

**From:** [Fiona Read](#)  
**To:** [MS Marine Renewables](#)  
**Cc:** [Sarah Dolman](#)  
**Subject:** RE: MeyGen Finalised PEMP Consultation - Request for Comments by 25th August 2016  
**Date:** 26 August 2016 09:59:21

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Dear Kirsty,

Sorry for the delay in responding.

Thank you for including WDC on the Meygen PEMP Consultation. Overall, we are happy with the PEMP. However, we do have reservations about the use of the EK60 and agree with the concerns raised in section 5.9.2. At some frequencies harbour porpoise and harbour seals will respond to the EK60 sonar, therefore, impacting the behavioural responses to the turbine. If avoidance behaviour to the turbine occurs due to the EK60, the data collected will not be representative and will not provide valuable data for the monitoring scheme as required for Phase 2. Monitoring as required in the marine licence should be given priority at all times.

Furthermore, should the Scottish Government demonstration Strategy (SGDS) equipment fail, FLOWBEC is not a good alternative to passive acoustic monitoring for marine mammals.

We are happy to discuss these comments further.

Best wishes,

Fiona

**Fiona Read**  
Scottish policy officer

Telephone: [REDACTED]  
[whales.org](http://whales.org)

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**From:** MS.MarineRenewables@gov.scot [mailto:MS.MarineRenewables@gov.scot]  
**Sent:** 11 August 2016 17:43  
**To:** MARINEENERGY@snh.gov.uk; George.Lees@snh.gov.uk; Chris.Eastham@snh.gov.uk; erica.knott@snh.gov.uk; MS\_Renewables@gov.scot; Paul.Stainer@gov.scot; Elaine.Tait@gov.scot; gdh10@st-andrews.ac.uk; ces@smruconsulting.com; b.e.scott@abdn.ac.uk; b.williamson@abdn.ac.uk; douglas.watson@thecrownestate.co.uk; Sarah Dolman; Fiona Read; planning.scotland@rspb.org.uk; brian@asfb.org.uk; ePlanning@highland.gov.uk; planning@orkney.gov.uk  
**Cc:** Nicola.Bain@gov.scot; Joao.Queiros@gov.scot; Claire.Crookston@gov.scot; Kirsty.Wright@gov.scot  
**Subject:** MeyGen Finalised PEMP Consultation - Request for Comments by 25th August 2016

## **ELECTRICITY ACT 1989**

*The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000*

Dear Sir/Madam,

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Please confirm receipt of this email and **receipt of the PEMP download**

Kind regards,  
Kirsty

**Kirsty Wright**

[marinescotland](mailto:marinescotland)

Marine Renewables Casework Officer

Marine Scotland Licensing Operations Team

Scottish Government

Marine Laboratory | 375 Victoria Road | Aberdeen, AB11 9DB

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**From:** [Carol Sparling](#)  
**To:** [MS Marine Renewables](#)  
**Cc:** [Gordon Hastie \(gdh10@st-andrews.ac.uk\)](#)  
**Subject:** RE: MeyGen Finalised PEMP Consultation - Request for Comments by 25th August 2016  
**Date:** 24 August 2016 21:11:12

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Dear Kirsty,

I have reviewed the PEMP as Project Manager of the Scottish Government Demonstration Strategy project named in the PEMP as a PEMP contributor.

There are a few areas of the PEMP as currently drafted that we have comments on. These are detailed below:

**The timeline for the commissioning period:** In previous discussions with MeyGen and Marine Scotland, we were advised that the commissioning period would be likely 6-8 weeks. The text in Table 3 details that the commissioning period could be as long as 14 weeks. This is much longer than anticipated when agreement was reached about the staged operation of the various acoustic devices. The SGDS project has concerns that an extended period of EK60 operation could influence the behaviour of marine mammals beyond this period, especially if there was low turnover of individuals at the site.

