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

Meeting	MFRAG-O	
Date	19th January 2022; 13:00 – 16:00	
Location	Teams Call	
Attendees	Marine Scotland Science (MSS)	Jared Wilson (JW) [Chair], Tom Evans (TE), Julie Miller (JM), Sue O'Brien (SB)
	NatureScot (NS)	Erica Knott (EK), Chris Eastham (CE), Kate Thompson (KT)
	Marine Scotland Licensing and Operations Team (MS-LOT)	Gayle Holland (GH)
	Joint Nature Conservation Committee (JNCC)	Julie Black (JB)
	Royal Society for the Protection of Birds (RSPB)	Aly McCluskie (AM)
	BOWL	Joseph Deimel (JD), Fiona Wilson (FW)
	Moray West	Catarina Rei (CR), Nuria Abad Oliva (NAO)
	MacArthur Green (Moray West Ornithology Advisor)	Ross McGregor (RM), Mark Trinder (MT)
	SSE Digital Ventures	James Scobie (JS)
	Marine Scotland (Marine Planning)	Janelle Braithwaite (JBr)
	Moray East	Eliana Mercy (EM), Ruaridh Danaher (RD)
Apologies		

Action Number	Action	Completion Date
1	MacArthur Green to review the study on catching seabirds at sea published by the Dutch Government and make contact with the author	Carried forward
2	Moray West to issue to group an updated method statement with clarification that survey altitude across the whole area will be to produce a 2cm resolution.	March 2022
3	MacArthur Green to produce note with initial outline for GB tagging workshop.	End March 2022
4	MacArthur Green to look at outstanding aerial survey monitoring commitments of the 3 Moray Firth projects, and to produce a note with more details of a combined survey approach.	Carried forward

5	JD to look at the original ornithological monitoring questions, and feedback to group.	End February 2022 [**now complete**]

1. Introductions and Purpose of Meeting

Introductions made

2. Meeting objectives and review actions from previous meeting (9th Feb 2021)

Developer objectives for the meeting:

JD – BOWL would like discussion of joint aerial survey proposals, agreement on metrics to be monitored by East Caithness Cliffs puffin camera, and would be interested in discussion of GB monitoring proposals for 2022 (as set out in the recent MacArthur Green note for Moray West).

NA – Moray West are preparing to commence pre-construction surveys (March 2022) so would like to reach agreement on survey proposals. Would also like to reach agreement on GB monitoring proposals for 2022, as Moray West has the requirement to undertake monitoring this year (pre-construction).

Review of actions from previous meeting:

1. Provide an update on actions from MFRAG-O meetings prior to the next meeting.
   Completed. Update on actions from 1st October 2021 MFRAG-O meeting was provided in advance of this meeting.
2. RD to provide MT with Moray East construction activities during April, May & June 2021.
   Completed.
3. JD to provide reporting timescales in relation to puffin camera monitoring.
   TBC – discussed in this meeting
4. MacArthur Green (MT and RM) to prepare a monitoring options paper to assess the potential options to combine the various aerial survey requirements across the 3 developments going forward.
   Completed. Moray Firth combined monitoring option papers was issued to MFRAG-O in advance of this meeting.
5. Moray West to produce a note describing the cost-benefit analysis of 1.5 cm versus 2 cm and circulate to MFRAG-O group towards the end of October 2021.
   Completed. Note issued to MFRAG-O on 11 November 2021.
6. Review the study on catching seabirds at sea published by the Dutch Government and make contact with the author
   Carried over –MacArthur Green to action.
7. Workshop to be arranged in relation to GBBG monitoring work
   To be discussed in this meeting.
8. TE to investigate how offshore tagging could be addressed through ScotMER.
   TE - will be added as an evidence gap to ScotMER evidence map.
9. MSS to request summary report of the issues encountered by BTO during the work on GBBG tagging in the Isle of May
   To be discussed in meeting. TE - Robin Ward at NIRAS may have looked at this?
10. Moray West to discuss with MS-LOT requirements to discharge consent condition in relation to GBBG monitoring.

Paper prepared, will be discussed in this meeting. Condition requires monitoring pre-construction, i.e. pre-2023, so need to monitor 2022

Action 1: MacArthur Green to review the study on catching seabirds at sea published by the Dutch Government and make contact with the author

3. Moray East project update

RD gave a project update presentation. Moray East coming to the end of construction, with commercial operation scheduled for 1st April.

