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Streamlining Ornithology Impact Assessments: What Changes Would be Beneficial?

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EXECUTIVE SUMMARY

The HRA (Habitats Regulations Appraisal) and EIA (Environmental Impact Assessment) offshore ornithology component of offshore wind farm (OWF) consent applications are lengthy and complex, making them resource-demanding to both produce and review. Scottish Renewables, with SOWEC funding, commissioned work to solicit views on whether the current ornithology impact assessment process and reporting could be streamlined.

An anonymous survey was undertaken to seek views on:

- The extent to which offshore ornithology issues posed a risk to OWFs obtaining consents;
- Which parts of the HRA and EIA ornithology impact assessment process work well and which would benefit from changes;
- Details of what changes would be helpful.

Altogether, 19 respondents completed the online questionnaire (6 developers, 12 consultants, 1 SNCB). When asked which aspects of ornithology pose the greatest risk to OWF projects obtaining consent, most of the industry respondents identified high precaution in assessments as high or very high risk. Challenges of securing compensation and slow adoption of new evidence by SNCBs were also seen as high or very high risk by most industry respondents.

Focussing on where changes to the ornithology impact assessment process would be beneficial, three-quarters of industry respondents felt that current approaches to baseline data collection, design-based methods for estimating seabird density and abundance and use of the stochastic collision risk model for estimating collision mortality worked well and did not require imminent change. By contrast, three-quarters of industry respondents felt change was urgently needed to methods for calculating in-combination impacts and two-thirds identified use of the SeabORD tool for estimating displacement, as needing urgent changes. However, the majority of this need for urgent change was seen as being technically or politically challenging to implement.

Respondents were then asked to provide detailed comments on current impact assessment approaches and reporting. Generally, respondents felt baseline site characterisation approaches worked well, although acknowledged that digital aerial survey methods do not account for birds using the OWF development area at night and in poor weather conditions and may also under record some cryptic species. Respondents also mentioned difficulties with using the MRSea tool to produce model-based estimates of seabird density and abundance.

Concerns were raised about both the displacement matrix and SeabORD tool, used for estimating displacement mortality, although the displacement matrix was recognised as being simple and quick to use whereas SeabORD was challenging to use and seen as overly complex. Many respondents identified high levels of precaution as an issue with displacement mortality estimates. Respondents recommended use of empirical evidence of the extent of displacement from operational OWFs and that mean abundance rather than peak abundance should be used as an input to models.

Generally, respondents thought that collision risk modelling approaches, used to estimate collision mortality, worked well. Respondents recommended obtaining updated empirical data on bird

flight heights and to validate model predictions using studies of collision mortality from operational OWF.

Respondents raised concerns over the way in which foraging ranges are used to apportion breeding season seabird mortalities to SPAs, noting that better use of bird tracking data (e.g. GPS) would be beneficial.

Current PVA methods use only density independent models whereas respondents felt having a density-dependent option in the PVA tool was important. Respondents also repeated concerns that high levels of precaution in the displacement and collision estimates triggered the need for PVAs to be run when more realistic estimates of mortality would not necessitate a PVA.

Reports required as part of EIA and HRA for OWF consent applications (i.e. the EIA offshore ornithology chapter, the Report to Inform the Appropriate Assessment and supporting technical reports) were found by many respondents to be too long and complex. More concise reports were thought to be needed. In particular, respondents suggested presenting a series of linked spreadsheets instead of long tables in word documents, to improve clarity on information flow through assessments.

Lastly, respondents gave views on the Cumulative Effects Framework. This tool has not yet been widely released and so many developers and consultants have not used the tool. Several respondents felt the CEF could be useful as a single source of information for in-combination assessments but were concerned that the tool may be difficult to use due to its complexity.

These results suggest that the high priority areas for investigating the feasibility of implementing changes are use of SeabORD for displacement mortality estimation and calculation of in-combination impacts. The medium priority areas for investigating the feasibility of implementing changes are model-based approaches, use of the displacement matrix, breeding and non-breeding season apportioning, and PVA. Current approaches to baseline data collection, design-based approaches and sCRM are satisfactory and do not require imminent change.

Findings from this survey will be used to inform discussions between industry, NatureScot, Scottish Government and RSPB to encourage streamlining of ornithology impact assessments.

1 BACKGROUND

Ornithology impact assessments undertaken for Offshore Wind Farm (OWF) consent applications, specifically HRA (Habitats Regulations Appraisal) and EIA (Environmental Impact Assessment), currently involve complex and technically demanding approaches. Various modelling tools have been developed to assist with undertaking assessments but each of these has strengths and weaknesses. Additionally, the complexity of the assessment process means that the EIA Ornithology chapter, the Report to Inform the Appropriate Assessment and supporting technical reports, submitted to the regulator as part of an OWF application for consent, tend to be long, highly complex and difficult to follow.

SOWEC (Scottish Offshore Wind Energy Council) and Scottish Renewables have contracted MacArthur Green to undertake work to explore whether streamlining of ornithology impact assessments used in Scottish OWF project applications, could be beneficial. This is being delivered via the following objectives:

1) Engagement with industry (Scottish OWF developers and their consultants) on which parts of the current impact assessment process, and associated reporting, work well and which would benefit from changes;
2) Collation of industry views on where change would be beneficial, in a publicly-available report (this is the purpose of this report);
3) Close engagement with NatureScot, Marine Directorate – Licensing Operations Team (MD-LOT), Marine Directorate – Science, Evidence, Digital and Data (MD-SEDD) and RSPB, to:
    a) Understand how applications are used by NatureScot, Scottish Government and RSPB, i.e. which parts of impact assessment reporting could be removed without reducing the quality of assessments;
    b) What changes they would like to see to current impact assessments and reporting;
    c) Understand the extent to which NatureScot, Scottish Government and RSPB would be amenable to changes in ornithology impact assessments, identifying where changes are feasible and exploring the reasons why change might be perceived as not possible in some areas;
4) Identification of an agreed set of actions to be undertaken during 2025 to streamline ornithology impact assessments.