**The power analysis:** On page 26 it states that a power analyses will *possibly* be carried out as part of the review after 8 weeks of full operation of the TTG . We are under the understanding that a power analysis will be carried out to inform the review. If a power analysis is not to be carried out then we would welcome more detail on how this review will be undertaken and on what basis future decisions regarding EK60 operation will be made.

**Redundancy:** Appendix D lists the various equipment for monitoring and specifies the redundancy in each case. We feel that this table currently overstates the degree of redundancy that the FLOWBEC platform provides to the Gemini Sonars. There is no evidence presented regarding the ability of the acoustic sensors on the FLOWBEC platform, or the algorithms used in the analysis of the resulting data to confidently detect and track marine mammals. The issue of the potential for the FLOWBEC acoustic signals to cause a behavioural effect would also need to be resolved before any FLOWBEC data could be used to make inferences about marine mammal behaviour or encounter rate. The spatial coverage provided by the two systems are also very different.

Best wishes

Carol

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**From:** MS.MarineRenewables@gov.scot [mailto:MS.MarineRenewables@gov.scot]

**Sent:** 11 August 2016 17:43

**To:** MARINEENERGY@snh.gov.uk; George.Lees@snh.gov.uk; Chris.Eastham@snh.gov.uk; erica.knott@snh.gov.uk; MS\_Renewables@gov.scot; Paul.Stainer@gov.scot; Elaine.Tait@gov.scot; gdh10@st-andrews.ac.uk; Carol Sparling <ces@smruconsulting.com>; b.e.scott@abdn.ac.uk; b.williamson@abdn.ac.uk; douglas.watson@thecrownestate.co.uk; sarah.dolman@whales.org; fiona.read@whales.org; planning.scotland@rspb.org.uk; brian@asfb.org.uk; ePlanning@highland.gov.uk; planning@orkney.gov.uk

**Cc:** Nicola.Bain@gov.scot; Joao.Queiros@gov.scot; Claire.Crookston@gov.scot; Kirsty.Wright@gov.scot

**Subject:** MeyGen Finalised PEMP Consultation - Request for Comments by 25th August 2016

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Please confirm receipt of this email and **receipt of the PEMP download**

Kind regards,  
Kirsty

**Kirsty Wright**

[marinescotland](mailto:marinescotland)

Marine Renewables Casework Officer

Marine Scotland Licensing Operations Team

Scottish Government

Marine Laboratory | 375 Victoria Road | Aberdeen, AB11 9DB

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**From:** [George Lees](#)  
**To:** [MS Marine Renewables](#)  
**Cc:** [Erica Knott](#); [Chris Eastham](#); [MARINEENERGY](#)  
**Subject:** RE: MeyGen Finalised PEMP Consultation - Request for Comments by 25th August 2016  
**Date:** 24 August 2016 18:11:37  
**Attachments:** [RE MeyGen PEMP for review.msg](#)

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Kirsty & Colleagues. Many thanks for consulting us on the revised PEMP for the MeyGen scheme. We are pleased to see that most of the comments provided by SNH, previously, have been addressed and, generally, are happy to endorse the PEMP. The addition of the 'Responsibilities / Monitoring Equipment Matrix' (Annex D) is particularly helpful.

We do, however, feel that one essential element is still missing. This is a table which lists, simply, each of the monitoring requirements (set out in Condition 12(a-d), *but broken down further to relate to each receptor where more than one is listed*) in turn and specifies how (ie through what components of the monitoring package) each is being monitored. Or, if not being monitored, why this is the case (for example para 4 of sn 2 of the PEMP, referencing 'The Monitoring Steering Report' cites earlier agreement about deferring monitoring of some receptors or impact pathways). We recognise that comprehensive monitoring of each receptor or impact pathway cited in Condition 12 (a-d) is not necessarily feasible and/or has been de-prioritised previously by the Advisory Group. Nonetheless, for transparency, it is important to indicate if/how each is to be covered.

