

MORAY FIRTH RENEWABLES ADVISORY GROUP (MFRAG) MEETING MINUTES

Meeting	MFRAG Ornithology Sub- Group	
Date	01 May 2018	
Location	The Studio, 67 Hope Street, Glasgow G2 6AE	
Attendees	Marine Scotland Science (MSS)	Finlay Bennet (FB) [chair], Jared Wilson (JW) [conf call]
	Marine Scotland Licensing Operations Team (MS-LOT)	Nicola Bain (NB)
	Scottish Natural Heritage (SNH)	Chris Eastham (CE) [conf call]
	Royal Society for the Protection of Birds (RSPB)	Aly McCluskie (AM) [conf call]
	BOWL	Lis Royle (LR), Nick Brockie (NB); Joe Deimal (JD) BOWL O&M representative
	Moray East	Catarina Rei (CR)
	Royal HaskoningDHV	Ben King (BK)
	APEM	Beth Goddard (BG), Stephanie McGovern (SM) [conf call]
	Joint Nature Conservation Committee (JNCC)	Orea Anderson (OA)
Apologies	Ian Davies (MSS), Giulia Agnisola (MS-LOT), Alex Robins, Erica Knott & Catriona Gall (SNH), Sarah Pirie (Moray East)	
Actions	<ol style="list-style-type: none"> 1. Suitability of ECC for studying puffin colony to be discussed at next MFRAG-O meeting. 2. APEM to update power analysis report to detail survey strip width of 225 m. 3. APEM to provide power analysis outputs in appendix to report and recirculate to group. 4. CR to search for the puffin density maps from the May, June and July boat based surveys and circulate. 5. AMFRAG-O secretariat to organise next meeting to discuss Moray East's pre-construction survey results. 	

1. Introductions & Terms of Reference
Introductions.
2. Review of MoM actions from last meeting
Last meeting minutes are from 21 st February 2018. Minutes approved via email prior to meeting. Outstanding actions from the previous meeting are as follows:

- Action 1. Suitability of ECC for studying puffin colony to be discussed at next MFRAG-O meeting: **Ongoing**. CE to discuss this action with AR prior to AR going on maternity leave. CE to provide update at next meeting.
- Action 2. GA to check BOWL PEMP on MS-LOT homepage and update to latest version agreed on 19th of September 2017 (on MFRAG homepage): **Complete**.
- Action 3. APEM to undertake power analysis and report to MFRAG-O in April: **Complete**. Note, reference to PVA in previous minutes should have been power analysis (PA).
- Action 4. Moray East to confirm whether flight height data from aerial survey will be reported: **Complete**. CR confirmed that flight height data from aerial surveys will be provided in report with caveats on any data analysis as required.
- Action 5. CR to distribute ORE Catapult tagging report: **Complete**.
- Action 6. MFRAG-O meeting to agree Moray East survey programme to be arranged for April: **Complete**. Update provided in today's meeting (Agenda Item 4).

Actions	1. Suitability of ECC for studying puffin colony to be discussed at next MFRAG-O meeting.
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3. Moray East Ornithology Monitoring Survey Programme

BG provided an overview of the power analysis undertaken by APEM for Moray East:

- APEM revisited proposed survey approach and replicated power analysis undertaken for three surveys May-July using MRSeaPower software to determine whether the survey design meets the requirements of the project scope.
- APEM also undertook analyses for alternative survey designs comprising a 4 km and 10 km buffer area around the Moray East site, grid and transect-based design approaches and increased transect widths to 450 m for transects running through the wind farm site to determine the most robust methods for monitoring. Transects that do not coincide with the wind farm footprint (ie, within the buffer survey area) would be 225 m wide – analysis was run for 225 m wide transects after report issued and achieved the same power as for 250 m wide transects.
- Power analysis was based on three surveys: May, June and July.
- Transect positioning replicated that of Moray East's initial power analysis and BOWL surveys, spaced 2.53 km apart in a SE-NW orientation.
- Results showed that for the monthly surveys over three months all designs with 450 m wide transect strips running through the wind farm site and grid designs had the power to detect 50% decline and 50% redistribution.
- Based on the power analysis results APEM's proposal is to survey the wind farm plus 10 km buffer zone with 450 m wide transects running through the wind farm and 225 m wide transects within the buffer area. This survey design would allow for cross-platform analysis and meets the requirements

of the survey scope.

