



INTERNATIONAL HYDROGRAPHIC ORGANIZATION



NATIONAL REPORT FROM AUSTRALIA TO THE SWPHC15

Reference: IHO Resolution 2/1997 as amended

Executive summary

1. Australian Hydrographic Office:

As the result of the First Principles Review of Defence, the *Navigation Act 2012* was amended to reflect a whole-of-Defence responsibility, rather than just Navy, for providing hydrographic services. The Australian Hydrographic Office (AHO) has merged with the Australian Geospatial-Intelligence Organisation (AGO) and appropriate amendments to the *Intelligence Services Act 2001* have been published. The Defence White Paper 2016 indicated the future of Australia's hydrographic surveying capabilities will be 'an efficient combination of commercial and military hydrographic and oceanographic surveying capabilities'.

2. Surveys:

Hydroscheme

Hydroscheme continues to be reviewed and targeted to best meet national and regional requirements. HydroScheme 2017-2020 was published in October 2017. HydroScheme 2017-2020 is available at www.hydro.gov.au.

Laser Airborne Depth Sounder (LADS)

LADS have conducted a range of HydroScheme tasks in 2017 with surveys being conducted in Tasmania, South Australia, the Great Barrier Reef and Papua New Guinea. LADS continues to be responsive to survey requests from the Australian Maritime Safety Authority (AMSA) and will be deploying more regularly in future to meet demand for surveys in western and northern waters.

Hydrographic Ships (HS) LEEUWIN and MELVILLE

HMAS *Leeuwin* began 2017 by conducting survey operations in Bass Strait. *Leeuwin* then conducted surveys within Gulf St Vincent, SA in an effort to increase navigable waters in the vicinity of Adelaide. HMAS *Melville* conducted surveys in the northern waters of the Timor Sea, and then were assigned to assist with survey operations after Tropical Cyclone Debbie hit the Queensland coast. Both ships spent the latter end of 2017 conducting surveys in Papua New Guinea waters in an effort to improve charting quality for the area. During the year *Leeuwin* was fitted with a Reson SeaBat T50-P Multibeam Echosounder and it is anticipated that *Melville* will receive the same sounder upgrade during 2018.

Survey Motor Launch (SML) MERMAID, PALUMA, SHEPPARTON and BENALLA

HMAS *Paluma* and *Mermaid* completed survey request action within the Great Barrier Reef in vicinity of Dunk Island. They also deployed to Northern Australia to conduct surveys in the Timor Sea. HMAS *Shepparton* and *Benalla* conducted a survey at Cape Nelson, PNG during the first half of 2017 in an effort to improve charting quality and to expand on the navigable waters within the area. They then returned to Arnhem Land to continue ongoing HydroScheme surveys within the area. Planned surveys for early 2018 include surveys within the western waters of Australia, Torres Strait and Shoalwater Bay.

3. New charts & updates:

a) ENC's

In August 2017 Australia became the PCA for the Solomon Islands and 41 'SB' ENC's were added to our Portfolio.

As part of the AHO initiative to support the production of high density bathymetric ENC's, 6 AU6 cells (Cairns and Townsville ports) were produced and published in 2017 as proof of concept.

b) ENC Distribution method

Australia's national ENC service, known as 'AusENC' has been running since June 2012. The AusENC service was designed to support vessels operating within Australian and Papua New Guinean waters through simple ordering and easy availability. In August 2017 the

service was expanded to include Solomon Islands coverage. This AusENC service now includes the full portfolio of published ENC covering Australian, Papua New Guinean and Solomon Islands waters. It is sold in a range of large and small geographical area packs at affordable prices. A free fortnightly web-based update service is included in the subscription price. For more information visit the AHO website at: www.hydro.gov.au/prodserv/digital/ausENC/enc.htm.