This issue was flagged up in our previous response (18 July 2016, paras 3 and 4, attached for info). Table 4 of the finalised PEMP, and Annex D, go some way to addressing this point, but still do not allow one to determine if and how each monitoring requirement has been addressed. Condition 12 of the s36 consent indicates that the PEMP should provide advice on how each of the aspects listed in (a)-(d) is to be monitored but, as presently structured, this is not easy to gauge. A table, *starting with the monitoring conditions and receptors (rather than the monitoring tool)*, and embedded within the main report (not as an annex) should enable this. It need not be lengthy.

NB. In our earlier response, referred to above (and attached) we indicated the need for any such table to address other issues such as redundancy and who had responsibility for the monitoring component concerned. These are now covered in Annex D, so need not be repeated.

We hope this helps and are happy to discuss any aspects of this response.

George

Dr George Lees  
Policy & Advice Manager (Marine Renewables)  
Scottish Natural Heritage  
Battleby  
Redgorton  
PERTH  
PH1 3EW

Tel: 01738 444177 (s'board)  
01738 458621 (direct)

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**From:** MS.MarineRenewables@gov.scot [mailto:MS.MarineRenewables@gov.scot]  
**Sent:** 11 August 2016 17:43  
**To:** MARINEENERGY; George Lees; Chris Eastham; Erica Knott; MS\_Renewables@gov.scot; Paul.Stainer@gov.scot; Elaine.Tait@gov.scot; gdh10@st-andrews.ac.uk; ces@smruconsulting.com; b.e.scott@abdn.ac.uk; b.williamson@abdn.ac.uk; douglas.watson@thecrownestate.co.uk; sarah.dolman@whales.org; fiona.read@whales.org; planning.scotland@rspb.org.uk; brian@asfb.org.uk; ePlanning@highland.gov.uk; planning@orkney.gov.uk  
**Cc:** Nicola.Bain@gov.scot; Joao.Queiros@gov.scot; Claire.Crookston@gov.scot; Kirsty.Wright@gov.scot  
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Kind regards,  
Kirsty

**Kirsty Wright**

marinescotland

Marine Renewables Casework Officer

Marine Scotland Licensing Operations Team

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Marine Laboratory | 375 Victoria Road | Aberdeen, AB11 9DB

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Marine Scotland - Marine Planning & Policy  
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Aberdeen  
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RSPB Scotland

[MS.MarineRenewables@gov.scot](mailto:MS.MarineRenewables@gov.scot)

Our ref: 555659 and 83326

19<sup>th</sup> August 2016

Dear sir/madam

### **MeyGen Finalised PEMP Consultation**

Thank you for the opportunity to review the Project Environmental Monitoring Programme (PEMP).

RSPB Scotland welcomes the investment in the development of methods to monitor the impacts of this type of development on marine mammals, fish and birds. The experience gained from the proposed monitoring at this site will be invaluable in informing future monitoring programmes for other marine renewable projects. More immediately, the information from the proposed monitoring will help to inform future development at this location. Given, however, the multiple factors that could affect the behaviour of the monitored species, the data will need careful interpretation in order to extrapolate over a wider area or to other sites.

While RSPB Scotland appreciates the technical challenges around monitoring in this dynamic environment, we are concerned that the proposed monitoring programme is focussed on direct interactions between mammals, seabirds or fish with the turbines. We are disappointed that Condition 12c) of the Consent relating to disturbance and displacement of birds, marine mammals and basking sharks during construction and operation has been ranked as of low priority by the Advisory Group and is not addressed by the PEMP. It will remain unknown whether the presence of turbines leads to behavioural change in diving birds and other species, and the scale and potential significance of any effects. It will therefore be impossible to make a fully informed assessment of the potential impacts on protected species of any future expansion of tidal energy at this site or similar developments at other sites. Similarly we are disappointed that Condition 12a) of the Consent is only partly addressed as no monitoring of any benthic impacts is proposed on the basis of experience from a very different tidal environment. While the Advisory Group have determined that displacement and benthic effects are of low priority in relation to this relatively small project, it would be desirable that these predictions are verified through monitoring before any future larger scale development at this site.

