SWPHC22-09B

22nd MEETING OF THE SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC22)

3-5 March 2025, Koror, Palau

NATIONAL REPORT FROM AUSTRALIA TO THE SWPHC22

References:

A. IHO Resolution 2/1997 as amended (see doc. C3-04.2A, Appendix to Annex A)
B. IHO Circular Letter 20/2019, The IHO Online Form System for responses to Circular Letters and input to IHO Publications (P-5 and C-55): link
   Online system for P-5 (Yearbook): link
   Online system for C-55 (Status of Surveys and Charting Worldwide): link
C. IHO Strategic Plan: link
D. IHO IRCC CL 01/2021 IHO Strategic Plan for 2021-2026 – Procedure for measuring the Strategic Performance Indicator (SPI) allocated to IRCC: link

1. Executive Summary

The Australian Hydrographic Office (AHO) is the Australian Department of Defence agency responsible for the publication and distribution of nautical charts and other information required for the safety of vessels navigating in Australian waters.

The key focus throughout 2024-25 has been the continued implementation of the HydroScheme Industry Partnership Program (HIPP) Phase 2, an innovative government-industry arrangement supporting the collection, assessment and publication of nautical information products in the Australian Charting Area.

The AHO has embarked on a digital transformation of its products and services that will see the implementation of a new geospatial standard (S-100) from late 2025.

2. Surveys

a) HydroScheme Industry Partnership Program (HIPP)

The AHO is in the fourth year of implementing the Hydrographic Industry Partnership Program (HIPP). HIPP fundamentally consists of a rolling annual survey program contracted out to a preselected panel of hydrographic survey providers. Each annual program is referred to as a 'HydroScheme'. HydroSchemes 2020, 2021, 2022 and 2023 are complete. HydroScheme 2024 is currently underway with HydroScheme 2025 open to tender for the Panel.

Requests for an area to be considered for inclusion into a HydroScheme can be submitted via the AusSeabed hosted Survey Coordination Tool, and online submission portal. The HydroScheme Review Panel (HRP) endorses a proposed HydroScheme in August each year.

Details of current and past HydroScheme activities and the HIPP Statement of Requirements are published on the AHO website at www.hydro.gov.au/NHP.

b) Royal Australian Navy (RAN) surveys

In 2024 planning commenced for the next co-operative survey between the RAN and TNI-AL (Tentara Nasional Indonesia Angkatan Laut) in adjoining waters of the EEZ to the North of Darwin. In 2025 the AHO will facilitate a visit for Pushidrosal and plan the next joint survey scheduled for the Q3 2025.

The Maritime Geospatial Warfare Unit (MGWU) conducted surveys in Antarctica, Northern Territory, Queensland and New South Wales. HMAS Leeuwin conducted sea mount investigation surveys north of Darwin.

c) Third Party surveys

The AHO continues to receive a large number of datasets from Commonwealth, State and Port authorities in addition to data collected through the HIPP or RAN. These are appraised and charts updated. A key focus during 2024 has been on improving the consistency of vertical datum adjustments, particulary in relation to the use of ellipsoidally referenced surveying techniques, and engaging with Port authorities to better document datum connections and ensure their vertical separation models align with work underway at the AHO to develop a national ellipsoid to chart datum separation model (AusHydroid).

d) AusSeabed

AusSeabed is a collaborative national seabed mapping initiative, hosted by Geoscience Australia, which is central to the Australian seabed information ecosystem. It was established in 2018 and delivers freely accessible seabed mapping data and coordinating efforts to map the gaps across the Australian maritime region of responsibility. The initiative is governed by an Executive Board and a cross-sector Steering Committee. The initiative works to collect and collate Australian seabed mapping data; create FAIR (Findable, Accessible, Interoperable, and Reusable) bathymetric data; and standardise data collection and processing. The AusSeabed data portal serves up integrated bathymetric surfaces as well as data from individual surveys and a spatial index of all known survey data in Australian and adjacent international waters. Datasets in the portal come from a wide range of Australian state and

federal government agencies, research institutions, and private industry. These holdings include 30 m resolution grids from HIPP surveys and high-resolution AHO National Reference Surfaces, which are used for calibrating multibeam echosounders.

To improve coordination of seabed survey activities and boost collaboration across the seabed mapping community, Geoscience Australia, in collaboration with the AHO and the community, developed the AusSeabed Survey Coordination Tool. This online geospatial web application serves three key functions to facilitate the coordination of survey activities across the government, academic and private sectors:

- The HIPP Survey Request function enables users to submit a request and business case for the Australian Hydrographic Office (AHO) to conduct survey activities in specific locations as part of the AHO's HIPP.
- The Areas of Interest (AOI) function allows users to register broader regions of particular value or where there is potential for collaboration. Submissions are made available to the public and to key data collection agencies, including CSIRO and AHO. The HIPP uses annual AOI submissions to inform a Risk Assessment Tool to prioritise future surveys.
- The Survey Plans function is a register for the community to share details on planned data collection campaigns to encourage further collaboration and the sharing of costs that would normally be shouldered by a single organisation.

3. Nautical Charting

The AHO continues to be committed to an ENC-first approach with ENC updates for Maritime Safety priorities being actioned first. Paper chart Notices to Mariners complement this approach whilst maintaining the Paper Chart Portfolio.

The AHO is the Primary Charting Authority (PCA) for two Pacific Island Countries, as well as the national authority for Australia and its territories. Australia currently publishes 11 paper charts within Timor-Leste.

The total AHO portfolio as of 1st Feb 2025 includes:

Nation	Paper Charts	ENCs	Total
Australia	275	717	**992**
Papua New Guinea	80	168	**248**
Solomon Islands	17	43	**60**
Total	**372**	**928**	**1300**

a) ChartScheme 2025

ChartScheme is the annual program of Charting projects to be undertaken by the AHO. It is very closely aligned with the HydroScheme activities as they are delivered to the Charting team. ChartScheme details the AHO's planned activities for the Financial Year (FY) in both Australian waters and in waters of countries for which the AHO is the Primary Charting Authority (PCA) - See CHARTSCHEME 2025

b) Papua New Guinea (PNG)

The AHO is the Primary Charting Authority (PCA) for Papua New Guinea, partnering with PNG via a bilateral MoU on hydrographic survey, specialist training and nautical cartography projects.

In partnership with PNG National Maritime Safety Authority (NMSA), Australia maintains 80 PNG paper nautical charts and 168 PNG (PG) electronic navigational charts, supporting maritime safety and environmental protection in PNG waters.

c) Solomon Islands (SI)

The AHO is the Primary Charting Authority (PCA) for Solomon Islands and in partnership with Solomn Islands Maritime Authority (SIMA) produces nautical charts and publications to support safe navigation in Solomon Islands. As the PCA for Solomon Islands, Australia maintains 17 SLB paper nautical charts and 43 SB electronic navigational charts, supporting maritime safety and environment protection in Solomon Islands waters.

d) Timor-Leste

Letters were exchanged between Australia and Timor-Leste in November 2021, enabling Australia to provide increased hydrographic capacity building support to Timor-Leste.

e) Electronic Navigation Charts

There are a total of 928 ENC cells published by the AHO. These include AU, PG and SB ENC cells.

Currently the AHO has published 16 High Density Bathymetric ENCS (HDbENCs) for ports of Brisbane, Townsville, Cairns, Sydney Harbour and Botany Bay.

ENCs published since the SWPHC21 Meeting		
Australia	**Solomon Islands**	**PNG**
Total: 1219 New ENC: 8 New edition: 18 Updates: 236 MSI Updates: 957	**Total: 17** New ENC: 0 New edition: 0 Updates: 3 MSI Updates: 14	**Total: 36** New ENC: 0 New edition: 0 Updates: 3 MSI Updates: 33

