

Marine Facilities Advisory Board 9th May 2017

National Oceanography Centre, Access Grid Room

Prof Mark Inall, SAMS – Chairman (MI)

Colin Day, National Oceanography Centre (CD)
Dr Sophie Fielding, British Antarctic Survey (SF)
Robert Gatliff, British Geological Survey (RG)
John Hall MBE, British Antarctic Survey (JH)
Dr Maarten Furlong, National Oceanography Centre (MF)
Prof Angela Hatton, National Oceanography Centre (ADH)
Andy Henson, National Oceanography Centre (AH)
Prof Karen Heywood, University of East Anglia (KH)
Dr Erica Koning, Royal Netherlands Institute for Sea Research (EK)
Dr Leigh Marsh, National Oceanography Centre (LM)
Prof Christine Peirce, University of Durham (CP)
Julie Pringle-Stewart, National Oceanography Centre (JPS)
Leigh Storey, National Oceanography Centre (LS)
Dr Andy Rees, Plymouth Marine Laboratory (AR)
Dr Mike Webb, Natural Environment Research Council (MW)
Prof Russell Wynn, National Oceanography Centre (RW)

Secretariat: Jackie Pearson, National Oceanography Centre (JP)

Thanks to Dr Marsh for assistance with note taking.

Please note that this document is a draft note of the meeting. Pending formal approval at the next meeting of the MFAB a full minute will be published.

Item 1 Welcome and meeting minutes from April 2016

- 1.1 MI reminded the Board of the terms of reference and advised that the opinions of MFAB go to the Cruise Programming Executive Board (CPEB). MI asked about the mechanism for this and also, whether there were any items for *Any Other Business*. None were advised. Phil Nightingale (PN) had provided apologies for being unavailable to attend this meeting.
- 1.2 The minutes need to reflect that PN and AR attended. Jackie covered the actions and confirmed that MFAB had had a presence at the NOC Association and *Challenger* meetings via a poster and the new leaflet. The Terms of Reference have been published on the MFAB web site. All agenda items requested are included today.
- 1.3 The Marine Autonomous Systems (MAS) business case has been amended but not finally signed off yet. Julie confirmed that there had been 'sign off' of a version in 2016.

- 1.4 There is a meeting on 23rd and 24th May about the RRS *Sir David Attenborough* (SDA) cruise planning and workshop in Cammell Laird. The NOC is not represented on the NPRV project board but there is an NMF presence (Colin Day) on the sub-group (“NPRV associated projects”) that is purchasing marine equipment.
- 1.5 LS agreed to alert MI if there are any forward-looking issues. It was queried whether the CPEB had reached a view on the fate of Autosub3 (PMN – CPEB have agreed that AS3 will be removed from the NMEP. 3 x Autosub Long Range platforms will be bought into the NMEP from 31 Mar 18. AS6000Mk2 will be introduced into the NMEP by 2021 replacing the under-ice capability lost with the retirement of AS3).
- 1.6 The Board discussed the Marine Environment Interaction Policy paper which had been submitted to the Cruise Programme Review Group (CPRG). MFAB needs to endorse this paper. Every time a NERC ships goes to sea, there should be an environmental impact assessment (EIA). We should be leading on this and showing that we are assessing the impact of activities, each time equipment is deployed into the ocean. The paper needs to be shared with members of the MFAB with a request that they confirm their endorsement. CP advised that the JNCC has issued an updated set of guidelines which now include electromagnetic sources. Leigh confirmed that all NERC scientists are required to produce an EIA every time. LS agreed to write a cover note and send it to CP before going to the Secretariat for circulating. **Action: Secretariat/LS (PMN – the MEIP has been endorsed by the CPEB and an options appraisal for introduction will be developed by BAS, NMF and GEF-D and presented to NERC by Sep 18).**

