



AUS
SEABED



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AusSeabed Annual Report

2018–2019

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ausseabed.gov.au

Overview

AusSeabed is a national seabed mapping coordination initiative governed by representatives from government, academic and private sectors. It started in late 2016 when government agencies came together to identify priority areas for seabed mapping. The momentum grew rapidly with the establishment of a technical working group to develop the [Australian Multibeam Guidelines](#) that set out standards for bathymetry data acquisition. AusSeabed followed shortly thereafter with its official launch in November 2018 and the establishment of a Steering Committee. The committee confirmed the mission for AusSeabed to improve the awareness, collection, quality, discoverability and accessibility of seabed mapping data. To achieve its mission, the AusSeabed program has identified three program themes and developed their associated annual work plans.

These themes are:

- Data Hub Program
- Tools, Guidelines, and Standards Program
- Outreach, Education, and Training Program.

In 2018-19, the AusSeabed program focused on the establishment of its governance structure and the development of the initial theme work plans. AusSeabed steering committee has taken an inclusive approach to defining the work plans, involving the broader AusSeabed community. Each program theme established working groups (WG) in support of the work plan and established an 18 month initial plan for completion (2019 to mid-2020).

This report provides the first annual review of AusSeabed activities that have taken place under the program themes with early outcomes from the program communicated and circulated to the broader community for comment and endorsement. The report is structured by program theme according to the initial work plan designed by the steering committee with an initial section focused on governance activities.

1 Overall Program

The governance work plan aims to establish a well-governed and enduring AusSeabed program. The work plan is on-track with early tasks completed (Table 1). This includes the delivery of:

- a strategic plan
- a governance model
- an initial work plan
- an annual report.

The only activity still in progress is the establishment of an executive governance board. A business case for the executive governance of AusSeabed was developed and endorsed by the Steering Committee and the AGM participants.

Table 1 AusSeabed program governance activities

Activity	Description	Participating Organisations	Intended completion	Status
Secure an ongoing program	Establish a governance model to secure ongoing funding for an enduring program	All	Ongoing	<ul style="list-style-type: none"> Establish the Steering committee and Terms of Reference (Nov 2018) Drafted (GA, AHO, CSIRO, AAD, AIMS) business case for the establishment of a high level 'board' to address ongoing funding (June 2019)
Governance	Finalise and execute governance model	All	Ongoing	<ul style="list-style-type: none"> Developed the Steering Committee Terms of Reference (Dec 2018) and endorsement by the community (Jan 2019) Set up quarterly steering committee meetings (executed Nov 2018, Apr 2019 and July 2019)
Strategic Plan	Development of the strategic plan for the program	All	July 2019	<p>Drafted plan and distributed to SC and ASB community for comments (April 2019)</p> <p>Finalised plan with endorsement by SC (July 2019)</p>
Annual work plan	Develop and endorse annual work plan for all program themes	Steering Committee (SC)	Jan 2019	Developed work plan and distributed to community (Feb 2019)
Annual reporting	Publish annual program report	Theme leaders (GA / FrontierSI, WA DoE)	June 2019	Completed (June 2019)

2 Data Hub Program Theme

The AusSeabed Data Hub program aims to develop a centralised system for data access, with links to data contributors. It will be governed by the data providers, owned by the community and will deliver a standard suite of freely available seabed related products. The Data Hub work plan comprises a list of priority tasks developed by the steering committee and the working group (WG) spanning 2018/19 and 2019/20. The Data Hub WG is open to new participants and presently comprises members from the Commonwealth government agencies, who have self-selected into tasks based on their experience and expertise. Progress on tasks was monitored through regular WG meetings.

The Data Hub work plan addressed a broad range of scoping and outreach activities that will assist in developing the data hub infrastructure, as well as tasks focused on the delivery and maintenance of datasets to the AusSeabed portal (Table 2). The work plan is on-track with most tasks well underway or completed. These include the discoverability and accessibility of existing datasets and layers on the AusSeabed portal and other portals, such as AODN and ELVIS, the elevation system information (Figure 1), the completion of workshops and training to identify data standards and ways to automate the data quality assurance and processing pipeline.