f) Australia ENC coverage by Usage Band

Australia

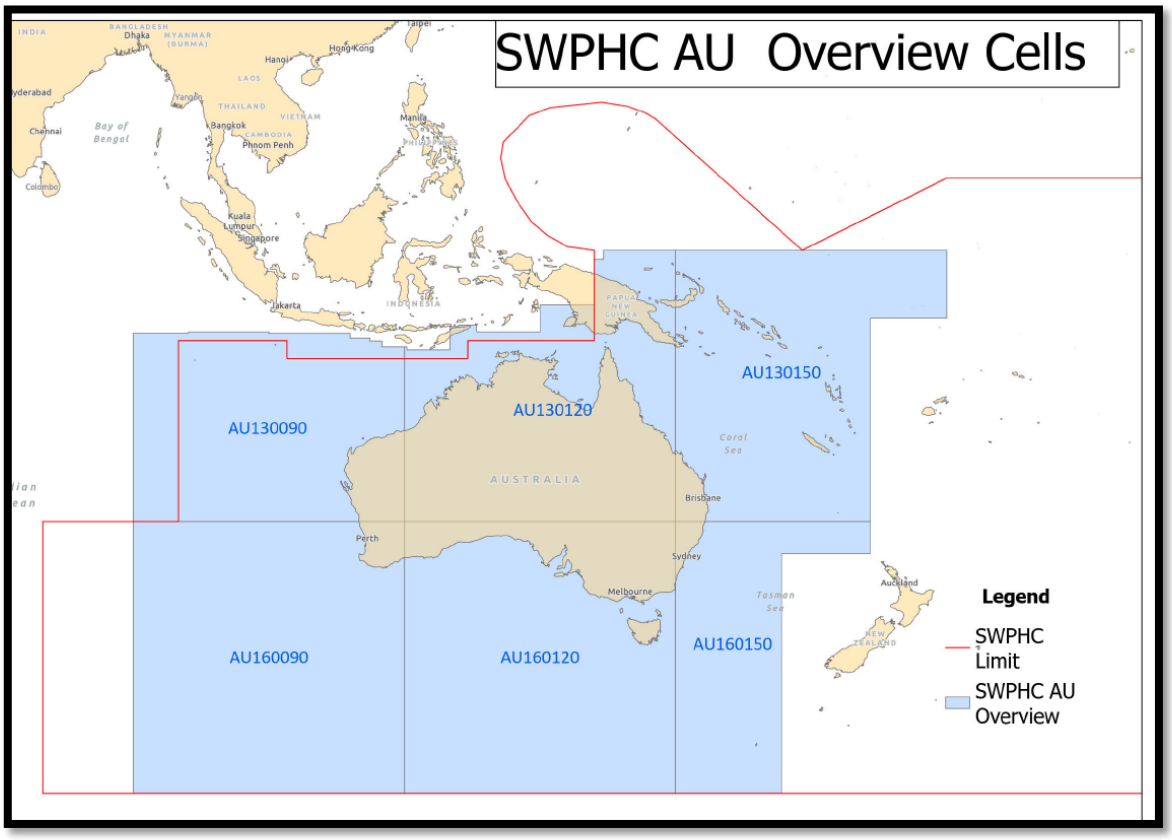


Figure 1 - Usage Band 1

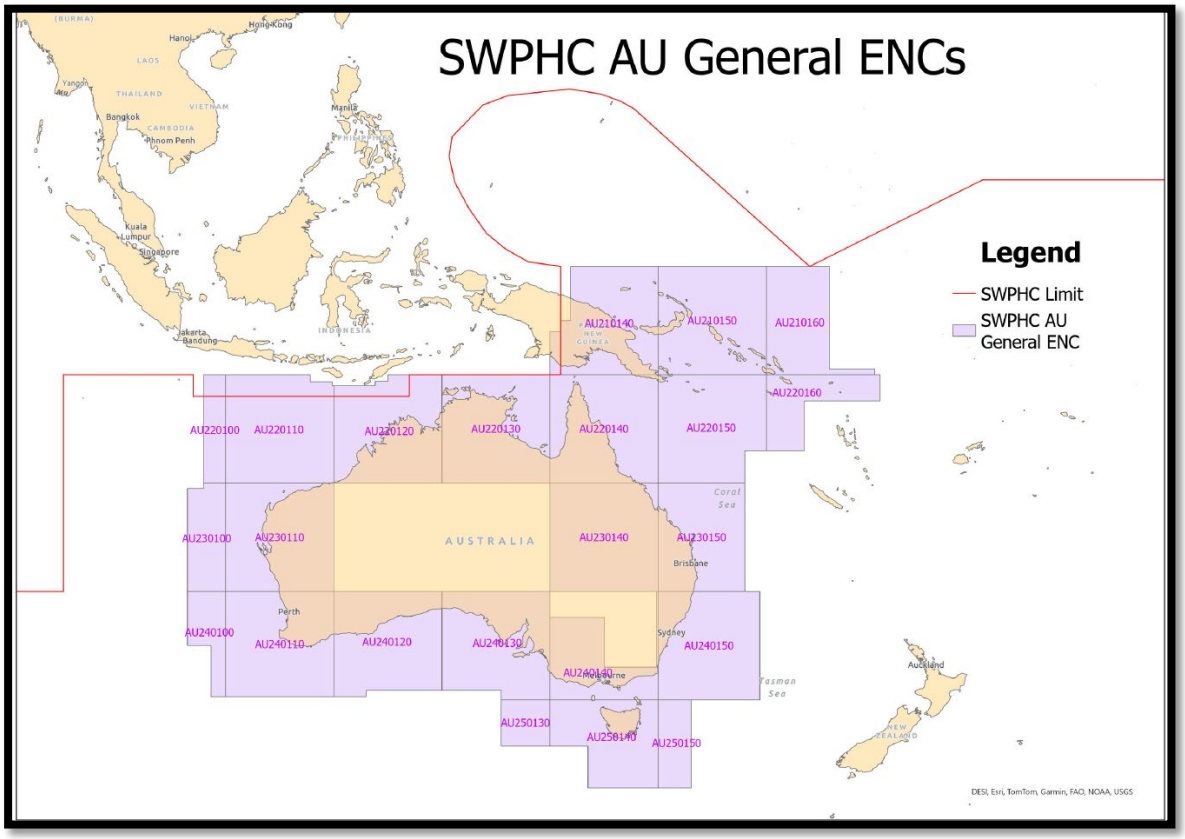


Figure 2 - Usage Band 2

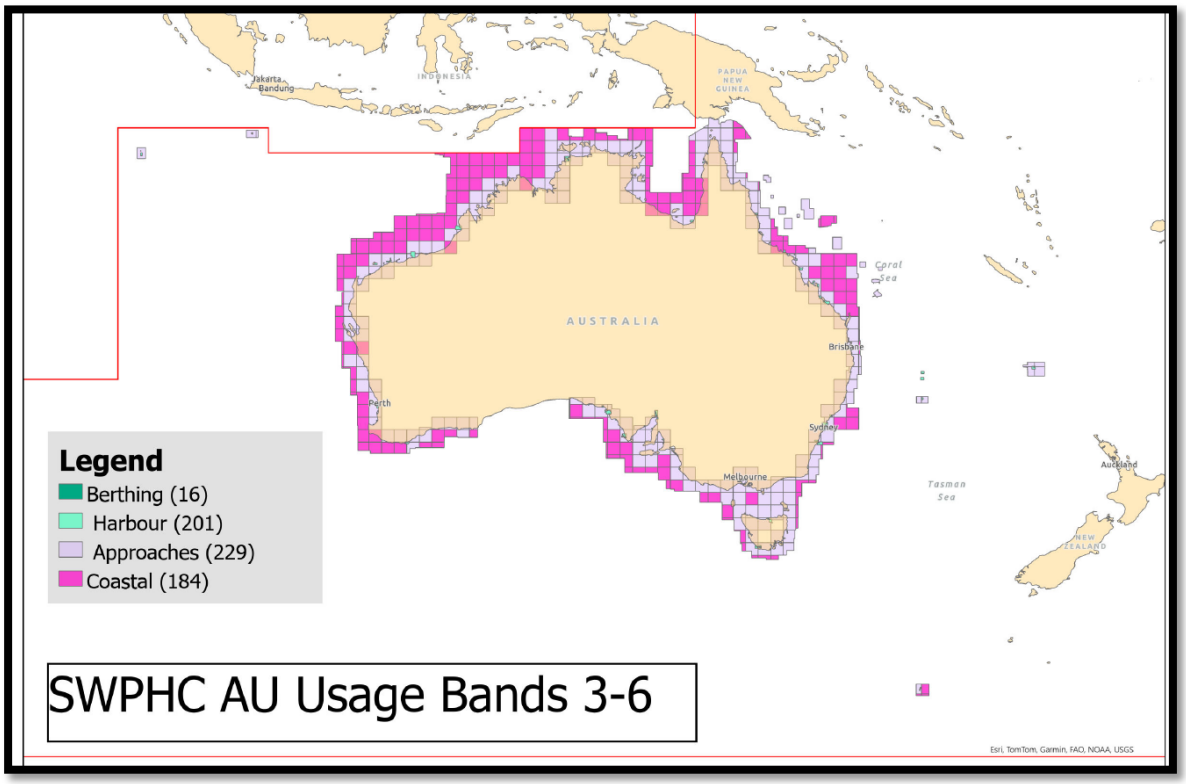


Figure 3 – AU Usage Band 3-6

Papua New Guinea (PNG)