Although the proposed monitoring is focussed on collision risk for harbour seals, RSPB Scotland are pleased to see that it is also intended to provide information on collision risk for other marine mammal species and some species of diving seabird and fish. Whereas the use of multiple detection systems will provide some verification of collision data for harbour seals, it is less apparent how data for other species will be verified given that the monitoring systems are still in development. Additionally, the PEMP indicates that monitoring will also provide information about the behaviour of marine mammals in the vicinity of the development. It would be helpful to know over what distances behavioural effects are likely to be detectable.

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The RSPB is part of BirdLife International,  
a partnership of conservation organisations  
working to give nature a home around the world.

The relationship between the Advisory Group Report and the PEMP is not fully explained. The final section of the Advisory Group Report appended to the PEMP lists a number of actions that are only partly addressed by the PEMP - the PEMP does not include deploying tags on shags, black guillemot and Atlantic salmon, a stranding scheme or seal haul out surveys. Although it is stated that the seal surveys will be conducted as part of the Environmental Management Plan, it is unclear whether the other actions are to be addressed under a separate programme of work or have been subsequently abandoned. The status of the recommendations made by SNH in relation to monitoring is also unclear. The Advisory group ranked some of the recommendations made by SNH as of low priority and as such, these will not be addressed by the PEMP (above). RSPB Scotland recognise the requirement to take a pragmatic approach towards monitoring in a challenging environment and the importance of utilising sources of renewable energy where this can be done without causing significant environmental harm. We are concerned, however, that the proposed PEMP will not provide sufficient information to inform a robust assessment of the potential impacts of a larger tidal energy project at this site (or elsewhere).

Please get in touch, if you would like further information or to discuss any issues that we have raised.

Yours faithfully



Alison Searl  
Conservation Officer, North Highland

Kirsty Wright  
Licensing Operations Team  
Marine Scotland  
375 Victoria Road  
Aberdeen  
AB11 9DB

## **MEYGEN: TIDAL ENERGY PROJECT PHASE 1 - FINALISED PROJECT ENVIRONMENTAL MONITORING PROGRAMME (PEMP) – REQUEST FOR MSS COMMENTS**

Marine Scotland Science (MSS) has reviewed the submitted PEMP and has provided the following comments.

### **marine mammals**

MSS consider that the combination of monitoring techniques to be used should provide useful data to meet the consent conditions, and to allow a better understanding of how marine mammals behave around tidal turbines. We are content with the decisions that have been taken regarding the need to understand whether the EK60 affects marine mammal behaviour and look forward to seeing the regular monitoring reports.

MSS note that the installation and commissioning dates have slipped considerably from those discussed at the recent Advisory Group meeting. While we understand that there are logistical and technical challenges associated with the installation of this project, we are concerned about the implications of this for monitoring time lines. In particular, the installation and commissioning phases are now moving into times of the year when poor weather conditions are highly likely, which increases the risk of further time line slippage. There is the potential for the first turbine to be installed and commissioned, but for it then not to be possible to deploy the later turbines, including the ARL turbine on which the monitoring equipment will be deployed. We would seek clarity from Meygen about how long they would anticipate that turbines could operate prior to any monitoring being possible in such a situation, and also from MS-LOT about whether they would be content with this position.

We remain concerned about the lack of redundancy for the Gemini sonars. It remains the case that these cannot be redeployed should there be any failure. While we accept that one sonar would likely be sufficient for monitoring to meet consent conditions, this will limit the data that can be collected to inform further phases of development, which may have consequences as Meygen come to expand their project. We would be concerned about the capability of the Imagenex sonar (to be deployed on the FLOWBEC platform) to track seals in order to fulfil this monitoring requirement in the event that both Gemini sonars failed. It will be for MS-LOT to decide whether they are content to allow the use of the Imagenex sonar for seal monitoring to meet the consent condition. MSS consider that Meygen are unlikely to be able to collect data that are robust enough to allow calculation of an empirical avoidance rate for seals from the data collected through the Imagenex sonar, which is likely to have implications for future phases of development.

