

## MORAY FIRTH RENEWABLES ADVISORY GROUP (MFRAG) MEETING MINUTES

<b>Meeting</b>	MFRAG Marine Mammal Sub-Group	
<b>Date</b>	8 <sup>th</sup> November 2019	
<b>Location</b>	EDPR Offices, Edinburgh	
<b>Attendees</b>	Marine Scotland Science (MSS)	Jared Wilson (JW) [Chair], Kate Brooks (KB) (Phone)
	Marine Scotland Licensing and Operations Team (MS-LOT)	Gayle Holland (GH)
	Scottish Natural Heritage (SNH)	Erica Knott (EK), Caroline Carter (CC), Chris Eastham (CE) (Phone)
	Joint Nature Conservation Committee (JNCC)	Sarah Canning (SC) (Phone)
	University of Aberdeen (UoA)	Paul Thompson (PT) (Phone)
	BOWL	Joseph Deimel (JD), Andrew Allan (AA)
	Moray East	Catarina Rei (CR), Matt de Angelis (MDA)
	Moray West	Sarah Edwards (SE)
<b>Apologies</b>	Whale and Dolphin Conservation (WDC)	Sarah Dolman (SD), Fiona Read (FR)
<b>Actions</b>	<ol style="list-style-type: none"> <li>1. Moray East to ask Anatec where to purchase 2018 AIS data.</li> <li>2. Include ongoing action on all MRFAG agendas: Review implications for guidance, lessons learned and project timescales.</li> <li>3. Group to decide who to prepare guidance (e.g. MFRAG or members of MFRAG e.g. MSS and SNH).</li> <li>4. SNH to progress discussions with PT re future of Lighthouse in monitoring and future funding sources.</li> <li>5. UoA and SMRU to look at how current monitoring can be joined up for more strategic approach.</li> <li>6. Neither MSS or SNH recommend the use of phased piling. MSLOT to therefore review requirements for phased piling mitigation based on findings from monitoring and recommendations from MSS and SNH.</li> <li>7. PT to advise how best to share data on results from UXO detonation noise monitoring</li> <li>8. JW to discuss inputs to ScotMER Developers Symposium with Janelle.</li> </ol>	

### 1. Introductions, Meeting Objectives and discussion of Actions from previous meeting (26 July 2018)

1. MS-LOT to update MFRAG web page with latest minutes. GH confirmed that latest MFRAG minutes added to website and link to minutes circulated to group prior to meeting.

2. JD to consult with BOWL management on potential for involvement in forthcoming Influence of Man-Made Structures in the Ecosystem (INSITE) programme as a renewables industry representative. JD confirmed that BOWL Management felt it was not the right time for the project to participate in the INSITE Programme.
3. SNH to advise on most appropriate timescale for population monitoring (bottlenose dolphin / harbour seal) – continue till end of 2021, until end of Moray East construction, or supplement with some additional post-Moray East construction monitoring. SNH confirmed that advice had been provided to BOWL on this matter (emails).
4. SNH to advise MFRAG-MM on scope of population monitoring, and whether this should include harbour porpoise. SNH confirmed in advice to BOWL that there is no requirement for HP to be monitored post-construction.
5. MSS and UoA to check what AIS data is available and how it is being used. PT confirmed 2017 AIS data is available from BOWL and 2019 AIS data available from Moray East. UoA looking at purchasing AIS data for 2018. Number of quotes ranging £3,000 to £4,000 depending on data resolution. KB noted that MSS have been looking to acquire AIS data from MCA. OK with request for one week but not one year. Alternative data sources include Brown and May Ltd or Anatec. Also lacking VMS data for smaller fishing vessel. High number observed on Moray East site during construction. **ACTION: CR to ask Anatec where they purchase AIS data.**
6. MFRAG-MM members to consider what they would like to see in terms of scientific instrument attachment points to be built-in to jackets during assembly. Hard to fit retroactively due to insurances and contracts (contracts awarded for jackets well in advance of fabrication). Group agreed action to be taken as a lessons learned. Link back to ScotMER Developers Symposium to see what options are available to get this incorporated to jackets / monopiles at fabrication stage through procurement and contractual processes
7. PT to draft the INSITE Proposal. Action complete. INSITE proposal (collaboration between UoA and UoE (University of Exeter) was submitted in October. Feedback expected early December with decision in February 2020.