To address Objective 1, above, a survey was undertaken to solicit views on current ornithology impact assessment approaches and reporting. This involved encouraging Scottish developers and their consultants to complete a short online questionnaire. Scottish Government, SNCBs and RSPB were also invited to complete the questionnaire. This report presents the results of that questionnaire. Note, this report does not make any recommendations on where changes to the ornithology impact assessment process and reporting would be beneficial – it only presents the results of the survey.

2 THE SURVEY

A Google forms online questionnaire was produced to capture the following information (see Annex A for a screenshot of the questionnaire). The questionnaire was anonymous and did not collect any personal information.

Questions were deliberately high level and brief, making the questionnaire quick to complete, to encourage as many people as possible to complete the survey. However, this does mean that some questions could be open to slightly different interpretations by respondents.

2.1 Questionnaire on streamlining impact assessments

Section A: Information on the respondent

1) Which part of the offshore wind sector do you work for?
2) Are you, or have you recently, been involved with running ornithology impact assessments? i.e. do you have first-hand experience of using the impact assessment approaches advised by NatureScot?
3) Are you, or have you recently, been involved with reviewing offshore ornithology components of OWF project consent applications? e.g. using assessments to produce advice.
4) Are you familiar with the Scottish ornithology impact assessment process, as advised by NatureScot (NatureScot Guidance Notes)?

Section B: What are the highest risks from ornithology to consenting of offshore wind farm projects?

5) With respect to offshore ornithology, please indicate the degree of risk to obtaining consent you think is posed by the following. Options were: Low Risk, Medium Risk, High Risk, Very High Risk:
   a) Challenges of securing compensation;
   b) High precaution in assessments;
   c) Complexity of the impact assessment process;
   d) Uncertainty about seabird response to operational OWF;
   e) Slow adoption of new evidence by SNCBs;
   f) Other (provide details below).

Section C: Where do current impact assessment approaches work well and where is change needed?

6) Please identify which of the components of the impact assessment process you feel work well and which would benefit from a change in approach. Options were: No change needed as

current approach works fine; Change could be helpful but not urgently needed; Change is urgently needed and would be easy to implement; Change is urgently needed but technically or politically challenging:

a) Baseline data collection: 24 monthly snapshot surveys;

b) Model-based approaches to estimating density and abundance;

c) Design-based approaches to estimating density and abundance;

d) Displacement matrix;

e) SeabORD;

f) sCRM (Caneco online tool);

g) Breeding season apportioning;

h) Non-breeding season apportioning of impacts to SPAs;

i) Calculation of in-combination impacts;

j) PVA;

k) Other.

Section D: Detailed feedback on changes to the impact assessment process

7) What works well about current approaches and what, if any, changes would you like to see and why, for the following:

a) Baseline site characterisation;

b) Estimating displacement impacts;

c) Estimating collision impacts;

d) Apportioning impacts to SPAs for HRA;

e) PVA;

f) EIA chapter;

g) RIAA;

h) Technical appendices supporting the EIA chapter and the RIAA;

i) Cumulative Effects Framework.

Section E: Any other information?

8) Lastly, are there any other comments or feedback you wish to add?

2.2 Promotion of the survey

The questionnaire was targeted at those with a detailed technical knowledge of current impact assessment processes, e.g. consultants who are producing ornithology impact assessments for OWF consent applications. As this work was funded by SOWEC and Scottish Renewables, the survey was aimed primarily at those working in the Scottish OWF sector but feedback on the English/Welsh impact assessment process was also felt to be helpful and so was also encouraged.

The questionnaire was deliberately kept short and focussed on a few key questions to increase the likelihood that busy consultants and developers would complete the questionnaire. The main objective was to obtain feedback on which stages of impact assessments most urgently require change and what changes should be made.

The survey was open from 6th December 2024 to 10th January 2025. The link to the questionnaire was sent by email or by LinkedIn message to:

- Scottish Renewables Barriers to Deployment Enabling Group members;
- Natural Power
- HiDef
- APEM
- Niras
- Royal Haskoning DHV
- MacArthur Green
- RPS
- MD-LOT
- MD-SEDD
- NatureScot
- RSPB
- JNCC.

Additionally, a link to the questionnaire was posted on LinkedIn (this received 42 reactions and 16 reposts). Where developers lacked the detailed technical ornithological knowledge to complete the questionnaire, they were encouraged to ask their ornithology consultants to complete it.

2.3 Analysis of survey results

Once the survey closed, responses were collated and are summarised below. For open questions, comments received were collated to identify the key issues that respondents commonly mentioned. The number of times any respondent mentioned one of the key issues was totalled, to obtain an indication of the relative importance of a key issue.

3 RESULTS OF THE SURVEY

3.1 Who responded to the Survey?

To encourage respondents to be as open as possible with their responses, the survey was anonymised. There is therefore little information on who responded to the survey beyond which part of the offshore wind sector they currently work in. All but one of the 19 respondents were from the private sector (6 developers and 12 consultants). One respondent worked for an SNCB. No NGO or government employee completed the questionnaire.

