



Australian Government
Department of Defence



AUSTRALIAN
HYDROGRAPHIC
OFFICE



MARINER'S HANDBOOK

For Australian Waters

5th Edition

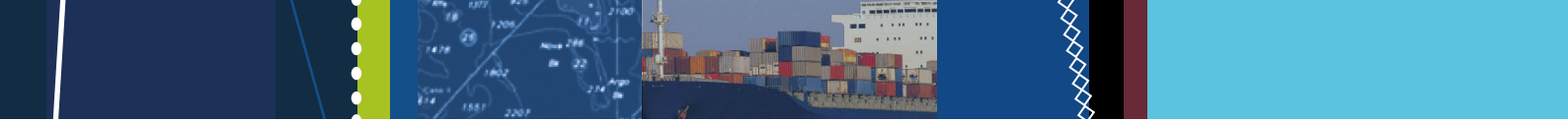
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OFFICIAL NAUTICAL CHARTS AND PUBLICATIONS
hydro.gov.au

AHP20

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Emergency (Police, Fire, Ambulance) 	000 (within Australia only)	www.triplezero.gov.au
Joint Rescue Coordination Centre (Australian Maritime Safety Authority)	1800 641 792 +61 2 6230 6811	www.amsa.gov.au/safety- navigation/search-and-rescue/ responding-search-and-rescue
healthdirect Australia 24 hour medical advice line	1800 022 222	www.healthdirect.gov.au
BorderWatch (to report suspicious activity)	1800 009 623 +61 2 6246 1325	www.homeaffairs.gov.au/help- and-support/departmental-forms/ online-forms/border-watch
Great Barrier Reef Marine Park Authority 24 hour hotline	1800 341 211	www.gbrmpa.gov.au
Aviation and Maritime Security Division (Department of Home Affairs)	1300 791 581 +61 2 6274 187	www.homeaffairs.gov.au/about- us/our-portfolios/transport- security/maritime-security/report- an-incident



AHP20

Mariner's Handbook for Australian Waters

(formerly *Seafarers Handbook
for Australian Waters*)



Mariner's Handbook for Australian Waters Edition 5.0

Compiled by the Australian Hydrographic Office

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Note: This book is formerly known as the Seafarers Handbook for Australian Waters. Any mention on official charts or other products, services or information of this former title are to be read as references to the Mariner's Handbook for Australian Waters.

PREFACE

I commend this edition of the *Mariner's Handbook for Australian Waters* (AHP20) to you and strongly recommend its carriage and use by all international and Australian commercial vessels operating in Australian waters, in accordance with the Australian Maritime Safety Authority (AMSA) *Responsible Navigational Practices* Marine Notice.

The *Mariner's Handbook for Australian Waters* (AHP20) brings together information required by both international and Australian commercial vessels operating in Australian waters under the requirements of the International Convention for the Safety of Life at Sea (SOLAS) and the *Navigation Act 2012* (Cth).

The *Mariner's Handbook for Australian Waters* (AHP20) provides information that enables these vessels to operate safely and in accordance with the relevant maritime rules and regulations covering operations in Australian waters, as well as providing advice on emergency contacts and where additional information may be found to meet particular circumstances.

This publication is a result of collaboration between the Australian Hydrographic Office, the Australian Maritime Safety Authority and all those Australian Government departments, port authorities and organisations that either regulate maritime operations in Australian waters, or provide services which support those activities.

This 5th edition supersedes the previous edition. It includes significant updates and revisions, as well as the relevant content of all permanent *Notices to Mariners* up until 13 September, 2019.



F.T. Freeman
Commodore
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HOW TO CORRECT THE AHP20 - PRINT VERSION

1. Significant information critical to the mariner is amended by *Notices to Mariners* (NtM). The number in the titling and the paragraph numbers marking each paragraph helps with identification of which text needs correcting.
2. If there are corrections to the AHP20, they will be published online in the NtM which are published fortnightly on the following website.

Website: www.hydro.gov.au/n2m/notices.htm

3. It is recommended that the corrections be attached to the pages in question where possible, but the note pages at the end of each chapter can be utilised as an area to store corrections. If the corrections are too large, a blank page can be glued along the spine of the publication, adjacent to the page that is being corrected.
4. It is recommended that text deletions be crossed out and any new text be indicated by an arrow at the row or paragraph for the correction. All corrections are to be recorded in the Record of Amendments table below.
5. More information can be found in the Australian Hydrographic Publication (AHP) 24, *Chart and Publication Maintenance Handbook*, available at www.hydro.gov.au.

NtM example:

Australia - Products - Amendment to *Mariner's Handbook for Australian Waters* (AHP20)

Paragraph 7.9.1 (6) Gannet Passage

Delete: 1.4 metres

Insert: 10.4 metres

Correction to AHP20:

Gannet Passage:	1.4 metres*
Varzin Passage:	10.5 metres*
Prince of Wales Channel:	11.4 metres*
*Note: refer to latest electronic or paper chart for up to date minimum depths.	

10.4 metres*

RECORD OF AMENDMENTS

2019	2020	2021	2022
1130/2019	4/2020	41/2021	-
1238/2019	187/2020	726/2021	
	587/2020	1012/2021	2023
	941/2020		176/2023
	1020/2020		219/2023
			2024
			799/2024

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1. The electronic version of the AHP20 is maintained in parallel with the printed version. Content in both versions is identical. (In the event that a large amount of text or an image is added, page numbers in the electronic version may be updated).
2. Users of the electronic version should register for eNotices on the AHO website, or monitor NtM. Upon receiving advice of an update to the publication, users should download the latest version of this publication and delete all previous versions.

Website:	eNotices	www.hydro.gov.au/enotices/enotices.htm
	Download	www.hydro.gov.au/prodserv/publications/ash.htm

3. The Record of Amendments will be updated by the AHO within the electronic version.

ACKNOWLEDGEMENTS

Organisations which have contributed authoritative information include:

Administration of Norfolk Island	Marine and Safety Tasmania
Australian Antarctic Division	Maritime Safety Queensland
Australian Communications Media Authority	Mid West Ports Authority
Australian Fisheries Management Authority	Modec Management Services Pte Ltd
Australian Maritime Safety Authority	National Offshore Petroleum Safety and Environmental Management Authority
Australian Reef Pilots	Ports Authority of New South Wales
Australian Transport Safety Bureau	Patrick Steveodores
Bureau of Meteorology	Pilbara Ports Authority
Chevron Australia Pty Ltd	Port of Melbourne Corporation
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Department of the Environment and Energy	Port of Portland Pty Ltd
Department of Environment and Water - South Australia	Quadrant Energy
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Eni Australia Limited	Woodside Energy Ltd
Flinders Ports	
Fremantle Ports	
Geoscience Australia	
Glencore	
Great Barrier Reef Marine Park Authority	
International Hydrographic Organization	
Kimberley Ports Authority	
Linx Port Services - Christmas Island	
Linx Port Services - Cocos (Keeling) Islands	
Lord Howe Island Board	

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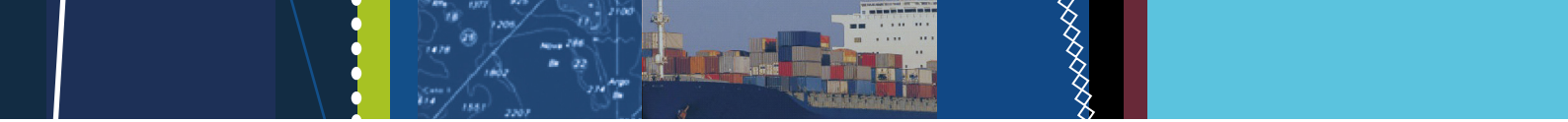
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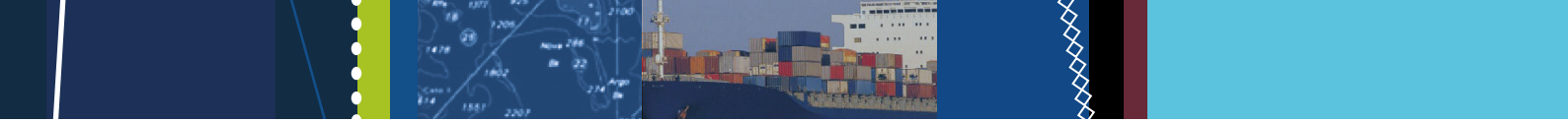
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CHAPTER 1 NATIONAL DESCRIPTION

Subject	Facts	More Information																				
Official name	Commonwealth of Australia	Member of the British Commonwealth																				
Brief history	Indigenous Australians are believed to have first arrived on the Australian mainland by sea from Maritime Southeast Asia between 40,000 and 70,000 years ago.	The first European settlers arrived in 1788. Federation took place in 1901.																				
Language	English	Three-quarters of Australians speak only English and the other five languages most commonly spoken are Italian, Greek, Cantonese, Arabic and Mandarin.																				
Currency	Australian dollar (\$) \$1.00 is equivalent to 100 cents (c)	Standard notes: \$100, \$50, \$20, \$10, \$5 Standard coins: \$2, \$1, 50c, 20c, 10c, 5c																				
Head of State	Queen of Australia, Her Majesty Queen Elizabeth II	Under the Australian Constitution, executive power is exercised by the Governor-General as the Queen's representative. The Governor-General is appointed by the Queen on the advice of the Prime Minister of Australia. The Prime Minister is Head of Government.																				
Government	Democratic Federal system comprising six states and two territories.	The maximum term for Australian Federal Governments is three years. Voting is compulsory in Australia for Australian citizens aged 18 years and over.																				
Australian Flag		The Union Jack acknowledges Australia's historical links with the United Kingdom. The white Commonwealth Star has seven points representing the unity of the six states and the territories of the Commonwealth of Australia. The Southern Cross can only be seen in the Southern Hemisphere and is a reminder of Australia's geographic location.																				
States, Territories and major cities		The capital city of Australia is Canberra, which is located in the Australian Capital Territory. <table><thead><tr><th>States</th><th>Capital City</th></tr></thead><tbody><tr><td>New South Wales (NSW)</td><td>Sydney</td></tr><tr><td>Queensland (QLD)</td><td>Brisbane</td></tr><tr><td>South Australia (SA)</td><td>Adelaide</td></tr><tr><td>Victoria (VIC)</td><td>Melbourne</td></tr><tr><td>Western Australia (WA)</td><td>Perth</td></tr><tr><td>Tasmania (TAS)</td><td>Hobart</td></tr><tr><td colspan="2">Territories</td></tr><tr><td>Northern Territory (NT)</td><td>Darwin</td></tr><tr><td>Australian Capital Territory (ACT)</td><td>Canberra</td></tr></tbody></table> Sydney is Australia's most populated city with more than 5 million people.	States	Capital City	New South Wales (NSW)	Sydney	Queensland (QLD)	Brisbane	South Australia (SA)	Adelaide	Victoria (VIC)	Melbourne	Western Australia (WA)	Perth	Tasmania (TAS)	Hobart	Territories		Northern Territory (NT)	Darwin	Australian Capital Territory (ACT)	Canberra
States	Capital City																					
New South Wales (NSW)	Sydney																					
Queensland (QLD)	Brisbane																					
South Australia (SA)	Adelaide																					
Victoria (VIC)	Melbourne																					
Western Australia (WA)	Perth																					
Tasmania (TAS)	Hobart																					
Territories																						
Northern Territory (NT)	Darwin																					
Australian Capital Territory (ACT)	Canberra																					
Time zones	Eastern Standard Time (EST): Coordinated Universal Time (UTC) + 10 Central Standard Time (CST): UTC + 9.5 Western Standard Time (WST): UTC + 8	- QLD, NSW, VIC, ACT - NT, SA and Broken Hill in NSW - WA																				
Time zones of Australia's External Territories	Lord Howe Island: UTC + 10.5 Norfolk Island: UTC + 11 Christmas Island: UTC + 7 Macquarie Island: UTC + 10 Cocos (Keeling) Islands: UTC + 6.5	Australian Antarctic Territory • Casey: UTC + 8 • Davis: UTC + 7 • Mawson: UTC + 5																				

Daylight Saving Time (DST)	States that observe DST are: • NSW (including Lord Howe Island*) • VIC • ACT • SA • TAS Commences the first Sunday of October and ceases the first Sunday of April. *Lord Howe Island advances its clock forward to UTC+11 when DST is observed. When DST ends Lord Howe Island reverts to UTC+10.5.	<u>Not</u> observed in: • NT • QLD • WA • Norfolk Island • Christmas Island • Cocos (Keeling) Islands DST arrangements are published by the Australian Hydrographic Office as a Temporary Notices to Mariners prior to DST commencement. This Notice is cancelled when DST ceases.
Public Holidays	1 January (New Year) 26 January (Australia Day) 25 April (Anzac Day) 2 Monday in June - except WA (Queen's Birthday) 25 December (Christmas Day) 26 December (Boxing Day) Good Friday and Easter Monday (gazetted)	Australian Public Holidays are determined and promulgated by the State and Territory Governments. Refer to: www.australia.gov.au/about-australia/special-dates-and-events/public-holidays
Area	7 682 300 sq. km	Australia is the smallest continent and the largest island on Earth. Australia's highest mountain is Mount Kosciuszko at 2 228 metres high, and the lowest point is Lake Eyre at 15 metres below sea level.
Population	Approx. 25 million	
Climate	Ranges from tropical to temperate. Most of Australia is arid land or desert.	The extreme north of Australia is tropical; the southeast and southwest more temperate.
Electricity	240 volts - Type 1 plug	Three pronged plugs are used in Australia. Adaptors are needed for overseas appliances.
Telephone	Australia's country code is 61 .	State area codes are: • 02 - NSW & ACT • 03 - VIC & TAS • 08 - SA, WA & NT • 07 - QLD
Medical System	Medicare - available to all citizens and permanent residents.	Reciprocal health agreements exist within the following countries: • New Zealand • United Kingdom • Republic of Ireland • Sweden • Netherlands • Finland • Italy • Belgium • Malta • Slovenia • Norway.

CHAPTER 2 MARITIME ORGANISATIONS

2.1 AUSTRALIA'S MARITIME JURISDICTIONS

1. Under the United Nations Convention on the Law of the Sea (UNCLOS), Australia has rights and responsibilities over 16 million square kilometres of ocean, more than twice the area of the Australian continent. The following terms are relevant in understanding the scope of Australian jurisdiction over this huge ocean area.
2. The Territorial Sea (TS), Coastal Waters (CW), Contiguous Zone (CZ) and Exclusive Economic Zone (EEZ) are measured from the baseline while the Continental Shelf (CS) is measured in accordance with the provisions of Article 76 of the UNCLOS.
3. For more information on Australia's maritime boundaries see Chapter 5.

2.2 FEDERAL AND STATE RESPONSIBILITIES

1. The responsibility for governing Australia's maritime environment is shared by the Australian Government and the governments of the six States and two self-governing Territories. Responsibilities are detailed in the following:
 - *Offshore Constitutional Settlement 1979* (Cth)
 - *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cth)
 - *Navigation Act 2012* (Cth)
 - *Australian Maritime Safety Authority Act 1990* (Cth)
2. They form the basis for the division of powers between the Australian Government and the States in relation to the following:
 - arrangements on managing oil, gas and other seabed minerals
 - marine parks
 - historic shipwrecks
 - shipping
 - marine pollution and fishing

2.3 INTERNATIONAL MARITIME ORGANISATIONS

2.3.1 INTERNATIONAL MARITIME ORGANIZATION

1. The International Maritime Organization (IMO) is responsible for improving maritime safety, security and prevention of marine pollution by ships. The United Nations (UN) convention formally establishing the IMO (the original name was the Inter Governmental Maritime Consultative Organization) was adopted in 1948. Australia became a member of the IMO in 1952. The IMO Convention entered into force in 1958.
2. The purposes of the IMO are:
 - to provide processes for cooperation among governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade
 - to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety and security, safe navigation and prevention and control of marine pollution from ships

3. Around 50 conventions, protocols and agreements have been adopted by the IMO and are amended as required to ensure currency. Among those, some major ones are:
 - the International Convention for the Safety of Life at Sea (SOLAS) - dealing with maritime safety and security
 - the International Convention on Load Lines (LL) - dealing with watertight integrity and seaworthiness of ships
 - the Convention on the International Regulations for Preventing Collisions at Sea (COLREG) - facilitating safe passage of ships at sea
 - the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) - setting standards for training and qualifications of seafarers
 - the International Convention for the Prevention of Pollution from Ships (MARPOL) - covering accidental and operational pollution by oil, chemicals, packaged goods, sewage, garbage and air pollution
 - the International Convention on Maritime Search and Rescue (SAR) - developing international search and rescue plans to facilitate rescuing of persons in distress at sea
4. It is the responsibility of member governments to put these conventions and protocols into effect through enacting and enforcing domestic legislation.
5. The IMO has introduced measures to improve the way legislation is implemented, by assisting Flag States and encouraging Port State Control (PSC) systems to ensure ships meet IMO standards. As part of capacity building, the IMO has also developed a technical cooperation program which is designed to assist governments which lack the technical knowledge and resources that are needed to successfully and safely operate a shipping industry.
6. The IMO produces a wide range of publications in various languages, including official conventions, codes and regulations. Visit the IMO website to access the online publication ordering system and downloads.

Website:	www.imo.org
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2.3.2 INTERNATIONAL HYDROGRAPHIC ORGANIZATION

1. The International Hydrographic Organization (IHO) is an intergovernmental consultative and technical organisation established in 1921 to support the safety of navigation and protection of the marine environment. The IHO has observer status at the UN and is recognised as its competent international authority regarding hydrography and nautical charting. The international standards and guidelines established by the IHO are used as the normative references for all matters relating to nautical charting and hydrography in UN instruments. This includes the chart requirements covered under the *Convention for the Safety of Life at Sea* (SOLAS) and the *United Nations Convention on the Law of the Sea* (UNCLOS).
2. The objectives of the IHO are to promote:
 - the coordination of the activities of national hydrographic offices
 - the greatest possible uniformity in nautical charts and publications
 - the adoption of reliable and efficient methods of carrying out and exploiting hydrographic surveys
 - the development of the sciences in the field of hydrography, and the techniques employed in descriptive oceanography
3. The IHO sets the international standards for the specifications, symbols, style and formats used for official nautical charts and publications. The practical benefits of the IHO's work can be seen in standardised charts and publications including Electronic Navigational Charts (ENC), and coordinated worldwide radio navigational warning services.
4. The official representative of each member government within the IHO is normally the national hydrographer.
5. The IHO produces numerous publications, including internationally recognised technical specifications and standards covering the compilation and delivery of nautical charts, publications and services, special publications such as Limits of Oceans and Seas and a series of ocean charts known as General Bathymetric Charts of the Ocean (GEBCO). Visit the IHO website to view these publications.

Website:	www.iho.int
----------	--

2.3.3 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

1. UNCLOS sets up the legal regime for the sea and oceans, and represents the intent of the international maritime community to regulate all aspects of the resources of the sea and uses of the ocean. In terms of the environment, UNCLOS establishes material rules concerning environmental standards and enforcement provisions regarding pollution of the marine environment. UNCLOS was adopted in 1982 in Montego Bay, Jamaica, and entered into force in 1994. To date, 163 countries have become signatories to UNCLOS.

Website:	www.un.org/Depts/los/index.htm
----------	--

2.4 NATIONAL AUTHORITIES

2.4.1 AUSTRALIAN ANTARCTIC DIVISION

1. The Australian Antarctic Division (AAD) is a division of the Department of the Environment and Energy (DEE). The AAD was established in 1949 to administer Australian National Antarctic Research Expeditions (ANARE). The AAD is responsible for leading, coordinating and delivering the Australian Antarctic Program to ensure that Antarctica remains valued, protected and understood.
2. The AAD manages Australia's activities in Antarctica and subantarctic regions, and includes:
 - managing Australian Government activity in Antarctica
 - providing transport and logistic support for those activities
 - maintaining three permanent Antarctic research stations, Wilkins Aerodrome and one subantarctic station
 - conducting and managing scientific research programs in Antarctica, Macquarie Island and the Southern Ocean

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Fax:	+61 3 6232 3288
Email:	information@aad.gov.au
Website:	www.antarctica.gov.au

2.4.2 AUSTRALIAN FISHERIES MANAGEMENT AUTHORITY

1. The Australian Fisheries Management Authority (AFMA) is the Australian Government agency responsible for the efficient management and sustainable use of fisheries resources on behalf of the Australian community.
2. AFMA manages and monitors commercial fishing to ensure Australian fish stocks and the fishing industry are viable now and in the future. The aim is to ensure that healthy and fresh local seafood is available and affordable to all Australians for current and future generations. For this to happen, AFMA has strict fisheries management practices in place.
3. Generally, AFMA looks after commercial fisheries from three nautical miles out to the extent of the Australian Fishing Zone (AFZ). The States and the Northern Territory look after recreational, commercial coastal and inland fishing and aquaculture.
4. In addition, AFMA provides fisheries management services to Joint Authorities of the Australian and State Governments, including the Torres Strait Protected Zone Joint Authority (PZJA).
5. AFMA also works with other Australian Government agencies and international counterparts to deter illegal fishing in the AFZ.

Telephone:	+61 2 6225 5555 / 1300 723 621
Fax:	+61 2 6225 5500
Email:	info@afma.gov.au
Website:	www.afma.gov.au

2.4.3 AUSTRALIAN HYDROGRAPHIC OFFICE

1. The Australian Hydrographic Office (AHO) is part of the Department of Defence. It is responsible for providing Australia's national charting service under the terms of SOLAS and the *Navigation Act 2012* (Cth). This role requires provision of nautical charting (including charts in electronic form) and associated services in support of maritime safety, the coordination and determination of policy and standards which cover both hydrographic surveying and charting, as well as contributing to the coordination, exchange and standards related to maritime geospatial data in general. The AHO is also responsible for providing direct support to the Australian Defence Force (ADF) by providing hydrographic, charting, oceanographic and meteorology services.
2. National responsibilities and commitments include:
 - publishing, evolving and maintaining the national chart series (in electronic and paper formats) to ensure they remain fit for purpose
 - publishing the Australian National Tide Tables (ANTT) and other nautical publications promoting navigation safety
 - promulgation of maritime safety updates to charts and publications, including direct update services for ENC and Notices to Mariners (NtM)
 - determining the priority for national hydrographic surveys through liaison with Defence, Australian Maritime Safety Authority (AMSA), Joint Agencies Maritime Advisory Group (JAMAG), State maritime agencies and key scientific organisations
 - standards for hydrographic surveys for safety
 - acting as Chair and Secretary for the Australasian Hydrographic Surveyors Certification Panel (AHSCP), which assesses hydrographic surveyors' qualifications and competency
3. International responsibilities and commitments include:
 - Principal Charting Authority for Papua New Guinea and Solomon Islands
 - representing Australia in IHO technical development and capacity building activities
 - coordination of regional charting and contribution to international chart coverage
4. Defence responsibilities and commitments include:
 - collecting hydrographic data
 - hydrographic, oceanographic and maritime military geospatial information services
 - military meteorology services
5. Visit the AHO website or see Chapter 12 for more information.

Telephone:	+61 2 4223 6500
Fax:	+61 2 4223 6599
Website:	www.hydro.gov.au

2.4.4 AUSTRALIAN MARITIME SAFETY AUTHORITY

1. The Australian Maritime Safety Authority (AMSA) is the Australian Government authority responsible for the promotion of maritime safety, protection of the marine environment, and provision of aviation and maritime search and rescue services. AMSA's main areas of responsibility include:
 - developing maritime safety standards for domestic commercial vessels Australia-wide
 - developing maritime safety and environmental protection standards to promote the responsible operation of ships and safety of seafarers
 - monitoring and enforcing compliance with these standards through its network of regional offices and surveyors/ inspectors
 - certifying seafarers to work on domestic commercial vessels and international ships

- responding to ship based maritime environmental emergencies
 - providing the systems that aid safe marine navigation
 - operating the Joint Rescue Coordination Centre (JRCC) Australia to coordinate maritime and aviation search and rescue
2. As a signatory to the relevant international conventions, AMSA conducts a ship inspection program to ensure the seaworthiness and safe operation of Australian and foreign ships in Australian waters, and the safe handling and storage of certain higher risk cargoes (particularly dangerous goods, grain and livestock). AMSA also issues Australian marine qualifications and ensures shipping operators comply with laws governing living and working conditions on board and the welfare of seafarers.
 3. AMSA also plays a role in protecting the marine environment from ship-sourced pollution and other environmental damage caused by shipping through:
 - maintaining a regulatory system consistent with international standards
 - influencing the development, implementation, monitoring and enforcement of international environment protection standards and the operation of international liability and compensation schemes
 - providing timely and appropriate response to marine casualties
 - providing ship-sourced pollution response services, consistent with international and regional obligations
 4. The shipping fleet conducting international trade within Australia's waters shares this space with around 27,000 domestic commercial vessels. These include passenger vessels (tourism, ferries, water taxis), non-passenger work vessels (freight and cargo vessels, research, tugs, barges, offshore support vessels, etc.), fishing vessels and hire and drive vessels (houseboats, jet skis and sailing vessels). AMSA's regulatory functions of these vessels and operators apply to:
 - the design and construction of commercial vessels
 - on-board safety equipment requirements
 - operational safety management
 - seafarer near - coastal qualifications across Australia
 - management of major coastal aids to navigation
 5. Aids to navigation include traditional lighthouses, beacons, buoys, radar transponders, Differential Global Positioning Systems (DGPS), Automatic Identification System (AIS) stations and meteorological and oceanographic sensors.
 6. AMSA also provides a national search and rescue (SAR) service for both maritime and aviation search and rescue incidents. Responses are coordinated by a 24 hour, JRCC Australia, located in Canberra.
 7. The following contact details are for land communication only with exception to a distress situation. Inmarsat C is to be used for normal business communication at sea (see Chapter 8).

Enquiries - Monday to Friday 8 am to 5 pm (excluding national public holidays):	+61 2 6279 5000
Search and rescue and marine pollution incidents 24/7 helpline	
Within Australia:	1800 641 792
Outside Australia:	+61 2 6230 6811
Website:	www.amsa.gov.au

2.4.5 BUREAU OF METEOROLOGY

1. The Bureau of Meteorology referred to as BOM, or the Bureau, is Australia's national weather, climate and water agency. Its expertise and services assist Australians in dealing with the harsh realities of their natural environment, including drought, floods, fires, storms, tsunami and tropical cyclones. Through regular forecasts, warnings, monitoring and advice spanning the Australian region and Antarctic territory, BOM provides one of the most fundamental and widely used services of government.
2. BOM contributes to national social, economic, cultural and environmental goals by providing observational, meteorological, hydrological and oceanographic services and by undertaking research into science and environment related issues in support of its operations and services.
3. BOM operates under the authority of the *Meteorology Act 1955* (Cth) and the *Water Act 2007* (Cth) which provide the legal basis for its activities, while its operation is continually assessed in accordance with the national need for climatic records, water information, scientific understanding of Australian weather and climate and effective service provision to the Australian community. BOM must also fulfil Australia's international obligations under the Convention of the World Meteorological Organization (WMO) and related international meteorological treaties and agreements.
4. Further information and marine weather related services can be found on the BOM website.

General enquiries:	+61 3 9669 4000
Website:	www.bom.gov.au
Marine weather related services:	www.bom.gov.au/marine

2.4.6 DEPARTMENT OF AGRICULTURE AND WATER RESOURCES

1. The Department of Agriculture and Water Resources (DAWR) ensures that all vessels arriving in Australia from overseas comply with International Health Regulations and ensures that all biosecurity risks posed by vessels is adequately managed. The Department was previously known as the Department of Agriculture, Fishing and Forestry and Australian Quarantine Inspection Service (AQIS).
2. Vessels entering Australia could unknowingly carry unwanted pests and diseases that can threaten the unique flora and fauna, human health as well as aquaculture and agricultural industries. Australia accounts for approximately 10% of the world's biodiversity so it is important that the spread of pests and diseases is prevented - making Australia's biosecurity laws among the strictest in the world.

Food, Plant Material and Animal Product

3. Biosecurity requirements relating to food, plant material and animal products are summarised in Section 10.9. Food, plant material and animal products from overseas could introduce some of the world's most serious pests and diseases into Australia. Rabies, foot and mouth disease, or avian influenza could be introduced by infected animals or in food purchased overseas or from trading with overseas vessels.
4. International trading ships have the potential to import exotic terrestrial pests and organisms by:
 - importing foodstuffs and waste from abroad
 - providing a vector for pests such as disease carrying mosquitoes, asian gypsy moth and brown marmorated stink bug
 - the carriage of humans and animals on board that may have been exposed to infectious or exotic diseases
 - importing foreign plant material or soils as cargo residues or in the cargo
5. Australia's borders, as far as mariners are concerned, may be considered as the limits of Australia's TS.

Marine Pests

6. As well as terrestrial pests, there are a great many marine pests around the world that are not present in Australian waters. Marine pests are capable of being transferred between ports in ships ballast water and as fouling organisms on ship's hulls, aquaculture and fishing equipment. DAWR has a number of requirements that mariners must adhere to when visiting Australian ports or transiting TS.
7. Details on the Australian ballast water requirements and biofouling guidelines are available on the DAWR website and are summarised in Section 10.9.

Human Health

8. DAWR, acting on behalf of the Department of Health, needs to know if there are any ill crew or passengers on board vessels arriving in Australia from overseas. This must be reported in the Pre-Arrival Report (PAR) within Maritime Arrivals Reporting System (MARS), along with answers to questions relating to animals, plants and other biosecurity concerns. See Section 10.9.

Information for International Vessels

9. Full details for the requirements for visiting vessels can be found on the DAWR website or be obtained from Australian port agencies that have been engaged to work on behalf of a vessel.
10. The Maritime National Coordination Centre (MNCC) manages all international vessel enquiries and pre-arrival reporting: Visit the DAWR website for more information.

Telephone:	1300 004 605 / +61 8 8201 6051
Email:	MaritimeNCC@agriculture.gov.au
Website:	www.agriculture.gov.au/about/contactus/phone/vessel

2.4.7 DEPARTMENT OF HOME AFFAIRS

1. The Department of Home Affairs (DHA) monitors the entry and exit of vessels, aircraft, goods and people. DHA performs the primary immigration function at air and seaports, and maintains an alert list of persons of interest for security or law enforcement purposes. It contributes to the management of customs and immigration border risks in Australia's maritime domain while continuing to facilitate the legitimate movement of travellers and goods.
2. Additionally, DHA has responsibility for:
 - delivery of the migration and humanitarian programs
 - processing applications for citizenship, permanent migration and temporary entry visas
 - programs to combat and deter people smuggling activities
 - proactive negotiation with overseas governments, international organisations and other agencies to deter unauthorised entry to Australia
 - detention arrangements for unlawful non-citizens
 - implementation of integrated humanitarian settlement strategy arrangements to support humanitarian entrants to Australia
 - programs to equip migrants and refugees to participate equitably in Australian society
3. DHA has a permanent presence at specific locations throughout Australia, established to help the Australian community, industry and overseas visitors to access its services and programs.
4. DHA also operates a national information collection program called Border Watch that draws on the knowledge of industry and the community. Border Watch encourages industry and the Australian community to work with DHA to protect Australia's borders by reporting suspicious border activities. To report suspicious behaviour, submit the Border Watch online form or use the toll-free telephone numbers in next paragraph.

Online Form:	www.homeaffairs.gov.au/help-and-support/departmental-forms/online-forms/border-watch
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5. Visit the Home Affairs website for more information.

Global Feedback Unit:	13 31 77 (within Australia) www.homeaffairs.gov.au/help-and-support/departmental-forms/online-forms/complaints-compliments-and-suggestions
To report suspicious behaviour, submit the Border Watch online form or use the toll-free 24/7 telephone numbers.	1800 009 623 (inside Australia) +61 2 6246 1325 (if you are outside of Australia or using a satellite phone) www.australia.gov.au/borderwatch
Website:	www.homeaffairs.gov.au
Office locations:	www.homeaffairs.gov.au/about/contact/offices-locations

Maritime Border Command

6. Maritime Border Command (MBC) is the primary Australian Government law enforcement organisation in the Australian Maritime Domain (AMD). It is part of the Department of Home Affairs. Structured as a multi-agency task force and as a Division of the Operations Group of the Australian Border Force (ABF), MBC combines the resources and expertise of the ABF and the ADF, as well as contributions from subject matter experts from the AFMA, the Biosecurity Services Group, and other government agencies, to deliver a coordinated, national approach to Australia's offshore civil maritime security.
7. In exercising tactical command of civil maritime security operations, MBC operates under the strategic direction of the DHA and shared operational direction from the ABF and ADF. MBC employs assigned ABF and ADF assets to achieve operational outcomes on behalf of Australian Government partner agencies that have responsibility for different elements of Australia's civil maritime security.
8. The AMD includes the TS, the offshore areas predominantly within Australia's EEZ, and extends to the area bounded by Australia's Search and Rescue Area (see Section 8.6). MBC is not a search and rescue organisation, however does routinely provide supporting surveillance and response assets for emergencies at sea.
9. MBC is responsible for coordinating and controlling operations to protect Australia's national interests against the following civil maritime security threats:
- illegal exploitation of natural resources
 - illegal activity in protected areas
 - illegal maritime arrivals
 - prohibited imports/exports
 - maritime terrorism
 - piracy, robbery, or violence at sea
 - compromise to biosecurity
 - marine pollution
10. Assets assigned to MBC conduct law enforcement activities on behalf of other Government agencies exercising powers under the *Maritime Powers Act 2013* (Cth), *Customs Act 1901* (Cth), *Migration Act 1958* (Cth), *Fisheries Management Act 1994* (Cth) and the *Australian Border Force Act 2015* (Cth). Visit the ABF website for more information.

Website:	www.abf.gov.au/about-us/what-we-do/border-protection/maritime
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2.4.8 DEPARTMENT OF INFRASTRUCTURE, TRANSPORT, CITIES AND REGIONAL DEVELOPMENT

1. The Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) contributes to the wellbeing of all Australians through the following outcomes:
 - improved infrastructure across Australia through investment in and coordination of transport and other infrastructure
 - an efficient, sustainable, competitive, safe and secure transport system for all transport users through regulation, financial assistance and safety investigations
 - strengthening the sustainability, capacity and diversity of our cities and regional economies
 - through facilitating local partnerships between all levels of government and local communities
 - through reforms that stimulate economic growth
 - grants and financial assistance
 - good governance in the Australian territories through the maintenance and improvement of the overarching legislative framework for self-governing territories, and laws and services for non-self-governing territories
2. Generally speaking, international and interstate shipping come under Australian Government jurisdiction, while ports and intrastate shipping comes under State jurisdiction.
3. DITCRD functions of direct relevance to mariners include its:
 - lead on Australian shipping policy
 - administration of maritime and shipping Acts and Regulations
 - oversight of AMSA, including its National Marine Safety Regulator function
 - regulation of access to the Australian coastal trade
 - administration of the Australian Cargo Liability Regime
 - administration of Part X of the *Competition and Consumer Act 2010* (Cth)
 - administration of *Shipping Reform (Tax Incentives Act) 2012* (Cth)
 - maritime safety
 - marine environmental protection
4. Visit the DITCRD website for more information.

