

MORAY FIRTH RENEWABLES ADVISORY GROUP (MFRAG) MEETING MINUTES

Meeting	MFRAG Main Group	
Date	14 th April 2021. 13:30 – 16:30	
Location	Microsoft TEAMS call	
Attendees	SAMS	Ben Wilson (BW) [Chair]
	Marine Scotland Licensing Operations (MS-LOT)	Gayle Holland (GH), Debbie England (DE), Stephanie Sweeting (SS)
	Marine Scotland Science (MSS)	Jared Wilson (JW), Marion Harrold (MHa), Ross Gardiner (RG), Kirsty Wright (KWr)
	Marine Scotland Planning & Policy (MS-PP)	Janelle Braithwaite (JB)
	NatureScot (NS)	Erica Knott (EK), Chris Eastham (CE)
	Fisheries Management Scotland (FMS)	Alan Wells (AW), Keith Williams (KWi)
	BOWL	Joe Deimel (JD), Heather Shaw (HS)
	Moray East	Catarina Rei (CR), Ruaridh Danaher (RD)
	Moray West	Nuria Abad-Oliva (NA)
	Joint Nature Conservation Committee (JNCC)	Doug Stewart (DS)
	Royal Society for the Protection of Birds (RSPB)	Catherine Kelham (CK)
	APEM	Marc Hubble (MHu), Ashley Cordingley (AC)
	Brown & May Marine	Alex Winrow-Giffin (AWG)
Actions	<ol style="list-style-type: none"> 1. JD to issue 2019 BOWL aerial survey report to group when finalised. 2. JD to share 2020 substrate sampling methodology with MFRAG group. 3. MHa to share research/information available on biofouling to JD and CR 4. NA to issue slides with the minutes of the meeting 5. MHa to circulate an email with a summary of the strategic research proposal for data archive. 6. Next MFRAG Main group meeting to be scheduled in October/November 2021 – doodle poll to be issued. 	

1. Introductions and Purpose of Meeting

Introductions made.

2. Review of Minutes of Meeting from previous meeting (11th June 2020)

Status of Actions from previous meeting:

1. JD to issue 2019 BOWL aerial survey report to group when finalised.
Ongoing action - JD confirmed that the report is currently being finalised. The target for submission of the aerial survey report is w/c 19th April 2021.
2. BOWL will discuss with MSS whether there would be interest in MSS acoustic monitoring for sandeels being carried out alongside BOWL sandeel surveys.
Action complete - JD confirmed that these discussions had already been had.
3. APEM (MHu and ACo) will finalise hard substrate sampling methodology, BOWL will forward this to group and then set up a call to discuss.
Ongoing action - JD explained that the 2020 surveys methodology has changed, as the seabed transects length have been extended. JD will issue the 2020 methodology to the MFRAG group.
4. INSITE proposal to be circulated again to the group.
Action complete - INSITE it is now OWEC proposal.
5. Interested members of the group to participate in discussions on updated research proposal.
Action complete - Meetings have been organised with a number of interested parties, including the MFRAG developers, to discuss the updated research proposals.
6. JB to provide information to SE on MSS cumulative assessment project.
Action complete - JB provided a link to the 'Cumulative Effect Framework for Key Ecological Receptor'.
[Cumulative Effects Framework for Key Ecological Receptors | UK Centre for Ecology & Hydrology \(ceh.ac.uk\)](https://www.ceh.ac.uk)
7. EDPR to issue Doodle poll for mid-late July MFRAG-O meeting
Action complete
8. JB to forward papers on biofouling to JD.
Ongoing action - MHa to share relevant research available on biofouling to JD and CR
9. EDPR to organise next MFRAG main group meeting.
Action complete – 14 April 2021 meeting (current meeting).

Actions

1. JD to issue 2019 BOWL aerial survey report to group when finalised.
2. JD to share 2020 substrate sampling methodology with MFRAG group.
3. MHa to share relevant research available on biofouling to JD and CR

3. Moray East Project

3.1 Moray East project update

RD provided project update.

