

## **Marine Facilities Advisory Board March 2021 meeting**

Professor Carol Robinson, University of East Anglia (CR) - Chair

Dr Adrian Baker, Dstl (AB)

Dr Joerg Bialas, GEOMAR (JB)

Professor Mike Elliott, University of Hull (ME)

Dr Kate Hendry, University of Bristol (KHe)

Dr Kerry Howell, Plymouth University (KHo)

Dr Joanne Hopkins, National Oceanography Centre (JH)

Dr Clara Manno, British Antarctic Survey (CM)

Dr Christopher McGonigle, Ulster University (CMc)

Professor Mark Moore, University of Southampton (MM)

Dr Tim Smyth, Plymouth Marine Laboratory (TS)

Professor Nick Wright, Newcastle University (NW)

### **National Oceanography Centre**

Dr Eleanor Darlington, Group Head, Programme Management, NMF (ED)

Dr Louise Darroch, Senior Marine Data Manager (LD), BODC

Dr Maaten Furlong, Group Head, Marine Autonomous and Robotic Systems (MARS) (MF)

Professor Angela Hatton, Chief Scientist & Director of Science and Technology (AH)

Helen Oldridge, Head of Scientific Engineering, NMF (HO)

Dr Suzanne MacLachlan, Curator, BOSCORF (SM)

Dr Matthew Palmer, Chief Scientist, MARS, Science Community Engagement (MP)

Dr Alex Phillips, Head of MARS Development, NMF (AP)

Julie Pringle Stewart, Chief Operating Officer (JPS)

Dr John Siddorn, Associate Director, Digital Ocean (JS)

Dr Helen Snaith, Senior Scientific Data Manager, BODC (HS)

Leigh Storey, Associate Director, National Marine Facilities (LS)

Juan Ward, Engineering Manager, NMF (JW)

Jackie Pearson, Secretary (JP)

### **NERC**

Dr Michael Webb, Head of Research - Marine

### **Welcome – Day One**

CR opened the meeting by thanking colleagues for their work on the capital expenditure proposals and the working groups. Apologies were noted from Dr Clara Manno and Dr Natalie Powney. Prof Mark Moore would not be able to join for day two. CR welcomed Dr John Siddorn, the NOC Associate Director of Digital Ocean Transformation.

#### **1. Actions from October 2020**

- 1c A list of principal scientists was in the papers with an action to ensure they are made aware of the TRM. Secretary to follow up with MF. **Action: JP**

- 1f The action about the infographic on NMF investment/budget and size of user groups is carried forward to the next meeting. **Action: LS**
- 10a The action about the discussion group PCO2 bid and presentation to MFAB is deferred to 2022. **Action: HO**
- 11.5 KHe advised that the NZOC discussion has happened.
- 2. Standing item: Update on new medium/large equipment/technologies  
Carol Robinson**
- 2.1 CR thanked Kola Akinola from NERC for updating this document about recent capital purchases. CR thanked NERC for the fact that UK oceanographic equipment is being replenished.
- 3. Update from Cruise Programme Executive Board - Leigh Storey and Carol Robinson**
- 3.1 The revised expedition programme has focused on retrieving data which has reduced the number of scientists and technicians on board. NERC is funding large infrastructure at the same level for the next five years and the shortfall that will arise over time is being met by attracting charters, but this has meant less opportunity for, for example, NERC funded research and trials. The CPEB Chair had reflected on the mix of discovery versus NC/commissioned research, the impact of the RRS *Sir David Attenborough* and C-19. There are plans to develop a scheme to mentor future chief scientists and to change the post cruise assessment form.
- 4. Cyber Security Plan Leigh Storey and Juan Ward**
- 4.1 Ships are required to comply with cyber security and this may impact how people interface with the ship's network. This priority task requires an overhaul of the ship's network, in similar vein to the SDA. NMF is investing in the cyber security aspects of how the ships and autonomous vehicles are operated. In terms of risks, an incident that impacts the ship's navigation system could be significant, potentially affecting safety; protection against losing scientific data ranks also highly in terms of priority. This could occur through, for example, a USB stick infected with malware. NMF is looking at the risk of data being hacked; there is a need to improve logging and monitoring. Gliders have not yet been looked at in terms of this issue.
- 5. [Proposal for a WG on Autonomous Vehicles - Matthew Palmer](#)**
- 5.1 MP has contacted 32 people across the UK for feedback on this proposal for a Working Group on Autonomous Vehicles. There will be an annual meeting and the working style of this group will be similar to the UK glider community WG.
- 5.2 Scientists need to understand the range of technology development and currently there is no mechanism for this. There are several groups using autonomous technology but no one group that brings them together. This will be the role of this WG. The Board discussed whether the requirements of the WG

would best be served by MFAB or a wider community group and the Board decided that this should be an MFAB WG but limited to eight – 12 people who would have good links into the wider community. CR recommended a meeting between KHe, KH and JH and any other volunteers from MFAB to discuss the ToRs, and to develop a list of tasks. MF spoke about the need for engineers in the WG. MP agreed and asked for MF to be involved. CR suggested an independent chair or co-chairs. **Action: MP**