<b>Actions</b>	<b>1. Moray East to ask Anatec where to purchase 2018 AIS data.</b>
<b>2. BOWL project update</b>	
<ul style="list-style-type: none"> <li>• JD provided BOWL project update. Most turbines have completed first service. Project fully operational. Maintenance programme ongoing and currently carrying out analysis of seabird monitoring data. Also currently preparing for post-construction environmental survey work – commissioning cod and sandeel surveys for 2020.</li> <li>• JW noted that appropriate specialists (from SNH and MSS) should be present at next MFRAG meeting to discuss scope of these surveys.</li> <li>• EK asked JD to confirm when BOWL planning to submit survey scopes for review.</li> </ul>	
<b>3. Moray East project update</b>	
<ul style="list-style-type: none"> <li>• CR provided a Moray East project update.</li> <li>• Piling progressed well over summer with 67 number of locations completed as of 07/11/2019.</li> </ul>	

- No piling during September due to weather.
- Three HDD drills are complete. Two ducts also complete – one remaining. Will be done when suitable weather window.
- EK queried whether delays with pin pile fabrication might lead to delays in piling schedule?
- CR confirmed that fabrication of pin piles to continue over winter. But not expected to impact overall schedule for completion of piling (target completion in March 2020).
- CMS and Construction Programme currently being reviewed to allow more flexibility.

#### 4. Moray West project update

- SE provided update on status of Moray West project. Although did not win a CfD, project still being progressed with Moray West exploring range of options including alternative routes to market and optimisation of the project. SE also confirmed Moray West progressing with discharge of consent conditions including Piling Strategy, pre-construction surveys (ornithology), ECoW and Decommissioning Plan.
- PT noted that Moray West should be aware of results from BOWL monitoring which confirm that assumptions included in BOWL and Moray East Piling Strategies are not correct, with higher than predicted noise levels recorded during soft starts.
- PT attending a conference in London (Wednesday 13<sup>th</sup> November) being run by CEFAS.
- CC confirmed the conference was the second part of a meeting originated by ORSTED and JNCC. Part 1 dealt with noise thresholds based on new guidance and how this affecting assessments; and Part 2 dealing with project design to reduce noise levels and noise abatement systems. Conference to be attended by mix of academics, advisors and industry.
- GH and CC also attending.
- Assume driver for workshop is HP SAC designation.
- PT noted English discussions about HP management may have implications for Scottish Projects.
- EK confirmed that SNH adopt a case by case approach to assessing impacts from projects in Scotland - different to elsewhere in UK.
- CC doing a joint presentation with Natural England – highlighting differences in approach between England and Scotland.
- Initial results from BOWL monitoring shared with group at early stage. However, for further analysis required.
- JW highlighted need to improve mechanisms for sharing evidence and information.
- EK – Role of MFRAG to facilitate sharing of evidence and information?
- CC – Practicalities of publishing scientific papers – requirement for Peer Review etc. Timely process. Author reluctant for papers to be made public unless fully peer reviewed.
- EK – more important to develop practical guidance based on lessons learned from information shared within the group. Share information and lessons learned (e.g. incorporating attachments for scientific equipment into substructures during assembly) through preparation of technical notes with caveats and reference to confidence limits etc. (rather than scientific papers).
- **ACTION – include ongoing action on all MRFAG agendas: Review implications for guidance, lessons learned and project timescales.**