Website:	www.infrastructure.gov.au
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Australian Transport Safety Bureau

5. The Australian Transport Safety Bureau (ATSB) is an independent Australian Government statutory agency within DITCRD.
6. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in:
 - independent investigation of transport accidents and other safety occurrences
 - safety data recording, analysis and research
 - fostering safety awareness, knowledge and action
7. The ATSB promotes marine safety by:
 - conducting investigations into accidents and serious incidents involving Australian registered ships anywhere in the world, foreign flag ships within Australian waters, or where evidence relating to an accident involving ships is found in Australia
 - publishing investigation reports and issuing recommendations and safety advisory notices

- issuing safety bulletins
- operating a Confidential Marine Reporting Scheme (REPCON)
- maintaining a database of marine accidents and incidents and confidential marine reports

8. Copies of legislation, explanatory material and investigation reports are available on the ATSB's website.

Telephone:	1800 020 616 +61 2 6257 4150
Fax:	+61 2 6247 3117
Email:	atsbinfo@atsb.gov.au
Website	www.atsb.gov.au

2.4.9 DEPARTMENT OF THE ENVIRONMENT AND ENERGY

1. The Department of the Environment and Energy (DEE) advises on, and implements policies and programs for, the protection and conservation of the environment. It encourages conservation and appreciation of natural and cultural heritage and ecologically sustainable management of coastal and marine resources. DEE is also responsible for administering environmental laws, which provide regulatory arrangements to ensure the protection and conservation of important national aspects of the environment, including the marine environment.
2. Responsibilities of DEE relevant to mariners, many of which are undertaken in cooperation with international, state and territory governments, as well as other Australian Government agencies, include:
 - the management of marine parks in Commonwealth waters (also called Marine Protected Areas (MPAs))
 - environmental assessment and approval of particular development proposals, including dumping at sea
 - the regulation of activities that may affect cetaceans (whales, dolphins and porpoises) in Commonwealth waters or outside Australian waters, including whale watching
 - managing Australian Government activities in Antarctica
 - conducting and managing scientific research programs on land and in the Southern Ocean
 - the assessment of all Government-managed fisheries with an export component
 - the identification and protection of cetaceans, marine and migratory species, threatened species and ecological communities, the regulation of wildlife imports and exports, and Australia's obligations under international agreements on flora and fauna
 - the identification and protection of historic wrecks and relics
3. DEE administers the following Acts relevant to mariners:
 - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)*
 - *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
 - *Environment Protection (Sea Dumping) Act 1981 (Cth)*
 - *Sea Installations Act 1987 (Cth)*
 - *Historic Shipwrecks Act 1976 (Cth)*
 - *Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Cth)*
 - *Great Barrier Reef Marine Park Act 1975 (Cth)*
 - *Wet Tropics of Queensland World Heritage Area Conservation Act 1994 (Cth)*
 - a suite of Antarctic legislation (such as the *Antarctic Treaty (Environment Protection) Act 1980 (Cth)*, *Heard Island and McDonald Islands Act 1953 (Cth)*)

4. For further information on the roles and responsibilities of DEE, the laws and regulations it administers, relevant contact telephone numbers etc, are published on its website.

Telephone:	1800 803 772
Email:	ciu@environment.gov.au
Website:	www.environment.gov.au

2.4.10 GEOSCIENCE AUSTRALIA

- Geoscience Australia (GA) is Australia's national geoscience research and geospatial information agency, within the Industry, Innovation and Science portfolio.
- GA's responsibilities include:
 - developing and maintaining the currency of the Australian Maritime Boundaries database (AMB)
 - advising the Australian Government on Australian maritime jurisdiction and supporting the release of resource acreage within that jurisdiction
 - coastal and marine data and maps (not for navigation)
 - advice on environmental marine and coastal impact from resource development
 - monitoring natural hazards, particularly earthquakes, landslides, tsunamis and volcanic events
 - advising the government on maritime boundaries and offshore jurisdiction, as well as facilitating meetings about specific international obligations (as set out in UNCLOS).

Telephone enquires:	+61 2 6249 9111
Fax:	+61 2 6249 9999
Email:	clientservices@ga.gov.au
Website	www.ga.gov.au

2.4.11 GREAT BARRIER REEF MARINE PARK AUTHORITY

- The Great Barrier Reef Marine Park Authority (GBRMPA) is a Australian Government statutory authority. GBRMPA reports to the Australian Government Minister for the Environment and advises the Minister on the control, care and development of the Great Barrier Reef Marine Park (GBRMP). GBRMPA also plays a major role in the management of the Great Barrier Reef World Heritage Area (World Heritage Area).
- The goal of GBRMPA is to provide for the long term protection, ecologically sustainable use, understanding and enjoyment of the Great Barrier Reef (GBR) for all Australians and the international community, through the care and development of the GBRMP.
- The GBRMPA, in partnership with the Queensland (QLD) Government, uses a wide range of management tools, many of which are legally binding, to protect the GBRMP and to manage sustainable use.
- The GBRMPA works collaboratively with AMSA and Maritime Safety Queensland (MSQ) to manage shipping activity within the GBRMP and World Heritage Area through:
 - administration of Acts, Regulations and Zoning Plan, including restrictions on certain activities, restrictions on the discharge of wastes including oil and chemical pollution, ballast water, garbage and litter; and offences and penalties for causing environmental damage to the GBRMP
 - compulsory pilotage requirements for certain ships within prescribed areas of the GBRMP
 - the mandatory Torres Strait and Great Barrier Reef Ship Reporting System and Reef Vessel Traffic Services (Reef VTS)
 - contingency plans for oil and other noxious substances
 - a system of navigation aids including DGPS coverage over the entire World Heritage Area and radar coverage over much of the GBRMP



- zoning plans and designated areas which limit where ships can go within the GBRMP
 - plans of management
 - permits
5. The aim of these activities is to protect the natural qualities of the GBR, while providing for reasonable use of the reef region.
 6. The GBRMPA website provides the latest news and information on:
 - legislation, regulations and policies
 - how the reef is managed
 - biodiversity
 - managing multiple uses
 - permits
 - Marine Park Zoning Plan and maps
 - plans of management

Telephone:	+61 7 4750 0700
24 hour hotline for oil spills:	+61 7 3830 4919
Fax:	+61 7 4772 6093
Email:	info@gbmpa.gov.au
Website	www.gbrmpa.gov.au

2.4.12 NATIONAL OFFSHORE PETROLEUM SAFETY AND ENVIRONMENTAL MANAGEMENT AUTHORITY

1. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), is Australia's national regulator for safety, well integrity and environmental management for offshore petroleum operations and greenhouse gas storage operations in Commonwealth waters, and in coastal waters where state and territory powers and functions have been conferred.
2. NOPSEMA's role is to:
 - work with industry, the workforce, stakeholders and other authorities to ensure the offshore petroleum industry properly controls all safety, integrity and environmental risks
 - independently administer offshore petroleum safety, well integrity and environmental management legislation
 - promote a legislative framework that encourages continuous improvement of safety, well integrity and environmental performance of the offshore petroleum industry
 - develop people, processes and systems that are efficient and effective
3. NOPSEMA's offices are located in Perth, WA and Melbourne, VIC.

Telephone:	+61 8 6188 8700
Email:	information@nopsema.gov.au
Website:	www.nopsema.gov.au

2.5 STATE AUTHORITIES

2.5.1 MARITIME SAFETY QUEENSLAND

1. Maritime Safety Queensland (MSQ) is a branch of the QLD State Government Department of Transport and Main Roads that administers the *Maritime Safety Queensland Act 2002* (QLD). MSQ's role is to protect Queensland's waterways and the people who use them – providing safer, cleaner seas. It is responsible for:
 - improving maritime safety for shipping and small craft through regulation and education
 - minimising vessel-sourced waste and responding to marine pollution
 - providing essential maritime services such as aids to navigation and vessel traffic services
 - encouraging and supporting innovation in the maritime industry
2. MSQ distributes information through the following products and services:
 - Beacon to Beacon guides available free online, aimed at recreational users and commercial operators in QLD waters
 - Queensland Tide Tables - Standard Port Tide Times available free online (annual)
 - Port Procedures and Information for Shipping available free online
 - marine safety and educational material
 - information published on website also includes QLD NtM, safety information and regulations, lists of regional offices and contacts

Website:	www.msq.qld.gov.au
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3. Regional Harbour Master contact details are listed at Section 11.6.1.

2.5.2 ROADS AND MARITIME SERVICES - NEW SOUTH WALES

1. Roads and Maritime Services (RMS) - is the New South Wales (NSW) State Government agency with responsibilities for marine safety and regulation of recreational boating, management of navigable waters in NSW and certain maritime properties. Its primary functions include:
 - educating users on safe boating through the issue of licenses, educational programs, establishing and supporting user groups
 - vessel registration, mooring management
 - maintaining a state wide system of navigation aids and signs
 - ensuring compliance with environmental legislation on the State waterways
 - compliance with maritime legislation on all navigable waterways in the State
 - inspection of public ferry wharves
 - safety and marine pollution inspections of vessels in commercial use
 - licensing of hire and drive operations
 - funding for local government and community groups for boating infrastructure
 - licensing of aquatic events
 - cleaning litter and debris from the waters and foreshores of Sydney Harbour, and the Parramatta and Lane Cove Rivers

Products / Information

- brochures, fliers and stickers promoting boating safety
- boating maps designed for recreational craft printed on waterproof paper

Telephone:	13 12 36
Fax:	+61 2 8849 2760
Email:	mps@rms.nsw.gov.au
Website:	www.rms.nsw.gov.au/maritime

2.5.3 MARITIME SAFETY VICTORIA

1. Maritime Safety Victoria (MSV), a branch of Transport Safety Victoria (TSV), is the State's maritime safety regulator and is responsible for the administration of the *Marine Safety Act 2010* (VIC) and its associated regulations.
2. The *Marine Safety Act 2010* (VIC) provides for safe marine operations in Victoria (VIC) and promotes:
 - the safety of marine operations
 - the effective management of safety risks in marine operations and in the marine operating environment
 - continuous improvement in marine safety management
 - public confidence in the safety of marine operations
 - involvement of relevant stakeholders in marine safety
 - a culture of safety among all participants in the marine operating environment
3. The functions of the Director, Transport Safety (Safety Director) under the *Marine Safety Act 2010* (VIC) include:
 - monitoring compliance with relevant marine safety laws, including a range of safety duties on the marine industry from workers, vessel masters through to passengers on vessels
 - registering recreational vessels and licensing masters of recreational vessels
 - regulating and managing the use of, and navigation of vessels on, State waters
 - licensing harbour masters and pilots, and registering pilotage service providers
 - issuing local knowledge certificates, including establishing and endorsing certification requirements for commercial operators
 - developing appropriate standards for the training of pilots and pilot exempt masters, the training of harbour masters, navigation and maritime safety on State waters, and dredging and maintenance of channels in State waters
 - making waterway rules
 - determining parts of State waters that require a licensed harbour master
 - investigating alleged breaches of relevant marine safety laws and to prosecute for them
4. In addition, the Safety Director also undertakes, as a delegate of the AMSA (the national regulator for the National System for Domestic Commercial Vessel Safety), functions relating to the:
 - certification of commercial vessels and commercial vessel operations in accordance with national standards
 - certification and licensing of masters and crew of commercial vessels in accordance with national standards

Products / Information

5. The TSV website provides the latest news and information on regulations, certification, registration and licensing requirements, and provides downloadable publications and information such as:
- vessel operating and zoning rules and online map
 - Recreational Boating Safety Handbook and safety pamphlets
 - incident reporting and data analysis
 - relevant legislation, such as the *Marine Safety Act 2010* (VIC)

Telephone:	+61 3 9655 3399 / 1800 223 022
Fax:	+61 3 9655 6611
Email:	information@transportsafety.vic.gov.au
Website:	https://transportsafety.vic.gov.au/maritime-safety
Social Media	 @MaritimeTSV  Boat Safe Ride Safe  Boat Safe Ride Safe

2.5.4 MARINE AND SAFETY TASMANIA

1. Marine and Safety Tasmania (MAST) is a statutory authority. The primary roles of MAST are:
- to ensure the safe operation of vessels in all Tasmanian waters
 - to perform the functions delegated to it by the national regulator (AMSA) for commercial vessels
 - to provide and manage marine facilities
 - to provide and manage environmental issues relating to vessels
2. MAST has jurisdiction in and over:
- the waters of all inland lakes, rivers and streams
 - coastal waters
 - any vessel not covered by Australian legislation
 - any matters delegated to it by the national regulator (AMSA)
 - any marine facility under its control

Products / Information

3. Information is available on the MAST website which includes:
- latest news and events
 - safety information
 - MAST NtM
 - facilities finder
 - downloadable publications (including recreational vessel newsletters)

Telephone:	1300 135 513
Fax:	+61 3 6233 5662
Email:	admin@mast.tas.gov.au
Website:	www.mast.tas.gov.au

2.5.5 DEPARTMENT OF PLANNING, TRANSPORT AND INFRASTRUCTURE - SOUTH AUSTRALIA

1. A range of marine services are provided by various divisions within the Department of Planning, Transport and Infrastructure (DPTI). These include:
 - marine safety, including policy development, licensing, compliance, accident reporting, investigations, marine safety equipment, Notices to Mariners, recreational boating and accreditation
 - commercial marine services - emergency response and navigation
 - marine facilities - maintenance of departmental marine assets including navigation aids
 - commercial ports and shipping policy advice
 - marine transport policy advice

Telephone:	1300 360 067 / +61 8 8343 2222
Email:	dpti.enquiriesadministrator@sa.gov.au
Website:	www.dpti.sa.gov.au

2.5.6 DEPARTMENT OF TRANSPORT - WESTERN AUSTRALIA

1. The Western Australian Department of Transport (DoT) - Marine Safety is responsible for:
 - providing and enabling the safe, accessible and sustainable use of navigable waters through the provision of an integrated policy and waterways safety management approach, to include those activities related to education, certification, navigational safety, compliance and investigations. Setting and monitoring safety standards for commercial and recreational vessels in Western Australia (WA) waters
 - management of maritime operations and performance of Harbour Master functions within Shipping and Pilotage ports and undertaking the role of Hazard Management Agency for marine environmental emergencies
 - placement and asset management of aids to navigation
 - Directorates oversee a range of services, including those related to recreational vessel registration and operations, Recreational Skipper's Ticket, moorings, aquatic event approvals, WA NtM, TS baseline vessels and wreck removals
 - provision of expert marine safety advice
2. DoT has directorates to deal with:
 - coastal data and cartography
 - recreational boating
 - sea freight and ports
 - coastal asset management
 - marine environmental emergencies
 - navigational safety
 - maritime policy and regulation

Products / Information

3. DoT publishes boating guides and maritime safety information. Visit the Marine section of the DoT website for:
 - WA nautical charts
 - WA ports
 - information for recreational vessels

- safety information
- facilities information
- useful links

Telephone:	+61 8 9216 8999
Email:	marine.safety@transport.wa.gov.au
Website:	www.transport.wa.gov.au/imagine/marine-information.asp

2.5.7 DEPARTMENT OF TRANSPORT - NORTHERN TERRITORY

- The Marine Safety Branch of the Department of Transport is the marine authority responsible for a range of marine matters in the Northern Territory (NT). Its primary functions are:
 - Regional harbour master for designated ports
 - marine safety
 - navigation aids within NT waters
 - recreational vessel safety

Products / Information

- The website includes regulations, local and coastal NT NtM, Darwin Port pilotage requirements, boating safety requirements and contacts.

Telephone:	+61 8 8924 7100
Fax:	+61 8 8924 7009
Email:	marinesafety@nt.gov.au
Website:	www.nt.gov.au/marine

2.5.8 VOLUNTEER MARINE RESCUE GROUPS

- There are a number of marine rescue services in Australia. These are all operated by highly trained volunteers who give up their own time and often use their own vessels to assist in search and rescue. They work closely with State marine authorities, police, ABF and various State rescue services.
- Assistance provided by these volunteer groups includes:
 - radio monitoring
 - safety patrols
 - search and rescue
 - marshalling at annual sporting / leisure events
- For more information on volunteer groups within Australia visit the following websites:

Australian Volunteer Coast Guard:	www.coastguard.com.au
Marine Rescue NSW:	www.marinerescuensw.com.au
Volunteer Marine Rescue Association Qld:	www.marinerescueqld.org.au
Volunteer Marine Rescue WA:	www.vmrwa.org.au
NT Emergency Services:	www.nt.gov.au
Volunteer Marine Rescue Tasmania:	www.slst.asn.au
SA Sea Rescue Squadron:	www.sasearescue.org.au

Notes:

Note 1 - On 1 February 2020 the Australian Government formed the:

- (a) Department of Agriculture, Water and the Environment (AWE) by merging
 - (i) Department of Agriculture and Water Resources (DAWR); and
 - (ii) Department of the Environment and Energy (Environment portfolio) (DEE)
- (b) Department of Infrastructure, Transport, Regional Development and Communications by merging:
 - (i) Department of Infrastructure, Transport, Cities and Regional Development (DITCRD); and
 - (ii) Department of Communications and the Arts.
- (c) Department of Industry, Science, Energy and Resources by merging:
 - (i) Department of Industry, Innovation and Science; and
 - (ii) Department of the Environment and Energy (Energy portfolio); and
 - (iii) Department of Employment, Skills, Small and Family Business (Small Business portfolio)

References to the former Government Departments should be replaced with the new Government Department titles throughout AHP20.

All website links, email addresses and contact information currently remain as printed (6 Mar 2020).

CHAPTER 3 **LEGISLATION AND REGULATIONS**

3.1 **NATIONAL LEGISLATION AND REGULATIONS**

3.1.1 **ANTARCTIC MARINE LIVING RESOURCES CONSERVATION ACT 1981 (CTH)**

1. *The Antarctic Marine Living Resources Conservation Act 1981 (Cth)* is administered on behalf of the Department of the Environment and Energy (DEE) by the Australian Antarctic Division (AAD). The Act implements the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). It regulates harvesting of, or research into, all living organisms that are found in the marine environment within the Convention area. This area is defined in the Convention as south of a series of coordinates which approximate the 'Antarctic Convergence' and includes Heard Island, but not Macquarie Island. The Australian Fisheries Management Authority (AFMA) has responsibility for regulating Australian commercial harvesting of marine organisms in the CCAMLR area.

3.1.2 **ANTARCTIC TREATY (ENVIRONMENT PROTECTION) ACT 1980 (CTH)**

1. *The Antarctic Treaty (Environment Protection) Act 1980 (Cth)* is an Act that applies within the Australian Antarctic Territory (AAT), and to Australian citizens, expeditions, organisations, crew and property outside Australia. It addresses three main issues:
 - the conservation of Antarctic fauna and flora, including the specification of permits and specially protected areas
 - environmental impact assessment
 - inspectors and offences
2. Regulations under this Act also provide for the conservation of Antarctic seals, waste management in Antarctica and the environmental impact assessment process. It seeks to ensure Australia's commitment to environmental protection in Antarctica in accordance with the *Protocol on Environmental Protection to the Antarctic Treaty (The Madrid Protocol)*.

3.1.3 **AUSTRALIAN BORDER FORCE ACT 2015 (CTH)**

1. *The Australian Border Force Act 2015 (Cth)* establishes the legal framework for the Australian Border Force (ABF) which was established within the Department of Immigration and Border Protection (DIBP) on 1 July 2015. The ABF is led by a Commissioner who then maintains control of the operations of the ABF. The ABF Commissioner and Australian Public Service employees in the ABF exercise powers under the *Customs Act 1901 (Cth)*, the *Migration Act 1958 (Cth)*, the *Maritime Powers Act 2013 (Cth)*, the *Australian Border Force Act 2015 (Cth)* and other Australian laws.

3.1.4 **AUSTRALIAN MARITIME SAFETY AUTHORITY ACT 1990 (CTH)**

1. *The Australian Maritime Safety Authority Act 1990 (Cth)* establishes the Australian Maritime Safety Authority (AMSA). The Act is administered by the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD). AMSA's primary functions under this Act include combating pollution in the marine environment, providing a search and rescue service and providing services to the maritime industry. AMSA is also given responsibilities under other legislation including the *Navigation Act 2012 (Cth)*, the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cth)*, the *Occupational Health and Safety (Maritime Industry) Act 1993 (Cth)* and a range of marine pollution legislation.

Website:	www.amsa.gov.au
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3.1.5 **BIOSECURITY (CONSEQUENTIAL AMENDMENTS AND TRANSITIONAL PROVISIONS) ACT 2015 (CTH)**

1. The *Biosecurity Act 2015* commenced operation on 16 June 2016. This Act is framework legislation and is supported by subordinate legislation. Chapter 3 of the Act deals with the management of goods which may create a biosecurity risk when they enter Australian territory. Garbage, dunnage or other waste on board a vessel is considered a 'good' under the Act. Chapter 4 of the Act deals with the assessment and management of biosecurity risks associated with the movement of conveyances into Australian territory. A conveyance includes a vessel. Chapter 5 of the Act implements Australia's proposed obligations under the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004. This Act is administered by the Department of Agriculture and Water Resources (DAWR).

3.1.6 **COASTAL TRADING (REVITALISING AUSTRALIAN SHIPPING) ACT 2012 (CTH)**

1. The *Coastal Trading (Revitalising Australian Shipping) Act 2012* (Cth) (*CT(RAS) Act*) commenced on 1 July 2012. An overview of the *CT(RAS) Act* can be found at:

Website:	https://infrastructure.gov.au/maritime/business/coastal_trading
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2. The *CT(RAS) Act* sets out a three tier licensing system:
 - general licences:
 - Australian flagged, Australian crewed vessels
 - valid for five years
 - unrestricted access to the coastal trade
 - temporary licences:
 - foreign flagged vessels
 - valid for 12 months
 - limited access to the coastal trade
 - emergency licences:
 - available in very limited emergency circumstances
 - valid for not more than 30 days
3. The Australian Government is working to reform Australia's coastal shipping arrangements and as a result the current regulatory requirements may be subject to change.

3.1.7 **CRIMES AT SEA ACT 2000 (CTH)**

1. State and territory laws apply from the coastal baseline out to 12nm. The *Crimes at Sea Act 2000* (Cth) (the Act) applies states and territory criminal law to offshore adjacent areas from 12 to 200nm, or to the limit of the Continental Shelf (CS), whichever is the greater.
2. Where another country also has jurisdiction over an alleged offence, the Act allows for the views of each country to be heard before a decision is made to prosecute under Australian law.
3. Under the Act, substantive Australian criminal law also applies anywhere in the world where there is an appropriate link between a crime and Australia. Australian criminal law applies, for example, to a crime that occurs on an Australian ship, a crime committed by an Australian citizen (other than a crew member) on a foreign ship, or a crime on a foreign ship where the ship's next port of call is Australia.
4. Special provisions are made for cooperative arrangements between Australia and Indonesia in the enforcement of criminal law.

3.1.8 CUSTOMS ACT 1901 (CTH)

1. The *Customs Act 1901* (Cth) gives the Department of Home Affairs (DHA) constitutional authority and empowers it to administer legislation on behalf of other government agencies in relation to the movement of goods and people across the Australian border.

3.1.9 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (CTH)

1. The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (the *EPBC Act*), which came into force in July 2000, is the Australian Government's central piece of environmental legislation. It is administered by the DEE. The *EPBC Act* applies throughout the Australian jurisdiction, including state and territorial coastal waters.
2. The *EPBC Act* provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places - defined in the *EPBC Act* as matters of national environmental significance.
3. The eight matters of national environmental significance to which the *EPBC Act* applies are:
 - world heritage sites
 - national heritage places
 - wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
 - nationally threatened species and ecological communities
 - migratory species
 - Commonwealth marine areas
 - the Great Barrier Reef Marine Park (GBRMP)
 - nuclear actions
4. Actions that are likely to have a significant impact on one of the eight matters of national environmental significance are required to be referred to the DEE for assessment. For further information in relation to the approval process under the *EPBC Act*, refer to the DEE website.

Website:	www.environment.gov.au/epbc/approval.html
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5. The *EPBC Act* operates to protect and conserve Australian native wildlife by regulating international trade. This helps to protect targeted species against over exploitation, and Australian ecosystems against the introduction of invasive species.
6. The *EPBC Act* also gives effect to Australia's obligations under the *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) by regulating international trade of the species covered by the Convention.
7. The *EPBC Act* provides for the establishment of Commonwealth reserves, including marine parks in Commonwealth waters. Some activities are prohibited in Commonwealth reserves (such as actions that affect native species) unless they are authorised by a permit issued by the Director of National Parks or are expressly provided for in a management plan that is in place for that reserve. The *EPBC Act* also provides for areas outside a Commonwealth reserve to be proclaimed a conservation zone to provide interim protection for the area while it is being assessed for possible inclusion in a Commonwealth reserve. As with Commonwealth reserves, certain activities are prohibited in conservation zones.
8. Visit the DEE website for more information.

Website:	www.environment.gov.au/epbc/index.html
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3.1.10 ENVIRONMENTAL PROTECTION (SEA DUMPING) ACT 1981 (CTH)

1. The DEE is responsible for the administration of the *Environment Protection (Sea Dumping) Act 1981* (Cth). This Act applies in all Australian waters (other than waters within the limits of a State or the Northern Territory) from the low water line out to the limits of the Exclusive Economic Zone (EEZ). It regulates the deliberate loading and dumping of waste and other matter at sea. It applies to all vessels, aircraft and platforms in Australian waters, and to all Australian vessels or aircraft in any part of the sea.
2. This Act does not cover operational discharges from ships, such as sewage and galley scraps. Those are regulated by the *Protection of the Sea* legislation administered by the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) and AMSA.

3.1.11 GREAT BARRIER REEF MARINE PARK ACT 1975 (CTH)

1. The *Great Barrier Reef Marine Park Act 1975* (Cth) (*GBRMP Act*) provides the framework for the establishment, control, care and development of the GBRMP. Activities such as the discharge of waste, illegal fishing and negligent shipping are strictly controlled with offences punishable by large fines for individuals and companies. The *GBRMP Act* applies to all persons, including foreigners, and to all vessels and aircraft. The *GBRMP Act* is administered by the Great Barrier Reef Marine Park Authority (GBRMPA).

3.1.12 GREAT BARRIER REEF MARINE PARK REGULATIONS 1983 (CTH)

1. The *Great Barrier Reef Marine Park Regulations 1983* (Cth) are the principal regulations under the *GBRMP Act*. They include a number of offence provisions, in addition to provisions relating to matters such as applications for and the granting of permissions, compulsory pilotage, environmental management charge, plans of management and review rights.

3.1.13 MARINE NOTICES - AUSTRALIAN MARITIME SAFETY AUTHORITY

1. Marine Notices are issued by AMSA to promote the safety of life and vessels at sea, and for the protection of the marine environment. They are non mandatory and do not form part of Australia's domestic law. Marine Notices remind mariners of their obligations and responsibilities under various Marine Orders and other laws. They may also include:
 - safety recommendations and reminders
 - warnings of unsafe practices
 - notice of legislative changes
 - changes in procedures as a result of new legislative instruments or an international convention
 - international convention amendments
 - type and product approvals
 - changes in survey matters and requirements
 - general information
2. Marine Notices are reviewed regularly and withdrawn when no longer relevant. They are published on AMSA's website.

Website:	https://apps.amsa.gov.au/MOReview/MarineNoticeExternal.html
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3.1.14 MARINE ORDERS - AUSTRALIAN MARITIME SAFETY AUTHORITY

1. AMSA has the power to make subordinate or delegated legislation known as Marine Orders. The Acts under which Marine Orders can be made are the *Navigation Act 2012* (Cth), the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth), the *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* (Cth) and the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cth). Marine Orders may apply to all vessels to which these Acts apply.

2. Marine Orders contain detailed technical standards and operational procedures which give effect to various international maritime convention requirements as well as relevant Australian standards. The Marine Orders also contain offences and penalties.

Marine Orders 1-100

3. Relevant Legislation

- *Navigation Act 2012* (Cth)
- *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth)
- *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* (Cth)

4. Vessels: These may apply to all vessels

Marine Orders 501-507

5. Relevant Legislation

- *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cth).

6. Marine Orders under the National Law Act set out the processes and requirements for national certificates, vessel identification, approved training organisations and administrative requirements.

7. Vessels: They do not apply to foreign flagged vessels

8. In response to changes in international law, industry requirements and technological developments, the Marine Orders are regularly amended, reviewed or replaced.

9. Visit the AMSA website to view Marine Notices, Marine Orders and links to relevant legislation.

Website:	www.amsa.gov.au/about/regulations-and-standards
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3.1.15 MARITIME POWERS ACT 2013 (CTH)

1. The *Maritime Powers Act 2013* (Cth) provides a broad set of enforcement powers for use in, and in relation to, maritime areas. The powers can be used by maritime officers to give effect to Australian laws and international agreements and decisions. Customs officers, members of the Australian Defence Force (ADF) and members of the Australian Federal Police (AFP) are designated as maritime officers. Other persons may be appointed as maritime officers by the Minister.
2. Maritime powers may be used in relation to a vessel, aircraft, installation, protected land area and to ensure the safety of persons. Maritime powers include the following:
 - boarding and entry powers
 - information gathering powers
 - search powers
 - powers to seize and retain things
 - powers to detain vessels and aircraft
 - powers to place, detain, move and arrest persons
 - the power to require persons to cease conduct that contravenes Australian law

3.1.16 MARINE SAFETY (DOMESTIC COMMERCIAL VESSEL) NATIONAL LAW ACT 2012 (CTH)

1. The *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cth) (*National Law Act*) regulates domestic commercial vessel safety. It establishes AMSA as the National Marine Safety Regulator (the National Regulator). This Act replaces other state and territory laws regulating domestic commercial vessel construction and operation, and seafarer qualifications, in order to provide one national regulatory system across Australia.

2. The term 'domestic commercial vessel' covers Australian vessels that are for use in connection with any commercial, research or governmental (other than Defence) activity. However, the term does not cover Australian vessels that are certified for, enter or operate in waters beyond the outer limit of the Australian EEZ or that are foreign flagged or elect to maintain the International Convention for the Safety of Life at Sea (SOLAS) Certification - these vessels are regulated under the *Navigation Act 2012* (Cth).
3. Regulations under the *National Law Act* (and Marine Orders) provide more details. Key definitions explain what vessels and structures are covered or excluded under the *National Law Act*. The Marine Orders under this Act are numbered from 501 to 507.
4. An agreed range of operational and enforcement functions under the *National Law Act* have been delegated by the National Regulator to state and territory maritime safety agencies.
5. For more information about the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cth) and the administration of the *National Law Act* visit AMSA's website.

Website:	www.amsa.gov.au/about/regulations-and-standards
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3.1.17 MARITIME TRANSPORT AND OFFSHORE FACILITIES SECURITY ACT 2003 (CTH)

1. Australia, through the Maritime Transport and Offshore Facilities Security Act 2003 (Cth), implements the International Ship and Port Facility Security Code 2003 (ISPS) under SOLAS Chapter XI-2. The ISPS was developed by the IMO to enhance maritime transport security around the world. This Act places obligations on ships regulated under ISPS visiting Australia. Security regulated ships under this Act refer to both regulated Australian ships and regulated foreign ships. Furthermore, this Act regulates only those ships engaged on overseas or interstate voyages with the exception of the roll-on, roll-off passenger vehicle ferry the *Spirit of Tasmania* (which sails from two embarkation points, Port of Melbourne and Devonport, Tasmania). Ships regulated under the Act are:
 - passenger ships carrying more than 12 passengers
 - cargo ships of more than 500 Gross Registered Tonnage (GRT)
 - mobile offshore drilling units
2. The Aviation and Maritime Security (AMS) Division within the DHA administers this legislation, and undertakes the role of Designated Authority under SOLAS Chapter XI-2 and the ISPS Code. This includes verification of ship compliance with the Act, issuing of International Ship Security Certificates (ISSC), approval of security plans, and the setting of Maritime Security Levels (MARSEC) for regulated Australian ports, ships and offshore facilities.

3.1.18 NAVIGATION ACT 2012 (CTH)

1. The *Navigation Act 2012* (Cth) provides the legislative basis for many of Australia's responsibilities for maritime matters. It regulates a wide range of areas including ship safety, seafarer qualifications and working conditions, reporting of marine incidents, shipboard aspects of measures to protect the marine environment, wreck and salvage, carriage of passengers and tonnage measurement of vessels. Some provisions of the Act apply to all vessels in Australian waters. Vessels that will be subject to the substantive requirements of the *Navigation Act 2012* (Cth) include:
 - foreign vessels
 - Australian vessels that operate from Australia and leave Australia's EEZ; or that operate entirely outside the EEZ; or are for use on voyages outside the EEZ
 - other Australian vessels that maintain SOLAS certification
 - other Australian vessels that choose to 'opt in' to the *Navigation Act 2012* (Cth)
2. The DITCRD administers the *Navigation Act 2012* (Cth) and its regulations. AMSA administers the Marine Orders.
3. Visit the AMSA website for more information.

Website:	www.infrastructure.gov.au
Website:	www.amsa.gov.au/about/regulations-and-standards

3.1.19 OFFSHORE PETROLEUM ACTS AND REGULATIONS

1. The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is responsible for administering the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth)* (OPGGGS Act), *Offshore Petroleum and Greenhouse Gas Storage (Regulatory Levies) Act 2003 (Cth)* and subsidiary legislation.
2. The OPGGS Act provides for NOPSEMA to regulate safety, well integrity and environmental management of offshore petroleum operations and greenhouse gas storage operations in Commonwealth waters, and in coastal waters where state and territory powers and functions have been conferred.
3. These activities are also subject to the following subsidiary legislation:
 - *Offshore Petroleum and Greenhouse Gas (Safety) Regulations 2009 (Cth)*
 - *Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2009 (Cth)*
 - *Offshore Petroleum and Greenhouse Gas (Regulatory Levies) Regulations 2004 (Cth)*
 - Part 5 of the *Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 (Cth)*

3.1.20 PROTECTION OF THE SEA (CIVIL LIABILITY) ACT 1981 (CTH)

1. The *Protection of the Seas (Civil Liability) Act 1981 (Cth)* provides a liability and compensation regime for pollution damage in Australian waters and the EEZ caused by spills from oil tankers. Oil tankers carrying over 2000 tonnes of oil in bulk as cargo must be insured to provide compensation for damage resulting from an oil spill. Ships of 400 GRT and over must be insured to cover liabilities from pollution damage. A ship at an Australian port not carrying evidence of insurance may be detained. This Act is administered by the DITCRD.

3.1.21 PROTECTION OF THE SEA (CIVIL LIABILITY FOR BUNKER OIL POLLUTION DAMAGE) ACT 2008 (CTH)

1. The *Protection of the Sea (Civil Liability for Bunker Oil Pollution Damage) Act 2008 (Cth)* provides a liability regime for pollution caused by bunker oil in Australia or the EEZ. Ships with a 1000 GRT or more are required to carry appropriate insurance for liability arising from bunker oil pollution damage. A ship at an Australian port not carrying evidence of insurance may be detained, and owners or operators of such ships may be fined. This Act is administered by the DITCRD.

3.1.22 PROTECTION OF THE SEA (POWERS OF INTERVENTION) ACT 1981 (CTH)

1. The *Protection of the Sea (Powers of Intervention) Act 1981 (Cth)* gives effect to the international conventions relating to *Intervention on the High Seas in Cases Of Oil Pollution Casualties* and *Intervention on the High Seas in Cases of Pollution by Substances other than Oil*. It allows AMSA or the Minister for Infrastructure and Transport to take action to prevent pollution in Australian waters. Intervention measures can include:
 - moving a ship or part of a ship to another place
 - removing cargo from a ship
 - sinking or destroying a ship or part of a ship
 - sinking, destroying or discharging into the sea any part of a ship's cargo
 - taking control of a ship or part of a ship
 - issuing directions to casualties or third parties who may assist in a response

3.1.23 PROTECTION OF THE SEA (PREVENTION OF POLLUTION FROM SHIPS) ACT 1983 (CTH)

1. The *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Cth) gives effect in Australia to operational provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL). This Act regulates the discharge or disposal from ships of:
 - oil or oily mixtures
 - noxious substances
 - packaged harmful substances
 - sewage
 - garbage
2. Certain discharges are prohibited in the Torres Strait and Great Barrier Reef (GBR) in accordance with the 'nearest land' provisions of MARPOL. This Act also sets limits on the amount of sulphur oxide and nitrogen oxide emissions from ships. There are significant penalties for the master and owner of a vessel and any other person violating the discharge regulations. This Act is administered by the DITCRD.