6. [Update on Ship Underway Users Group \(SUWUG\) - Helen Oldridge and Helen Snaith](#)

6.1 The Data Working Group (DWG) ToRs are around improving data flows and systems on the ships through to BODC. There is overlap with the SUWUG, especially in terms of looking at how onboard instrumentation feeds through the data. The SUWUG is an ideal user group to test the data formats that are proposed. LD has produced a report which captures the standardisation of data format across the vessels. The DWG aims to present to the SUWUG in a few months' time and will have set the next priority by the next MFAB. CR asked for an agenda item at the next meeting, to decide next steps. **Action: JFP**

6.2 There were questions about how to calibrate data streams and the procedure for camera data acquisition when the ships are on passage. NMF is keen to get data flows from the bathysnap system and is in discussion with HS. Video data from ROVs can be streamed whilst operational which can give scientists not on board, the opportunity to review pictures. NMF is working to handle data from the multi-beam system whilst on passage but can't operate multi-beams in another country's waters. There are procedures around operating when there may be marine mammals in the area. HS commented on the need for an automated data flow system and is keen to ensure that the NERC vessels generate as much data as possible into the GEBCO multi-beam project. Re: underway data - the signal to noise ratios can be terrible so this needs to be considered. ME reminded the Board that an aim of the UN Decade is to map the global seabed.

7. [Update on the NMF Technology Roadmap - Maaten Furlong & Helen Oldridge](#)

7.1 The next refresh of the TRM will be in March 2022. Improvements planned include the addition of timelines and a section between the introduction and the categories. The A2KUI is currently being ballasted and will be doing maiden trials in May 2021. The ALR1 is being prepared for deployment in 2022. The NMF team will update the TRM and invite comment from MFAB and the NZOC project will feed into it. The next draft of the TRM will be reviewed by MFAB in March 2022. **Action: All**

8. **The UKRI call for ideas for new scientific facilities - Carol Robinson**

8.1 The Board discussed the call in case it was an opportunity to feed in ideas around the needs of the TRM, however, there's been confusion about the call which is actually about refining information from the community and concerns a particular budget line in NERC - Services and Facilities which includes the Ocean Bottom Instrument Consortium and BOSCORF facility. It is not a mechanism to enhance NMF's funding.

## 9. The Cruise Programme Executive Board - what will MFAB present?

- 9.1 At the CPEB, CR gave an overview of MFAB activity which included the ROV WG, equipment prioritised and an update about the TRM. CR asked for three sentences, by the beginning of May (note 1), from those involved in the DWG, the SUWUG and the Autonomous WG that she can present at the next CPEB. **Action: HS, HO and MP.**

***Note 1 - Post meeting note – this is now required for the October meeting of the CPEB***

## 10. MFAB activities in 2021

- The Board will feed into the next review of the TRM for 2022/23
- ME suggested we look at what MASTS is doing in terms of coordination of the facilities throughout its members in Scotland. During the meeting, Mike E contacted Dave Paterson who indicated that there would be synergies worth exploring. Invite Dave Paterson or Mark James to link in. **Action: CR**

JPS thanked CR for a well chaired meeting and LS thanked the Board for engaging in the NZOC project.

## Day Two

Carol noted apologies from JPS, CM, MM and welcomed Dr Suzanne MacLachlan.

