MINUTES

Attendees:	Ed Rollings (ER) MeyGen Prof. Ian Bryden (IB) Chairman – UHI Joao Queiros (JQ) MSLOT Roger May (RM) MSLOT Daniel Pendrey (DP) MSLOT Ian Davies (ID) MSS Jared Wilson (JW) MSS - phone Finley Bennett (FB) MSS Robert Main (RMain) MSS Ross Gardiner (RG) MSS Chris Eastham (CE) SNH Erica Knott (EK) SNH George Lees (GL) SNH Toby Gethin (TG) TCE Benjamin Williamson (BW) UoA/MeyGen Beth Scott (BS) UoA Carol Sparling (CS) SMRU	Date:	02/04/2015
Chaired by:	Prof. Ian Bryden	Time:	10:00
Apologies	Kate Brookes (MSS) Jaren Wilson (MSS)	Location:	MS, Aberdeen

SUBJECT: MeyGen Advisory Group (AG) Meeting 5

Agenda

No.	Subject	Time (min)
1	**Project Update**	**10**
2	**Actions from last meeting**	**15**
3	**Field Trials 2015 proposal presentation – Benjamin Williamson / Ed Rollings**	**20**
4	**Field Trials 2015 discussion**	**45**
5	**Collaboration with other projects (other than SGDS)**	**20**
6	**Environmental Management Plan and other consenting requirements**	**10**
7	**AOB**	**5**

No.	Subject	Action
1	**Project Update - ER**	
1.1	ER update on MeyGen Phase 1a since previous meeting (Jan 2015)	
1.2	Onshore works have commenced. Consent granted for HDD Marine Works on 01/04/15, drilling commenced at site. Predicted 2 weeks per HDD bore, so first marine activity in roughly 2 weeks, dependent on ground conditions encountered. Currently on programme for cable and foundation installation later summer 2015, first turbine (ARL) in March 2016.	
2	**Actions from last meeting - IB**	
2.1	Discussions with EMEC on SGDS have not moved forward, timescales for delivery meant SGDS had to find alternative options for testing equipment. Similar experience with MeyGen and EMEC talks on use of the EMEC frame.	
2.2	**ACTION 1 - ER still to supply org chart to AG**	**ER**
2.3	All other actions from last meeting closed.	
3	**Field Trials 2015 proposal presentation – Benjamin Williamson / Ed Rollings**	
3.1	BW and ER presented the proposed monitoring solution and field trials in conjunction with SGDS. See document MEY-1A-70-HSE-007-D-PEMPFieldTrials supplied with agenda	
3.2	Issues discussed:	
3.3	Biofouling of cameras and other equipment - BW looking at recent studies and best practice to find a solution for the equipment. Biofouling could serious hinder the operating time of equipment.	
3.4	Complexity of deployment operation – experience of ReDapt team.	
3.5	**ACTION 2 – BW to discuss ReDapt lessons learned with Brian Sellar**	**BW**
3.6	**ACTION 3 – RMain to provide the ReDapt lessons learned document to AG**	**RMain**
3.7	Complexity of managing a number of acoustic devices in a small area (cycling pings etc) – BW is looking with MeyGen engineers to understand needs of other monitoring requirements (turbine performance tests, ongoing flow and wake data – both using ADCPs). Linking all equipment together through a common SCADA so that pings can be synchronises etc. CS noted that this was done on the TEL turbine (Ramsey Sound)	
3.8	Different multibeam swath orientations (horizontal and vertical) provide different data and also has different logistical issues - Orientated in the vertical swath has to be more accurately positioned to get the correct alignment (orientation, pitch and roll), which given the seabed conditions is very challenging. The horizontal swath has greater tolerances.	
3.9	Turbine structure and shadowing on the AAM - Trials will be done without a turbine or structure in the water. The project will be relying on experience from FLOWBEC (EMEC), MCT and TEL for this information.	
3.10	Programme for summer trials – Separate trails and testing regime with MeyGen and SGDS (west coast) at the start of summer will enable all technologies and operations to be tested. Whilst, the opportunity to test SGDS on the FLOWBEC frame towards the end of the summer, would enable almost a complete test of the proposed solution. Preparatory work is underway on the FLOWBEC frame so it should be ready in time for initial tests.	
3.11	Using a self-contained camera on the trials is only to explore light/turbidity conditions for use of the camera. It will not be synchronised with the multibeam on the FLOWBEC platform	
3.12	Position of multibeam (including adv/disadv of orientations) will depend on what data can be captured. Due to off axis flow between flood and ebb, multibeam positions in front of the turbine for one tide will not be behind the turbine on the reverse. A side on multibeam could potentially capture both.	
3.13	Data – cabled into the turbine cable junction box and controlled/managed through the SCADA system. Data processing there's potential for a certain amount of autonomous processing however, there's enough bandwidth to allow raw data to shore for post processing later.	
3.14	Monitoring one turbine – given the complexity of the system it is only proposed to monitor one turbine. Moving a cabled system for turbine to turbine would be difficult. Using the FLOWBEC frame	

