

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

|                  |  |   |
|------------------|--|---|
| <b>Meeting</b>   | MFRAG Marine Mammal Sub-Group  |   |
| <b>Date</b>      | 10 June 2019   |   |
| <b>Location</b>  | SNH, Battleby  |   |
| <b>Attendees</b> | Marine Scotland Science (MSS)  | Jared Wilson (JW) [Chair], Ross Culloch (RC)                                    |
|                  | Marine Scotland Licensing and Operations Team (MS-LOT)   | Nikoleta Papanastasouli (NP), Gayle Holland (GH)                                |
|                  | Scottish Natural Heritage (SNH)  | Erica Knott (EK), Caroline Carter (CC), Chris Eastham (CE)                      |
|                  | Joint Nature Conservation Committee (JNCC)   | Sarah Canning (SC)  |
|                  | University of Aberdeen (UoA)   | Paul Thompson (PT), Isla Graham (IG)  |
|                  | Beatrice Offshore Windfarm Limited (BOWL)  | Joseph Deimel (JD), Mark Mulqueeny (MQ) (SSE Renewables Environmental Advisors) |
|                  | Moray Offshore Windfarm (East) Limited (Moray East)  | Catarina Rei (CR)   |
|                  | Royal HaskoningDHV (RHDHV)   | Fiona Moffatt (FM)  |
| <b>Apologies</b> | Whale and Dolphin Conservation (WDC)   | Sarah Dolman (SD)   |
| <b>Actions</b>   | <ol style="list-style-type: none"> <li>MS-LOT to update MFRAG web page with latest minutes.</li> <li>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.</li> <li>SNH to advise on most appropriate timescale for population monitoring (bottle nosed dolphin / harbour seal) – continue till end of 2021, until end of Moray East construction, or supplement with some additional post-Moray East construction monitoring.</li> <li>SNH to advise MFRAG-MM on scope of population monitoring, and whether this should include harbour porpoise.</li> <li>MSS and UoA to check what AIS data is available and how it is being used.</li> <li>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. NOTE; BOWL have consulted with engineering teams, and to be successful these attachment points would require low maintenance, and to be of low complexity.</li> <li>PT to draft INSITE Proposal for further consideration by MFRAG members. Deadline for submissions 19 September 2019</li> </ol> |   |

|   |  |
|---|--|
| <b>1. Introductions, Meeting Objectives and discussion of Actions from previous meeting (26 July 2018)</b>  |  |
| <ul style="list-style-type: none"> <li>• Action 1: MS-LOT to update MFRAG web page with latest minutes – outstanding.</li> <li>• Action 2: PT to confirm timescales for publishing documents outlined in agenda 4 item – timescales for porpoise dose response curve and cast study for the mitigation approach provided by email on 16/01/19. Work on final report with cMMMP results ongoing.</li> <li>• Action 3: SNH to provide update on bottlenose dolphin (BND) population estimates – completed via email on 18/01/19, to MFRAG-MM.</li> <li>• Action 4: Moray East to provide updated monitoring proposal paper to the MFRAG-MM during w/c 20<sup>th</sup> August – completed, feedback received and approved.</li> <li>• Action 5: MFRAG-MM to review and provide comments on Moray East updated cMMMP – completed.</li> <li>• Action 6: PT to provide proposal to MS-LOT for funding/approach to sandeel strategic monitoring – completed via email on 16/01/19.</li> <li>• Action 7: Next MFRAG-MM meeting to be confirmed by secretariat – completed.</li> </ul> |  |
| <b>Actions</b>  | <b>1. MS-LOT to update MFRAG web page with latest minutes.</b> |
| <b>2. BOWL project update</b>   |  |
| <ul style="list-style-type: none"> <li>• JD provided BOWL project update. All turbines are now installed and generating and have subsequently been transferred to operational.</li> <li>• Large vessels have left the site; however, over the course of the summer, snagging will continue and be completed prior to works finishing. At this point, the site will no longer be covered by the Construction (Design and Management) Regulations 2015 (CDM regulations).</li> <li>• Aerial bird surveys are underway, and sub-sea monitoring is scheduled for later this year (2019).</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>• UXO removal campaign has been completed (April 2019) and the analysis of the underwater noise data collected is ongoing.</li> <li>• All pre-construction surveys have now been completed and monitoring equipment for BND and harbour porpoise (HP) during the construction phase has been deployed.</li> <li>• Piling started on 18<sup>th</sup> May 2019 and to date there are 7 locations completed.</li> <li>• Generally, it is taking approximately 3 days to complete piling at each WTG location – the outer piles are sunk to an intermediate depth before the middle pile is fully sunk and then the outer two tightened. The piles are 2.5m in diameter and 53 – 57 m in length.</li> <li>• Less challenging locations have been the focus of early piling to ensure systems are working adequately before tackling more challenging locations. This does not mean however that all the</li> </ul>   |  |

difficult locations will be left until the end of the construction programme. Roughly the sequencing is NE to SE to N to S.