3.1.24 SEA INSTALLATIONS ACT 1987 (CTH)

1. The DEE administers the *Sea Installations Act 1987* (Cth). Sea installations include man made structures such as floating hotels, tourism pontoons, and artificial islands. The object of this Act is to ensure that sea installations are operated safely and in a manner that is consistent with the protection of the environment.
2. The *Environmental Permitting Regime (EPR)* of the Act was originally used to regulate the construction and operation of sea installations by the issue of permits. Since the introduction of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (*EPBC Act*) it has become common practice for the DEE to issue exemption certificates under the EPR of the Act.
3. Sea installations are also regulated by the *EPBC Act* and/or the *Great Barrier Reef Marine Park Act 1975* (Cth) depending on whether the sea installation is located in Australian territorial waters or the GBRMP respectively.

3.1.25 SHIPPING REGISTRATION ACT 1981 (CTH)

1. The purpose of the *Shipping Registration Act 1981* (Cth) is to fix the conditions for the registration of ships in Australia and to grant ships Australian nationality. It also provides for Australian ships to fly the Australian flag or the Australian Red Ensign in accordance with Australia's obligations under the United Nations Convention on the Law of the Sea 1982 (UNCLOS), to which Australia is a party.
2. The *Shipping Registration Act 1981* provides for two registers; the Australian General Shipping Register and the Australian International Shipping Register (AISR). For more information on the Australian Shipping Registers see Section 3.3.

3.1.26 TELECOMMUNICATIONS ACT 1997 (CTH)

1. Under Schedule 3A of the *Telecommunications Act 1997* (Cth), the Australian Communications and Media Authority (ACMA) has responsibility for regulating the installation and protection of submarine cables landing in Australia. This includes declaring 'protection zones' in relation to certain international cables. To date, ACMA has declared three protection zones: Northern Sydney, Southern Sydney and Perth. These zones protect submarine cables that are of national significance to Australia by prohibiting or restricting activities that may damage the cables.

3.1.27 TRANSPORT SAFETY INVESTIGATION ACT 2003 (CTH)

1. The *Transport Safety Investigation Act 2003* (Cth) (the *TSI Act*) establishes the Australian Transport Safety Bureau (ATSB) and provides the agency with the statutory power to conduct safety investigations for determining and reporting on the factors contributing to marine accidents and incidents. The ATSB conducts marine safety investigations involving interstate and overseas shipping in accordance with international treaties and instruments, including Article 94(7) of UNCLOS, IMO Casualty Investigation Code and SOLAS as enabled through the *TSI Act*.

3.2 SHIPPING LEVIES

1. The Australian Government imposes the following levies to fund maritime safety activities:
 - The Marine Navigation Levy (MNL) and Marine Navigation (Regulatory Functions) Levy (RFL) are payable by all sea-going commercially operated vessels of 24 metres or more in length.
 - The Protection of the Sea Levy (PSL) is payable by all vessels of 24 metres or more in length and with more than 10 tonnes of oil in bulk as fuel or cargo.
2. The *Marine Navigation Levy Collection Regulations 1990* (Cth), the *Marine Navigation (Regulatory Functions) Levy Collection Regulations 1992* (Cth) and the *Protection of the Sea (Shipping Levy Collection) Act 1981* (Cth) grant exemptions to certain vessels under certain circumstances. Exemptions from liability to pay the MNL and RFL are identical, however it should be noted that there are some differences in the exemptions from liability to pay PSL.
3. For overseas trading vessels, the MNL and RFL are payable upon arrival at an Australian port and cover a three month period. For coastal trading vessels the two levies are payable quarterly. The PSL is payable quarterly.
4. AMSA is authorised to collect the levies on behalf of the Australia Government. The collected levies are paid into the Commonwealth Consolidated Revenue Fund (CRF). An equivalent amount is then appropriated from the CRF and paid to AMSA to fund AMSA's maritime safety regulation activities, the costs associated with operating the Australian Government's marine aids to navigation system and to provide a framework capable of providing an effective response to oil and chemical pollution incidents involving shipping, including the national system of emergency towage vessels.
5. Shipping levies can be paid and managed online using the AMSA Levy Payment Portal.
6. The Levy Payment Portal offers:
 - search for levy expiry dates
 - calculate levy amounts
 - pay for one or more vessels
 - flexible payment options - credit card, direct debit
 - authority and Electronic Funds Transfer (EFT)
7. The master is required to keep a copy of the levy receipt on the vessel. This will be required when entering Australian ports as proof that levy/levies are paid.
8. Visit the AMSA Levy Payment Portal for more information.

Telephone:	+61 2 6279 5801
Email:	levyqueries@amsa.gov.au
Website:	https://apps.amsa.gov.au/levies

3.3 AUSTRALIAN SHIPPING REGISTER

1. The Australian Shipping Registration Office (SRO) is established under the *Shipping Registration Act 1981* (SRA) (Cth) and is responsible for the administration of that Act. Since the formation of AMSA in 1991, the SRO has been part of AMSA.
2. The business of the SRO includes recording the ownership of ships, the granting of registration certificates, the issue of Continuous Synopsis Records (CSR) to ships required to carry them and providing public access to the information held in the Australian Shipping Registers.
3. There are two Australian shipping registers:

The Australian General Shipping Register (the General Register)

4. The Australian General Shipping Register is open to all Australian owned or operated vessels; however Australian owned vessels, 24 metres or more in tonnage length and capable of navigating the high seas are required to be registered. Ships less than 24 metres in length, government ships, fishing vessels and pleasure craft are not required to be registered, but may be, if the owner desires. All Australian owned vessels sailing overseas must have Australian registration, regardless of size.

5. Registration on the General Register provides the following benefits:

- recording of title of the vessel
- Australian nationality for the vessel
- ability to sail overseas

The Australian International Shipping Register (the International Register)

6. The International Register is open to international trading ships that meet specific criteria. The purpose of the International Register is to provide a competitive alternative for Australian companies that own or operate ships. The register maintains Australia's international reputation for high quality maritime safety and environmental standards while putting Australian companies on a level footing with their international competitors. Registration on the (AISR) provides access to:
- income tax exemption and other tax incentives
 - mixed crewing arrangements
 - the same maritime safety, environmental and work health and safety standards as vessels on the Australian General Shipping Register
7. **Note.1:** Where a ship is obliged to be registered under the SRA Section 12, and noting SRA Section 68, then it must be registered on one of the two registers unless exempt by Section 13 of SRA. Where a ship required to be registered is not eligible to be registered on the International Register, or this option is not exercised, then it must be registered on the General Register.
8. **Note.2:** While the administration of the International Register rests with AMSA, the administration of the tax incentives associated with the register is administered by the DITCRD. Visit the DITCRD website for more information about registering on the International Register.

Website:	https://infrastructure.gov.au/maritime
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9. AMSA's contact details:

Telephone:	+61 2 6279 5925
Fax:	+61 2 6279 5922
Website and email online:	www.amsa.gov.au/sro

3.4 FLAG STATE ADMINISTRATION

3.4.1 SAFETY

1. AMSA is responsible for the safety survey and certification of Australian flagged vessels trading on interstate or international voyages. In general, AMSA performs this function through formal agreements with approved classification societies who are the providers of survey and certification services; however, AMSA can conduct these services as an internal service on a cost recovery basis. The approved classification societies are:
- American Bureau of Shipping (ABS)
 - Bureau Veritas (BV)
 - China Classification Society
 - Det Norske Veritas - Germanischer Lloyd (DNV GL)
 - Korean Registered of Shipping
 - Lloyd's Register (LR)
 - Nippon Kaiji Kyokai (ClassNK)
 - RINA Services S.p.A

3.4.2 SECURITY

1. The Aviation and Maritime Security (AMS) Division (formerly the Office of Transport Security) regulates transport security for Australia's aviation, maritime transport and offshore oil and gas industry through its administration of the *Aviation Transport Security Act 2004* (Cth) and the *Maritime Transport and Offshore Facilities Security Act 2003* (Cth).
2. AMS provides policy advice to the Australian Government on transport security matters as well as transport security-focused programs and services. It also works closely with other governments and agencies, international and national, as well as states and territories to deliver transport security outcomes.
3. AMS carries out ship security inspections on regulated Australian ships to verify compliance with the *Maritime Transport and Offshore Facilities Security Act 2003* (Cth), the ISPS Code and SOLAS. In doing so it ensures that security regulated ports, ships and offshore facilities take appropriate measures to mitigate the vulnerabilities and risks associated with their operations. AMS administers the Maritime Security Identification Card (MSIC) scheme. An MSIC is a nationally consistent identification card which is issued to identify a person who has been the subject of a background check. It shows that the holder has met the minimum security requirements and has demonstrated an operational need to work unescorted or unmonitored in a maritime security zone.

Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security
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3.5 MARITIME QUALIFICATIONS

3.5.1 AUSTRALIAN REGISTERED VESSELS

1. All crew members on Australian ships are required to hold an Australian marine qualification relevant to their duties. AMSA has responsibility for certifying all crew members of Australian flagged ships operating under the *Navigation Act 2012* (Cth) and all seafarers with Australian qualifications. AMSA ensures that all crew members meet the competency standards required under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).
2. AMSA also administers the following licensing and qualification requirements:
 - certificates of recognition for overseas qualifications issued by Flag State Authorities with which Australia has an agreement under STCW for seafarers working on Australian flagged vessels
 - licensing requirements for Great Barrier Reef and Torres Strait coastal pilots
3. To qualify for an AMSA STCW qualification, seafarers must complete appropriate qualifying sea service and an approved course of study at an AMSA approved Registered Training Organisation (RTO). Deck or engineer officers must then pass an oral examination in operational knowledge and Australian maritime legislation conducted by AMSA examiners. There are a number of examination centres (offices) located around Australia where AMSA qualifications services are provided. Visit the Qualifications and Training section of the AMSA website for more information.

Website:	www.amsa.gov.au/qualifications-training
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3.5.2 AUSTRALIAN DOMESTIC COMMERCIAL VESSELS

1. AMSA has responsibility for certifying relevant crew on Australian domestic commercial vessels operating under the *Marine Safety (Domestic Commercial Vessels) National Law Act 2012* (Cth) in Near Coastal waters.
2. AMSA requires crews to meet the competencies required under the National Standard for Commercial Vessels (NSCV).
3. The Near Coastal certificates are issued by AMSA based on Part D of the NSCV, Crew Competencies. All certificates issued under the National System will be automatically recognised in all states and territories, allowing seafarers the ability to work within Australian near coastal waters, according to the conditions and endorsements on their certificate.
4. Visit the Qualifications and Training section of the AMSA website for more information (See Section 3.5.1).

3.5.3 FOREIGN FLAGGED VESSELS

1. AMSA carries out Port State Control (PSC) inspections on foreign vessels to verify compliance to the STCW Code and other international regulations (see PSC at Section 3.6).
2. Under the STCW convention, each seafarer must have specific qualifications for the position they fill on board. The type of qualifications and number of personnel required is determined by the Minimum Safe Manning Certificate (SMC) as issued by the Flag State.
3. The master is required to provide documentary evidence in the form of originals of the qualifications of each seafarer on board as per the SMC. As seafarers may receive their formal qualifications at various maritime institutions around the world, they are also required to have on board a Flag State Certificate of Recognition of their qualifications. Failure of the vessel's master to provide these documents may result in the vessel being detained until the deficiency is rectified.

Security

4. All ships which are captured under SOLAS and the ISPS Code should carry International Ship Security Certificates (or an exemption) which confirm their Flag States' approval of their security measures, and that their security measures are in force. All foreign flagged ships must also comply with certain parts of the *Maritime Transport and Offshore Facilities Security Act 2003* (Cth) including providing pre-arrival information, allowing inspections, complying with security levels and control directions, and complying with the maritime or ship security plans of other participants.

3.6 PORT STATE CONTROL

1. AMSA conducts PSC inspections to ensure that ships visiting Australian ports are seaworthy, do not pose a pollution risk, provide healthy and safe working environments and comply with relevant international requirements. These inspections are conducted in an open, objective and accountable manner in line with International Maritime Organization (IMO) inspection guidelines and in accordance with the powers in the *Navigation Act 2012* (Cth).
2. In addition to acting as the national regulator enforcing the Australian Government's safety objectives, AMSA's PSC program is conducted in cooperation with partner nations in the *Tokyo Memorandum of Understanding* (TMOU) and the *Indian Ocean Memorandum of Understanding* (IOMOU) PSC regions, with the collective aim to improve the safety of shipping across the region. AMSA PSC inspectors conduct their inspections in a uniform and consistent manner as per internationally agreed PSC procedures.
3. During a PSC inspection, the inspector first conducts an initial inspection to verify that the ship holds all necessary certificates and documentation, followed by a general physical inspection of the ship focusing on safety critical aspects, cargo arrangements, and crew working and living conditions. If there are discrepancies with the documentation or the certification is invalid, or if the inspector believes there are clear grounds to suspect that the ship, crew or equipment may not comply with convention requirements, then a more detailed inspection is undertaken into specific aspects of shipboard operations.
4. To ensure consistency, AMSA inspectors use a Ship Initial Inspection Checklist that contains listings of requisite documentation and inspection items. The details and findings of the inspection are then recorded in the Ship Inspection Record, with 'Form A' completed for all inspections indicating that an inspection has been carried out, and a 'Form B' completed recording any deficiencies identified during the inspection. If serious defects or breaches of international conventions are identified during the inspection, the ship may be detained to ensure that critical deficiencies are rectified before the ship can depart harbour. When a ship is detained or released, AMSA notifies the master, the Flag State, the relevant classification society and the IMO.
5. Further information on Australia's PSC program can be obtained from the AMSA website at:

Telephone:	+61 2 6279 5684
Fax:	+61 2 6279 5058
Email:	psc@amsa.gov.au
Website:	www.amsa.gov.au/vessels-operators/port-state-control

6. Inspections for security control are also carried out in relation to maritime security requirements. Transport Security Inspectors and other agencies will also be guided by the relevant instruments under the *Maritime Transport and Offshore Facilities Security Act 2003* (Cth) and the *Maritime Transport and Offshore Facilities Security Regulations 2003* (Cth).
7. Visit the DHA website for more information on the security of Australian maritime security.

Telephone:	+61 1300 791 581 / +61 2 6274 8187
Email:	transport.security@Infrastructure.gov.au
Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security/maritime-security

3.7 AUSTRALIAN CARGO LIABILITY REGIME

1. The *Carriage of Goods by Sea Act 1991* (Cth) provides the cargo liability regime for goods shipped in Australia, and in limited circumstances for goods imported into Australia.
2. This Act sets statutory minimum levels of carrier liability for loss, damage or delay to sea cargoes. Australia's regime is based on the Hague-Visby Rules, but with modifications.
3. Visit the DITCRD website for more information.

Website:	www.infrastructure.gov.au
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3.8 PART X OF THE COMPETITION AND CONSUMER ACT 2010 – INTERNATIONAL LINER CARGO SHIPPING

1. Part X (ten) of the *Competition and Consumer Act 2010 – International Liner Cargo Shipping* regulates international liner shipping of cargo travelling either to or from Australia. Liner shipping is generally defined as shipping services operating on a regular trade route, with predetermined and publicly advertised schedules between advertised ports of call.
2. The main objective of Part X is to ensure that exporters have access to liner cargo shipping services of adequate frequency capacity and reliability at freight rates, which are internationally competitive. Importers are also covered by Part X but to a lesser extent than exporters.
3. Part X was designed to be an effective, low-cost, limited government intervention regulatory regime. Traditionally liner shipping operators have been permitted by governments around the world to act in concert as 'conferences' to discuss and set common prices and/or provide joint shipping services. Australia is highly dependent on liner shipping services, which aim to provide frequent, reliable services that may otherwise not be available due to Australia's geographical location, and to provide more equitable treatment to shippers.
4. The Part X legislation sets out conditions for granting limited, but assured exemptions from Sections 45 and 47 of the *Competition and Consumer Act 2010* to allow liner shipping companies to collaborate as conferences. The conditions include requirements to negotiate with exporters and importers on specific matters. Part X provides a legislative framework within which liner shipping operators and their customers can resolve problems through commercial negotiations with minimal government involvement.
5. Part X provides industry-specific competition rules for international liner shipping. It is in place to regulate limited anti-competitive behaviour of shipping lines, provide additional rights and power to shippers while allowing a higher level of joint operations and services, in line with global practices. It recognises the special role liner shipping plays in providing services to exporters and importers and supporting Australia's trade.
6. Details of the registration process and the forms required can be obtained from the Registrar of Liner Shipping or the DITCRD.

Telephone:	International +61 2 6274 7083 Australia only 1800 005 221
Email:	PartX@Infrastructure.gov.au
Website:	https://infrastructure.gov.au/maritime/business/liner_shipping/index.aspx

3.9 SHIPPING REFORM (TAX INCENTIVES) ACT 2012

1. A range of measures to revitalise Australia's shipping industry under the *Stronger Shipping for a Stronger Economy* reforms were introduced in 2012. A key part of these reforms was the introduction of a number of tax concessions, which commenced on 1 July 2012.
2. The objective of the Shipping Reform (Tax Incentives) Act 2012 is to provide a framework for tax incentives to encourage:
 - (a) investment in the Australian shipping industry
 - (b) development of sustainable employment and skills opportunities for Australia seafarers
3. The measures were introduced to address concerns about the declining Australian shipping fleet, low participation by Australian companies in international maritime trades and increasing maritime skills shortages. The measures provide a mechanism for the shipping industry to obtain access to a range of taxation concessions and encourage ship ownership and ship operations in Australia as well as encourage the employment of Australian seafarers.
4. The tax concessions include:
 - an income tax exemption for operators of Australian registered eligible vessels on qualifying shipping income
 - accelerated depreciation and rollover relief for owners of Australian registered eligible vessels
 - a refundable tax offset for employers who employ eligible Australian seafarers
 - an exemption from royalty withholding tax for foreign owners of eligible vessels leased under a bareboat or demise charter to an Australian operator
5. Visit the DITCRD website for more information.

Telephone:	International +61 2 6274 7083 Australia only 1800 005 221
Email:	PartX@Infrastructure.gov.au
Website:	https://infrastructure.gov.au/maritime/business/liner_shipping/index.aspx

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CHAPTER 4 CLIMATE AND SEA CONDITIONS

4.1 AUSTRALIAN REGIONAL CONDITIONS

4.1.1 AUSTRALIAN MAINLAND AND TASMANIA

1. The climate over the northern regions of Australia is monsoonal and controlled by the gradual annual north-south migration cycle of the Intertropical Convergence Zone (ITCZ) or Monsoon Trough (see Section 4.2.6). From April to November, the ITCZ migrates north of the Equator. The exact location and timing will vary greatly from year to year, sometimes by over a month and as much as 10° in latitude. The dry season is characterised by southeast trade winds with relatively dry conditions. Transitional period winds are light and variable. Between approximately November and March the ITCZ moves south across the Equator, air pressure falls over regions of northern Australia bringing the wet season to northern Australia. The wet season is dominated by the Northwest Monsoon bringing rain, cloud and humid conditions with an occasional tropical cyclone. Temperature remains high throughout the year, however humidity varies greatly between the wet and dry seasons.
2. Between the Monsoon Trough and the mid-latitudes, winds are mainly from the east to southeast, with the belt of 'trade winds' encircling the globe at the tropics. To the south of the trade winds lies the sub-tropical ridge. This belt of high pressure encircles the globe in the mid-latitudes, bringing dry and stable conditions to large parts of Australia.
3. Between 25° and 40°S, cold fronts regularly pass eastward across the country, bringing a change from fine weather about once a week on average. Wind speeds and direction are variable in this region, depending on the relative locations of the high and low pressure systems that form the cold fronts. From May to October, the procession of cold fronts moves northward with the movement of the ITCZ and sub-tropical ridge, and likewise moves southwards between November and April. South of this region the winds are predominantly westerly.
4. The west coast, south of the monsoonal region, like much of inland Australia is predominantly dry, as is much of the coast along the Great Australian Bight. These arid regions give way to a wetter area between roughly Geraldton and Perth, and east of Esperance. The far southwest coast roughly between Perth and east of Esperance, as well as much of the southern coast between Ceduna and Warrnambool, experience a dry summer with frontal rains occurring in winter. Most of the east coast of Australia receives similar monthly average rainfall throughout the year. In the southeast, thunderstorms bringing rainfall is more common in summer.
5. Weather to the south of the Australian mainland and around Tasmania becomes cooler and highly changeable, especially between June and August when westerly winds become dominant. Strong winds, high seas and precipitation are usually associated with frontal systems of east moving lows.
6. Although the weather around Australia follows these general patterns, it does vary from year to year because of cyclic climate patterns such as the El Niño-Southern Oscillation (ENSO) and the Indian Ocean Dipole. This will mean that some years are wetter with more storms and others will have very little rain with much of the country in drought.

4.1.2 ANTARCTIC REGION

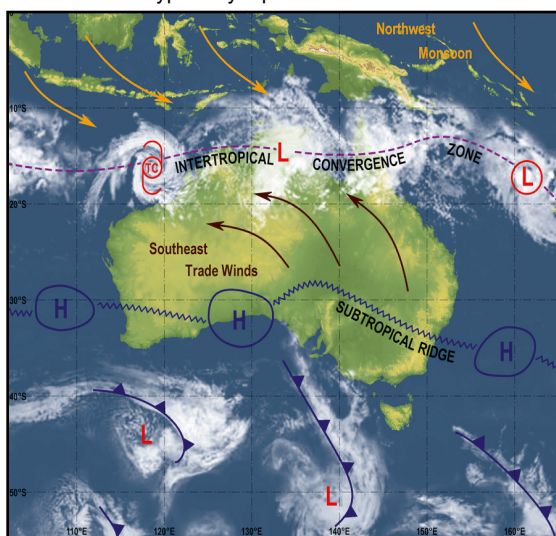
1. Antarctica is renowned for being the coldest, driest and windiest place on earth. About 99% of the Antarctic continent is covered with ice and has the coldest average annual temperatures (- 35°C), and the lowest temperature ever recorded on earth. There are two seasons in Antarctica, a very brief summer between November and February and a long cold winter.

4.2 AIR PRESSURE

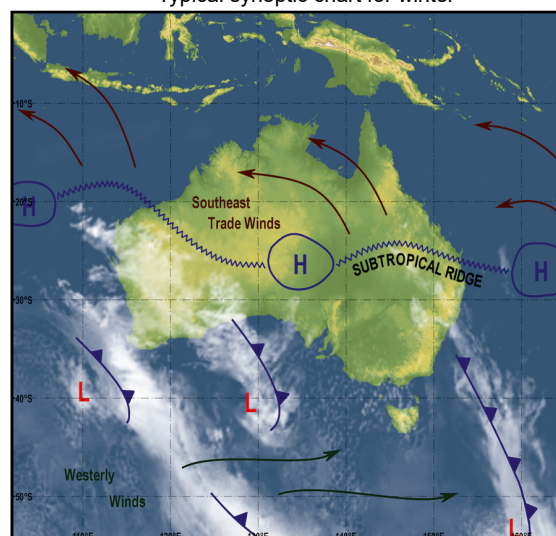
4.2.1 GENERAL DISTRIBUTION

1. Average sea level air pressure is 1013 hectopascals (hPa), but actual values may vary greatly from this with over 1040 hPa and under 900 hPa being recorded across the area. Generally, air pressure regions run in bands, with lower pressure regions found around the equator and across the Southern Ocean. Day to day pressures vary greatly from this overall pattern due to the formation and movement of high and low pressure systems. In winter a belt of generally high pressure, the sub-tropical ridge, lies over the Australian continent, while in summer this moves southward, with a general region of low pressure over the north of the country. High pressure cells can also be found over the Indian and South Pacific oceans. These similarly move northwards in winter and southward in summer.

Typical synoptic chart for summer



Typical synoptic chart for winter



4.2.2 DIURNAL VARIATION

1. Air pressure varies with a regular daily pattern. Pressure maxima occur at around 10:00 and 22:00, while daily minima occur at about 04:00 and 16:00. The amount of variation depends on latitude, being around 2-3 hPa in the north and 1-2 hPa along the southern Australian coast, and insignificant in the Antarctic.

4.2.3 HIGH PRESSURE SYSTEMS

1. The main area for high pressure system activity is within a high pressure band known as the Sub-tropical Ridge. This band moves north and south across the southern part of Australia during the year. Embedded within this ridge are a series of high pressure systems. Between these systems are troughs or low pressure areas. Fronts separate the high and low pressure systems. Winds within a high pressure system travel in an anticlockwise direction in the southern hemisphere. Generally, high pressure systems are associated with fine but sometimes hazy weather, while troughs may bring colder rainy weather. High pressure systems move across Australia from west to east in a regular procession which means an anticyclone (high pressure system) crosses any one area about once every five to seven days. Highs may become stationary or blocked, bringing a particular area an extended period of fine or poor weather.
2. Blocking highs are strong high pressure systems and tend to form further south than usual. When they become stationary, these highs essentially 'block' the west to east progression of weather systems across southern Australia. Blocking highs are often, although not always, associated with a cut-off low which may form to the north of the blocking high, the two systems creating a blocking pattern. As frontal systems approach the blocking high, they slow down, weaken and tend to slip to the south of the high pressure system.

4.2.4 LOW PRESSURE SYSTEMS

1. The monsoonal regions in northern Australia are subject to the most extreme form of low pressure systems, the tropical revolving storm or tropical cyclone (see Section 4.4).
2. The non-monsoonal southern portion of Australia can experience frontal depressions, with the specific nature and strength of the system being dependent on the location and method of formation. These systems can bring severe weather to an area (see Section 4.3).
3. In the area to the south of Australia, frontal systems move east in frequent succession. Occasionally these systems can be very severe. These depressions lie to the south of the high pressure belt and so they are well south of Australia in the summer but move northwards across southern Australia and into Bass Strait in the winter. In the region between 55°S and 70°S, depressions tend to develop in the circumpolar trough and move east. Depressions occur on average about every three to five days moving with a speed of 30 knots in winter and 20 knots in summer. Winds within a depression travel in a clockwise direction in the Southern Hemisphere. The most intense and frequent period for depression activity is September and October, with this halving in mid-summer.

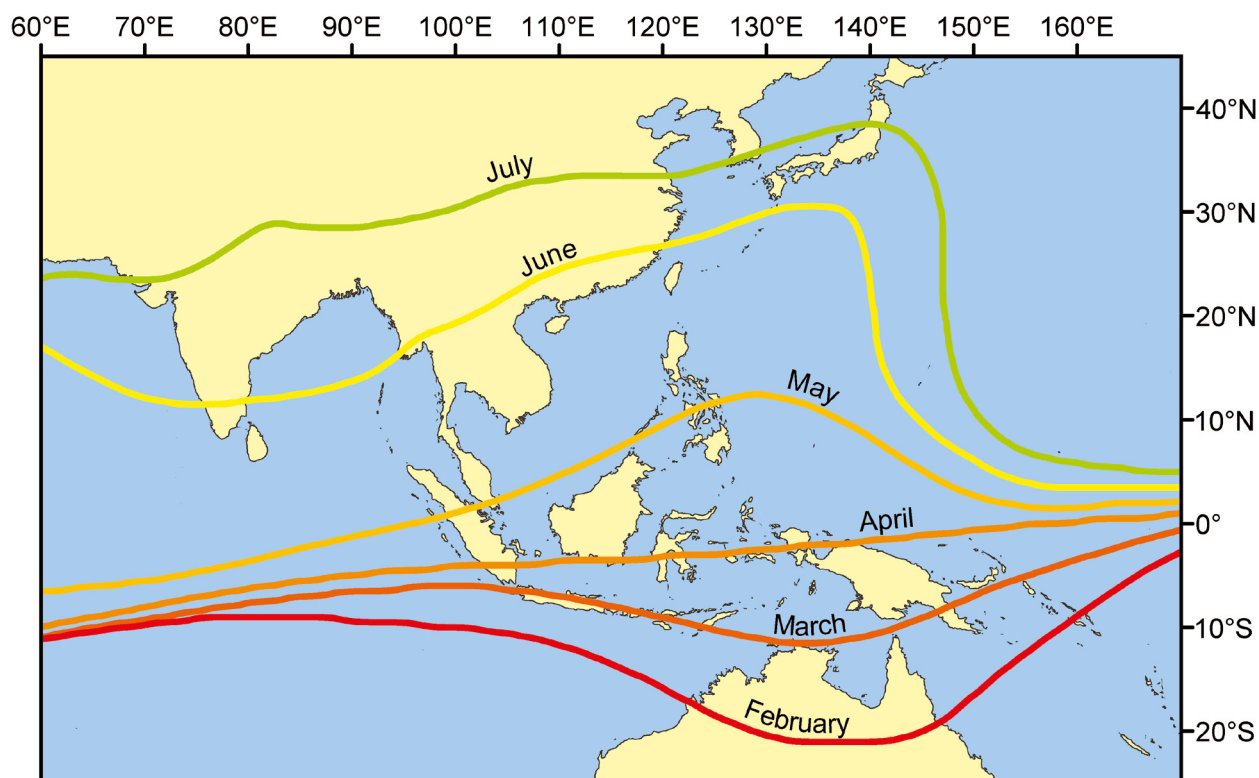
4.2.5 FRONTS

1. Frontal activity in the Southern Ocean brings frontal depressions and extensive cloud activity to the southern areas of Australia. This results in considerable rainfall in the southeast and southwest corners of the country, especially in areas of west-facing coastline, which are more exposed to the generally eastward movement of these systems. Occasionally a front and associated low moves north into the Tasman Sea and produces a very cold southerly airstream over south-eastern Australia. Fronts also form between the anticyclones and troughs embedded in the high pressure belt. These can result in rain during winter, and dramatic changes in temperature and wind direction.
2. Changes in wind speed and direction can often be sudden and violent as the trough passes, causing a danger to shipping.

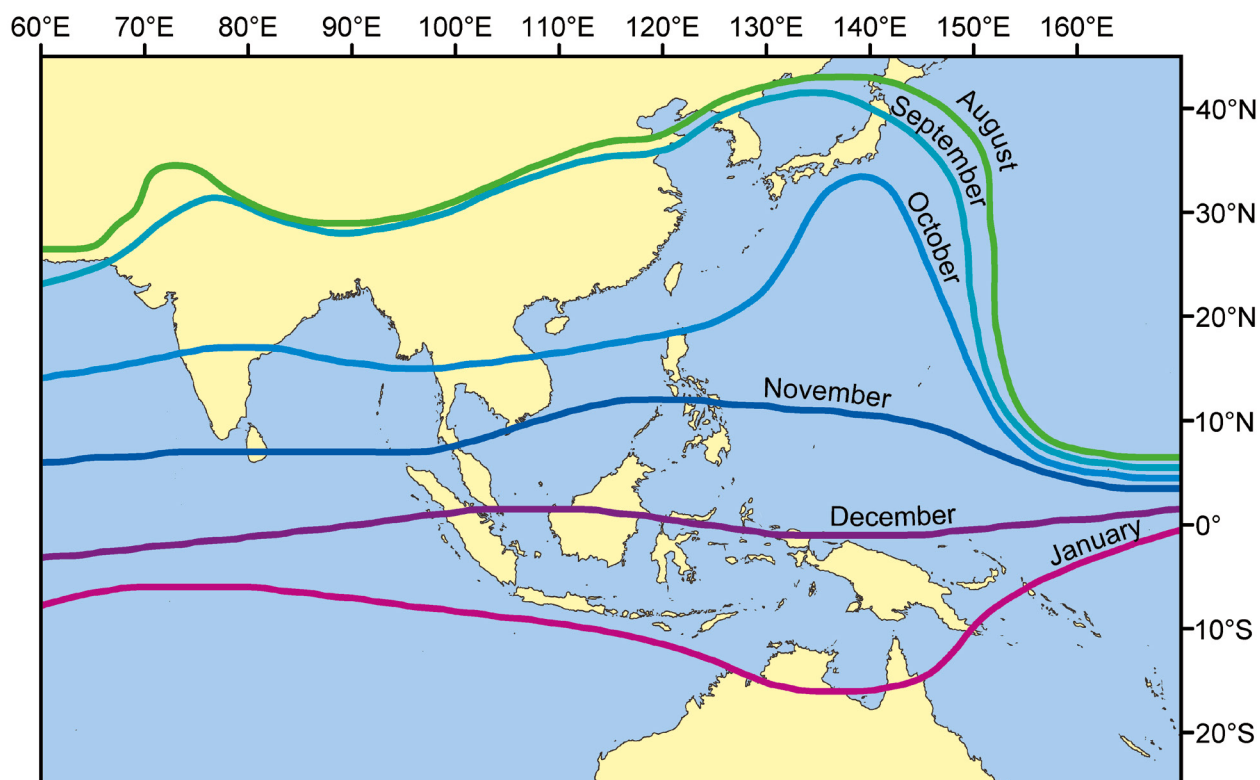
4.2.6 INTERTROPICAL CONVERGENCE ZONE

1. The ITCZ is also known as the monsoonal trough or doldrums. The ITCZ is a convergence line that forms near the equator in the region where the northeast and southeast trade winds meet. This results in the uplifting of moisture laden tropical air. Extensive cloud may form producing thunderstorms, squalls and torrential rain. At other times the wind is calm or light with little or no cloud.
2. The ITCZ moves north and south during the year, following the tilt of the earth, bringing a variation in the weather over the northern region of Australia by changing the location and path of the Trade Winds (see diagrams page 40).