Clarifications were as follows:

- CE and JW noted that densities of puffins in May were predicted to be quite high (3.25 birds per km²). Would the power be reduced if fewer birds were detected in the surveys? SM noted that the data were simulated based on pre-existing boat based baseline data. Power could be reduced but as the power was high (100%) APEM expect this would not result in a power less than the recommended 80%. BG noted that the survey design and camera system allows for additional imagery to be collected along the 225 m width transects (within the buffer area) which could be analysed should densities be too low. BG also noted that each survey would be completed in full even if a survey is abandoned due to weather or technical difficulties therefore there would be no percentage reduction in densities for not completing a survey.
- OA noted that the analysis was only undertaken assuming a 50% displacement rate. This is a coarse measurement of redistribution and may not allow finer level changes to be detected, and may have implications for the discussion around impact assessment. Being able to detect a 30% reduction would provide finer level detail that would better inform impact assessment. SM replied that the analysis had not been conducted on a 30% redistribution but the level of power at 50% redistribution was high and therefore the survey design would likely be able to detect a 30% redistribution, but this could only be confirmed by running additional analysis.

RSPB queries:

- The power analysis inputs/equations and outputs are not provided in the report, were environmental variables included in the analyses? SM noted that X and Y spatial locations of the data and bathymetry were used however; bathymetry did not always remain in the model. Going forward more environmental variables could be used in the model and we can assume that more variables would provide more power to detect change. Model outputs can be provided.
- The simulated distribution of puffins shown in figures 2-4 in the power analysis report look relatively evenly dispersed, was species biology taken into account during the modelling? SM noted that data were simulated using a Poisson process which enables for any cluster effect to be taken into account.
- How does the actual puffin distribution (collected during the 2010-2011 boat-based surveys) compare with the modelled distribution presented in the power analysis report? CR noted that it was likely that the distribution maps would have been presented within the ES. No additional density modelling of the boat based surveys was undertaken as part of the current power analysis exercise.
- JW stated that the breeding season in 2018 was noted to be occurring later than usual and asked whether there was any way that this could be considered in the survey programme. LR noted that previous surveys at BOWL detected non-resident birds in August. CR noted that survey timing is flexible per month and surveys could be undertaken later in the month for May, June or July if required. The recommended survey scope was for surveys in May, June and July, and with the power analysis showing that three surveys would be sufficient it was agreed that there would not be a survey in August.

CR asked for feedback from the group on the proposed pre-construction survey design for the Moray East Offshore Wind Farm. CR noted that the proposal is to carry out three surveys over May, June and July

following the survey design proposed within APEM's power analysis report. As highlighted at the meeting it is expected that the proposed survey design would provide enough power to detect change, however should significantly lower densities of puffin be encountered than expected (resulting in a power less than the recommended 80%) additional data would be analysed (increasing the transect width within the buffer area to 450 m as per wind farm area).

RSPB, SNH and MSS all voiced agreement with the proposal.

Decision – MFRAG-O approval of Moray East's proposed pre-construction ornithology survey design.

Actions	<p>2. APEM to update power analysis report to detail survey strip width of 225 m.</p> <p>3. APEM to provide power analysis outputs in appendix to report and recirculate.</p> <p>4. CR to search for the puffin density maps from the May, June and July boat based surveys and circulate.</p>
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4. AOB

The results of the pre-construction Moray East surveys will be provided in an annual report which will be distributed to the group for discussion in approximately October/November.

Actions	5. MFRAG-O secretariat to organise next meeting to discuss Moray East's pre-construction survey results.
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