

# Minutes Advisory Group @ Marine Scotland Marine Laboratory Aberdeen 25<sup>th</sup> July 2016

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Apologies  
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## **Introductions**

Delegates introduced themselves as per list above.

## **Minutes and Actions from last AG meeting SLIDE 3**

Minutes agreed, see action register

## **MeyGen Project update (slide 4 to 17) DT**

DT, the first turbine to be installed will be Andritz Hydro Hammerfest (AHH) Tidal Turbine Generator (TTG) scheduled for installation 17/09. The monitoring equipment associated with Atlantis Resources Limited (ARL) TTG will be installed 15/09. Load out is defined as leaving Nigg on board installation vessel ahead of deployment. GeoSea trialled the Goliath Jack-up vessel (JUV) and demonstrated capability of operating in a tidal race in Raz Blanchard, in conditions very similar to Pentland Firth and Orkney Waters.

RM, JUV trialled @ EMEC had significant issues with ground conditions.

## **Scottish Government Demonstration Strategy (SGDS) update (slide 18 to 24) GH**

Harbour seal tagging - Pinger tags (180kHz) to be tested with seals in tanks in August.

Data management is an outstanding issue, SMRU continue to work with MeyGen to formalise data management. SMRU will require hard drives to progress monthly reporting.

EK, An important issue is understanding if there was failure of the monitoring equipment, how this can be checked and how this notification of any failures would be communicated to; MS-LOT, the Advisory Group (AG) and the SGDS steering group. Can daily checks be conducted at the onshore facility or remotely?

DT / GH TTTG monitoring will be carried out continually. Remote access should allow parties to check equipment status at any point.

GH, SMRU are working to tight timeline and are on track, procurement issues are on the critical pathway as PAM and HiCup to be deployed on foundation and simultaneously with ARL Tidal Support Structure (TSS).

**Action GH** liaise with Martin Dunn (MeyGen) to understand data collection to inform the reporting cycle.

**Action MeyGen** - report delays in assembly and installation programme to AG.

RG, can cameras be used to capture images of fish??

**Action GH** circulate resolution of cameras and shutter speed.

**Action MeyGen** include camera specification in PEMP.

RM, what is process to decode tags from PAM. GH, there is no requirement to decode only to capture arrival times.

EK, what are the procedures if there are any issues / delays with the installation and operation of the turbines and monitoring equipment, and consent conditions cannot be discharged. ID AG are advisory and MS LOT would be contacted first in this event.

**Action MeyGen** develop reporting schedule to encompass normal operation and activities in the event of equipment failure, reporting pathways to MS LOT and also the AG.

**Action - MeyGen** to organise date for AG meeting post installation in November.

### **FLOWBEC update (slide 25 to 31) BW**

BW presented EK60 management and scheduling during commissioning and operation. Group discussed the following points

- 120kHz out of seal hearing range?
- Any evidence of low-frequency harmonics? Known narrow bandwidth.
- SGDS 2015 Kyle Rhea EK60, SGDS PAM on 2015 FLOWBEC deployment?
- 8-week period? Then 1-month review –compared to real-time ongoing review?
- Proposed 12-week period with EK60 off will miss important fish (prey – herring and mackerel) spawning / migration periods, increased bio-fouling of inactive transducers.

RG, is there existing information on the target strength for salmon at the EK60 frequencies BS, separate study would be required. Presently no information available for any of the life stages of salmon.

BS, UoA are very keen to progress EK60 with the 200kHz in use. Therefore, to establish if there are behavioural responses to 200 kHz of the EK60, the following actions were proposed:

**Action UoA** contact EK 60 manufacturers to provide evidence of absence of side lobes for 200 kHz.

**Action SGDS** investigate if PAM data sets demonstrate evidence of low frequency components of the 200 kHz transducer

Ongoing discussion between UoA and SGDS investigating if existing EK 60 datasets are sufficient.

**Action ID** investigate funding for technical contractor to investigate potential issue of low frequency components in the 200 kHz.

**Action GH** investigate possibilities of using pool behavioural tests at SMRU with seals and EK 60.

**Action MeyGen** to investigate the opportunity to use work vessels to record EK60 when deployed.

**Action MeyGen** investigate whether MERIKA project can record EK60 when using drifting ears to make recordings of EK 60 when operational @ MeyGen for turbine noise recordings.

**Action ID** explore costs and practicalities to source spare EK60 from MSS to be used in pool test at SMRU or outsource with technical contractor

ID, continue with scheduled timeline until evidence of no side lobes provided.

