

MORAY FIRTH RENEWABLES ADVISORY GROUP – ORNITHOLOGY (MFRAG-O) MEETING AGENDA

Meeting	MFRAG-O	
Date	26 th September 2023; 10:00 – 12:30	
Location	BOWL O&M Base, Wick and Teams Call	
Attendees	Marine Directorate	Jared Wilson (JW), Gary Clewley (GC), Kat Booth Jones (KBJ), Alexander Gilliland (AG)
	NatureScot (NS)	Jenna Lane (JL), Rona McCann (RM), Alex Robbins (AR)
	Marine Directorate Licensing and Operations Team (MD-LOT)	Debbie England (DE), Kirsty Black (KB)
	BOWL	Joe Deimel (JD) [Meeting Chair], Heather Shaw (HS), Thea Pisani Fraser (TPF)
	Moray East	Robert Iredale (RI), Susannah Farrugia (SF), Catarina Rei (CR)
	Moray West	Nuria Abad Oliva (NAO), Chris Newman (CN)
	MacArthur Green (Moray East and Moray West Ornithology Advisor)	Ross McGregor (RM)
	MacArthur Green (BOWL Ornithology Advisor)	Mark Trinder (MT)
Apologies	NatureScot (NS)	Erica Knott (EK), Kate Thompson (KT)
	Joint Nature Conservation Committee (JNCC)	Orea Anderson (OA)

Action Number	Action	Completion Date
1	RI to ask APEM if they will fly higher in post-construction surveys than they did for pre-construction surveys.	
2	AR and JW to understand what level of validation of Jason's model would provide reassurance.	
3	MT and RM to approach Jason and/or Lindsay to see what outputs can be from a joint survey analysis or an analysis of existing survey data without need for a further survey.	

4	All to approach relevant special analyst experts to look at opportunities.	
5	MFRAG members to feed back to MacArthur Green what they would like to see from future monitoring	
6	Action for MFRAG secretariat to send out doodle poll for next meeting. Likely to be March 2024, following completion of analysis of Moray East and Moray West survey results.	
Date of Next Meeting	Likely March 2024	

1	Introductions	
JD - Introductions made – in the room and on Teams dial-in.		
2	Review of actions from the previous meeting (8 th November 2022)	
<p>1. Action - MT to look into including consideration of applying the turbine avoidance method at a larger scale (i.e. the wind farm as a whole). This may be included in the revised monitoring report, or report back at next MFRAG-O</p> <p>MT – Explained that there would be significant challenges to scale it up. Resampling a large chunk of where Beatrice is already as opposed to resampling single turbines (and a defined radius around single turbines). ‘Moving’ a turbine a few hundred metres during a resampling model run is useful as a statistical bootstrapping exercise but ‘moving’ a whole windfarm several kilometres would be at a very different and at that scale new variables could affect model outputs. Didn’t feel it would be robust to do so.</p> <p>JW- Explained that reason behind the ask was that the analysis is focussed very small scale so it was just to see whether anything could be done to scale up. However, agrees that there would be substantial challenges around doing so.</p> <p>2. Action - NS/MSS to send a written confirmation to BOWL that a scientific paper manuscript based on the Hi-Def data should be produced.</p> <p>BOWL and MacArthur Green have produced a manuscript and submitted to Frontiers in Marine Science, currently awaiting completion of peer review process.</p> <p>3. Action - MT to issue manuscripts and 2021 survey report to MFRAG-O for review. Completed and on the Marine Scotland website.</p>		

4. Action - MacArthur Green to contact BTO and update the position paper on GBBG. The paper has now been published.
5. Action - MacArthur Green and Moray Firth Developers to append the GBBG position paper to a note to include conclusions discussed through MFRAG and approach for future reviews. Separate discussion will be had when comments come back from the paper.
6. Action - MacArthur Green to update the Moray Firth digital aerial surveys approach position paper – consideration of the analysis and outputs that we would receive from these both and compatibility issues (transects adjustments, data from different providers). Will be addressed in current meeting.
7. Action – Date for this current meeting. Completed.
8. Action - EA to include all MFRAG members to the list for future offshore visits to Moray East. CR – This will have to be next year and journey to ME is longer than to BOWL. Visits have ended for the winter and will be sure to include MFRAG members in future invites.

3

Moray East project update

CR -

O&M update

- Major maintenance/ repair work took place in July 2023, with the Wind Orca.
- Other regular O&M works ongoing.
- OfTI transfer expected by the end of 2023.
- Surveys (SSS and MBES) currently being undertaken at planned jack up locations prior to works taking place (planned October).

