# AusSeabed Workshop 4 Minutes

3rd July 2018, 18:30-21:55

Australian Marine Science Association (AMSA) conference 2018, Adelaide

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| Coordinators: | Kim Picard (GA), Dan Ierodiaconou (Deakin Uni), Nathan Quadros & Sam Amirebrahimi (FrontierSI), Ralph Talbot-Smith (WA DoT) |
| Minutes: | **Andrew Carroll (GA), Aero Leplastrier (GA)** |

The minutes presented here represent a summary of the discussions and outcomes that took place during the 4th AusSeabed workshop. The minutes have been organised to address the workshop objectives (below) with related Outcomes and Actions listed first. While each workshop session differed slightly in terms of activities, the summaries included here have been standardised to include a brief summary of the topic and a condensed Q&A section. For detailed notes on the workshop proceedings, please refer to this document.

Objectives:

1. Present an update on the progress since the last workshops.
2. Complete a user needs analysis for the QA4MBES (multibeam data QA tool)
3. Discuss data discoverability and accessibility
4. Discuss governance and direction for the group
5. Discuss future activities, including Seabed 2030

**Actual Agenda**

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| 18:00 -18:30 | Participant arrival and Dinner (with presentation by Robin Beaman) |
| 18:30-18:45 | Update on AusSeabed progress and tasks (1)—Kim Picard/Aero Leplastrier |
| 18:45-19:50 | QA4MBES (2) – Nathan Quadros/Sam Amirebrahimi |
| 19:50-20:35 | Discoverability and accessibility (3)—Dan Ierodiaconou |
| 19:45-20:00 | Break |
| 21:00-21:20 | AusSeabed Governance (4)— Ralph Talbot-Smith |
| 21:20-21:55 | Other Business (Seabed 2030 & future plan) (5)—Kim Picard/Kevin McKay |
| 21:55 | Close of Meeting |

## Outcomes and Actions from workshop

| **2. QA4MBES** |
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| Workshop participants were updated on the development of QA4MBES tool and provided preliminary intel on their use of multibeam (MBES) and their need for a QA tool. |
| 1. The AusSeabed and broader seabed mapping community (expert and non-expert, first or end-users) should complete **the following survey** by **3 August, 2018**. |
| 2. FrontierSI will compile information and produce a report on the results, which will provide project guidance [*the results are also planned to be presented at Hydro18 conference Ed.*] |
| **3. Discoverability and accessibility** |
| Data coverages are wanted on the portal until proper data discovery tool is developed. Coverage should be supplied as a Polygon or Nav track shapefile and not a bounding box, and will contain contact details of custodians for data access purposes. |
| 1. Develop layer within next twelve months. |
| 2. Include all data coverage as long as data are accessible (or will be in the future) |
| 3. Develop an automated upload on the portal (if possible) |
| 4. Convince private industry of the benefits of sharing their data with us so that we can show coverage. |
| **4. AusSeabed Governance** |
| Workshop participants agreed that AusSeabed should be governed by a steering committee (SC) to provide a representative direction to the program and ensure transparency |
| 1. Volunteers to develop a “Terms of Reference” for AusSeabed governance, including SC nomination process for the roles within it.<br>(T. Ingleton, S. Nichol, A. Jordan, J. Daniell, B. Brooke, P. Hedge volunteered V. Lucieer, C. Waterson, N. Quadros, K. Austine, R. Talbot, E. Johnstone, and K. Picard) |
| 2. Alan Jordan and Neville Barrett to supply TOR templates from another recent working group |
| 3. Nominate steering committee (SC) once TOR is established |
| 4. Agree to the proposed biannual meeting structure |
| 5. SC will establish a clear strategy, means for data governance and without straying into technical detail. |
| **5. Seabed 2030** |
| AusSeabed should be a partner and put forward a representative as the conduit between AusSeabed and Seabed 2030 RDACCs |
| 1. Write a role description for a Seabed 2030 representative into the TOR |
| 2. Hold an election for a representative (due before October) |