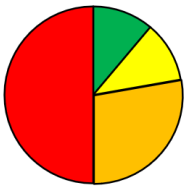
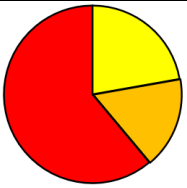
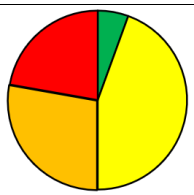
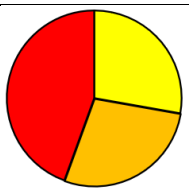
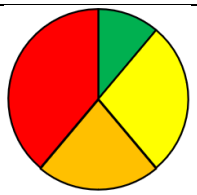
All consultants and developers were either currently, or had been recently, involved with running ornithology impact assessments and had first-hand experience of using the impact assessment methods and tools. All respondents were familiar with the Scottish ornithology impact assessment process, as advised by NatureScot: NatureScot Guidance Notes.

3.2 Which aspects of offshore ornithology pose the greatest risk to an OWF project obtaining consents?

This section of the survey aimed to evaluate the relative risk to OWF project consents, perceived by respondents, across six areas. The consultant and developer responses are presented separately to the SNCB response, anticipating different perceptions of risk from the private sector compared to SNCBs.

Table 3-1 shows the risk areas that consultants and developers perceived to represent a very high risk (red), high risk (orange), medium risk (yellow) and low risk (green), in pie charts. High precaution in assessments was found to be 'very high risk' by the majority of private sector respondents, followed by challenges of securing compensation and slow adoption of new evidence by SNCBs. Complexity in the impact assessment was perceived to present a medium risk by nearly half of private sector respondents. Very few respondents identified any of the six risk areas as 'low risk'.

Table 3-1. Proportion of consultant and developer respondents (n=18) indicating low, medium, high or very high risk for six risk areas, in response to the question, "With respect to offshore ornithology, please indicate the degree of risk to obtaining consent you think is posed by the following:"

Risk area	Degree of risk	Risk area	Degree of risk
Low risk Medium risk High risk Very high risk			
1. Challenges of securing compensation		2. High precaution in assessments	
3. Complexity of impact assessment process		4. Uncertainty about seabird response to OWF	
5. Slow adoption of new evidence by SNCBs		6. Lack of consistency in SNCB advice across UK	

The SNCB respondent identified the 'challenges of securing compensation' and 'uncertainty about seabird response to OWF' as high risk, 'high precaution in assessments' and 'complexity of the impact assessment process' as medium risk and the 'slow adoption of new evidence by SNCBs' and 'lack of consistency in SNCB advice across the UK' as low risk.

3.2.1 Comments from respondents

Respondents were invited to provide further information regarding the degree of risk to obtaining OWF consent presented by offshore ornithology issues.

Respondents mentioned the following risk areas that were not listed above:

- A lack of consistency within SNCB advice, i.e. within an individual agency;
- Concerns over robustness of new models/methods, e.g. them not being fully tested and a sensitivity analysis run before projects are asked to use them in applications;
- Cumulative assessments being based on consented, rather than 'as built' seabird mortality estimates;
- False precision in assessments, e.g. "requiring outputs to the 4th decimal point".

Below are a sample of comments from respondents:

"Just a comment to say that each of the components above are linked, so that perceived lack of evidence (will there ever be enough evidence to satisfy stakeholders) increases complexity in assessments, increases precaution, which in turn significantly increases estimated impacts, which therefore very often leads directly to the need to secure compensation. All this increases risk of legal challenge, slows down consents, increases costs to projects with narrow margins, increases uncertainty and reduces investors' appetite and slows down and significantly reduces offshore renewables."

"The results from Beatrice, Aberdeen Bay and forthcoming post construction surveys from Moray East and Kincardine all demonstrate that the models industry has used for the past 15 years are at best over precautionary or just plain wrong. This has created a false reality where every OWF now requires derogation. Derogations will cost the UK OWF industry, and therefore consumers, hundreds of millions of pounds. This unnecessary cost puts UK projects at a competitive disadvantage as global investors can opt to finance non-UK projects which are free of the significant burden of false model outputs and associated derogations costs. We urgently need a task force to update CRM and Displacement models to better reflect the reality of post construction results to safeguard long term investment in the UK OWF industry and supply chain, whilst lowering costs to UK consumers."

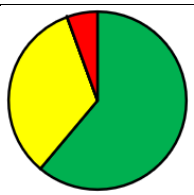
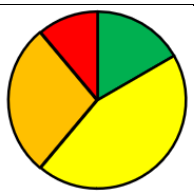
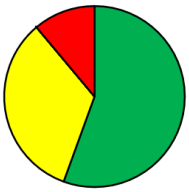
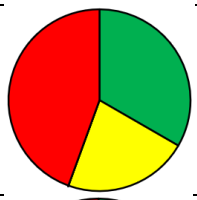
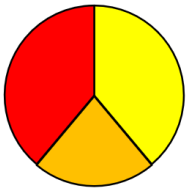
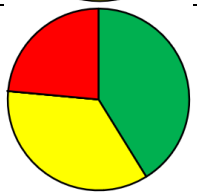
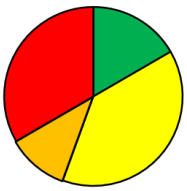
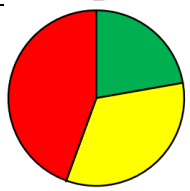
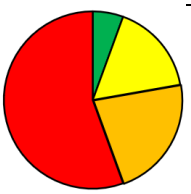
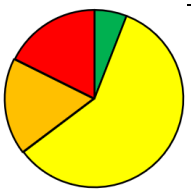
"Poor planning from government in terms of process(es), structures and strategic measures required in relation to the cumulative impacts of the ScotWind and INTOG leasing rounds. Not enough forward thinking in these early (preparatory) stages on work better done strategically / collectively rather than at an individual project-level. And surprising for no lessons to have been learned from government, SNCB and industry experience of the first Scottish east coast projects: the Moray Firth and Forth & Tay regional clusters."

