

# Collaborating to maximise Australian seabed mapping efforts

Kim Picard, Aero Leplastrier, Tanya Whiteway, and AusSeabed working group

# History

Pre-2017:

- various entities from various sectors,
- various programmes involving seabed mapping,
- various level of communication across sectors

## Landscape map



Research for understanding and managing Australia's marine biodiversity



**Sea2400-HIPP**

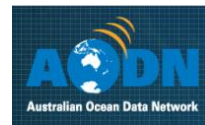
Upcoming large mapping program



Brings the seabed mapping community together

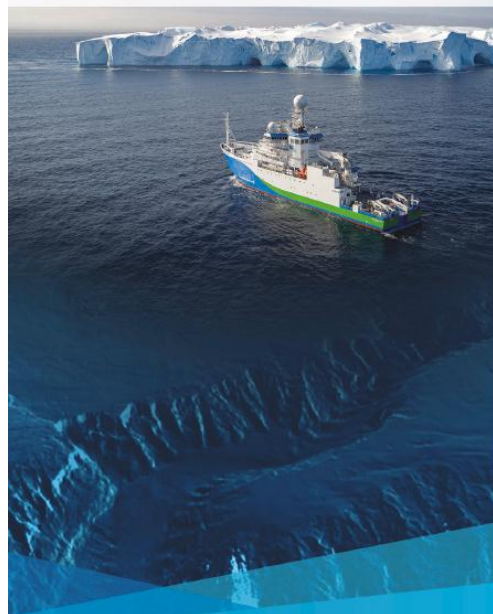


Data acquisition  
Research vessels



Acquire and deliver  
ocean data

Private  
sec



**BRINGING THE SEABED  
TO THE SURFACE**

[ausseabed.gov.au](http://ausseabed.gov.au)



**BECOME A PART OF  
THE NATION'S SEABED  
MAPPING FUTURE**

**To develop initiatives and  
products to improve the  
quality, discoverability  
and accessibility of  
seabed mapping data for  
the Australian community.**



## CURRENT PARTNERS



Australian Government  
Geoscience Australia



Australian Government  
Australian Maritime Safety Authority



Australian Government  
Department of the Environment  
Australian Antarctic Division



Australian Government  
Great Barrier Reef  
Marine Park Authority



Government of South Australia  
Department for Environment  
and Water



Department of  
Transport



Curtin University

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Marine  
National Facility

# National Seabed Mapping Website

[AusSeabed.gov.au](http://AusSeabed.gov.au)

1-stop shop for seabed mapping material

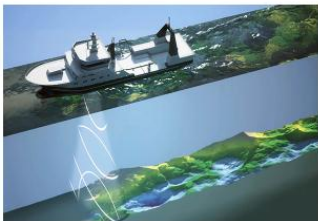


About ▾

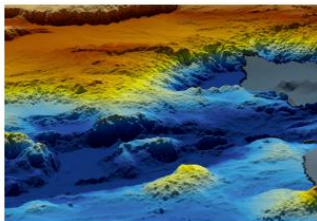
Surveys & Data ▾

Resources ▾

News



Guidelines



QA4BATHY



Capability Catalogue



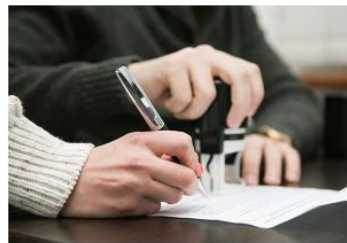
Systems Available



Presentations & Publications



Education



Permit Information

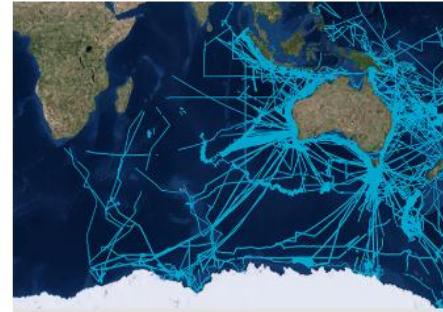


Technical Resources



# Coordination and Collaboration Tools

- **Government Priority Map**
- Multibeam Coverage Map
- Survey Register
- Data Discoverability