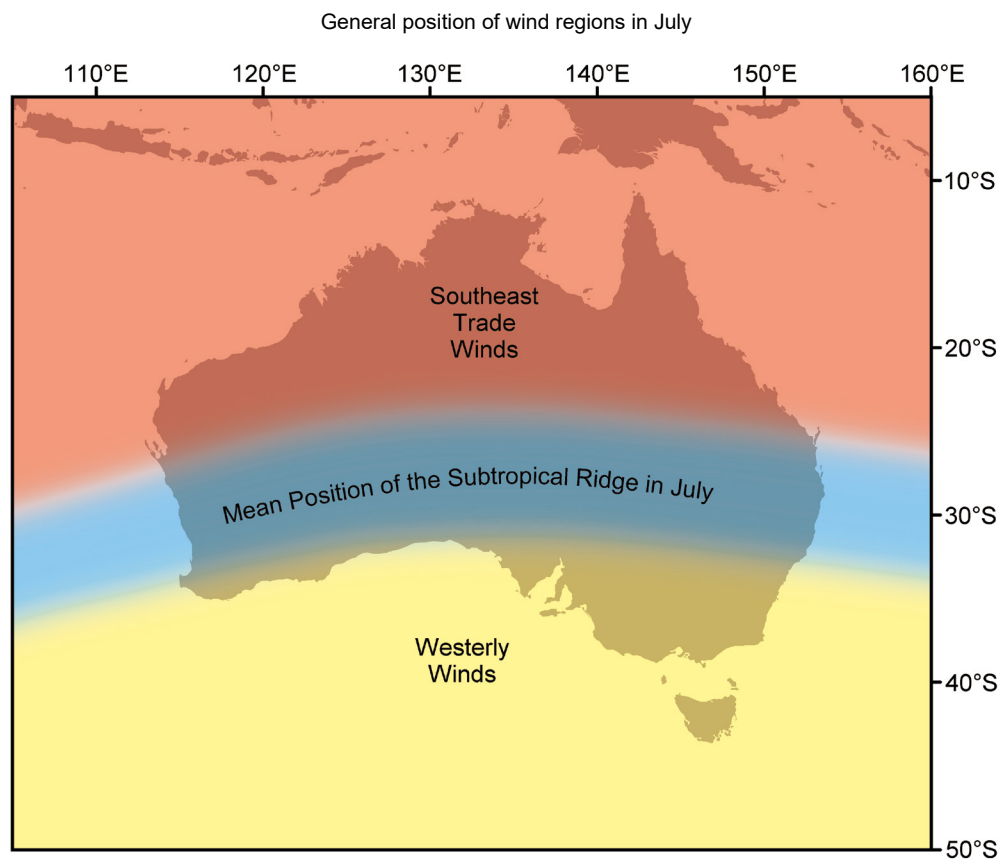
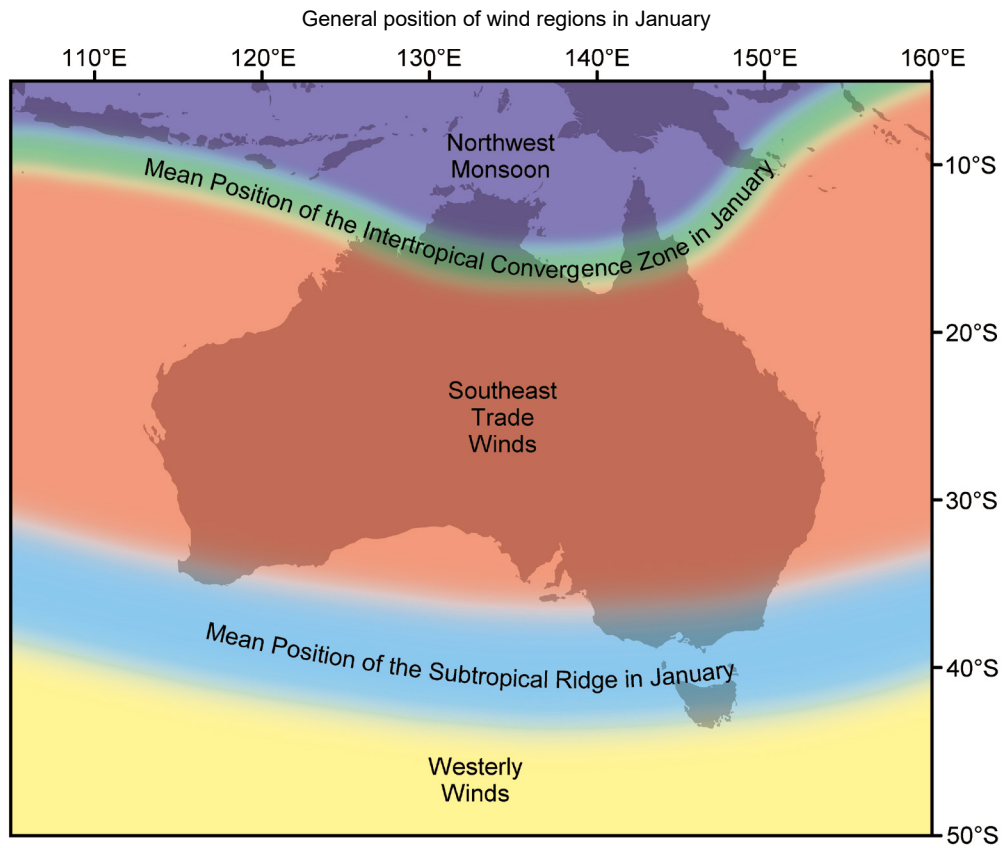
Mean position of the Intertropical Convergence Zone during northward movement



Mean position of the Intertropical Convergence Zone during southward movement



4.3 WINDS AND PRECIPITATION





4.3.1 THE MONSOON

1. The winds in the north of the Australian area are subject to a seasonal reversal as a result of the annual shift in the position of the ITCZ. As the Australian continent heats as summer approaches, rising air creates low pressure at the surface. This effectively draws the monsoon trough – a zone of low pressure and rising air – over northern Australia. This trough draws in moist air from the surrounding oceans and the monsoon period is known for its high humidity and rainfall.
2. In northern Australia, the prevailing wind is from the east or southeast for most of the year, but during active monsoon periods (occurring any time during November to April) the winds shift to become northwesterly at the surface. The monsoon can be in either an 'active' or an 'inactive' phase. The active phase is usually associated with broad areas of cloud and rain, with sustained moderate to fresh northwesterly winds on the north side of the trough. Widespread heavy rainfall can result if the trough is close to, or over, land. An inactive or 'break' period occurs when the monsoon trough temporarily weakens or retreats north of Australia. It is characterised by light winds and isolated shower and thunderstorm activity, sometimes with gusty squall lines.
3. Transitions from active to inactive monsoon phases may be associated with the Madden-Julian Oscillation, a large-scale, slow-moving band of increased cloudiness that travels eastwards in the tropics.
4. The monsoon trough frequently spawns individual low pressure systems, producing heavy rain and flooding.

4.3.2 TRADE WINDS

1. The Trade Winds are the east to southeasterly winds which blow across much of the Southern Hemisphere tropics, affecting tropical to subtropical areas of Australia. They collect moisture as they move eastward over the tropical Pacific Ocean towards the east coast of Australia and are associated with enhanced rainfall to tropical and subtropical areas of the east coast.
2. The Trade Winds are strongest during the winter months (the dry season in the tropics). During this time, when the Australian monsoon has receded to the Northern Hemisphere, the Trade Winds blow east/southeastward across the continent, drying out as they move over inland northern Australia and the Top End and bringing more stable (fine and sunny) conditions to these areas of the country. Wind strength tends to be around 10 to 20 knots (see diagrams Section 4.3), although this can increase to 20 to 35 knots if a particularly strong anticyclone is passing to the south.
3. In the summer months, the subtropical ridge moves south, the Trade Winds weaken and the monsoon returns to northern Australia.
4. The months of October - November and March - April are transition periods. The transitions are usually gradual with light to moderate winds interrupted by the occasional squall.

4.3.3 EASTERN AND WESTERN AUSTRALIAN COAST

1. The eastward passage of high pressure systems and depressions largely determines the winds across the southern half of the country. As a result, the winds within the region affected by these systems are very variable in both direction and speed, with the winds rarely remaining constant for more than a few days. The direction and speed of the wind is determined by the position of the depression or high pressure system relative to an observer. Northerly winds are usually experienced ahead of an approaching cold front while cooler southerly winds follow the passing of the front.
2. To the north of the sub-tropical ridge winds are from the southeast to northeast while to the south they predominantly come from the southwest to northwest. These also vary as the high pressure systems and depressions pass by. In the southeast of the country winds can be stronger in the winter, being moderate to strong. Winds are also less variable in direction during winter than in the summer.
3. Westerly gales blow along the southeast coast of Australia, and are most common in the late winter and early spring, with the frequency being low to moderate along the coast. Winds are usually stronger offshore than in coastal waters, but the coastal topography can strengthen the winds.
4. East coast lows and southerly busters (see Section 4.3.7) also occur on average several times each year off the eastern coast of Australia. Both can rapidly intensify in a short period, making them among the more dangerous weather systems to affect the eastern Australian coast.
5. Also see Section 4.3.4 Coastal Winds and Section 4.3.7 Severe Weather.

4.3.4 COASTAL WINDS

1. On days with little or no cloud cover, heating causes the formation of a sea breeze blowing from the sea to the land. The strength and direction of the sea breeze can be affected by the local topography, being stronger around river mouths. The breeze usually sets up perpendicular to the coast then turns anticlockwise as the breeze increases in strength. Sea breezes usually extend over five nautical miles from the coast with the outer edge distinguished by a zone of light winds. In some locations such as off the southwest coast of Australia the sea breeze may extend as far as 27nm offshore. Sea breezes generally occur from mid afternoon to the early evening and tend to complicate the seasonal patterns of winds. On hot days, the sea breeze may start in the morning and finish at midnight.
2. Along the southeast coast of Australia, strong sea breezes do not develop until October in the north and November in the south. Sea breezes in the region are typically 20 knots in strength, but can reach between 30 and 35 knots. Along the west and southwest coast, strong sea breezes (21 to 26 knots) may occur in the afternoon on most days of the summer. On the southwest coast of Australia the sea breeze is often reinforcing the prevailing south-westerly wind. In the northwest sea breezes are common in the coastal zone, extending to 15nm offshore. They are particularly prominent during calm conditions, and during the transitional period between the summer and winter.
3. Cooling at night can result in the formation of a land breeze. In general, land breezes are weaker than sea breezes and do not extend as far out to sea. Land breezes develop in the late evening and fade after sunrise. In the northwest land breezes are common in the coastal zone. In particular, land breezes occur regularly where high ground is located close to the coast, such as on the Western Australian Kimberly coast. Along the southeast coast of Australia the land breeze is most common in autumn, but is strongest in winter.
4. Katabatic winds usually form in the evening when cool dense air from a higher elevation moves down slope under the force of gravity. They may significantly affect sea conditions off mountainous coastal areas of Australia, however, they are more intense and common along the coast of Antarctica where they are found blowing out from the large and elevated ice sheets at speeds of over 100 knots. In Torres Strait, the steep slopes of Papua New Guinea (PNG) reinforce the downward movement of the land breeze sometimes bringing katabatic squalls known locally as Gubas.

4.3.5 THE ROARING FORTIES

1. North of the circumpolar trough, a belt of westerly winds known as the 'Roaring Forties' (see diagrams page 41) dominates the area. The Roaring Forties have a reputation for being some of the strongest winds in the world. Winds tend to blow from between southwest to northwest and have wind speeds in excess of 20 knots. The passage of an east-moving front or trough will bring some variability to the wind strength and direction. To the south of the trough, winds are lighter from the east and southeast (the southern side of the clockwise winds around the depressions). Blizzards occur when these winds increase to gale force. Precipitation occurs as a mix of rain, sleet and snow on the northern edge of the trough, whilst on the Antarctic side, snow is the dominant form of precipitation.
2. Also see Section 4.3.4 Coastal Winds and Section 4.3.7 Severe Weather.

4.3.6 SOUTHERN OCEAN POLAR EASTERLIES

1. In the Southern Ocean winds blow predominantly from the east in latitudes greater than 65°S (Indian Ocean sector) / 70°S (Pacific Ocean sector). There may be significant variability in direction and speed. Strong gale force winds from any direction are common.
2. Also see Section 4.3.4 Coastal Winds and Section 4.3.7 Severe Weather.

4.3.7 SEVERE WEATHER

1. Wind squalls are a common feature of northern Australia, particularly during the transitional periods and during the Northwest Monsoon. Squalls are usually short lived and are accompanied by clouds, and sometimes thunderstorms and rain. The frequency and severity of squalls increases as the Northwest Monsoon approaches. Hurricane force winds associated with tropical cyclones occasionally occur in the north. (Tropical cyclones are discussed in Section 4.4).

2. In the high pressure belt, gales are mostly associated with the passage of troughs embedded in the belt. Occasionally gale force winds will be brought to the area by an ex-tropical cyclone.
3. Gales are most common to the south of Australia and are more common in winter. Between 45°S and 55°S gales are most frequent and are recorded on 20% of days in winter. Further south near the Antarctic coast the frequency of gales decreases to around 5-10%.
4. Australia and New Zealand have the second highest occurrence of tornadoes (over land) and waterspouts (over the sea) in the world. Although the occurrence is infrequent, considerable damage can be inflicted on anything in the path of one. Waterspouts and tornadoes are formed by thunderstorms which bring severe wind squalls, heavy rain, large hail, reduced visibility, rough seas and lightning.
5. Intense low pressure systems referred to as east coast lows can occur at any time of the year off the eastern coast of Australia, in particular southern Queensland (QLD), New South Wales (NSW) and eastern Victoria (VIC). They cause gale force winds and rough seas with prolonged heavy swell in the coastal waters. These low pressure systems can develop in a number of ways:
 - Between November and April lows can be ex-tropical cyclones which have moved south along the coast. These are less intense than the original cyclone
 - Lows can also develop over inland NSW from an easterly dip (an elongated trough running down the east coast of Australia) or alternatively can be associated with a cold front which moves across from South Australia (SA). Severe weather forms when these low pressure systems move out over the ocean and rapidly intensify. These can develop at any time of the year
 - The most dangerous lows are those which develop offshore, usually to the east of Gabo Island. They can form rapidly, are very intense and often develop during the night or early morning. The most severe stage lasts only about 24 hours, after which the low pressure system will weaken and move southeast into the Tasman Sea. This particular type of east coast low is relatively rare, only being expected once or twice a year
6. Many small craft have been lost off the coast during these storms and larger vessels have run aground. It is also important to note that ports are typically unable to provide shelter from the big seas driven by easterly gales.
7. In addition to this, about 60 southerly changes occur each year along the NSW coast, mainly in the warmer months. Some of these changes, known as busters, produce strong, squally, southerly winds with gusts over 30 knots. On average about 10 busters occur each year, almost exclusively between September and March. Busters can be extremely hazardous due to the strong unpredictable winds. Gusts up to 70 knots have been recorded.

4.4 TROPICAL CYCLONES

1. Tropical cyclones are complex non frontal low pressure systems with well-defined clockwise (in the Southern Hemisphere) circulation with sustained surface winds exceeding 34 knots persisting for at least six hours. Short period wind gusts are often up to 40% higher than the average wind speed. Tropical cyclones form in low latitudes, and usually dissipate as they move southwards out of the tropics. Cyclones with a small diameter may be only 60nm across, whereas tropical cyclones with a large diameter may be 300nm across. However, there is no relationship between physical extent and wind speed of the storm. Mature tropical cyclones are characterised by a central low pressure region at the eye usually between 910 and 990 hPa. Surrounding the eye is a ring of cloud in which the maximum wind belt is located. Severe tropical cyclones (Category 3-5) have sustained surface winds greater than 63 knots. Outwards from the eye the wind speed gradually decreases and the atmospheric pressure increases. Over the whole system there is usually massive cloud, embedded thunderstorms and torrential rain with poor visibility.
2. The huge waves generated by cyclonic winds over the open sea are a serious threat to vessels. The highest recorded cyclonic wind gust in Australia was at Barrow Island in April 1996 at 220 knots. Damage caused to the underside of a gas platform following a tropical cyclone in April 1989 indicated that waves of more than 20 metres in height had battered the base of the rig.
3. For details of the Australian Bureau of Meteorology (BOM) cyclone categories and warnings see Section 8.4.4.

4.4.1 FORMATION OF A CYCLONE

1. Australia's tropical cyclone season is between November and April, coinciding with the monsoon trough in the equatorial region. Tropical cyclones typically form between 5°S and 15°S in the Southern Hemisphere.
2. For a tropical cyclone to form it is generally considered that six climatological factors are required:
 - a minimum displacement of five degrees from the equator
 - a pre-existing area of low pressure
 - a low level of wind shear between the surface and 200 hPa. 20 knot difference between the surface and 200 hPa is generally considered the maximum threshold for a developing system
 - a water temperature of at least 26°C to a depth of 60 metres. This provides the energy required for the system to develop
 - an unstable atmosphere. Allows for rapid growth of convective clouds given a small disturbance
 - a high relative humidity in the mid troposphere
3. Aside from these climatological factors, it has been observed that a system will develop quickly in the presence of an upper level anticyclone or jet stream. This provides upper level divergence and essentially acts like an extractor fan sucking up air and moisture from below and assisting lower level convergence.
4. If a developed tropical cyclone loses any of the above factors then it will decay. If the system remains over water and moves south, then both the water temperature and upper level conditions cause the system to decay to a severe low pressure system.

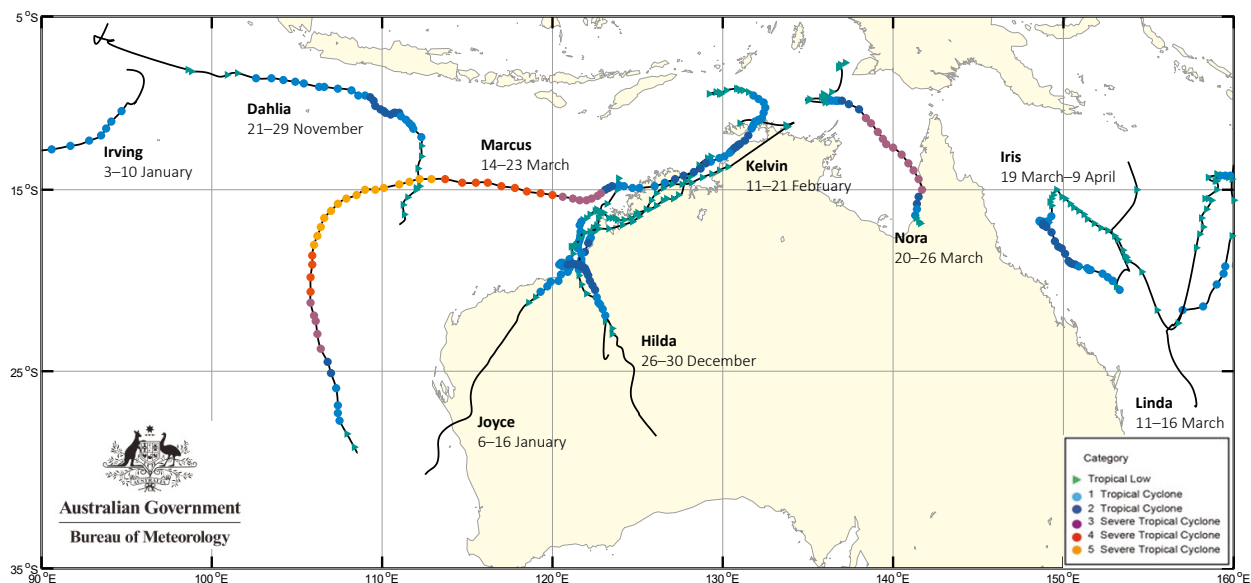
4.4.2 WARNING SIGNS

1. The best indication of a cyclone, particularly with regards to development and movement are signals from forecasting centres. If however, a ship does not have access to this type of information, or is in close proximity to a developing low pressure system, knowledge of warning signs of tropical cyclones may help to better interpret the synoptic situation.
2. The major warning signs for an approaching or developing tropical cyclone are:
 - very low surface pressure, or a 24 hour change of 4 hPa or more. Diurnal variation in pressure should always be taken into consideration
 - an unusual wind direction. Consideration should be given to land/sea breezes or other topographical effects
 - wind speeds 25% or more above the mean which is around 7-10 knots across northern Australia during the cyclone season, particularly if the flow curves cyclonically
 - long period swell, especially from an unusual direction. Normal swell in northwest Australia is southwest, and in the Coral Sea is southeast. Any departure from this should be viewed with suspicion. Note: swells are normally variable in the Gulf of Carpentaria
 - a solid overcast of cirrostratus cloud thickening and lowering, particularly at several adjacent reporting stations
 - the ceasing of the diurnal fluctuation in barometric air pressure

4.4.3 MOVEMENT OF A TROPICAL CYCLONE

1. A Southern Hemisphere tropical cyclone usually forms at low latitudes, moves in a south westerly direction and then curves to the south or southeast. On the QLD coast, tropical cyclones south of 15°S tend to move in a south-easterly direction, while along the west coast the tracks are more in a southwest direction. It should be noted that this movement profile is only general and individual tracks can and do vary considerably from the average.

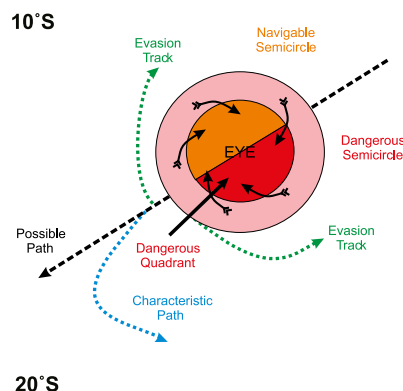
Tropical cyclone, storm and depression tracks for 2017-18



- The map above shows the tracks of a number of cyclones which occurred in the Australian region in 2017-18.

4.4.4 TROPICAL CYCLONE AVOIDANCE

- Although a tropical cyclone may often appear circular in nature, due to the movement of the system the wind distribution can be irregular. The movement of the system can also be unpredictable, but using climatology a general pattern can be seen. These factors lead to the identification of a dangerous and navigable semi-circle within a tropical cyclone.
- The dangerous semi-circle, in general, has both the strongest winds and is the direction in which the tropical cyclone is expected to move. The strongest winds occur as a result of the direction of movement of the system being in sympathy with the movement of the winds.
- Tropical cyclone avoidance rules were developed prior to satellite data being readily available. With that in mind, and considering the advances in communications technology, tropical cyclone avoidance should always first be sought from a qualified forecasting centre. The avoidance rules are based on a vessel's location relative to the dangerous or the navigable semi-circle, and in the Southern Hemisphere are:
 - ensure plenty of sea room in order to avoid being blown aground
 - This is particularly important, and will require early decision-making if the ship is in coastal waters that have no tropical cyclone havens
 - if possible, manoeuvre the ship to the 'safe' side of the system, in order to avoid danger from recurvature of the system to the south
 - if caught in the dangerous semi-circle, place the wind on the port bow and make best speed, keeping the wind in this position. Such action will result in the ship manoeuvring out of the storm by the most direct route
- If caught in the navigable semi-circle, place and maintain the wind on the port quarter. Such action will result in the ship manoeuvring out of the storm by the most direct route.



4.5 SEA AND SWELL

1. Sea is generally defined as the waves produced by the wind blowing at the time in the area of observation, and swell is defined as waves that are produced by previous winds outside the observers region. Stronger winds that have blown over a great distance and time produce larger waves. Wave characteristics are shown in Table 1 below.
2. Ocean waves are often irregular in size and shape (that is amplitude and wavelength) as they are formed from a combination of sea and swell. Upon approaching the shore (and shallow water), waves slow down, change direction and become steeper. Refraction causes waves to bend around headlands and travel into sheltered bays. Waves moving over deeper water will speed up. Sea breezes may alter sea conditions. Combined with an onshore wind, a sea breeze will whip up rougher seas than usual, while during an offshore wind, a sea breeze will produce short steep waves. Wind speed can be estimated from the state of the sea surface using the 'Beaufort Scale' (see Section 4.8 - Table 2).

Table 1 - Wave Characteristics

	Wind Waves	Swell
Shape	Steeper	Rounded
Height	Irregular	Regular, lower
Period	Slightly irregular, shorter	Regular, longer
Wavelength	Slightly irregular, shorter	Regular, longer
Direction	Same as the wind	Determined by wind in different location on previous days
Occurrence	Unlikely if there is no wind	Unlikely if water depth is less than swell wave length

4.5.1 NORTHERN AND NORTH EASTERN AUSTRALIAN COASTS

1. Sea conditions in this area are determined by the monsoons. Generally the highest seas occur during winter. Seas during summer and the transition periods tend to be slight. During all seasons, wave heights are less across the continental shelf and lesser still close to the coast, particularly during the northwest monsoon. Squalls associated with the passage of the ITCZ may bring rougher conditions as may tropical storms. A long westerly swell will form in the Arafura and Timor Seas during summer. During winter a low easterly or south-easterly swell is common. Within Torres Strait swells are from the northwest in summer and from the southeast in winter. In the Coral Sea the swell is mainly from the southeast for the entire year. Along the Northwest Shelf, the swell is from the northeast during the Southeast Monsoon, and the southwest during the Northwest Monsoon.

4.5.2 EASTERN AND WESTERN AUSTRALIAN COASTS

1. Along the southwest coast seas are occasionally high, particularly during a depression embedded in the westerly stream. In such conditions rough seas may persist for days. Swells tend to come from the south and become larger and more south westerly with increasing latitude.
2. Along the east coast, seas are generally slight to moderate and variable in direction. Seas tend to become rougher with increasing latitude. Swells tend to come from the east in summer and from the south to southeast in winter. Beyond 155°E swells are mainly from the southwest. Swells become increasingly heavy with increasing latitude.

4.5.3 SOUTHERN AUSTRALIAN COASTS

1. Rough seas are whipped up by most of the depressions that cross the area. These conditions may last for several days and are more severe towards the south. Rough conditions are more common between July and September. Seas will be slight along the high pressure belt and to the north of this in summer. Strong persistent winds across the Southern Ocean result in large swells throughout the year. Swells of up to five metres from the southwest are common. Larger swells become increasingly common in the south, and in winter, with swells of six to eight metres occurring on occasions. Further south the swells increasingly come from the west.

4.5.4 THE ROARING FORTIES

1. The highest seas within the Southern Ocean should be expected between 45°S - 60°S. Large waves are common at all times of the year, but are greatest when an eastward moving depression passes across an area. In general, the swell comes from the southwest to northwest. To the south of this area the wind waves and swell are calmer due to the presence of icebergs.

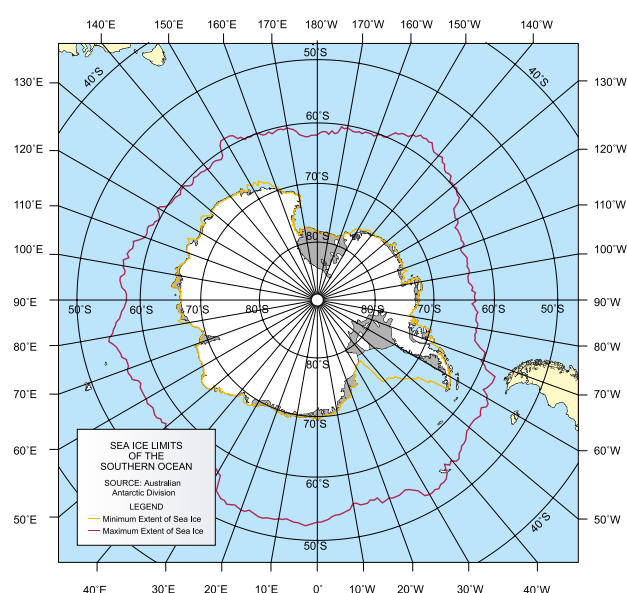
4.6 ICE

1. Sea ice occurs around Antarctica, extending a considerable distance into the Southern Ocean, usually reaching a maximum of about 20 million square kilometres in September or October. Most of this ice melts during summer, with some parts of the Antarctic coastline becoming accessible to shipping from December to March.

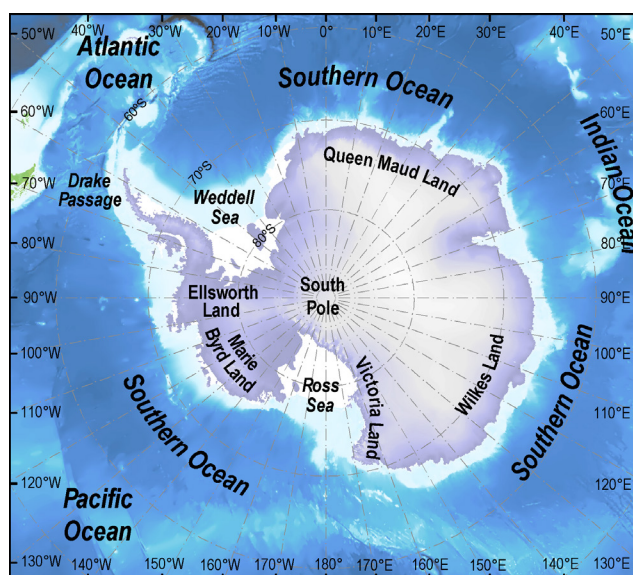
4.6.1 SEA ICE LIMITS IN THE SOUTHERN OCEAN

1. From January to March the surface of the ocean starts to warm by about 1 to 2°C above the ocean freezing point of sea water of about -1.8°C. In late summer (February to March) only about three million square kilometres of the sea ice remains. The areas of extensive summer sea ice are concentrated east and west of the Antarctic Peninsula, extending approximately 500 kilometres into the Weddell Sea (10° - 57°W), with the remainder concentrated in the Bellingshausen (57° - 102°W) and Amundsen (102° - 158°W) Seas.
2. There are generally less than a few tens of kilometres of patchy sea ice around the rest of the coastline.
3. From about March the ocean surface temperature tends to cool until freezing point is reached. Starting with the high latitude regions first, most notably in the Ross (158°W - 170°E) and Weddell Seas, the sea ice cover gradually spreads outwards. In some locations fast ice attached to the coast extends several tens of kilometres seaward while in other locations strong offshore winds maintain coastal polynyas (areas of sea where the ice cover is thin or absent) for some time. Beyond the fast ice the pack drifts with the wind and currents primarily towards the east. In the outer pack drift rates of 18 kilometres per day are not uncommon. There is also a tendency for the ice to drift to the left of the wind (by about 25%). This tends to drive the sea ice northwards in the circumpolar current in a divergent manner.

Sea Ice Limits of the Southern Ocean



Seas of the Southern Ocean



4.6.2 SEA ICE MOVEMENT

1. In the Antarctic, beyond the fast ice, lies the pack ice that is a mixture of various types of sea ice, broken off sections of fast ice, and parts of ice bergs referred to as bergy bits and growlers. The average wind flow around the coast is easterly and there is a weak westerly current causing the pack ice to drift to the west. This ice drift is a diverging flow since the ice is being moved towards an ever increasing area of ocean. Consequently the pack ice is open with wide leads and channels between the floes. When the drifting ice reaches 60°S, or further north, it encounters the region of the westerlies and of the Antarctic Convergence Zone (ACZ).
2. Typically at the time of maximum sea ice extent, the percentage of open water within the sea ice zone appears to decrease from about 50% near the edge to about 10% near the fast ice. The ice concentration or the amount of open water is highly variable in both space and time. Similarly the average sea ice thickness is highly variable and dynamic as the winds and currents move the ice together to form thick pressure ice regions, or apart to form leads and open water areas. A large part of the Antarctic sea ice is young ice (less than a year old) with an average ice thickness of 0.5 to 1 metre. The drift of icebergs generally provides an indication of the general drift direction of the sea ice. Wind normally affects the short term movements, particularly in offshore areas, whereas the average long term movement is affected by the prevailing ocean currents.

4.6.3 ICEBERGS

1. Of the various icebergs encountered in the Southern Ocean the largest is the tabular iceberg. The large tabular icebergs are created after calving from the ice shelves along the coast of Antarctica. The main ice calving areas are the Larsen, Ronne, Amery, West, Shackleton and Ross Ice Shelves. The tabular icebergs vary considerably in size, with some icebergs reaching up to 200 kilometres long, 32 kilometres wide and over 500 metres thick, with an average height of 40 to 50 metres above sea level.
2. The movement of ice and icebergs is primarily influenced by ocean currents in the upper few hundred metres of the ocean. They often become grounded or impounded for several years close to the Antarctic coast. Most icebergs in the Australian Antarctic Territory (AAT) drift in a westward direction along the coast of Antarctica. Icebergs can then head out to sea, reduce in size then drift north and east.
3. Most Southern Ocean icebergs break up and suffer erosion due to increased sea temperature and weather. This prevents icebergs from moving into the lower latitudes, keeping normal shipping routes generally free of icebergs.
4. Generally, sea ice and icebergs are contained within the boundaries of the maximum extent of sea ice shown in the figure Sea Ice Limits of the Southern Ocean (Section 4.6.1). The amount of ice decreases northwards, with the concentration decreasing rapidly north of 60°S. There are still many sightings between 60 - 55°S. Icebergs are seen around Macquarie Island and the islands south of New Zealand every few years. North of 40°S icebergs are rare and sporadic, being spotted near New Zealand once every 100 years. The furthest north an iceberg has been spotted is 26°30'S in the Atlantic Ocean.

4.6.4 SEA ICE INFORMATION SERVICES

1. Since the establishment of satellite imagery, it has been possible to regularly monitor sea ice extent on a large scale.
2. BOM provides Antarctic sea ice satellite images. The service can be accessed via their website.

Website link:	www.bom.gov.au/ant/seaiice/index.shtml
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4.7 VISIBILITY

4.7.1 EAST AND SOUTHEAST OF AUSTRALIA

1. Fog, defined as visibility less than 1 000 metres, occurs less than 2% of the time. Overall, visibility is good most of the time with sea fog at its lowest in June and July. Serious deterioration can occur during periods of heavy rain, but usually lasts less than an hour. During periods of extensive drought, strong offshore winds can carry dust a considerable distance out to sea, reducing visibility.

4.7.2 SOUTH OF AUSTRALIA

1. Visibility is generally good, with exceptionally good visibility quite common. Visibility is usually around 10nm, but often ranges to 25nm. Visibility may be reduced by fog or rain associated with depressions. Fog over the open ocean is uncommon. In summer months winds often bring a reddish haze to coastal locations. Strong offshore winds, particularly after extensive drought, can cause dust storms, reducing visibility a considerable distance out to sea.

4.7.3 WEST, NORTHWEST AND NORTH OF AUSTRALIA

1. Visibility is generally good at sea and sea fog is practically unknown. Haze, smoke and dust can significantly reduce visibility during the dry season, particularly during drought years when visibility of one to five nautical miles is normal. The sky may become obscured at some places on the north and northwest coast due to haze. Smoke haze reaches a maximum at the end of the dry season in September and October. Fresh to strong Southeast Trade Winds in the northern parts of the Coral Sea may occasionally produce mist and haze, reducing visibility to less than 5nm.

4.7.4 SOUTHERN OCEAN

1. The Antarctic air is almost free of dust and solid particles and the air blowing off the continent contains only a small amount of moisture. Therefore the visibility is usually good, often exceptional, and if this is not considered it may lead to serious error when judging distances.
2. Fog is generally less common across the Southern Ocean than other parts of the world, occurring three to four days a month over the summer months. Sea fog often occurs at any time of the year along the Antarctic Convergence and in the Antarctic coastal regions during summer. However visibility may be reduced to near fog limits in the north of the area due to rain, drizzle, sea spray and very low cloud, and in the south due to snow. During snow blizzards coastline visibility falls below fog limits, often obscuring the Antarctic coastline. The best visibility occurs between December and February.