3.3 Areas of ornithology impact assessments that would benefit from change

This section of the survey focussed on the risk area, 'Complexity of the ornithology impact assessment process', with the aim of identifying where assessment tools and methods are working well and where they would benefit from changes. Respondents were asked to consider whether each stage of the ornithology impact assessment process would benefit from change or whether no change is needed. Where change was felt to be needed, respondents were asked to categorise that into 'change could be helpful but not urgently needed', 'change urgently needed and would be easy to implement' or 'change is urgently needed but technically or politically challenging'. This last category was included, recognising that there are many reasons why implementing change may be difficult.

Table 3-2 shows the responses from the 18 consultants and developers on where change is needed for each stage of ornithology impact assessments. Pie charts show the proportion of respondents who felt that no change is needed as the current approach works well (green), change could be helpful but not urgently needed (yellow), change is urgently needed and would be easy to implement (orange) and change is urgently needed but technically or politically challenging (red).

Table 3-2. Proportion of consultant and developer respondents (n=18) indicating whether change is needed for each stage of the impact assessment process, in response to the question, "Which of the components of the impact assessment process do you feel work well and which would benefit from a change in approach?"

Stage of impact assessment	Change needed?	Stage of impact assessment	Change needed?
	No change needed, current approach works fine Change could be helpful but not urgently needed Change is urgently needed and would be easy to implement Change is urgently needed but technically or politically challenging		
1. Baseline data collection: 24 snapshot surveys		2. Model-based approaches to estimating density and abundance	
3. Design-based approaches to estimating density and abundance		4. Displacement matrix	
5. SeabORD		6. sCRM (Caneco online tool)	
7. Breeding season apportioning of impacts to SPAs		8. Non-breeding season apportioning of impacts to SPAs	
9. Calculation of in-combination impacts		10. PVA	

The SNCB respondent identified 'displacement matrix', 'calculation of in-combination impacts' and 'PVA' as requiring urgent change but acknowledged this would be technically or politically challenging. 'Breeding season apportioning of impacts to SPAs' was identified as also urgently needing change but this was felt by the SNCB respondent to be easy to implement. Other stages of the impact assessment process were identified as not requiring any change ('model-based approaches' and 'design-based approaches to estimating density and abundance') or change would be helpful but not urgently needed ('baseline data collection', 'SeabORD', 'sCRM' and 'non-breeding season apportioning of impacts to SPAs').

Of the private sector respondents, approximately three-quarters identified 'calculation of in-combination impacts', as requiring urgent change. Additionally, two-thirds of industry respondents identified 'use of SeabORD to estimate displacement mortality' as needing urgent change.

However, the majority of this need for urgent change was seen as being technically or politically challenging to implement.

Approximately, one-third of private-sector respondents identified model-based approaches, the displacement matrix, breeding and non-breeding season apportioning, and PVA as also needing urgent change. Again, that urgent change was largely identified as being politically or technically challenging to implement. Finally, at least three-quarters of the private sector respondents identified the following parts of the impact assessment as either needing no change or change was not urgently needed: baseline data collection, design-based approaches and sCRM.

These results suggest that the high priority areas for investigating the feasibility of implementing changes are use of SeabORD for displacement mortality estimation and calculation of in-combination impacts. These results also imply that the medium priority areas for investigating the feasibility of implementing changes are model-based approaches, use of the displacement matrix, breeding and non-breeding season apportioning, and PVA. Finally, these results suggest that the low priority areas for investigating the feasibility of implementing changes are baseline data collection, design-based approaches and sCRM.

3.4 Detailed feedback on each stage of the impact assessment process

Respondents were asked to provide information on what works well about current approaches and what, if any, changes they would like to see and why. Common issues and themes in responses were identified and the number of times each respondent mentioned an issue was noted, in brackets, after the issue. The common issues are presented in tables below.

3.4.1 Baseline site characterisation

Generally, respondents felt baseline site characterisation approaches worked well (Table 3-3). Use of 24 monthly digital aerial surveys (DAS) provides clarity and consistency in what a project is required to do. However, there was acknowledgement that DAS does not account for birds using the OWF development area at night and in poor weather conditions and may also under record some cryptic species. Respondents had identified model-based approaches to estimating seabird density and abundance as requiring urgent change (Table 3-2). When asked to provide detailed comments, they mentioned the difficulties with using MRSea and the potential subjectivity of choices the user is required to make.

Table 3-3. Summary of key issues respondents identified regarding current methods for baseline site characterisation. The number of respondents who identified a particular issue in their comments is given in brackets. DAS: Digital Aerial Survey

	Positive responses	Negative responses
Baseline site characterisation	Consistent approach, clarity in requirements and methods (4) Current approach works well (2) DAS, along with tracking data and colony counts,	OWF applications could make better use of other data, e.g. tracking data, besides DAS and colony counts (2) Propagation of uncertainty in baseline data through to final estimates is challenging (1)

	Positive responses	Negative responses
	provides a robust baseline (1)	
24 monthly DAS snapshots	Robust approach to understanding inter-annual variation (1) DAS do not cause bird disturbance and is relative cost-effective (1) Only feasible option for ScotWind projects due to location and size of projects (1)	No nocturnal or bad weather sampling by DAS (4) Some species not detected by DAS and issues of incorrect ID of some species (3) Bird distributions fluctuate, can change dramatically over hours. DAS doesn't give enough certainty given variation within and between years, only a single snapshot in a month (3) Both DAS providers run things slightly differently and both provide data differently making data analysis challenging (1) Low coverage by DAS at rotor swept height compared to sea level (1) Survey buffer around development area should be 2km maximum – as 2km is recommended displacement buffer for most species, data beyond 2km is not used (1)
Model based methods for estimating seabird density and abundance		Not clear and standardised, user has to make decisions when using MRSea, lack of guidance on what to do in various situations (1) MRSea not very user friendly, older documents not useable (1) Cannot be used for species infrequently recorded (1)

