grounds (x5). • Aviation radar conflict areas (x3). • Existing oil and gas activities/infrastructure when incompatible (x3). • With the exception of major shipping lanes, everything should be manageable at a cost. • Visual Impact - buffer zone imperative. • Maintenance of extensive fishing grounds especially in relation to new potential closure areas and potentially enhanced active fisheries management. • Safety: munitions, wrecks. • Generally the application of appropriate thresholds to define areas to be avoided more relevant than absolute prohibition. • Not fish spawning/nursery areas - absence of fishing activity would be a bonus. • Important areas for turtles. • Important archaeological sites (x2). • Impact on the fishing industry - possible seasonal control placed on wind farm construction. • Assessing the cumulative effects of wind farms with other activities such as shipping and the proximity to other wind farms. • All covered by topics on the poster boards.

What do you view as hard constraints for siting of offshore windfarms in the context of the multiple uses/designations of the seas around the UK, together with the need for security of supply and response to climate change?

- Licensed dredging application.
- Helicopter access.
- Consenting determination process and timescales.
- Who decides which issue/need takes precedence and why? Keeping everyone happy may not necessarily get the results we need to meet certain targets.
- Need to develop cheaper methods to rapidly install offshore wind - e.g. SPAR/tension leg moored floating systems.
- Biggest insurance cost to date with wind farms is due to the power lines being severed by fishing boats, aggregate dredges etc. - better marine spatial planning and enforcement.
- There is a clear need to develop the offshore renewables industry - we are doing this with an incomplete database and seabed data, underestimating the environmental issues (noise). Once we have a proper seabed map (based on multibeam) we would be better able to plan and allow multiple uses. Like to see a focus of data collected and interpretation by government agencies in key areas that will aid the offshore renewables industry.
- Technology challenges (water depth).
- Future MCZs.
- Water depth.
- Geological conditions.
- Meteorological conditions.

London workshop

- Grid connection (x3).
- Conservation sites, specifically MCZs, Natura 2000 sites, Ramsar sites.
- Conservation areas should not be considered 'hard' constraints, they can be worked around; however, they should not be considered as 'soft' constraints and ignored.
- IMO routeing areas for shipping.
- Key fishing areas.
- Key navigation areas (x2).
- Existing offshore windfarms, although allow upgrading as improved turbines become available.
- Subsea cables and oil and gas infrastructure (x2).
- Coastal buffer zone.
- Suitability of geology.
- MoD interests are key constraints.
- Protected wrecks.
- Need to consider current and future aggregate extraction areas and routes to and from these (x2).
- Sites potentially particularly suitable for carbon capture and storage.
- Only pre-licensed areas of the sea (e.g. dredging areas, oil & gas facilities). Nothing else is truly a 'hard' constraint; values can be attached to all present (and future) claims on the sea, and offshore wind should be compared to other claims based on this value judgement.
- The only hard constraints are economic ones; all impacts on the environment can be mitigated and human issues are simply a matter of priority.
- None - developers should be free to propose any area, at their sole risk, and try to find a solution for that particular area.
- Hard constraints should be kept to a minimum.
- Either the SEA or the government's decision on Round 3 should consider economic and consenting constraints.

Table A2.10 - Question C.2

Similarly, are there any temporal/spatial controls necessary on activities in blocks offered for oil and gas licensing?

Cardiff workshop

Similarly, are there any temporal/spatial controls necessary on activities in blocks offered for oil and gas licensing?
<ul style="list-style-type: none"> Seasonal migrations, particularly for megafauna. Consideration of oil and gas as chemical feedstock. Sustainability of oil and gas reserves. Buffer zones must be justifiable. No activities in blocks within designated conservation areas. Limits on new developments within a time scale to consider the effects of climate change. Natura 2000 sites.
Glasgow workshop
<ul style="list-style-type: none"> Spatial control needed in relation to known seabed features of interest. More work needed on effects of noise on cetaceans. Temporal controls may be required for certain high risk activities associated with oil and gas developments that are located in area of high sensitivity/vulnerability for marine fauna - e.g. seabird breeding for oil and gas and collision risks for seabirds with turbines. Controls necessary in areas of sensitivity but should not exclude oil and gas activity. All possible impacts should be avoidable at some financial cost. Vessel traffic, shipping, MoD use, fishing grounds, MPAs. Definition as to what legislation carbon capture and storage development will be consented under. Maybe - project specific though. Necessary controls are already in place (x4).
London workshop
<ul style="list-style-type: none"> Consideration of currently licensed marine aggregate dredging areas. Should continue to use existing controls (x2). Oil and gas facilities should not be hard constraints for offshore wind developers. The 6nm exclusion zone for offshore wind turbines around surface infrastructure (oil and gas) needs to be flexible; it should not be uniformly enforced but considered on a case-by-case basis (x2). Can the 6nm exclusion zone around surface infrastructure (oil and gas) be reduced to 3nm on the seaward side? Maybe provide an incentive for oil and gas developers to surrender sites due for decommissioning for windfarm development.