4.8 GENERAL METEOROLOGICAL INFORMATION

Table 2 - Beaufort Wind Scale

Beaufort Wind Scale				
Beaufort Number	Descriptive Terms	Knots (kn)	Seastate code	Description
0	Calm	0	0	Sea like a mirror
1-3	Light Winds	10 or less	1-3	A glassy appearance maintained; ripples; small wavelets
4	Moderate Winds	11-16	3-4	Small waves becoming longer; fairly frequent white horses
5	Fresh Winds	17-21	4	Moderate waves, taking a more pronounced long form; many white horses formed; a chance of some spray
6	Strong Winds	22-27	5	Large waves begin to form; the white foam crests are more extensive with probably some spray
7	Near Gale	28-33	5-6	Sea heaps up and white foam from breaking waves begins to be blown in streaks along direction of wind
8	Gale	34-40	6-7	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along the direction of the wind
9	Strong Gale	41-47	7	High waves; dense streaks of foam; crests of waves begin to topple, tumble and roll over; spray may affect visibility
10	Storm	48-55	8	Very high waves with long overhanging crests; the resulting foam in great patches is blown in dense white streaks; the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy with visibility affected
11	Violent Storm	56-63	8	Exceptionally high waves; small and medium sized ships occasionally lost from view behind waves; the sea is completely covered with long white patches of foam; the edges of wave crests are blown into froth
12	Hurricane	64+	9	The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected

Table 3

Celsius—Fahrenheit—Celsius Conversion Table										
Temp °C	0	1	2	3	4	5	6	7	8	9
-20	-4.0	-5.8	-7.6	-9.4	-11.2	-13.0	-14.8	-16.6	-18.4	-20.2
-10	14.0	12.2	10.4	8.6	6.8	5.0	3.2	1.4	-0.4	-2.2
-0	32.0	30.2	28.4	26.6	24.8	23.0	21.2	19.4	17.6	15.8
0	32.0	33.8	35.6	37.4	39.2	41.0	42.8	44.6	46.4	48.2
10	50.0	51.8	53.6	55.4	57.2	59.0	60.8	62.6	64.4	66.2
20	68.0	69.8	71.6	73.4	75.2	77.0	78.8	80.6	82.4	84.2
30	86.0	87.8	89.6	91.4	93.2	95.0	96.8	98.6	100.4	102.2
40	104.0	105.8	107.6	109.4	111.2	113.0	114.8	116.6	118.4	120.2

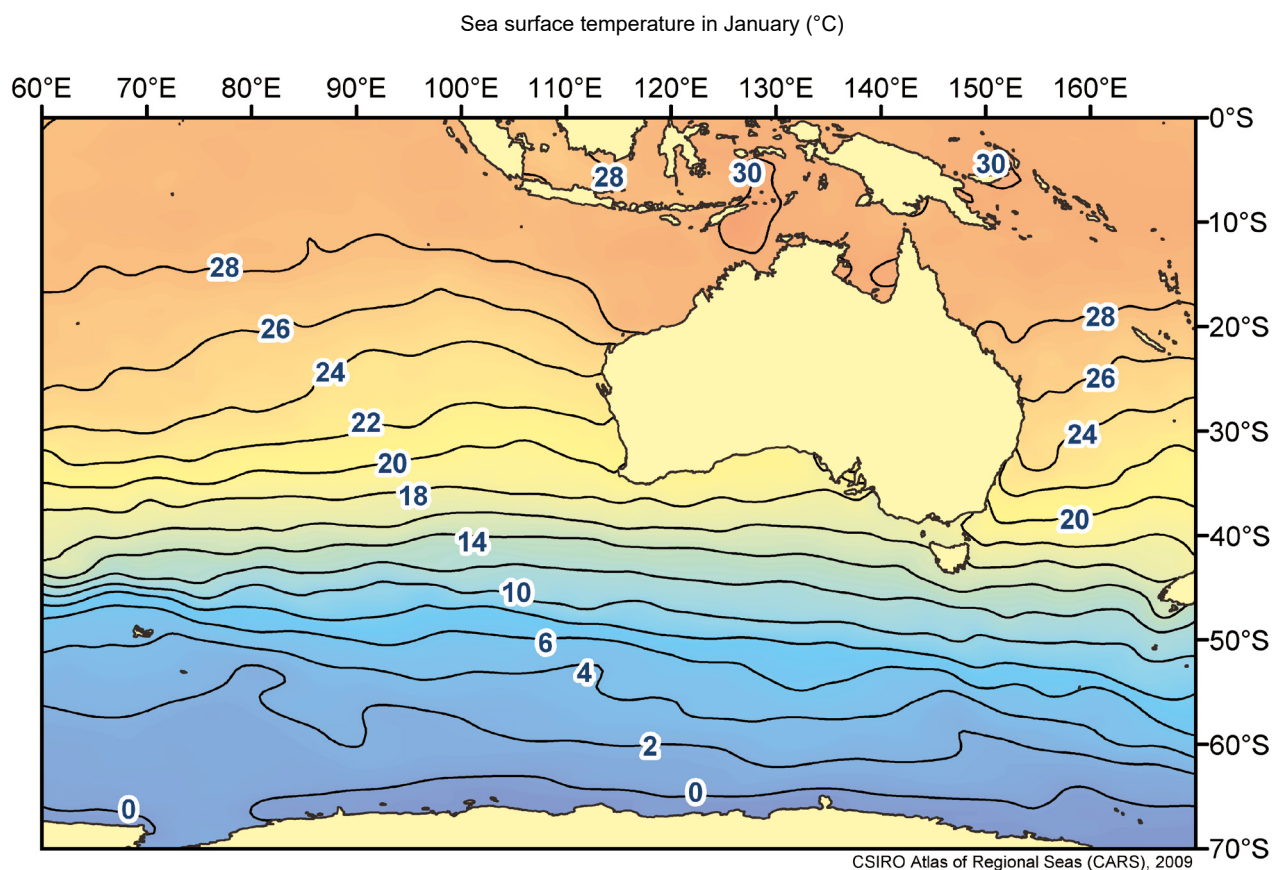
4.9 SEAWATER CHARACTERISTICS

4.9.1 TEMPERATURE

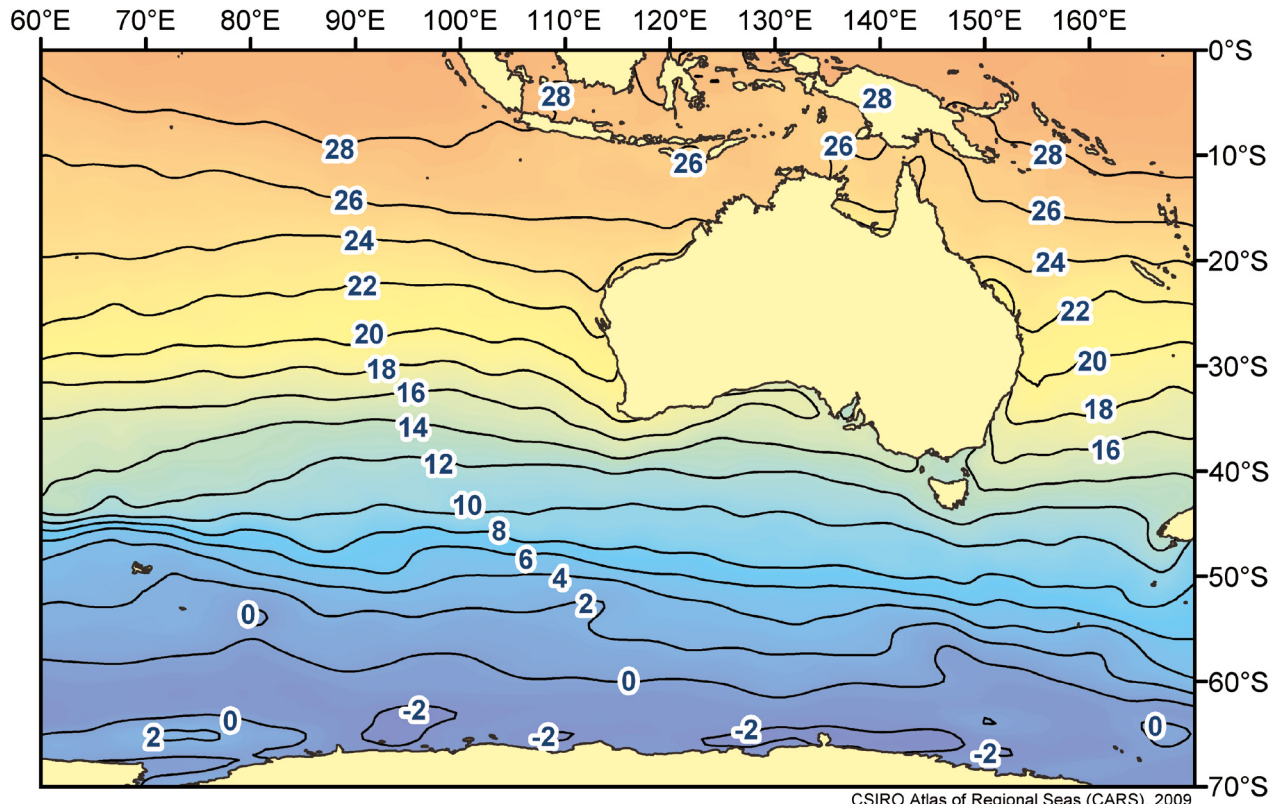
1. Ocean surface water temperatures are seasonal. The largest temperature change between winter and summer is around 6°C, occurring in the temperate latitudes (around 30°S). Temperatures can range from freezing in the Antarctic waters to over 30°C in equatorial waters.
2. The isotherms lie roughly east west, deflected on the east and west coasts of Australia by south flowing warm currents. Temperatures can vary by up to 6°C over distances of 10 to 20 kilometres across a current frontal boundary, with the boundary variation increasing with increased latitude (see diagrams at Section 4.9.2).

4.9.2 SALINITY

1. The salinity of ocean surface waters varies with latitude due to the balance between precipitation, evaporation, freezing, melting and runoff from land. In equatorial regions precipitation usually exceeds evaporation, resulting in lower salinity. Evaporation usually exceeds precipitation in subtropical regions, resulting in higher salinity. In southern waters the balance favours precipitation, resulting in lower salinity. Close to Antarctica, the freezing of surface waters produces cold, salty water which drops to the ocean depths. When sea ice eventually melts, cold low salinity water is released into the surface layers.



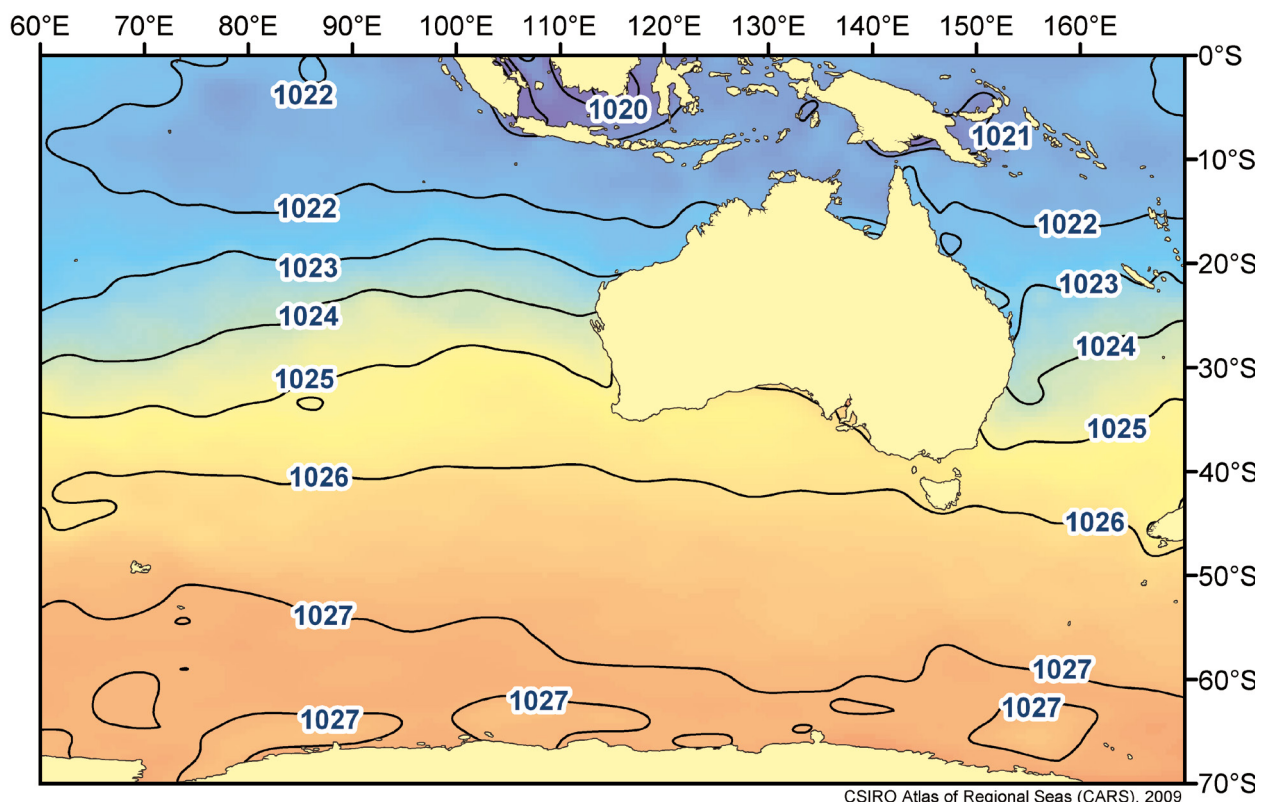
Sea surface temperature in July (°C) 3.4.3

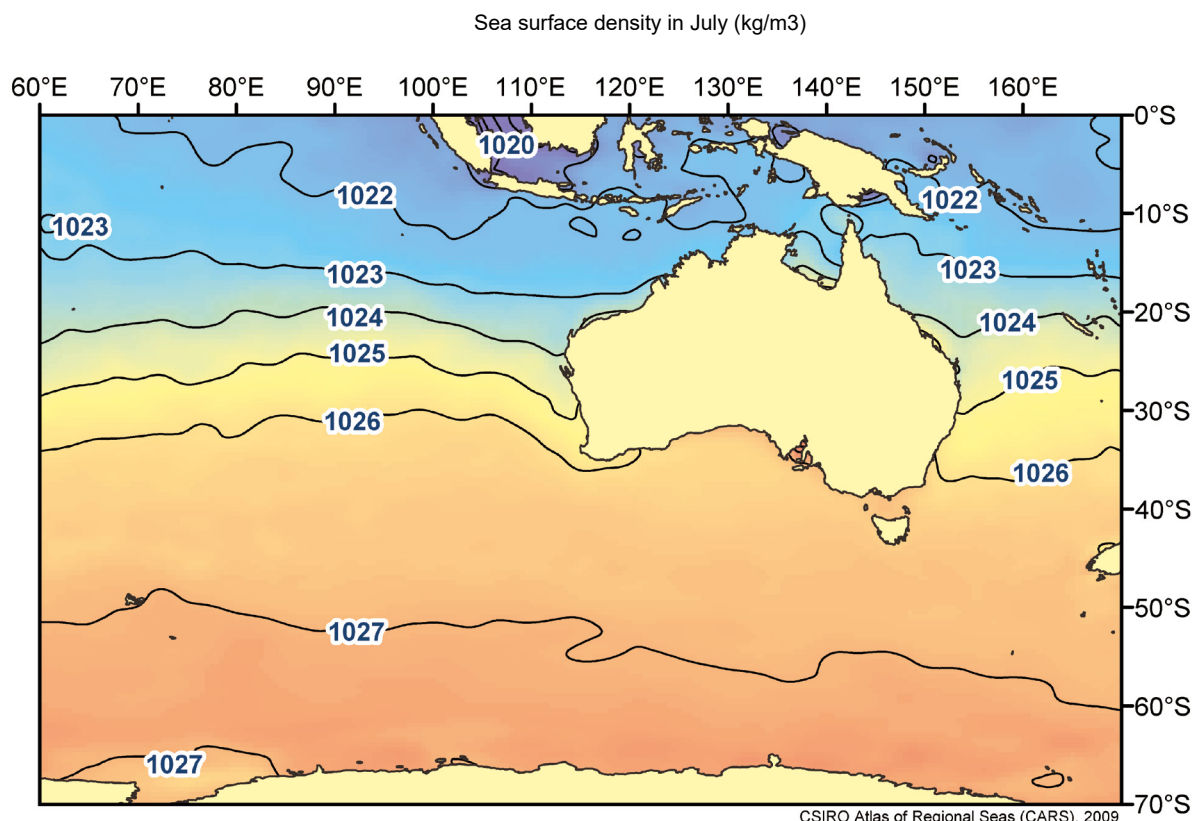


4.9.3 DENSITY

1. The density of surface seawater is a function of both temperature and salinity. Temperature has the greater effect so that the density of surface seawater is least in equatorial waters and greatest in southern waters.

Sea surface density in January (kg/m³)





4.10 CURRENTS

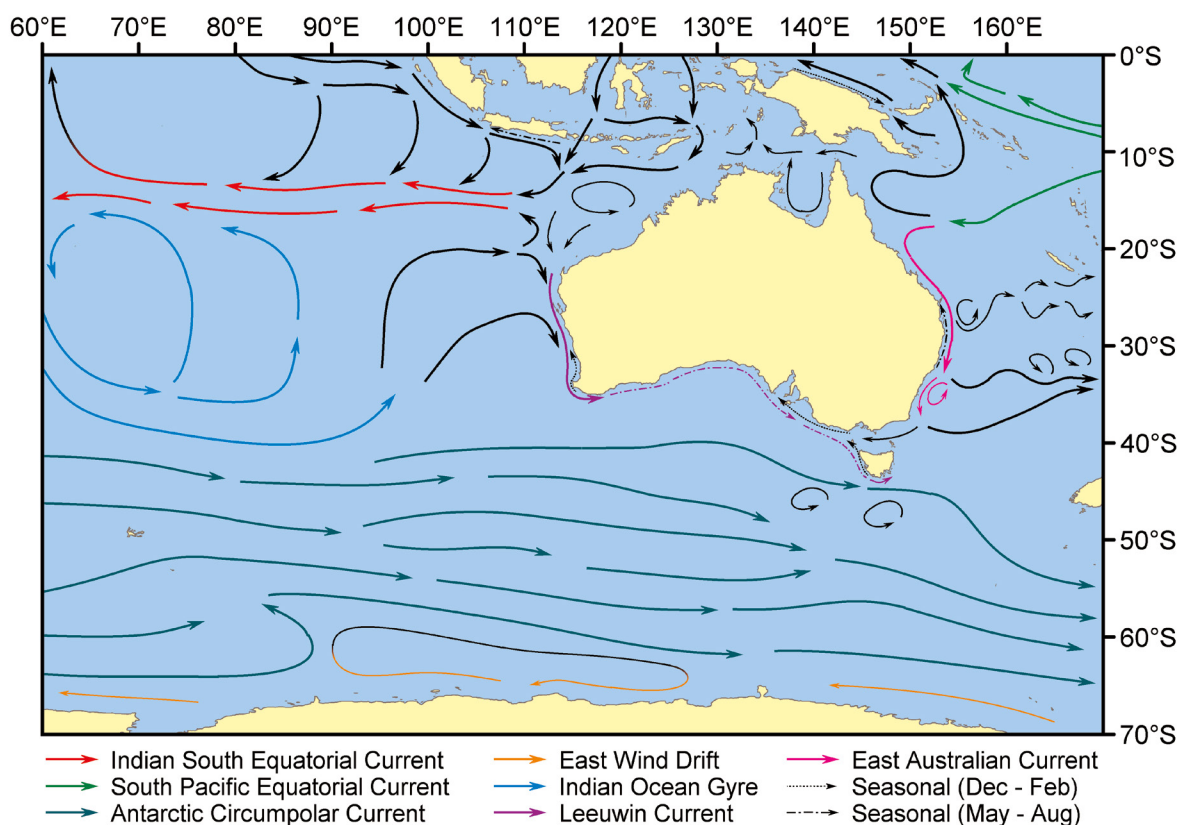
- Ocean surface currents are produced by persistent winds and density gradients. In the Australian region, a number of major permanent currents exist. The Antarctic Circumpolar Current (at around 50°S) is the most permanent, due to the strong and persistent westerly winds across a broad expanse of ocean. There are also two major boundary currents on the east and west coasts of Australia; the East Australian Current (EAC) and the Leeuwin Current. The EAC is a western boundary current of the subtropical gyre of the South Pacific Ocean that carries warm water from the tropics southwards along the east coast of Australia. The Leeuwin Current is a poleward flowing density driven eastern boundary current. Currents in the Timor Sea reverse with the monsoons and are extremely variable (see image at Section 4.10.1).
- The best way to determine current conditions is to examine satellite images or current predictions for the region. Analysed satellite maps showing sea currents around Australia can be obtained from the Integrated Marine Observing System (IMOS) website.

Website:	http://oceancurrent.imos.org.au
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4.10.1 EQUATORIAL CURRENTS

- Southeast Trade Winds push surface water towards the west, creating the Indian South Equatorial Current in the Indian Ocean, and the South Pacific Equatorial Current in the South Pacific Ocean. The speed and constancy of these currents depends on the strength of the Southeast Trade Winds. This seasonal variation results in stronger and more constant currents during winter when speeds of 1 knot can sometimes occur. At other times of the year, speeds of up to 0.4 knots in the Pacific Ocean and around 0.4 to 0.6 knots in the Indian Ocean are more common. There are also inter-annual variations due to large scale El Niño/La-Niña Southern Oscillation (ENSO) effects, with stronger currents when the Southern Oscillation Index is positive.

General currents around the Australian region



- In the Pacific Ocean the South Subtropical Current flows westward towards Papua New Guinea (PNG). Most of this current flows to the north of PNG, some flows southwards into the Coral Sea, with a portion returning to the east along the equator as the Equatorial Counter Current and a portion moving through the Indonesian archipelago to join the South Equatorial Current in the Indian Ocean.
- In the Indian Ocean the South Equatorial Current turns gradually south before reaching Africa and then returns towards Australia at a more southerly latitude. Unlike other parts of the world, the West Australian Current turns northwards far from the Australian coast with a speed of around 0.2 knots. The currents show some variability in the region between the West Australian Current (WAC) and the coastal Leeuwin Current.

4.10.2 CORAL SEA CURRENTS

- In the Pacific Ocean, the southern edge of the South Subtropical Current flows into the Coral Sea, aided by the Southeast Trade Winds. From March to November the current divides between 150°E and 156°E, with the northern branch setting west then northwest towards Torres Strait and the southern branch setting to the south. Currents are generally weak and variable, with speeds usually less than 0.2 knots.
- The current pattern within the area of the Great Barrier Reef (GBR) sets northwest along the northern part of the QLD coast and southeast along the southern part. The latitude of this division varies throughout the year and is mainly determined by the prevailing wind. From March-November during the Southeast Trade Winds the division is around 18°S, with most of the water within the GBR setting northwest. The southeast branching flow sets southwards to form the EAC.

4.10.3 TIMOR AND ARAFURA SEA CURRENTS

- Currents in the Timor Sea show considerable variability, largely due to the variable wind conditions. Over most of the area, the currents reverse seasonally in response to the monsoon wind changes. Currents enter the Arafura Sea from both the east and west and exit through the north of the sea. The mean rate is less than 0.4 knots for both seas.



4.10.4 THE EAST AUSTRALIAN CURRENT

1. The EAC flows southward from the Coral Sea along the edge of the continental shelf at 0.5 to 0.8 knots. Further south, current speeds average 2-3 knots, over most of the length of the current. The EAC shows significant seasonal variability along its length. For example; during November and December the current flows strongly along the edge of the GBR near Cairns, while near Eden the flow is much less. Near Sydney the current is strongest in February and March. In May the current is strongest in Eden, but weakest between the Coral Sea and Sydney.
2. Although the EAC follows the general line of the continental shelf break, the current is deflected both towards and away from the coast in many locations due to the coastal topography, current strength and the weather. The current also breaks into eddies, particularly towards the south. This results in significant changes in speed and direction. The largest of these is a semi-permanent eddy that forms over the abyssal plain between Sydney and Jervis Bay. The strength of the EAC is depleted by branches as it flows south beyond 32°S. These branches leave to the east to join the general easterly flow in the open ocean as part of the Pacific Ocean gyre.

4.10.5 THE LEEUWIN CURRENT

1. The Leeuwin Current is formed from waters that have flowed through the Indonesian archipelago from the Pacific Ocean. Tropical water is transported from the North West Shelf region, southwards along the west Australian coast. This water is warmer and less saline than the water flowing northwards from the south.
2. The Leeuwin Current flows between 29°S and 35°S, close to the edge of the continental shelf, where the width of the current varies from 20 to 50nm. The average speed is around one knot, but can reach three knots. The Leeuwin Current is strongest from May to September. The current becomes stronger towards the south and may intensify locally as it approaches Cape Naturaliste. Meanders and eddies are common in the region north of Cape Naturaliste, particularly when the Leeuwin Current is flowing strongly. This results in a significant amount of variability in speed and direction. From April onwards the current spreads south of Cape Naturaliste, swings eastward into the Great Australian Bight, and then across to Bass Strait before turning southwards along the west Tasmanian coast.
3. Between December and March the current is weak and counter currents develop inshore to the north of Cape Naturaliste and along the eastern side of the Great Australian Bight. Counter current speeds are typically around 0.2 to 0.6 knots, but can reach as high as one knot, particularly adjacent to Shark Bay.

4.10.6 ANTARCTIC CIRCUMPOLAR CURRENT

1. The Antarctic Circumpolar Current (ACC), centred around 50°S, circles Antarctica between 35°S and 65°S. The current tends to vary in direction between northeast to southeast, with low to moderate constancy, at a mean rate of 0.5-1 knot. The fastest currents occur in jets along the Sub-Antarctic and Polar Fronts. These jets meander around bottom topography and can form surface eddies, that go down to the depths of the ocean floor.

4.10.7 THE ANTARCTIC AND THE EAST WIND DRIFT

1. To the south of the ACC lies a region of weak westward flowing currents of low constancy, known as the East Wind Drift (EWD). The EWD is separated from the ACC by the Antarctic divergence. The location of the Antarctic divergence follows the Antarctic Circumpolar Trough (see Section 4.10) closely around the Antarctic continent. The EWD is influenced by the submarine geology and also the prevailing easterly winds. The current speed tends to be greatest near the edge of the Continental Shelf. Typical current speeds are in the order of 0.2 knots but can be much higher as a result of higher wind speeds.
2. At a number of locations around the Antarctic continent where the coastline and Continental Shelf have north pointing peninsulas the ocean surface current tends to turn northwards and connect with the ACC. This occurs in the large gyres of the Weddell and Ross Seas and also to a lesser degree near the Balleny Islands, the 90°E ridge, and near the Riiser-Larsen ice shelf. At other locations the submarine orography contributes to turning the ACC southwards towards the continental shelf, such as the region west of the Antarctic Peninsula and west of the Balleny Islands.

4.11 TIDES

4.11.1 TIDE RANGE AND TIDE TYPE

- Due to Australia bordering the South Pacific, Indian and Southern Oceans, the tidal types and tidal ranges vary significantly from one part to the next. Tide types are commonly grouped into the following based on whether the observed tides reflect the motions of the moon and sun, or reflect the declination of the moon and sun:
 - diurnal - a single tide per day (e.g. Groote Eylandt)
 - semi diurnal - two tides per day (e.g. Broome)
 - semi diurnal with diurnal inequalities - one tide is usually larger than the other (e.g. Sydney)
 - mixed - the tidal characteristics drift between diurnal and semi-diurnal in a repetitive sequence (e.g. Portland)
- The most common tide type in the region is semi diurnal with diurnal inequalities. This type is predominate along the east coast of Australia, in the Great Australian Bight, and along the north coast of Australia from Wyndham to the Wessel Islands. Mixed tides are predominate along the southern coasts; semi diurnal tides are predominate in Bass Strait, along the east coast from Mackay to Gladstone, and along the north west coast from Onslow to Wyndham. Diurnal tides are predominate in the Gulf of Carpentaria, and along the south west coast from Shark Bay to Albany.
- The tidal range varies greatly from one to two metres along the southern shores, to 10 to 11 metres in the north west near Broome. While there is no simple relationship between the tide type and range, most areas that experience tides of five metres or more also experience semi diurnal tides. Similarly, most areas that experience diurnal tides have a tidal range of less than four metres.
- Tidal ranges and types for Australian waters can be found in the Australian National Tide Tables (ANTT) and AusTides. Visit the Australian Hydrographic Office (AHO) website for more information.

Website:	www.hydro.gov.au/prodserv/publications/publications.htm
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4.11.2 METEOROLOGICAL EFFECTS ON TIDES

- Meteorological conditions which differ from the average will cause corresponding differences between the predicted and the actual tides. Variations from predicted heights are mainly caused by strong or prolonged winds, and by unusually high or low barometric pressure. Differences between predicted and actual times of high and low water are mainly caused by the wind.

Barometric pressure

- Tidal predictions are calculated for average barometric pressure. A difference of 10 hPa from the average can cause a difference in sea level of about 0.1 metres. This depression of the water surface under high atmospheric pressure, and its elevation under low atmospheric pressure, is often described as the inverted barometer effect. The water level does not adjust itself immediately to a change of pressure. It responds to the average change in pressure over a considerable area. The average barometric pressure and information concerning changes in level under different conditions is given in this chapter. Changes in sea level due to barometric pressure seldom exceed 0.3 metres.
- In conjunction with this, changes in sea level can also occur due to strong onshore or offshore winds.

The effect of wind

- The effect of wind stress on sea level, tidal heights and times is variable and depends on the topography of the area. In general, the wind will raise the sea level in the direction towards which it is blowing. This effect is often called wind setup. A strong wind blowing onshore will pile up the water and cause waters to be higher than predicted. Winds blowing off the land will have the reverse effect. Winds blowing along a coast tend to set up long waves which travel along the coast, raising the sea level at the crest and lowering it in the trough. This effect is called a Kelvin wave. Coastally trapped Kelvin waves can have a large impact on tidal heights along the SA coast near Adelaide.

Storm surges

5. The combination of wind setup and the inverted barometer effect associated with storms can create a pronounced increase in sea level. This is often called a storm surge. A long surface water wave travelling with the storm depression can further exaggerate this sea level increase. A negative surge is the opposite effect, generally associated with high pressure systems and offshore winds which can create unusually shallow water. This effect is of great importance to very large vessels which may be navigating with small under keel clearances.

4.11.3 TIDAL STREAMS

Torres Strait

1. From a tidal point of view, Torres Strait is possibly the most complex area in the world. Its narrow and shallow channels connect two oceans with different mean sea levels, caused by the general oceanic circulation patterns. This difference introduces a westward equalising current. In addition, tidal regimes on both sides of Torres Strait are completely different, with diurnal tides to the west and semi diurnal to the east.
2. The contrast in regimes is caused by the different semi diurnal components of tide at either entrance, the diurnal part being generally uniform in the area. At some phases of the moon it can be high water at one entrance when it is low water at the other. These marked differences between the water levels at the entrances result in strong tidal streams. While the tides may have a large diurnal component (especially at the western entrance), the tidal streams are predominantly semi diurnal.
3. Throughout the Prince of Wales Channel (POWC) and its approaches from Twin Island in the east to a few miles west of Goods Island, the rates diminish as the channel becomes less restricted and at its western entrance are only about 30% of those predicted at Hammond Rock. At Booby Island the rates are comparatively weak. Rates of up to eight knots can be expected at Hammond Rock which is the maximum rate of tidal streams in Torres Strait shipping routes.
4. Near Harvey Rock and Saddle Island the streams commence and reach their maximum rates about 30 minutes earlier than at Hammond Rock. However in these more open waters the rates are comparatively weak. In Endeavour Strait the streams commence and reach their maximum rates about 40 minutes later than at Hammond Rock. Except for the more restricted parts of Torres Strait, their rates do not exceed 30% of those at Hammond Rock.
5. However, tidal stream predictions for Hammond Rock do not include any non-tidal flows like the equalising current mentioned above or currents caused by meteorological influences. In addition, the ENSO can cause a drop of sea level of about 0.5 metres on the eastern side of the Strait in a very short time. The resultant changes to the water levels in the Strait, and to the current and stream direction and rates are impossible to predict.
6. Daily tidal stream predictions for Torres Strait (Varzin Passage, Harrison Rock, Hammond Rock, Nardana Patches and Alert Passages) are published in the ANTT and AusTides.
7. Information on Torres Strait tide gauges, current meters and the Under Keel Clearance Management System (UKCM) can be found in Section 7.10 and 7.12.

Port Phillip Heads

8. Due to the restriction of the tidal range within Port Phillip, caused by the relatively narrow entrance, the tidal stream near the Port Phillip Heads does not turn at high and low water. The force of the tidal streams depends upon the relative water levels inside and outside Port Phillip Bay. The greatest differences in levels occur around the time of high and low water in the Entrance, when the streams run at their strongest. This can reach up to six knots under normal conditions and approach nine knots in extreme conditions.
9. Slack water occurs at around three hours before and after high water, when the levels inside and outside are the same. The incoming stream runs from approximately three hours before to three hours after high water and the outgoing stream at other times.

10. The main body of the incoming stream from the southward and eastward sets at about 038° directly through the entrance fairway, with drifts of considerable force across and through the reefs, spreading towards Shortland Bluff (Queenscliff) and the southern shore. The incoming stream then runs directly through the channels of the Great Sand Bar. The outgoing stream coming directly from the Great Sand Bar channels sets towards Lonsdale Bight. From there the outgoing stream runs out through the Entrance with great force, partly across the channel at 200°, then away south eastward along the land towards Cape Schanck.
11. The water level and tidal streams can be significantly affected by barometric pressure and the direction and duration of the winds. West to south west winds cause a rise in sea level outside Port Phillip and consequently increase both the rate and duration of the ingoing stream. This will continue until sea levels inside and outside have reached equality, then the increased ingoing stream will cease and the streams will become normal. The sea level outside falls to normal when the winds cease, causing the outgoing stream to increase both in rate and duration until the sea level in Port Phillip has fallen to normal. Then the levels outside and inside are again equal.
12. Daily tidal stream predictions for the entrance to Port Phillip (ENC AU5RIP01 / PNC Aus 144) are published in the ANTT and AusTides. Visit the AHO website for more information.

Website:	www.hydro.gov.au/prodserv/publications/publications.htm
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Tidal Stream Flow Diagrams

13. Tidal streams flow diagrams for the following ports are available in the ANTT and AusTides:
 - Sydney
 - Broome
 - Port Phillip Heads
 - Darwin
14. The rates shown are empirical rather than predicted.

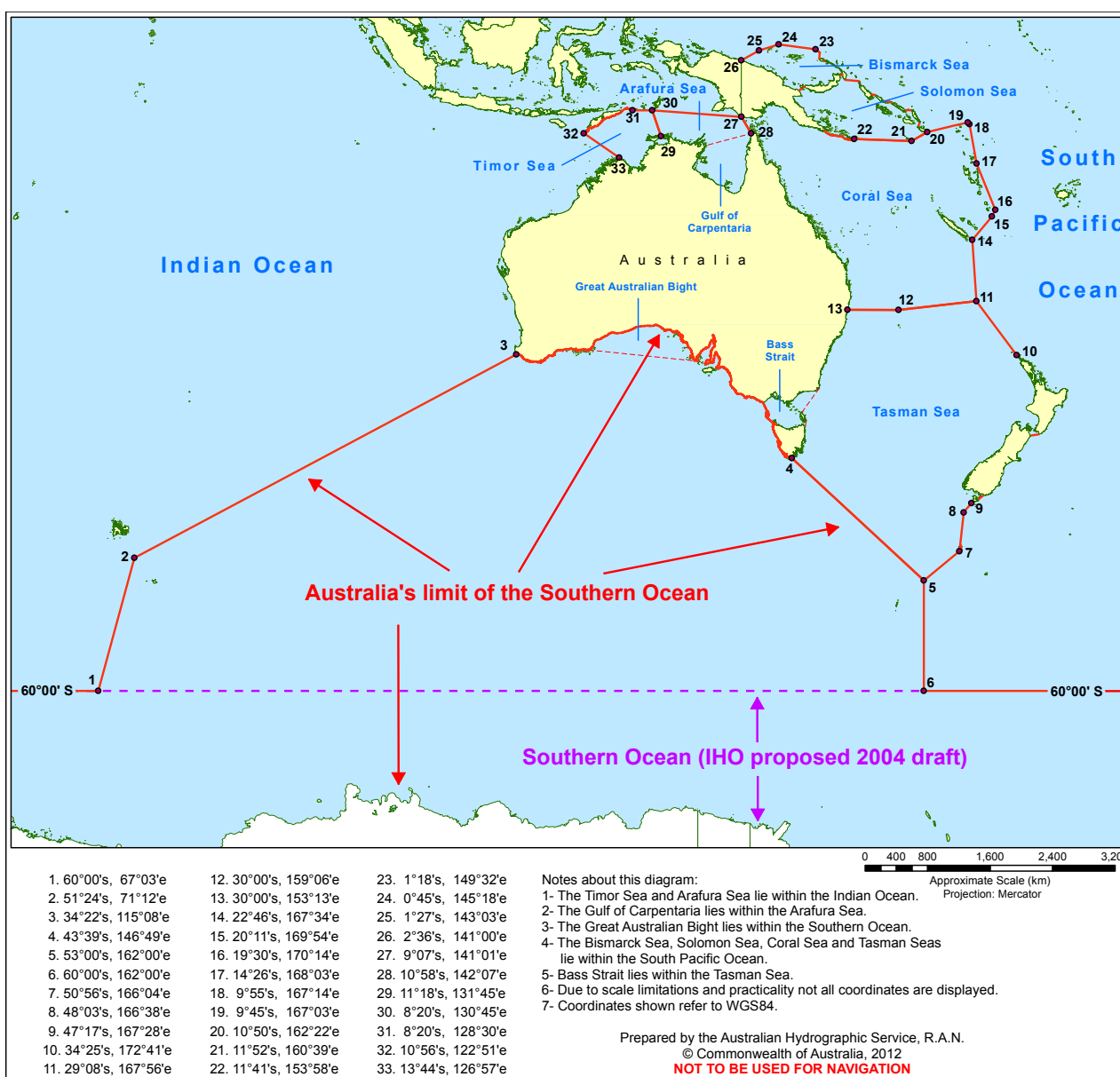
Notes:

CHAPTER 5 MARITIME BOUNDARIES

5.1 LIMITS OF OCEANS AND SEAS

1. The International Hydrographic Organization (IHO) S-23 - *Names and Limits of Oceans and Seas, 3rd Edition (1953)* is used as an authoritative technical reference by national hydrographic offices for the compilation of nautical charts and publications. The published version is outdated and does not reflect current usage in many areas.
2. Australia has produced an official interpretation of the Names and Limits of Oceans and Seas around Australia and this supersedes the IHO publication for this region.
3. This interpretation has been endorsed by the Interdepartmental Committee of Surveying and Mapping (ICSM) under ICSM Resolution R00/11/06 - *Limits of Oceans and Seas and Offshore Undersea Features (April 2001)* and is shown in diagram below.