MSS understand that there may be scope to develop a platform similar to the FLOWBEC platform, for the Gemini sonars, which could be powered by batteries. Under this scenario, we would consider

that useful data could still be collected, although the logistics of regularly deploying and recovering the platform would be complex. Should the situation arise that there is a failure of the Gemini sonars, MSS would recommend that this option is thoroughly investigated, since it offers the possibility of still collecting data that will allow the calculation of an empirical avoidance rate.

We reiterate some comments that were made on the draft PEMP and at the AG meeting

- We consider that there will be a need to develop a protocol for data transfer, in order to ensure that reporting can be undertaken by both SMRU and the University of Aberdeen in a timely manner. This should detail who will transfer and send data and the timing of this. It should also consider any technical details required to ensure that this is carried out without data losses.
- MSS would like to see details of how the monitoring data collected will be used. For example, will the collision risk model be updated? Will this include calculation of an empirical avoidance rate? How will the different data sources be integrated to achieve this? We assume that there will be reporting to the AG.

### **benthic ecology**

MSS has no comments to make regarding benthic ecology.

### **physical environment**

It is good to see that the physical environment is being monitored using mainly ADCPs, but also an ADV to capture smaller scale flow structures. This should provide some much needed insight into how the turbines change the flow in the area. The ADCPs mounted on the turbines will provide flow data very close to the turbines, i.e. within the wake, and the FLOWBEC ADCP will give some data further away from the turbines. It is encouraged that the idea to deploy additional self-contained ADCPs around the turbines is pursued, as it will be important to know the spatial extent of the flow changes and to what extent there is horizontal flow diversion due to the turbines and array. It is also encouraged that baseline data (over a sufficiently long time series) be collected from the deployed ADCPs and ADV, i.e. before the turbines are switched on. MSS would be very interested in using the ADCP data to help develop and validate our hydrodynamic model of the region.

### **aquaculture**

MSS has no comments on aquaculture

### **socio economics**

MSS has no comments on socio economics

### **diadromous fish**

The PEMP will provide a great deal of valuable information on how the turbines will interact with aquatic animals in general.

The advice of the MSS/SNH working group at the time consent was given for the first 6 turbines was that the key risk to consider regarding diadromous fish at this site is collision with, rather than risk to smolts. Some useful information has been assembled since then – local information on swimming depth of returning adult salmon and information on the pop off locations for adult salmon tagged with pop off tags on the north coast of Scotland, although the information from the pop off locations has not been considered sufficiently informative to change the modelling assumptions of what proportion of fish go through the Pentland Firth.

As already noted in previous responses and at Advisory Group meetings, the extent to which the information obtained in the PEMP will result in improved parameterisation of the current collision modelling for returning adult salmon is not clear.

The key elements for which better information is still needed are

- Improved information on the numbers of adult salmon which use the Pentland Firth and whether they make multiple passages through the development area or just pass through it once. Obtaining useful information might involve adult tagging and tracking. The provision of suitable acoustic receivers in the vicinity of this site could be useful if combined with appropriate tagging of adult salmon. They could also be useful in the context of other studies using acoustically tagged smolts which might also migrate through the Pentland Firth.
- Improved information to support any active or passive avoidance of the turbines by salmon being brought into the collision modelling. Interaction with adult salmon will be a rare but important event and it is not clear that the PEMP will provide useful information. However, if these events take place we need to be sure that the technology will be capable of providing at least some information and there are still questions about whether the cameras will produce sufficiently sharp images of fast moving objects in the ambient conditions. The advisory group has discussed other possible lines of investigation – CFD modelling, releases of fish or dummy fish, etc.

It is therefore hoped that additionally to what is included in the PEMP that the developer will continue to consider what might be possible to assist in information gap filling which will assist in improving model parameterisation.

Hopefully these comments are helpful to you. If you wish to discuss any matters further contact the MSS Renewables in-box [MS\\_Renewables@scotland.gsi.gov.uk](mailto:MS_Renewables@scotland.gsi.gov.uk).

Yours sincerely



**Paul Stainer**

Marine Scotland Science

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