Recommendations made by respondents:

- Have a set of guidelines to standardise the format in which the digital aerial survey data is presented to those analysing the data, with the aim of improving consistency in how data are provided by the two DAS providers e.g. making sure images have names in order to match it up with effort data, consistent column names and format in which the data are provided to facilitate calculation of abundances. This would assist with data analysis;
- Incorporate other datasets alongside 24 snapshot surveys, e.g. ESAS data, to improve baseline characterisation (rather than just contextual information);
- More data from tracking studies need to be incorporated into the process to give more understanding of the importance of a site.

3.4.2 Methods used to estimate displacement mortality

The displacement matrix was seen by respondents as being a crude method. Whilst SeabORD was seen as a more sophisticated, biologically-realistic tool, multiple respondents reported issues with using the tool. SeabORD was seen as a 'black box' and overly complex. There was low confidence in the accuracy and reliability of displacement mortality estimates produced by either method.

Multiple respondents flagged high levels of precaution used to estimate displacement mortality as an issue.

Table 3-4. Summary of key issues respondents identified regarding current methods for estimating displacement mortality. The number of respondents who identified a particular issue in their comments is given in brackets.

	Positive responses	Negative responses
General comments	Displacement rates are largely evidence based (1)	High precaution (worst case scenario) is unrealistic leading to overestimation of impacts – empirical evidence from operational OWF should inform model inputs (5) No justification for using peak abundance rather than mean abundance (1) False precision – very precise outputs from very uncertain inputs (2) No evidence for shipping disturbance or OWF-induced displacement causing seabird mortality (1) No evidence to support presumed mortality of displaced birds that is required to be used in assessments (e.g. 5% for auks) (1)
Buffers	Size of buffers are largely evidence based (1)	Use of buffers adds yet further overestimation of mortality (1)
Displacement matrix	Useful tool (2) Quick to run (1) Simple tool (3)	No empirical rates used to inform the recommended displacement rates and, in particular, the mortality rates (3) Not useful for making predictions of absolute mortality – should be used for comparison of different scenarios to understand relative change in mortality (1) Crude method (2) Not sure results are 'believable' (2)
SeabORD	Mostly fine (1) Useful tool (3) More biologically realistic than matrix (2)	Not user-friendly, 'black box' model, overly complex, requires ground truthing, slow to run, various technical issues, more guidance on using it is needed (4) Limited in time of year, number of colonies, number of OWFs, etc. that can be modelled (4) Not useful for making predictions of absolute mortality – should be used for comparison of different scenarios to understand relative change in mortality (1) Relies on a set of assumptions/generalisations from one location (1) Not sure results are 'believable' (1)

Recommendations made by respondents:

- Should use mean abundance for each season rather than peak abundance;
- Displacement and mortality rates used in buffers should be much lower than in OWF footprint area;
- Obtain and use empirical evidence for displacement rates from operational OWFs;

- Reductions in survival and productivity of displaced birds are unknown - this should be a priority area for future research.

3.4.3 Methods used to estimate collision mortality

Overall, respondents provided positive comments about the stochastic collision risk modelling tool. However, respondents noted that model inputs need updating (e.g. flight heights) and that model predictions need validation from studies of collision and flight behaviour in operational OWFs. Respondents also noted that summing collision and displacement mortality is not ideal as birds that are displaced from an OWF cannot collide with turbines.

Table 3-5. Summary of key issues respondents identified regarding current methods for estimating collision mortality. The number of respondents who identified a particular issue in their comments is given in brackets.

	Positive responses	Negative responses
sCRM	Works well, simple model, online tool is good (8) Camera/radar studies and work to obtain better flight height data underway is good (1)	Current approach to incorporating avoidance behaviours into models is 'flawed', models need to take better account of bird flux, species' movements and behaviour, flight height data needs to be updated (3) Model predictions require validation using data from operational OWFs (2) Just use a deterministic model, stochastic model not needed, uncertainty from stochastic model is not currently carried forward in assessment process (2) Birds cannot suffer both collision mortality and displacement mortality (2) False precision – very precise outputs from very uncertain inputs (1)
mCRM		mCRM 'wrapper' for migratory birds needs improvement (1)

Recommendations made by respondents:

- Better flight height distributions and understanding of avoidance behaviours is needed;
- Research on petrel and shearwater collision risk in relation to light attraction is needed;
- Further detailed guidance on using the online sCRM tool would be helpful.

3.4.4 Methods used to apportion mortalities to SPAs for HRA

Respondents described current approaches to apportioning seabird mortalities to SPAs as a logical and simple approach. However, several respondents noted that foraging ranges used in breeding season apportioning (i.e. mean maximum foraging range plus 1 standard deviation) are over-precautionary and not representative of typical foraging ranges. Respondents thought that data from tracking individual birds should be used more frequently to inform apportioning.

Table 3-6. Summary of key issues respondents identified regarding current methods for apportioning seabird mortality to SPAs. The number of respondents who identified a particular issue in their comments is given in brackets.

