

**Marine Facilities Advisory Board**  
**Thursday 3 July 2025: 14:00 to 16:00**

**Participating**

Professor Tim Smyth, PML (TS)

Professor Tiago Alves, University of Cardiff (TA)

Rory O-Brian, NMF (RO)

Dr Adrian Baker (AB), DSTL

Dr Filipa Carvalho (FC), NOC.

Dr Veronique Creach (VC)

Dr Maaten Furlong (MF)

Dr Stephen Jones (SJ)

Dr Veerle Huvenne (VH)

Helen Oldridge (HO)

Dr Gabriele Stowasser (GS)

Dr Suzanne MacLachlan (SM)

Dr Alex Phillips (AP)

Dr Helen Snaith (HS)

**Apologies received**

Dr Rob Hall (UEA), Dr Gaye Bayrakci (NOC) and Matthew Tiahlo (NMF),  
Dr Natalie Powney (NERC).

**Item One      WELCOME**

TS invited members to introduce themselves.

**Item Two      MINUTES AND ACTIONS**

2.1      TS invited comments on October 2023 and March 2024 meetings. None were received.

**2.2      Actions**

39 – To be carried forward.

40 – HS will report later.

53 – HO - This will be covered in the Technology Roadmap (TRM).

**Item Three      NMEP UPDATE – REVIEW OF BUDGET, EQUIPMENT STATUS AND PRIORITIES.**

3.1      MF explained that NMF is commissioned to the end of March 2028 and is looking at recommissioning with NERC from April 2028, however, there are uncertainties around available funding and carbon budgets for the ships. To the end of the commissioning period NMF's ability to create new infrastructure and buy new equipment is limited so is focusing on enhancing capabilities, data and processes. This has been discussed with the CPEB at NERC who are aware of the challenges.

- 3.2 HO gave an overview of the many demands on NMF's capital funding. Input from MFAB helps NMF to ensure that it provides the most benefits for the community. Between now and 2028, we have items totalling £7m against a capital budget of £6m. Most of the spend will be for keeping equipment up to specification and in line with upgrades etc. Areas covered included seismics, sensors, container laboratories etc.
- 3.3 Additional items of expenditure include replacement of the ships' IT system; the shallow and deep water multibeam echosounder (MBES) on both vessels are out of service and there are problems with spares. The seismics suite HP air compressors are old and spares are almost non-existent. Our ability to support these items is fragile. We need three compressors, and we maintain the fourth as the spare. All of these items cost around £1.5m per year so if we chose to pay these costs, this would affect other areas.
- 3.4 The portable ADCP fleet is old. These are expensive and starting to fail at sea. They need to be replaced, to maintain the programme commitments. The ship-fitted ADCPs are both are out of action but will be replaced as they are required for the programme. The glider fleet is aging and there are inevitable losses.
- 3.5 AP: The majority of the NMEP gliders are over ten years old. The Slocum gliders have been through their three-quarter life refit to update to Slocum G2.5 including improved 'O' ring sealing, etc. These vehicles are starting to show their age across the fleet, and there will probably be an increase in loss rate due to mechanical failures. Around one glider is lost for every ten to 15 deployments. Each glider costs around £175K plus sensors so this can draw a lot from the NMEP capital.
- 3.6 AB: Is this 'a like for like' replacement on the Slocums? AP: Slocums are good for open ocean science. There are other platforms and there will be a new generation of gliders. Cheaper gliders are available but these aren't proven technology so NMF will stick to Slocums, certainly in the short term.
- 3.7 HO: We have chosen to retire and not replace one of our gravity meters. We have chosen to retire SeaSoar and won't attempt to bring it back into the pool, because of cost and problems around the supply chain with manufacturers.
- 3.8 We are seeing more requests for the Moving Vessel Profiler (MVP) so there is a case for its ongoing use. We can either restore its basic function as a bare minimum or can spend more to do this well. This is a question for feedback from MFAB.
- 3.9 AP: In this F/Y, we have sent the ROV LARS back to the manufacturer for a substantial refurbishment which will cost £360K. There are other elements of the ROV that need constant maintenance and upgrades. The system dates from 2004 but updates and upgrades have been completed. Within the next 5 – ten years, the ROV will need a substantial upgrade when the now dated, major electronics fail or we may think about a full replacement. We are thinking about this now as the vehicle is a key part of the NMEP.