## Pre-workshop: Presentation on the 100/30 m resolution bathymetry grids for Northern Australia (Robin Beaman)

**Summary:**

- New 100 m & 30 m grids available for Broome in WA to Arnhem Land in the Northern Territory, across the north-east Indian Ocean and Timor Sea to the Arafura Sea. Data was published at the end of June 2018.
- Data was derived from 107 multibeam surveys, 54 singlebeam surveys, 10 airborne lidar bathymetry surveys, 110 ENC tiles spot depths, the Intertidal Extents Model V1.0 DEM, Satellite derived bathymetry, and used the AusCoast VDT to adjust data to approximate the MSL vertical datum.
- The work offers a noticeable improvement on the AusBathyTopo (250 m) data.

Click **here** to access the presentation.

## AusSeabed update and progress (1)

**Activity summary**

AusSeabed program and website were officially launched on 30th of June 2018. During this session, Kim gave a presentation of the AusSeabed website, function, tools, and news. The data portal attached to AusSeabed (in development) drew particular interest.

Click **here** to access the presentation.

**Questions & Answers**

*Data portal*

*Question—Kam Austine: Will we have access to historical data?*

*Response—KP: Not yet, but that is something we are working on and need to discuss.*

*Question: Federal data or input from state government?*

*Response—KP: Both, will discuss later.*

*Website*

*Question (Sli.do, online question platform): The website is great, but shouldn't it have a vision statement, an outcome that AusSeabed is working towards?*

*Response—AL (revised): It does have some information about the initiative and the vision of the website click here. Will review whether or not people want this made more apparent in the next update of the website.*

# QA4MBES – a multibeam data QA and tender form tools (2)

**Activity summary**

Introduction:

Nathan Quadros gave an introduction to what QA4MBES is and will do for the community. The tool will follow the current QA4 suite (QA4LiDAR, QA4MoBILE, QA4UAV). QA4MBES will save time for multibeam experts, provide guidance to novices, and in general, streamline data flow to generate high-quality data that is appropriate for many uses. QA4MBES will be built in two phases: 1) a user-needs analysis and development of a tender/survey requirements form with integration of this form with the AusSeabed upcoming survey register and 2) development of QA checks and completion of the workflow to facilitate data submission. Phase 1 is underway and Phase 2 (yet to be funded) will be guided from the findings of phase 1.

Sam Amirebrahimi followed through with:

1) Demonstration:

A demonstration of what QA4MBES integrated to AusSeabed Survey Registration might look like. For example, during Step 1 of QA4MBES, the user will specify requirements to ensure data will be fit for purpose, enter or draw area of interest on an interactive map, enter basic information, which will be used to populate the AusSeabed upcoming survey register and if needed, a tender form. The information gathered here will then be used post-survey for the data QA and submission step.

Click **here** to access the presentation.

2) Preliminary user survey:

An interactive activity to gather preliminary information that will be taken into account in a broader, more complete user-needs analysis undertaken from the input of all into this survey. This analysis will guide the development of an appropriate QA4MBES software.

Click **here** to access the poll results.

**Questions & Answers:**

*Question – Adam Lewis: What is the next step to polish it up, to improve it? Also, does it help people to submit data, or set up a portal for the data to be displayed on?*

*Response – SA: The first step for improvement is community engagement to ensure that the information captured is appropriate in regards to quantity and purpose. It will help people acquire, deliver and use the data in a streamlined manner.*

*Question – Scott Nichol: Are all the fields [in the tender form] compulsory?*

*Response – KP: No. If you know what data and equipment specifications you need for your data acquisition you can go straight to the survey register.*

*DI – It is also an opportunity for the community to establish what the standards are and the level of detail required to meet the benchmark.*

*NQ – This information will be gathered by conducting interviews with the community to help inform process.*

*RTS: Only looking at from data collector point of view, what about the user point of view?*