Table A2.11 - Question C.3

Are there any activities associated with oil and gas exploration and production and offshore windfarm construction and operation for which you feel require additional operational controls?
Cardiff workshop
<ul style="list-style-type: none"> Transit routes during construction and operation. Understanding of the implications and policing of controls where international or trans-boundary concerns may be affected. Cumulative effects may bring in the need to apply additional controls. Seismic surveying and other sources of noise pollution. Physical disruption of substrate during installation, decommissioning etc. Improve current framework relating to mitigation measures with respect to seismic activity.
Glasgow workshop
<ul style="list-style-type: none"> Do the FERA and CRA controls for wind farm construction and maintenance include the recovery of dropped objects from the seabed? Wind farms - physical protection from other users. Information on harmful effects of seismic surveys is still lacking. Every effort should be made to minimise seismic activity in areas/times when/where cetaceans are abundant (x2). Decommissioning activities of oil and gas developments- considerations of cuttings piles. Barrier effect of large offshore wind farm development on birds moving longshore (plus from

Are there any activities associated with oil and gas exploration and production and offshore windfarm construction and operation for which you feel require additional operational controls?
<p>feeding to breeding grounds) to be moderated by leaving gaps between clusters.</p> <ul style="list-style-type: none"> • Long term monitoring of these schemes is a must, it would be wise (given the level of uncertainty associated with the renewable technologies) to implement an adaptive management approach. • Monitoring programmes of impacts from the activities. • Not sure whether the current mitigation strategies are listed as “potential” mitigation strategies by DEFRA/JNCC or “enforced” strategies. • Review requirements for repeat environmental surveys in licensed areas. • Ensure all data collected is lodged with data archive centres and made publicly available. • None that are not already covered through FEPA licence conditions. • Pile driving (x3). • Decommissioning.
London workshop
<ul style="list-style-type: none"> • No (x3) • Not at an SEA level. • Pipelines and cables. • Issues should be left for discussion and agreement between respective developers. • Potential turbine shutdown during times of high bird impact sensitivity e.g. peak migration periods, if turbine sensors detect large numbers of birds.

Table A2.12 - Question D. Are there any other comments which you would like to make for consideration in the Offshore Energy SEA?

Cardiff workshop
<ul style="list-style-type: none"> • Use of software (eg: MARXAN) in final selection of areas for development. • Implications of trans-boundary effects, eg: common fisheries. • Understanding of the process of identifying stakeholders for consultation. • How can future SEA processes be improved (eg: avoiding the Crown Estate issue)? • The effects of offshore wind farms on the wind climate and on wind-induced currents and waves with subsequent implications for flooding and the dispersion of aerial pollutants. • How is a lack of data in a particular area being considered in mapping? Will confidence maps or data coverage maps be used? • Zoning should be implemented for licensing and leasing to make areas unsuitable for these activities clearer from the start of the process. • Consideration of the likely significant effects of any increase/reduction in CO₂ and other emissions associated with these activities. • Concern that simplifying and streamlining planning procedures limits the opportunity for objections to be made. • Must not interpret a lack of evidence of environmental impact as evidence of no environmental impact. • It would be useful for the SEA to consider consenting risk associated with marine conservation regulations and risk associated with appropriate assessment. • The importance of presenting evidence independently. • What are the impacts on displaced ecological communities and/or the fishing industry? • Is greater co-ordination between industries for monitoring purposes an option? • More consideration to upcoming technologies should be given.
Glasgow workshop
<ul style="list-style-type: none"> • Omission of offshore wind in Scottish territorial waters is a big issue given the likely scale of future development in these waters. • As Scottish territorial waters are excluded from the SEA, I hope that the Scottish Executive will follow a similar path i.e the SEA model, in these areas. • Who will carry out Appropriate Assessment for the Scottish Renewable Energy Zone?