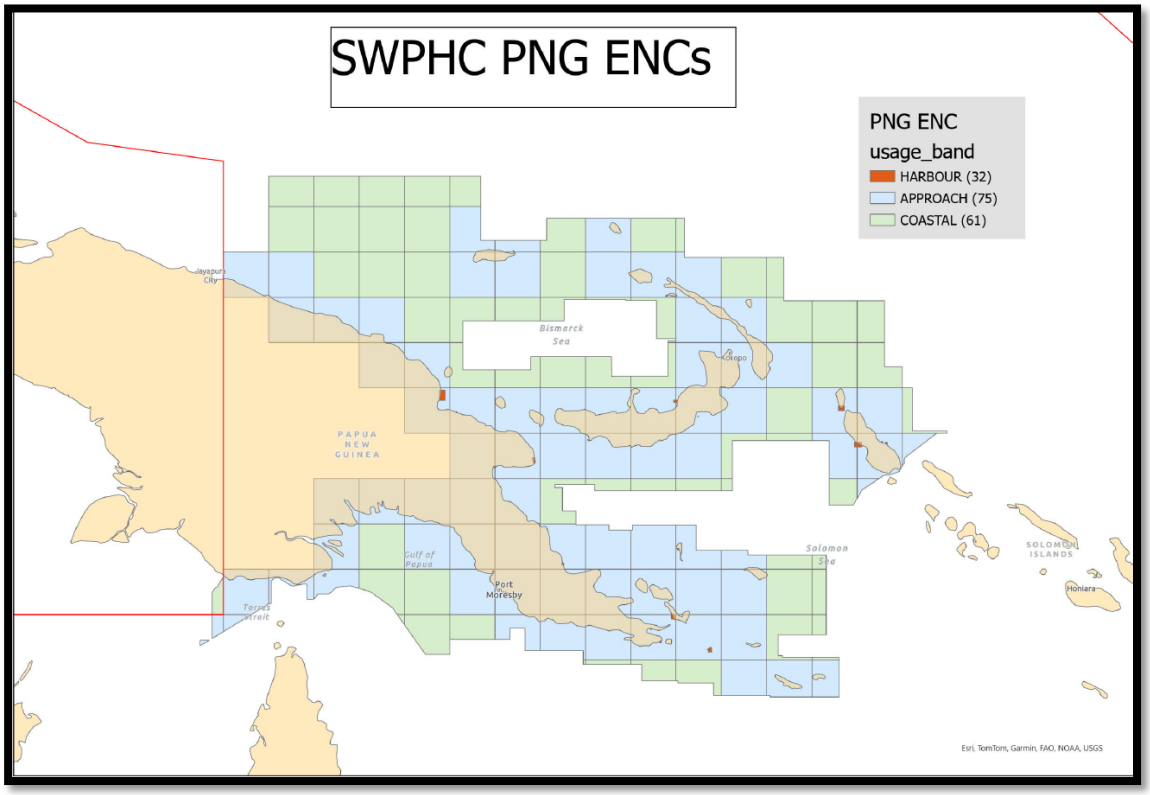


Figure 4 – PG Usage Band 3-5

Solomon Islands

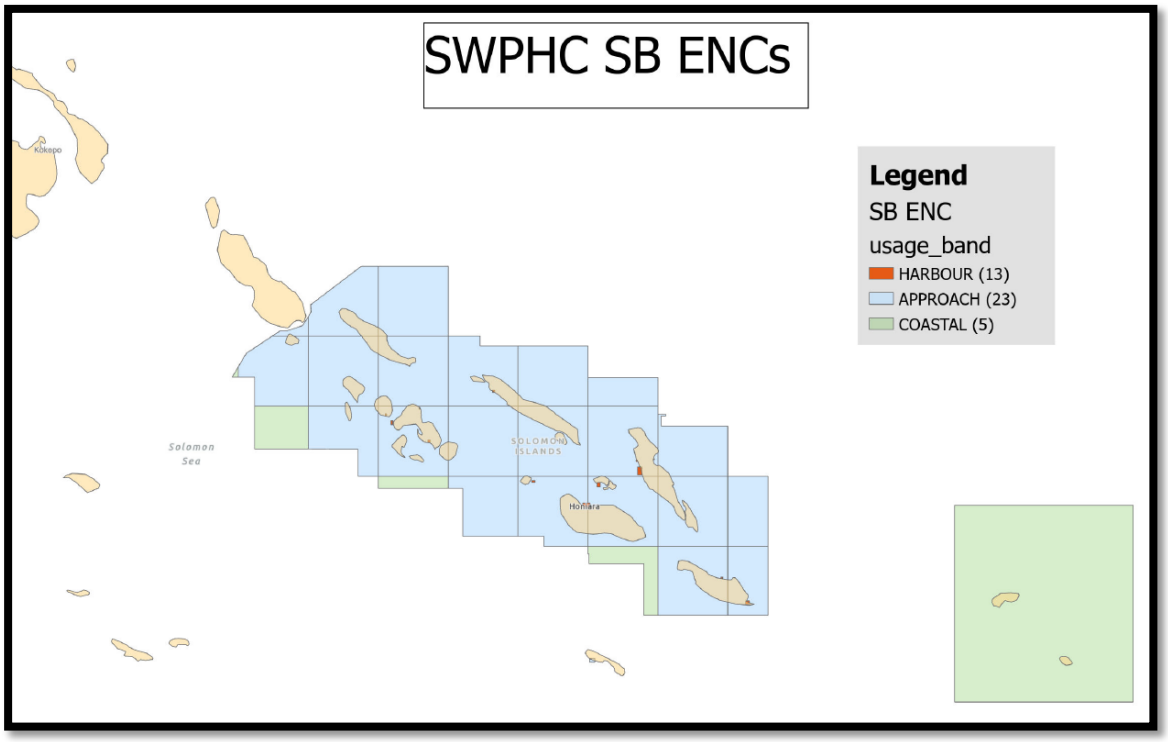


Figure 5 – SB Usage Band 3 (Solomon Islands)

g) ENC Distribution

Australia is a member of IC-ENC and distributes its full portfolio of AHO published ENCs through IC-ENC. Australia also hosts a regional IC-ENC office which provides support to SWP IC-ENC members. Australia is currently Vice Chair of the IC-ENC Steering Committee and an active participant in various IC-ENC technical and commercial working groups.

View the IC-ENC World Catalogue here: http://geosig.hidrografico.pt/flexviewers/ICENC/

Australia also has a national ENC service, known as 'AusENC'. This supports vessels operating within Australian, Papua New Guinea, Solomon Islands, Timor Leste and surrounding waters and is priced to encourage use by domestic vessel operators, including coastal and port pilots. To support cross-Tasman operations, Toitu te whenua LINZ published ENC of North and South Island New Zealand have also been included in the service since Jan 2021.

For more information, visit the AHO website at:
www.hydro.gov.au/prodserv/digital/ausENC/enc.htm

h) Raster Nautical Charts

The AHO does not produce RNC.

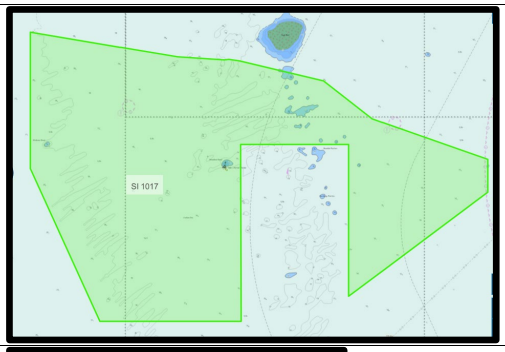
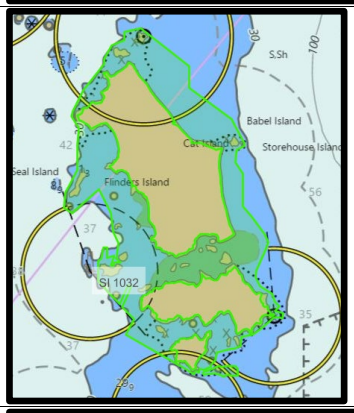
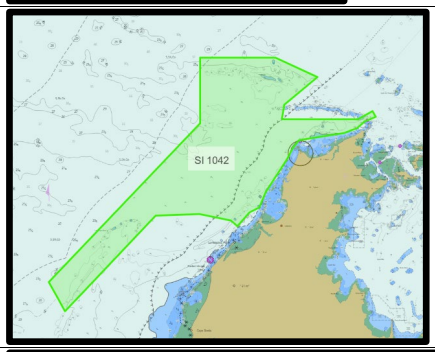
i) Paper Nautical Charts

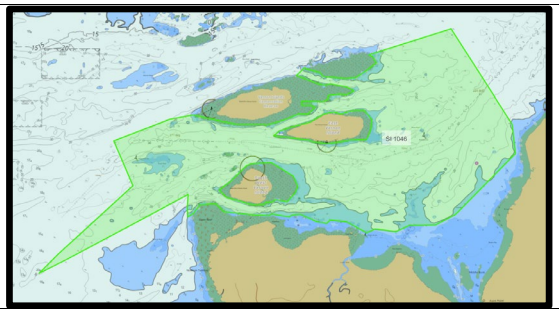
There are currently **372** paper nautical charts produced and maintained by the AHO. Detailed information of the full Australian chart portfolio can be found on the AHO website at:
http://www.hydro.gov.au/prodserv/paper/auspapercharts.htm

Paper Charts published since the SWPHC21 Meeting			
Australia	**Solomon Islands**	**PNG**	**INT**
Total: 217 NC: 0 NE: 19 MSI Updates: 198	**Total: 6** NC: 0 NE: 0 MSI Updates: 6	**Total: 23** NC: 0 NE: 4 MSI Updates: 19	**Total: 22** NC: 0 NE: 1 MSI Updates: 21

Australia

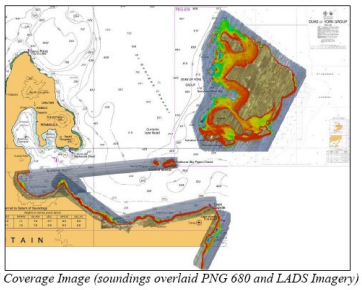
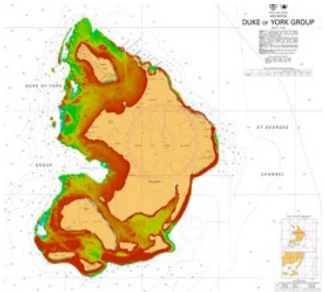
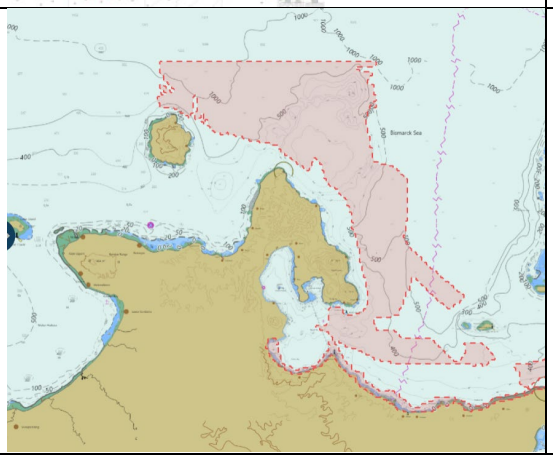
Some of the major updates are shown below:

Survey Details	Thumbnail	Products	Published
HIPP SI 1017 Varzin Passage to Merkara Shoal, QLD		AU411141 AU220140 Aus294 Aus296 Aus700 Aus842 Aus301	20/08/2024 15/08/2024 25/10/2024 25/10/2024 25/10/2024 25/10/2024 25/10/2024
HIPP SI 1032 Furneaux Group, TAS		AU5FIW01 AU5LAB01 AU440147 AU440148 AU441147 AU441148 AU240140 AU250140 AU160120 Aus179 Aus798 Aus800 Aus487	16/05/2024 23/05/2024 23/05/2024 23/05/2024 30/05/2024 30/05/2024 23/05/2024 23/05/2024 16/05/2024 18/07/2024 18/07/2024 18/07/2024 18/07/2024
HIPP SI 1042 Lord Mayor Shoal to Pit Shoals, WA		AU417122 AU417123 AU220120 Aus733 Aus732 Aus323	17/10/2024 24/10/2024 17/10/2024 25/10/2024 25/10/2024 06/12/2024
HIPP SI 1043 Cape Fourcroy (West), NT		AU412129 AU413129 AU413130 AU220120 AU130120 Aus309 Aus4603	30/05/2024 30/05/2024 06/06/2024 30/05/2024 06/06/2024 21/06/2024 21/06/2024

Survey Details	Thumbnail	Products	Published
HIPP SI 1046 Howard Channel, NT		AU412131 AU413130 AU413131 AU220130 Aus20 Aus309 Aus720	15/08/2024 15/08/2024 22/08/2024 15/08/2024 13/09/2024 30/08/2024 13/09/2024

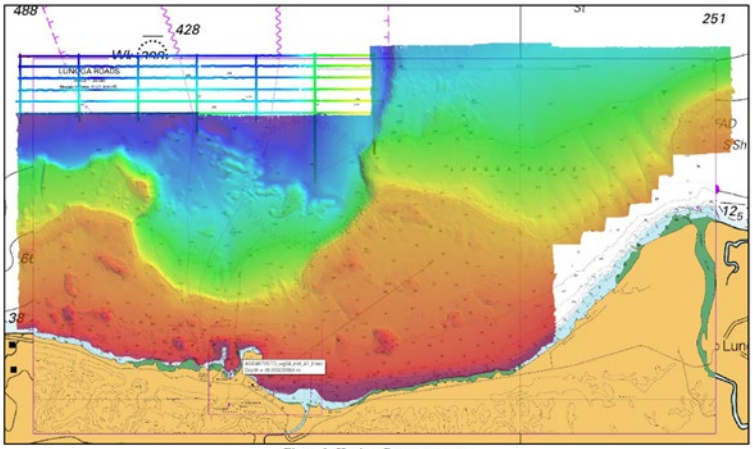
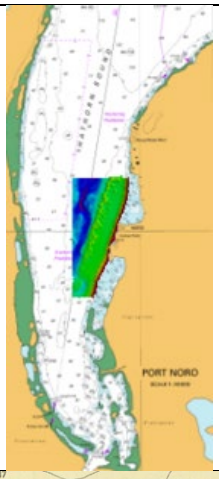
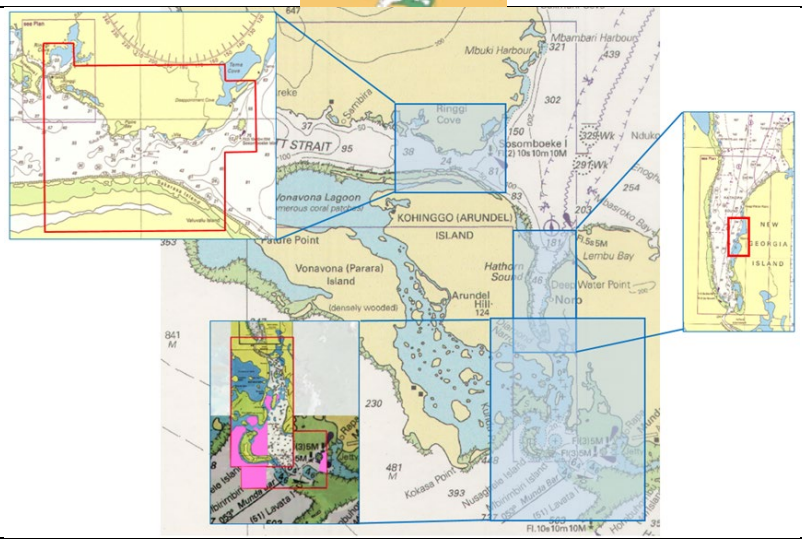
Papua New Guinea

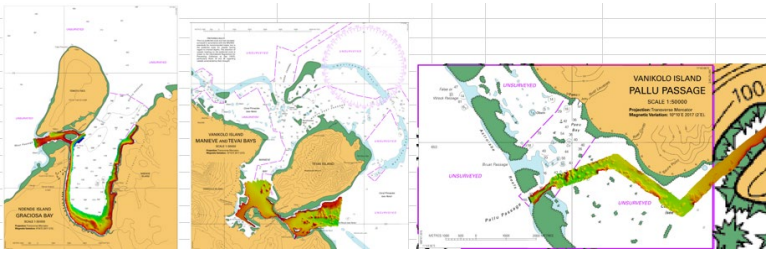
Some of the major updates are shown below:

Survey Details	Thumbnail	Products	Published
Rabaul - Duke of York - PNG LADS Survey 2018 RAN HI 612	 *Rabaul Coverage Image (soundings overlaid PNG 680 and LADS Imagery)* 	PG5679P0 PG405152 PNG554 PNG679	26 Feb 24 29 Feb 24 23 May 24 12 Apr 24
PNG - Approaches to Blanche Bay (Rabaul)		PG405152 PNG554 PNG545 PNG680	25 Jul 24 14 Sep 24 14 Sep 24 30 Aug 24

Solomon Islands

Some of the major updates are shown below:

Survey Details	Thumbnail	Products	Published
JICA/SIMA project 2022-23 -Honiara - Lungga Roads - MBES/SBES	 *Figure 1: Honiara Port survey area.*	SB5101P1 SB410159 SB410160 SLB101 SLB201 SLB303 SLB304	Underway
JICA/SIMA project 2024 - Port Noro MBES		SB5102P3 SB409157 SLB102P3 SLB102P4	Not yet Commenced
JICA/SIMA project 2024 – Blacket Strait, Diamond Narrows to Munda Bar		SB5102P3 SB409157 SLB102 SLB302	Not yet Commenced

RAN GI 070 - Santa Cruz Islands		SB3107P1 SLB107	Underway

j) S-100

The AHO has been actively collaborating and engaging with other Hydrographic Offices., Australian Government and industry partners on S-100 products and services. The AHO has established project Theseus, which is looking at our S-100 implementation plan with focus on our path to dual fuel ENC production from late 2025.

The AHO will produce the following S-100 products:

- S-101 Electronic Navigational Chart
- S-102 Bathymetric Surface
- S-104 Water Level Information for Surface Navigation
- S-111 Surface Currents
- S-128 Catalogue of Nautical Products

The AHO will start producing S-57 and S-101 from Q4 2025. AHO will manage the existing S-57 database already in production and derive S-101 Products via automated conversion from this database. Initial release of S-101 products will be for 20 focus areas; 18 areas around the country, 1 area for Papua New Guinea and 1 area for Solomon Islands, with the remaining cells to follow over time.

S-102 datasets have been created and are being tested by their related port authorities in Australia, with a focus on creation of S-102 products in areas where we currently have HDbENCs as the first phase of production of S-102. AHO will have a co-ordinated release for S-101, S-102 and S-128 for the initial tranche of work.

S-104 will focus on the delivery of regular gridded water level surface time series and AHO will look at implementing S-104 in areas covered by S-102. S-111 will initially consist of point prediction at 8 locations around Australia. S-104 and S-111 are expected to be produced from middle of 2026.

Figure 6 - Ms Gabriela Balla (AHO S-100 Coordinator) and Adjutant Sub-Chief Simon Zanni (Italian Hydrographic Institute) during the testing for S-101 ENCs (AHO supplied), IHO Singapore Lab project, Darwin, October 2024.

In 2024, AHO supported the IHO Singapore Lab project which focuses on testing the S-100 Electronic Chart Display and Information System (ECDIS) aboard the Italian Navy's training ship, *Amerigo Vespucci,* along major shipping routes. Fourteen S-101 ENC cells, along with some updates provided by AHO were successfully loaded and used alongside Amerigo Vespucci's ECDIS. The ship used these charts to navigate Australian waters during their stop to Darwin, 4th-7th October 2024, as part of its around the world voyage.

Australia's National S-100 Stakeholders Working Group (S-100WG) was stood up to take the leadership role in creation, implementation and oversight of the introduction of S-100 based services in Australia by developing documentation, creating national standards and policies, defining roles, responsibilities and control that will harmonise the Australian e-Navigation data chain.

The S-100WG is a working group under Intergovernmental Committee on Surveying and Mapping (ICSM) and is responsible for coordinating and managing the timely and effective implementation of a broad range of S-100 products and services in Australia and New Zealand. It is chaired by the AHO and vice-chaired by AMSA.

The Working Group membership is drawn from organisations involved in the maritime domain and likely to be impacted by the introduction of some of the S-100 based products and services.

See S-100 Working Group | Intergovernmental Committee on Surveying and Mapping (icsm.gov.au)

The next S-100 WG meeting will take place virtually on 18th March 2025.

Figure 7 - The AU S-100WG Roadmap

A S-100 Testbed Focus Group (S-100TBFG) project team was established in October 2023 under S-100WG. The project team's main objective is creating a national testbed to enable the development and testing of a different S-100 product prototypes to support IHO S-100 Implementation Priorities, Phase 1 – Route Monitoring.