**Comment: QA4MBES team need to emphasise how it will make life easier for the partners of AusSeabed and how would it work for, eg. the MNF or NSW?**

*Response: "As end-users of the data, MNF and NSW can use QA4MBES to establish the technical requirements for their projects. They can also ensure the data meets these requirements by running the QA checks after the data is delivered. QA4MBES aims to also be a linkage component in the AusSeabed data sharing infrastructure, in which it will be used by 'local hubs' to submit data to the 'AusSeabed central hub'. This will ensure data and system interoperability.*

*QA4MBES will lower the risk of miscommunication between supplier and end-user, and help non-technical people to order data to a general standard. It will save time in setting up the project and also provide suppliers with specifications they are familiar with. Overall, the project is aimed at supporting the philosophy of "collect once use many times".*

## Data discoverability and accessibility (3)

**Activity summary**

Dan introduced the activity highlighting that the challenge in data discoverability and accessibility is addressing where we'll be in 5-6 years. We need to store and manage data with the future in mind, not just the present. The objectives of this activity were to decide on how to store and manage data and who will lead the compilation of data coverage as an immediate activity. This activity was divided into two parts:

1) Presentation

Kim and Graham Hammond presented on a proposed data management infrastructure and on the operation and feasibility of a SIMILAR (not identical) infrastructure, called ELVIS, currently run out of GA. The proposed AusSeabed data infrastructure model will:

- revolve around a central hub (managed by GA) that feeds into the AusSeabed portal displaying all that it and the local hubs hold
- allow data to be submitted to the National Hub and processed or maintained in your entity's infrastructure, which would then act as a local hub, feeding data through a QA process into the National hub for display on the website portal
- Allow data users to access the AusSeabed portal which would act like a data delivery service.
- Enable deep archive storage (available in perpetuity as a raw file to original submitter)
- Ensure security , functional redundancy through distributed platform, transparency, provenance, retention of custodianship, deep archive, standardisation of platform and data

Since the last workshop, GA progressed the development of the point cloud system (presented by Johnathan Kool) by contracting an Apache Spark (open-source cluster-computing framework) specialist company to develop data readers that will ultimately provide a high powered unified analytics engine for processing big data.

ELVIS – Elevation Foundation Spatial Data is an existing GA-managed model providing a discrete similar example for the proposed AusSeabed data infrastructure. The ELVIS framework:

- Stores data in AWS but collaborators have and manage their own buckets.
- Users submit data requests through Elvis portal, which redirects requests to a "warehouse" that 'clips and ships' data via FME (a "Factory" for custom requests) and emails link back to user.
- Delivers 4000+ orders per month from ~ 40 TB of free available data. Collects statistics on data user field.
- Adding jurisdictional data doesn't add hugely to the cost (compared to just having GA data) since rates reduce with increase amount of data. Additionally, cost of invoicing would be more than the realised benefit. About $ 22,000 annually.
- Requires 3 staff, a manager, data manager and cloud / FME technical developer.

Click **here** to access the presentation.

**Questions & Answers:**

*Question: Graham, how do you value the data – put a cost on it?*

*Response – GH: That's an estimate based on looking at what we would pay for a survey per square kilometre and we extend that out to the coverage we have from the collaborators.*

*Question – Adrian Flynn: Bathymetry is just negative elevation, right? I can image that there would be a great use for managers to be able to think about that simple thing of being able to draw a polygon of what's there to actually have the coastal lidar with the bathymetry so that the manager is getting the intertidal and coastal environment. So would this work for bathymetry?*

*Response – KP: Yes, we are looking to merge it all together. The bathymetry is everything from where the water starts to the deep and the lidar is on the land. We want to have it seamless. It's just that the communities are slightly different at the moment, but we are obviously working with the elevation people to bring it all together.*

*Response – DI: It's about having that warehouse that's common between all of us you have a bathymetry shop, you have an elevation shop and you have one that does both.*

*Question – Adam Lewis: Are we delivering Point clouds as well? Is the uptake more and more points?*