Key construction milestones:

- Jacket installation – Commenced in June 2020 & completion December 2020
- OSP installation – OSP topsides installed in August 2020
- WTG installation commenced in January 2021. Works are still on-going and are expected to run until October 2021. 22 WTGs have been installed to date.
- Offshore export cable burial completed. OEC is fully installed and there is a small portion of protection around OSP to be placed.
- IAC installation - 2 campaigns. IAC – 60% cable burial (including protection) has been complete, and 100% of IAC cable installation to be complete around June 2021.

Look ahead:

- IAC programme to complete June 201
- WTG installation to complete in October 2021.
- First Generation – April/May 2021
- Commissioning – December 2021
- Final commissioning – April 2022

Actions	None
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3.2 Moray East monitoring update

CR provided an update on the construction marine mammal monitoring.

Summary of surveys undertaken during Moray East construction:

- Core populations studies for harbour porpoises and bottlenose dolphins
- Noise monitoring throughout construction campaign

Low density CPOD array to monitor long-term responses of porpoises to different phases of construction across BOWL and Moray East sites.

CR mentioned that two workshops have been organised:

- Workshop 1 – took place on 19th February. University of Aberdeen presented the results from the study looking at the effects of construction and vessel activities on the harbour porpoise occurrence and ambient noise prior to deterrence and pile driving activities at both BOWL and Moray East.
- Workshop 2 – organised for 30th April. The aim of this workshop will be to present the preliminary results of the piling noise levels and porpoises’ responses at Moray East.

CR presented the list of reports and publications that University of Aberdeen intend to produce from construction monitoring at Moray East.

1. Broad-scale responses of harbour porpoises to pile-driving and vessel activities during offshore windfarm construction [Q2 2021]
2. How do vessel characteristics and activities affect underwater soundscapes and porpoise responses prior to pile-driving at offshore windfarm sites? [Q3 2021]
3. Comparison of piling noise levels at Beatrice and Moray East offshore windfarms [Q2 2021]
4. Assessing the far-field effect of offshore developments on coastal bottlenose dolphins [Q1 2021]
5. Evasive responses of small cetaceans to anthropogenic disturbance – insights from a novel passive acoustic monitoring system [Q4 2021]
6. Temporal variation in abundance and vital rates of Moray Firth harbour seals and bottlenose dolphins [Q1 2022]

CR noted that a draft paper on item 4 had been circulated to the MFRAG-MM subgroup by Prof Paul Thompson for comment (at the end of 2020) and had been submitted to a journal in January 2021.

CR confirmed that Moray East has recently submitted the piling strategy implementation report to MS-LOT for approval. The document, which was a commitment within the Piling Strategy, is a factual report on how the piling was carried out and how mitigation was deployment during the phased piling at Moray East.

It was highlighted that the process of peer review might take some time, and that some information on the publications would be useful. JB asked if a draft version of these publications could be provided to the MFRAG members or if not, a summary.

CR explained that the scope of these publications has been shared with MFRAG, and the same approach would be taken for the rest of the papers.

Actions	None
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4. Moray West Project

4.1 Moray West project update

NA provided a Moray West project update.

NA provided a programme overview and highlighted key project dates:

- Commencement of offshore construction – Q1 2023
- Submission of the Moray West consent Plans – between Q4 2021 and Q1 2022.
- Pre-construction surveys in 2021 and 2022
- Site Investigations planned for 2021

NA mentioned that Moray West has recently submitted an application to vary the S36 consent. The amendments requested are:

- To remove the reference to the maximum capacity of the project of ‘around 850 MW’

- And to increase the blade width from 6 to 6.6 meters.

EK asked if the changed of parameters was assessed. NA confirmed that a new collision risk modelling was undertaken with the updated parameters, and the results are included in the consent variation application report.

Actions	None
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4.2 Moray West monitoring update

NA mentioned that a monitoring update would only be provided for 3 of the 5 receptors included in the PEMP conditions, including ornithology, marine mammals and benthic community, as monitoring approach for other receptors (socio-economics and commercial fisheries) have not yet been progressed.

Ornithology pre-construction monitoring:

NA confirmed that APEM is the contractor appointed to undertake aerial surveys.

The main objectives of the pre-construction surveys are to collect data on seabirds distributions and estimations of species abundance, flight directions of key species and gather flight height data. The key species and impacts to be monitored were presented, and it was explained that these were identified based on the results from Moray West EIA and AA, and it was proposed that the ornithological monitoring focuses on them.