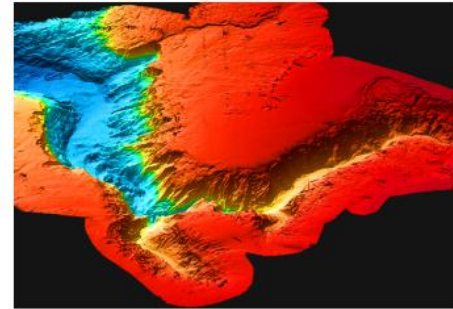
Bathymetry coverage



National Bathymetry Priorities



Survey Register

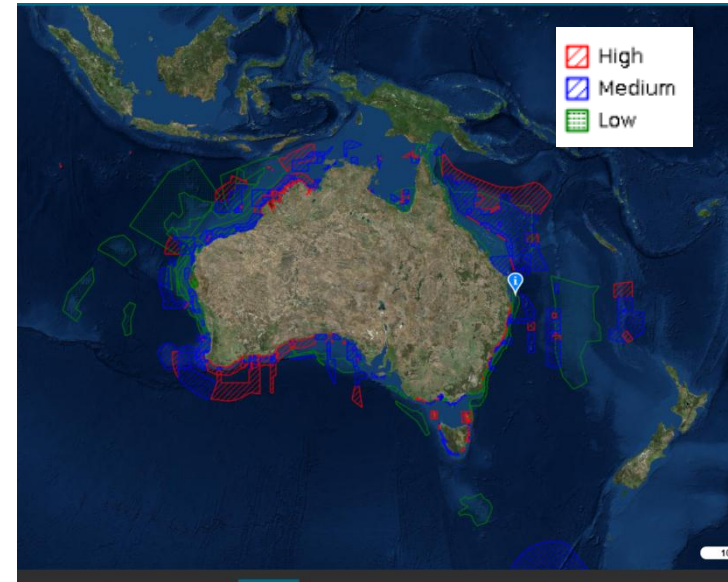


Data

# Actually 2 plans - that fit together!

## Charting + Other Government Priorities

## National Coordination



# Coordination and Collaboration Tools

- Government Priority Map
- **Multibeam Coverage Map**
- Survey Register
- Data Discoverability



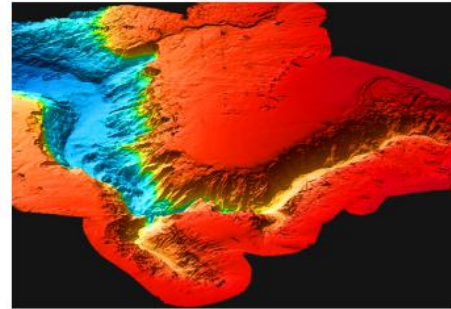
Bathymetry coverage



National Bathymetry Priorities



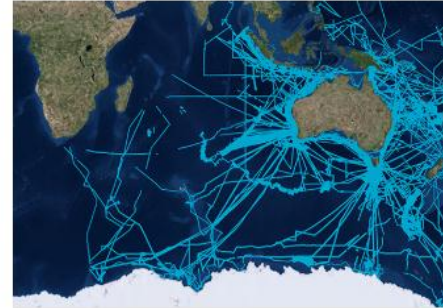
Survey Register



Data

# Coordination and Collaboration Tools

- Government Priority Map
- Multibeam Coverage Map
- **Survey Register**
  - **Improve communication, collaboration, and better use of national resources**
- Data Discoverability



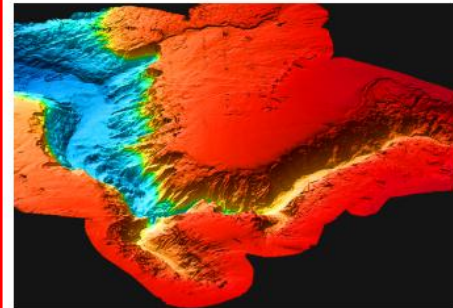
Bathymetry coverage



National Bathymetry Priorities



Survey Register

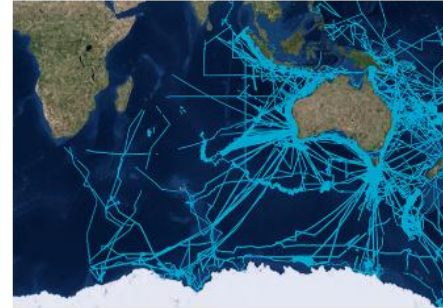


Data



# Coordination and Collaboration Tools

- Government Priority Map
- Multibeam Coverage Map
- Survey Register
  - Improve communication, collaboration, and better use of national resources
- **Data Quality and Discoverability**
  - Guideline and QA tool
  - Developing a cross-entities, cloud-shared and distributed storage file management platform
  - **Accessibility from end-user through point cloud delivery system.**