- 3.9.1 AP: At some point, our gliders will become obsolete as the manufacturer moves to producing G3 Slocum parts. The gliders will continue for five to 10 years but at some point, NMF will need funding to replace the fleet.
- 3.9.2 HO: we are trialling an altimeter integration into the VMP6000 which will reduce on-going costs. An altimeter is good but expensive. We recommend that this is extended to the rest of the VMP fleet so that we would be spending capital to save operational costs.
- 3.9.3 SJ: although it is good to repair essential items, why introduce new capability when we are unsure of the budget in 2028. HO: NMF invests in items that are frequently requested by the community, e.g. the UVP6, by contrast to items like the Passive Acoustic Monitoring (PAM) system which, whilst it can enhance seismic operations, we do fewer seismic operations which we can still do effectively, so we won't be investing in a PAM. The 'Repair, Replacements, and Obsolescence' (RRO) items are used infrequently, so these are the cases where we are looking to MFAB for guidance, to see whether there is still a need for these items.
- 3.9.4 SJ: it is clear that FMRI will need more autonomous capability. Could autonomous capability undertake measurements better than an MVP? If so, why invest in it? HO: There is a question around resolution so, for example, an MVP could do a higher resolution survey versus a greater spatial view from a glider but one is not better than the other. It depends on the application.
- 3.9.5 FC asked why SeaSoar was retired. HO: NMF has had several requests for the MVP but none for SeaSoar via the Marine Facilities Planning portal for the last ten years. FC: it is not possible to request SeaSoar though. Whilst HO accepted this, she explained that NMF had considered restoring SeaSoar but there were issues with supply chains and some components are no longer made. Manufacturers won't share the IP to enable NMF to manufacture the components elsewhere, so this route is not value for money.
- 3.9.6 MF: we are driven, to some extent, by science requests received by the MFP. If we don't get requests, the item isn't used. However, if the community isn't aware of the equipment, this is a problem, so this is why we need MFAB to highlight items to be supported or retired. HO: Although the MVP can't do what SeaSoar does, its upgrades will bring it closer to SeaSoar's capability.
- 3.9.7 TS: A few years ago, MFAB recommended that the MVP be retired. We also discussed the cost of maintaining the capability in-house in terms of the technician capability. HO: The cost is largely capital but includes some training. In terms of the operation of the MVP, it is an unmanned system so doesn't require monitoring. It is also easy to incorporate into a larger cruise.

## **4. WORKING GROUP UPDATES**

### **4.1 Data Working Group**

- 4.1.1 HS: The DWG has not met in the last 18 months as it was uncertain if the

DWG would be required because of what was happening around MFAB. This question remains - is the DWG still required and if so, what are its priorities.

- 4.1.2 We have been working to get near real-time data off the ships. This links sensor data directly from the ships using messaging services. We use a sensor API which use a set of internationally agreed standards for the delivery of sensor data. We have compatible messaging across the environmental data service: from NOC, the RRS *Sir David Attenborough*, BAS, sensors operated by NCAS and through BGS.
- 4.1.3 HS showed a slide that shows the data stream from a sensor on the RRS *James Cook*. This service is in development. Some funding was received through DSIT and enabled BODC to create a pilot service that provides persistent identifiers for sensors. Users can register a sensor with the service which will then hold the metadata, description calibration information, parameters measured etc., and this links messaging for a particular data stream to a sensor. This intermediate service allows us to achieve a lot in terms of data interoperability. BODC is trying to get funding to convert the pilot to an operational data service with a view to linking it to the MFP, so that records match all the instrumentation that is held within NOC and indeed, within any centre.
- 4.1.4 There is an EU-funded project called [AMRIT](#) which concerns developing tools to make it easier for anyone completing ocean monitoring activities to advise of deployments and manage the platform and sensor information. This concerns the ability to data stream from these services. Information about deployments will be shared on EMODnet, for example, and this is being developed on mobile applications which can be run off-line and in harsher environments where Internet connection may be interrupted. These apps integrate into a distributed metadata system that links between participating nodes so that users can be notified of new deployments.
- 4.1.5 What happens to the DWG now? TS asked about current membership. HS: We had been using the Under Working Group to support the DWG. At the last MFAB meeting, we were trying to decide what would be the next area of focus for the DWG. TS asked to review the membership of the SUWG. HS: as with all the NC funded activities, we are short of resource to dedicate to this. To some extent, what BODC can do will be dictated by the requirements of the EDS. HO: the AMPLIFY project involves the membership of the SUWUG and the DWG so we need to look at this. HS: This will need to evolve. There is on-going activity that is relevant to both working groups and it will be useful to report this to MFAB. By this time next year, we will need to consider whether we need to split the group. For example, we may want to add the PCO<sub>2</sub> streams into the near real-time stream which is clearly the role of the SUWUG but there was also discussion about whether development of the geophysics work stream might be a focus, depending on the new investment. In this case, this will involve a different group of people.
- 4.1.6 TS suggested merging the UWG and DWG over the next interim period, to deliver on some of those activities and to revisit this at the next MFAB. **Action 62: HO, HS, JP.** TS: hold an UWG meeting between now and the autumn MFAB. **Action 63: JP.** TS recommended making the membership of both

groups available to the Board and to launch an open call for new members now that the membership has evolved from PCO<sub>2</sub> to data. **Action 64: HO/JP**