*Response – GH: No its probably twice, the 1 m dem is the biggest and after that point clouds.*

*Response – NQ: I think we will look at these graphs [for usage ed.] as being miniscule in a few years – once we add bathymetry, shallow LIDAR and all the states, we are going to be distributing more and more packets each day.*

Comment: Relationship with AODN is a key question for the data model

2) Group activity

Groups here discussed pros and cons of the data infrastructure model presented. They also discussed whether AusSeabed should deliver a survey coverage compilation and how to.

| Pros | Cons |
|---|---|
| Theme: Model similarity to ELVIS infrastructure<br>• Infrastructure exists and has been shown to work with states<br>• Easy to use<br>• Cost savings on delivery<br>• Basic concept is sound<br>• Redundancy<br>• Custodianship preserved<br>• Access to big data<br>• Everything is centralised and available through the same portal<br>• Open data | Theme: Integration of different data<br>• Could be vertical datum issues (on the fly datum transformation)<br>• LIDAR not currently integrated<br>• It may be difficult to ensure the accuracy of different datasets<br>• Unclear whether Bathy management at State level is at the point where easy integration could occur |
| Theme: AusSeabed functionality incorporated into ELVIS like infrastructure<br>• Prioritisation<br>• Collaboration potential<br>• Gap analysis<br>• De-sensitisation<br>• Safe, secure and centrally managed<br>• Storage at point and grid level<br>• Redundancy/backup | Theme: Users<br>• One off users may not use<br>• Ports may be reluctant to join the party<br>• QA of one off suppliers<br>• Latency for upload issues (con if slow)<br>• Double-handling on the QA/QC front |
| Theme: General positive ideas<br>• Can link across to AusSeabed through the AODN window<br>• Feed MNF transit lines into pre-survey planning<br>• Data model consistent with seamap Australia model that is delivering habitat shapefiles | Theme: Legality<br>• May be publishing moratoriums associated with data<br>• International boundaries issues – Law of the Sea |

**<u>Questions</u> from the discussions that need answering:**

1. *"need to identify the need for a strategy to address one off users who may not have the necessary incentive to use the portal."*
2. *"Do we need clarification on International boundaries and law of the sea issue"*
3. *"How do we manage the metadata, raw data, sidescan data etc., different data types?"*
4. *"Decision needs to be made on unsuitable, non-proprietary formats, i.e GSF for point? BAG for gridded data? Floating point geotiff*?
5. *"How do we deal with organisations who do not wish to show spatial coverage?"*
6. *"Who would be responsible for migrating historical data to ellipsoid*?"
6. *"How does It definitely can link across to the AODN window. Just a little unsure of the relationship between the AODN stuff that has a huge amount of bathymetry stuff on it already and how that fits in with the model."*

Response – DI : *" After quick discussion about that and the way we see is like Seamap Australia is in the AODN, it is just another shop. AusSeabed could be the central repository for that data (on the AusSeabed Server) and link in like Seamap Australia does to the AODN and potentially other data resources in the future"*

## Future activities and direction (4)

### 1. AusSeabed Governance

**Activity summary**

Ralph Talbot-Smith outlined the necessity for a steering committee to guide the direction and work program of the AusSeabed workgroup. Topics of discussion included the role of the committee, how long members should sit for, the election process, how to ensure a good representation from industry, universities, and government, frequency of meetings, and how often reporting back to the workgroup should occur.

- Possible meeting schedule:
    - An annual open meeting held at the annual AMSA conference and an associated one day workshop
    - Annual steering committee meeting some time from Nov – Feb

### 2. Seabed 2030

**Activity summary**

Kevin gave a run-down of the Seabed 2030 initiative – a program very similar to AusSeabed, but at a global scale. Australia intersects three of the Ocean regions (regional data assembly coordination and compilation, RDACC) that Seabed 2030 has divided the oceans into. Kevin is pushing that Australia only report to one RDACC for Pacific and Indian/Atlantic RDACCs (Southern Ocean RDACC stays independent) after which the onus is on the RDACC to share and distribute our data.