	<ul style="list-style-type: none"> <li>• <b>ACTION – group to decide who to prepare guidance (e.g. MFRAG or members of MFRAG e.g. MSS and SNH).</b> Not for developers to prepare guidance. Also need to link to ScotMER.</li> <li>• EK – ScotMER not meeting frequently enough to identify specific guidance requirements and ScotMER group members not necessarily close enough to specific projects to prepare the guidance.</li> </ul>
<p><b>Actions</b></p>	<ol style="list-style-type: none"> <li>2. <b>ACTION – include ongoing action on all MRFAG agendas: Review implications for guidance, lessons learned and project timescales.</b></li> <li>3. <b>ACTION – group to decide who to prepare guidance (e.g. MFRAG or members of MFRAG e.g. MSS and SNH).</b></li> </ol>
<p><b>5. BOWL marine mammal post construction monitoring update</b></p>	
	<ul style="list-style-type: none"> <li>• JD providing update for how to contribute to long term post-construction monitoring.</li> <li>• CC confirm post-construction monitoring should commence 2022 onwards when resources / funding become a little more limited.</li> <li>• CC suggesting continuing with current monitoring methods e.g. photo ID for BND and acoustic monitoring.</li> <li>• EK – BND monitoring is linked to Moray Firth SAC site – carried out on 6 year cycle through collaboration with UoA. Continuity of data is a key requirement.</li> <li>• EK remarks that all Moray Firth developers should contribute towards post construction monitoring. No costs at the moment. Uncertainty with Moray West acknowledged.</li> <li>• CR proposes to investigate whether BOWL post construction monitoring may have effects / scope for synergies with Moray Easy. Timescales for this dependent on future contractual arrangements btw SNH and the Lighthouse for surveys which is difficult to forecast so far in advance. Feedback to developers on hold for the moment.</li> <li>• <b>ACTION: SNH to progress discussions with PT re future of Lighthouse in monitoring and future funding sources.</b></li> <li>• AA advise BOWL is quite keen in getting themselves in order and satisfying the requirements before thinking of synergies with other companies.</li> <li>• PT suggests if funding looked at more strategically potential opportunity to look more holistically at the east coast e.g. through links to other monitoring along the East Coast such as the MSS ECOMAS Project – CPOD monitoring. Potential crossover with ScotMER.</li> <li>• KB – ECOMAS project to continue for duration of construction of F&amp;T wind farm projects.</li> <li>• EK – Important to consider monitoring in context of Sector Plan and future ScotWind sites.</li> <li>• <b>ACTION: UoA and SMRU to look at how current monitoring can be joined up for more strategic approach.</b></li> <li>• SNH confirms no more post construction monitoring required for harbour porpoise. EK reminds SNH has no reason to require anything further from BOWL on this matter (harbour porpoise).</li> </ul>
<p><b>Actions</b></p>	<ol style="list-style-type: none"> <li>4. <b>ACTION: SNH to progress discussions with PT re future of Lighthouse in monitoring and future funding sources.</b></li> <li>5. <b>ACTION: UoA and SMRU to look at how current monitoring can be joined up for more strategic approach.</b></li> </ol>

## 6. Moray East Monitoring Update

- PT – seal work is continuing as planned. Confirmed increasing population trend from 2014 to 2019, although evidence of animals becoming more dispersed at Loch Fleet.
- Dolphin monitoring went according to plan. Observed that 25 – 30 animals that occur regularly in the Moray Firth had been recorded along the North Coast of Scotland (including at the Meygen Site). From there the group appeared to split into two with some animals heading to Ireland, and some to the Netherlands.
- Reason for the dispersal from the Moray Firth is unclear, but occurred in March 2017 when no construction activity taking place (BOWL piling complete and Moray East not commenced). Therefore not linked to construction works.
- Number of animals in the SAC population also still good so no indication of poor population health.
- Long term underwater noise monitoring being carried out at point between BOWL and Moray East sites. Generally quieter for Moray East as using jack-up rather than DP vessels. However, piling noise more noticeable from Moray East as against lower background noise (less vessels).
- Low density CPOD array results – CPODS deployed April 2019. All 12 recovered (for data retrieval) and re-deployed August 2019. Next recovery and re-deployment 2020.
- CPODS appear to detect piling noise as BND clicks – leading to misleading results (higher levels of detection due to false detections).
- High density CPOD array was also deployed in April 2019 to monitor HP response to piling noise and ADDs. Efforts to recover affected by poor weather.
- Hydrophones (PAM (Landers)) deployed to monitor directional information relating to HP (in response to noise). Array located at the top of the Moray East Site. Only recorded for 3 days (11<sup>th</sup> – 14<sup>th</sup> July 2019) due to high intensity of data (run out of memory). High number of HP detections during the three days. Not got readings from all landers due to one being knocked over, one being trawled and one not working on specific channel).
- Also extended south coast PAM array along south coast to assess whether BND move closer to coast during piling. Deployed April 2019. Recovered 9 in Oct 2019 – 1 failed. Remaining 3 to be recovered when suitable weather window.
- KB – asked if PAM array falsely detecting dolphins only in near-field or also in far-field? PT confirmed detecting responses near-field and far-field.
- CR sought confirmation from MSLOT and SNH whether required to report on results from the phased piling strategy or prioritise analysis of collected monitoring data (from CPOD arrays and PAM (landers)). Both EK and GH confirmed analysis of monitoring data is a priority.
- KB noted that results from the phased piling strategy should still be analysed. These will be important to feed into mitigation for Moray West and F&T projects (e.g. use of ADDs) and whether there is any added value with the JNCC mitigation (phased piling)?
- CC - data analysis useful to determine if phased piling makes a difference or not and therefore whether to be used for future projects as evidence from BOWL and Moray East suggests little added value, but noted that the sample size was small.