Item 2 Marine Facilities Planning System

- 2.1 We need to highlight the profile of the Marine Facilities Planning system via the membership of the NOC Association, MFAB, CPRG, Challenger Wave etc. **Action: Secretariat**
- 2.2 CD is updating the MFP as the drivers need to be modified/updated. The NOC has been working with partners within the Ocean Facilities Exchange Group (OFEG) – e.g. the Royal Netherlands Institute for Sea Research (NIOZ) to develop a joint-funded commercial platform. NIOZ has been using the MFP platform for 18 months. NOC used the 2016 cruise programme as a shadow period. The new system went live in April with 2017/18 and the old MFP is now shadowing. The new system covers all the functionality of the old MFP and P.I.’s can also complete the Ship-time and Marine Equipment (SME) form through the same platform. The functionality includes inventory management/staff operations or resourcing/multiple draft plans. A comprehensive reporting module is in its development phase. A link to the website - <https://nerc.marinefacilitiesplanning.com>
- 2.3 MI asked whether P.I.s can complete a Post Cruise Assessment (PCA) through the Marine Facilities Planning page. CD explained that the PCA is a web-based system that can be integrated into the project management

module. A P.I can complete online whilst on the ship. It is comprehensive but not yet functional. SF asked how staff will be able to access the MFP whilst on the ship with limited bandwidth which is 256kb -> 1MB. CD advised that the bandwidth has been upgraded 256kb -> 1MB. The speed of the system is viable as the various pages on the system are 'cached' reducing repeated load time; running the system on the JCR has shown to be ok, and the *Discovery* and *Cook* also have planned upgrades to their ships bandwidth.

- 2.4 AR asked if budgets and costing SME's could also be completed through the MFP. CD said this will be possible in the future. The draft 'phase-1' funding is an option. MI said this would be good as 70% of grants that require a costing are not funded. This would take the pressure off NMF. A provisional costing tool is needed. AR asked whether scientists have access to the MFP module. CD advised they do but this does depend on their access level. P.I's can set up their own equipment list. The community having full sight of the NMEP is important. He asked how it will be possible to advise of this development across the community and queried whether this should be done via MFAB. CD suggested maybe the CPRG. He added that all the old SME's have now been transferred across. KH asked that NOC updates the NERC links and NOC pages. **Action: Communications Team (LM)**

Item 3 Technology Road Map

- 3.1 AH advised he had co-written the Technology Road Map (TRM) with MF and colleagues from NMF. The plan states how we aim to spend capital investment over the next five years. There had been some input from the science community but AH advised that NMF is also seeking views from MFAB.
- 3.2 LS advised NERC provide NMF with a capital budget to cover lost, broken or obsolete items within the NMEP. This is linked to the TRM and can be flexed to accommodate requests from the science community if MFAB provides that advice.
- 3.3 KH commented on the inclusion of different shades of blue in the document and noted that the document would benefit from some re-formatting. **Action: Andy Henson/Secretariat**
- 3.4 JH commented that the road map is "*a great document*". AH noted that there had not been much feedback to date. SF asked how the document could be made more widely available and also, whether there are any issues to note, regarding commercial sensitivity. LS advised it would be possible to make a version of the road map available that excludes the spreadsheet of spend. RW said that we can all promote the document and that it will be helpful in countering the engineering push and science pull. CD added that it is useful to have the perspective of the Ocean Facility Exchange Group. MF advised that we need to protect I.P so there is a need to be mindful of confidentiality. Final thoughts are also needed on the title.

- 3.5 KH added that it would be good to see the current and future capability but this may become out of date rapidly. The document needs to be dated and should advise that a new version will be prepared in 'x' years. Once the document is on the MFAB web site, we will seek further input on this. AR suggested that it could go on the MFAB and NF Marine Planning site and we could advise the marine community of its availability via the NERC marine list-server. Members could also make their own communities aware. JP is also working on the UK Marine Science and Marine Industry database. It would be good to make the Road Map and the database available as soon as possible. **Action: Secretariat**
- 3.6 LS advised that funding is used to replace equipment every year. Mark mentioned that some equipment that isn't currently on the NMEP list, should be. For example, the NERC BGS rockdrill. We could link the NMF Roadmap to the UK Marine Science and Marine Industry database. MI referred to a statement of concern in the document and queried whether this text should remain. There is also detail concerning the annual operating budget. MW advised that the capital mentioned should not be used for sensors. Once all of these queries have been resolved, the document can be published. **Action: LS, AH, Secretariat**
- 3.7 EK referred to the future capability of a virtual control room for ROVs. It would be good to talk to the Schmidt Ocean Institute about this as they have already done a lot of work on this. **Action: AH, LS**