Highlights related to data accessibility include:

- Over 1600 users accessing the AusSeabed website with the Data and Education page being the most accessed
- Over 1800 instances of data download (AusSeabed, AODN, ELVIS combined; Figure 1)
- Development of functions to query sediment sample layer in AusSeabed, in conjunction with other available layers.

The successful delivery of the Data Hub working group activities in 2018/19 is contributing the following to the Australian seabed mapping community:

- The improved discoverability and accessibility of published seabed mapping data through the delivery of datasets and layers into various portals
- The delivery of standardised and consistent products through the identification of data standards and specifications
- The improved coordination and collaboration amongst the community through the various workshops and delivery of the upcoming surveys dataset.

Table 2 AusSeabed Data Hub program theme (led by Kim Picard, Geoscience Australia)

Activity (Development phase)	Activity description	Participating Organisations	Intended completion	Update
Survey extents coverage (problem scope)	<ol style="list-style-type: none"> 1. Rebuild coverage polygons based on representative grid size. 2. Review attribute information 3. Update/collate other missing coverage 	Geoscience Australia & other collaborators	Ongoing	<ol style="list-style-type: none"> 1. In progress 2. TBD 3. Collaborators coverage received, awaiting publication on the web.
AusSeabed communication (problem scope)	Establish data hub working group and set up regular meetings.	Geoscience Australia	Ongoing	Bimonthly meetings established, executed Feb, April, and June 2019.
Metadata standards (problem scope)	Scope existing metadata standards to enable interoperability between Australian and international collaborators.	Geoscience Australia	July 2019	Existing metadata standards in-use and proposed for AusSeabed compiled by GA and distributed to collaborators for workshop discussion (May 2019).
Data formats (problem scope)	Scope existing formats to understand the diversity and develop a plan to facilitate data QA and ingestion into the data hub.	CSIRO/ Guardian Geomatics/ Geoscience Australia	July 2019	<ul style="list-style-type: none"> • Compilation and publication of MBES user-need analysis completed by FrontierSI, GA and Deakin (June 2019). • Existing data formats in-use and proposed for AusSeabed compiled by GA, Guardian Geomatics and Australian Hydrographic Office, and distributed to collaborators for workshop discussion (May 2019).
Local portal integration into the AusSeabed Data Hub (problem scope)	Each agency planning to be a local hub to scope the integration to the Data Hub	CSIRO / GA / AAD / AHO / WA DoT	TBD	Not yet underway
Standards establishment (Plan development)	Establish data format and metadata standards to facilitate data QA and ingestion (Plan development)	All collaborators	July 2019	<ul style="list-style-type: none"> • Data standards workshop held at GA (May 2019) • Workshop minutes drafted with proposed standards agreed (June 2019)
Scope integration of all data hub product suites (Plan development)	Develop a plan to integrate all product suites (bathymetry, backscatter, sub-bottom profile and sediment), starting with bathymetry and backscatter products	Unassigned	July 2019	<ul style="list-style-type: none"> • Live data hub roadmap developed and circulated to data hub working group and Steering Committee (March 2019). • Roadmap socialised with broader AusSeabed community through various workshops (May 2019)