Boundaries of the oceans and seas around Australia

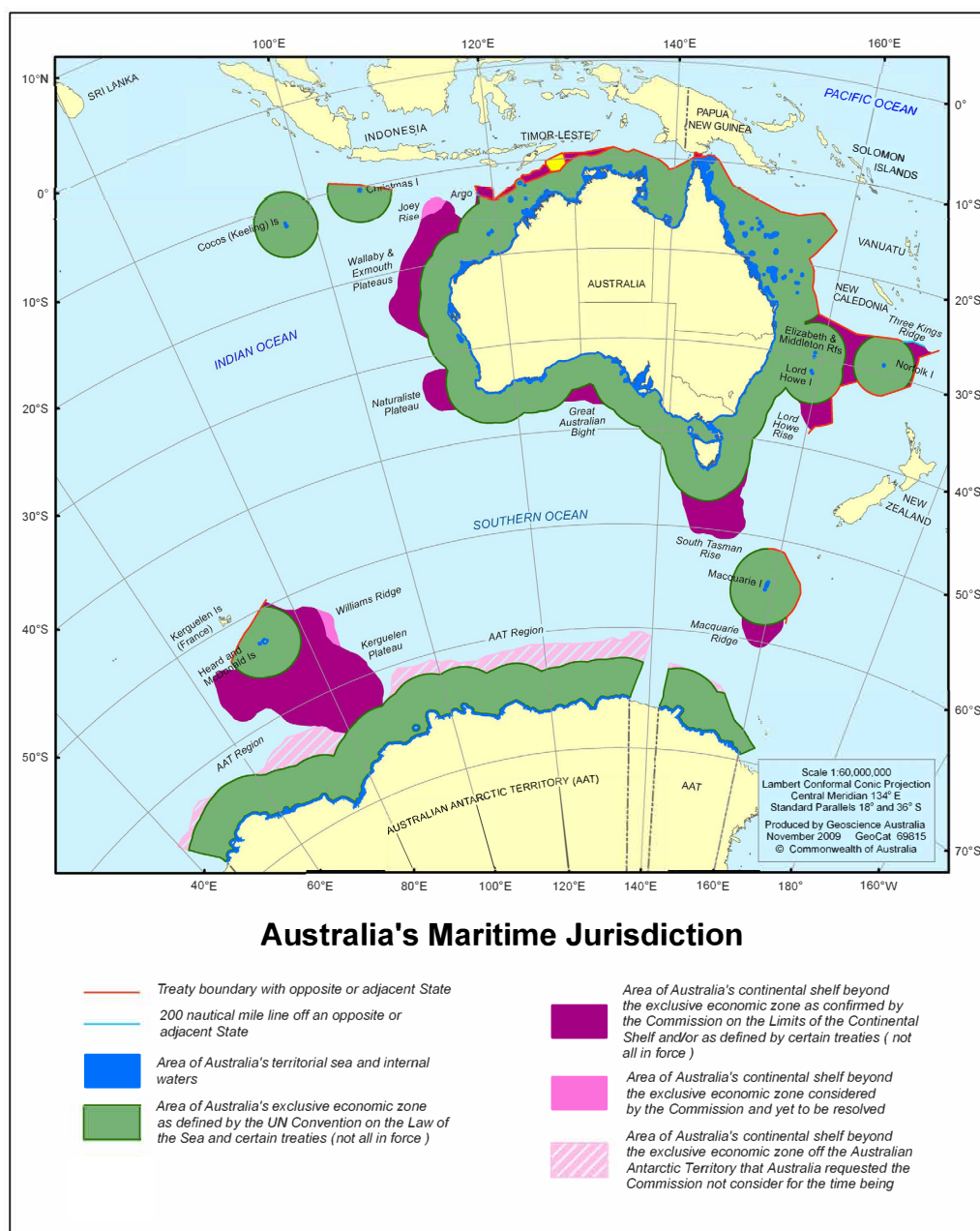


5.2 OCEANS AND SEAS SURROUNDING AUSTRALIA

1. Australia is bounded on the north by the Timor Sea, the Arafura Sea and Torres Strait, on the east by the South Pacific Ocean (including the Coral Sea and Tasman Sea), on the south by the Southern Ocean, and on the west by the Indian Ocean.

5.3 NATIONAL MARITIME ZONES

1. In general, Australia exercises jurisdiction over a Territorial Sea (TS) 12 nautical miles (nm) in breadth, a Contiguous Zone (CZ) with an outer limit of 24nm and an Exclusive Economic Zone (EEZ) with an outer limit of 200nm, all measured from the TS baselines. Australian jurisdiction also extends over a proclaimed Continental Shelf (CS) defined under the provisions of Article 76 of the *United Nations Convention on the Law of the Sea (UNCLOS) 1982*. The outer limits of these zones are adjusted to conform to bilateral agreements between Australia and individual neighbouring countries. Under the *Offshore Constitutional Settlement 1979* with the States and Northern Territory (NT), Australia also has Coastal Waters (CW) with an outer limit of 3nm from the TS baseline defined in the various *States Commonwealth Coastal Waters Acts 1980*.



Source: Geoscience Australia

5.3.1 TERRITORIAL SEA BASELINE

1. The TS, CW, CZ and EEZ are measured from baselines while the CS is measured in accordance with the provisions of Article 76 of UNCLOS. The normal baseline from which the breadths of these limits are measured is the low water line along the coast of the mainland, islands and territories of Australia. The low water line is defined as Lowest Astronomical Tide (LAT). Under the provisions of UNCLOS, the baseline includes:
 - the low water line of permanent harbour works
 - a straight line across the mouth of a river
 - a straight line across the entrance of a bay
 - a series of straight lines, as defined under Article 7 of UNCLOS, joining appropriate points of deeply indented sections of coast, or fringing islands
 - historic bays
 - the low water line of drying reefs or banks that are wholly or partially within 12nm of the baseline defined by the elements described above. These features are called low tide elevations
2. The baseline, including the straight baseline end points, are promulgated in the *Sea and Submerged Lands (Territorial Sea Baseline) Proclamation 2006*, the *Sea and Submerged Lands Act 1973* (Cth), and the baseline points for certain historic bays in South Australia (SA) by Commonwealth of Australia Gazette S57 of 31 March 1987.

5.3.2 INTERNAL WATERS

1. Waters on the landward side of the baselines are internal waters for the purposes of international law.

5.3.3 TERRITORIAL SEA

1. The TS is a belt of water not exceeding 12nm in width measured from the TS baseline. Australia's sovereignty extends to the TS, its seabed and subsoil, and to the airspace above it. This sovereignty is exercised in accordance with both customary international law and the provisions of UNCLOS.

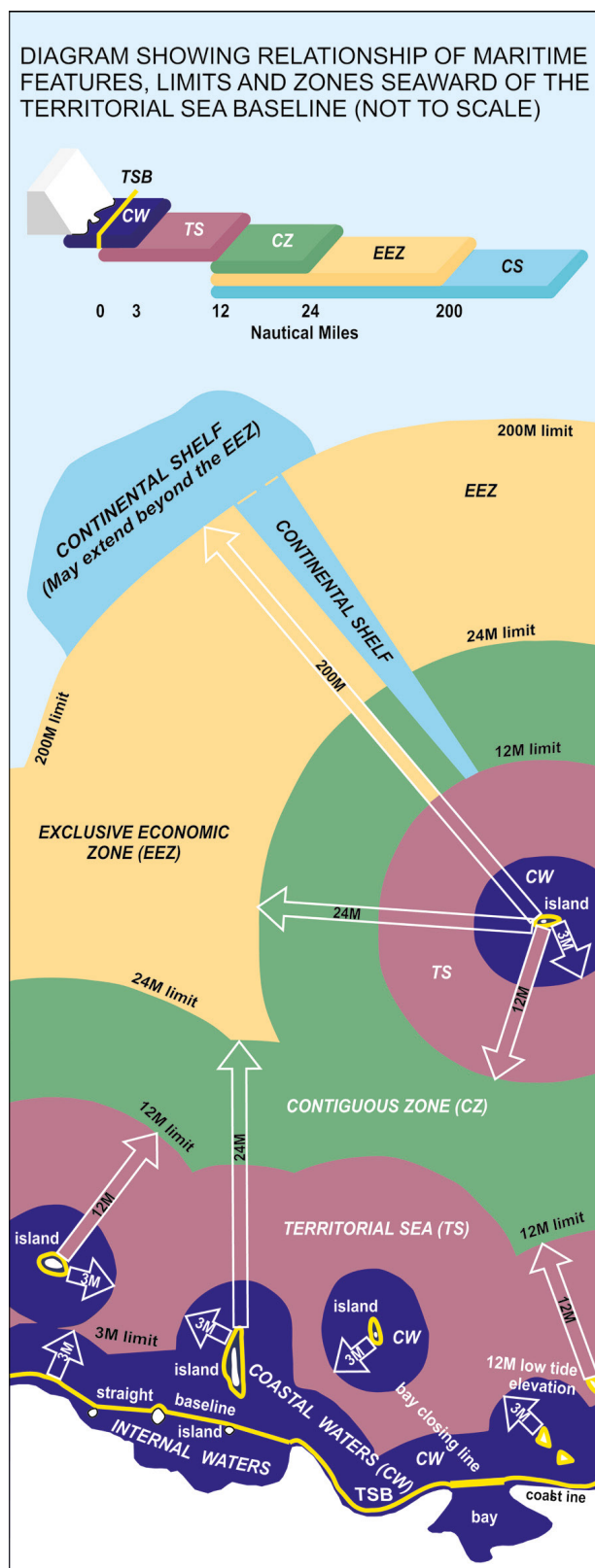
5.3.4 CONTIGUOUS ZONE

1. A zone contiguous to the TS, not extending beyond 24nm from the TS baseline, and was proclaimed in the Commonwealth of Australia Gazette S148 of 7 April 1999. In this zone, Australia may exercise control necessary to prevent and prosecute infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or TS.

5.3.5 EXCLUSIVE ECONOMIC ZONE

1. The EEZ is an area beyond and adjacent to the TS and was proclaimed in the Commonwealth of Australia Gazette S290 of 29 July 1994. It applies around the Australian mainland and islands, including all external territories. The outer limit of the EEZ is 200nm from the baseline from which the breadth of the TS is measured, except where limited by treaties with neighbouring countries.
2. Within the EEZ, Australia has sovereign rights for the purpose of exploring and exploiting, conserving and managing all natural resources of the waters superjacent to the seabed and of the seabed and its subsoil together with other activities such as the production of energy from water, currents and wind. Jurisdiction also extends to the establishment and use of artificial islands, installations and structures, marine scientific research, the protection and preservation of the marine environment, and other rights and duties.

Australian Maritime Zones



Source: Geoscience Australia

5.3.6 CONTINENTAL SHELF

1. Australia's CS is that area of the seabed and subsoil which extends beyond the territorial sea to a point 200nm from the TS baseline and, in certain areas, beyond that limit to the edge of the continental margin as defined under Article 76 of UNCLOS.
2. On 9 April 2008 the Commission of the Limits of the Continental Shelf (CLCS) adopted recommendations on Australia's submission for its CS, which were subsequently proclaimed in the *Seas and Submerged Lands (Limits of Continental Shelf) Proclamation 2012* (Cth).
3. Australia has sovereign rights over its CS for the purposes of exploring and exploiting the mineral and other non-living resources of the seabed and subsoil together with sedentary organisms. Jurisdiction also extends to marine scientific research, the production and preservation of the marine environment, and other rights and duties.

5.4 ADJACENT INTERNATIONAL BOUNDARIES

5.4.1 TERRITORIAL SEA AROUND THE ISLANDS IN TORRES STRAIT

1. The Torres Strait Treaty was signed in December 1978 and entered into force in February 1985. It defines the border between Australia and Papua New Guinea (PNG) and provides a framework for the management of the common border area.
2. There are two main boundaries described by the Treaty. They are the:
 - Seabed Jurisdiction Line. Australia has rights to all things on or below the seabed south of this line and PNG has the same rights north of the line
 - Fisheries Jurisdiction Line. Australia has rights over swimming fish south of this line and PNG has the same rights north of the line. The two countries have agreed under the Treaty to share these rights
3. Australian islands north of the Seabed Jurisdiction Line also have their own territorial seas of 3nm unless otherwise specified in the Treaty.

5.4.2 AUSTRALIAN FISHING ZONE

1. The Australian Fishing Zone (AFZ) is promulgated under the *Fisheries Management Act 1991* (Cth). The AFZ has limits similar, but not identical to those of the EEZ. The inner limit of the AFZ is 3nm from the TS baselines and it extends to 200nm from the baseline. The AFZ includes the waters surrounding Australia's external territories. There is no AFZ adjacent to the Australian Antarctic Territory (AAT). Australia regulates fishing by vessels of all nationalities in waters of the AFZ.

5.4.3 TORRES STRAIT PROTECTED ZONE

1. In Torres Strait, a protected zone has been established to protect the traditional activities of the inhabitants of the Torres Strait. Fishing, by vessels of all nationalities, in the protected zone is regulated by Australia and PNG retrospectively under the *Torres Strait Fisheries Act 1984* (Cth) and *Fisheries Management Act 1998* (Cth), in accordance with an agreement between them.

5.4.4 MEMORANDUM OF UNDERSTANDING, INDONESIAN TRADITIONAL FISHERMEN, TIMOR SEA

1. A Memorandum of Understanding (MOU) between Australia and Indonesia regarding the operations of Indonesian traditional fishermen in the Australian EEZ is extant in parts of the Timor Sea. It covers the general area of Ashmore and Cartier Islands, Browse Island, Seringapatam Reef and Scott Reef.

5.4.5 BILATERAL TREATIES DELIMITING THE WATER COLUMN AND SEABED

1. In certain areas of Torres Strait, Timor Sea and Arafura Sea, Australia has entered into bilateral treaties with neighbouring countries whereby the sovereign rights and jurisdiction over the waters superjacent to the seabed are vested in one country and the sovereign rights and jurisdiction over the seabed and its subsoil are vested in the other country.

5.4.6 COMMONWEALTH MARINE AREA

1. The Commonwealth marine area is any part of the sea, including the waters, seabed, and airspace, within Australia's EEZ or over the CS of Australia, that is not state or territory waters. Australia regulates activities that will affect the environment within the Commonwealth marine area with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (see Chapter 6 and Chapter 3).

5.5 PROMULGATION OF MARITIME ZONES

1. Copies of the Commonwealth of Australia Gazette and relevant Acts may be purchased from Australian Government Publishing Service bookshops and online at the website below. Enquiries about the Commonwealth of Australia Gazette and relevant Acts may also be made at Australian diplomatic and consular offices.

Website:	www.austlii.edu.au
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5.5.1 AUSTRALIAN MARITIME BOUNDARIES INFORMATION

1. The depiction of the outer limits of Australia's maritime zones on charts are sourced from Australian Maritime Boundaries (AMB) Version 2, the product released by Geoscience Australia (GA) in February 2006. The TS baseline and maritime zones are established under the *Seas and Submerged Lands Act 1973* (SSLA) (Cth). AMB is a digital representation of the TS baseline, the outer limits of Australia's maritime zones and various treaty lines. In the event of an inconsistency between the AMB data and the SSLA legislation or treaties, the legislation or the treaties prevail. The AMB data is available for download on the GA website.

Website:	www.ga.gov.au/scientific-topics/marine/jurisdiction/map-series
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5.5.2 BOUNDARIES ON CHARTS

1. The charted locations of the TS baseline and the outer limits of all maritime zones generated from that baseline are derived from the best information at hand at the publication date of the chart. Charts are prepared for the purposes of safe navigation and may not depict all physical features relevant to the generation and delineation of Australia's maritime zone. Physical changes to the coast and improved methods of locating the low water line in the future may lead to differences between the TS baseline and the information depicted on the charts in certain areas.

5.6 STATE LIMITS

Limits of the States of Australia are below:



5.6.1 WATERS WITHIN A STATE OR TERRITORY

1. These are waters that formed part of the State at Federation in 1901, including both internal waters and that part of the TS extending 3nm to seaward of the baseline.

5.6.2 COASTAL WATERS

1. The extent of the CW and rights which the Australian States and NT exercise over these waters are set out in the *Coastal Waters (State Powers) Act 1980* (Cth) and *Coastal Waters (Northern Territory) Powers Act 1980* (Cth). The Savings Sections in these Acts do not extend the limits of any state or NT. They are a belt of water that extend between the seaward limits of states and NT and a line representing the location of the territorial sea if the breadth of that TS had continued to be 3nm. The CW includes the Internal Waters of Australia but not the waters that are within the limits of a state or NT.

5.7 OTHER MARITIME ZONES

5.7.1 MARINE PROTECTED AREAS

1. Marine Protected Areas (MPA) are areas especially dedicated to the protection and maintenance of the biological diversity and of the natural and associated cultural resources.
2. These are discussed further in Chapter 6.

5.7.2 PORT LIMITS

1. Port limits, or port areas / waters, refers to the area described and promulgated in legislation declaring the waters of that port. The activities and movement of vessels within port waters fall under the control

of the Harbour Master (Section 11.4 discusses the Harbour Masters' powers). Port limits are shown on large scale charts. Controls within port waters are published in port regulations, directions and handbooks available from the port authority or operator (see Chapter 11).

5.7.3 PORT SECURITY

1. In accordance with the International Ship and Port Facility Security Code (ISPS), a maritime security regime to help safeguard Australia's maritime transport system and offshore facilities has been established by the Australian Government under legislation. Under this regime, all security regulated ports, port facilities, offshore facilities and ships security undertake risk assessments and implement security plans to address identified risks (see Chapter 11).

5.7.4 NAVAL WATERS

1. Naval Waters means any waters declared under the *Control of Naval Waters Act 1918* (Cth). The Superintendent of Naval Waters may give the master of any vessel within Naval Waters directions as to the mooring, anchoring, placing or removing of the vessel. The Superintendent may also remove any thing which impedes navigation in, or approaches to, Naval Waters. Areas of Naval Waters may also be reserved for weapons operations after due notice is given.
2. Excluding Jervis Bay, the CO of HMAS KUTTABUL is the Superintendent of all Naval Waters within in NSW.

5.7.5 MILITARY EXERCISE AREAS

1. Military firing practice and exercise areas are discussed in Section 10.10.

5.7.6 INDIGENOUS ESTATES

1. Throughout mainland Australia and Torres Strait, determinations at law have been made with regard to native title. Each determination of native title is different and ranges from the recognition of exclusive rights on land and sea over the whole area claimed, to limited rights over part of the area, to a determination that native title does not exist.
2. Indigenous estates are managed by representative Aboriginal and Torres Strait Islander bodies which have Regional Land Councils and Aboriginal Corporations.
3. Access and entry to indigenous estates, without prior permission of the relevant managing authority, is prohibited. If a permit is required, enquiries should be made before planning a cruising or recreational voyage outside of ports, particularly in the north and northwest parts of Australia.
4. Strict regulations apply to the possession of firearms and supply of alcoholic beverages in the areas.
5. Further information can be found on the following websites:

National Native Title Tribunal:	www.nntt.gov.au
Attorney General's Department:	www.ag.gov.au

5.7.7 OTHER MARITIME BOUNDED AREAS

1. In accordance with Australian charting specifications the following additional maritime bounded areas may also be shown on chart products:
 - Aboriginal Waters with exclusive use
 - anchorage and no anchoring areas
 - archipelagic sea lanes & components
 - dumping grounds / spoil grounds
 - Designated Shipping Areas (DSA)
 - compulsory pilotage areas

- ship reporting systems
- vessel management systems
- area to be avoided
- safety zones
- restricted areas
- prohibited areas
- caution areas
- protected zone of historic shipwrecks
- submarine pipeline areas
- marine aquaculture areas
- pilotage limits

5.8 HISTORIC SHIPWRECKS

1. The Department of the Environment and Energy (DEE) administers the *Historic Shipwrecks Act 1976* (Cth) which protects historic wrecks and relics in Commonwealth waters, extending from the low water mark to the edge of the CS. The *Historic Shipwrecks Act 1976* (Cth) aims to ensure that historic shipwrecks are protected and seeks to control actions which may result in damage to a historic shipwreck or associated relics, including damage by anchors and anchor chains. Each of the states and NT has complementary legislation which protects historic shipwrecks in their jurisdictional waters.

5.8.1 PROTECTION

1. All wrecks, including their associated relics, which are more than 75 years old are protected. The Environment Minister may also make a declaration to protect any significant wrecks which are less than 75 years old.
2. All isolated relics that entered jurisdictional waters from a vessel more than 75 years ago are also protected.
3. Some historic shipwrecks lie within protected or no entry zones (see table below). These zones may cover an area up to a radius of 800 metres. Entry to these protected zones requires a permit.

HISTORIC SHIPWRECK PROTECTED ZONES							
Name	State	Year	Radius (metres)	Gazettal date	Latitude	Longitude	Datum
Historic Shipwrecks in Commonwealth waters							
Clonmel	VIC	1841	50	26-Feb-14	38° 44' 38" S	146° 40' 39" E	WGS84
SS Alert	VIC	1893	500	23-Aug-07	38° 29' 13" S	144° 45' 02" E	WGS84
SS Glenelg	VIC	1900	500	09-Mar-11	38° 33' 09" S	147° 12' 27" E	WGS84
Lady Darling	NSW	1880	150	06-Sep-96	36° 19' 06" S	150° 10' 06" E	WGS84
SS Bega	NSW	1908	797	08-Nov-04	36° 39' 22" S	150° 05' 20" E	WGS84
M24 (Japanese Midget Submarine)	NSW	1942	500	01-Dec-06	33° 40' 21" S	151° 22' 58" E	WGS84
HMS Porpoise	Coral Sea	1803	797	29-Apr-92	22° 11' 38" S	155° 21' 21" E	WGS84
Cato	Coral Sea	1803	See (a)	29-Apr-92	22° 11' 38" S	155° 21' 21" E	WGS84
SS Yongala	QLD	1911	797	22-May-02	19° 18' 16" S	147° 37' 19" E	WGS84
Aarhus	QLD	1894	500	19-Dec-83	26° 59' 42" S	153° 28' 42" E	WGS84
Foam	QLD	1893	200	26-Feb-14	18° 16' 12" S	147° 22' 58" E	WGS84
HMS Pandora	QLD	1791	500	26-Feb-14	11° 22' 19" S	143° 59' 16" E	WGS84
Gothenburg	QLD	1875	200	26-Feb-14	19° 21' 59" S	148° 03' 25" E	WGS84
Llewellyn	QLD	1919	500	02-Sep-98	21° 00' 13" S	149° 30' 21" E	WGS84

HMCS Mermaid	QLD	1829	797	13-Jan-09	17° 12' 04" S	146° 17' 18" E	GDA94
AHS Centaur	QLD	1943	797	18-Jan-10	27° 16' 58" S	153° 59' 13" E	WGS84
I-124 (Japanese submarine)	NT	1942	797	14-Jun-90	12° 07' 12" S	130° 06' 23" E	WGS84
SS Macumba	NT	1943	797	15-Nov-17	11° 22' 33" S	134° 36' 33" E	WGS84
SS Florence D	NT	1942	797	16-Apr-09	11° 13' 06" S	130° 05' 27" E	GDA94
Sanyo Maru	NT	1937	797	24-Jul-13	11° 41' 30" S	134° 36' 40" E	WGS84
SMS Emden	Indian Ocean	1914	500	26-Feb-14	11° 50' 40" S	96° 49' 13" E	WGS84
Zuytdorp	WA	1712	500	26-Feb-14	27° 11' 10" S	113° 56' 11" E	GDA94
HMAS Sydney II	WA	1941	797	11-Nov-08	26° 14' 39" S	111° 12' 48" E	GDA94
HSK Kormoran	WA	1941	See (b)	11-Nov-08	See (b)	See (b)	GDA94
Historic Shipwrecks in State waters							
HMVS Cerberus	VIC	1926	See (c)	13-Aug-09	37° 58' 03" S	145° 00' 28" E	WGS84
Clarence	VIC	1850	100	13-Aug-09	38° 12' 09" S	144° 43' 24" E	WGS84
Joanna	VIC	1857	100	13-Aug-09	38° 12' 29" S	144° 43' 48" E	WGS84
SS City of Launceston	VIC	1865	250	13-Aug-09	38° 04' 37" S	144° 49' 35" E	WGS84
William Salthouse	VIC	1841	250	13-Aug-09	38° 16' 23" S	144° 42' 20" E	WGS84
Will O' the Wisp	VIC	1853	50	13-Aug-09	38° 14' 29" S	144° 42' 04" E	WGS84
Zanoni	SA	1867	550	21-Jun-84	34° 30' 49" S	138° 03' 43" E	AGD66

Table notes:

- (a) *Cato* is located within the protected zone declared around *HMS Porpoise*.
- (b) *HSK Kormoran* is in the Indian Ocean contained within and bounded by:
- commencing at the point of latitude 26° 05' 18" S, longitude 111° 04' 10" E
 - thence east along the parallel of latitude 26° 05' 18" S to its intersection with the meridian of longitude 111° 04' 38" E
 - thence south along the meridian of longitude 111° 04' 38" E to its intersection with the parallel of latitude 26° 6' 36" S
 - thence west along the parallel of latitude 26° 6' 36" S to its intersection with the meridian of longitude 111° 04' 10" E
 - thence north along the meridian of longitude 111° 04' 10" E to the point of commencement
- (c) An area of 0.50 hectares containing the wreck of the *HMVS Cerberus*, having its centre point amended to the location stated above, and more particularly described being contained in a rectangle, having its longer sides each parallel to, and at a distance of 25 metres either side of the longitudinal centre-line (which is described by an imaginary line drawn between the peak of the bow and the peak of the stern) of the wreck and its shorter sides each at a distance five metres to seaward from the peak of the bow and the peak of the stern respectively.
4. Newly discovered shipwrecks or relics, or damage to historic shipwrecks, should be reported to the relevant State agency or the Commonwealth Historic Shipwrecks Officer via the relevant online submission form or via the contact details provided in Section 5.8.3.

Website:	www.environment.gov.au/heritage/publications/shipwreck-forms-permits.html
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5.8.2 PROMULGATION

- The following wrecks are shown on Australian Electronic Navigational Charts (ENC) and Paper Nautical Charts (PNC):
 - all reported shipwrecks

- wrecks with protected zones or prohibited areas
- sites with moorings marking the location
- sites considered dangerous to safe navigation of ships operating in their normal mode, meaning sites which:
 - lie in shipping channels
 - are considered hazardous to trawl fishing operations
 - are considered hazardous to submarine operations

2. The Australian National Shipwreck Database (ANSDB) is published on the DEE website.

5.8.3 CONTACTS

COMMONWEALTH Commonwealth Historic Shipwrecks Officer Department of the Environment and Energy	Telephone: +61 2 6274 2116 Email: andrew.viduka@environment.gov.au Website: www.environment.gov.au/heritage/historic-shipwrecks
QUEENSLAND QLD Department of Environment and Science - Heritage Branch	Telephone: 13 QGOV (13 74 68) Aust only +61 7 3405 0970 (International callers) Email: archaeology@des.qld.gov.au Website: www.environment.des.qld.gov.au
NEW SOUTH WALES NSW Office of Environment and Heritage - Heritage Branch	Telephone: + 61 2 9873 8552 Email: maritime.heritage@environment.nsw.gov.au Website: www.environment.nsw.gov.au/MaritimeHeritage/index.htm
VICTORIA Department of Environment, Land, Water and Planning	Telephone: +61 3 9938 6894 Email: heritage.victoria@delwp.vic.gov.au Website: www.heritage.vic.gov.au
TASMANIA Tasmanian Parks and Wildlife Service - Historic Heritage Section	Telephone: +61 3 6165 4220 Email: mike.nash@parks.tas.gov.au Website: www.parks.tas.gov.au
SOUTH AUSTRALIA SA Department for Environment, Water and Natural Resources - State Heritage Unit	Telephone: +61 8 8124 4960 Email: DENRheritage@sa.gov.au Website: www.environment.sa.gov.au
WESTERN AUSTRALIA Western Australian Museum	Telephone: 1300 134 081 Email: reception@museum.wa.gov.au Website: www.museum.wa.gov.au
NORTHERN TERRITORY NT Department of Lands, Planning and the Environment - Heritage Branch	Telephone: +61 8 8999 5041 Email: david.steinberg@nt.gov.au Website: www.nt.gov.au/leisure/arts-culture-heritage/maritime-heritage
Norfolk Island Norfolk Island Museum	Telephone: (0011) 67 23 23788 Email: info@museums.gov.nf Website: www.norfolkislandmuseum.com.au

Notes:

Notes:

CHAPTER 6 MARINE ENVIRONMENTAL PROTECTION

6.1 MARINE PROTECTED AREAS

1. The Australian Government identifies, declares and manages marine parks in Commonwealth waters. Commonwealth waters are those waters that start where State and Territory jurisdiction ends and extend out to the boundary of Australia's Exclusive Economic Zone (EEZ), typically 200nm from the low water line. State and Territory waters generally cover waters out to 3nm.

6.1.1 PARTICULARLY SENSITIVE SEA AREAS

1. The International Maritime Organization (IMO) declared the Great Barrier Reef (GBR) region a Particularly Sensitive Sea Area (PSSA) in 1990. This was extended to the Torres Strait in 2005 and to the South West Coral Sea in 2015. The PSSA designation recognises that these areas are vulnerable to damage by international shipping activities. Special protection measures including Australia's system of pilotage, ship routing measures and ship reporting requirements apply to shipping activities in areas of the PSSA. For further information regarding the Great Barrier Reef Marine Park (GBRMP) see Section 6.3.

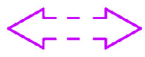
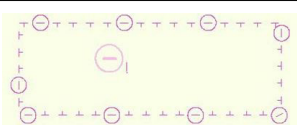
6.1.2 ENVIRONMENTALLY SENSITIVE SEA AREAS

1. Environmentally Sensitive Sea Areas (ESSA) have specific environmental protective measures that apply to domestic commercial activities including tourism, fishing, mining, as well as scientific and recreational purposes. To undertake these activities in an ESSA, an authorisation must be obtained from the Director of National Parks. ESSA are marked upon charts. However there are no restrictions upon international shipping activities or commercial vessels when undertaking voyages in conformance with MARPOL, the main international convention aimed at the prevention of marine pollution from ships, and International Convention for the Safety of Life at Sea (SOLAS). Vessels should note the environmental significance of ESSA and take extra care while transiting through these areas. For further information regarding the Great Barrier Reef Marine Park see Section 6.3.

6.1.3 DEPICTION OF MARINE PROTECTED AREAS ON CHARTS

1. Where appropriate and practical, marine protected areas are charted as ESSA or Antarctic Specially Protected Areas (ASPA). Australian charts include the outer limits of the area, the outer limits of navigation restrictions, and chart notes. Mariners are advised to seek guidance on the specific restrictions within these areas from the responsible agency.

NP5011 / 5012 Reference	Description	Encoded on an ENC as:	Display on ECDIS (Symbolised)	Symbol
N22	Particularly Sensitive Sea Area	Administration Area		<i>PSSA (see GBRMP Note)</i>
N22	Great Barrier Reef Marine Park	Administration Area		<i>GBRMP (see Note)</i>
N22	Environmentally Sensitive Sea Area	Restricted Area		<i>ESSA (see Note)</i>
N22	Environmentally Sensitive Sea Area	Administration Area		<i>ESSA (see Note)</i>
N1.2	Designated Shipping Area	Administration Area		<i>DSA (see Note)</i>

M28.2	Two-Way Route	Two-Way Route Part		
N22	Marine Reserve	Restricted Area		N/A

2. For examples of depiction of the various overlapping zones affecting shipping in the GBR, see Section 6.3.

6.2 MARINE PARKS IN COMMONWEALTH WATERS

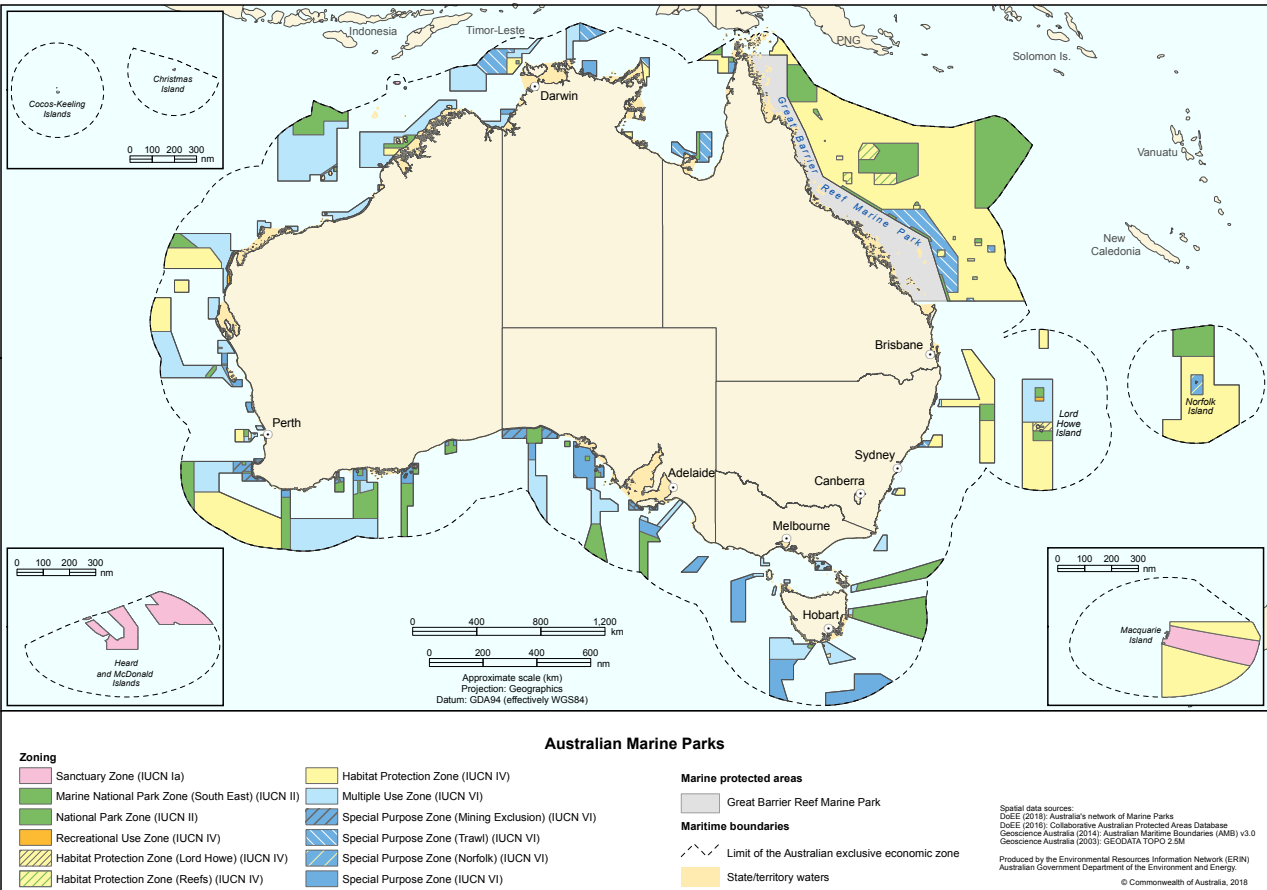
1. This section provides information related to the 58 Australian Marine Parks (AMPs) and Heard and McDonald Islands Marine Reserve. For information regarding the GBRMP see Section 6.3.