They are collecting a lot of data from Int. vessels transiting through the NZ EEZ. If the boats continued on through into Australian waters, Seabed 2030 will pass on the navigation track and bathymetry associated with this line (to AusSeabed), and wonder if we could make this a two-way relationship. The point was also raised that AusSeabed should be a partner and put forward a representative for the Australian region to participate in the Seabed 2030 regional meetings (next one is planned for October).

**Discussion overview**

*Paul Hedge: "Vanessa Lucieer is already a connection [through NESP – MBH] to Seabed 2030" also pointed out that it made sense that NESP be represented on the steering committee.*

*Tanya Whiteway: "I think a call should go out for nominations for the AusSeabed representative to be the Australian representative – then it can go to a vote"*

Group agreement with this statement.

*Ralph TS: "How much time would be involved for the representative?"*

*Kevin M: "It wouldn't take very much time, the agency would need to support time and effort but travel costs would be covered by Seabed 2030"*
*Ralph TS: "Need for the representative details/role be included in the terms of reference for the steering committee"*
*Kim: "The person who represents AusSeabed has a responsibility to be a two-way point of communication too"*

## 3. Presentation on IIC Academy IHO Cat B course

For this section, Robin Beaman planned on giving an update on the proposed IIC Academy IHO Cat B hydrographic course planned in Australia and open a discussion on possible other plans in place. However, due to the lack of time, this presentation was skipped. Please click **here** to access the presentation and email Robin if you have any questions or comments.

AusSeabed

**Attendees List**

| Company Name | First Name | Last Name |
|---|---|---|
| Australian Antarctic Division | Ursula | Harris |
| Acoustic imaging | Douglas | Bergersen |
| Australian Geospatial-Intelligence Office | Luke | Callcut |
| Australian Hydrographic Office | Chris | Waterson |
| CSIRO | Paul | Hedge |
| Curtin University | Iain | Parnum |
| Deakin University | Daniel | Ierodiaconou |
| Department of Environment, Land, Water & Planning | Lawrance | Ferns |
| NSW Department Primary Industry | Alan | Jordan |
| EGS Survey | Kam | Austine |
| Fathom Pacific pty ltd | Adrian | Flynn |
| FrontierSI | Sam | Amirebrahimi |
| FrontierSI | Nathan | Quadros |
| Fugro | Alex | Cowdery |
| Geoscience Australia | Andrew | Carroll |
| Geoscience Australia | Aero | Leplastrier |
| Geoscience Australia | Rachel | Nanson |
| Geoscience Australia | Scott | Nichol |
| Geoscience Australia | Kim | Picard |
| Geoscience Australia | Rachel | Przeslawski |
| Geoscience Australia | Justy | Siwabessy |
| Geoscience Australia | Adam | Lewis |
| Geoscience Australia | Tanya | Whiteway |
| Geoscience Australia | Brendan | Brooke |
| Geoscience Australia | Graham | Hammond |
| Geo-Ocean Horizons pty ltd | Roberta L | Rice |
| IXBLUE | David | Donohue |
| IXBLUE | Elizabeth | Johnstone |
| James Cook University | James | Daniell |
| James Cook University | Robin | Beaman |
| Macquarie University | Marta | Ribo |
| Moss Landing Marine Labs | Gary | Greene |
| National Institute Water & Atmosphere, NZ | Kevin | Mackay |
| NSW Department of Fisheries | Joel | Williams |
| NSW Office Environment & Heritage | Tim | Ingleton |
| OneTemp Pty Ltd | Tass | Peters |
| OneTemp Pty Ltd | Georgia | Sinclair |
| Parks Australia | Cath | Samson |
| Precision Hydrographic Services | Jennifer | Brindle |
| University of Sydney | Nader | Boutros |
| Western Australian Department of Transport | Ralph | Talbot-Smith |