AusSeabed data hub functionality (Implementation)	Refer to Data Hub roadmap	Geoscience Australia		Live data hub roadmap developed (March 2019) and circulated to Steering Committee (June 2019).
Portal maintenance and layer inclusion (Implementation)	<ol style="list-style-type: none"> Continuously update the portal with new or updated layers and datasets (e.g. marine parks, state shapes, other WMS) Scoping redesign and migration of portal to optimise visualisation and delivery 	Geoscience Australia	Ongoing	<ol style="list-style-type: none"> Added EEZ, State boundaries, Marine Parks, Available bathy compilation polygons, NIDEM, 5m CSIRO bathy, 30m GBR and N Aus, 50m, Geomorphology, Sediments) Scoping and transitioning to GA EFTF portal to increase capability and functionalities
ENC S-100 onto portal (Implementation)	Investigate release of ENC and integration on the portal	Unassigned		
Machine learning to optimise data processing and cleaning (Implementation)	Investigate the capability of tools that are available or in development	Geoscience Australia / CSIRO	December 2019	Tested Caris AI tool (May 2019).
Antarctic data hub data exchange (Implementation)	??	Australian Antarctic Division / Geoscience Australia		TBD
Update bathymetry model (Next phase)	Update Geoscience Australia 2009 national bathymetry model	Unassigned	Once hub operational	TBD
Develop functionalities to inform survey planning phase (Next phase)	Enable extraction of data according to survey planning polygon (e.g. existing data in a permit area).	FrontierSI / Geoscience Australia		See TSG for more details
Sediments (Next phase)	<ol style="list-style-type: none"> Develop a standard operating procedure (SOP) for sediment sample acquisition and analysis that will be delivered through the GA MARS database Complete audit of sediment samples held at GA that are not in the MARS database Publish MARS as a live layer onto the portal 	Geoscience Australia, AHO	Ongoing	<ol style="list-style-type: none"> SOP published through NESP Marine Biodiversity Hub. SOP implemented with AHO Completed June 2019 MARS snapshot published on AusSeabed and prototype analytics functionality under development
Line planning tool (Next phase)	Make accessible in GitHub then integrate to Survey Planning tool	Guardian Geomatics / GA / FrontierSI	Dec 2019	<ul style="list-style-type: none"> Tool published on GitHub (2019) and being tested for integration in the ASB tools in development. Moved to TSG

Maintenance/upkeep of website and portal (Next phase)	Review website information and update as required (e.g. Permitting requirements, Licencing, Authorities)	Unassigned	Ongoing	TBD
Upkeep and maintain submitted datasets (Next phase)		Geoscience Australia	Ongoing	<ul style="list-style-type: none"> Ongoing in the GA established protocol. New collection management in-development See also Portal maintenance and layer inclusion update
Integration into external systems: AODN and Seabed 2030	Develop SOP to integrate / provide data to the AODN and GEBCO		Ongoing	<ul style="list-style-type: none"> Integrated first bathymetry layers and sediment layers to the AODN portal (March 2019). Review and development of the workflow for AODN in progress