The pre-construction aerials surveys will cover two breeding seasons, 2021 and 2022, between March and October, and 1 survey will be undertaken each month. NA confirmed that the first aerial survey was completed on 2nd April 2021, and survey 2 would be carried out in the next few days.

The aerial surveys are transect-based covering an uneven buffer area surrounding Moray West Offshore Wind Farm site. The Moray West transects have been aligned with Moray East and BOWL transects. The intention of having an uneven buffer around Moray West site is to reduce the effort in those areas where there is an overlap with Moray East site and BOWL (which are already being monitored); and increase the survey effort in areas that have not been surveyed.

JW asked whether there are data sharing agreements in place. NA confirmed that data sharing agreements have not yet been formally set-up, but the intention is that Moray West, Moray East and Beatrice will share data.

JW requested for the Moray West presentation to be shared with the MRAG group.

Marine mammals’ pre-construction monitoring:

NA explained that the main aim of the pre-construction marine mammal monitoring.

Moray West approach to monitor marine mammals consist of:

- Deploy of CPOD array within Moray West site and contribute to the on-going marine mammal monitoring programme within the Moray Firth.
- Analyse marine mammal digital imagery collected during the digital aerial surveys.

NA mentioned that it is expected that pre-construction monitoring would commence in June 2021.

Benthic communities monitoring:

NA explained that benthic ecology baseline conditions, as outlined in the ES, was based on desk-based study, and in order to provide an up-to-date characterisation of the habitats and species occurring within the Moray West site and offshore export cable corridor, it was agreed with MS-LOT that site-specific survey would be undertaken within the study area. Site specific characterisation surveys were undertaken in 2017, using Drop Down Video (DDV), benthic grabs and beam trawls.

Habitats of conservation interest were identified during the site-specific surveys, but at very localised areas and in very low numbers. Potential Annex I feature was recorded in one single station, but the habitat was a small patch of large cobbles/small boulders and somewhat patchy.

NA explained that the approach for pre-construction benthic monitoring will be to undertake a review of existing (pre-consent monitoring) and new geophysical data collected during post-consent and pre-construction site investigation surveys. The geophysical data will be reviewed for the purposes of delineating any potential Annex I features and Priority Marine Features (PMF) habitats. NA explained the considerations that has been taking into account.

NA confirmed that the foundation selected for Moray West are monopiles and the HDD is the preferred method for export cable landfall installation

Actions	4. NA to issue a copy of the Moray West slides to the MFRAG members with the minutes
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5. BOWL Project

5.1 BOWL project update

JD provided BOWL project Update.
 BOWL is progressing with O&M activities. Maintenance procedures are being refined and improved on an ongoing basis.
 JD mentioned that marine growth removal requirements are still to be determined at this stage. The marine growth accumulation results are still being analysed.

Actions	None
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5.2. BOWL monitoring update

Benthic monitoring update:

MHu provided an update on the benthic monitoring work undertaken at Beatrice,

- 2 Reports will be made available, which are being finalised:
 - o WTG locations monitoring
 - o Grab sample survey – to investigate whether there has been significant impact on the MoeVen biotope.

Benthic Monitoring update – Grab monitoring survey:

Detection of the MoeVen biotope is one of the main survey objectives.

Grab samples were taken at the same 12 stations that were surveyed in 2010 for the ES and 2015 for the pre-construction monitoring; 10 stations within the wind farm area plus 2 reference stations.

At each station 3 replicate grabs were taken for biota sampling, sub-sampling for PSA.

Range of statistical techniques (including cluster analysis) was used to analyse the results; further details are included in the survey report.

Key results:

- PSA data for each replicate – components (gravel, sand, mud) – this has been compared with previous survey findings. These have been mapped out within BOWL wind farm area.
- Predominantly sand environment and some gravel components.
- Breakdown of the major groups – abundance of individuals/m². Annelida was the most abundant group.
- Biomass – analysed at species level
- Same data presented as in previous survey reports – to facilitate direct comparison of the results.
- Taxa richness – Annelida had the greatest taxon richness.
- Biotope allocated to each replicate based on the biological raw data. Majority of replicates were allocated as being the MoeVen biotope.