BW highlighted RV Scotia baseline survey conducted in late June - slide 31.

### **PEMP contingency measure /responsibility matrix (slide 32)**

Group has provided written comments on PEMP, which should be incorporated into PEMP before circulation to Liaison Group.

**Action MeyGen** to add steering report to appendices and provide context of PEMP within introduction, link PEMP to consent conditions.

**Action MS LOT** to provide comments on PEMP by COP 26<sup>th</sup> July.

RG, Both the MSS/SNH review of Xodus's collision modelling and the recent modelling carried out by Band as a case study in the recent SNH collision document predicted just under 30 adult salmon / grilse could be impacted annually per turbine. For a six to eight turbine array this is very low number in comparison with the total number of salmon / grilse returning to Scottish east coast rivers, there would be increasing concern with increased numbers of turbines and cumulative impacts with developments, unless there was data to support reducing the predicted numbers per turbine.

### **Responsibility Matrix**

ER, the redundancy options for monitoring do not offer like for like replacements. MeyGen accept that redundancy for HiCup using Flowbec for equipment failure may result in a more precautionary approach to data analysis.

The decision was made that wet-mate connectors (disconnect and reconnect under water) would not be used for FLOWBEC and HiCUP due to engineering challenges and high cost. FLOWBEC can be retrieved and redeployed on batteries (BS – within a couple of months).

The HiCUP frame can be retrieved, but there are no plans presently to redeploy.

**Action - SMRU** to investigate development of batteries options for Gemini sonars for redeployment.

EK, MeyGen need to provide evidence that the consent conditions have been met. Decision on whether conditions have been met is with MS-LOT, with advice from AG. This evidence will inform future deployments.

RM, gathering monitoring data will provide evidence to move to next phase.  
BS, to retrieve Flowbec and re-instrument would take up to a couple of months.

The monitoring system has complementary technology (video cameras and strain gauges) that will provide monitoring in the event of equipment failure. The video camera system is likely to be used to look at targets identified on the active sonar but alternative sampling methods could be used in the case of equipment failures.

**Action SMRU** to consider methods to interrogate video data.

**Action MeyGen** to consider reporting schedule and monthly updates and reporting cascade in event of an emergency/failure; MS LOT to inform AG.

The outputs of the steering group meetings will be fed to the AG.

### **PEMP data management and reporting**

**Action SMRU & UoA** to liaise with Martin Dunn (MeyGen) to understand data collection from onshore substation to inform monthly reporting.

DT, remote dial-up possible to check equipment is working properly.

**Action UoA, SMRU & MeyGen** to develop reporting template for review by MSLOT and AG to check parameters are fit for purpose. This will be circulated to the AG.

ECoW role is required during construction only; MeyGen will appoint an Environmental Manager, who will take on the reporting actions post construction. A consolidated report will be provided to the AG.

KB, need to state what the data is to be used for, is it fit for purpose, and can it be used to progress the next stages of development via refining collision risk modelling etc.

DT & GL, dates for 4-weekly reporting to be set once monitoring equipment is in the water and the Andritz turbine commence its 14 day reliability test.

EK, stressed the importance of MeyGen utilising the expertise within Advisory Group to make decisions.

GH, queried reporting on turbine manufacturer strain gauge and camera data.

BS, in order to improve strain gauge data, UoA has a PhD student classifying turbulence and extracting signal from noise. However, this would need 200 KHz to be running on EK60 to acquire suitable turbulence data.

### **PEMP Submission**

ID, the Terms of Reference stipulates two groups: (i) the core AG, and (ii) the Liaison Group, who are to be provided with correspondence, minutes and discussion papers.

**Action MSLOT** to circulate link on MS website and finalised AG minutes and draft papers to the Liaison Group members. Liaison Group to be consulted on PEMP.

**Action MeyGen** to submit updated draft of PEMP by 8<sup>th</sup> August to allow 10 working day consultation with Liaison Group. Then 5 working days for any amendments, followed by 5 working days for MS LOT to agree sign off with Scottish Ministers.

#### **Terms of Reference**

**Action MeyGen** circulate revised ToR.

**Action MeyGen** to advise of new Secretariat

#### **AOB**

**Action MeyGen** to provide place holder dates for AG meetings.

CD, noted MeyGen to host media event in Nigg in September.

GH, noted opportunity to see SMRU seal tagging in late October/early November.

#### **Summary of actions**

See action register

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