Positive	Negative
Logical, simple approach, can be used when no colony-specific data available (6) NatureScot apportioning method is better than the MS Apportioning Tool due to the latter using Seabird 2000 colony counts (1)	Foraging ranges used (i.e. MMFR+1SD*) are not representative of typical birds and are over-precautionary, current approaches overestimate impacts to SPAs (4) Better use of GPS tagging data to inform apportioning is needed (3) Lack of robust data on adult: immature proportions and their different use of marine areas (2) Current guidance is insufficient (2) False precision in mortalities apportioned to SPAs (1) In-combination assessments are too complex (1)

* mean maximum foraging range plus 1 standard deviation

Recommendations made by respondents:

- Undertake more work to understand how birds from individual colonies use the marine environment as well as using existing tracking data to better inform apportioning, including colony segregation at sea;
- Further guidance would be helpful, e.g. when to use OWF centre-to-SPA centre distances or not, exactly how to calculate at-sea distances;
- BDMPS approach for non-breeding season apportioning needs updating.

3.4.5 PVA methods

Several respondents noted the need for the current PVA tool to be updated to allow for density-dependent scenarios to be included when modelling population response to predicted seabird mortality. There were also concerns that high precaution in collision and displacement estimates meant PVAs were assessing population response to unrealistically high seabird mortality. Consequently, multiple PVAs were required (i.e. adult mortality exceeded the threshold at which the need for a PVA is triggered), whereas a more realistic estimate of seabird mortality would not trigger the need for a PVA.

Table 3-7. Summary of key issues respondents identified regarding current methods for PVA. The number of respondents who identified a particular issue in their comments is given in brackets.

Positive	Negative
Tool works well (2)	Unrealistically high precaution in all stages of the impact assessments results in PVAs producing unrealistic outputs (3) Density dependent models should be an option in NEPVA (4) General concerns about all impact assessment tools being black box and only possible to run tools through shiny interface, limited guidance for using R code locally (3) Threshold at which a PVA is required is very small, meaning PVAs run when impacts will not trigger any measurable population response (2)

Positive	Negative
	NEPVA does not allow for either demographic rates or impacts to change over time, no consideration of meta-population dynamics, demographic rates don't produce trajectories that match observed historical population sizes (1) False precision given uncertain and imprecise inputs (1) Concerns regarding CEF and industry confidence in how model actually works (1)

Recommendations made by respondents:

- Update NEPVA to allow density-dependent models to be run;
- Update guidance notes to include clarity on thresholds for when a PVA is needed.

3.4.6 EIA report, RIAA and technical reporting requirements

Respondents' comments on reporting requirements (i.e. the EIA ornithology chapter, the RIAA and supporting technical reports) were collated, as comments across all three were similar. Whilst some respondents thought the current reporting structure works well, many respondents felt reports were too long, too complex and impenetrable. They also flagged duplication of information across reports as an issue.

Table 3-8. Summary of key issues respondents identified regarding current reporting requirements, including the EIA ornithology chapter, the RIAA and supporting technical reports. The number of respondents who identified a particular issue in their comments is given in brackets. Note, numbers of responses in brackets are from a collation of responses to three separate questions in the questionnaire.

Positive responses	Negative responses
Reporting structure is fine, works well (5)	Too long, should be more concise, currently too complex and impenetrable to non-specialists, duplication across reports (15) The LSE stage should remove all but the key sites and impacts, thereby focussing and streamlining the RIAA (1) Higher threshold for significant impact for EIA, e.g. 5% (1) Challenging to present such a large volume of information in a way that is easily followed (1) Obtaining cumulative information from other applications to inform the in-combination assessment can be very difficult due to each application having a different structure (1) Projects often split HRA and EIA components of work among different consultancies which is challenging as some parts of the two assessments overlap and some are separate (1)

Recommendations made by respondents:

- Identify essential information for decision making in EIA/HRA reports and remove the rest to an appendix, e.g. for EIA produce a simple short tabular EIA outcomes chapter focussed on sites, species and mitigation. Further guidance from government on EIA/HRA reporting requirements is needed;

- More guidance on what EIA reporting requirements are, how to define regional populations, when a PVA is required, etc;
- Move to a tabular RIAA where key information is presented in a spreadsheet to avoid duplication/misinterpretation. Currently there is a lot of information presented in tables in word documents – present this in a series of linked Excel spreadsheets instead – a log of inputs/outputs and tools used;
- Have an agreed cumulative impacts database that can be used by applicants;
- Hold 'better' pre-application meetings between applicants and SNCBs to agree approaches to assessment and what will be in RIAA/EIAR.

3.4.7 Cumulative Effects Framework

The Cumulative Effects Framework (CEF) has not yet been widely released and has not been used by most consultants or developers. However, it was still felt useful to assess respondents' views on the potential utility of the tool.

Generally, respondents felt the CEF could potentially be helpful with in-combination and cumulative impacts, by having a single source of information on predicted mortalities from all OWFs. It is also hoped it will bring more clarity to what is required in assessments and improve consistency. However, respondents had concerns over how easy the tool will be to use and about the complexity of the tool. Respondents also noted the tool will need frequent updates as more OWF projects are included in cumulative assessments.

Table 3-9. Summary of key issues respondents identified regarding the Cumulative Effects Framework. The number of respondents who identified a particular issue in their comments is given in brackets.

Positive	Negative
If it makes in-combination assessments easier, that would be helpful, having all cumulative impacts in one agreed location (2) It will hopefully improve clarity in what is required in assessments and improve consistency (6) Updates to information used in assessments, e.g. baseline, should be quicker (1)	Concerns about run time as was found for other much smaller tools (CRM, PVA) so people run R code locally. Will this be an option for CEF? Concerns that tool will not run easily (3) CEF is likely to be a 'black box', lacking transparency in how it calculates mortalities and impacts, concerns over complexity of tool (3) Will the CEF have the flexibility to be tailored to individual projects' requirements (1) Will need constant updating to be reliable to use, as new projects arise (3) Insufficient industry consultation/engagement during tool development so little trust in how the tool works (1) Long delays to tool being issued (3)

4 NEXT STEPS

The findings from this survey will be used to inform discussions with NatureScot, Scottish Government and RSPB on where and how changes to current tools, methods, approaches and reporting of ornithology impact assessments could be made in order to streamline the process.