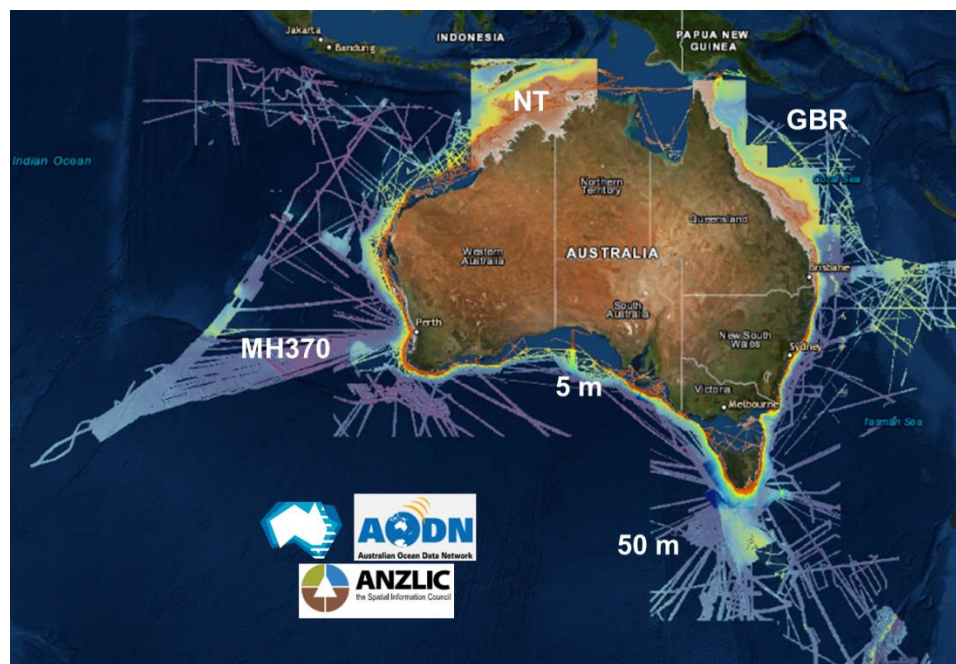
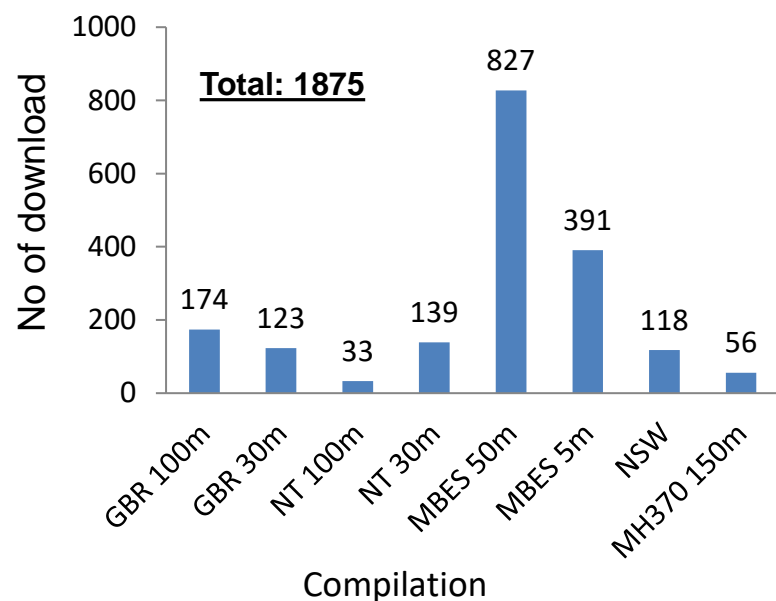


Figure 1 Download combined statistics between January and July 2019 for bathymetry compilation dataset (shown on the image on the right) available on AusSeabed, AODN and ELVIS portals. Statistics for individual survey data was not available.

3 Tools, Guidelines & Standards Program Theme

The AusSeabed Tools, Guidelines and Standards (TGS) program aims to develop community-ready resources and tools which enhance the quality, consistency and ease of seabed mapping. The initial TGS work plan represents priority tasks that were identified at the November 2018 AusSeabed Steering Committee meeting. These tasks were then communicated to the AusSeabed community with volunteers called to form the TGS WG. The WG is open to new participants and presently comprises members from a broad cross-section of AusSeabed community. The members have self-selected into tasks based on their experience and expertise. Each task has been assigned a lead for monitoring and reporting purposes.

The work plan addresses a broad range of guidance material for seabed mapping, covering topics such as vertical datum, crowd-sourcing, LiDAR, satellite-derived bathymetry, MBES, data processing and performance testing. In summary, the work program is now well-defined and coordinated. It is on-track showing initial progress made within the highest priority activities. These include:

- publication of a study on Multibeam Echo Sounder (MBES) user needs in Australia
- the delivery of the AusSeabed Survey and Planning Tool prototype
- the development of a proof-of-concept for an AusSeabed QA tool, which included collaboration with NOAA and the Centre for Coastal and Ocean Mapping – University of New Hampshire
- the review of the seabed mapping priority map.

The successful delivery of the TGS working group activities in 2018/19 is contributing the following to the Australian seabed mapping community:

- Guide the coverage of seabed mapping to the highest priority areas through the Priority Map Review
- Provide coordination and guidance to non-technical and inexperienced seabed mapping users through a Survey and Planning Tool.