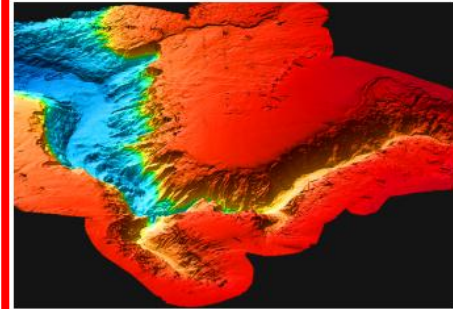
Bathymetry coverage



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Survey Register



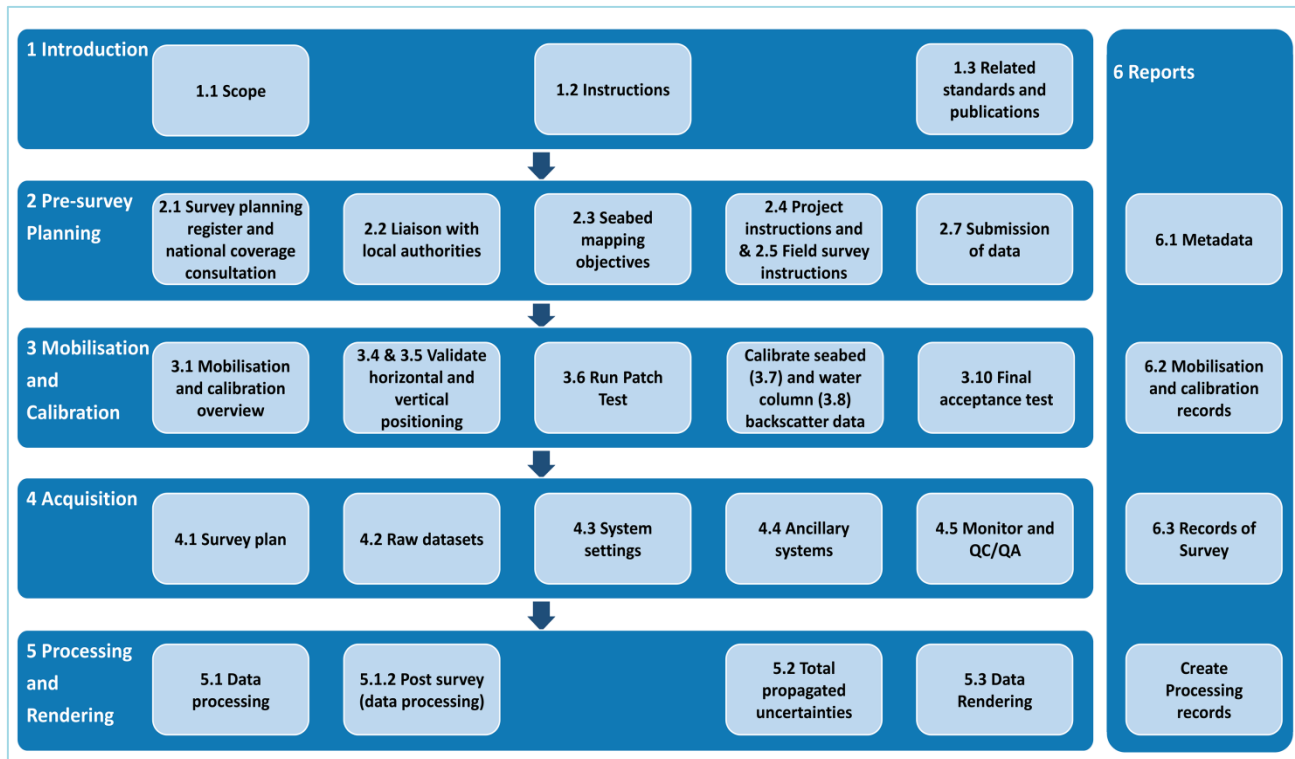
Data

# National Multibeam Guidelines v.1.1



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National Multibeam guideline for experts and non-experts: *Collect once, use many times*