PEMP

- Submitted to MS-Lot on 7th March 2023 and out for consultation on 31st March 2023.
- Forwarded to MFRAG group by Moray East on 5th April 2023.
- Following consultation, amendments were incorporated to the document on 27th June 2023, (version 4 for the WF PEMP, and version 2 for the OfTI PEMP), subsequently approved by MD-LOT on 7th July 2023.

Ongoing PEMP activities

- CPODs deployed in August 2023.
- Start of tendering activities for fish surveys to take place in Feb/March 2024.
- Benthic data analysis in line with agreed methodology.

Future update

- PEMP will be updated and split into two separate documents following OfTI transaction.

Ornithology monitoring

RI -

- First Moray East post-construction surveys (Digital Aerial Surveys) undertaken by APEM during the 2022 breeding season, combined with Moray West pre-construction surveys.
- Three survey episodes, May, June and July.
- Key species are puffin, guillemot, razorbill, kittiwake.
- Analysis underway, using similar approach to that undertaken at Beatrice (density estimation, comparisons between project phases, analysis of any turbine displacement effects).
- First draft expected by the end of the year with results being presented to MFRAG in advance of the first MFRAG-O meeting of 2024.
- Next surveys planned to take place in the next breeding season following Moray West construction – expected 2025 at the earliest.

JW- Asked how the three windfarms are considering bird flu impacts on gannet when discussing the results?

RM – Explained that the abundance might be lower but relative spatial distribution should be the same regardless.

MT – Stated that it would depend on how badly the colonies affected in northern Scotland. Not badly as recalled.

JW – Asked if we are expecting a shift up or down of the overall density or might expect something about the distribution to change because of competition. Perhaps when we see results, we might interpret this better. Just wondering if initial thoughts had been identified.

RM – Stated there are various possible results outcomes but without long term picture of avian flu impacts not sure what we can compare it with.

RM – Stated it should be made it clear in the reporting that avian flu impacts happened.

JD - Suggested using imagery from before avian flu for comparison (BOWL 2021).

AR – Raised the timing of the surveys. If we know timings of when avian flu is beginning to be seen at colonies this might give an indication of which months within the breeding season, we might expect to see some differences.

RI – Stated it's possible the avian flu outbreaks might have occurred after this season's colony counting had been done but hopefully that will provide some useful contextual information to feed into this as well.

JD - Reality of surveys only covering a snapshot in time.

AR – We did counts at ECC but didn't get all of it done with timeframe that they had. Looking at key plots. Within two weeks of counting the colony was hit with bird flu. Discussions ongoing as to whether it will be counted again next year but using key areas to look at before and after bird flu comparison.

MT – Asks if it will be a while before we see any numbers from that work.

<p>AR – Mentions that further numbers of dead birds were reported to Nature Scot via mailbox and discussions are ongoing as to if this information can be shared with developers to help interpret what they are seeing in results.</p> <p>JW – Expectations for colony count from this summer available by the end of this year. If additional counts are done next year, they will be made as quickly as possible. Any information we can be given about potential outbreaks the better.</p> <p>RI – Raised that the Seabird Monitoring Programme (SMP) methodology doesn't best capture this as it encourages counts earlier in the season (May/June). Most of the infection is impacting birds after this. Wonders if some of the SMP productivity plots that require multiple visits could be a better way of capturing this.</p> <p>JW – Agreed colony counts aren't a way to look at avian flu outbreaks. NatureScot have a reporting system for reporting birds thought to be infected with avian flu.</p> <p>JW – Raised that there was a paper in the latest edition of Scottish Birds on GBBG population change in North East Scotland which is showing a large decline.</p>		
4	BOWL project update	
<p>JD-</p> <p><u>O&M Update</u></p> <ul style="list-style-type: none"> • A few cable faults have been rectified over the summer and have been done so from within structures, avoiding having to do any work in marine environment. • Swapped out radiators on OTM1 and looking to do the same on OTM2. • Swapped out switchgear on one turbine. • Ongoing maintenance campaigns likely to end this week. • The Puffin camera at Dunbeath has been recording data, yet to be analysed. • The 2021 aerial monitoring report has been uploaded to MFRAG website now. • Worked with MT to submit a scientific paper based on that report (manuscript submitted to Frontiers in Marine Science) and currently awaiting feedback (as per previous meeting Action 2 mentioned above). 		
5	Moray West Project update	
<p>NA and CN –</p> <p><u>Offshore consent plans</u></p> <ul style="list-style-type: none"> • Operation and maintenance plans to be submitted Q4 2023. • All other plans approved by MD-LOT. <p><u>Offshore Seabed Preparation Works</u></p> <ul style="list-style-type: none"> • UXO identification, and then clearance by low order deflagration (81 objects in total). 100% success rate, MW first to do this on a commercial scale. • Current boulder clearance campaign completed in early September. 		

Additional licences and consents

- Various UXO clearance Marine Licences and EPS licences received.
- Safety Zones consent received August 2023.
- Construction EPS Licence in place.