Transiting Vessels

2. An authorisation is not generally required for transiting in marine parks in Commonwealth waters (as shown in the diagram below), but there may be restrictions on transiting in some sensitive areas. Generally vessel transit is allowed in AMPs without a permit. In cases where transit is not allowed this is encoded in the ENC.

Commercial Operations within Marine Parks

3. However an authorisation may be required for some commercial operations in AMPs and Heard and McDonald Islands Marine Reserve. For instance, disembarking passengers in AMPs is deemed to be a commercial operation and would require approval. Mariners are advised that anchoring and discharge of waste is restricted in marine parks in Commonwealth waters. For details about the rules applying to AMPs, mariners need to contact Parks Australia in the Department of the Environment and Energy (DEE) or visit the Parks Australia website.



Website: parksaustralia.gov.au/marine/

6.2.1 ORGANISATIONS RESPONSIBLE FOR MARINE PARKS IN COMMONWEALTH WATERS

- The Australian Government organisations responsible for declaring and managing marine parks in Commonwealth waters in their jurisdictions are listed below.

Parks Australia	Telephone: +61 419 293 465 Website: parksaustralia.gov.au/marine/
Great Barrier Reef Marine Park Authority	Telephone: + 61 7 4750 0700 Email: info@gbmpa.gov.au Website: www.gbmpa.gov.au
Australian Antarctic Division	Telephone: +61 3 6232 3209 Website: www.antarctica.gov.au

6.2.2 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT PERMITS

- There are numerous activities that require permits under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (*EPBC Act*), including:
 - activities on Commonwealth land or in the Commonwealth marine area (see Section 5.4.6) that may affect a member of a listed or threatened species or ecological community, a listed migratory species, or a listed marine species. It is an offense to kill, injure, take, trade, keep or move a member of a listed species without a permit. However the results of an unavoidable accident is not an offense provided the person responsible reports the accident to the DEE within seven days
 - whale watching (this includes whales, dolphins and porpoises)
 - other activities which may affect whales, dolphins or porpoises inside or outside the Australian Whale Sanctuary. It is an offense to kill, injure, take, trade, keep, move or interfere with whales, dolphins or porpoises without a permit
 - activities involving the movement of wildlife or product made from wildlife, into or out of Australia

Website:	www.environment.gov.au (Permits and Assessments Tab)
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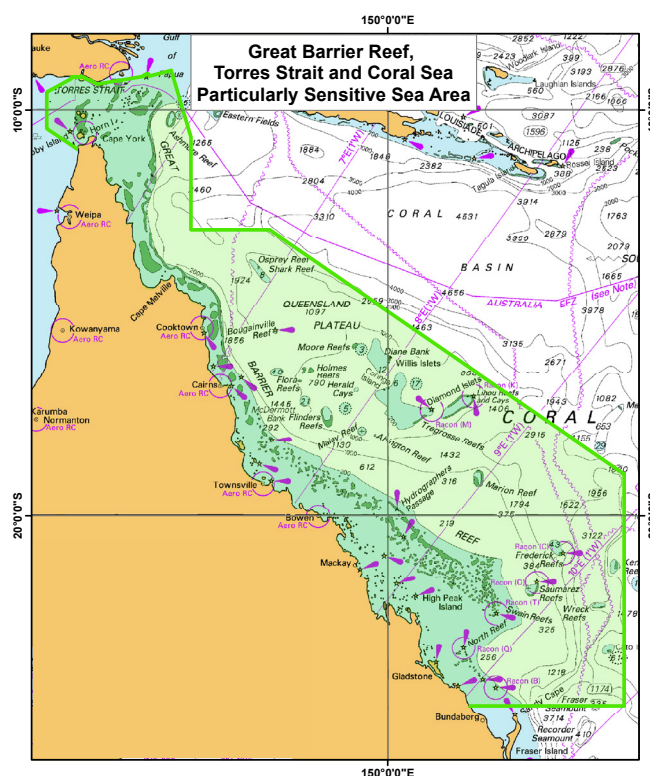
6.2.3 MARINE COMPONENTS OF COMMONWEALTH NATIONAL PARKS

- The Director of National Parks (through Parks Australia) is responsible for the management of the following terrestrial Commonwealth national parks established under the *EPBC Act*, which include a marine component:
 - Booderee National Park
 - Christmas Island National Park
 - Norfolk Island National Park
 - Pulu Keeling National Park
- Information is available on the website below about the marine components of these parks, including activities that are permitted/prohibited within the areas, protected area management, permit requirements and processes for controlled activities.

Website:	www.environment.gov.au/topics/national-parks
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6.3 THE GREAT BARRIER REEF AND TORRES STRAIT

1. The Great Barrier Reef (GBR) is the largest coral reef ecosystem and the world's largest living structure. It stretches 2300 kilometres from Lady Elliot Island in the south to the tip of Cape York Peninsula in the north, spanning 14° of latitude. Contrary to its name, the GBR is not one long continuous reef, but a complex range of approximately 2900 reefs, 900 islands, lagoons, seagrass meadows and mangrove forests. It hosts approximately 1500 species of fish, 360 species of hard corals, over one third of the world's soft coral species, 5000 mollusc species, six of the world's seven marine turtle species, and more than 30 species of marine mammals.
2. Due to its international importance, the GBR is both a Marine Park (GBRMP) and World Heritage Area. Under the World Heritage Convention, Australia has an international obligation to protect and conserve the Great Barrier Reef World Heritage Area for future generations. Included in the World Heritage Area (348 000 square kilometres) are all islands, regardless of tenure, and Queensland (QLD) internal waters. Over much of the GBR and Torres Strait area discharges are prohibited under the International Convention for the Prevention of Pollution from Ships (MARPOL) see Section 6.7.
3. The GBRMP was established under the *Great Barrier Reef Marine Park Act 1975* (Cth) (GBRMP Act). The GBRMP Act confers responsibility for the management of the GBRMP upon the Great Barrier Reef Marine Park Authority (GBRMPA), an Australian Government statutory agency.
4. The Australian and QLD Governments have a cooperative and integrated approach to the management of the GBRMP. The GBRMPA is responsible for the overall planning and management of the GBRMP whilst the field based management of the GBRMP (and adjacent QLD Marine Parks and island national parks) is carried out in partnership with QLD State agencies. Maritime Safety Queensland (MSQ), the QLD Water Police, the Department of Home Affairs (DHA), and Australian Maritime Safety Authority (AMSA) also conduct other day to day management activities in the GBRMP such as enforcement, surveillance, monitoring and education.
5. A combination of legislative and educational mechanisms are used to manage the GBRMP. These include:
 - The *Great Barrier Reef Marine Park Zoning Plan 2003* (Zoning Plan) defines certain activities which are allowed. Before any activity is undertaken in the GBRMP it is essential to check the *Great Barrier Reef Marine Park Zoning Plan 2003* or the Activities Guide (page 80) to see if the activity is allowed, and whether the activity requires a Marine Park Permit. Activities generally fall into one of the four categories:
 - ships transiting using the Designated Shipping Area (DSA) or General Use Zone (GUZ)
 - permission or notification not required
 - notification required before undertaking activity
 - those requiring special permit
 - Management plans for intensively used areas, or particularly vulnerable groups of islands and reefs, and for the protection of vulnerable species or ecological communities. These management plans provide greater detail than can be accomplished by the broader GBRMP Zoning Plan. Current plans in effect include:
 - *Shoalwater Bay (Dugong) Plan of Management 1997*



- *Cairns Area Plan of Management 2008*
- *Whitsundays Plan of Management 1998 - Includes the 2017 amendment as in force 1 January 2018*
- *Hinchinbrook Plan of Management 2004*
- The *Great Barrier Reef Marine Park Zoning Plan, 2003* makes provision to set up temporary Special Management areas if required. These provide a responsive and flexible approach to implementing appropriate management strategies at various sites in the GBRMP. They are an additional layer on top of zoning. A special management area may be designated for a number of reasons including:
 - conservation of a particular species or natural resource (e.g. turtle, dugong, bird nesting sites or fish spawning aggregation sites)
 - public safety
 - to ensure opportunities for appreciation by the public
 - response to an emergency (e.g. a ship grounding, oil spill or marine pest outbreak)
- 6. Best environmental practices or responsible reef practices are designed to complement rather than duplicate, legal requirements of environmentally responsible ways to conduct activities such as anchoring near corals and no anchoring areas, fuel transfer, waste water disposal and marine wildlife watching.

6.3.1 GREAT BARRIER REEF MARINE PARK DESIGNATED SHIPPING AREAS

1. Ships may transit the GBRMP through the GUZ or the DSA. The GUZ or the DSA may be used or entered without permission for the navigation of a ship, subject to any requirements for a compulsory pilot, or if any equipment that is normally used for fishing or collecting is stowed or secured when the vessel is in part of the zone in which the use of the equipment is not permitted. A ship is generally defined as a vessel greater than 50 metres in overall length.
2. Ship operators require a permit from GBRMPA to navigate outside the DSA and GUZ.
3. For further details regarding the definition of a DSA see Section 7.9.5 and the *Great Barrier Reef Marine Park Regulations 1983* (Section 3.1.11).

6.3.2 GREAT BARRIER REEF MARINE PARK ZONING PLANS

1. Zoning plans provide a framework for the protection of critical habitats and the management of human use, particularly extractive activities such as fishing and collecting. For each zone, certain activities are allowed 'as of right' whereas some activities require a permit. Significant penalties apply for contravention of the Zoning Plan, especially in relation to fishing and environmental damage caused by the operation of a vessel.
2. For details of the DSA and GUZ see Section 6.3.1.

6.3.3 ACTIVITIES WHICH MAY BE UNDERTAKEN WITHOUT PERMISSION OR NOTIFICATION

1. In relation to other maritime activities, a zone may be used or entered:
 - in an emergency, for any of the following purposes:
 - to investigate and respond to an emergency alert
 - to save human life or avoid the risk of injury to a person
 - to locate or secure the safety of an aircraft, vessel or structure that is, or may be, endangered by stress of weather or by navigational or operational hazards
 - to carry out emergency repairs to a navigational aid
 - to deal with a threat of pollution to the marine environment under Commonwealth law or a national emergency response arrangement in which GBRMPA participates

- under Commonwealth law, to remove or salvage a vessel or an aircraft, or a section of a vessel or an aircraft, or other wreck, that is wrecked, stranded, sunk or abandoned and poses a threat to the marine environment or safety
- by a traditional owner for an activity not involving the taking of plants, animals or marine products, for the purposes of Aboriginal or Torres Strait islander custom or tradition
- to perform functions and exercise powers under the GBRMP Act, the Regulations or a Plan of Management
- to enforce a law of the Commonwealth or QLD by a person authorised under that law, or under another law of that kind
- to carry out reconnaissance or surveillance for the Australian or QLD Government

6.3.4 ACTIVITIES WHICH MAY BE UNDERTAKEN FOLLOWING NOTIFICATION

1. A zone may be used or entered after notification to GBRMPA and subject to any directions given for any of the following purposes:
 - for a non-emergency, to remove or salvage a vessel or an aircraft, or a section of a vessel or an aircraft, or other wreck, that is wrecked, stranded, sunk or abandoned
 - to construct, operate or service navigational aids, and their ancillary buildings and works, that are authorised under a law of the Australian or QLD Governments, including the operation of vessels and aircraft for those purposes
 - to remove, in accordance with an order under the Regulations (being an order to which section 38H of the Act applies) or a deed of agreement, property described in the order or deed
 - to undertake Defence activities that would otherwise require permission under the Zoning Plan
 - to undertake Government surveys
 - to undertake urgent maintenance or works on essential public services (including power, water, sewerage and communication systems), that are authorised under a law of the Australian, QLD or local government authority
 - to deal with an emergency involving a serious threat to the environment, other than a threat mentioned in subparagraph 5.1 (a) (v) or (vi) of the *Great Barrier Reef Zoning Plan 2003*
2. Visit the GBRMPA website for more information about the *Great Barrier Reef Zoning Plan 2003*.

Telephone:	+61 7 4750 0700
Website:	www.gbrmpa.gov.au

6.3.5 ACTIVITIES REQUIRING A PERMIT

1. As a general guide:
 - most commercial activities, including tourist operations
 - installation and operation of structures, such as jetties, marinas, pontoons and aquaculture facilities
 - any works, such as repairs to structures, dredging and dumping of spoil, placement and operation of moorings
 - waste discharge from a fixed structure
 - research except for limited impact research
 - educational programs
2. Most visitors to the GBRMP will NOT require a permit for recreational activities.
3. Permits to conduct activities within the GBRMP are generally issued as joint permits by both the GBRMPA and the QLD Department of Environment and Science. Applications should be lodged as early as possible, preferably four months prior to the date required.

4. See the Activities Guide (page 80) or the GBRMPA's website for permit application forms and further information.

Telephone:	+61 7 4750 0700
Fax:	+61 7 4772 6093
Email:	info@gbmpa.gov.au
Website:	www.gbrmpa.gov.au/zoning-permits-and-plans/permits

5. For information about activities undertaken outside of the GBRMP which might affect either the World Heritage Area or any one of a number of protected matters (e.g. endangered species), contact the DEE.

Website:	www.environment.gov.au
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6.3.6 GREAT BARRIER REEF MARINE PARK CRUISE SHIP ACTIVITIES

1. To provide safer navigation through the GBR waters, cruise ships are required under Australian law to carry a licensed pilot in designated compulsory pilotage areas. These areas are:
 - the inner route of the GBR region bounded by the northern boundary of the GBR region, latitude 16°39.91'S, the Australian mainland and the outer edge of the GBR
 - Hydrographers Passage
 - the Whitsundays compulsory pilotage area
2. Cruise ship operators are required to have a Marine Park permit to conduct a tourism program on a cruise ship in the GBRMP. When applying, operators should detail their proposed itinerary and activities to ensure that an appropriate permit is issued.
3. The GBRMPA has identified 34 designated anchorages (for cruise ships) throughout the GBRMP. These anchorages provide access to a range of reefs and islands which meet safety and environmental factors. The anchorages are:
 - Far Northern Management Area of the Marine Park - 11
 - Cairns Area - 7
 - Dunk Island Area - 1
 - Hinchinbrook Area - 2
 - Whitsundays Area - 10
 - Mackay/Capricorn Management Area - 3
4. Some anchorages, such as the far northern anchorages, specifically cater for smaller cruise ships less than 120 metres long and carrying less than 150 passengers.
5. All anchorages must be booked with the GBRMPA prior to use. Generally only one cruise ship is allowed to use a cruise ship anchorage at any one time. Geographical coordinates for the anchorages are available online at the GBRMPA's website.
6. The GBRMPA has also identified nine cruise ship transit corridors that enable cruise ships to transit outside the DSA and GUZ for sightseeing and to discharge waste external to the GBRMP. No anchoring is permitted in these corridors.
7. Visit the GRMPA website for more information.

Email:	cruise.bookings@gbmpa.gov.au
Website:	www.gbrmpa.gov.au
Anchorage and transit corridors	http://elibrary.gbrmpa.gov.au/jspui/handle/11017/3406

ACTIVITIES GUIDE

(see relevant *Zoning Plans* and *Regulations* for details)

	General Use Zone	Habitat Protection Zone	Conservation Park Zone	Buffer Zone	Scientific Research Zone ³	Marine National Park Zone	Preservation Zone
Aquaculture	Permit	Permit	Permit ¹	×	×	×	×
Bait netting	✓	✓	✓ ²	×	×	×	×
Boating, diving, photography	✓	✓	✓	✓	✓ ³	✓	×
Crabbing (trapping)	✓	✓	✓ ⁴	×	×	×	×
Harvest fishing for aquarium fish, coral and beachworm	Permit	Permit	Permit ¹	×	×	×	×
Harvest fishing for sea cucumber, trochus, tropical rock lobster	Permit	Permit	×	×	×	×	×
Limited collecting	✓ ⁵	✓ ⁵	✓ ⁵	×	×	×	×
Limited spearfishing (snorkel only)	✓	✓	✓ ¹	×	×	×	×
Line fishing	✓ ⁶	✓ ⁶	✓ ⁷	×	×	×	×
Netting (other than bait netting)	✓	✓	×	×	×	×	×
Research (other than limited impact research)	Permit	Permit	Permit	Permit	Permit	Permit	Permit
Shipping (other than in a designated shipping area)	✓	Permit	Permit	Permit	Permit	Permit	×
Tourism programme	Permit	Permit	Permit	Permit	Permit	Permit	×
Traditional use of marine resources	✓ ⁸	✓ ⁸	✓ ⁸	✓ ⁸	✓ ⁸	✓ ⁸	×
Trawling	✓	×	×	×	×	×	×
Trolling	✓ ⁶	✓ ⁶	✓ ⁶	✓ ^{6,9}	×	×	×

PLEASE NOTE: This guide provides an introduction to Zoning in the Great Barrier Reef Marine Parks.

1. Restrictions apply to aquaculture, spearfishing and harvest fishing for aquarium fish, beachworm and coral in the Conservation Park Zone.
2. No take of bream, flathead or whiting by commercial bait netters.
3. Except for One Tree Island Reef (SR-23-2010) and Australian Institute of Marine Science (SR-19-2008) which are closed to public access and shown as orange, all other Scientific Research Zones are shown as green with an orange outline.
4. Limited to 4 catch apparatus per person (eg. crab pots, collapsible traps or dillies).
5. By hand or hand-held implement and generally no more than 5 of a species.
6. Maximum of 6 hooks attached to no more than 3 hand-held rods or handlines per person.
7. Limited to 1 hook attached to 1 hand-held rod or handline per person. Only 1 dory detached from a commercial fishing vessel.
8. Apart from traditional use of marine resources in accordance with s.211 of the *Native Title Act 1993*, an accredited Traditional Use of Marine Resources Agreement or permit is required.
9. Pelagic species only. Seasonal Closures apply to some Buffer Zones.

Detailed information is contained in the *Great Barrier Reef Marine Park Zoning Plan 2003* and *Regulations* and the *Marine Parks (Great Barrier Reef Coast) Zoning Plan 2004*.

- Permits are required for most other activities not listed above.
- Commonwealth owned islands in the Great Barrier Reef Marine Park are zoned "Commonwealth Islands Zone" - shown as cream.
- All Commonwealth Islands may not be shown.
- Special Management Areas may provide additional restrictions at some locations.
- The Zoning Plan does not affect the operation of s.211 of the *Native Title Act 1993*.

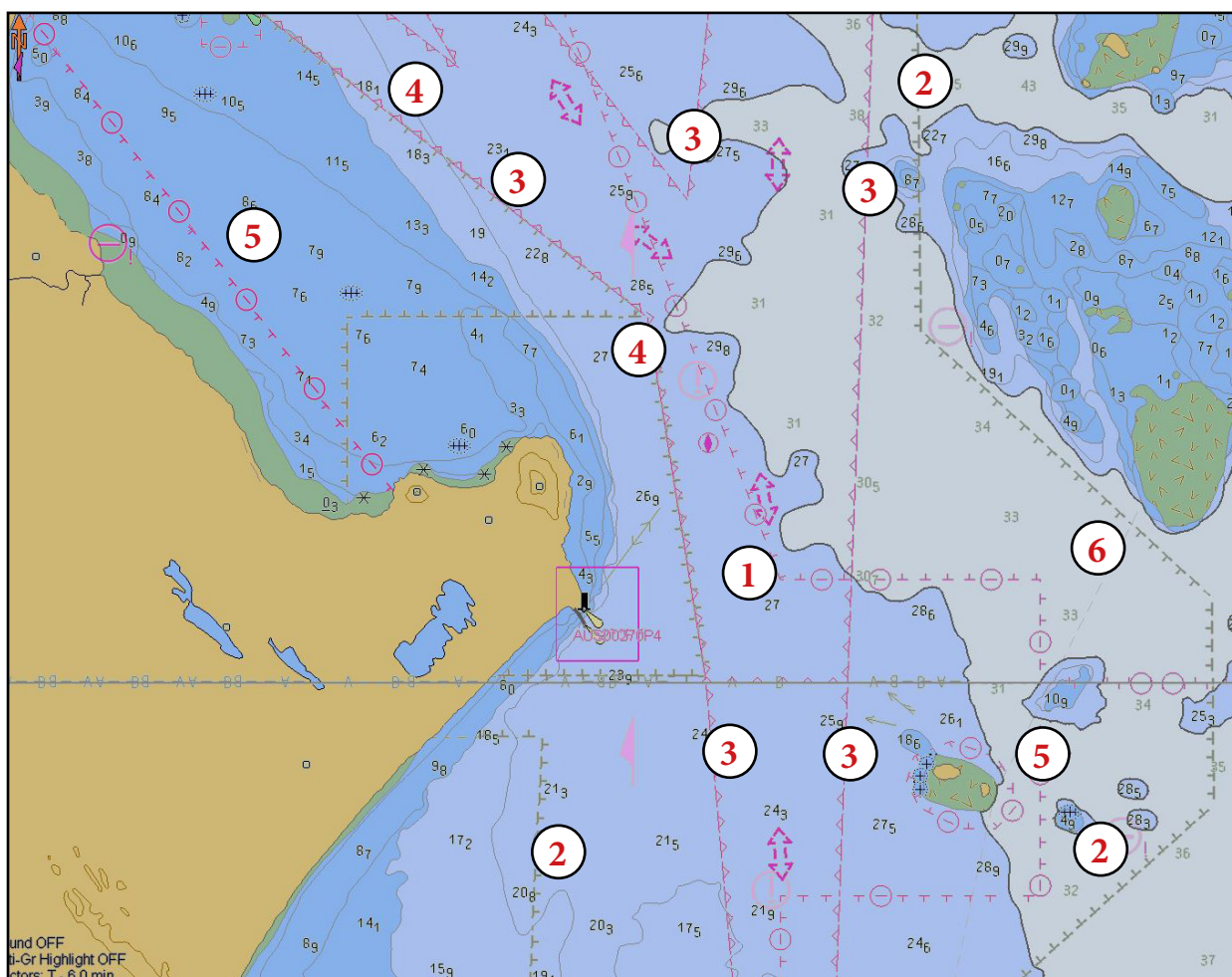
ACCESS TO ALL ZONES IS PERMITTED IN AN EMERGENCY.

Source: Great Barrier Reef Marine Park Authority

6.3.7 GREAT BARRIER REEF MARINE PARK ZONE DEPICTION ON CHARTS

1. The following bounded areas on page 82 and page 83 are shown on Australian charts covering the GBRMP:
 - the GBRMP outer boundary - to alert mariners when they are entering the area in which Marine Park restrictions apply
 - the DSA - where in addition to the GUZ of the GBRMP, vessel transit is allowed through other GBRMP zones. Mariners should note that the 'shaded' side of the boundary indicates which side of the boundary navigation should be undertaken
 - the Two-Way Route - the preferred route to be followed by ships transiting the reef, taking into account the Coastal Passage Plan, navigation safety considerations and quality of hydrographic surveys
 - port limits
 - marine reserve limits - on ENC only - areas where higher levels of restrictions on activities may apply, see Section 6.1.3

GBRMP zone depiction on ENC

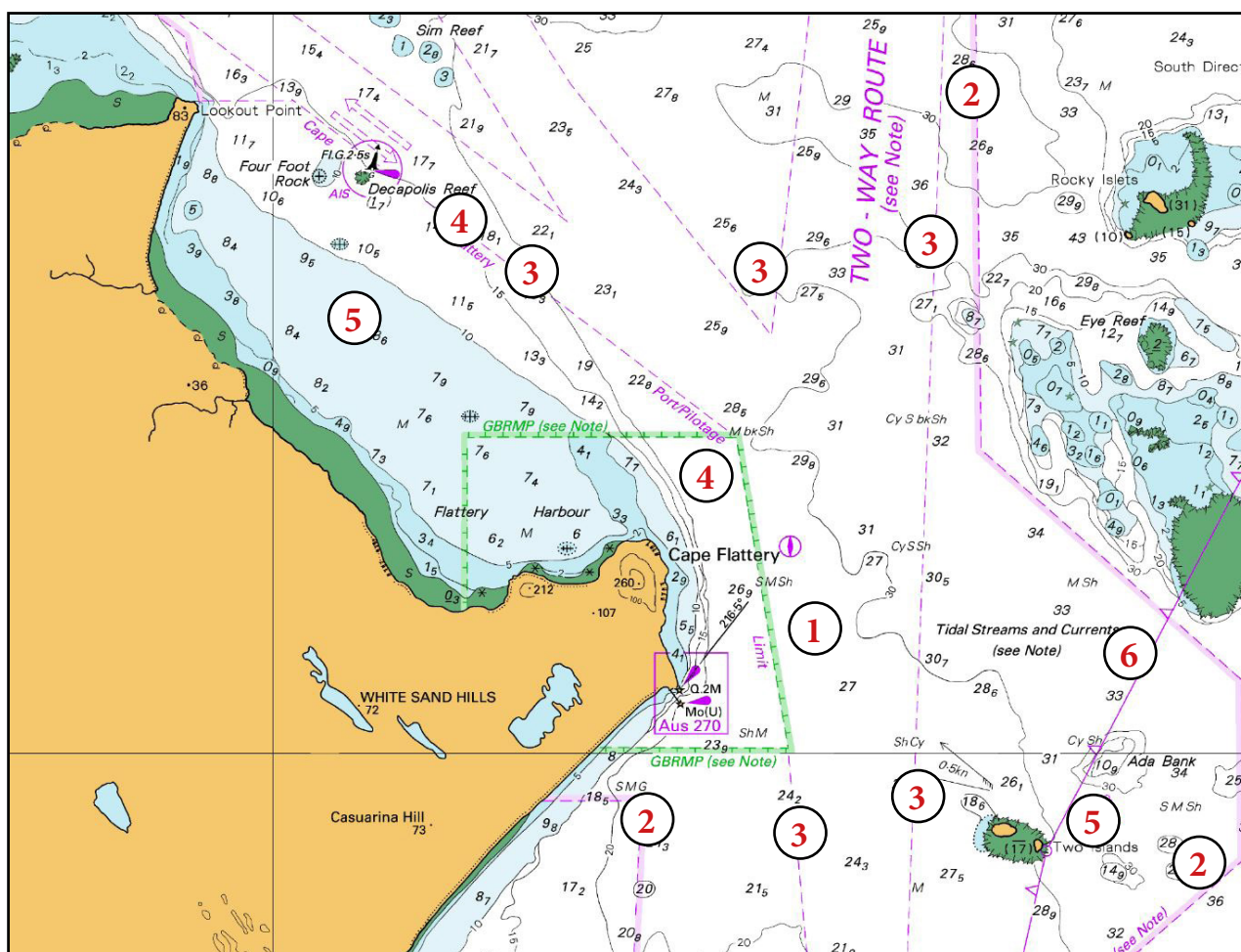


Note: ECDIS display settings can alter the level of displayed content. The following image shows an ENC in standard display mode, with the following additional display groups added:

- Additional boundaries
- Depth contours
- Soundings

1	ESSA boundary (inner limit of GBRMP shown here)
2	DSA (limit for normal transit through GBRMP)
3	Two-Way Route (limit of navigationally preferred route through GBRMP)
4	Port Limit
5	Marine reserve limit with greater restrictions than in GUZ (not shown on paper charts)
6	Territorial Sea Baseline

GBRMP zone depiction on Paper Nautical Charts (PNC)



1	ESSA boundary (inner limit of GBRMP shown here)
2	DSA (limit for normal transit through GBRMP)
3	Two-Way Route (limit of navigationally preferred route through GBRMP)
4	Port Limit
5	Marine reserve limit with greater restrictions than in GUZ (not shown on paper charts)
6	Territorial Sea Baseline

6.4 WHALES AND DOLPHINS

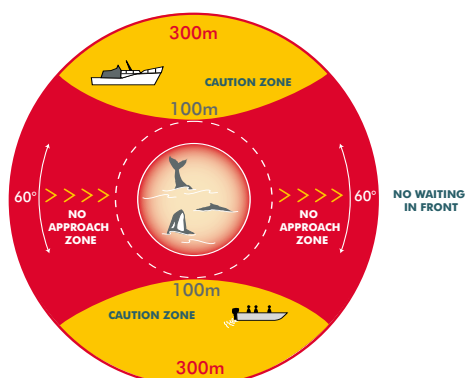
1. Cetaceans (including porpoises, dolphins and whales) in Commonwealth waters have been protected under Australian legislation since 1980. The *EPBC Act* established the Australian Whale Sanctuary that comprises the waters of the EEZ.
2. It is an offense to kill, interfere with, injure, take, trade, keep or move a cetacean in the Australian Whale Sanctuary. Interference with a cetacean includes harassing, chasing, herding, tagging, marking or branding. It is also an offense for an Australian to perform these activities beyond the Australian Whale Sanctuary without a permit. Activities for which permits may be granted under the *EPBC Act* include whale watching, interference, take, keep or move, export and import.
3. Regulations for watching whales and dolphins are in place in all Australian waters. These aim to minimise disturbance and interruptions to the normal behavioural patterns of the animals. The following diagrams give the minimum approach distances and show the best strategies for vessels to approach whales and dolphins. Whales and dolphins may come close to vessels. In this instance ship masters should take all precautions to avoid a collision, either slow down and steer straight away from the animal, or place the engines in neutral and let the animal pass.
4. People wishing to observe whales for commercial whale watching, scientific or educational purposes, must apply for a permit from the relevant State agencies and/or the DEE. For reporting requirements relating to cetaceans see website below.

Website:	www.environment.gov.au/marine/marine-species/cetaceans/notification-interactions
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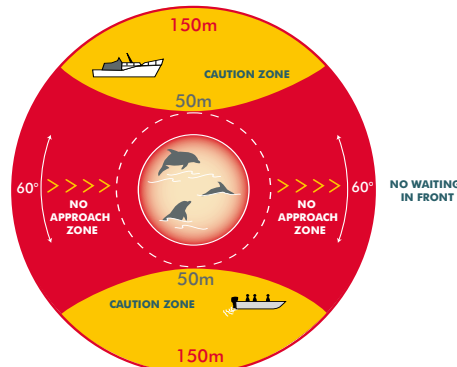
5. The table below (from AMSA Marine Notice 15 - 2016) identifies the location and time that the five whale species currently listed under the *EPBC Act* as nationally threatened are found in Australian waters.

Species	Where	When
Blue Whale (endangered)	Australian waters as far north as Scott Reef, the Kimberley and Pilbara regions of north-west Australia, and as far south as south-west Australia, across the Great Australian Bight, and to waters as far east as off Tasmania. Feeding grounds are known to occur in the Perth Canyon off southern Western Australia, and the upwelling system of the eastern Great Australian Bight and adjacent waters off Tasmania.	November to May.
Southern Right Whale (endangered)	Occur along the southern coastline including Tasmania, generally as far north as Sydney on the east coast and Perth on the west coast. There are occasional occurrences further north, with the extremities of their range recorded as Hervey Bay, Queensland and Exmouth, Western Australia. Large aggregation areas include the Doubtful Island Bay and Israelite Bay areas in Western Australia and Head of Bight in South Australia; smaller aggregation areas include Yokinup Bay in Western Australia and the Warrnambool region in Victoria. The migratory paths between Australian waters and feeding areas to the south of Australia are not well understood.	May to November.
Humpback Whale (vulnerable)	Migrate along the east and west coasts of Australia, with their core range including all Australian waters, except those off the Northern Territory. Known calving areas include the Southern Kimberley between Broome and the northern end of Camden Sound in north-west Western Australia; and the Great Barrier Reef between approximately 14° S and 27° S.	May to November.
Sei Whale (vulnerable)	All Australian waters.	Migration patterns are poorly known.
Fin Whale (vulnerable)	The full extent of their distribution in Australian waters is uncertain, but they occur within Commonwealth waters and have been recorded in most state waters.	Migration patterns are poorly known.

Approach distances for whales



Approach distances for dolphins



Source: Department of the Environment and Energy

Printed copies of this electronic document are considered uncontrolled. Please refer to the AHO website for the latest version.
Mariner's Handbook for Australian Waters NTM Edition 22 25th October 2024

6.5 STATE MARINE PARKS

6.5.1 ORGANISATIONS RESPONSIBLE FOR MARINE PROTECTED AREAS

1. State and Territory Government organisations responsible for declaring and managing marine reserves in their jurisdictions.

QUEENSLAND Department of Environment and Heritage Protection	Telephone: 13 74 68 (Australia only) Email: info@des.qld.gov.au Website: https://environment.des.qld.gov.au/
NEW SOUTH WALES - including Jervis Bay Department of Primary Industries	Telephone: 1300 550 474 (Australia only) Email: marine.environment@dpi.nsw.gov.au Website: www.mpa.nsw.gov.au App: Search for DPI FishSmart
VICTORIA Department of Environment, Land, Water and Planning Parks Victoria	Telephone: 136 186 (Australia only) +61 3 5332 5000 Website: www.delwp.vic.gov.au Telephone: 13 1963 (Australia only) +61 3 8627 4699 Email: info@parks.vic.gov.au Website: www.parkweb.vic.gov.au
TASMANIA Department of Primary Industries, Parks, Water and Environment	Telephone: +61 3 6165 3233 1300 368 550 (Australia only) Email: fishing.enquiries@dpipwe.tas.gov.au Website: www.dpipwe.tas.gov.au
SOUTH AUSTRALIA Department of Environment Water and Natural Resources	Telephone: +61 8 8204 1910 Email: DEWNRmarine@sa.gov.au Website: www.environment.sa.gov.au
WESTERN AUSTRALIA Department of Fisheries WA WA Department of Parks and Wildlife WA Department of Biodiversity, Conservation and Attractions	Telephone: 1300 374 731 Fax: +61 8 9482 7389 Website: www.fish.wa.gov.au Telephone: +61 8 9219 9000 Email: enquiries@dbca.wa.gov.au Website: www.dpaw.wa.gov.au Website: www.dbca.wa.gov.au
NORTHERN TERRITORY Department of Primary Industry and Fisheries	Telephone: +61 8 8999 2144 Fax: +61 8 8999 2065 Email: fisheries@nt.gov.au Website: https://nt.gov.au/marine

6.5.2 SOUTH AUSTRALIAN MARINE PARKS

1. The South Australian (SA) Government has established 19 marine parks within state waters, to 3nm, in waters of Spencer Gulf and Gulf St Vincent. Marine parks in SA have been zoned for multiple uses, providing for varying levels of conservation, recreational and commercial use. Zoning provides the basis for the management of marine parks, in accordance with the objects of the state's legislation, *Marine Parks Act 2007*.
2. Marine parks are managed by the SA Department of Environment, Water and Natural Resources (DEWNR). As certain restrictions apply in the zones mariners should check the website below for more details (see Section 6.5.1 - contact details).

website:	www.environment.sa.gov.au/marineparks/home
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6.6 AUSTRALIAN ANTARCTIC TERRITORY

6.6.1 NAVIGATING NEAR ANTARCTICA

1. The Antarctic environment is very vulnerable to human impacts. Parties to the Antarctic Treaty have adopted the *Protocol on Environmental Protection to the Antarctic Treaty* (the Environmental Protocol). The Environmental Protocol:
 - designates Antarctica as a natural reserve, devoted to peace and science
 - establishes environmental principles for the conduct of all activities
 - subjects all activities to prior assessment of their environmental impacts
 - requires the development of contingency plans to respond to environmental emergencies
 - provides for the elaboration of rules relating to liability for environmental damage
2. Australia gives legislative effect to the *Environmental Protocol through the Antarctic Treaty (Environment Protection) Act 1980* (Cth) (the *ATEP Act*) and its associated regulations. The *ATEP Act* applies to Australian citizens, expeditions, organisations and property within the Antarctic (defined as the area south of 60° south latitude).
3. The *ATEP Act* provides for the establishment of Antarctic Specially Protected Area (ASPAs) to protect outstanding environmental, scientific, historic, aesthetic or wilderness values and scientific research. The *ATEP Act* also provides for the establishment of Antarctic Specially Managed Areas (ASMAs) to assist in the planning and coordination of activities, avoid possible conflicts, improve co-operation between Parties or minimise environmental impacts. Several ASPA and ASMA are located along the Antarctic coastline. Activities in ASPA and ASMA must be conducted in accordance with the relevant area management plan. ASPA may only be entered with a relevant permit or during the course of an emergency. Refer to Section 6.6.2 or contact the Australian Antarctic Division (AAD) for more information.
4. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) is an international agreement that manages marine living resources within its convention area. This Convention area covers waters surrounding Antarctica and waters in the southern Atlantic Ocean and southern Indian Ocean south of the Antarctic convergence. Australia gives legislative effect to CCAMLR through the *Antarctic Marine Living Resources Conservation Act 1981* (Cth).
5. The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) protects the environment from ship caused pollution. Waters south of 60° S are deemed a 'special area' under MARPOL 73/78 where special mandatory methods for the prevention of sea pollution must be applied.