	as a second system means that we can move this around the site and can expect a certain amount of transfer of information between turbines/positions. There's a question mark about whether moving the monitoring equipment around would compound natural site/seasonal variations.	
3.15	Risks. Project is targeting monitoring the first turbine in the water (Atlantis - March 2016). However this is reliant on manufacture going to programme. The AHH turbines will alos have a junction box to connect to so we should be able to shift monitoring to another turbine if there are delays in the programme. Cables – the biggest operational risk on the project is cable wear, BW is working wih MeyGen engineering to spec the cables that link equipment / pods. PAM on turbine foundations. Whilst this seems a good opportunity for a spacing PAM in a tight array. If this solution is used then this is probably a sacrificial technology. Once something goings wrong with the PAM system there's little opportunity to recover it or replace it. We'd have to look at alternative locations to replace the PAM.	
3.16	**ACTION 4 Set date to receive comments on and approval for the field trials proposal** Date set for Friday 24th April 2015	**ER**
3.17	RM – MSLOT need AG to confirm that this proposal is the correct approach to meeting the needs of the MeyGen consent conditions.	
4	**Field Trials 2015 discussion**	
4.1	See section 3	
5	**Collaboration with other projects (other than SGDS)**	
5.1	BS and RMain have sent out meeting invites for Workshop to Explore the Combined Research Potential of the MeyGen Development.	
5.2	Invited DEC, TCE, Catapult to introduce funding opportunities.	
5.3	This is an opportunity for further research and not considered part of the monitoring programme under the MeyGen consent conditions.	
5.4	Salmon tagging work MERILA project, INTERACTIONS (Pitlochry) and ERI (MORL BOWL tagging at Berridale). Opportunity ot add sensors to the array to interact with any of this work.	
5.5	Collisionometer – SNH have a bid in to support ORE Catapult project. Census project (Ben Wilson)	
5.6	Stranding Scheme – SNH funding proposal rejected. MeyGen could potentially help Andrew Brownlow project – to increase under reporting in North Caithness / Orkney and Mobile App	
5.7	SNH colony counts NCCC (Alex Robins) linked to JNCC census	
5.8	Basking Sharks – tagging work integrated	
5.9	Turbine noise – MeyGen is talks with MERIKA project to do pre and post installation noise monitoring in the Inner Sound	
	Purpose of the workshop is for people to identify collaborations and take them forward	
	ACTION 5 – BS/RMain to report back to the AG on success of workshop	**BS/RMain**
6	**Environmental Management Plan and other consenting requirements**	
6.1	Target 4th May for the rest of the offshore documentation related to the installation of the cables, foundations and turbines	
6.2	PEMP due to be submitted in December, however this needs to incorporate SGDS findings and the final report for the project is not due until December as well.	
6.3	**ACTION 6 – ER to discuss timings with SGDS**	**ER**
7	**AOB**	
7.1	RG – ID had put forward a request to University of Edinburgh on an AIM day. Can CFD predict collision and the slipstreaming effect? Understood that the difficulty is representing an object in a flow as the object itself will change the flow. Hammer et al – review paper for available information on turbine collision risk; again didn't consider	

	passive avoidance. SNH (CE) reviewing all collision risk models – noted again there was no consideration of passive avoidance and active avoidance considered quite high. CE – the latest version will address these points.	
7.2	**ACTION 7 – RG to distribute Hammer et al to AG**	**RG**
7.3	EIMR workshop on collsion risk notes have not been seen.	
7.4	**ACTION 8 – GL to chase up Arnie to fro papers**	**GL**

ACTION REGISTER

No.	Action	Responsibility	Complete
1	**ACTION 1 - ER still to supply org chart to AG**	**ER**	
2	**ACTION 2 – BW to discuss ReDapt lessons learned with Brian Sellar**	**BW**	
3	**ACTION 3 – RMain to provide the ReDapt lessons learned document to AG**	**RMain**	
4	**ACTION 4 Set date to receive comments on and approval for the field trials proposal**	**ER**	**Y**
5	**ACTION 5 – BS/RMain to report back to the AG on success of workshop**	**BS/RMain**	
6	**ACTION 6 – ER to discuss timings with SGDS**	**ER**	
7	**ACTION 7 – RG to distribute Hammer et al to AG**	**RG**	
8	**ACTION 8 – GL to chase up Arnie to fro papers**	**GL**	