The local AusENC service complements the international services available through the global network of distributors of the International Centre for ENC (IC-ENC).

c) RNCs

The AHO no longer produces RNC

d) INT charts

2 INT charts previously produced by UKHO have been transferred to AHO as part of becoming Primary Charting Authority (PCA) for Solomon Islands.

e) National paper charts

In August 2017 Australia became the PCA for the Solomon Islands and 14 new navigation charts and an Index chart were published under the 'SLB' prefix.

f) Other charts

An index of Solomon Islands ENC (SB) was published in August 2017

The AHO continues to focus on system and process upgrades. Implementation of Bathy Database and enhancements to Chart Product Management System, Tides Information System, Wrecks Database, Maritime Boundaries database, Product Delivery System, Workflow and Survey Planning systems are underway.

4. New publications & updates:

a) New Publications

- a. In September 2017, Australia signed a Memorandum of Understanding to become the Primary Charting Authority for Solomon Islands. As part of this agreement, Australia and Solomon Islands will collaborate to produce a Solomon Islands Tide Tables, scheduled for release in October 2018.

b) Updated publications

- a. In October 2017, a new edition of the Chart and Publications Maintenance Handbook (AHP 24) was published.
- b. In October 2017, the latest edition of the Australian National Tide Tables (ANTT) was published.

- c. The AHS Tides Information System (TIS) is being further developed to include tidal height analysis and predictions with expected delivery before Jun 2018. The ANTT 2018 was produced with the TIS.
- d. A new edition of the Seafarer's Handbook (AHP20) will be issued in early 2019.
- e. The AHO has ceased publication of the Australian Annual Notices to Mariners (AHP19).

c) Means of delivery, e.g. paper, digital

- a. The AHO is currently investigating technical solutions for the replacement/upgrade of AusTides.
- b. The AHP 24 was published exclusively online and free of charge at www.hydro.gov.au.
- c. Planning for the appropriate delivery format/s for the AHP 20 is underway.

5. MSI

- a) NAVAREA X broadcasts are made via the satellite service provider, Inmarsat, through Burum LES. Messages are transmitted to Burum LES using XOT (X.25 over TCP) and messages are received from Burum via TCP/IP. MSI messages are transmitted in a noninteractive manner to Burum LES for broadcast over SafetyNET via the IOR and POR satellites
- b) All navigational warnings (NAVAREA X, coastal and local warnings) are transmitted via SafetyNET on the IOR and POR satellites at the scheduled times of 0700 and 1900 UTC. Messages are also transmitted within 30 minutes of receipt of the information
- c) New infrastructure in accordance with GMDSS Master Plan

The details for Australia reported in the GMDSS Master Plan (GMDSS.1/Circ.19 dated 8 August 2016) have been checked and are correct

Warnings are monitored automatically via a POR (Canberra) and IOR (Fremantle) MES in almost real time using special EGC monitoring software which precludes the need to power down and reboot the MES at regular intervals. AMSA's EGC broadcast receiver for the POR/IOR region has recently been re-developed and re-written from C to Java. The original EGC broadcast receiver was developed nearly 2 decades ago. The benefits of the redevelopment are;

- the EGC broadcast receiver is now part of AMSA's IT infrastructure high availability architecture
- the software has been re-written in a modern programming language which is easier to support
- the new software incorporates better system monitoring

The only noticeable change visible to clients who receive forwarded EGC messages are the recipient and sender addresses have changed. MSI traffic received on the POR and IOR by the NAVAREA X EGC monitors is provided to USA and New Zealand authorities in almost real time.

6. C-55
The table with the latest information to update IHO Publication C-55 is provided in Annex B.
7. Capacity Building Offer of and/or demand for Capacity Building
 - a) Training received, needed, offered

RAN Hydrographic School

The RAN Hydrographic School continues to provide training courses in hydrographic surveying for officers and sailors from Australia and the local region under the Defence Cooperation Programme. Courses include Basic Hydrographic Systems Operator which is part of Initial Employment Training for New Entry RAN Sailors, Intermediate Hydrographic Systems Operator, which is advancement Training for RAN Sailors and the H2 Surveying Course. The H2 course is recognised at the Category B level by the FIG/IHO International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) with Option 1 (Hydrography for Nautical Charting) and Option 6 (Military Hydrography). The course is presently being revised and updated to reflect the new Category S5B syllabus.