Main activities undertaken on site:

- WTG commissioning and handover to those assets to O&M
- Takeover of the project on-going
- Aim of reaching Commercial operation date in April 2022

Activities on-going:

- Transition into O&M phase – new team member Eliana Mercy
- Update required to consent documentation
- Post construction monitoring – Export and IAC burial & foundation surveys
- Aerial bird surveys – May-July 2022
- Marine mammal monitoring as part of joint approach with BOWL and MOWWL
- Over trawl trials – April 2022. Broad agreement on the locations for trial in April 2022.

JW – Highlighted that the timing of the over trawl trial surveys would need to be confirmed with the marine mammal monitoring team, so they are aware of this.

RD – confirmed that the over trawl survey has been in the quarterly update circulated to MFRAG.

JW/RD – over-trawl plans include for 1 or 2 passes for each cable string, approx. 25% of the site. Scheduled for soon after full commissioning.

4. BOWL project update

JD gave a project update. Relatively quiet time of year for site operations, with ongoing regular maintenance and operational checks.

Preparing for 2022 subsea asset surveys and minor maintenance on jackets

4.1 BOWL 2021 Digital Aerial Surveys initial results

MT – has carried out initial review of avoidance rates, also has turbine RPM data in same format as 2019. No apparent indication of avoidance from auks. From this initial look at the data, results appear to be the same pattern as 2019. Targeting spring 2022 for a summary report. Hasn't looked in detail at how to combine the 3 years of results; may potentially be a processing issue?

JW – was an abstract on this research submitted for a presentation at the 2022 Conference on Wind energy and Wildlife impacts (CWW).?

MT – was accepted for a poster, also on a reserve list for a talk.

JW – has there been analysis of non-breeding season data from EA1 surveys?

MT - work has been done but with SPR.

EK/JW – is there potential for an interim paper combining 2019/2021 results, as evidence for sectoral marine plan?

JD/MT – will develop a strategy for an interim note.

[**Post-meeting update**: MT has written an interim note, which BOWL have submitted as evidence for the sectoral marine plan]

4.2 East Caithness Cliffs puffin monitoring metrics / Isle of May monitoring trial outcomes

JS – introduction to Isle of May work and results. Good accuracy (mid-low 80%s) and good consistency of results. Would expect high 90%s following model retraining using IoM footage.

Showed footage from salmon counting camera. A validation exercise showed results from the AI cameras were much more accurate than previous fish counter equipment. AI models developed solely on footage from fish pass sites, no stock footage used.

Then showed a dummy dataset for Dunbeath puffin monitoring cameras. Data will be captured 10 times per second.

Data feeds into a PowerBI dashboard, can be set to refresh as often as needed. Showed a mock dashboard for the Dunbeath cameras.

Provided example of a dummy year-on-year trend monitoring output; what's happening to the population, what other variables might be impacting? Examples – what is highest number of puffins on a single day, and what is the largest for a month, etc. With demonstration of a year where population is against prevailing trend.

The model could integrate other data such as weather, or food sources, if there are query points?

Can also plot exact counts by time of day. Can easily plot different time periods against each other.

Will workshop with NatureScot team to work out statistics will want to show.

A recce was undertaken to the proposed Dunbeath camera location in October 2021, following which a decision was made to deploy 4 cameras to capture images from different parts of the stack at high resolution.

TE – identification; is the system specifically picking up puffins, or any black and white bird that's coming into frame?

JS – in early days, a gull or 2 was picked up, but as model is trained this becomes less. 'Training by feedback' is being developed, which will help enable training including by non-technical staff.

JM – could it be trained to identify burrow themselves? Could it be trained to associate a moving puffin with a burrow?

JS – this is a potential for future development. But can currently label the burrows manually on a frame, and detect puffins entering the burrows. Stretch target to identify puffins entering burrows carrying fish. Would also like to train model to identify pufflings. Model could focus on – is it a puffin (body) is it a puffling (head) is it carrying fish (breeding)?

KT – keen to look at pursuing stretch targets in some way, has significant long-term potential.

JW – key currently measurable metric is population data.

JS – opportunities to develop further.

RM – have multi-spectral cameras including UV detection (fluorescing bills in adult puffins) and IR (for birds entering and exiting burrows at night) been explored?

JS – these could potentially be looked at in future.

[**Post-meeting update**: planning permission received from Highland Council in April 2022, with a condition that camera installation should not take place within the bird nesting season. Installation will therefore be planned for September 2022. Interim data-collection approaches are being investigated]

5. Moray West project update

NA provided an update presentation.

Hoping to receive S36 determination by February.

Pre-construction SI in 2022

Pre-construction monitoring surveys to commence soon.

- Aerial surveys – to recommence in March 2022
- Marine mammal monitoring – to recommence in spring 2022

Consent plans are being progressed.