Capital Expenditure Proposal Form

- 3.8 CP noted the difficulty for users proposing new equipment purchases to discover what their carbon footprint might be - either in manufacture or use. Actually, the biggest contributor to the carbon footprint is in using a ship. The question is thus relatively meaningless. A more appropriate and useful piece of information to have might be the environmental impact of use of said proposed item (what issues or implications does it present for the NMEP to have that included in it for example), and if there was any special issues involved in its use that the vessel operator or NMEP might need to consider upfront and appraise for impact before purchase that may even preclude purchase – i.e is it radioactive, does it use a radiation source, has it very specific power requirements incompatible with that on the vessels, does it run on lithium batteries or similar things that posed a fire or explosion risk, does it run using inherent lithium batteries that thus make it un-airfreightable etc. In other words, the operational logistical impact. **Action: Secretariat**
- 3.9 Sometimes there is not much money to buy new equipment so this is why we need to generate ideas from our community that should be returned to JP for collation. Leigh Storey queried how we would then review this? The Joint Capital Advisory Group (JCAG) does this already. MI asked if the community feeds comment into JCAG? Mike commented it would be a shame if we can't show what might be possible for NMEP if we had some more funding. MI suggested creating a list of items of value up to £150k and LS agreed this would be useful. CD asked whether NMF would have the autonomy to

prioritise? MI said MFAB would provide a view on proposals submitted. Proposals to be collated in advance of the meeting for review. **Action: Secretariat**

- 3.9.1 LS advised that NMF collates the number of times that equipment is used and is able to advise how long equipment has been on the shelf and how long it's been in the water. We can, for example, look at the number of gliders we have and see how much they are used. The CPRG get information on usage.

Item 4 NC LRI commissioning and the increasing use of MAS platforms

- 4.1 LS advised that whilst NMF will continue to operate two ships, the number of MAS platforms will increase. The Ship Funding Model requires NMF to charter ships should a shortfall in flat funding arise. EK commented that chartering requires flexibility within the programme. JH commented that there are often ships alongside with no work so, is there much requirement for this or does the NERC fleet have a unique selling point?

Item 5 Non-NMEP capital equipment

5a. Future equipment planning

- 5.1 There was an action at the last meeting about ideas at the Science Programme Advisory Group. This information needs to be captured and transferred to MFAB.

It is important to justify the use of capital. RW spoke about the spreadsheet and suggested it could be driven by input from the equipment form discussed earlier?

MW agreed that there is an element of opportunity here - sometimes there is an underspend. MI agreed that it would be useful for NERC (Mike Webb) to have the list of equipment submitted by the community, prior to its prioritisation by MFAB. MW agreed but advised it would be good to have endorsement from the Chair of MFAB which would lend weight to this in NERC. **Action: Secretariat**

- 5.2 MI said that if the spreadsheet is labour intensive, then we may not continue with the form. We need to discuss with NERC and establish how easy it is to prepare and then make a decision. **Action: Secretariat**
- 5.3 MI referred to the purchase costs for the RRS *Sir David Attenborough* (SDA), noting that the figure is less than we thought but does refer to portable equipment. Where should this equipment be? We need to think about how the UK might manage this in the future.
- 5.4 CD had been asked to provide input to the project board but noted that NMF's input, via CD, had not been exhaustive. He has provided information but has not received feedback, so it is not clear how much influence NMF has had on

equipment purchased. It is important to avoid duplication of equipment. Colin agreed and cited the example of seismic compressor containers. What containers does NMF have and are they compatible? There is also the question of whether this is the best use of funding, to develop the UK assets of containers? With RRS *Discovery*, there are limitations in terms of programming in large seismic capability, particularly in terms of having enough space.