Offshore Construction Programme – Works Completed to Date

- HDD completed February 2023.
- Offshore Export Cable Pre-Lay Grapple Run route clearance completed in July 2023.
- Scour protection completed July 2023.

Offshore Construction Programme – Future Works

- Monopile installation due to begin from early October.
- About to start the grapple run for windfarm IACs.
- Starting in October, laying the first of the two offshore export cables.
- Two of the OSP monopiles will be some of the first to be installed before the OSP topside is estimated for arrival in November.
- Continued piling into March next year.
- IAC installation to start spring 2024.
- Turbine installation to begin April 2024.

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Digital Aerial Survey – Moray Firth combined survey approach

Data compatibility between data collected by Hi-DEF and APEM

MT - Asked RI if Moray East data is collected as continuous transects.

RI – Confirms yes.

MT – Explained that with a combined dataset for all three windfarms there would still remain differences so any comparisons being run between what has been collected to date and any future joint surveys across all three sites there would have a backwards compatibility issue. Unknown how significant that would be. Likely overall % coverage and species identification rates may vary but until it is tried -unsure by how much. It'll be a problem for whichever project takes the hit and changes survey contractor.

RI – In terms of species ID, there's a divergence in the two survey methods between non-breeding season (guillemot v razorbill). ID rates in the breeding season are not too dissimilar.

MT – Asked question around APEM resolution quality when flying higher.

RM – Explained a difference can be seen in imagery and ID rate due to weather conditions.

MT - Asked Ocean Winds if APEM will fly higher in post-construction than they did pre- construction.

Action: RI to ask APEM if they will fly higher in post-construction surveys than they did for pre-construction surveys.

AR - Asked if the imagery would change with different heights?

MT – Responds to AR, yes likely but it can be cropped.

MT – Explained that having the two different survey suppliers introduce complications which means there needs to be a hierarchy of what we want to get out of this which will help us work out best compromise.

RM – What’s the purpose? What’s the best solution? It might not be joint aerial surveys.

MT – Looking at statutory advisors and regulatory colleagues and asking where we should be heading with this.

JW – What’s the objective of combined survey?

CR – Nature Scot highlighted that it would be good to collect single dataset all at same time to have regional dataset for all projects together.

MT – Acknowledging the fact this would focus on one big wind farm rather than carving it up into (from a bird perspective) into artificial subsets; it makes sense to treat it as single entity from survey perspective. However, retrospective analysis could potentially be done across the sites using the Joint Survey methods developed by Jason Matthiopolous for Marine Scotland. This is specifically intended to be able to model survey data collected using different methods (e.g. boat, aerial, tracking) at different times and different spatial scales, although it has not to our knowledge been used in practice.

RM – Advantage of Jason’s approach is that it can be expanded to include Caledonia’s EIA surveys.

MT – States it would be good to run turbine avoidance data at this scale (i.e. including Caledonia). However, consistent avoidance has been seen at BOWL and East Anglia One (for which one year post-construction analysis has been analysed, but isn’t publicly available yet). There is increasing confidence in the results we got from BOWL and there are going to be other similar results coming soon. So, if there is to consideration of factors driving a requirement for joint survey, turbine avoidance is probably now a lower priority consideration as it has been investigated already. Wider spatial modelling is where the gains are.

RI – Asked what are the disadvantages to Jason’s modelling approach?

MT – the MRSea modelling approach is considered quite slow however gives flexibility for fine resolution density surfaces. The difference with Jason’s model is that it allows data to be modelled using a covariates from different places and different times and collected using different methods.

RM - Model validation has not occurred, and this would be next year.

AR – Recommended that it would be useful to get feedback from Jason. The main thing is to make use of all available data so keen to see what Jason has to say about what can be done here in term of the objectives and if all available data can be used. Get feedback on advantages and disadvantages to inform that decision.

JW – Asked how widely used is Jason’s approach? Can anyone use it? Not clear about what the driver for a single survey is.

MT – Driver for a single survey was that if you survey each site independently and analyse them as such, you are ignoring the fact that they’re not really independent.

GC– Asked what are the logistical differences to delivery of three separate site surveys or one large combined survey?

MT – Could probably do it in one day in one plane in good weather.

JD – If processing becomes an issue, we might be able to get access to Microsoft collaboration via SSE.

RM – Jason’s approach doesn’t just interpolate within survey area you can extrapolate beyond it because of the way you are incorporating covariates. Can include colony count data within the framework to predict abundances in un-surveyed space.

JW - Who else uses this model?

MT – Has a copy however the R package has not been made public. In terms of using the model, would look to Jason for guidance.

MT – A piece of work has been done on Marine Directorate’s behalf.