The last H2 course concluded in November 2017, there were 15 trainees, 10 Australian (RAN), three New Zealand (RNZN) one Indian Navy and one Fijian Defence Force. The School also ran one Basic HSO course (10 weeks duration) completing June 2017, with 13 trainees graduating.

The next H2 Course will be run 13 June 2018 to 8 November 2018, it is anticipated that this Course will again be fully subscribed with 15 trainees, at present positions have been reserved for three RAN Officer, three positions for the RNZN, one Japanese Maritime Self Defence Force Officer, one Royal Malaysian Navy Officer, one Tentara Nasional Indonesia – Angkatan Laut Officer and one Pakistan Navy Officer.

An Australian nautical cartographer is currently attending the Cat B Nautical Cartography training course at the UKHO.

8. Oceanographic activities
 - 8.1 AHO has engaged with Commonwealth Scientific and Industrial Research Organisation ship Research Vessel Investigator to undertake survey and science missions in waters around Australia. Improvements in understanding regional ocean currents will lead to better coastal modelling in the region.
 - 8.2 AHO continues to participate in the ARGO project with annual purchase of 5 floats some of which are deployed by Royal Australian Navy vessels outside major shipping lanes.
 - a) Tide gauge network
 - a. The two permanent tide gauges operated by the Bureau of Meteorology in the Solomon Islands are now recognized by the AHO as the official Standard ports for the determination of predictions and are now published in the Australian National Tide Tables and in Austides.

- b. The Pacific Sea Level Monitoring Project, has increased by two tide gauges and now consists of 14 permanent gauges throughout the South Pacific region monitoring sea level and related parameters. Locations of the gauges are shown in **Figure 1** (below).



Figure 1 Permanent tide gauge network operated by the Bureau of Meteorology, including the Australian Baseline Sea Level Monitoring Array (16 sites) and Pacific Sea Level Monitoring Project (14 sites).

- c. The Australian Tsunami Warning System (ATWAS) has increased by one tide gauge bring the total number of sites to 53. Locations of the gauges are shown in **Figure 2** (below)