- Need to provide information on the legal approach to appropriate assessment, transboundary issues and consideration of grid (should SEA include?).
- Relationships between Scottish territorial waters 'offer' of leasing and Round 3 (cumulative effects); risk of judicial review due to lack of SEA for Scottish territorial waters.
- Devolution issues in general in Scottish renewable energy zone (which law applies etc.).
- Consider onshore requirements - planning and interactions through excluded areas e.g. Scottish >12nm development – cables through <12nm zone.
- Comprehensive monitoring programmes of adequate length (and sampling frequency) attached to wind farm consents. Given that there is little good quality monitoring available from R1/R2 wind installations. In the event that monitoring of wind farms brings evidence of negative ecological status, how will this impact DECC's renewable strategy?
- Question should not be what are the hard constraints? But, what are the soft constraints which should be generically addressed by the SEA? e.g. a buried cable, installed simultaneously, plough and burial or lay trench groove and burial does not require environmental impact assessment. e.g. airborne acoustic noise measurement not required or modelled for wind/wave/ tidal more than "X"km offshore.
- Long-term monitoring of impacts is key, particularly as marine renewables develop.
- Baseline pre-development surveys should be essential (as they are on land) to assess the importance of areas of interest for species and habitats.
- Migrating birds - cumulative impacts and how assessed.
- Need to incorporate positive environmental aspects of renewable energy into assessment and consider operational and decommissioning aspects.
- There is much data/information on marine areas but it is poorly understood and inaccessible. Government agencies should do more to promote collation and publication of this data from a single sources thereby reducing duplication of effort.
- There are still huge data gaps, particularly for oceanic deep-diving cetaceans which may be most vulnerable to impacts of intense noise. These species are not easily seen or heard, and therefore not easily accounted for.
- Ambient noise mapping of UK waters is required (x2).
- Equal consideration should be given to alternative technologies such as tidal energy production, from both a potential impact potential and application consideration.
- Use of helicopters for access and interaction with oil and gas exclusion and flight zones.
- Reef potential of offshore wind farms to encourage/ speed up introductions of non-native species (e.g. stepping stone theory against waters).
- There is huge scope for floating wind farms, secured to seabed in a variety of ways. They are not limited to shallow waters, can be built and towed – out to site and rapidly relocated if a site turns out to be unsuitable (bird migration pathway etc)
- CO₂ capture and storage technology is likely to progress more quickly than current plans suggest.
- Time to look at tidal areas - get ahead of the game.
- Developers needs - wind resource, suitable seabed, water depth. Real information? International aspect.
- Need to ensure that the need/requirement for renewable energy is balanced in the assessment of cumulative impacts and spatial assessments i.e. marine spatial planning should account for need for renewable energy and ensure that developers are not "left" with areas where it is not productive to develop (in absence of Marine Spatial Planning, need to be careful).
- Will the SEA identify areas with development potential?

London workshop

- In general, recreation is able to co-exist with offshore energy installations as exclusion zones only apply during construction and decommissioning. A key issue is conflict with commercial shipping if offshore energy installations displace recreational vessels into shipping lanes. The cumulative effects of such displacement from multiple windfarms are a major concern for recreational boating.
- Clarification is required on the organisations responsible for licensing (oil and gas).
- Clarification is required on how the SEA fits in with provisions of the potential Marine Bill, specifically the National Planning Framework and MCZs.
- Would like to see GIS data now, as SEA is being completed, not when the report is publicised.

- Consideration is required of potential inshore/onshore impacts of any emerging grid requirements. Specifically, need to consider coastal conservation sites (SSSIs, AONBs, National Parks, Natura 2000 sites) as well as species protection and licensing issues.
- Developers are best placed to assess and deal with risks and constraints that exist for any area of proposed development.
- Mitigation solutions will be different in different areas and, to some extent, may vary between different developers.
- The long track record and experience of previous competitive oil and gas licensing rounds should be drawn upon - it is hugely relevant and should be followed as closely as possible.
- Creative ways need to be found to keep those who feel they have lost out happy e.g. allowing small-scale fishing within windfarms, offering free electricity to homes and businesses in sight of wind farms.
- Dual-use may solve many fishing and conservation issues - can windfarms exist in the same location as fisheries and conservation areas?
- Construction of an offshore windfarm will cause environmental, navigation and fishing disruption for 1-2 years; however, this should be weighed against the relative quiet the site will enjoy over the next 20 years.
- The 33GW of offshore wind energy is fundamental to the UK's energy strategy - should this be abdicated to a commercial entity such as the Crown Estate? Should DECC not be controlling this process?
- Concerns of data gaps: yes, started bird surveys in 2005, but some areas only have 1 year of survey - this could be too little for EIAs.
- Cumulative impacts are a big issue; are these being considered in the SEA?