- Decommissioning Programme (DP) – submitted to MS-LOT on 26 November 2021

Commencement of OfTI construction planned for December 2022

Commencement of wind farm construction planned for Q3 2023

5.1 Moray West Pre-Construction Digital Aerial Surveys

NA showed flight plans for the surveys. 2021 aerial surveys have been carried out respecting 1.5NM 2000ft requirement for the Beatrice complex (survey lines 7 to 17 inclusive). Imagery has been collected at two different resolutions, 2 cm resolution and 1.5 cm.

ID rates at these two resolutions are very similar, and still estimated to be high for 2 cm GSD, therefore this will not have a significant impact on detection and identification rates.

Additionally, 2 cm GSD has been the standard imagery resolution used to date.

A note has been prepared with more details of approach for 2022 aerial surveys. Moray West proposed to use the same approach used in 2021, capturing imagery at 1.5 cm and 2.0 cm GSD across the survey area

Advice from NS and MSS was received in December 2021, and it was suggested that an alternative approach would be for Moray West to move to 2 cm GSD across the entire survey area. NA explained the response provided by APEM on queries raised in the response received in December 2021, on differences in detection rates and the potential edge effects in detection and / or identification rates when using a cropped 2cm GSD image.

The main measure APEM uses to minimise the risk of not detecting targets in the images is thorough internal quality assurance process, undertaken on data from every survey.

In addition, APEM aim to capture high quality data by surveying in optimal conditions to reduce occasions whereby targets may be missed in imagery, for example glare, sea state. APEM collect additional imagery to compensate for any images that may be affected by glare, for example.

The edges of the 2cm GSD images are blacked out so that the analysts can only see the same footprint area as if APEM flew at a lower altitude to capture 1.5cm GSD images.

APEM will clip 2cm resolution data to be equivalent of 1.5cm resolution data, so that data from the 2 difference survey altitudes can be combined.

KT – may be easier to move everything to a 2cm resolution. Hadn't realised how wide the area was that's affected by the Repsol Sinopec survey plane flight height restrictions.

TA – agreed with KT, when reviewed proposals previously found that moving to 2cm resolution would be good for consistency across the area.

NA – will send to MFRAG-O an updated method statement with clarification that survey altitude across the whole area will be to produce a 2cm resolution. Group was in agreement.

Action 2: Moray West to issue to group an updated method statement with clarification that survey altitude across the whole area will be to produce a 2cm resolution.

6. MacArthur Green Moray Firth cluster GBBG Monitoring Proposals

NA – proposals as described in note circulated on Friday.

RM – as there is no opportunity for GB tagging this breeding season, to research connectivity with the wind farm sites it could be useful to look at flight behaviour (proportion of trips that go offshore, could flights be assigned to marine/coastal/terrestrial, proportions). And prey provisioning – collect pellets from accessible nests once or twice a week. Identify prey to lowest taxonomic level, and determine if any are marine species.

JM – has there been any consideration of provisioning observations?

RM – considered in relation to provisioning rate, although pellets may provide more detail on source of prey.

JM – can sometimes get good observations of gulls (has observed HG) with regurgitated material sometimes clear what contents are.

AM – will flight observations be throughout colony, and will weather details (incl. wind direction) be collected?

RM – if the group feels this is useful fieldwork, could be good to scope a number of potential vantage points.

TE – visual tracking has potential to deliver useful information, some validation (e.g. from 2014 GPS tracking study) to see if observed vanishing bearing corresponds to the GPS data. Gulls thermal riding before heading out to see might cause some confusion.

JW – Sam from UHI (Phd student looking at GB on Isle of May) has been doing GB prey work.

MT – in theory, all birds are accessible for observation, so may have positives in relation to tagging. Also, re TE's point, Adam at Bios did a bootstrap study on decisions the birds make.

JW – noted group agreement that this is a good approach.

TE – BTO update, summary of issues encountered: a captured/tagged set, and a control set. Lower breeding success, and 2 mortalities, in tagged birds. Similar effects seen by groups outside the UK.

Broadly BTO think tagging can be explored, and supportive of a workshop to look into this. They could organise this if were commissioned to do this.

RM – would be a workshop organised by MFRAG-O, to look at whether issues could be addressed. Need to address next steps for the workshop, and create an initial document for those attending the workshop. Also need to decide when we need to do this.

CR – supportive of helping to organise. Production of note by MacArthur Green? This meeting could be carried out under MFRAG ToR, likely to be a virtual meeting. Best timing could be after the summer? Would allow time to agree a note to attendees.

JD – agreed.