## 11. Proposal for a deep-sea rock laboratory & Questions - Suzanne MacLachlan with input from Mike Webb & John Siddorn

- 11.1 NERC doesn't have a centralised repository for resources but is responsible for marine sediment and rock samples. BOSCORF is large research infrastructure (LRI) so doesn't come under Services and Facilities. A rock store could be set up by the BOSCORF team and would be an important community asset for NERC to host. The UK has a responsibility to the international community to enable access to samples but this is not possible at the moment. Rock samples are easy to house compared to marine sediments. This facility could be accommodated at NOCS. The proposal would need to be driven by the 'rock' community. CMc suggested having a visual reference library and extracting biological material as a different approach.
- 11.2 AH: If there is a need for a rock store, there should be a survey of the community's needs. Ultimately NOC or indeed anyone else could bid to run the rock store and the analysis as part of Services and Facilities so this is a good opportunity. If, however, this falls under LRI, then we will have to wait until the next commissioning exercise as otherwise, funding it would require that something else would lose funding to support it. If a rock store became a priority, we could possibly look to expand LRI or if this is deemed an important service and facility, we could just bid for it.
- 11.3 AH: Is this about rocks or their analysis? If people can store their samples at

their own site, this would be an analytical facility. SM replied that this is about the rocks. There needs to be a centralised system and a portal for the data and metadata and access. AH concluded there needs to be 1.) a database and metadata, 2.) access and 3.) analytical side. The community needs to be clear about what it wants.

- 11.4 CR asked if MFAB supports this need? If so, how do we report this need to NERC? Should the rock community submit a proposal to the S & F exercise in case it is covered here? Should there be a WG? Several universities might be interested. There needs to be join up with the groups around the UK. SM: The priority is to develop a policy on curation and access of samples.
- 11.5 JB: There is a need for an overarching database where information from cruises can be added and a centralised rock repository. MW added that there is a rock repository at BGS Edinburgh so, is there something already in place that could be enhanced? It would be worth contacting BGS first to find the best route.
- 11.6 K Ho: A database of all samples brought back from sea would be good. HS: Some metadata exists in cruise reports in BODC but it isn't easily accessible, however, a lot of information is already available.
- 11.7 CR asked that this be an agenda item at the MFAB October 2021 meeting and to find a volunteer to start a Rock Store WG which would input to the UKRI scoping exercise. AH agreed to take this action and will discuss current collections - there should be a WG on all collections, not just rocks. LD advised to look at IGSN numbers. The Rock Store WG should be an MFAB agenda item for the next meeting. **Action: AH & JFP**
- 11.8 JP reminded the Board that the UK Marine Science and Technology Compendium records information about all the UK's marine collections. CR asked for an item on collections to go onto the next NOCA agenda. **Action: JFP**

## **12a Capital Expenditure Proposals - Update on rounds one and two Helen Oldridge & Maaten Furlong**

### **Capital Expenditure and wish-list – presentation**

- 12.1 HO gave an update about the 2018/19 and 2019/20 rounds. CR checked about funding for capital equipment rounds – there is £1.5M available for approved proposals, once other commitments (repair and replace) have been met. Should we set a grade below which items don't go onto the list? E.g. anything below six isn't added to NMF's list. MF added that in the TRM, there is a list of 'aspirational' items. If there is spare money, we look at this list and decide what is the most appropriate item to buy - this may differ from MFAB's ranking so we may prioritise a lower ranking item for tactical/operational reasons.
- 12.2 CR asked how items approved from previous rounds are brought forward into current rounds. MF: this is important – for example, do grades diminish over time? NMF looks at what makes sense at the time. The list of items will grow and should be reviewed annually; applicants may be asked to resubmit. There can also be programme constraints to consider too. TS added that we need to take items out of scope when, for example, they aren't a community asset. These

should not be acquired even if funds are available.

It was agreed that:-

- 1.) Anything marked six or below does not go on to NMF's list
- 2.) To consider the info that we give MF and HO for their decision making.

## 12b Capital Expenditure Round Three Proposals – overall grades

- 12.3 CR thanked the Board for their hard work. Anyone at the same institute as a proposal should not join the discussion. At the end of the review, members were reminded not to make comments where they were conflicted. TS chaired when CR had to leave the discussion due to conflicts of interest.
- 12.4 LS clarified that anything bought by this route goes into the NMEP, then the P.I requests it by the SME. Potentially, there may be a higher priority SME that may be able to use the item first.

## 2020/21 Proposals

### Final overall moderated results

MFAB NMF Capital Expenditure Round Three 2020				
Ranked	Lead Institution	Equipment	Final Score	Final Ranking
Christine Peirce	Durham	Multichannel seismic streamer	12	1
Christine Peirce	Durham	Replacement airgun seismic source	11	2
Rob Hall	UEA	Teledyne RD Instruments Pinnacle 45 Long-Range ADCP	11	3
Bramley Murton	NOC	High-precision underwater long-baseline navigation system.	9	4
John Howe	SAMS	Sonardyne Mini-Ranger 2 ultra-short baseline (USBL) system	9	5
Jennifer Jackson	BAS	Hydrophone array	8	6

- The Board discussed the final overall grades and ranked the Christine Peirce proposal marked as 11, as above the Rob Hall proposal, also marked 11, on the basis that it had already been waiting for funding for several years and is clearly a critical need.
- Two proposals were graded 9, Murton and Howe, and it was suggested that the Murton proposal was graded higher than the Howe proposal, on the basis that the item proposed by Howe is already in the NMEP with an advisory to see if a second is needed.
- Proposals graded 6 or below were not ranked.
- Applicants received detailed feedback and grades.