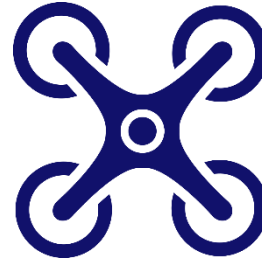
# QA4MBES



**QA4LiDAR**



**QA4MoBiLE**



**QA4UAV**



**QA4MBES**

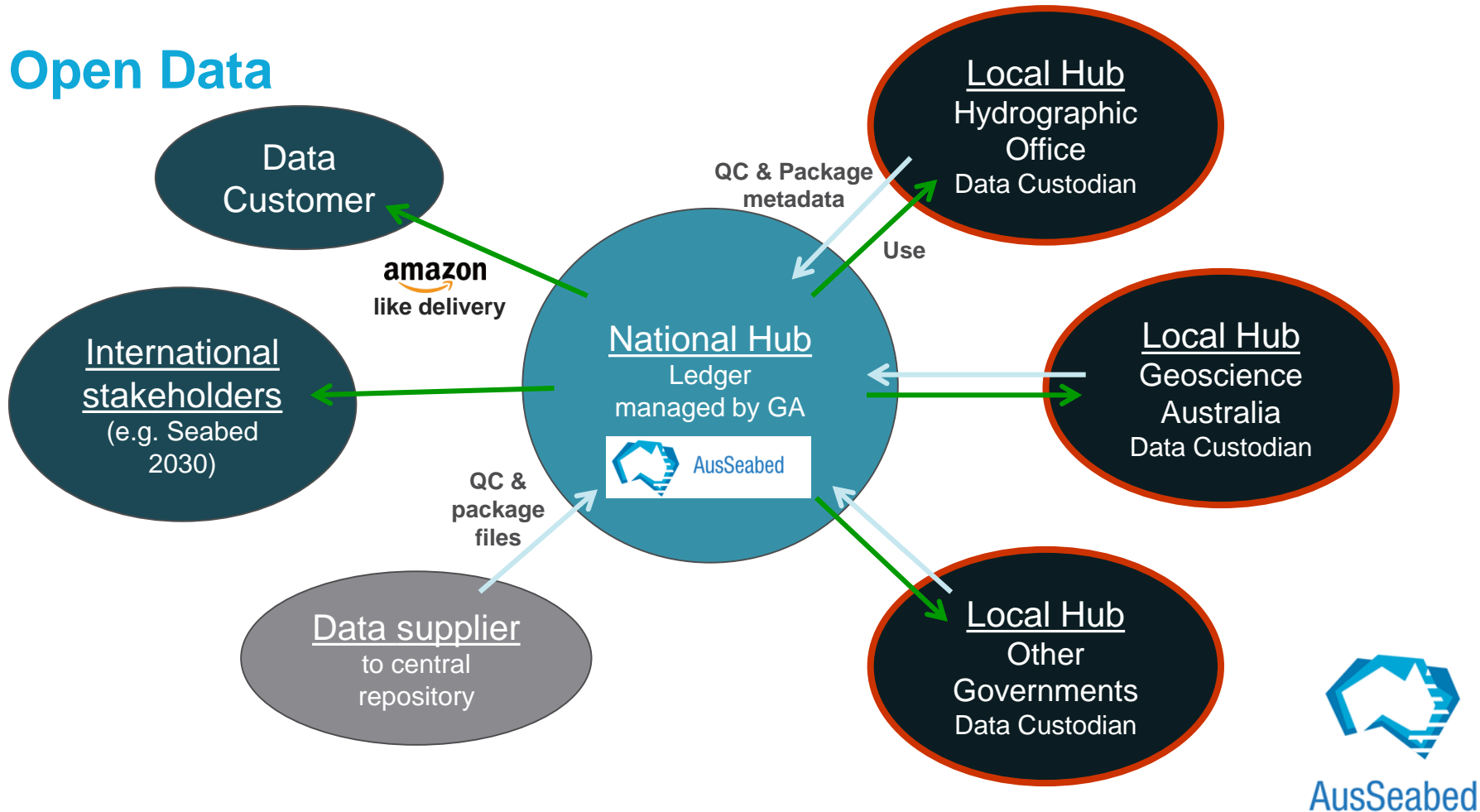
- ✓ Quality checks for your data and contractor data
- ✓ Templates for contract work (survey requirements)
- ✓ Saving time for experts. Providing guidance to novices.
- ✓ Streamlining the workflow for the end users

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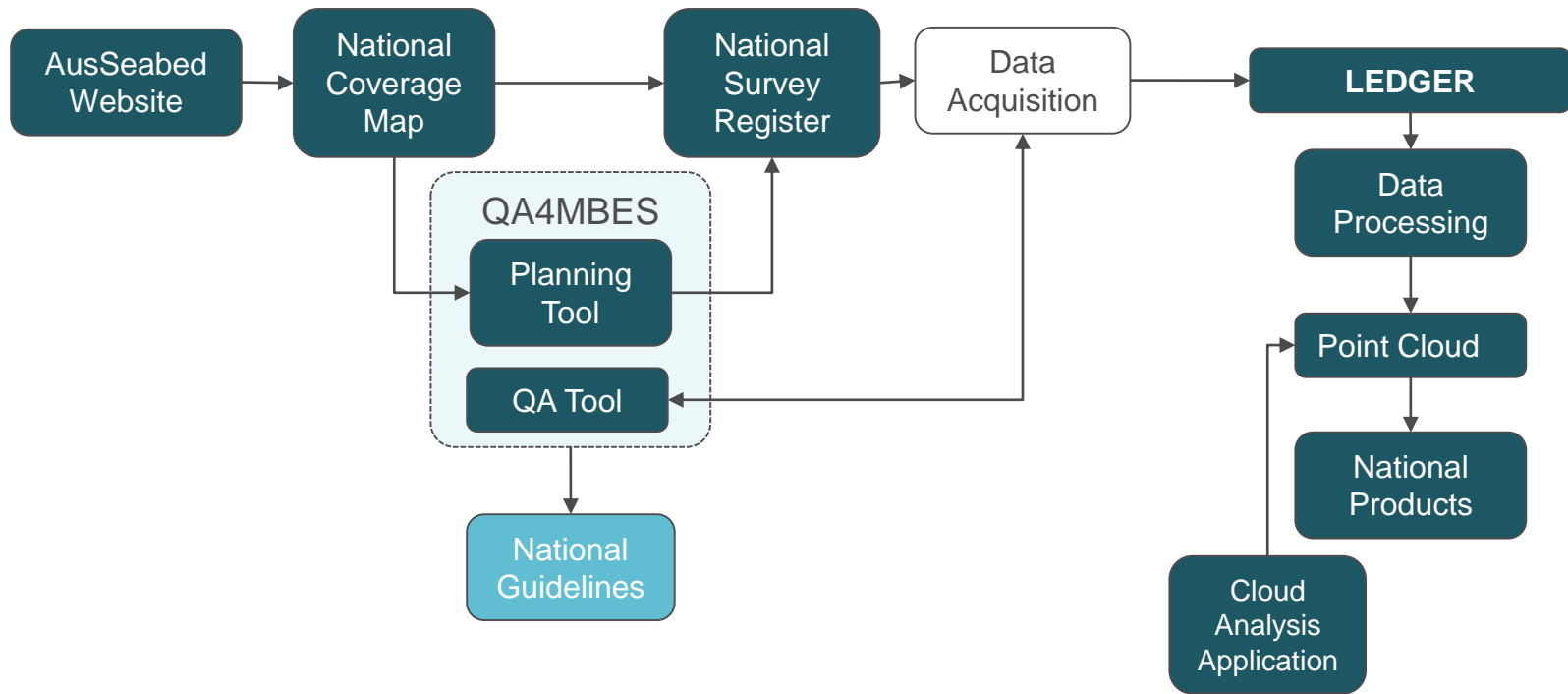
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# Open Data