Reference stations (as shown in Figure 8 of the survey report) are useful to determine whether the trends seen within the OWF site are specific to the OWF or applicable to the general area.

In 2010 – all sample stations were allocated to biotope in MoeVen

In 2015 – only 3 stations were allocated to biotope MoeVen

This is partially related to a change of the sediment type.

There is a correlation between sediment data and the communities, in particular the extent of the MoeVen biotope that has been observed, which is greater than it was in 2015 and is more consistent, suggesting that to date there is no impact on the MoeVen distribution.

GH asked what the cause of the changes in sediment type since 2010 could be. MHu explained that the sediment has become more sandy with time, which is a natural change occurring to sediments. It was highlighted that this would need to be clarified with further survey work as these are the results from the 1st post-construction survey, and there is no definitive view on what the cause of sediment changes could be.

EK asked whether these changes could be due to fishing activity in the area

EK highlighted that the benthic specialist in NatureScot will review the report and provide comments back once it has been reviewed.

JD said that it is difficult to determine the level of fishing activity within BOWL site – whether there has been a reduction of fishing activity – due to inconstancy of AIS data.

BW – interesting to look at age of ocean quahog shells – all those found during the survey were juveniles.

MHu reiterated that the objective of the monitoring was on the MoeVen biotope and the observed changes sediment types are not detrimental to this.

MHu presented the main results from the WTG foundation monitoring report:

4 WTGs were selected – criteria of the selection of the WTGs - based on consideration of location within the MoeVen biotope, 2 locations intended to be near the border of the wind farm and 2 others near the centre.

An ROV was used to survey jacket legs from the surface down to the bottom of the jacket, and of the seabed out about 50 m from the base of the jacket legs.

DDV was also used to survey transects from approximately 50m out, to a further nominated distance. For transects run to the north-northeast and south-southwest (in line with the prevailing current – based on current rose diagrams), DDV transects were taken to 500m out from the jacket base. For transects run to the east-southeast and west-northwest (perpendicular to the prevailing current), DDV transects were taken to 250m out from the jacket base. MHu provided a high-level summary of the results at each of the ROV jacket-leg surveys, at the different depth bands.

- 0 – 5m; dominated by algae and barnacles.
- 5 - 10m; transition between the algae-dominated upper leg and the cnidarian-dominated zone on the mid-leg.
- 10 - 25m; dominated by the cnidarians, with hydroids, sponges and scavengers species.
- 25 - 40m; transition away from cnidarians, with lower section of the legs dominated by keel worm.

No biological material was found at the base of the jackets.

- The survey report shows the transects that were run by DDV and habitat types allocated, which were Sublittoral coarse sediment
- Mixed sediment
- Flustra – allocated to another biotope.

MHu mentioned that mobile species such as Atlantic cod were seen.

MHa asked if there was scour protection associated with the jackets – MHu confirmed that there wasn't any scour protection.

MHa asked if APEM took measurement of the currents on the seabed near the foundations, as these could be used to understand if the currents could be responsible for moving away any fouling from the bottom of the jackets, which would explain why there is little evidence of enrichment on the seafloor.

MHu confirmed that no measurement of the currents were taken but there was some strong current during the survey. AC stated that high movement of water around the jackets was experienced during the surveys, but there no other evidence. AC also noted that no biological material was seen along the DDV transects.

MHa asked if non-native species were found.. AC mentioned that a targeted survey would be required (i.e. diver survey) to identify presence of non-native species. Could potentially find them if there was an obvious species, but a close inspection with divers would probably be required.

MHa – needing to remove biofouling; for BOWL any marine growth exceeding 50 or 100 mm (threshold varies by structural component) may need to be removed.

JD mentioned that a possible a campaign of marine growth removal would be undertaken this summer, but it is not certain at this point.

Licensing requirement for marine growth removal, if removed material deposits on the seabed.

JD asked the group whether there is a value in continuing running 500 m transects at the next benthic monitoring surveys or whether for the 2021 surveys BOWL can follow the original monitoring programme.

MHa confirmed that there would be value on continue running the 500m transects – change over time and to see if there was any impact.

EK asked, in relation to the 500m lengths transects away from turbines, would BOWL need to repeat this before undertaking marine growth removal in order to have a baseline prior marine growth?