Table A – IHO list of S-100 products with special focus	
Phase 1 / Route monitoring	
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-104	Water Level Information for Surface Navigation
S-111	Surface Currents
S-124	Navigational Warnings
S-129	Under Keel Clearance Management
Critical Framework	
	IHO Geospatial Information Registry
S-98	Interoperability Specification
S-100	Universal Hydrographic Data Model
S-128	Catalogue of Nautical Products
S-164	Test Data Set for S-100 and ECDIS Type Approval
Phase 2 / Route planning	
S-122	Marine Protected Areas
S-123	Marine Radio Services
S-125	Marine Aids to Navigational (AtoN)
S-126	Marine Physical Environment
S-127	Marine Traffic Management
S-131	Marine Harbour Infrastructure
S-411 (WMO)	Ice Information
S-412 (WMO)	Weather and Wave Hazards

Phase 1 is product specifications for Route Monitoring which must be supported by the Critical S-100 Framework. Product specifications for Route Planning will be developed as the Phase 2. (source IHO Roadmap for the S-100 Implementation Decade (2020-2030), Annex 2, V3.0 19 October 2023).

The AUS S-100TBFG project team is actively engaging and collaborating with other Hydrographic Offices and industry partners on S-100 available test dataset products. The project team also supports and participates in various IHO S-100WG meetings. The AHO has also participated in the IHO S-100 Working Group held in Italy in November 2024.

k) Paper Chart automation

The AHO continues to work toward automation of paper chart production using CARIS AutoChart. The AHO has formulated a plan to allow us to migrate our entire charting portfolio over to AutoChart products. This is a significant body of work that began in Q1 2025.

l) Australian Chart Index Application

The Australian Chart Index (ACI) is a web application facilitating the discovery of paper and electronic charts published/issued by the AHO. The ACI enables chart agents, mariners and other users to:

- identify the latest chart products
- identify individual ENC coverage
- identify ENC regional packs for purchase
- view S-57 ENC content via the integrated 'AHO ENC Online' layer
- view bathymetric Zones of Confidence.

All content within the ACI is updated weekly in accordance with weekly AusENC updates. The ACI can be accessed at: https://services.hydro.gov.au/AHOChartIndex/

4. New publications & updates

2025 Australian National Tide Tables (ANTT) were released as a digital (.pdf) download from the AHO website, and via an interactive web service that allows port searching with the ability to view and download individual port tidal data. Downloads incorporate the latest applicable Notice to Mariners update.

AusTides has been upgraded to provide a cleaner and more intuitive user-experience. It is available for Windows, Mac OS and Linux, as a free download from the AHO website. When an internet connection is available, the app automatically checks for data updates and applies them upon the next restart (with an explanatory pop-up for user clarity). The updating feature also supports loading a new year's data.

Separate 2025 National Tides Tables for Papua New Guinea, the Solomon Islands and Timor-Leste have been published. 2025 Papua New Guinea National Tide Tables were released as a digital (.pdf) download from the AHO website only. The 2025 Solomon Islands and Timor-Leste National Tide Tables were released as .pdf and printed books available from the Solomon Islands Maritime Authority and Timor-Leste Government.

Work is continuing on the Mariner's Handbook for Australian Waters AHP20 6th Edition with publication planned in 2025. The publication will be released as a digital (.pdf) download from the AHO website. A new dynamic web service for AHP20 is being developed and is planned for release in 2026.

Figure 8 – AHO Digital Publications

5. Maritime Safety Information (MSI)

Australia is the coordinator for NAVAREA X with operational services delivered by Joint Rescue Coordination Centre (JRCC) Australia within the Australian Maritime Safety Authority (AMSA). AMSA is Australia's national agency responsible for maritime safety, protection of the marine environment, and maritime aviation search and rescue.

Information, outline maps and coordinates for NAVAREA X and the coastal warning areas are available on the AMSA website at: https://www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information.

Maritime Safety Information (MSI) in the form of navigational warnings (S-53) are promulgated by Inmarsat SafetyNET, Iridium SafetyCast, HF digital selective calling (DSC) and HF radiotelephone.

The MSI Assessment for NAVAREA X for the period 1 January 2023 to 31 December 2023 was submitted to the Sixteenth IHO World Wide Navigational Warning Service (WWNWS) Sub-Committee Meeting (WWNWS16) held in Valparaíso, Chile from 2 to 6 September 2024 (document WWNWS16-3.2-X). A brief update for the period 1 January 2024 to 31 December 2024 has been submitted (document SWPHC22-10B).

In-force NAVAREA X MSI can be obtained from the AMSA website at: https://www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information-database

6. Capacity Building

a) Maritime Geospatial Training Centre (MGTC)

The Maritime Geospatial Training Centre is located at HMAS Penguin in Sydney on the North Shore. MGTC provides training courses in Hydrographic surveying for officers and sailors from Australia and the SW Pacific region under the Defence Cooperation Programme. It also provides meteorology and oceanography (METOC) training to the RAN.

The hydrographic training consists of three levels: basic, intermediate and advanced level. The basic, intermediate and advanced level course is attended by sailors and officers from Australia and the region. In 2023 MGTC's advanced level H2 course was reaccredited by the FIG/IHO/ICA International Board on Standards of Competence as a Category "B" programme for a further 6 years.

In 2024 the advanced level H2 course ran for 25 weeks and consisted of students from Australia (12), Malaysia (1), and New Zealand (2) - (*see photo below*). The Intermediate course (10 weeks' duration) was attended by students from Australia (8) and Fiji (1). The two Basic courses (12 weeks' duration) consisted of students from Australia (6), Pakistan (2), Philippines (1), Sri Lanka (1) and Fiji (2). At the end of the 2024 MGTC also held a Military Meteorology and Oceanography (Mil METOC) Course over 12 weeks; where 7 students in total attended from Australia (5), New Zealand (1) and Malaysia (1).

Figure 9 – 2024 Advanced H2 Course Participants

b) S-5B Hydrographic Surveyors Course and S-8B Category B Marine Geospatial Information Program (IIC)

AHO have five staff enrolled in the S-8B Marine Geospatial Information Program, and one staff member currently conducting the S-5B Hydrographic Surveyors Course.
The courses run by IIC Technologies are accredited by the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) and is designed to maximize the advantages of online delivery.

As a part of Capacity Building activities, Australia supported 1 PNG officer to attend the S5B Hydrogrpahic Survey course (completed in July 2024) and 1 PNG officer to attend the S8-B nautical cartography course (completed in April 2024).

c) Solomon Islands Navigation Safety Planning Workshop and Tripartite Meeting – Sep 2024

In Sep 2024, Assistant Director International Charting Development, AHO visited the Solomon Islands to attend Navigation Safety Planning Workshop and the JICA project Tripartite meetings.
The Navigation Safety Planning Workshop took place in Honiara with several presentations from SIMA focussing on Safety of Navigation, E-Navigation, Solomon Islands Hydroscheme and hydrographic survey priorities. Presentations covered - drivers for identifying priority areas, importance of hydrography to Solomon Islands and detailing the SIMA Act 2018 which mandates hydrography and SOLAS obligations. The AHO delivered a presentation focussing on maritime safety coordination, Notice to Mariners, summary of survey and charting projects in Solomon's Islands and AHO S-100 implementation progress.

Figure 10 – Navigation Safety Planning Workshop

The JICA project Tripartite meetings took place in Honiara. Attendees included Japan International Cooperation Agency (JICA), Asahi Corporation (AAC), SIMA and AHO. Aero Asahi Corporation, who are undertaking the surveys under contract to JICA gave an update on the project activities so far and completion of the hydrographic surveys in Honiara, Noro, Munda and an outline of project outcomes. Schedule for ENC and paper chart production and anticipated dates for deliverables to AHO were agreed. The AHO has been supporting the JICA project, through apprasing survey data and providing validated datasets for charting action as well as performing QA of supplied ENC and Paper products. SIMA staff will attend ENC Quality Assurance training at AHO in April 2025.

d) Papua New Guinea National Maritime Safety Authority (NMSA) Workshop – Oct 2024

In Oct 2024, Assistant Director International Charting Development, AHO attended the Papua New Guinea National Maritime Safety Authority (NMSA) for National Hydrographic Meeting. The Hydrographic meeting focussed on SOLAS conventions, importance of hydrography and Nautical charting.

AHO provided update to NMSA participants focussing on Maritime safety coordination, Notice to Mariners, chart update process and summary of completed survey and charting projects in PNG waters as well as an update of AHO Digital transformation strategy, S-100 implementation progress, Australia's S-100 Working group and current test bed cases being developed in Australia.

The key outcome from the visit was to prioritise survey activity for PNG waters.

e) World Hydrography Day Seminar 2024

The Australian Hydrographic Office and The Hydrographic Industry Partnership Program (HIPP) was pleased to host a World Hydrography Day Seminar, on 21st June 2024 in Wollongong, with over 100 attendees. This event brought together leading experts, professionals, and enthusiasts from the field of hydrography to collaborate and to celebrate World Hydrographic Day including recent advancements and future directions in hydrographic science and practice, centring on the WHD theme "Hydrographic Information – Enhancing Safety, Efficiency and Sustainability in Marine activities."

Figure 11 - World Hydrographic Day Seminar: Keynote presentations and discussions on the critical role of hydrography in sustainable ocean management and the blue economy.

f) Category A Hydrographic Programme

The Australian Maritime College (AMC), located at the University of Tasmania is Australia's national institute for maritime education, training and research. In partnership with The University of Tasmania and industry partners Fugro Australasia, Ocean Infinity, Revelare Hydrospatial and Revelare, aims to bring extensive expertise, state of the art equipment and facilities to deliver a Category "A" Hydrographic Programme.

The programme has been submitted to the IBSC for recognition assessment against the IHO S5-A syllabus. The programme aims to commence in January 2026, with enrolments commencing from September 2025.