JW – should aim for a MFRAG organised workshop in Sept/Oct 2022. Is group content that a strategy/timeline be developed? Outline at this stage, including aims and objectives.

CR – individuals in the group could invite their contacts as appropriate.

EK – any relevant findings from NS gull workshop a couple of years ago? Lucy Quinn (Marine Ornithology Advisor at NS) may be able to help advise.

JW – would end March be a good target for initial outline for workshop?

EK – yes, as CWW could be a good opportunity to speak to other specialists.

TE/JW – what would workshop outputs be? Should include possible solutions, next steps.

Action 3: MacArthur Green to produce note with initial outline for GB tagging workshop, by end March 2022.

7. MacArthur Green Moray Firth cluster Combined Aerial Survey Proposals

MT – recently issued note was to set the context for a joined-up aerial survey approach in the future. Note described what surveys have been carried out to date across the 3 projects, and survey transects illustrated in diagrams, showing there is some overlap already.

Also included a diagram to illustrate most likely configuration of a 3 project approach.

Set out remaining commitments on the 3 different projects, and how surveys could be shared out.

2 possible approaches – projects continue doing their own surveys, resulting in a greater number of years overall. Or combine surveys and effectively have fewer years, but a larger area covered each year.

JW – based on BOWL results, what would preferable approach be?

MT – treating them as independent sites, when they will effectively be one site, loses some value.

JW – if a combined approach was taken, how many complete surveys of the cluster would be delivered?

MT – definitely one full survey, at current levels of commitment.

JW – would sites built later would have less post-construction survey effort than locations built earlier?

MT – how different do we expect results to be for Moray East and West from BOWL?

MT – would group support firming up proposals for this.

KT – proposal sounds logical. Also makes sense having a joint survey to avoid MW construction effects. Ideally 2 seasons of joint survey would be carried out. Some further detail would be helpful.

JW – do we need to discuss what would be a sufficient number of years of post-construction monitoring?

RM – have key questions been answered?

CR – would group be happy that there is a gap before joint survey i.e. until after MW has completed construction? Likely would be 2025

TE – potential habituation of birds to the wind farms would support a delay. Should new ScotWind site be factored in?

CR – Caledonia Windfarm, has been awarded and is close to the existing 3 sites. But is early stage site and not a MFRAG member.

JB – note from MT, how many years that would be reasonable if one big survey. Shouldn't discount possibility of 2 further years at this stage.

SO – is this is a question of spatial variation versus temporal variation?

MT – we may have a better idea when analysis of the second year of BOWL results is completed.

SO – suggested that spatial response to WF presence is of most concern, temporal response data provides context to this but absolute numbers in a given year are less important for overall analyses.

MT – there is potential to analyse all this data together using a Joint Survey model that has been developed for MacArthur Green. Will be able to utilise post-construction data from the 2 BOWL and 1 ME surveys done till now.

RM – what are surveys looking to achieve beyond this year? (including Moray East buffer zone that overlaps BOWL, there have effectively been 3 years of post-construction surveys at BOWL).

SO – in 2022, 23 and 24 there will be a lot of data collected on prey through PrePARED. Would be valuable to have an aerial survey at the same time – predator/prey. Moray Firth work will be looking at marine mammals, and looking at prey landscapes (led by MSS and University of Exeter). Will all be pulled together into one model. Fish modelling and abundance/community changes, comparing BOWL as a slightly older wind farm with ME as a newer one.

MT – will fish distribution maps be coincident with aerial survey data? i.e. what is time granularity.

SO – the most informative data for fish distribution will be from acoustic surveys which will be carried out in June, for 3 years from 2022.

MT – joint aerial survey is understanding spatial distributions – if can link up with fish data.

SO/MT – Action to have a discussion about PrePARED.

MT – will coordinate developers to look at their outstanding commitments.

JW – further action looking at original ornithological monitoring questions. JD to investigate.

Action 4: MacArthur Green to look at outstanding aerial survey monitoring commitments of the 3 Moray Firth projects, and to produce a note with more details of a combined survey approach.

Action 5: JD to look at the original ornithological monitoring questions, and feedback to group.

7. Strategic work updates

TE provided an update on LIDAR project – MSS commissioned APEM to carry out LIDAR surveys in the Moray Firth, June/July 2021 – demonstration of LIDAR technology. Report expected to be published mid 2022.

8. AOB
MT – re earlier comment from TE; BTO suggested contacting Robin Ward re catching birds at sea. JW – date of next meeting; after review of questions that post-construction monitoring required to address? Autumn 2022? Interim meeting when initial discussions on GB tagging workshop have progressed.