Table A2.13 - Attendees at the Stakeholder Workshops

Name		Organisation	Workshop
Stuart	Anderson	Hartley Anderson Ltd ¹	C, G, L
David	Arbuary	Plambeck New Energy UK Ltd	L
Lucy	Ashford	RES Offshore	L
Geoff	Audcent	DEFRA	C
Duncan	Ayling	BWEA	L
Adam	Baddeley	Eunomia Research & Consulting Ltd	L
Trevor	Baker	Atmos Consulting Ltd	C
Chris	Bale	Ocean Electric Power	C
Nick	Barcock	Metoc plc	C
Roger	Barker	Trinity House	L
David	Bean	PMSS Ltd	C
Lauren	Beatty	Royal Haskoning	L
David	Bingham	BP Exploration	G
Neil	Birch	PMSS Ltd	C
Gill	Bishop	Brittania Operator Ltd	G
Birgit	Böhme	Plambeck Neue Energien AG	G
Doug	Borthwick	Hartley Anderson Ltd ¹	L
Rachel	Bowes	SMRU Ltd	G
Pippa	Bowyer	Shepherd & Wedderburn	G
Jenny	Brack	Newcastle University	L
Herman	Brenninkmeijer	Good Energies	L
Alex	Brown	Hartley Anderson Ltd ¹	C, G, L
Louise	Burton	Natural England	L
Alastair	Cameron	Shell UK	G
Rick	Campbell	Airtricity	C
Mark	Christie	Scottish Government	G
Elizabeth	Clarke	Scott Wilson	L
Emma	Cole	DECC	G, L

Name		Organisation	Workshop
Bill	Cooper	ABPmer	L
Colin	Cornish	South West Regional Development Agency	L
Andrew	Craig	Ambrian Partners Ltd	L
Mike	Cummings	Welsh Assembly Government	C
Andy	Cummins	Surfers Against Sewage	C
Paul	Dacombe	Star Energy Group plc	L
Mike	Davies	FreeStream Offshore Ltd	L
Jochen	Dirksmeyer	WPD	L
Sarah	Dolman	WDCS	G
Mark	Downes	Shell UK Ltd	L
Les	Duckers	Coventry University	C
Alastair	Dutton	BP Alternative Energy	C
Tracy	Edwards	JNCC	G
Rod	Ellison	RSK Environment Ltd	C
Richard	Evans	Warwick Energy Ltd	L
Nicola	Everitt	Newcastle University	L
Joseph	Ferris	Parsons Brinckerhoff	G
Peter	Fish	SLP Energy	L
David	Flood	SLP Energy	L
Adrian	French	Terence O'Rourke Ltd	L
Peter	Gaches	Royal Haskoning	C
Liz	Galley	RSK EHS Ltd	G
David	Garner	Dong Energy (UK)	L
Malcolm	Garrity	Eclipse Energy	G
Robert W	Gatliff	British Geological Society	G
Toby	Gethin	RSPB	L
Ferdinando	Giammichele	Dong Wind (UK) Ltd	L
Tim	Golding	RPS Planning & Development	C
Sophie	Goodall	Environment Agency	L
Lissa	Goodwin	Wildlife Trusts	L
Peter	Gordon	RSPB Scotland	G
David	Grimsell	Save Our Seas	C
Nick	Haley	FreeStream Offshore Ltd	L
Stephen	Hall	National Oceanography Centre	G
Justin	Hardie	SLP Energy	L
Fiona	Harrison	Scottish Government, Marine Transition Unit	C
John	Hartley	Hartley Anderson Ltd ¹	C, G, L
Sue	Hartley	Hartley Anderson Ltd ¹	L
Toni	Harvey	DECC	L
Robin	Harvey	Scottish Association for Marine Science (SAMS)	G
Sam	Haylen	DEFRA	L
Jen	Heathcote	English Heritage	L
Carolyn	Heeps	Fred Olsen Renewables Ltd	C
Simon	Hewitt	ERM	L
Cheryl	Hiles	Regen SW	L
Lorraine	Hill	Save Our Seas	C
Andrew	Hill	CCW	L
Sally	Holroyd	Metoc plc	L
Jesper	Holst	Dong Energy	L
Patricia	Jehle-Hanke	Plambeck Neue Energien AG	G
Michael	Jenkins	Bridgend County Borough Council	C
Tom	Jennings	Carbon Trust	L
Brian Juel	Jensen	Dong Energy (Denmark)	L