The course will be 48 weeks in length, with five phases including the six-week Complex Multidisciplinary Field Project. There are two practical phases included within phases two and three (seven weeks total).

Course entry requirements are as follows (individuals must meet one of the following):

- Certified Professional Hydrographic Surveyor (CPHS) Level 2 accreditation, via the Australasian Hydrographic Surveyors Certification Panel (AHSCP) or IBSC recognised equivalent certified scheme; or
- A bachelor's degree, from a STEM discipline – examples of degrees include those with a maths of physics major, engineering, oceanography or GIS; or
- Completion of a Category "B" accredited hydrographic survey course and at least two years of recent hydrographic survey experience; and
- A minimum English language of level 6 of the IELTS or equivalent.

7. Oceanographic activities

a) Tide gauge networks

Two permanent tide gauge networks are operated in the region by the Bureau of Meteorology.

The Australian Baseline Sea Level Monitoring Array currently consists of 14 permanent gauges monitoring sea level and ancillary meteorological parameters around the Australian coastline, including one at Cocos Island. The array is supplemented with 2 privately-operated tide gauges at Lorne and Stony Point. The locations of the gauges are shown in Figure 12 (below).

Monthly reports and observational data are published by the Bureau and can be located on their website at: http://www.bom.gov.au/oceanography/projects/abslmp/abslmp.shtml
The array forms part of a wider Australian network of tide gauges operated by various port and marine agencies whose metadata and monthly sea levels are available from the Bureau website at: http://www.bom.gov.au/oceanography/projects/ntc/monthly/

The Pacific Sea Level and Geodetic Monitoring Project currently consists of 14 permanent gauges monitoring sea level and ancillary meteorological parameters throughout the South Pacific region. The locations of the gauges are shown in Figure 12 (below).

Monthly reports and observational data are published by the Bureau and can be located on their website at: http://www.bom.gov.au/pacific/projects/pslm/index.shtml

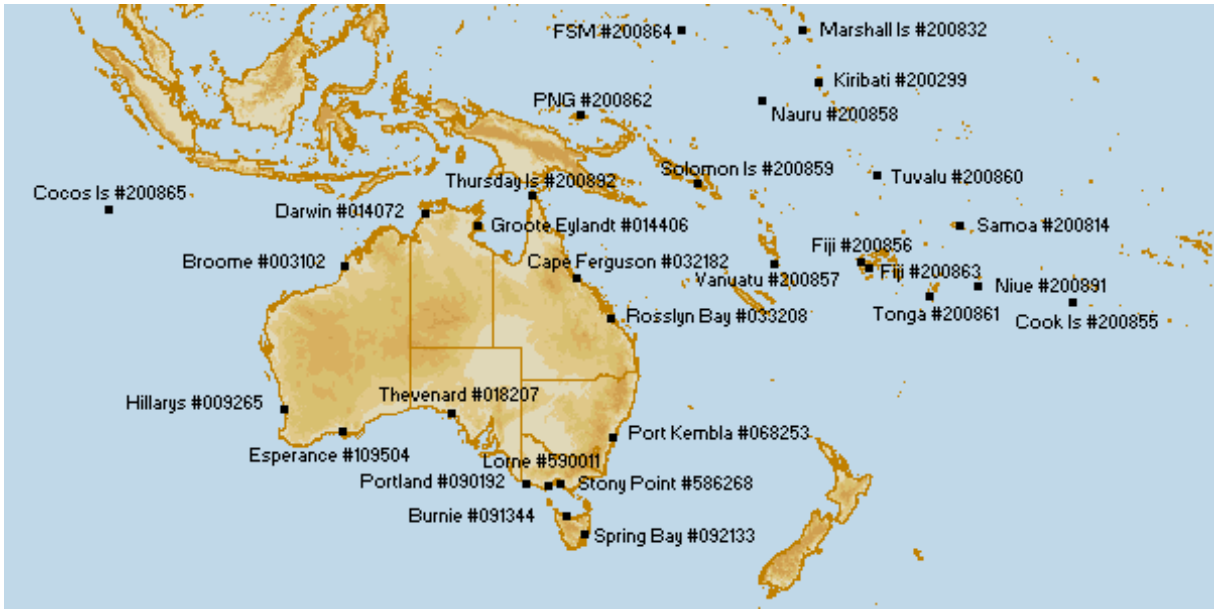


Figure 12: Permanent tide gauge network operated by the Bureau of Meteorology, including the Australian Baseline Sea Level Monitoring Array (16 sites) and Pacific Sea Level and Geodetic Monitoring Project (14 sites).

The permanent tide gauges were upgraded in 2009-2010 (Baseline) and 2011-2013 (Pacific) with modernised data loggers, real-time satellite communications and additional radar-type water level sensors.

The Australian Tsunami Warning System (ATWS) is supported by the 30 permanent Australian and Pacific tide gauges (Figure 12) as well as an additional network of 16 radar-type tide gauges at four Pacific and 12 Australian sites as shown in Figure 13. An array of six deep-ocean tsunameters (DART buoys) brings the Australian tsunami-monitoring network to 52 sites in all.
The primary purpose of these additional stations is for the detection of tsunami with real time data made available to support the operations of the Pacific Tsunami Warning System. Further information about the Australian Tsunami Warning System is available at http://www.bom.gov.au/tsunami/about/atws.shtml

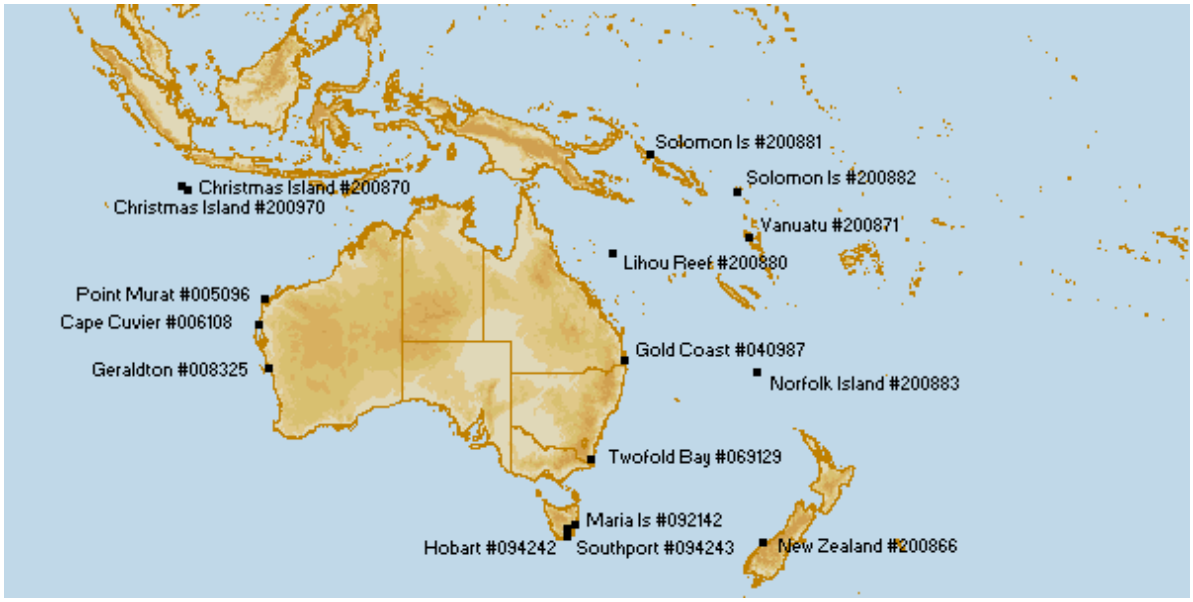


Fig. 13- Additional ATWS radar gauges (16 sites) that are used in conjunction with the permanent tide gauge network for monitoring tsunamis in the Australian region.

b) New equipment

Surveyable mounting of the secondary radar water level sensors and integration of mounting pillars for continuous GNSS/GPS equipment on the tide gauge infrastructure are slowly being introduced into the network, while acoustic water level sensors remain the primary sensor at most sites.

c) Problems encountered

Generally, the gauges operate autonomously in between calibration and servicing on a routine 18-month schedule, with average data return from the permanent tide gauge network exceeding 95%. The variety of day-to-day problems that do arise include power supply, data logger, data communications and sensor malfunctions, which are managed either remotely, by voluntary first in maintenance support or through contingency field trips.

Relocation or temporary removal of a tide gauge is occasionally required when the wharf is being developed or refurbished. Where possible a comparison gauge is established and run in tandem with the operational tide gauge for a period of time to help provide continuity in the record.
The following items relating to the tide gauges are worth noting at the time of writing;

- The station at Groote Eylandt has been out of service since being destroyed during Severe Tropical Cyclone Megan in March 2024.
- The station at Hillarys resumed service in April 2024, having been removed in July 2023 to accommodate wharf refurbishment.
- The station at Nauru was relocated and resumed service in May 2024, having been removed in September 2023 while the harbour was redeveloped.

d) Status update of the UNESCO/IOC Indian Ocean Tsunami Warning and Mitigation System (IOTWMS)

TSP Australia's special maritime products for NAVAREA Coordinators are still to be announced for subscription to the IHO/IMO/WMO Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC).
To mark the 20th anniversary of the tragic 2004 Indian Ocean Tsunami, a Global Tsunami Symposium was held in Banda Aceh Indonesia between 11 and 14 November 2024. It was jointly organised by the Government of Indonesia, the Intergovernmental Oceanographic Commission (IOC/UNESCO) and the International Union of Geodesy and Geophysics (IUGG).
Following on from this key event, the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS) held its 14th Session between 16 and 19 November 2024.