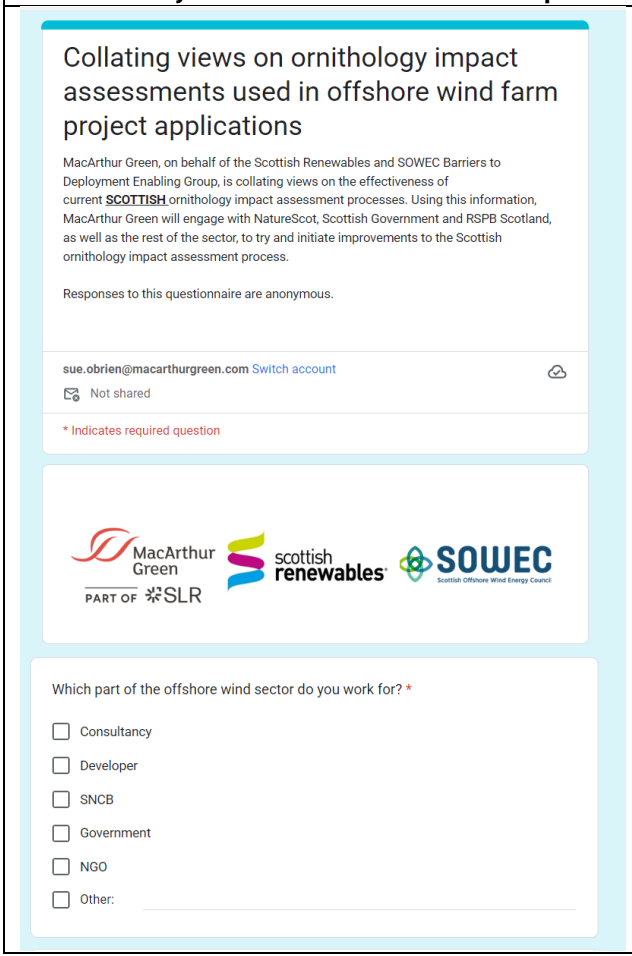
5 ACKNOWLEDGEMENTS

We would like to thank all those who took the time to complete the survey questionnaire and for all the detailed, considered and comprehensive responses provided. This work was funded by SOWEC (the Scottish Offshore Wind Energy Council) and Scottish Renewables.

ANNEX A. THE QUESTIONNAIRE

The screenshots below show the appearance of the online questionnaire, which respondents were asked to complete.

Section 1: Identifying which part of the OWF sector a respondent works in and assessing whether they are familiar with current impact assessment approaches



Collating views on ornithology impact assessments used in offshore wind farm project applications

MacArthur Green, on behalf of the Scottish Renewables and SOWEC Barriers to Deployment Enabling Group, is collating views on the effectiveness of current **SCOTTISH** ornithology impact assessment processes. Using this information, MacArthur Green will engage with NatureScot, Scottish Government and RSPB Scotland, as well as the rest of the sector, to try and initiate improvements to the Scottish ornithology impact assessment process.

Responses to this questionnaire are anonymous.

sue.obrien@macarthurgreen.com Switch account

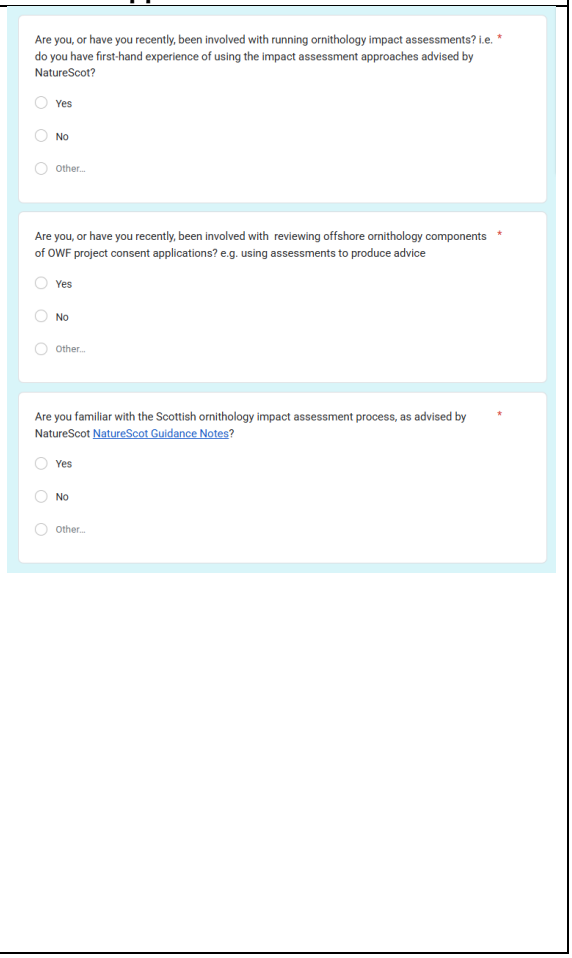
Not shared

* Indicates required question

MacArthur Green PART OF SLR | scottish renewables | SOWEC Scottish Offshore Wind Energy Council

Which part of the offshore wind sector do you work for? *

- [ ] Consultancy
- [ ] Developer
- [ ] SNCB
- [ ] Government
- [ ] NGO
- [ ] Other:



Are you, or have you recently, been involved with running ornithology impact assessments? i.e. do you have first-hand experience of using the impact assessment approaches advised by NatureScot? *

- Yes
- No
- Other...