Name		Organisation	Workshop
Adam	Jones	Hartley Anderson Ltd ¹	G
Vicky	Kennard	SeaRoc	L
Leila	Kiersch	Save Our Seas	C
Rob	Langman	British Marine Aggregate Producers Association	L
Jennifer	Learmonth	Vattenfall	G
Zoë	Lenkiewicz	RPS Planning & Development	C
Paul	Leonard	Corporate Risk Associates Ltd	L
Annie	Linley	Plymouth Marine Laboratory	C
Paula	Low	RPS Group	C
James	Low	Mainstream Renewable Power	L
Jon	Lucas	Valhalla Oil & Gas Ltd	L
Suzanne	Lumsden	Hartley Anderson Ltd ¹	L
Simon	Machen	East Lindsey District Council	L
Andrew	Mack	The Boston Consulting Group	L
Alison	Mackay	Parsons Brinckerhoff	G
Katherine	MacNeill	DECC	L
Peter	Madigan	BWEA	L
George	Mager	Plambeck New Energy UK Ltd	L
Hugh	Masters-Williams	Jacobs Engineering	C
Tom	Matthewson	Black & Veatch Ltd	L
Jamie	May	Npower Renewables	L
James	McKenzie	Scottish Government	G
Rachael	Mills	Marine & Fisheries Agency	L
Kate	Moore	Royal Yachting Association	L
Anna	Morton	Metoc plc	L
Lia	Moutselou	Wales Coastal & Maritime Partnership	C
Sinead	Murphy	Sea Mammal Research Unit (SMRU)	G
Joergen R	Næumann	Dong Energy E&P (DK)	L
Tom	Newcombe	Eversheds LLP	L
Betty	Ng	Jacobs Engineering UK Ltd	C
Kim	Nguyen	Macquarie Capital	L
Tim	Norman	The Crown Estate	L
Charlotte	Nott	Hartley Anderson Ltd ¹	G
Eleri	Owen	E.ON	C
Matt	Partridge	Ecotricity	C
Mark	Petterson	Warwick Energy Ltd	L
John	Phylip-Jones	University of Liverpool	L
Andrew	Prior	PMSS Ltd	C
John	Qualtrough	Bircham Dyson Bell LLP	L
Mark	Rehfisch	British Trust for Ornithology	L
Alastair	Rennie	Amec Power and Process Europe	G
James	Roy	Banks Developments Ltd (Northumbria Offshore Wind)	G
Saurabh	Sachdeva	The Chamber of Shipping	L
Judith	Shapiro	Carbon Capture and Storage Association	L
Graham	Singleton	British Marine Aggregate Producers Association	L
Sue	Sljivick	RSK Environment Ltd	L
Annie	Smith	RSPB Cymru	C
George	Smith	Hyder Consulting Ltd	C
Roger	Smithson	Dept for Communities & Local Government	L
Robin	Stowell	SeaRoc Ltd	L
Dominic	Stratton	SeaRoc	L
Gillian	Sutherland	ScottishPower Renewables	G
Derek	Tagg	BG Group plc	L

Name		Organisation	Workshop
Harriet	Thomas	Hyder Consulting Ltd	C
Irene	Thomson	DECC	G
Paul	Townsend	Maritime & Coastguard Agency (MCA)	L
Marcus	Trinick	Eversheds LLP	G
David	Vale	Hartley Anderson Ltd ¹	C
Gero	Vella	RES Offshore	L
Martin	Wadsworth	Common Data Access Ltd	L
Raymond	Wells	Statoil (UK) Ltd	L
Andrew	Wharton	BG Group plc	L
Peter	Wilkinson	Environment Agency Wales	C
Charles	Williams	Falck Renewables	L
Kath	Winnard	Atkins Ltd	C
Matthew J	Witt	PRIMaRE, University of Exeter	C
Kathy	Wood	Amec	L
Emma	Woods	Centrica Energy	L
David	Wotherspoon	Metoc plc	G
Angela	Wratten	DECC	C, L
Sarah	Wright	Royal Haskoning	G
Andrew	Wyatt	JP Kenny Ltd	L
David	Yong	SLP Energy	L

Notes: ¹ SEA team. "Workshop" column indicates the workshop(s) attended; C = Cardiff, G = Glasgow, L = London.