Table 3 Tools, Guidelines and Standards Work Plan Update (led by Nathan Quadros, FrontierSI)

Activity	Activity description	Participating Organisations	Intended completion	Update
Priority Map Review	In 2017, a map showing government priority areas for seabed mapping data was published. This activity aims to update these priorities based on the present needs.	Geoscience Australia and Parks Australia	Ongoing	Revised and web update pending resources
Database of Reference Surfaces	The reference surface initiative is a program to create a series of highly accurate vertical surfaces with a known uncertainty around Australia. This initiative will provide a standardized vertical verification capability (and horizontal if possible), which will allow a direct comparison between different survey vessels and between the same systems over multiple survey seasons.	Australian Hydrographic Office	Ongoing	TBD
ASB Planning Tool for MBES data	The MBES ASB Planning Tool will assist the AusSeabed community to develop MBES (and related seabed mapping technology) survey requirements through an assisted online workflow. The workflow will also enable industry to submit survey requests to the Hydroscheme Industry Partnership Program (HIPP).	GA, FrontierSI, AHO, Deakin University	July 2019	<ul style="list-style-type: none"> • Minimum viable product developed and launched at AMSA (July 2019). • Completed MBES user-needs survey and analysis. Report published on AusSeabed website (May 2019) • Pending: Extraction of upcoming surveys planned using the tool and integration to ASB portal.
ASB QA Tool for MBES data	The QA process for MBES surveys will ensure data products are fit-for-purpose and meet a minimum ASB quality standard. The software will identify and design key metrics to assess MBES data quality, with the supporting automated algorithms and processes.	GA, FrontierSI, AHO, CSIRO, NOAA, CCOM	July 2019	<ul style="list-style-type: none"> • Developed prototype QA process (Apr 2019) • Established collaboration with CCOM and NOAA to leverage of existing tools (Apr 2019) and GA hosted two staff for one month (Jun-Jul 2019). • Initiated development of automated pipeline and additional checks for Raw (L0) and Gridded (L3) products (June 2019)

MBES Performance Test Compilation	The performance test compilation will look to create a guide on a set of tests for the monitoring of multibeam system performance over time. Mainly aimed at vessels with permanently mobilised multibeam systems it will include a variety of tests and procedures that are designed to best represent the performance of the system as a whole and give a guide on how often these tests should be performed to obtain a reliable understanding of a system's degradation.	CSIRO		TBD
Upkeep of AusSeabed Multibeam Guidelines	The guidelines provide procedures mainly on survey planning, data acquisition and submission i.e. from the pre-survey planning phase to the data submission phase, off the ship. They are designed for a range of audiences, from those experienced in seafloor mapping using swath acoustic systems, non-experts who are developing mapping capabilities, and those contracting seafloor mapping surveys using swath systems.	Fugro, Geoscience Australia and IX Blue	July 2019	TBD
Establish an AusSeabed Processing Standard	At present, data is being cleaned and published mainly in an inconsistent manner that is variable depending on the application. This activity aims to produce an agreed bathymetry data processing standard for the products that will be published through the AusSeabed data hub.	GA, CSIRO and NSW OEH	July 2019	Roadmap in development
Australian Guideline for LiDAR Bathymetry	The ALB guidelines will provide recommended technical specifications for the acquisition of bathymetric LiDAR. They will be similar in design to the airborne LiDAR specifications released by ICSM.	FrontierSI, Fugro and IX Blue		TBD
Australian Guideline for Satellite Bathymetry	The SDB guidelines will provide recommended technical specifications for the acquisition of satellite derived bathymetry. They will be similar in design to the airborne LiDAR specifications released by ICSM.	FrontierSI, EOMAP, IX Blue, GA, CSIRO	Ongoing	TBD
Australian Guideline for Crowd-Sourcing Data	Citizen Science Bathymetry (CSB) involves volunteer observers who operate vessels-of-opportunity in places where nautical charts are poor or where the seafloor is changeable and traditional hydrographic assets are not easily available. The AusSeabed vision allows for the opportunity to maximise CSB through engagement with the wider marine community,	Deakin University and James Cook University		Crowd-source project underway with JCU (Dec 2018)