- 4.1.7 AB: do the DWG and SUWUG decide the priorities for near real-time data? HS: the SUWUG identified the priorities for the near real-time data work that was then picked up by the DWG. MFAB sets the priorities and is then represented on the UWG.
- 4.1.8. SJ: it would be useful if the SUWUG group is combined and the membership revisited, plus a look at how much time resource people have. Maybe have one priority to focus on. HO: although we need to narrow the list of priorities, we first need to cast the net wide to see what needs to be prioritised and then we need to revise this on a semi-regular basis. SJ: maintain the list but feed upwards the fact that, without funding, we won't be able to progress. HS: this work is done through other funding initiatives. We have funding to develop services in a generic area. Having a set of priorities would help us divert funding from other areas to help answer these priorities.

## **4.2 Ship Underway Users Group**

- 4.2.1 HO: the Amplify project uses this membership. The Amplify project is working to get RVDAS data into BODC. Both BAS and NMF contribute, and we are experimenting at the moment. We postponed the meeting planned in May 2025 to wait for the FMRI science requirements so will have the next meeting as soon as those are published.

## **4.3 Seismics Working Group**

- 4.3.1 HO: The new seismics suite was trialled in the summer of 2024. There is a paper on this available from HO. When the group was formed, the group looked at the next seismics capability. We are now largely operational, so the user group is now mainly technician led. This group will continue as an internal NMF group, but the question is whether it should continue to report to MFAB as it is not making fundamental changes in the medium term. SJ: Has this group been developed to the point that it is no longer needed? HO: largely, yes as now meetings are largely operational. SJ: This is OK but it should be noted that there are several other topics on the list to improve seismic capability, but these can't be accommodated, given the funding situation and this needs to be recorded. HO agreed. We do have strong links with the community with this working group. The next item will be the compressor replacement.

## **4.4 Rock Store Working Group**

- 4.4.1 SM: We launched a survey in October 2024 and allowed three months for responses. We have had some great responses, so the next step is for JP and SM to write a short report, within the next two months. TS asked the Board to look at it and bring any questions to the next meeting. **Action 65: SM & JP**

## 4.5 MARS Working Group

- 4.5.1 Since November 2024, Filipa Carvalho and Veerle Huvenne have taken on the role of chief scientist for MARS and one task is to revitalise this group. We will provide recommendations for MFAB about future UK investment, development and priorities in the MARS equipment pool. We also hope to promote the visibility of the NMEP and provide an open forum for what the MARS capability should be. We want to encourage new collaborations and new users as there may still be some hesitation in some to use autonomy and robotics, so we want to break that barrier. We will canvas the community for new members and ask for commitment for at least two years, renewable for a second term. We have created a table of expertise that we need and will publish a call for members in September with a deadline of mid-October, discussing potential new members in November with a view to holding the first meeting in January or February 2026. We will then refine the group goals and develop the time line over the next two years.
- 4.5.2 GS asked how new members would be appointed. VH expects to approach the Challenger community and JP explained the options for promotion the opportunity. FC mentioned the special interest group in the Challenger Society and asked for other suggestions. TS: mentioned the NOCA news channel as this community may not be reached by the Challenger Society. How might this group influence the TRM? MF: The working groups do help to inform the TRM. We try to make the TRM science led but there is a tension between technology push and science pull. It can be a struggle, so we issue the TRM with our best estimate of what we think the science requirements are and come to MFAB to check that it is aligned with the community's requirements. We hope that MFAB and the MARS WG provides the guidance to technology development and considers what can be done tomorrow. The gaps can be less from what is possible today and what may be possible tomorrow. There is likely to be an upscaling of autonomy, so we need to train the next generation of scientists to use this new technology. TS: this should be part of the aims and objectives of each of the WGs to mention the TRM and the view of what each group will feed into the TRM. The leads of WG should at least include the TRM in their aims and objectives at the top level. **Action 66: JP**

## 5. Request from Cruise Programme Review Group (CPRG) for MFAB to work with BAS to discuss equipment and testing needs on the SDA.

- 5.1 MF: The CPRG reviews post cruise assessments. There were recommendations for better alignment between BAS and NOC, around testing equipment on the Sir David Attenborough. There was a question around whether there could be an MFAB WG around this. Although this is outside MFAB's remit, both BAS and NMF deliver the marine programme and should more effectively work together to share best practice and equipment. We do a lot of work with BAS around seismics but what is the best method of reporting our further integration with BAS to MFAB? MFAB recommendations won't go to BAS, they come to NOC, then CPEB. This won't be a forward look for BAS infrastructure, they are a forward look for the NMEP. This could be an opportunity to look around the broader marine capabilities.