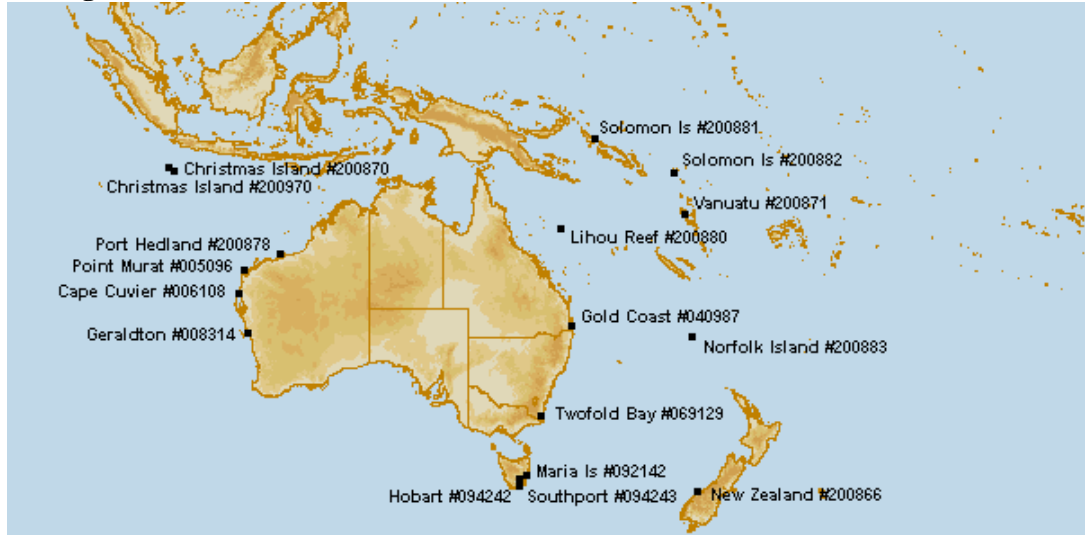


Figure 2 Additional ATWAS radar gauges (17 sites) that used in conjunction with the permanent tide gauge network for monitoring tsunamis in the Australian Region.

- d. Co-located comparison stations were installed at Broome and Tuvalu in 2017. Another is planned for Tonga in 2018 in preparation for becoming the permanent operational tide gauges at those locations due to wharf refurbishments.

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. Problems encountered

- a. 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.

9. Other activities

a) Participation in IHO Working Groups

The AHO currently participates in Council, HSSC, S-100, DQWG, ABLOS, ENCWG, IRCC, NCWG, TWCWG, CBSC, WENDWG, MSDIWG, CSBWG, HCA.

10. Conclusions

a) Areas of significant achievement

- Trial publication and maintenance of 'high density' bathymetric ENCs
- Successful transition to become PCA role for Solomon Islands. More than 50 products (ENC and paper) were smoothly migrated into our production systems.
- All paper chart repro mats and corresponding metadata are now being managed in house using Caris PCE (including NtM updates, POD and Geotiff generation).
- Caris BDB implementation from April 2018.

b) Areas of particular concern

- Small scale charts need attention to better align them with latest editions of overlapping larger scale products.
- S-101/ S-102 implementation strategies from 2019
- Increasing demand of AU6 from ports

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

Country: Australia
Organization: Australian Hydrographic Office

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: Hydrographer of Australia – Director-General Naval Hydrography and METOC (DGNHM) Name: Commodore Fiona FREEMAN, RAN Postal address: 8 Station St, Wollongong, NSW 2500, Australia Tel: +61 (0) 2 4223 6500 Fax: +61 (0) 2 4223 6599 Email: international.relations@hydro.gov.au
-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	http://www.hydro.gov.au
Country information / Informations sur le pays/ Información sobre el país	
-Declared National Tonnage -Tonnage national déclaré -Tonelaje Nacional Declarado	Tonnage: 1,917,550 Date: September 2016
-National day -Fête nationale -Fiesta nacional	26 January
-Date of establishment and Relevant National Legislation -Date de mise en place et législation nationale pertinente -Fecha de constitución y legislación nacional pertinente	Hydrographic Office, R.A.N – Established 01 October 1920 ; Commonwealth Naval Order 275 dated 14 December 1920. Navigation Act 2012

-Date first joined IHO -Date d'adhésion à l'OHI -Fecha de adhesión a la OHI	21/06/1921
-Date ratification Convention -Date de ratification de la Convention -Fecha de ratificación de la Convención	25/11/1968
-Remarks on membership -Remarques sur l'adhésion -Comentarios sobre la adhesión	Included under “British Empire” with the U.K. from 1921.
Agency information/ Information sur l'agence/ Información sobre la agencia	
-Top level parent organisation -Organisme mère -Organización asociada de nivel superior	Dept of Defence
-Principal functions of the organisation or the department -Attribution principales de l'organisme ou du département -Principales funciones de la Organización o departamento	Hydrographic and bathymetric surveys. Notices to Mariners Nautical charts. Australian Hydrographic Data Archive, Tide tables, Tides, Tidal Streams, Currents Maritime Military Geospatial Products and Services. Australian Hydrographic Data Archive.
-Annual operating budget -Budget annuel -presupuesto anual	\$127million per annum
-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	40
-Total number of paper charts published-Nombre total de cartes papier publiées-Número total de cartas de papel publicadas	482