EK suggested that it would be good to repeat the 500m transects in the WTG where possibly marine growth removal will be undertaken. Before removal, and if collection of removed material is not possible, it would be good to look where the marine growth is dropped after removal and the area where it would extend, considering the currents as the marine growth deposited might be moved further away than 500 m. EK suggested that the benthic monitoring survey running 500m length transect should be undertaken after the marine growth removal has been done in order to get as much information as possible to understand the effects of the marine growth would have on the seabed.

JD – opportunity to repeat in 2024. In terms of this year, June could be the optimal month to do benthic survey (the 2020 survey was pushed back to October due to covid restrictions).

It was agreed that it would need to be decided before June 2021 what WTGs would require marine growth removal done and undertake monitoring surveys prior to and after the marine growth removal works at those WTGs.

EK mentioned that if June had been initially decided to be the most optimal month to do benthic surveys and the 2020 survey it was only pushed back due to covid, June would still be considered to be a more optimal month if there is no reason to delay this year.

JD suggested that a separate meeting would be required to discuss the 2021 benthic survey in more detail.

JD asked if there are any methods that can be used to estimate the biomass of marine growth accumulation on structures.

BW mentioned that there are ways to work out what the mass of the materials would be.

AC confirmed that there are ways that the biomass can be estimated via video, for example the volume of the marine growth layers using imagery collected by ROV.

Janelle – suggested that the ScotMer benthic specialist group could help identify key questions that need answers.

EK – beyond benthic – detritus – prey/predator relationships – could this have effect on other receptors?

JB - potentially could be effects on physical processes as well.

BW mentioned that this topic has relevance for the INSITE project

JB suggested to arrange a call with ScotMer group chairs to outline what the key questions are.

AW – SEPA has experience at looking at organic inputs to the marine environment – having SEPA in the meeting would be useful, and also key to understanding this – SEPA (Peter Pollard) head of ecology. AW would also be interested in investigations into influences in prey/predator relationship.

INSITE conference is also coming soon.

EK – could a new (formatted) Pdf of the sampling report be issued (ACTION). Also asked for confirmation when second report (WTG jacket surveys and seabed transects) will be shared – targeted for next week.

Sandeel/Cod Surveys Monitoring Update:

AWG provided an update on the sandeel and cod monitoring work:

- Currently undertaking QC of the data and the final report have not yet been issued.
- AWG provided an overview of the surveys and preliminary results.
- Surveys are a requirement under BOWL s36 conditions.
- Pre-construction sandeel and cod monitoring surveys were carried out.
- Post-construction – a repeat of the pre-construction surveys.
- Overview of pre-construction sandeel surveys – results chart was presented.
- Post-construction – results chart presented, also showing survey stations that could not be accessed due to static gear having been deployed.

EK asked when the report would be made available. AWG confirmed that it could be ready for circulation in the next two weeks.

KWr – comparing results within and outside the wind farm site. No replicates taken (AWG) – comparison will be done but not using abundance.

KWr asked whether it would be good to compare sandeel catches and ICES catches – AWG – higher resolution.

KWr Cod in pre and post-construction surveys – thoughts about the difference in numbers – a lot more juvenile fish were seen in the pre-construction survey, and only 4 in post-construction. Adults (stage 2 to 4) there were 50 in pre-construction and 23 in post-construction. Numbers are less in maturing and spent individuals.

AWG – Juvenile haddock were dominant (80-90% of the catch) with exception of 3 stations.

GH asked whether the larger of sandeel numbers observed at post-construction was due to the timing of the surveys, or whether it could be linked to the change in the sediment type recorded.

AWG explained that it is difficult to catch sandeels that are buried in sediment, and a pelagic method would be needed. Anecdotally, high numbers of sandeels have been seen around the turbines. The numbers of sandeels have increased in comparison to pre-construction, and this may have due to reduced fishing activity.

AWG - Squid – more emerging fisheries in the past few years. Scalloping may have happened historically in the Beatrice area, but not a strong ground.

JD mentioned that aerial bird surveys would commence in May 2021, and the feasibility investigations for capture and tagging of gulls are continuing.