5.2 TS: this HAS to happen as this has been a problem for decades. There needs to be better, seamless alignment between BAS and the NOC ships. We don't have a view of the BAS ecosystem and there may not be an equivalent to MFAB in BAS. MF confirmed that is correct. When the SDA was bought, there was a small equipment pool that was nationally available but would mainly be used on the SDA but there is other BAS-owned equipment that doesn't sit in that pool and there are challenges here around demarcation and whether it is available as a community resource or whether it is only for BAS. The NMEP equipment pool is for the whole community, however, most of the BAS equipment pool is for BAS scientists but there is a small subset which sits in the SDA with the seismics equipment being part of it, but it is opaque about how that works but we are aiming to work more closely with BAS. TS agreed that we need to do this, but a working group may not solve this as there are too many separate processes and systems. HO suggested inviting BAS's Dr Sophie Fielding who could be an ex officio member of MFAB and the BAS equivalent of NMF. GS and SJ agreed. Contact Sophie Fielding. **Action 67: TS, JP**

5.3 AB: would SF chair a working group about the SDA? SJ: We won't make any progress unless we get an operational representative from BAS in this group. At the next meeting, we should set up a working group which would report back to the next MFAB meeting. Hopefully, it would produce a list of what equipment is available. HO: SF will have a list of equipment but isn't in the public domain.

## **6. Sampling Working Group – consider if this group should be restarted**

6.1 HO: We started this group three years ago, but it lacked focus. The idea was to look at the evolution of our sampling capability e.g. coring suite and marine snow catchers and how we can improve but there isn't a specific problem or target. The development of sampling capability isn't something we get a lot of feedback on so the question is, does MFAB think we should continue this?

6.2 SM attended the original SWG meetings to ensure that there was best practice, which helped bring together what was happening on the ships with the downstream process of, for example, ingesting samples into collections. BBNJ is an issue here though and we need to get on top of this now as it will have huge implications for how we handle the samples and the data. We need to think long term about this and how we can ensure that the processes are in place and linked to potential infrastructure projects that are in the background, around collections, including at NERC. HS: The BBNJ is a legal framework that will come into force over the next couple of years and we will need a much better system for tracking where our samples end up. This is mainly about material that is used for genetic sampling. A best practice system for capturing and tracing samples for BBNJ will be good for all samples. This has the potential to ensure a much better infrastructure that will support linking samples and collections with the data and analysis that result but this needs to start at the point at which we collect the samples. HO: This could be the next DWG topic. This is broad reaching beyond the practice that happens on the ships. MF: this is not just data; it is also biological samples. For example, the Discovery Collection. The UK has signed up to ratify this but it's not in force yet. SM: also includes marine mud samples, but includes

microbiology and sediment etc. MF: if collected for non-biological reasons, e.g. deep-sea mining, is there a need to comply with the BBNJ? HS: We should treat all samples in compliance with the BBNJ. GS asked Helen if she had been in touch with colleagues from the UK Polar Data Centre because BAS has implemented something similar on the SDA. HS: yes, NOC has some elements of this. e.g. bar-coding samples would be good. There is an extensive set of applications that would make this more robust.

- 6.3 TS: where are we with the sampling working group in terms of membership? HO: This is worth a revamp as it needs to be refocused around BBNJ practices. SM agreed that there is a need to review the membership as presently, the group is NOC dominated. **Action 68: HS, GS and SM** to restart this group. HS will also nominate the NOC samples specialist.

## 7. Technology Roadmap – next edition

- 7.1 The TRM is in final draft at the moment and will be circulated after this meeting for publishing at the end of the summer.

### AoB

TS asked the Board to take a look at the ToRs and referred to a schematic which shows how MFAB fits into the various processes around ocean-going equipment.

**Action 69: All**

### Actions

62	Merge the UWG and DWG and include as agenda item for autumn meeting.	HO, HS, JP
63	Hold UWG meeting before next MFAB	JP
64	Circulate membership of UWG and DWG to Board and then launch open call for new members.	HO/JP
65	Write short report about the Rock Store survey and include as agenda item at next meeting.	SM, JP
66	Leads of WGs should include the TRM in their aims and objectives at the top level.	JP
67	Invite BAS's Dr Sophie Fielding to be an ex officio member of MFAB and the BAS equivalent of NMF.	TS, JP
68	Review the membership of the sampling working group and restart with focus around BBNJ.	HS, GS, SM
69	Look at ToRs to see how MFAB operates around ocean-going equipment.	All