- The phased piling mitigation period is scheduled for July 2019.
- Crew transfer for the piling vessel is via helicopter and therefore shipping movements have been significantly reduced to roughly a third of the original (c. 500 reduced from 1500 consented). PT suggested using this to assess the impact on carbon output as a positive news story.
- The first Horizontal Directional Drilling (HDD) duct is due to be installed late June 2019.

#### 4. Moray East marine mammal monitoring update

- PT provided an update on the monitoring currently underway and what academic papers are in production from the data that is being/has been collected.
- PT indicated that there will be two papers ready in the second half of this year. One of the papers is on HP responses to piling noise (paper approved and should be published soon) and another paper likely to be on the effects of hammer noise vs piling noise.
- The assumption made by University of Aberdeen was that the final reports would be a series of journal articles with a high-level summary paper. All parties agreed with this reporting format.
- Photo-ID studies of BND and harbour seal (HS) are currently ongoing in coastal waters of the Moray Firth and CPOD monitoring (long-term low density and short-term high-density arrays) for HP and dolphins is being undertaken over and around the Moray East site .
- An additional array of CPOD along the Moray Firth coast is being used to monitor variation in inshore BND occurrence in relation to piling. Previous work during BOWL construction found inshore occurrence increased slightly when piling works were being conducted. This points to BND heading closer to the coast when piling is being conducted and the current array design aims to test this hypothesis.
- The novel piece of work introduced in the Moray East construction MMMP will focus on the development of PAM studies to assess finer scale responses of HP to construction vessels vs piling. This additional acoustic monitoring will use multi-channel “Sountrap” recorders to provide more detailed understanding of the direction of movement of HP in relation to different phases of the piling process (Vessels, ADD, Piling etc). The kit has been built and will be deployed around WTG locations immediately prior to piling. This work is scheduled for later in the summer 2019 (the kit will need to be tested first).
- University of Aberdeen are currently carrying out additional studies alongside the Moray East / BOWL monitoring utilising vessel time from Marine Scotland.
  - Integration of marine mammal and seabird data to explore variation in top predator diversity (work being undertaken as part of a PHD study funded by UoA and MSS).
  - The links between predator diversity, schooling prey and hydrography. The study would also look to answer whether the effectiveness of sound monitoring equipment is impacted under heavy stratification.

**5. Confirmation on post-construction monitoring requirements for BOWL**

- EK noted that SNH is happy to advise, but developers are required to produce an initial post-construction monitoring plan for discussion. The plan should be based on bespoke questions with receptor specific monitoring proposed to provide answers.
- JD advised that 2019 is too short a deadline to agree scope and finalise procurement processes. Given the time impacts it would be easier to agree a scope for a 2020 or 2021 monitoring programme.
- To ensure that a monitoring programme is agreed for 2020, the scope would need to be agreed by the end of June 2019 which seems unrealistic therefore monitoring may be best from 2021 or later.
- Post construction monitoring for ornithology is being defined by Mark Trinder (MacArthur Green). The monitoring is likely to include gull tagging and strategic puffin monitoring.
- In agreeing a scope for the monitoring there was a few suggestions that covered looking back at the EIA or scoping reports to identify whether the proposed impacts were correct.
- The key species to monitor are BND and harbour seal (HS) – there was some discussion on whether minke whale should be included however it was considered that any impacts on the species would be negligible and therefore should likely not be included in the post construction monitoring programme. There was also some debate on whether to include HP or not.
- The group discussed possible monitoring actions in the following topic areas:
  - Impacts of vessel activity but also to include interactions;
  - Biodiversity gain/loss;
  - Fisheries management near the wind farm (WF);
  - Interaction with bio-fouling/decommissioning;
  - Impacts on fish food webs/structure in the WF area (previous monitoring has covered sandeel, cod and herring);
  - Shipping data to identify the differences in vessel activity before and after the wind farm being built.
- One concern that was raised was whether the Moray East construction traffic would impact on the results of any post construction monitoring at Beatrice.
- Given the level of disturbance from Moray East, one suggestion was that it would be better served to postpone a new phase of monitoring but drill down further into the data that was collected during pre-construction and through construction to better understand the data we have. Smaller studies can then be recommended off the back of understanding the current data.
- Everyone in the group agreed that there is a good opportunity to monitor fish populations within the wind farm envelope and possibly combine this with a proposal under the forthcoming NERC INSITE Programme.