<p>-Number of ENC cells published -Nombres de cellules ENC publiées -Número de células ENC publicadas</p>	892			
<p>-Number of Other charts -Nombre d'Autres cartes -Número de Otras cartas</p>	4 Index Charts			
<p>-Type of publications produced -Type d'ouvrages produits -Tipo de publicaciones producidas</p>	<p>Australian (Au) ENC distributed nationally within Australia as 'AusENC' (AHP124) and distributed internationally through the ICENC.</p> <p>Australian Chart Index - Standard ACI (update status for Australian paper nautical charts and ENC) - web.</p> <p>Australian Paper Nautical Charts ('Aus' series).</p> <p>Australian (Au) ENC distributed nationally within Australia as 'AusENC' (AHP124) and distributed internationally through the ICENC.</p> <p>Australian Chart Index - Standard ACI (update status for Australian paper nautical charts and ENC) - web.</p> <p>Australian Chart Index – GoogleEarth™ ACI (graphical index of Australian paper nautical charts and ENC) - web.</p> <p>Australian Paper Nautical Charts ('Aus' series).</p> <p>Paper Australian Index of Nautical Charts (Aus5000 - Northern Portion, Aus5001 - Southern Portion).</p> <p>Fortnightly Notices to Mariners (AHP18) - web.</p> <p>Seafarers Handbook for Australian Waters (AHP20) 4th Edition (release March 2016).</p> <p>Paper Australian National Tide Tables (AHP11) - annual release.</p> <p>Australian Electronic Tide Tables ('AusTides' - AHP114) - annual release.</p> <p>Australian Chart and Publication Maintenance Handbook 3rd Edition (AHP24) – web</p> <p>Maritime Gazetteer of Australia (geographic names as shown on Australian paper nautical charts) – web</p>			
<p>-Detail of surveying vessels/ aircraft -Détail des bâtiments hydrographiques / aéronefs -Detalle de los buques hidrográficos / aeronaves</p>	<p>-Name -Nom -Nombre</p>	<p>-Displacement -Déplacement -Desplazamiento</p>	<p>-Date Launched -Date de mise en service -Fecha de botado</p>	<p>-Number of crew -Nombre de l'équipage -Tripulación</p>

HMAS LEEUWIN	2550	1997	56
HMAS MELVILLE	2550	1998	56
HMAS PALUMA	380	1989	13
HMAS MERMAID	380	1989	13
HMAS SHEPPARTON	380	1989	13
HMAS BENALLA	380	1990	13
LADS Unit Dash 8 (modified)	Aircraft	1993	9 (naval) +5 (contractor)
Deployable Geospatial Support Team (DGST)	Vessel of opportunity	Early 1980s	4
ASV WYATT EARP	6.3	1992	
-Other information of interest -Autres informations utiles -Otra información de interés			

Input to the IHO Publication C-55 - no change to current publication

National MSI Self-Assessment

*Country: Australia**Organization: Australian Maritime Safety Authority*

1. Maritime area

NAVAREA X extends from the Antarctic coast at longitude 080° E thence,
 30° 00 S 080° 00 E 30° 00 S 095° 00 E 12° 00 S 095° 00 E
 12° 00 S 127° 00 E 10° 00 S 127° 00 E 10° 00 S 141° 00 E
 00° 00 S 141° 00 E 00° 00 S 170° 00 E 29° 00 S 170° 00 E
 45° 00 S 160° 00 E

thence to the coast of the Antarctic continent at longitude 160° 00 E.

Outline maps of NAVAREA X are available from the Seafarers Handbook for Australian Waters (AHP20) and the UK Hydrographic Office publication ALRS Volume 5.