# AusSeabed Data Hub Roadmap



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## What next, further information and questions

- AusSeabed Strategic Plan and 2019-2020 work plan in development by Steering Committee
- For more information or to be involved contact Kim Picard or Aero Leplastrier [AusSeabed@ga.gov.au](mailto:AusSeabed@ga.gov.au)

# Data query and download for raw data (e.g. MH370 data release)

About Products

## Products

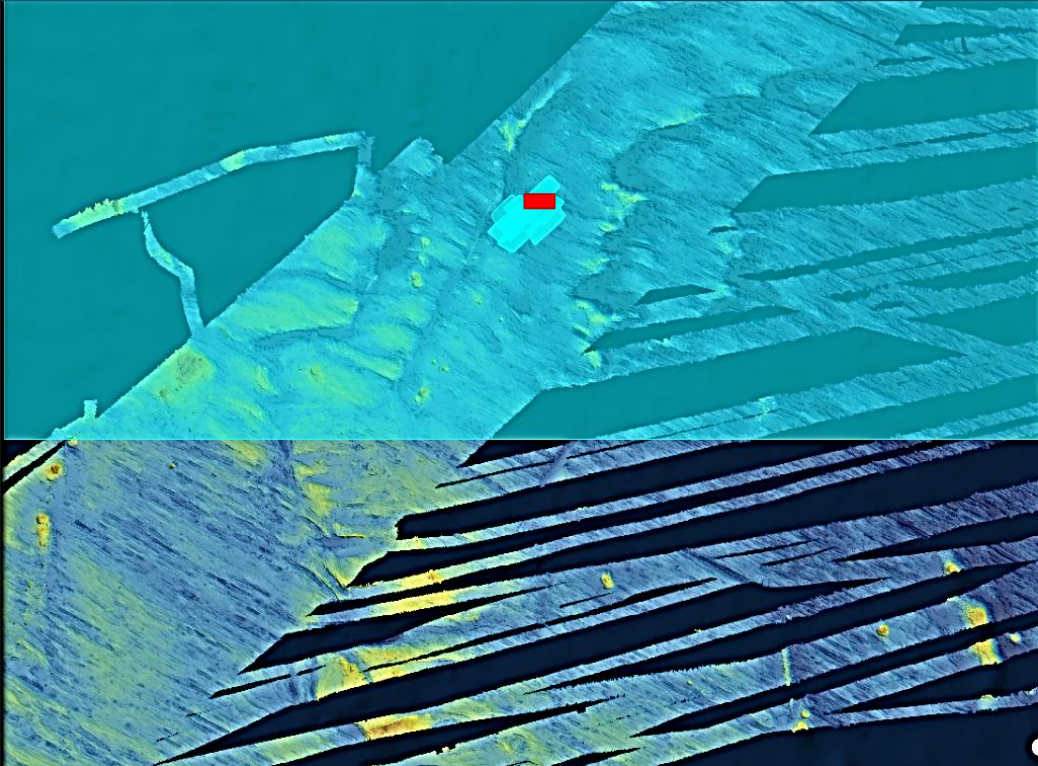
Base Maps

World Imagery from ArcGIS Online ▾

Overlays

- ☐ GA Multibeam Holdings ⓘ
- ☐ Upcoming Surveys ⓘ
- ☐ National Priorities ⓘ
- ☐ MH370 Search Grid ⓘ
- ☐ MH370 Phase 2 Data ⓘ
- ☒ MH370 Search Data ⓘ
  - Bathymetry 150m ▾
- ☐ Individual Survey Data ⓘ
  - Marine Survey Multibeam Bathymetry ▾