|                |  |
|----------------|--|
| <b>Actions</b> | <b>2. JD to consult with BOWL management on potential for involvement in forthcoming INSITE programme as a renewables industry representative.</b> |
|----------------|--|

|  |  |
|--|--|
|  | <p>3. SNH to advise on most appropriate timescale for population monitoring (bottle nosed dolphin / harbour seal) – continue until end of 2021, until end of Moray East construction, or supplement with some additional post-Moray East construction monitoring.</p> <p>4. SNH to advise MFRAG-MM on scope of population monitoring, and whether this should include harbour porpoise.</p> <p>5. MSS and UoA check what AIS data is available and how it is being used.</p> |
| <p><b>6. Lessons learned about timescales, procurement and any issues encountered</b></p>  |  |
| <ul style="list-style-type: none"> <li>• Possible lessons that could be learned from Beatrice and Moray East: <ul style="list-style-type: none"> <li>- Incorporate a thermometer on the structure below the water to better understand thermal stratification. Doesn't have to be all of the wind turbines, it could be a percentage.</li> <li>- Install attachment points on the jackets, etc for monitoring stations.</li> <li>- Possibility to convey lessons learned from Beatrice/Moray East to other developments e.g. Forth and Tay.</li> </ul> </li> <li>• Moray East and Beatrice have noted that it is not easy to incorporate additional monitoring kit to offshore structures after design is complete. These requirements will need to be discussed with offshore wind developers at a very early stage of design.</li> </ul> |  |
| <p><b>Actions</b></p>  | <p>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. <b>NOTE; BOWL have consulted with engineering teams, and to be successful these attachment points would require low maintenance, and to be of low complexity.</b></p>  |
| <p><b>7. INSITE proposal</b></p>   |  |
| <ul style="list-style-type: none"> <li>• PT introduced this item and indicated there was a possibility for a NERC proposal to consider our understanding of man-made structures in the environment and their bearing on environmental processes. The group discussed the potential for submitting an application and it was agreed that PT would develop a draft proposal for consideration by MFRAG. The deadline for the submission is 19 September 2019. Moray East and Beatrice have noted that it is not easy to incorporate additional monitoring kit to offshore structures after design is complete. These requirements will need to be discussed with offshore wind developers at a very early stage of design.</li> </ul>  |  |
| <p><b>Actions</b></p>  | <p>7. PT to draft INSITE Proposal for further consideration by MFRAG members. <b>Deadline for submissions 19 September 2019</b></p>  |

## 8. Conclusions

- The group is to feedback on the terms of reference – this must be completed by end of June 2019.
- May be prudent to delay the Beatrice post-construction monitoring given the disturbance of Moray East and then combine the monitoring of both sites.
- There is a desire for continuity in the personnel handling the BOWL and Moray East projects.
- Possibility of doing some monitoring or approach the company who are decommissioning the two turbines at Beatrice to see what monitoring they are doing to inform future large-scale decommissioning.
- There may be an opportunity and may be beneficial to bring additional members into the group who may have an impact on marine mammals.
- Confusion over what access restrictions are in place at Beatrice – JD to investigate this.
- MSS to investigate the procurement of AIS data.
- SSE could give a contribution in kind as part of the NERC proposal by offering the ornithological aerial imagery.
- PT to confirm the NERC deadline and rough out a NERC funding proposal for the group to agree.
- Monitoring of HP to be discussed at the next meeting as a standing action.
- MSS to pull together a list of possible instruments on turbine bases and to ask developers as to the feasibility of incorporating the monitoring equipment – also includes instrumenting vessels.
- It was discussed that if there are delays between ADD being deactivated (after 5-10 minutes of activation as per the Moray East Piling Strategy) and soft start commencing, the ADD activation can be extended to 15 minutes. It was identified that it would be rare for more than 15 minutes delay to be required therefore will remain as is just now but with the intention of discussing further should the group feel it is warranted/becomes a more frequent occurrence.

**Next meeting provisionally in October/November 2019 after the NERC proposal from PT. Update – this meeting has been confirmed for 8<sup>th</sup> November 2019 at the Moray East office, Edinburgh.**

| <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                                |