MINUTES

Attendees: Ed Rollings (ER) MeyGen
Benjamin Williamson (BW) MeyGen / UoA
Prof. Ian Bryden (IB) UHI
David Bova (DB) MSLOT
Joao Queiros (JQ) MSLOT
Ian Davies (ID) MSS
Kate Brookes (KB) MSS
Jared Wilson (JB) MSS - phone
Ross Gardiner (RG) MSS
Chris Eastham (CE) SNH
Erica Knott (EK) SNH
Dougie Watson (DW) TCE
Robert Main (RM) MSS
Euan Edwards (EE) MSS
Carol Sparling (CS) SMRU Ltd. – SGDS project

Date: 21/01/2016

Chaired by: Prof. Ian Bryden

Time: 13:00

Location: Marine Scotland, Aberdeen

SUBJECT: MeyGen Advisory Group (AG) Meeting 6

No.	Subject	ACTION
	Introductions and apologies	
	Apologies from Beth Scott, Nicola Bain, Roger May	
1	**Minutes and actions from last meeting**	
	ER to provide Org Chart of ARL / MeyGen	**ER**
	RM to provide ReDapt lessons learned	**RM**
	IB to double check EIMR collision workshop noted available online	**IB**
2	**Project Update – HDD / TSC installation / ECoW**	
	ER: Presentation material available with minutes. TSC installed in 2015, onshore works ongoing. Planning for TSS and TTG installation in 2016. Delays to TTG represent issues for monitoring strategy, discussed later in the meeting.	
3	**PEMP - Update**	
4	**PEMP - Field trials 2015**	
	BW/CS Presentation material available with minutes.	
	Acadia University – are looking at fish imaging quality of Tritech Gemini (Anna Redden)	
	Triggering sensors from other sensors – possible and the preferred method to monitor, but requires time and experience to implement. Scenario is likely to be that we're recording all raw data at the start of monitoring and start to move towards a triggered system as time progresses.	
	CS to circulate latest SGDS report to AG	**CS**
	Vemco tags (SGDS used large V16 tag in trials) could be used on seals and detected by PAM. V7 tags being used by RM on Alba, but issues with detection, possibly due to boat echosounder masking. Tags used on salmon smolts are 1/3 power, question mark about whether they would be picked up by the	**CS**

	PAM at any significant distance. Sound of Sleat trials suggest 200m detection radius for V16 (and porpoise, slightly further for BN dolphins). SGDS unclear at what states of the tide the Vemco tags were tracked in and what influence that has on detection. Anna Redden shows issues above 2 m/s. https://tethys.pnnl.gov/sites/default/files/attachments/EIMR2014_8114_Redden.pdf http://www.oera.ca/wp-content/uploads/2013/05/Jeremy-Broome.pdf Also potential issue of tag audibility to animals. SGDS are investigating detection function, tag power output and animal audibility. **CS to confirm V16 model, and report back on detection function and animal audibility.**	
	EK60 work in SMRU sea trials indicates issues with crosstalk with PAM and potential disturbance to cetaceans. KB – issue is still to be resolved, MS do not want there to be question marks over the monitoring data due to issues with negative impacts of sensors in the water. BW – agree that this needs to be resolved. There are a number of areas where the situation / outlook for the EK60 can be improved: Re – "detection by porpoises and seals up to 1 km" • Already considering reduced frequency suite / duty-cycled / triggered operation, however important to initially get a comparative / translative dataset to 2015 baseline • There are several options to reduce the power of transmission per frequency, which reduce SNR but are acceptable given the very short range (<40 m) required • Due to upward facing, narrow beamwidth / beam pattern, and specular reflections off surface then seabed, previous modelling (Blondel) suggested small radius around frame where EK60 audible above background noise in a tidal site (not 1 km). BW to review SGDS briefing note to compare operating parameters for each system are comparable. • Compare to other boat based porpoise / cetacean surveys when EK60 used – e.g. James Waggitt (Celtic Sea and EMEC), Joshua Lawrence (various) Re – "signals at 120 kHz could mask porpoise signals" • See Joshua Lawrence method to filter out EK60 from PAM data while preserving porpoise detections • EK60 power, pulse length and ping repetition rate are adjustable • Already considering reduced frequency suite / duty-cycled / triggered operation ER – ultimately we want to be able to use both suites of sensors so MeyGen/SMRU are to find a way to get the best out of both whilst not compromising the data or both sets of deliverables. **BW/CS/ER continue to develop monitoring strategy and schedule. ER to produce proposal paper for AG on sensor scheduling.**	**BW/CS/ER**
5	**PEMP – Issues**	
6	**PEMP – Next steps**	
	Delays mean that a turbine without the integrated sensor system could be installed 1st, 1 month before the monitored turbine. This month is likely to be commissioning period for 1st turbine so not fully operational. Options to move system to other turbines are limited by power/data, cost and programme risk. Alternative options: 1) No monitoring except 1st turbine cameras until monitored turbine is installed 2) Using FLOWBEC platform as currently spec'd on batteries 3) Using FLOWBEC but connected to 1st turbine (would have to check power / data /	**ER**

	connection / installation) 4) Using EMEC pod – question over state of readiness / sensor suite / connectivity **ER to continue researching options and produce proposal paper to AG on preferred solution.**	
	Communication with the AG should be improved to enable AG to assist/advise MeyGen in decision making process. ER – decisions to be made in next 6 weeks will naturally require more interaction with the AG. Decisions on 1) System integration design 2) Delay to turbines and risk to monitoring 3) Scheduling of monitoring (compatibility of different sensor suites) 4) Data analysis responsibilities and reporting data to AG Position papers can be circulated for 1-4 to inform AG prior to PEMP submission. PEMP submission planned for mid-March. Next AG meeting 3-4 weeks post submission	
7	**MeyGen Phase 1b / Section 36 variation**	
	ARL are starting to look at MeyGen Phase 1b and Sound of Islay for the next development opportunities. Phase 1b would be 4 x 1.5MW turbines incorporating the StreamTec foundation development (ARL/ETI project). Potentially this requires a variation. ARL looking to have a site consent that allows for Phase 1b and ARL can financially close on the project in 2016.	
8	**AOB**	
	Next meeting – ER to send out doodle poll for w/c 11th / 18th April. Site visit to be planned later in the year.	**ER**

ACTION SUMMARY

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	ER to provide Org Chart of ARL / MeyGen	**ER**
	RM to provide ReDapt lessons learned	**RM**
	IB to double check EIMR collision workshop noted available online	**IB**
	CS to circulate latest SGDS report to AG	**CS**
	CS considering detection function of VEMCO tags with tide speed, and animal audibility.	**CS**
	BW/CS/ER - EK60 issue to be resolved. Continue to develop monitoring strategy and schedule. ER to produce proposal paper for AG on sensor scheduling.	**BW/CS/ER**
	ER – monitoring options if turbine is delayed. Continue researching options and produce proposal paper to AG on preferred solution.	**ER**
	ER - Next meeting, ER to send out doodle poll for w/c 11th / 18th April. Site visit to be planned later in the year.	**ER**