Measure Reset My Location Identify Transect Download DB Query



90.11375, -37.37911

## Database Query and Visualization ⓘ

Select Product:

Phase 1 Data ▾

Search by Area Search by Attribute

**Download Data:** The total data size exceeds the maximum size of 2GB, use 'Download URLs' instead.

Shape Type: Box ▾

| Name                         | File Size |
|------------------------------|-----------|
| 0092_20150115_112232_Fugr... | 72.30 MB  |
| 1477_20140904_073824_Fugr... | 72.80 MB  |
| 1477_20140904_073824_Fugr... | 440.45 MB |
| 1480_20140904_113644_Fugr... | 71.65 MB  |
| 1480_20140904_113644_Fugr... | 449.62 MB |
| 1481_20140904_133639_Fugr... | 71.35 MB  |
| 1481_20140904_133639_Fugr... | 450.15 MB |
| 1531_20140907_232850_Fugr... | 69.83 MB  |
| 1531_20140907_232850_Fugr... | 475.21 MB |
| 1532_20140908_012854_Fugr... | 70.56 MB  |
| 1532_20140908_012854_Fugr... | 459.29 MB |
| 1532_20140908_012854_Fugr... | 72.54 MB  |



# Data visualisation & clip and ship for products



Australian Government  
Geoscience Australia

Geoscience Australia Marine Data Discovery

Quick Links ▾

Populated search place



About Products

Measure Reset My Location Identify Transect Download DB Query Clip

## Products

### Base Maps

World Imagery from ArcGIS Online ▾

### Overlays

☐ GA Multibeam Holdings

☐ Upcoming Surveys

☐ National Priorities

☐ MH370 Search Grid

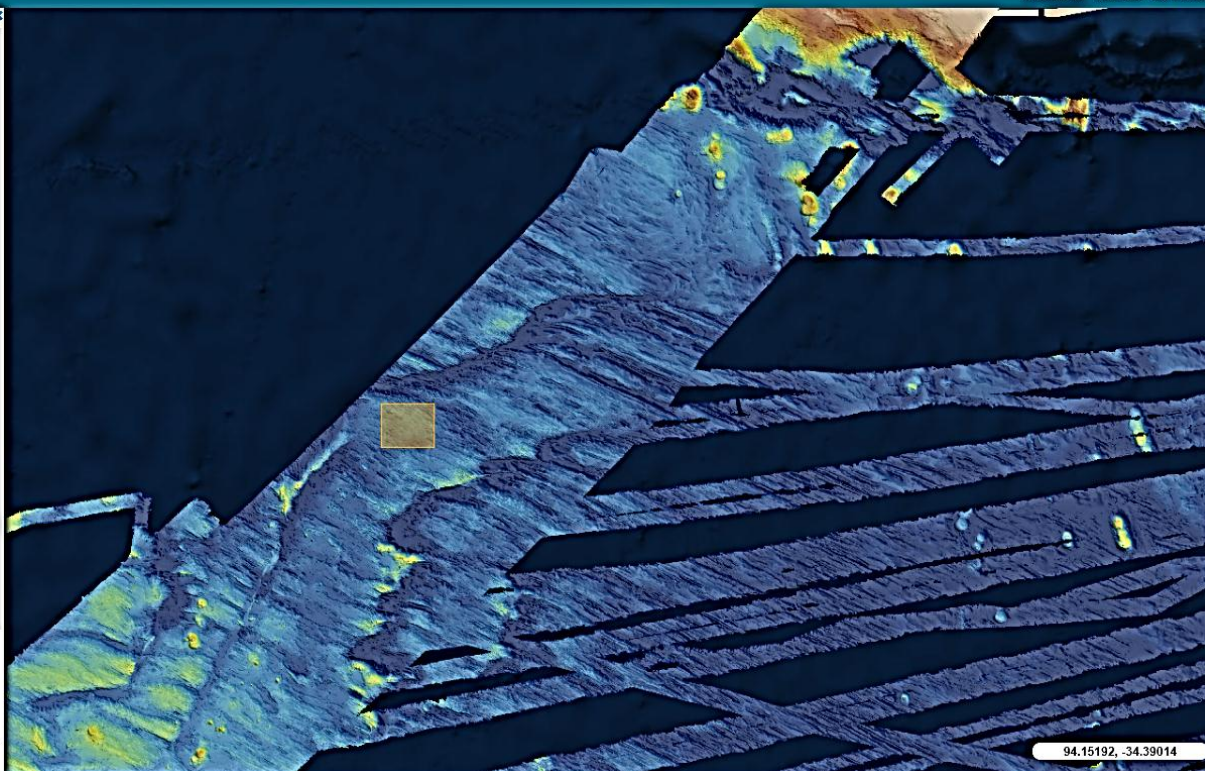
☐ MH370 Phase 2 Data

☒ MH370 Search Data

Bathymetry 150m ▾

☐ Individual Survey Data

Marine Survey Multibeam Bathymetry ▾



☒ Bathymetry 150m

☒ Backscatter 30m

☐ Autonomous Underwater Vehicle SSS

☐ Synthetic Aperture Sonar 2014-2015

☐ Synthetic Aperture Sonar 2016

Total datasets selected: 2

Format:

Projection:

Email:

94.15192, -34.39014



# Governance

Steering committee:

3 Standing members (AHO, GA, CSIRO)

9 general members with proportional representation between sectors  
(Government Commonwealth and States; Academia; Private; International)



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# Coverage



Australian Government  
Geoscience Australia

Geoscience Australia Marine Data Discovery

Quick Links ▾

Populated search place



About ⓘ Products

Measure Reset My Location Identify Transect Download DB Query

## Products

### Base Maps

World Imagery from ArcGIS Online ▾

### Overlays

☒ GA Multibeam Holdings ⓘ

☐ Upcoming Surveys ⓘ

☐ National Priorities ⓘ

☐ MH370 Search Grid ⓘ

☐ MH370 Phase 2 Data ⓘ

☐ MH370 Search Data ⓘ

Bathymetry 150m ▾

☐ Individual Survey Data ⓘ

Marine Survey Multibeam Bathymetry ▾



## Identify Data

Click on the map to search for features.

Please note this tool does not work with the MH370 Phase 2 Data.

### Feature Details

Layer: GA Multibeam Holdings

Lat: 26°44'23" S - Lon: 111°33'44" E

#### WA Margins Reconnaissance

|                               |   |
|-------------------------------|---|
| GA Identifier (GAMSI):        | 2476  |
| Bathymetry type:              | Multibeam   |
| Project title:                | WA Margins Reconnaissance   |
| Collection organisation code: | GA-2476   |
| Ship:                         | R/V Sonne   |
| Principal investigator:       | Dr Kriton Glenn (Kriton.Glenn@ga.gov.au), Dr Michael Hughes, Dr Andrew Heap (Andrew.Heap@ga.gov.au) |
| Collecting institution:       | GA  |
| Start date:                   | 2008-10-25Z   |
| End date:                     | 2009-01-20Z   |
| Start port:                   | Singapore   |

Australian Government

# Upcoming surveys

About ⓘ Products 

## Products

Base Maps

World Imagery from ArcGIS Online ▾

Overlays

☐ GA Multibeam Holdings  ⓘ

☒ Upcoming Surveys  ⓘ

☐ National Priorities  ⓘ

☐ MH370 Search Grid  ⓘ

☐ MH370 Phase 2 Data  ⓘ

☐ MH370 Search Data  ⓘ

Bathymetry 150m ▾

☐ Individual Survey Data  ⓘ

Marine Survey Multibeam Bathymetry ▾

Measure  Reset  My Location  Identify  Transect  Download  DB Query  Clip 



108.13477, -28.81965

## Identify Data

Click on the map to search for features.

Please note this tool does not work with the MH370 Phase 2 Data.