## Summary of points for the revised capital expenditure claim form

- Make it clear items must have significant amount of time when they can be used by the rest of the community. For example, '*we anticipate that items will be used for a project at the start (two to three years) but after that time, it should be available for several more years.*' Assets are for the community and will sit in the NMEP. Their use is determined by the programme and prioritised by NERC. Access is the same for all.
- There needs to be a section in the form that encourages applicants to supply additional supporting documentation, where appropriate. For example, it will be helpful for the Board to be made aware of the historic context to the funding request.
- Items must be higher than £10K in cost.
- The form must be more comprehensive in what we ask for, in the first place.
- We must be consistent in when we go back to applicants for further information.
- Some items applied for are at a consumable level and seem to be additions to existing grants rather than strategic investments that might benefit the whole community.
- How should the community inform us about what sorts of sensors they would like for the NMEP? It's not clear how the community can tell us this? What is the mechanism to inform us about these requirements?
- Should we discuss this round with the PAP P.I?
- Could the biogeochemists benefit if they had a community-led exercise, linked to the Marine Autonomous Systems Working Group, that could consider what sensors should be in the pool?
- We also need to clarify the wording on the web site. The form will be transferred from an Excel to Word format, with expanding text boxes.

Board to review wording for application form – **Action All**

### 13 Any Other Business

13.1 CR asked the Board to indicate by email who would like to continue as members of the MFAB. **Action: All**

13.2 Jennifer Durden, NOC, had asked if she could become a member of the Autonomy WG. JP confirmed she had flagged this with MP.

13.3 Board is asked to look at the revised Marine Autonomous Systems WG ToRs and give feedback over the next couple of months so that this is in place before September. Due date for comments: **31 July 2021. Action: All**

13.4 ME talked about the MASTS pool of equipment; MFAB should discuss coordination across the border. It was agreed to add this to the next MFAB

agenda and that we should invite David Paterson to join. CR will talk to ME about this when the next agenda is put in place. **Action: CR/ME/JFP**

13.5 The Board is asked for feedback on the meeting. **Action: All**

**Close**

**Table of actions**

<b>Point</b>	<b>Action</b>	<b>Who</b>
1c	A list of principal scientists was in the papers with an action to ensure they are made aware of the TRM. Secretary to follow up with MF.	JP
1f	The action about the NMF infographic on NMF investment/budget and size of user groups is carried forward to the next meeting.	LS
10a	The action about the discussion group PCO2 bid and presentation to MFAB is deferred to 2022.	HO
5.2	Marine Autonomous Systems WG – arrange a meeting between KHe, KH and JH and any other volunteers from MFAB to discuss the ToRs, and to develop a list of tasks. Include MF and have independent chair or co-chairs.	MP
6.1	Data Working Group (DWG) – set agenda item at the next MFAB to decide next steps.	JFP
7.1	TRM refresh – review by the Board in March 2022.	All
9.1	CPEB – Members to provide some text on: DWG, the SUWUG and the Autonomous WG that Carol can present at the next CPEB – now October.	HS, HO, MP
10	Invite Dave Paterson or Mark James (MASTS) to link into MFAB to look for comparisons in coordination.	CR
11.7	Initiate a Rock Store WG Rock store to be agenda item for the next MFAB meeting.	AH JFP
11.8	Add item about marine collections onto the next NOCA agenda.	JFP
	Ask members to review the new wording for the Capital Expenditure Proposals form.	All
13.1	Board members to indicate by email to CR who would like to continue as members of the MFAB.	All
13.3	Look at the revised Autonomy WG ToRs and give feedback over the next couple of months so that this is in place before September. Due date for comments.	All
13.4	Invite David Paterson from MASTS to join the next MFAB to discuss coordination of marine equipment. Add this to the next MFAB agenda. CR to talk to ME about this when the next agenda is put in place.	CR, ME, JFP
13.5	Provide feedback on the meeting.	All

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