	providing mariners interested in filling the gaps in ocean floor data an opportunity to contribute to AusSeabed bathymetric coverage.			
Australian Guideline for Sub-Bottom Profiling	The SBP guideline will inform best practice for the acquisition of sub-bottom profile data across a variety of substrate types, with an emphasis on the resolution vs depth of signal penetration. Also envisioned is an SBP atlas to inform the community about the application and benefits of SBP for understanding the geological context of bathymetry data.	GA, IX Blue	Ongoing	Completed scoping of guideline document through NESP SOP D2 project
Australian Guideline for Backscatter	The work on backscatter guidelines will be focus on refining and augmenting the technical specifications in the Australian Multibeam guidelines to align with the recommendations of the GEOHAB Backscatter Working Group. This work will provide a high-level overview of backscatter current best-practice with links to in-depth technical documentation on both acquisition and processing.	CSIRO, GA, IX Blue, NIWA, Guardian Geomatics		TBD

4 Outreach, Education & Training Program Theme

The Outreach, Education, and Training (OET) program theme aims to raise awareness of the importance of seabed mapping beyond the AusSeabed partners, while building capacity in the marine sector and facilitating engagement through educational initiatives. The OET work plan represents a list of priority tasks developed by the steering committee and the working group (WG). The OET WG is open to new participants and presently comprises members from the government and academic sector, who have self-selected into tasks based on their experience and expertise.

The Data Hub work plan addresses a range of activities mainly focused on outreach (Table 4 & Table 5). In summary, the work plan is on-track with most tasks well underway or completed. These include:

- Workshops on the following topics
 - Understanding CUBE as a processing tool (March 19; 10 participants and provided by iXblue)
 - Data standards and formats (May 19, Canberra; 25 participants)
 - QCtools and Pydro (June 19, Canberra; 20 participants) in collaboration with new collaborators, NOAA and CCOM
 - AMSA AusSeabed workshop (July 19, Perth; 40 participants)
- AMSA conference symposium (July 19, Perth; 20 presentations; ~70-100 attendees)
- National and international presentations and establishment of registry to track engagement activities and opportunities (Table 6)
- Creation of generic communication products and templates
- Accreditation of AusSeabed in providing valuable contribution to the hydrographic surveyors (SSSI)

The successful delivery of the OET working group activities in 2018/19 is contributing the following to the Australian seabed mapping community:

- The delivery of a consistent message to both the existing community and potential collaborators, resulting in the trust and growth of the community
- The national and international recognition and influence of the program
- The opportunity to develop experience and growth knowledge in the field of seabed mapping.

Table 4 Outreach, Education and Training (led by Ralph Talbot-Smith, WA Department of Transport)

Activity (Priority)	Activity description	Participating Organisations	Intended completion	Update
Workshop and Symposium Planning (1)	Secure and prepare AMSA 2019 Symposium and Workshop – Perth and the associated steering committee meeting	WA DoT / Curtin / GA	June 2019	<ul style="list-style-type: none"> Accepted full day symposium and workshop at AMSA (April 2019) Prepared AGM/workshop (June 2019)
Project Management system (1)	Establish a system to manage program projects (e.g. JIRA)	GA	March 2019	GA investigated JIRA licence in-house, but unable to add external members (Nov 2018). Activity put on hold
Education opportunities (1)	<p>Develop relationships and initiatives to educate, train, provide opportunity to expand seabed mapping knowledge and skills. These include:</p> <ol style="list-style-type: none"> Secure lecture during HMAS Penguin hydrography training program Develop projects for postgrads and internship opportunities Promote Uni/Education Related Studies to potential community Develop material for career info paths Encourage establishment of Hydro Training Cat A and B 	James Cook University/Deakin University	September 2019 (Navy lecture)	<ol style="list-style-type: none"> GA is in contact with HMAS Penguin to arrange in-principle agreement to have ASB give lecture Connected JCU postgrad with APR internship with CSIRO/MNF DoTWA and Curtin Uni developed work experience program with DoTWA. Led to 5 persons completing program A National Register has been established within the Steering committee Communicated AusSeabed through the CSIRO MNF – Collaborative Australian Postgraduate Sea Training Alliance Network (CAPSTAN), particularly the April 2019 voyage where hydrography was a focus for training. CAPSTAN program TBD TBD TBD
Outreach activity registry (1)	Establishment and Maintenance of a Central list identifying outreach activities (e.g. meeting, conference) and potential individuals and organisations that should be introduced to ASB	WA DoT	Dec 2019	Created a registry within GovTeams and output that can be viewed in Google Maps
Transit data acquisition for all vessels (2)	Ensure that all vessels with seabed mapping capability routinely collect transit Data and deliver to AusSeabed. This includes improved coordination of the Public Vessel Status (PVS) through DFAT.	GA/CSIRO	Dec 2019	PVS coordination review is in progress (GA & MNF)