### Feature Details

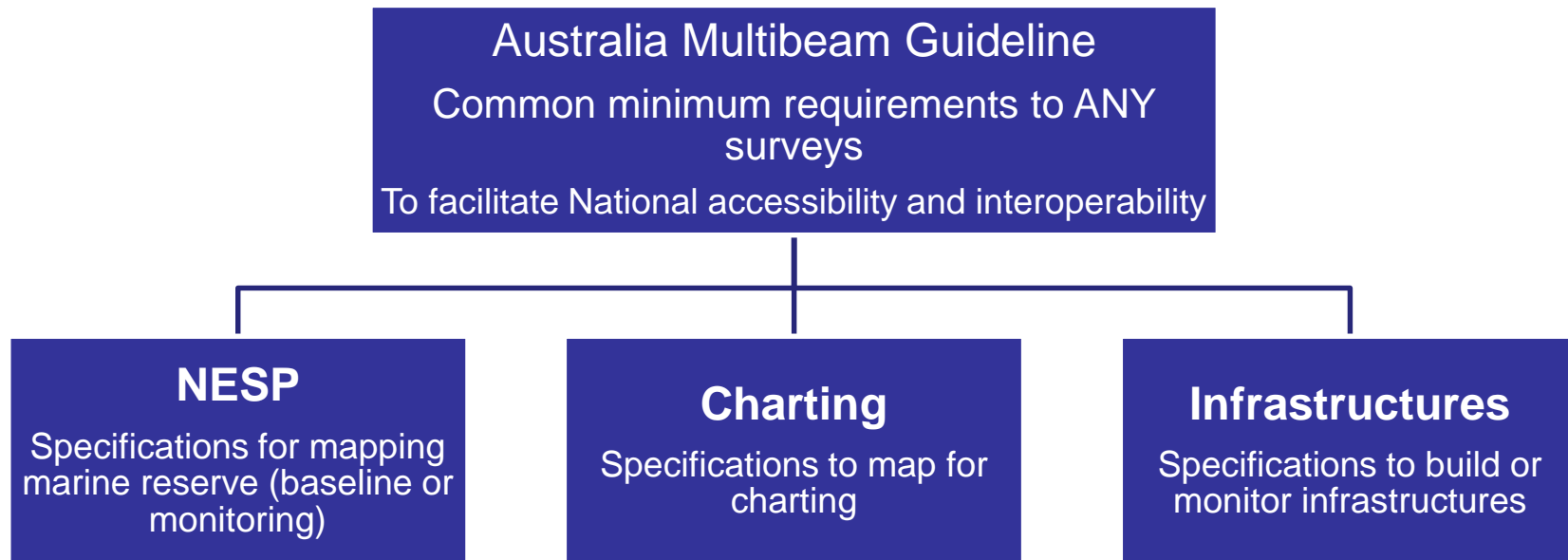
**Layer:** Upcoming Surveys

**Lat:** 21°57'26" S - **Lon:** 150°37'47" E

| ID: upcoming_surveys.8 |   |
|------------------------|---|
| Survey name:           | Shoalwater Bay, QLD                       |
| Contact:               | CMDR Chris Waterson, RAN                  |
| Organisation:          | Australian Hydrographic Office            |
| Email:                 | hydro.plans@defence.gov.au                |
| Status:                | Planned                                   |
| Start date:            | Sep-Oct 2018, FY 2019-2020                |
| Purpose:               | Navigation safety                         |
| Vessel:                | Royal Australian Navy Survey Motor Launch |
| Multibeam:             | Yes                                       |
| Water column:          | No  |
| Backscatter:           | Yes                                       |
| Other data:            | Sediment samples                          |
| Quality:               | IHO Order 1a                              |
| Comments:              | Hydroscheme Task 14                       |
| Shape length:          | 0   |



# Australia Multibeam Guideline & NESP Field Manuals



- NESP Multibeam Field Manual was developed in parallel with National Multibeam Guidelines
- NESP manual V.2 needs to be undertaken to ensure cross-reference with National guideline

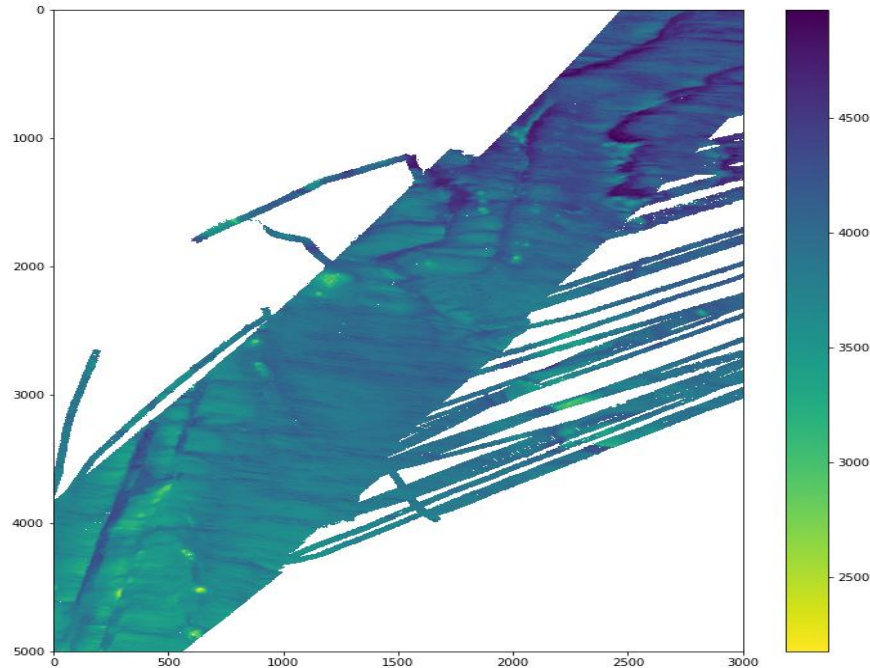


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# Point Cloud - Bathymetry processing with Spark (MH370 Phase 1) – Contracted SAGES (Polish company)

<http://bit.ly/2wUwuC0>



Approximately **45 min** for  
**>4.6 billion points** (at 150m)  
using **8 m3.xlarge nodes**,  
approximately **AUD\$0.48**  
(previously > 8 hours)





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[www.ausseabed.gov.au](http://www.ausseabed.gov.au)



- High-resolution bathymetry
- Coverage maps
- Priority mapping areas



[www.seamapaustralia.org](http://www.seamapaustralia.org)



- Derived bathymetric products (e.g. contour maps)
- Other seabed information (e.g. imagery)
- Habitat classifications