<ul style="list-style-type: none"> <li><b>ACTION – neither MSS or SNH recommend the use of phased piling. MSLOT to therefore review requirements for phased piling mitigation based on findings from monitoring and recommendations from MSS and SNH.</b></li> <li>CC better to look at effectiveness of using ADDs during construction and responses of individual animals to different construction activities.</li> </ul>	
<b>Actions</b>	<p><b>6. ACTION – neither MSS or SNH recommend the use of phased piling. MSLOT to therefore review requirements for phased piling mitigation based on findings from monitoring and recommendations from MSS and SNH.</b></p>
<p><b>7. Moray East UXO Removal (detonation)</b></p>	
<ul style="list-style-type: none"> <li>PT Over 540 recordings. Some were too loud and close to recorders therefore clipped (approx. 57% unclipped).</li> <li>CC highlights importance of the monitoring and questions whether based on results there is a need to reconsider mitigation required.</li> <li>EK – important to have description of the activities, analysis of the data.</li> <li>CC – also important to understand influence of different water depths / bathymetry in use of bubble curtains and whether appropriate abatement for UXO detonation.</li> <li>Important to share the data on UXO – PT to advise how best to do this.</li> </ul>	
<b>Actions</b>	<p><b>7. ACTION – PT to advise how best to share data on results from UXO detonation noise monitoring</b></p>
<p><b>8. Strategic Work</b></p>	
<ul style="list-style-type: none"> <li>Discussion on INSITE and updates to ScotMER evidence maps</li> <li>GH – link monitoring in PEMP to ScotMER evidence maps</li> <li>PT – Role of PhD students in strategic work e.g. quadrant programme and MASTS</li> <li>Opportunities to bid more funding</li> <li>Existing studentships – Aude and MSS vessels – CPOD acoustic monitoring data</li> <li>JW – supporting involvement of PhDs in strategic work. Plenty of opportunity and scope for funding.</li> <li>ORJIP II reinstated – first meeting 5<sup>th</sup> December</li> </ul>	
<p><b>9. Lessons Learned</b></p>	
<ul style="list-style-type: none"> <li>Discussion on ScotMER Developers Symposium and how to get best out of discussions – more inputs / lead from MFRAGs? More focused discussions on specific project related monitoring activities to reduce risk of duplication?</li> <li><b>ACTION – JW to discuss inputs to ScotMER Developers Symposium with Janelle</b></li> <li>CR queried best way of capturing lessons learned – maybe short note / document?</li> </ul>	

- Initial results from BOWL noise monitoring indicates that conversion factors (hammer energy converted to level of noise emitted) are potentially higher than predicted especially during soft starts. Noise conversion factors is also non-linear.
- PT away 3<sup>rd</sup> December to end January 2020.

**Actions**

**8. ACTION – JW to discuss inputs to ScotMER Developers Symposium with Janelle**

<b>List of Abbreviations</b>	
ADD	Acoustic Deterrent Device
AIS	Automatic Identification System
BND	Bottlenose Dolphins
BOWL	Beatrice Offshore Windfarm Limited
cMMMP	Construction Marine Mammal Monitoring Programme
JNCC	Joint Nature Conservation Committee
Moray East	Moray Offshore Windfarm (East) Limited
MFRAG	Moray Firth Regional Advisory Group
MFRAG-MM	Moray Firth Regional Advisory Group – Marine Mammals Subgroup
MS-LOT	Marine Scotland Licensing Operations Team
MSS	Marine Scotland Science
ScotMER	Scottish Marine Energy Research (previously SpORRAn)
SNH	Scottish Natural Heritage
SNSOWF	Southern North Sea Offshore Wind Forum
SpORRAn	Scottish Offshore Renewables Research Framework (now ScotMER)
UoA	University of Aberdeen
WDC	Whale and Dolphin Conservation