- 5.5 SF noted the remit advised by Ray Leakey about the polar research vessel's capability, where the capital money is being spent to ensure that the SDA can continue to undertake science that is already undertaken frequently on the RRS *James Clark Ross*. In some cases this is where capabilities that were inbuilt on the JCR, have now become containerised (e.g. air guns), or where frequent use would remove the equipment from the NMEP for long periods of time (e.g. CTD).
- 5.6 MI raised the situation when there is tension between a portable item and what might be purchased solely for the SDA or more widely used, where can the consideration be made? Mike said that there are difficulties with the SDA around its power systems – for example, we need to be able to convert equipment that needs to be transferred between ships. JH advised that much of the equipment has been ordered now. RW said that in terms of portable items, there are similar items in the NMEP now. This could have implications for space.
- 5.7 JH was at a meeting on 27th April for the project managers for the SDA. The decision about where the equipment will go, will be made at the end of service period for the ship. NERC's Paul Fox had emphasised that the ship and equipment is available for all. We just have to make a decision on where equipment will be homed. SF said that the CPRG used to have champions for issues. The challenge now, is determining where existing capability of the JCR can be transferred to the SDA. KH added that there is no issue provided it is clear who is responsible for the equipment. There is also a cost issue for NOC and BAS to deal with - the resource for maintaining new capital equipment. The Board recognised the issue of cost that BAS, NMF and NERC have to discuss.
- 5.8 CD confirmed that there is a stakeholder workshop but nothing to report yet.

6. OCEANIDS capital project

- 6.1 LS gave an overview of the developments: Autosub Long Range1500, Autosub6000 (Mark 2) and the C2 project (developing integrated command and control tools to pilot the MARS fleet.)
- 6.2 The ALR 1500 design phase programme started in 2018. All assets will be added to the NMEP on completion of the Oceanids programme. Further development will be done via grant awards and will be added to the SME process. The design phase of the Autosub6000 Mark 2 has started with trials anticipated in 2019. Russ Wynn will be working with Leigh Marsh on raising

awareness of these new vehicles in the NMEP, with our community. **Action RW, LM**

7. Centres of Excellence

- 7.1 LS explained that this had been proposed through the Research Vessels Working Group (RVWG) which is a subcommittee of the MSCC. The RVWG meets every six months. BAS and NMF operate global class vessels; the rest of our community operate smaller class vessels but there is an aspiration to share costs and make sure there is not spare capacity in the UK.
- 7.2 As a means to maximise efficiency, the Centre of Excellence idea is about sharing, more effectively, the capability on UK ships and smaller vessels effectively. This centre would be maintained as UK capability. LS's team has prepared a matrix to demonstrate this but the challenge is how to share because of the different capabilities.

8. Update on RRS *Discovery* and RRS *James Cook*

- 8.1 LS reported that the **RRS *James Cook*** had reach her tenth year of service and that currently, there are no major issues. For 2017, a refit is planned to include an upgrade to the winch control systems. There will also be an upgrade to communications and the multi-beam system.
- 8.2 **RRS *Discovery*** - there will be work on the Science Verification Plan (SVP) and delivery of seismics, coring and ROV operations. A refit is planned for 2017, during which there will be an upgrade to communications equipment - there is an on-going review to see whether the current bandwidth is sufficient. The lifeboats are for 54 persons and there has been a requirement for more berths due to the multidisciplinary nature of expeditions, thus additional engineers and technicians are needed. The ship has Tier 1 and Tier 2 training berths.
- 8.3 There was a suggestion to replace 'Science Verification Plan' with Capability Verification Plan'. Currently, the RRS *James Cook* is undertaking seismic work.
- 8.4 CP noted that embedded in the SVP seismic component was an indication that the *Discovery* is mains "humming" – i.e is radiating a 50 Hz electrical signal. If that is true, it is a significant problem for a swath of disciplines. Christine asked if, on delivery, *Discovery* had undergone noise radiance tests, and if so what they revealed in this context. At this point, Mark advised that this topic was out of the scope of this meeting and it is understood that the issue is being addressed by NMF.