2. Operational Points of Contact for the National Coordinator within NAVAREA X have been checked and confirmed as follows

COUNTRY	TELEPHONE	FACSIMILE	EMAIL
New Caledonia	+687 292332	+687 292303	mrcc.nc@lagoon.nc
Papua New Guinea	+675 3213033	+675 3210873	PNGMRCC@nmsa.gov.pg
Solomon Islands	+677 21609	+677 23798	mrcc@solomon.com.sb
Vanuatu	+678 22339	+678 22475	hworek@vanuatu.gov.vu

3. GMDSS Master Plan

The details for Australia reported in the GMDSS Master Plan (GMDSS.1/Circ.19 dated 8 August 2016) have been checked and are correct.

Equipment Type for Ports and Local Area	Software Version	Date of Up-date
Thrane & Thrane TT 3022A (Primary) Inmarsat C transceivers with TT3020B (Standby)	EMON Version 1.1	1990

Over the past three calendar years the following number of navigational warnings were issued over SafetyNET with average elapsed times:

2014		2015		2016	
Total	Average elapsed time	Total	Average elapsed time	Total	Average elapsed time
439	16.7 Mins	450	12.6 Mins	424	14.5 Mins

4. NAVTEX Coverage:

Australia does not broadcast navigational warnings on NAVTEX and no other National Coordinators use NAVTEX within NAVAREA X. Australian Coastal (AUSCOAST) warnings are broadcast via SafetyNET using the relevant C codes.

5. Operational Issues:

NAVAREA X issues “In Force warnings” Bulletins.

NAVAREA X broadcasts navigational warnings whilst in force. The Australian Hydrographic Service no longer compiles Section III of the Australian Notices to Mariners (Navigation Warnings) and directs Mariners to the AMSA MSI Website.

NAVAREA X continues to engage National Coordinators to enhance the provision of MSI services within the region. A regional MSI Capacity Building training for National Coordinators was hosted by NAVAREA XIV in Wellington, New Zealand in August 2016 with representation from all four NAVAREA X National Coordinators. Unfortunately, NAVAREA X was unable to provide a resource to assist in this training. A further regional south-west Pacific MSI Capacity Building Course has been approved by the IMO/IHO, it is tentatively scheduled to occur in August 2018.

6. Contingency Planning

The NAVAREA X Coordinator’s primary work place within JRCC Australia in Canberra is supported by a disaster recovery facility (DRF), 13 kilometres north of the primary site. The DRF provides all the functionality of the primary site, including computing and communication systems in an almost “hot standby” state. In the past year, JRCC Australia/NAVAREA X Coordinator duty staff have regularly exercised transfer of systems to the DRF site. Work continues to develop AMSA’s IT infrastructure as part of a modern high availability architecture approach with a migration of computer systems to virtual Data Centre hosted environments.

7. Capacity Building

The AUSAID/Australian Department of Foreign Affairs and Trade (DFAT) Project to provide a GMDSS capability in Papua New Guinea (PNG) was completed in October 2016. It is anticipated that PNG will seek approval via the SafetyNET panel for the inclusion of Sub-Area ‘P’ to improve capability for both navigational warnings and search and rescue purposes. NAVAREA X Coordinator has indicated that they are happy to assist PNG in any application to the SafetyNET panel.

8. Other Activities

AMSA is leading an international project team that is developing an IHO S-100 based product specification for Under Keel Clearance Management (UKCM) information. It is expected that the project team will complete the product specification in 2018.

AMSA has been actively contributing to the IMO NCSR correspondence group that is developing guidelines for the harmonized display of navigation information received via communications equipment.

Australia (and other Asia-Pacific) nations have recently been invited to participate in Asia-Pacific Web (APW). The APW testbed aims to provide a web-based platform where digital maritime services that are available in a region (such as navigational and meteorological warnings and notices to mariners), can be discovered by ships and shore authorities. Australia is preparing to participate in these trials.

9. National Maritime Website

www.hydro.gov.au
www.amsa.gov.au

10. Recommendations

No change to that currently promulgated.

11. Summary

The NAVAREA X Self Assessment report highlights MSI activities for the period July 2016 to June 2017.