Are you, or have you recently, been involved with reviewing offshore ornithology components of OWF project consent applications? e.g. using assessments to produce advice *

- Yes
- No
- Other...

Are you familiar with the Scottish ornithology impact assessment process, as advised by NatureScot NatureScot Guidance Notes? *

- Yes
- No
- Other...

Section 2: Assessing where offshore ornithology is thought to create a risk to OWF projects obtaining consents

What are the highest risks from ornithology to consenting of offshore wind farm projects?

With respect to offshore ornithology, please indicate the degree of risk to obtaining consent you think is posed by the following:

	Low risk	Medium risk	High risk	Very high risk
Challenges of securing compensation	☐	☐	☐	☐
High precaution in assessments	☐	☐	☐	☐
Complexity of the impact assessment process	☐	☐	☐	☐
Uncertainty about seabird response to operational OWF	☐	☐	☐	☐
Slow adoption of new evidence by SNCBs	☐	☐	☐	☐
Lack of consistency in SNCB advice across the UK	☐	☐	☐	☐
Other (provide details below)	☐	☐	☐	☐

If you ticked 'Other' above, please provide more details:

Your answer

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Section 3: Assessing which parts of the impact assessment process would benefit from change and where the current approach works well

This section focusses on complexity of the ornithology impact assessment process

Here we are interested in identifying areas where the current impact assessment process could be streamlined. Addressing precaution in assessments is important but answers to this section should focus solely on whether current complexity of approaches are warranted or helpful, e.g. are particular tools helpful in assessments rather than considering the precautionary values recommended to parameterise tools.

Please identify which of the components of the impact assessment process would benefit from a change in approach

	No change needed, current approach works fine	Change could be helpful but not urgently needed	Change is urgently needed but technically or politically challenging	Change is urgently needed and would be easy to implement
Baseline data collection: 24 monthly snapshot surveys	☐	☐	☐	☐
Model-based approaches to estimating density and abundance	☐	☐	☐	☐
Design-based approaches to estimating density and abundance	☐	☐	☐	☐
Displacement matrix	☐	☐	☐	☐
SeabORD	☐	☐	☐	☐
sCRM (Caneco online tool)	☐	☐	☐	☐
Breeding season apportioning of impacts to SPAs	☐	☐	☐	☐
Non-breeding season apportioning of impacts to SPAs	☐	☐	☐	☐
Calculation of in-combination impacts	☐	☐	☐	☐
PVA	☐	☐	☐	☐
Other	☐	☐	☐	☐

If you ticked 'Other' above, please provide more details:

Your answer

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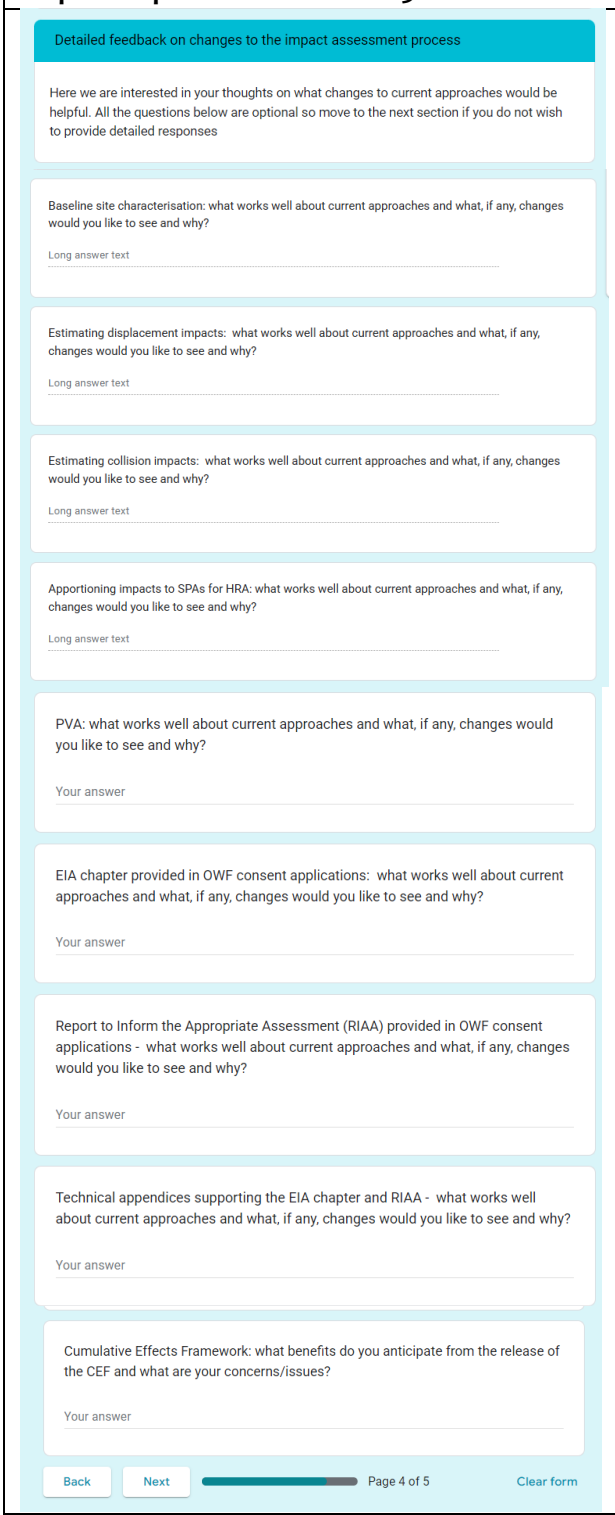
Section 4: Soliciting detailed feedback on responses provided in Section 3



Section 5: Providing an opportunity to contribute any other information