Post meeting note from LS

RRS *Discovery* did not undertake noise ranging trials during the build SATs and there hasn't been any funding since. We believe that the 50Hz issue is on the RRS

James Cook and this has been isolated to a cooling pump motor – LS will report back on this issue at the next MFAB, pending results.

9. MFAB membership profile

- 9.1 ADH asked if there was anyone covering deep-water? Sophie also noted that there is a gap in benthic exploration. Karen asked whether we need a meteorologist to cover air chemistry. We need to seek new members to cover these areas. **Action: Any suggestions should be sent to JP.**
- 9.2 Should we have succession planning? We are just past three years so members need to advise Mark whether they wish to come to the end of serving on the Board. **Action: Board members, to comment to MI, cc Secretariat**
- 9.3 SF suggested widening the number of scientists involved. ADH suggested that members of the Board need to ask their own communities about what they want brought to the MFAB meetings. We should prompt the community two months before the next meeting to ask for their comments. **Action: Secretariat**
- 9.4 There was a suggestion to send out some MFAB leaflets to members **Action: Secretariat**

10 AoB

- 10.1 Mark commented on the implications of BREXIT. The last meeting of OEEG went well and good relations and coordination are still in place. There needs to be discussion around Autosub3 retiring/decommissioning soon. A paper will be circulated soon. There may be a gap in capability now until the 6000 Mark II goes on-line which may impact science programmes. There are two funded projects that will be affected. NERC's Professor Tim Wheeler will need to make a decision on this. A paper will seek our views. The 'under-ice' capability will be affected. The vehicle is being retired due to issues with funding, expertise and reliability.

Actions summary

Item	Detail	Responsible
1.6	Write cover note for the Marine Environment Interaction Policy and send it to CP before asking the Secretariat to circulate to the Board.	Leigh Storey and Secretariat
2.1	Highlight the profile of the Marine Facilities Planning system via the NOC Association, MFAB, CPRG, Challenger Wave etc.	Secretariat
2.6	Profiling the new Marine Facilities Planning System – needs to be an update of links on the NERC and NOC pages.	Communications Team (Leigh Marsh)
3.3	Technology Road Map (TRM) There are different shades of blue and it needs some work on the formatting.	Andy Henson? Secretariat?

3.5	TRM - Advise marine community via NERC marine list-server. Make the TRM and Marine Science and Marine Industry database available, as soon as possible.	Secretariat
3.6	TRM Remove spreadsheet on spend and consider issues of confidentiality. Does the title need to be changed? Should we retain the statement of concern? There is detail on the operating budget. Resolve these items and then publish.	Leigh Storey, Andy Henson, Secretariat
3.7	TRM It would be good to talk to the Schmidt Ocean Institute about their work on a virtual control room for ROVs.	Leigh Storey, Andy Henson
3.8	Capital Expenditure Proposal Form Revise in line with CP's suggestion.	Secretariat
3.9	Capital Expenditure Proposal Form Proposals to be collated in advance of the meeting for review.	Secretariat
5.1	Future Equipment Planning NERC (Mike Webb) to receive list of equipment requests submitted by the community, prior to its prioritisation by MFAB.	Secretariat
5.2	Non-NMEP Capital Equipment Check with NERC how labour intensive production of the spreadsheet is, as we may not continue to request it.	Secretariat
6.2	Raise awareness of the new vehicles in the NMEP, with our community.	Russ Wynn, Leigh Marsh
9.1	Membership profile We need new members to cover deep-water, benthic exploration, air chemistry.	Suggestions from all, to go to the Secretariat for collation for the Chair.
9.2	Membership profile Members to advise MI whether they wish to come to the end of serving on the Board.	All to comment to Mark Inall. Please cc to Secretariat
9.3	Membership profile Community to be encouraged to feed ideas to MFAB. Advise community of MFAB meetings, via members, two months in advance.	All, Secretariat
9.4	Membership profile Send MFAB leaflets to members for distribution to community	All, Secretariat