Criteria for Contributors Membership/Recruitment of Contributors/Review of Membership (3)	Establish criteria to define AusSeabed collaborator status	Unassigned		TBD
Newsletter (3)	Set up an automated email system with the website (incl. info on resource innovation, tech events, etc.) Coordinate with AHS and other appropriate marine (NESP, IMOS) newsletters	GA / EGS / AHS	Jan 2019	Developed monthly newsletter template and distribution system (March 2019, GA/EGS). Distributed 4 newsletters
Measures of Progress and Success (3)	Establish method to measure progress of the program and successes	GA		Defined in the strategic plan (June 2019)
Analysis of Backscatter Methods (3)	Review the various methodologies used to process seabed backscatter and report.	Unassigned		TBD. Moved to TSG and likely an output for Geohab BSWG.

Table 5 Additional activities undertaken since the development of the OET work plan at the Steering Committee establishment meeting in November 2018.

Activity	Activity description	Participating Organisations	Intended completion	Update
Outreach activities	Plan a number of opportunities to promote, discuss AusSeabed	All	Ongoing	See Table 6
Communication material	Development of material to enable steering committee and community members to promote program	GA		<ul style="list-style-type: none"> Developed generic slide deck and video Developed and printed pamphlets and banner Established GovTeams for steering committee comms
Publication participation	Publication where AusSeabed was mentioned			<ul style="list-style-type: none"> SSSI POS100 Apr/May 2019 edition written by Stuart Edwards and Matt Boyd, CSIRO (May 2019). https://www.spatialsource.com.au/magazine Wolf et al., 2019. Seafloor Mapping – The Challenge of a Truly Global Ocean Bathymetry, <i>Frontiers in Marine Science</i>. https://www.frontiersin.org/articles/10.3389/fmars.2019.00283/full
Association Recognition	Established recognition pathways with relevant associations	GA / AHO		Surveying and Spatial Sciences Institute (SSSI) are awarding credits to individuals who contribute to AusSeabed events and development

Table 6 Outreach registry for 2018-2019

Event	When	Where	Who	What was presented	Outcomes (where applicable)	Link
Hydro 18	Oct-18	Sydney	Sam Amirebrahimi (FrontierSI)	MBES user-needs analysis results		
GEBCO 35 th meeting	Nov-18	Canberra	Kim Picard (GA)	AusSeabed program		
Seabed 2030 Atlantic & Indian Ocean Regional Centre	Oct-18	New York, USA	Vanessa Lucieer	Seabed mapping in Australia from a NESP and AusSeabed perspective		
American Geophysical Union meeting	Dec-18	Washington D.C., USA	Kim Picard (GA)	Side meetings to discuss broader uptake of seabed mapping e.g. UN Decades, OceanObs '19. Presented ASB at seafloor mapping session.	Submission of a breakout session proposal " <i>Seabed mapping, the missing link in OceanObs</i> " bring mapping and OceanObs communities to help each other International acknowledgement of ASB	here
Centre for Coastal Ocean Mapping (CCOM)	Dec-18	NH, USA	Kim Picard (GA)	Presentation to NOAA and CCOM	Identified similarity with NOAA proposed program	
National Marine Science Committee (NMSC) Meeting	Feb-19	Canberra, Australia	Kim Picard (GA)		Awareness and understanding of ASB within the marine landscape leaders	
Open Geospatial Consortium (OGC) Marine Summit	Mar-19	Singapore	Kim Picard (GA)	Presented Data Hub to Marine Domain Working Group		
Australian Ocean Data Network (AODN) Technical Advisory Group (TAG) meeting	Apr-19	Hobart, Australia	Kim Picard (GA)	Data Hub progress update		