Actions	None
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6. Strategic Research

OWEC

JW provided an OWEC project update. JD mentioned that a call with developers was held to discuss the aims and objectives of this projects. MSS project lead. Summary:

- Predator-prey
- 30th June – submission ultimate deadline.
- Date on prey and predators on both Moray Firth and Forth and Tay. Focus is on seabird, harbour porpoises and potentially other cetaceans and seals.
- TCE alongside BEIS – founding for these programmes of works 5-year programme. This would be 4 years programme.
- Separate meeting – relevant to diadromous fish (they are prey and also predators).

Electro-magnetic field (EMF) study

EK noted that NatureScot and MSS are working together with a Master’s student, Lucie Herve, on a project focusing on the EMF effects from cables associated with offshore renewables. Lucie carried out a number of interviews with developers, cable engineers and researchers as part of her project. A workshop has been organised for the 27th April to discuss EMF with stakeholders and a summary of Lucie’s interviews will also be presented. EK thanked developers for their participation contribution to the EMF study.

MS and TCES – proposal around data and archiving of data

- Guidance and where and how PEMP data should be archive.
- Developers to works with MS to ensure that data archive and process is identified.
- Ensure that data archive process is helpful, and data is accessible
- JD would ask MHa to email a summary of the project
- Single portal for each data type = assumption is that MEDIN provide these data – mechanism to get gaps addressed.

ORJIP

CR provided a brief update on the ORJIP 2021 projects. In 2021 a total of 4 projects are being progressed; the focus of 3 of these projects is on seabirds and one in marine mammals.

ScotMER

JB provided a link to ScotMER

[Marine renewable energy: Science and research - gov.scot \(www.gov.scot\)](http://www.gov.scot)

Actions	5. MHa to email a summary of the project
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7. AOB

BW requested if an update on east coast projects could be provided.

GH briefly provided an update on Hywind and Kincardine:

- Hywind have a licence condition which specifies their attendance at the Fort & Tay Regional Advisory Group (FTRAG) . **However when the Hywind post-consent monitoring was being agreed the FTRAG was not functioning.**
- Kincardine have a licence condition to be part of a RAG, but it is not specified which one. MS-LOT are currently having separate discussion with Kicardine project.
- GH mentioned that after Scotwind there will be a need to think whether these projects will be to incorporate the projects in these groups or separate groups.

JB asked about Moray East and BOWL’s plans for diadromous monitoring surveys. CR noted that Moray East’s (and BOWL’s) conditions only required the projects to carry out pre-construction monitoring for diadromous fish and that both projects had completed the surveys and that the results had been discussed at previous MFRAG meetings.

<p>JB asked for an update on Socio-economic monitoring requirements for Moray West. NA explained that the Moray West approach for monitoring socio-economic receptors has not yet been discussed with councils and external stakeholders.</p> <p>JD mentioned that BOWL will be applying for a marine licence exemption for benthic surveys and enquired who from NatureScot should he be in touch about this application.</p>	
Actions	
8. Next meeting and close	
<p>It was discussed that the preferred time for next meeting would be around October/November, after MFRAG subgroup meetings.</p>	
Actions	6. Next MFRAG main group meeting to be scheduled in October/November 2021

List of Abbreviations	
BOWL	Beatrice Offshore Windfarm Limited
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FTRAG	Forth & Tay Regional Advisory Group
INSITE	Influence of man-made Structures In The Ecosystem
JNCC	Joint Nature Conservation Committee
Moray East	Moray Offshore Windfarm (East) Limited
Moray West	Moray Offshore Windfarm (West) Limited
MFRAG	Moray Firth Regional Advisory Group
MFRAG-MM	Moray Firth Regional Advisory Group – Marine Mammals Subgroup
MFRAG-O	Moray Firth Regional Advisory Group – Ornithology Subgroup
MS-LOT	Marine Scotland Licensing Operations Team
MSS	Marine Scotland Science
NS	NatureScot
ORJIP	Offshore Renewables Joint Industry Programme
OWEC	Offshore Wind Evidence and Change Programme
RAG	Regional Advisory Group
RSPB	Royal Society for the Protection of Birds
ScotMER	Scottish Marine Energy Research
SpORRAn	Scottish Offshore Renewables Research Framework (now ScotMER)
UoA	University of Aberdeen
WDC	Whale and Dolphin Conservation