MT- Should a subgroup be created to further discuss this?

AR – What surveys do we have and what are the objectives? Can these be sent to Jason M and Lindsay (Scott-Hayward) to get views on what’s possible using both methods (individual site and combined survey)?

CR – OW have a list of all data available.

MT – States we don’t currently have a question. What would be the most useful thing to learn from this location (Moray Firth sites)?

CR – The monitoring requirements are on a strategic level rather than a project level so which one is the more important at this point. This decision would need to be made even if the strategic monitoring objectives meet the project level objectives.

JD – Agrees, our PEMP’s state that engagement in strategic monitoring is ongoing.

JW – Stated that the fundamental question would be ‘is there displacement and at what scale and is any displacement consistent across locations and time’? If there are spatial questions that can be answered using three windfarms that can’t be answered using one then they are the questions we should be looking at. If not, then looking for consistency of displacement results over all windfarms.

JD – Would it be reasonable for updates to be done to the previous paper on the combined survey approach, i.e. an addendum just proposing potential questions that might be useful to look at. Circulate to group?

MT - Would it be more informative to take these questions away and discuss with Jason or Lindsay in first instance to focus in on the key outputs we could get from this?

RI – Agrees. Explains that methods around MRC are widely accepted by stakeholders in offshore wind. Key ask from OW would be to understand how Jason’s methods are to be validated and at what level AR and JW would be comfortable with.

RI – Concerns over modelling approach validation if OW can’t give comfort to stakeholders to allow findings to be accepted.

Action for AR and JW to understand what level of validation of Jason’s model would provide reassurance.

RM - Because Jason’s model can extrapolate un-surveyed areas, it needs to be validated, otherwise it is not known if the outputs are realistic.

JW - Not clear that an objective of post-construction monitoring should be to validate Jason’s approach.

CR – Only if want to use results as a template for monitoring at future offshore windfarms.

MT- Asked if there a future scenario where developers don’t have to collect 2 years baseline data for an offshore wind farm. If the answer is no, then there isn’t much gain from validating Jason’s method.

RM - Looking forward to ScotWind there is going to be a complex range of projects coming forward. How do we monitor that in a meaningful way; having a model mechanism to with new monitoring results datasets can be added as they come in would be useful.

AR- Two main things to consider. Objectives for this work (from strategic and site monitoring perspective), and also future proofing ongoing monitoring at a wider scale – how can statistical modelling best be used to make sense of this. Would be great to get feedback from experts on spatial modelling.

Action for MT and RM to approach Jason and/or Lindsay to see what outputs can be from a joint survey analysis or an analysis of existing survey data without need for a further survey.

Action for all to approach relevant special analyst experts to look at opportunities.

Action for MFRAG members to feed back to MacArthur Green what they would like to see from future monitoring.

RM – Suggests being able to apply those results to impact assessments. Reduce precaution and increase knowledge in predicting impacts for EIS and can we use this.

JD - Rather than another repeat of monitoring has already been carried out at a site level, SSE Renewables would be keen to see a main objective of a combined survey being to reduce precaution in impact assessments, which could be used for EIAs for other projects.

MT – Queried at what point will results from previous and current monitoring be accepted as satisfactory by MFRAG, i.e. is there a purpose to continuing to collect further data.

JW – Suggested that focus of analysis should be whether there are consistent results emerging from the different windfarms, and that the monitoring is at a stage were project specific results feed into strategic outcomes.

RM – Could be good to produce a position paper to share with Forth & Tay RAG for feedback.

8	Strategic work updates	
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PrePARED

JW -

- PrePARED Field season over the summer ongoing fish surveys.
- Sandeel survey access in Forth and Tay due to lots of construction activity.
- Waiting on report update on how field seasons have gone over the summer.
- Bird flu didn't impact the tracking as much as it did in 2022.

JD -

- Extended detector arrays placed at BOWL for smolt so should give an indication of how salmon and trout smolt are interacting within the windfarm.

ScotMER

AG -

<ul style="list-style-type: none"> • 3 Ornithology projects all currently in different stages of tendering. • One looking at auks, another looking at GPS tags for a range of different species in a range of different colonies and lastly another project looking at distributions changing after bird flu with tagging. • Extended colony counts. • Diadromous fish online tracking project. • Going through projects board process again. Looking to leverage more funding to see if bigger project can come through. 		
9	AOB and Close	
<p>AG - ScotMER Symposium likely to be held around the end of January/ beginning of February 2024. Currently in planning and schedule stage and likely to be virtual event. If anyone has anything they'd like to share at the symposium, then please send to AG directly or scotmer@gov.scot.</p> <p>Action for MFRAG secretariat to send out doodle poll for next meeting. Likely to be March 2024, following completion of analysis of Moray East and Moray West survey results.</p>		