8. Spatial Data Infrastructures

a) Status of Marine Spatial Data Infrastructure (MSDI)

The AHO operate a basic public facing MSDI, serving foundation hydrographic geospatial web services, and enhanced through a couple of supporting browser based applications. The AHO currently utilise two cloud-based infrastructures to support its MSDI capability; our own sovereign capability hosting the following
https://services.hydro.gov.au/site1/rest/services
https://services.hydro.gov.au/AHOChartIndex/
and ESRI's ArcGIS Online which hosts our HIPP HydroScheme
https://www.hydro.gov.au/NHP/
The mission for our MSDI is to ensure our data and products are secure-FAIR; findable, accessible, interoperable, and reusable where compatible with our security obligations. The OGC standards we currently present are Web Map Service, Web Map Tile Service, Web Feature Service, and GeoServices REST.

Australia has three other MSDIs of interest to the SWPHC:

- The AusSeabed Marine Data Portal, hosted by Geoscience Australia, provides seabed data from multiple organisations.

- AMSIS – the Australian Marine Spatial Information System - is a web-based interactive mapping and decision support system that improves access to the legal frameworks that regulate Australia's marine domain. The public interface of AMSIS presents the official representation of Australia's maritime boundaries and incorporates the rights, restrictions, responsibilities, and activity within the jurisdiction.
- The Australian Ocean Data Network provides access to oceanographic data collated by the Integrated Marine Observing System.

The Australian whole of government approach to Marine Spatial Planning can be seen through the Blue Economy Co-operative Research Centre.

b) Relationship with the National Spatial Data Infrastructure (NSDI)

Australia does not provide a single NSDI, rather supports and enables a federation of spatial data infrastructures that, based on a common set of interoperable standards, are able to communicate between each other. The AHO is currently focussed on Marine/Maritime SDI's rather than National SDI's.

c) Involvement in regional or global MSDI efforts

The AHO is currently a member of the SWPHC MSDI WG, and has been very active in the past twelve months, contributing to seven working group meetings, growing participation throughout the region including Cook Islands, Fiji, Kirabati, New Caledonia, PNG, Tonga, SPC, France, NZ, UK (Chair), and USA.

d) MSDI national portal

As addressed above in reference to NSDI's, the Australian position on SDI's is to federate them rather than have a single portal. Therefore there are a number of MSDI's available from Australia as recently updated in the IHO MSDI register https://iho.int/uploads/user/Inter-Regional%20Coordination/MSDIWG/MISC/SDI-portals_19Aug2024.pdf

http://iho.maps.arcgis.com/apps/webappviewer/index.html?id=6225e69a6d424b38b46dd2b59e7ca722
The AHO is currently providing geospatial web services in support of a number of port and national Marine Spatial Planning applications. The AHO is looking to federate its MSDI with Geosciences Australia AusSeabed Data Hub. Geoscience Australia coordinates the contribution of Australian seabed data into GEBCO data products.

9. Innovation

a) Use of Technology

AHO is currently working to implement distributed printing of charts by Agents. This is a precursor to more automated paper chart generation and supply for regulated purposes via our agents. There are significant system changes underway to support provision of the print files; this will be followed by updated file creation processes over coming years.

b) Survey Planning Risk Assessment tool

The AHO continues to use a Risk Assessment Tool (RAT) based on the methodology adopted by LINZ. This operates on an Amazon Web Service cloud instance and was first employed during the survey planning process for HydroScheme 2021. It uses AIS data (supplied by AMSA) and numerous geospatial data overlays to output a graphical risk display. The user has the flexibility to alter Traffic, Likelihood and Consequence weightings to develop Use Case Scenarios. The output of the RAT complements survey planning expertise to aid in the prioritisation of survey activity.

c) Survey Rank Dashboard

ESRI Dashboards have been developed to leverage RAT functionality in decision making and preliminary survey assessment and triage. Unassessed surveys received by the AHO are assessed against the RAT output and the survey's relative risk score and risk component composition are computed. These surveys are then automatically ranked on priority based on relative risk and this allows the survey assessor to make a preliminary assessment of the order in which the surveys should be assessed for inclusion on charts.

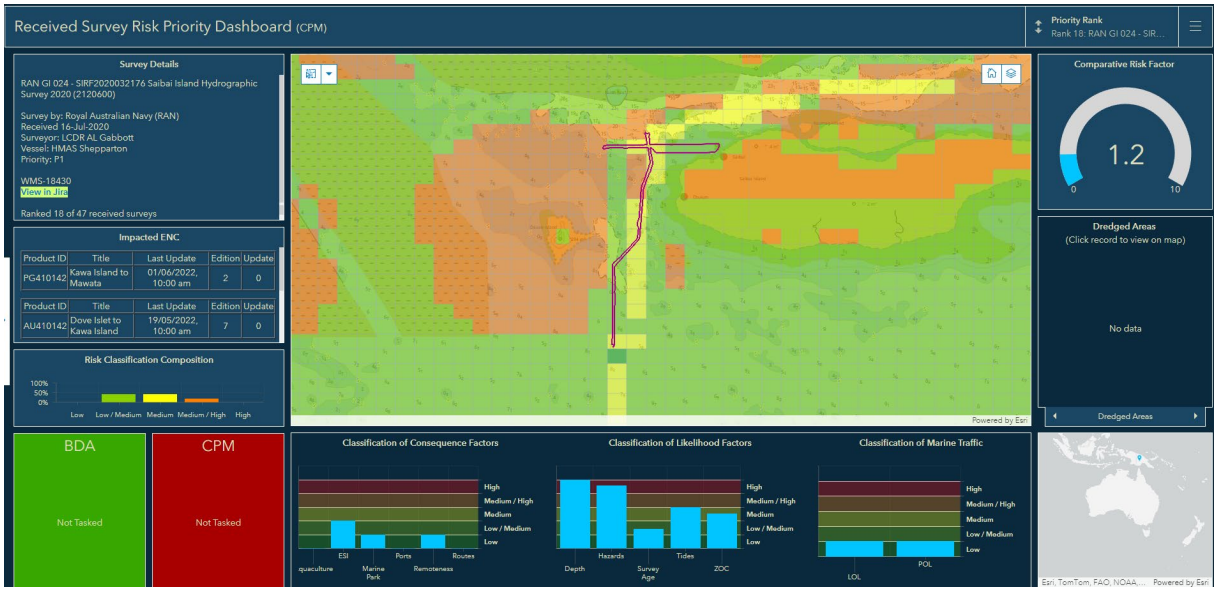


Figure 14 – Survey Rank Dashboard

d) S-124 navigational warnings development

Based on current progress, NAVAREA X is unlikely to declare operational S-124 services by 1 January 2026.

Australia has been actively engaged in the development and early implementation of the S-124 product specification. We have developed an initial prototype utilizing large language models (LLMs) for AI-based auto conversion of S-53, intended for demonstration purposes. This prototype can deliver S-124 in real-time via SECOM (IEC 63173-2) and includes an interactive WebUI for visualizing the datasets on an ENC.

Australia and New Zealand led efforts at the 109th session of the IMO Maritime Safety Committee (MSC) to achieve an output proposal to develop guidance to establish a framework for data distribution and global IP-based connectivity between shore-based facilities and ships for ECDIS (Electronic Chart Display and Information System) S-100 products, with work to commence at the twelfth IMO Sub-Committee on Navigation, Communication and Search and Rescue (NCSR) in May 2025.

Australia is now coordinating an input to NCSR 12 to establish this framework, a crucial element in establishing the means to distribute real-time S-100 exchange sets between shore providers and S-100 ECDIS.

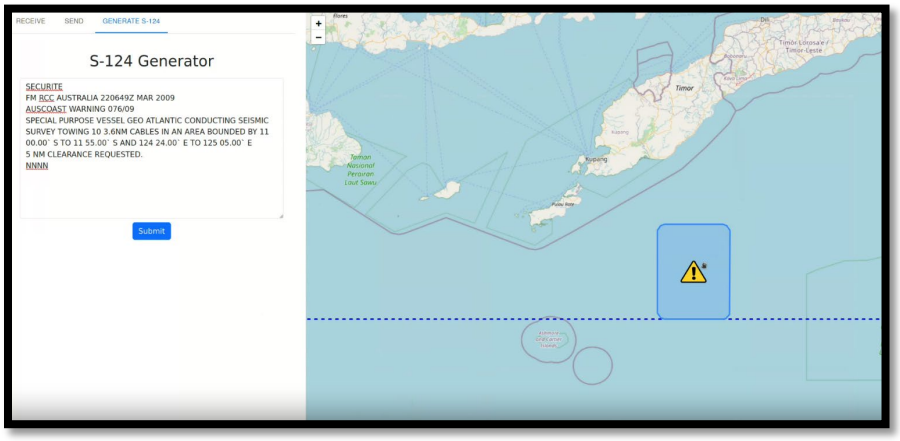


Figure 15 – S-124 Generator

e) National Maritime Website

General information on MSI, including availability and publication of navigational and meteorological warnings and services for NAVAREA/METAREA X are on AMSA's website https://www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information. This webpage was recently updated to improve the information available to mariners on availability of EGC services in Australia with the operationalisation of Iridium SafetyCast services.