Seabed 2030 South and West Pacific (SaWPac) Oceans Regional Mapping Meeting	Mar-19	Wellington, New Zealand	Kim Picard (GA), Vanessa Lucieer (UTas), Robin Beaman (JCU), John Maschke (AHS), David Donohue (iXblue)	Presented AusSeabed and Data Hub update		here
Locate19	Apr-19	Melbourne, Australia	Sam Amirebrahimi (FrontierSI); GA	Progress on QA4MBES tool (Data Hub); Booth display	Upcoming meeting.	here
SDB Day	May-19	Sunshine Coast	Kim Picard (GA)	Keynote on AusSeabed. Want to attract SDB crowd to join	Upcoming meeting.	-
APPEA 2019	May-19	Brisbane, Australia	Kim Picard (GA)	Presenting AusSeabed at Geoscience Australia's booth.	Upcoming meeting.	here
AHS/FHS world hydro day in Fiji	Jun-19	Suva, Fiji	John Maschke	Present AusSeabed on behalf of SC (requested by Kim)		-
International Cable Protection Committee (ICPC)	19-Jul	Perth, Australia	Ralph Talbot-Smith Kam Austine	Potentially Presenting to ICPC chairman at AMSA19	Upcoming meeting	
WALIS Marine Group	19-Mar	Perth, Australia	Ralph Talbot-Smith	Presented AusSeabed to State Government Departments	Commitment from group to advance AusSeabed and support AMSA19	
Western Australian Harbour Masters	19-Mar	Fremantle	Ralph Talbot-Smith	Presented AusSeabed and encourage involvement in next AusSeabed Workshop	Positive reaction to contribution of survey shapes. Reluctance to centralisation of Raw and processed data	
AHS		Wollongong	Wendy Stewart, Tim Ingleton	Discussions of priority survey areas NSW coastal waters	OEH complete sections of Wollongong areas for AHS, AHS to include area of interest at Newcastle for OEH + backscatter	
World Ocean Day		Scotts Head NSW	Tim Ingleton	World Ocean Day - 'Laser beams and sonic waves'	Science talks around LiDAR/LADS and MB for mapping the coast for local primary and high school students	
Hypack conference		Hornsby NSW	Tim Ingleton	Advert for AMSA sessions and AusSeabed Workshop at Hypack conference, hosted by Bruttour Pty Ltd		

5 Conclusion

Since the establishment of the AusSeabed governance and steering committee in November 2018, the AusSeabed program has made significant progress, including the development of a strong and committed multi-sectoral community. This progress has established solid foundations for the enduring national coordination of seabed mapping activities in Australia. The successful delivery of the program in 2018-19 is contributing the following to the Australian community:

- Improved discoverability and accessibility of published seabed mapping data through the delivery of datasets within coordinated portals
- Consistent products through the identification and implementation of data standards and specifications
- Improved coordination and collaboration amongst the community through workshops and the delivery of survey plans
- Guiding the coverage of seabed mapping to the highest priority areas through the Priority Map Review
- Providing coordination and guidance to non-technical and inexperienced seabed mapping users through the Survey and Planning Tool, and Multibeam Guidelines
- Delivering a consistent national message to both the existing community and potential collaborators
- Promoting local activities through national and international recognition and influence
- Developing career opportunities in seabed mapping and hydrography through presentations and student engagement.

We anticipate that the next 12 months will see the AusSeabed program grow through continued support and commitment from the marine community. The program will continue to improve the awareness, collection, quality, discoverability and accessibility of seabed mapping data so that we reach our vision:

By 2030, all available seabed mapping data within the Australian Marine Estate will be readily and openly available, and new data acquisition will take into account the needs of a wide range of users. This will facilitate collaborations between government, research institutions and the private sector while contributing to improved safety of life at sea and opening up new avenues for scientific investigation.