NAVAREA X, AUSCOAST and Sea Safety Message warnings are updated in real time when they are issued and cancelled, and can be updated by refreshing the webpage https://www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information-database. The date and time of the last update is shown on the website and any download. Historical warnings are not available.

f) Geoscience Australia's AusBathyTopo Grids

Geoscience Australia continues to publish integrated bathymetric and elevation surfaces under the AusBathyTopo Product series. The most recent national-scale 250m resolution grid was released in 2024, with regional-scale 30m and 100m products being iteratively published under the Australian government's Resourcing Australia's Prosperity initiative. These products are also essential to the Australian Government's management of Australia's Maritime Jurisdiction.
Geoscience Australia innovations including the Digital Earth Australia Intertidal Elevation Product and other bathymetric integration advancements have been included in the 2024 and subsequent product releases. Geoscience Australia has shared these innovations with the

international geoscience community through forums such as the 2024 Bogor Indonesia UN-GGCE Workshop on Integrating Land and Sea.

10. Other activities

a) Australian Participation in IHO Working Groups

	Meeting	Chair/Vice Chair	Member/ Associate/ Observer
	Council		M
HSSC	Hydrographic Services and Standards Committee		M
NCWG	Nautical Cartography Working Group		M
ENCWG	ENC Working Group		M
DQWG	Data Quality Working Group		M
MSDIWG	Marine Spatial Data Infrastructure Working Group		M
HSWG	Hydrographic Surveys Working Group		M
NIPWG	Nautical Information Provision Working Group		M
TWCWG	Tidal, Water Level and Currents Working Group		M
WEND	World-Wide Electronic Navigational Chart Database	Vice Chair	M
WWNWS-SC	World-Wide Navigational Warnings Service Sub-Committee		M
ABLOS	Advisory Board on the Law of the Sea		O
CSBWG	Crowd Sourced Bathymetry Working Group		O
ECSPT	Electronic Chart System Project Team		M
S-100	S-100 Working Group		M
S-100	S-100 Validation Sub-Group		M
S-100	S-100 Security Scheme Project Team	Vice Chair	M
S-101	Project Team	Vice Chair	M
S-102	Project Team		
S-104	Project Team		M
S-111	Project Team		M
S-121	Project Team		M
S-129	Project Team		M
S-412	Development Group		M
HCA	Hydrographic Commission on Antarctica		M
NIOHC	North Indian Ocean Hydrographic Commission		A
SAIHC	Southern Africa and Islands Hydrographic Commission		O
SWPHC	South-West Pacific Hydrographic Commission SWPHC International Charting Coordination WG SWPHC Marine Spatial Data Infrastructure WG SWPHC Work Plan & Priorities WG SWPHC Hydrographic Leaders Programme SC	Chair-Secretary Vice Chair	M M M M
EAHC	East Asian Hydrographic Commission		O
IBSC	International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers		M
SCUFN	GEBCO Sub Committee on Undersea Feature Names		O

IHO FGPT	IHO Funds Generation Project Team		M
IHO WFPT	IHO Workforce of the Future PT		M
IHO IPT	IHO Inclusion PT		M

Input to the IHO Publication P-5 (*Yearbook*)

Country: _____
Organization: _____

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

Contact information/ Informations de contact / Información de contacto	
-National Hydrographer or equivalent -Directeur du service hydrographique ou équivalent -Director del Servicio Hidrográfico o equivalente	Post: Name: Postal address: Tel: Fax: Email:
-Head of the Hydrographic Office (if different from the person indicated above) -Directeur du Service Hydrographique (si différent de la personne indiquée ci-dessus) -Director del Servicio Hidrográfico (si diferente de la persona indicada anteriormente)	Post: Name: Postal address: Tel: Fax: Email:
-Other point(s) of contact -Autre(s) point(s) de contact -Otros punto(s) de contacto	
-Web site -site web -sitio web	
Country information / Informations sur le pays/ Información sobre el país	
-Declared National Tonnage -Tonnage national déclaré -Tonelaje Nacional Declarado	Tonnage: Date:
-National day -Fête nationale -Fiesta nacional	
-Date of establishment and Relevant National Legislation -Date de mise en place et législation nationale pertinente -Fecha de constitución y	

legislación nacional pertinente	
-Date first joined IHO -Date d'adhésion à l'OHI -Fecha de adhesión a la OHI	
-Date ratification Convention -Date de ratification de la Convention -Fecha de ratificación de la Convención	
-Remarks on membership -Remarques sur l'adhésion -Comentarios sobre la adhesión	
Agency information/ Information sur l'agence/ Información sobre la agencia	
-Top level parent organisation -Organisme mère -Organización asocieda de nivel superior	
-Principal functions of the organisation or the department -Attribution principales de l'organisme ou du département -Principales funciones de la Organización o departamento	
-Annual operating budget -Budget annuel -presupuesto anual	
-Total number of staff employed -Effectifs totaux -Número total de personal empleado	
-Number of INT charts published -Nombres de cartes INT publiées -Número de cartas INT publicadas	
-Total number of paper charts published-Nombre total de cartes papier	

publiées-Número total de cartas de papel publicadas				
-Number of ENC cells published -Nombres de cellules ENC publiées -Número de células ENC publicadas				
-Number of Other charts -Nombre d'Autres cartes -Número de Otras cartas				
-Type of publications produced -Type d'ouvrages produits -Tipo de publicaciones producidas				
-Detail of surveying vessels/ aircraft -Détail des bâtiments hydrographiques / aéronefs -Detalle de los buques hidrográficos / aeronaves	-Name -Nom -Nombre	-Displacement -Déplacement -Desplazamiento	-Date Launched -Date de mise en service -Fecha de botado	-Number of crew -Nombre de l'équipage -Tripulación
-Other information of interest -Autres informations utiles -Otra información de interés				

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia (L)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia			
Country Iso Code:				
Country SubCode:				
INT Region:	L			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:** Classification regime has been reviewed, resulting in some decrease in what is considered adequate to modern standards for shallow waters; however, an overall increase in survey coverage.
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	15	74	11	
> 200m	19	41	41	

MSI	**Y/N**	**Comments on MSI:**
Local warning	Y	Promulgated by Port Authorities
Coastal warning	Y	Promulgated by SafetyNET & CRS network
Nav warning	Y	Promulgated by SafetyNET & CRS network
Port warning	Y	Promulgated by Port Authorities
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	Y	
Area A1	N	
Area A2	N	
Area A3	Y	Australia
NAVTEX	N	
SafetyNet	Y	

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia – Christmas Island (L)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia – Christmas Island			
Country Iso Code:				
Country SubCode:				
INT Region:	L			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:** Significant increase in survey coverage since last update.
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	100	0	0	
> 200m	19	41	41	

MSI	**Y/N**	**Comments on MSI:**
Local warning	Y	Promulgated by Harbour Master
Coastal warning	N	
Nav warning	Y	NAVAREA X
Port warning	Y	Promulgated by Harbour Master
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	N	No requirement
Area A1	N	
Area A2	N	
Area A3	Y	Australia / Japan
NAVTEX	N	
SafetyNet	Y	Australia / Japan

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia – Cocos (Keeling) Islands (L)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia – Cocos (Keeling) Islands			
Country Iso Code:				
Country SubCode:				
INT Region:	L			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:** Significant increase in survey coverage since last update, particular in shallow water.
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	100	0	0	
> 200m	11	9	81	

MSI	**Y/N**	**Comments on MSI:**
Local warning	Y	
Coastal warning	N	
Nav warning	Y	
Port warning	Y	
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	N	No requirement
Area A1	N	
Area A2	N	
Area A3	Y	Australia
NAVTEX	N	
SafetyNet	Y	Australia

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia – Heard Island (H)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia – Heard Island			
Country Iso Code:				
Country SubCode:				
INT Region:	H			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:**
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	0	3	97	
> 200m	10	44	56	

MSI	**Y/N**	**Comments on MSI:**
Local warning	N	
Coastal warning	N	
Nav warning	Y	
Port warning	Y	Australian Antarctic Division would provide on request
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	N	No requirement
Area A1	N	
Area A2	N	
Area A3	Y	
NAVTEX	N	
SafetyNet	Y	South Africa – NAVAREA VII

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia – Macquarie Island (L)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia – Macquarie Island			
Country Iso Code:				
Country SubCode:				
INT Region:	L			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:** Significant increase in survey coverage since last update, particular in shallow water.
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	70	24	6	
> 200m	22	25	53	

MSI	**Y/N**	**Comments on MSI:**
Local warning	N	
Coastal warning	N	
Nav warning	Y	Australia – NAVAREA X
Port warning	Y	Part of the Australian State of Tasmania
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	N	No requirement
Area A1	N	
Area A2	N	
Area A3	Y	Australia
NAVTEX	N	
SafetyNet	Y	Australia

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

Country: **Australia – Norfolk Island (L)**

(Please provide the information in English. Consider using the IHO Online Form System, see reference B)

C-55 Summary for:				**Comments on Charts:**
Country:	Australia – Norfolk Island			
Country Iso Code:				
Country SubCode:				
INT Region:	L			
Country/Depend:				
Last updated:	Jan-25			
Provided by:				
Chart coverage	**Passage (%)**	**Coastal (%)**	**Port (%)**	
INT	100	100	100	**Comments on Surveys:** Significant increase in survey coverage since last update.
RNC	0	0	0	
ENC	100	100	100	
Status of Paper Charts				
Paper charts with depths in meters (%)			100	
Paper charts referenced to a satellite datum (%)			100	
Status of surveys	**Adequate (%)**	**Resurvey (%)**	**No survey (%)**	
0-200m	43	54	3	
> 200m	16	17	67	

MSI	**Y/N**	**Comments on MSI:**
Local warning	Y	Promulgated by Harbour Master
Coastal warning	N	
Nav warning	Y	NAVAREA X
Port warning	Y	Promulgated by Harbour Master
GMDSS	**Y/N**	**Comments on GMDSS:**
Master Plan	N	No requirement
Area A1	N	
Area A2	N	
Area A3	Y	Australia
NAVTEX	N	
SafetyNet	Y	Australia