6.6.2 ENVIRONMENTAL IMPACT ASSESSMENT

1. Under the *ATEP Act*, mariners planning to enter Antarctica (all land, ice shelves and water south of 60°S latitude) must contact the AAD or other appropriate national Antarctic program for authorisation prior to entry.
2. The *ATEP Act* requires that an Environmental Impact Assessment (EIA) must be prepared before any activity commences. This requirement applies to any Australians anywhere in Antarctica.
3. The purpose of an EIA is to provide information sufficient to allow assessments of, and informed judgments about, the possible impact on the Antarctic environment of any activity, before that activity occurs. The AAD, on behalf of the Australian Government, is responsible for EIA assessments, authorisations and permits under the *ATEP Act*. Any Australian citizen who intends to conduct activities south of 60°S must have obtained the appropriate authorisation for their activity prior to departure.
4. Mariners wishing to navigate south of 60°S need to demonstrate that their activities have been planned carefully to avoid environmental harm, or to minimise potential detrimental effects on the natural environment. Mariners are encouraged to provide information on the suitability of their vessel to negotiate pack ice and the experience of the vessel's crew.
5. Mariners planning to submit an EIA are strongly advised to contact the AAD Environment Officer at the earliest stages of planning to clarify their EIA obligations (see Section 2.4.1).
6. Full details of Australian Antarctic legislation, instruments, management plans, guidelines and EIA requirements can be obtained from the AAD website.

Website:	www.antarctica.gov.au
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7. Citizens of countries other than Australia should contact the appropriate national Antarctic authority in their country.

6.6.3 POLLUTION

1. The Environmental Protocol and MARPOL 73/78 provide Antarctic waters with a high level of environmental protection. Both contain provisions for the prevention of pollution through the discharge of bilge water, oil and oily mixtures, waste storage, treatment and discharge, sewage storage and treatment and exhaust emissions. Mariners must comply with these protections. They are encouraged to provide information on their pollution control measures in their EIA. Marine Notices should be checked for additional information regarding pollution controls measures in the Antarctic Treaty area.
2. Mariners are encouraged to contact the AMSA for guidance and information on pollution control measures in the Antarctic Treaty area.

6.6.4 BIOSECURITY

1. Antarctic fauna and flora are very vulnerable to human impacts, including the accidental or deliberate introduction of non-native species and diseases. Accordingly, there is a strong focus on biosecurity in Antarctica.
2. The *ATEP Act* includes provisions that aim to prevent the introduction of non-native species and diseases. Mariners are advised that it is illegal to bring into the Antarctic Treaty area any animal, plant, virus, bacterium, yeast or fungus that is not indigenous to the Antarctic unless permitted.
3. Mariners have a responsibility to prevent the introduction of non-native species and diseases to Antarctica. They must be aware that non-native species and diseases may be introduced via uninspected and uncleaned vessels, containers, cases, field equipment, clothing and footwear. All items worn and taken ashore must be carefully checked and cleaned prior to landing.
4. All vessels entering the Antarctic Treaty area must possess and produce a valid Ship Sanitation Certificate prior to departure.
5. Mariners are encouraged to contact the AAD for guidance and information on Antarctic biosecurity.



6.6.5 SHORE LANDING IN ANTARCTICA

1. Ice, glacial terrain, poorly charted approaches and poor weather and sea conditions all impede safe landings in the Antarctic Treaty area. Mariners should therefore not assume that landings would be possible.
2. Special care must be taken not to land in one of the several ASPA located along the Antarctic coastline. ASPA may only be entered with a permit or in an emergency, including saving a person from death or serious injury, or securing the safety of a ship. Contact the AAD for more information.
3. Intentions to undertake landings in Antarctica must be addressed by mariners during the EIA process.
4. Mariners are encouraged to contact the AAD for guidance and information on landings in the Antarctic Treaty area.

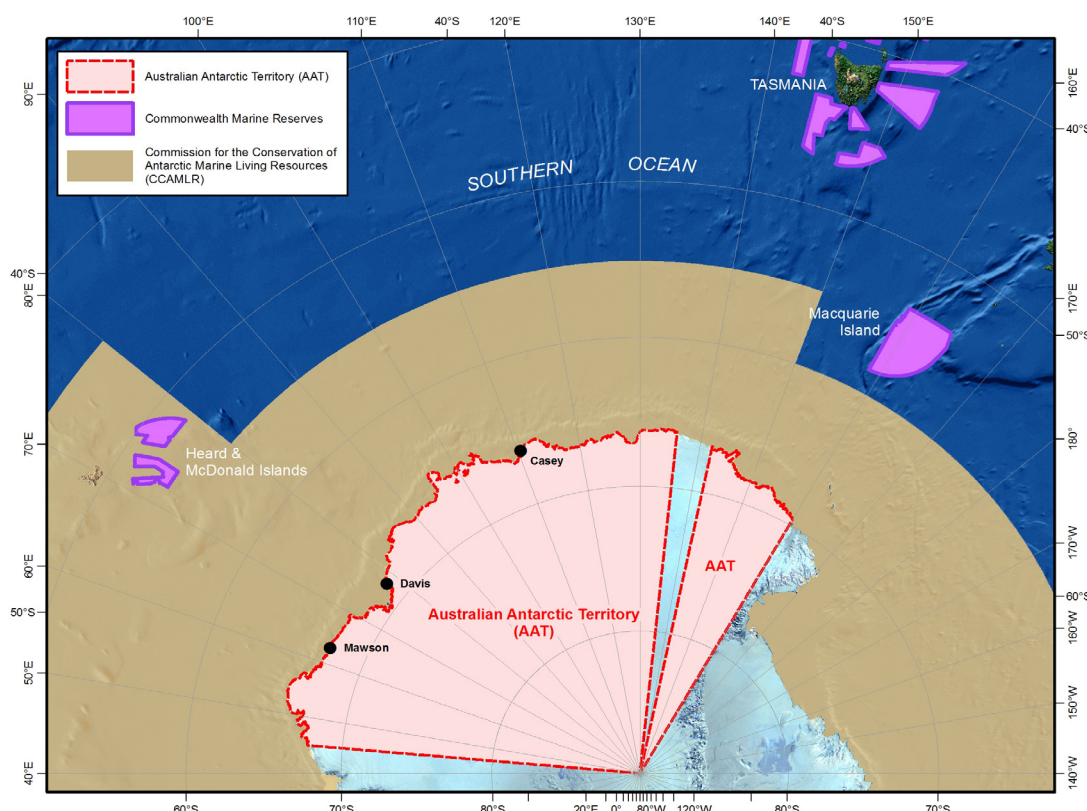
6.6.6 AUSTRALIAN ANTARCTIC STATIONS

1. Australia operates three-year round research stations along the East Antarctic coastline – Casey, Davis and Mawson. Visits to these stations may be arranged through the AAD. Whilst every effort would be made to accommodate visit requests, the AAD must give priority to its operational commitments. Any vessel visiting an Australian station should be totally self-sufficient and must not rely upon the station for assistance.
2. For descriptions of approaches and contact details, refer to the Admiralty Sailing Directions Antarctic Pilot (NP9).
 - Casey Research Station is situated in the Windmill Islands at 66° 16' 57"S 110° 31' 36"E (see ENC AU5AQCAS / PNC Aus 601)
 - Davis Research Station is situated in the south west sector of the Vestfold Hills at 68° 34' 38"S 77° 58' 03"E (see ENC AU4602P0 / PNC Aus 602)
 - Mawson Research Station is situated at the southern end of Horseshoe Harbour at 67° 36' 10"S 62° 52' 26"E (see ENC AU5AQMAW / PNC Aus 600)

6.6.7 AUSTRALIAN SUBANTARCTIC ISLANDS

1. The AAD maintains a year-round station at the northern end of Macquarie Island at 54° 29' 56"S 158° 56' 16"E. Macquarie Island is a part of Tasmania and is administered by the Tasmanian Parks and Wildlife Service, Department of Primary Industries, Parks, Water and Environment. A permit from the Tasmanian Parks and Wildlife Service is needed to visit Macquarie Island.
2. The AAD administers the Australian External Territory of Heard Island and McDonald Islands (the Territory). The Territory is located within the AAD-managed Heard Island and McDonald Islands Marine Reserve (the Reserve). The Reserve is managed pursuant to the Heard Island and McDonald Islands Marine Reserve Management Plan. A permit from the AAD is required to enter the Territory. Certain activities in the Reserve (including scientific research) may only be undertaken pursuant to a permit from the AAD. Only upon the completion of the EIA process may the AAD make a decision to issue permits.

Australian Antarctic Territory (AAT) and Commonwealth Marine Reserves



6.7 INTERNATIONAL CONVENTIONS ON POLLUTION

1. Australia has signed or adopted several international conventions, formulated by the IMO, dealing specifically with ship related marine pollution matters. Conventions and protocols adopted are:
 - MARPOL - International Convention for the Prevention of Pollution from Ships
 - SOLAS 74 - International Convention for the Safety of Life at Sea
 - UNCLOS 82 - United Nations Convention on the Law of the Sea
 - CLC Protocol 92 - International Convention on Civil Liability for Oil Pollution Damage 1992
 - London Convention and Protocol 1972 and 1996 - Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters
 - OPRC 90 and OPRC HNS Protocol - International Convention on Oil Pollution Preparedness, Response and Cooperation 1990
 - AFS Convention 2001 - International Convention on the Control of Harmful Anti-fouling Systems on Ships 2001
 - Intervention Convention 69 - International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969
 - IOPC Funds - The International Oil Pollution Compensation Funds. There are at present two IOPC Funds, the 1992 Fund and the Supplementary Fund
 - Bunkers Convention 2001 - International Convention on Civil Liability for Bunker Oil Pollution Damage 2001
 - BWM Convention 2004 - International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004
2. For more information on current international conventions visit the following website.

Website:	www.imo.org
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6.7.1 ENFORCEMENT OF POLLUTION CONVENTIONS

1. Australia supports a policy of onboard inspection and surveillance to encourage adherence to pollution conventions. Any suspected violation is investigated and appropriate action taken as part of Australia's obligations under MARPOL. Inspectors are empowered to board a vessel and check for evidence of pollution or other violations. Pollution surveillance inspections are coordinated by AMSA.
2. AMSA views deliberate and environmentally damaging actions as serious breaches of domestic law and works closely with other relevant maritime agencies, the Australian Federal Police (AFP) and the Commonwealth Director of Public Prosecutions to prosecute any such offences wherever appropriate.
3. The proper operation of a ship's machinery space oily water separator is part of the essential shipboard procedures to prevent pollution of the sea by oil. AMSA inspectors look closely for any indications that oily water separators are being bypassed. Particular attention is paid to the oil record book, the oily water separator, its pipe work, flanges and associated areas, including wear patterns indicating removal of fittings or fresh painting to cover patterns of this nature. Where an AMSA inspector suspects that the oily water separator is being used improperly the ship may be subject to detention while the inspector makes further inquiries to determine whether it is able to proceed to sea without presenting an unreasonable threat of harm to the marine environment. This may require a more comprehensive investigation to be carried out. AMSA inspectors have full investigative powers under Australia's national MARPOL implementing legislation.
4. The AMSA inspector may give a direction to a ship during a port or Flag State control inspection that a specified quantity of waste oil, noxious liquid substance, sewage or garbage must be discharged within a specified time to port waste reception facilities. This would happen if an opinion is formed that the quantity of waste on board the ship is such that there is a risk of a discharge at sea not permitted under MARPOL. In forming this opinion, the inspector will consider issues such as:
 - capacity and contents of the ship's waste holding tanks or compartments
 - likely waste production between inspection and next port of call
 - reception facilities available at current or next port of call
 - presence of waste products in a tank or compartment other than that usually used for such storage
 - status, functionality and capacity of on board waste handling equipment such as an oily water separator, or on board garbage processing facilities
 - vessel's on board record books such as the oil, cargo or garbage record books
 - vessel's port or Flag State control records, previous infringements, prosecution actions, warnings, deficiencies, etc
5. In the GBRMP, the Field Management Compliance Coordination Unit is responsible for:
 - ensuring compliance with GBRMPA legislation
 - planning and coordination of compliance and enforcement activities in the GBRMP
 - intelligence and tasking of external stakeholders such as the DHA, QLD Department of Natural Resources, Mines and Energy, QLD Police Service and the AFP

6.8 OIL AND OTHER NOXIOUS AND HAZARDOUS SUBSTANCES POLLUTION RESPONSE

1. In the event of oil or chemical pollution, Australia has a national contingency plan and response capability, known as the National Plan for Maritime Environmental Emergencies (National Plan). The National Plan is a national integrated Government and industry organisational framework enabling effective response to marine pollution incidents. AMSA manages the National Plan, working with State and Territory Governments, the shipping, oil, exploration and chemical industries and emergency services to maximise Australia's marine pollution response capability. The aim of the National Plan is to protect the community and the environment of Australia's marine and foreshore zones from the adverse effects of oil and other noxious or hazardous substances. It also aims to minimise those effects where protection is not possible.
2. The responsibilities of National Plan participants are clearly defined. These include access to equipment and dispersant stockpiles, equipment maintenance and storage, funding and joint use of resources. Based on these arrangements, the Australian Government's role, through AMSA, is coordination, training, and the provision of technical and logistic support, equipment, materials and finance.

6.8.1 MARINE POLLUTION REPORTING

1. MARPOL requires a report to be made when an incident involves:
 - a discharge above the permitted level or probable discharge of oil or noxious liquid substances for whatever reason including those for the purpose of securing the safety of the ship or for saving life at sea
 - discharge or probable discharge of harmful substances in packaged form, including those in freight containers, portable tanks, road and rail vehicles and ship borne barges
 - damage, failure or breakdown of a ship of 15 metres or more in length which affects the safety of the ship; including but not limited to collision, grounding, fire, explosion, structural failure, flooding and cargo shifting
 - impairment of the safety of navigation; including but not limited to failure or breakdown of steering gear, propulsion plant, electrical generating system, and essential ship-borne navigational aids
 - discharge during the operation of the ship of oil or noxious liquid substances in excess of the quantity or instantaneous rate permitted under MARPOL
2. These obligations are reflected in Australia's domestic law.
3. The master or other person having charge of any ship involved in an incident is required to make the report. If this cannot be done, then the owner, charterer, manager or operator of the ship, or their agent is responsible for making the report.
4. For more information on MARPOL reporting see:

Website:	www.amsa.gov.au/marine-environment/marine-pollution/mandatory-marpol-pollution-reporting
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5. Observed pollution incidents from the above and other sources should also be reported to AMSA (see also Section 7.22):

Website:	www.amsa.gov.au/marine-environment/marine-pollution
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6.8.2 RESPONDING TO MARINE SPILLS

Control Agencies for oil pollution incidents Table

Area ----- source	Oil terminal or state govt agency	Sole-user maritime facility for oil terminal	Multi-user maritime facility	Port waters	State waters	Commonwealth waters	
						Shipping sourced spill	Offshore petroleum facility
First Strike / Level 1	Oil terminal operator or state govt agency	Oil terminal operator	Maritime facility owner	Port authority or state govt agency	Offshore petroleum facility titleholder	AMSA	Titleholder
Levels 2 and 3	Port authority or state govt agency	Port authority or state govt agency	Port authority or state govt agency		or state govt agency		
Great Barrier Reef Marine Park – for any spills the Control Agency is the Queensland Government New South Wales – whilst a terminal operator is expected to respond to Level 1 incidents; the Port Authority or Roads and Maritime is the Control Agency for all incidents in State waters.							
Torres Strait – for any spills into the area defined within TorresPlan the Control Agency is the Queensland Government							
External territories: Australian Antarctic • for any spills within station limits of the Australian Antarctic the Australian Antarctic Division (represented by the relevant Station Leader) is the Control Agency and Incident Controller for level 1 and 2 responses. • AMSA is the Control Agency outside Station waters and will appoint an Incident Controller to lead any response. AMSA will also act as the Control Agency for level 3 responses. Norfolk Island • For any spills into Commonwealth waters around Norfolk Island, including into the Norfolk Island port area, the incident controller is appointed by AMSA. Christmas Island • for any spills into Christmas Island ports areas the Harbour Master is the Incident Controller • for any spills into Commonwealth waters around Christmas Island, the Incident Controller is appointed by AMSA. Cocos (Keeling) Islands • in accordance with its Service Delivery Agreement with the Commonwealth the WA Department of Transport will be appointed Incident Controller for Level 1 spills outside Port Waters. • for Level 2 and 3 responses AMSA will act as Control Agency and Incident Controller. *for further information on Roles and Responsibilities refer to associated Contingency Plan.							

Source: National Plan for maritime environmental emergencies - AMSA

Website:	www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies
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Table notes

1. To avoid uncertainty, a vessel at a maritime facility with a line ashore is subject to the relevant Control. Agency arrangements indicated for a maritime facility and not the arrangements indicated for port waters.
2. In the case of controlled Naval waters, the local Naval authority will contain and clean up all spills that can be safely and effectively managed using available Naval equipment. The Harbour Master is to be informed at the first opportunity. Where there is doubt that local Naval resources are sufficient, the Naval authority will contact the Harbour Master immediately for assistance. Costs incurred by local authorities responding to oil spills from Naval assets shall be borne by the Royal Australian Navy (RAN).

Table definitions

3. **First strike** means a prompt initial response to protect the environment that is intended to limit the effect of an incident until such time as other resources can be deployed in support. This capability may vary from location to location.
4. **Oil terminal** means a petroleum refinery and/or petroleum storage/distribution facilities with access to a maritime facility, but not including the maritime facility.
5. **Maritime facility** means a wharf or mooring at which a vessel can be tied up during the process of loading or unloading a cargo (or passengers). A maritime berth may be a sole user berth (such as a dedicated berth for an oil refinery) or may be a multi-user berth (such as a berth that handles general cargo, or one that handles bulk liquids such as petroleum for more than one user of the berth (sometimes known as a common-user berth).
6. **Oil terminal operator** means a company [or joint venture] that operates an oil terminal.
7. **Port waters** has the same meaning as in Section 12 of the *Maritime Transport and Offshore Facilities Security Act 2003* and includes:
 - (a) areas of water, between the land of the port and the open waters outside the port, intended for use by ships to gain access to loading, unloading or other land-based facilities; and
 - (b) areas of open water intended for anchoring or otherwise holding ships before they enter areas of water described in paragraph (a); and
 - (c) areas of open water between the areas of water described in paragraphs (a) and (b)

Hazardous and Noxious Substance

8. **Hazardous and Noxious Substance (HNS)** incidents and spills are potentially more complex and hazardous in nature, so response requires different skills, knowledge, experience and equipment. The National Plan arrangements for HNS response is based on cooperation between port managers, State and territory emergency (fire and rescue) services and maritime agencies. The specific control agency for a HNS incident and response will depend on location and context. When reporting the HNS spill incident to AMSA's Joint Rescue Coordination Centre (JRCC) Australia, advice will be given about which Australian agency will have responsibility as control agency.

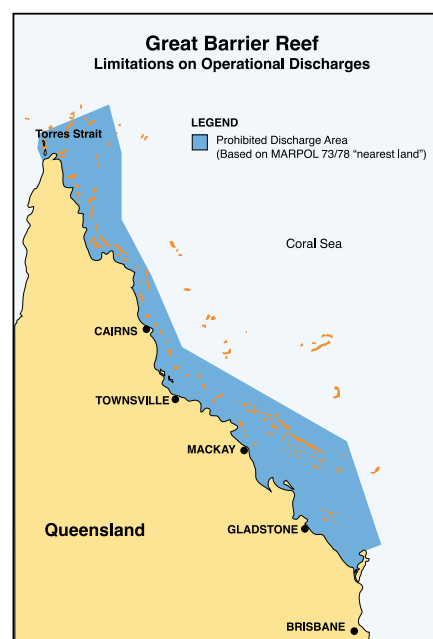
6.9 DISCHARGING WASTE AT SEA

1. Oceans were traditionally seen as vast domains in which garbage decayed or sank, and vessels dumped their garbage into the sea. Today the situation is very different mainly due to the prevalence of non-biodegradable products such as plastics. Discarded debris can entangle wildlife and cause limb amputation and or death through drowning or strangulation in larger marine animals. Debris can also be ingested and cause internal blockages and result in starvation and other complications. Economic impacts include loss of aesthetic value on beaches and loss of fish catches to abandoned or lost fishing gear.

6.9.1 GARBAGE

1. To prevent pollution of the sea by garbage, Australian laws impose strict controls and stipulate heavy fines for polluters from ships of all sizes, including dinghies. The garbage regulations are based on MARPOL Annex V.
2. MARPOL prohibits the discharge of all garbage into the sea except in the below circumstances, which only apply while the ship is 'en route':

- comminuted or ground food wastes that fit through a screen with openings no bigger than 25mm must be disposed offshore as far as practicable but at least 3nm from nearest land. For vessels on international voyages, Australian biosecurity laws apply and vessels cannot dispose of ground food waste within 12nm of the nearest land



- not comminuted or ground food wastes can only be disposed of at least 12nm from the nearest land
 - cargo residues not classified as harmful to the marine environment can be disposed of at least 12nm from the nearest land (Resolution MEPC.219(63) - 2012 Guidelines for Implementation of MARPOL Annex V)
 - wash water containing cleaning agents or additives not classified as harmful to the marine environment can be discharged into the sea (Resolution MEPC.219(63)) except in the Great Barrier Reef Marine Park, where additional restrictions apply (see GBRMPAs website – responsible reef practice for waste water)
 - animal carcasses from livestock carriers can be discharged into the sea at a distance greater than 100nm from the nearest land and in maximum water depths (Resolution MEPC.219(63))
3. In all cases disposal should be as far as practicable from the nearest land. Note also, more stringent standards apply in MARPOL 'Special Areas' such as the Antarctic.
 4. All other waste generated on board during the normal operations of the ship must be discharged to a port waste reception facility.
 5. When considering the term 'nearest land', Special Protection for the GBR Region should be noted.

DON'T trash the oceans bring your garbage back

Australian Government
Australian Maritime Safety Authority

In waterways and within 3 nm from nearest land

▶ it is **ILLEGAL** to discharge garbage

3 - 12 nm from nearest land

▶ it is **ILLEGAL** to discharge garbage **EXCEPT** food wastes processed to less than 25mm

Refer to MARPOL* Annex V and associated guidelines for additional information on limited exceptions that may be applied to discharges of:

- unprocessed food wastes
- fishing gear
- cargo residues
- cleaning agents
- animal carcasses

DISCHARGE OF ALL GARBAGE INTO THE OCEANS OR WATERWAYS OF AUSTRALIA IS PROHIBITED.

Fines of up to \$1.7 Million apply.

*Nearest land' includes the Great Barrier Reef area. Definitions can be found in MARPOL Annex V or at amsa.gov.au.

REPORT ALL MARINE POLLUTERS TO 1800 641 792 OR YOUR LOCAL MARINE AUTHORITY.

*International Convention for the Prevention of Pollution from Ships (MARPOL)

AMSA 440 (1/15)

6.9.2 PLASTICS

1. The discharge of plastics into the sea is totally prohibited in any location. Vessel operators must retain all plastic material for disposal at port facilities.

6.9.3 FISHING NETS

1. The location of any lost or abandoned fishing nets should be reported to The Modernised Australian Ship Tracking and Reporting System (MASTREP) or Great Barrier Reef and Torres Strait Vessel Traffic Service (Reef VTS). If possible, the net should be recovered and a small sample sent to the Marine Protected Areas Section of the DEE.

6.9.4 PLACARDS

1. All vessels of 12 metres or more in length and fixed and floating platforms are required to display placards setting out the garbage disposal requirements of MARPOL. The placards should be visible in areas where garbage may be generated and in full view of crew and passengers.

6.9.5 SHIPBOARD WASTE MANAGEMENT

1. Every vessel 100 gross tonnage (GT) and above, and every vessel certified to carry 15 persons or more, and fixed and floating platforms must develop and follow a shipboard Garbage Management Plan, and be fitted with equipment required to operate in accordance with the plan. Guidelines for the development of these plans have been provided by the International Maritime Organization (IMO) (Resolution MEPC.220(63) - 2012 Guidelines for the Development of Garbage Management Plans).

6.9.6 GARBAGE RECORD BOOKS

1. Ship's Masters should be aware that AMSA inspectors may ask to see records of oily waste disposal, as required by the ship's Oil Record Book, and records for garbage disposal, as required by the Garbage Record Book. Every vessel over 400 GRT and every ship certified to carry 15 persons or more on international voyages and every floating or fixed platform are required to maintain a Garbage Record Book. The Record Book must be kept for two years and it is recommended that any receipts for using a shore waste reception facility be retained with this book. MARPOL Record Books are available in hard copy from AMSA regional offices.

6.9.7 MARINE WASTE RECEPTION PROGRAM

1. As a signatory to MARPOL, Australia is under an obligation to ensure that adequate reception facilities are available at ports for ships to dispose of waste, including oil, chemical, sewage or garbage.
2. AMSA website links to the IMO Global Integrated Shipping Information System (GISIS) for information on the availability of reception facilities in Australian ports and includes contact details, whether prior notice is required and in most cases capacity and other relevant details. Where possible, arrangements for the use of reception facilities should be made through the ship's agent. Charges apply to the use of facilities unless otherwise indicated.

Website:	www.amsa.gov.au
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6.9.8 FURTHER INFORMATION

1. Further information on maritime garbage disposal laws can be obtained from Port Authorities, State marine authorities, the AAD, the GBRMPA or from AMSA.

Website:	www.amsa.gov.au/marine-environment/marine-pollution
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6.10 SEA DUMPING

1. The *Environment Protection (Sea Dumping) Act 1981* (Cth) (the *Sea Dumping Act*) was enacted to fulfill Australia's international responsibilities under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 and the 1996 Protocol to that convention.
2. The *Sea Dumping Act* is administered by the Department of the Environment or GBRMPA (if the activity is taking place within the GBRMP). The *Sea Dumping Act* applies to all vessels, aircraft and platforms in Australian waters (other than waters within the limits of a State or the Northern Territory (NT)), from the low water mark out to the limit of the EEZ, and to all Australian aircraft and vessels in any part of the sea.
3. The *Sea Dumping Act* regulates the deliberate loading and dumping of wastes and other matter at sea. It does not cover operational discharges from ships, such as sewage and galley scraps. Those are regulated by the *Protection of the Sea legislation* administered by AMSA.
4. Permits from the DEE or GBRMPA are required for all sea dumping operations including:
 - dredging operations
 - creation of artificial reefs
 - dumping of vessels
 - platforms and other man-made structures
 - burials at sea
5. Dumping, or loading for the purposes of dumping, other than in accordance with a permit, is a criminal offence under the *Sea Dumping Act*, and may incur a substantial penalty including imprisonment. Seriously harmful material (material capable of causing serious harm to the marine environment) such as radioactive material cannot be dumped in Australian waters under any circumstances.

6. Applications for a sea dumping permit can be obtained from the DEE website. In deciding whether to grant a permit, consideration is given to the type of material proposed to be dumped, the dump site and the potential impacts on the marine environment.

Website:	www.environment.gov.au/marine/marine-pollution/sea-dumping
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6.11 AIR POLLUTION FROM INTERNATIONAL SHIPPING

1. Annex VI of MARPOL sets out internationally agreed regulations for air emissions and entered into force in May 2005. These regulations aim to minimise air emissions from international shipping and address ships' contribution to local and global air pollution.
2. In July 2010 amendments to Annex VI entered into force which established a regime to progressively reduce global ship emissions of sulphur oxides (SOx), nitrogen oxides (NOx) and particulate matter (PM).
3. Amendments adopted in 2011 set mandatory technical and operational energy efficiency measures for ships in order to progressively reduce carbon dioxide (CO₂) emissions from international shipping.
4. Amendments made to MARPOL Annex VI since 2011 have extended the requirements of the Annex to gas fuelled ships, introduced new record keeping requirements, extended the application of the Energy Efficiency Design Index (EEDI) to a wider range of ships and made changes to the content of bunker delivery notes.

6.11.1 NITROGEN OXIDE EMISSIONS

1. The Nitrogen Oxide Emissions (NOx) control requirements of MARPOL Annex VI provide for progressive reductions in NOx emissions from marine diesel engines. NOx emissions are restricted to certain limits (Tier I, II and III) based on the ship's construction date and area of operation. Within each of these Tiers, the NOx emission limit is set based on the ship's rated engine speed. The Tier I and II limits apply to marine diesel engines installed on ships constructed on or after 1 January 2000 and 1 January 2011 respectively. Replacement engines and additional engines installed on existing ships will be required to meet Tier II standards. These limits apply in all areas not designated as an IMO adopted NOx Emission Control Area (ECA).
2. The more stringent Tier III limits apply to marine diesel engines installed on ships constructed on or after 1 January 2016 operating in existing NOx ECAs. Replacement engines installed on existing ships operating in NOx ECAs will be required to meet Tier III standards where possible. Additional engines will need to meet the Tier III standard. Four ECAs have been designated by the IMO. These are the Baltic Sea, North Sea, the North American area (both east and west coasts of the United States and Canada) and the United States Caribbean Sea area. More information on these requirements can be found on the AMSA website:

Website:	www.amsa.gov.au/marine-environment/marine-pollution/discharge-standards
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6.11.2 SULPHUR OXIDE AND PARTICULATE MATTER EMISSIONS

1. Sulphur Oxide (SOx) and PM emissions are a function of the sulphur content of fuel. Accordingly, the SOx control requirements in MARPOL Annex VI provide for a progressive global reduction in the sulphur content of marine fuels to reduce the emission of SOx and particulate matter from ships.
2. The current maximum sulphur content of fuel oil in areas other than SOx ECAs, is 3.5%. This will be reduced to 0.5% from 1 January 2020.
3. Cruise ships capable of accommodating more than 100 passengers and berthing in Sydney Harbour have been issued with a Direction by AMSA, in accordance with Subsection 246(1)(b) of the *Navigation Act 2012*. The Direction requires the vessel to limit emissions of SOx when at berth by using either low sulphur (max 0.1% m/m) fuel or an alternative measure that achieves an equivalent outcome, such as an exhaust gas cleaning system (scrubber). Further information on the Sydney Harbour low sulphur fuel requirements can be found in Marine Notice - 2018/06, *Limitation of sulphur emissions from cruise vessels while at berth in Sydney Harbour*.

4. The maximum sulphur content of fuel oil for ships operating in SOx ECAs was reduced from 1.0% to 0.1% on 1 January 2015. Four SOx ECAs have been designated by the IMO. These are the Baltic Sea, North Sea, the North American area (both east and west coasts of the United States and Canada) and the United States Caribbean Sea area. More information on these requirements can be found on the AMSA website:

Website:	www.amsa.gov.au/marine-environment/marine-pollution/2020-low-sulphur-fuel
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5. It is also a requirement under Australian domestic law that bunker delivery notes, specifying the sulphur content of the fuel delivered to the ship, are retained on vessels of 400 GT and above for a period of three years after the fuel has been delivered. Ship's Masters should be aware that AMSA inspectors may ask to see the bunker delivery note during a Port State Control Inspection. While there is no prescribed format for the bunker delivery note, MARPOL Annex VI requires specific information to be collected. Information on bunker delivery notes, the information to be collected, and a format that can be used, is available on the AMSA website.
6. Annex VI of MARPOL requires that a Register of Local Suppliers of Fuel Oil is maintained. In Australia, all local suppliers of fuel oil are required to be registered with AMSA, and are listed on the AMSA website.
7. Chapter 4 of MARPOL Annex VI - *Regulations on Energy Efficiency for Ships* - mandates:
 - an EEDI for new ships
 - a Ship Energy Efficiency Management Plan (SEEMP) for all ships
 - a requirement for all ships to carry an International Energy Efficiency (IEE) Certificate

6.11.3 ENERGY EFFICIENCY

1. The EEDI is a non prescriptive, performance based mechanism that leaves the choice of technologies to use in a specific ship design to the industry. As long as the required energy efficiency level is attained, ship designers and builders are free to use the most cost effective solutions for the ship to comply with the regulations.
2. All new ship designs must meet a required EEDI based on their ship type (for example, a bulk carrier or a passenger ship). The index was designed to be tightened every five years in distinct phases, creating a progressively more energy-efficient global fleet. The EEDI standards are being phased in from 2013 to 2025. Resolution MEPC.245 (66) - 2014 *Guidelines on the Method of Calculation of the Attained EEDI for New Ships*, as amended.
3. The SEEMP establishes a mechanism for operators to improve the energy efficiency of ships. Each ship is required to keep a ship specific SEEMP on board which may form part of the ship's Safety Management System. The SEEMP for each ship needs to be developed taking into account guidelines adopted by the IMO (Resolution MEPC.213(63) - 2012 *Guidelines for the Development of a SEEMP*).
4. Potential operational efficiency measures include:
 - improved hull and propulsion system maintenance
 - voyage planning
 - weather routing
 - speed optimisation
 - use of automated engine management systems
5. As part of the SEEMP the inclusion of a goal or incentive should be included to promote implementation. The goal can take any form, such as the annual fuel consumption or a specific target of Energy Efficiency Operational Indicator (EEOI). The EEOI developed by IMO (MEPC.1/Circ.684 - *Guidelines for Voluntary use of EEOI*) is one of the internationally established tools to obtain a quantitative indicator of energy efficiency of a ship and/or fleet in operation, and can be used for this purpose. It is important to recognise that the setting of a goal is voluntary.
6. All ships of 400 GT and above engaged in international voyages need to be issued with an IEE Certificate. Owners and operators of Australian ships engaged in international trade should ensure the IEE Certificate is issued and available for inspection on board.

6.12 COMPULSORY INSURANCE REQUIREMENTS IN AUSTRALIAN WATERS

1. Australia is party to two international liability and compensations regimes designed to ensure adequate compensation is available to persons who suffer oil pollution damage resulting from maritime accidents involving oil tankers and other ships. Liability for such damage is placed on the owner of the ship from which the polluting oil escaped.
2. The International Convention on Civil Liability for Oil Pollution Damage 1992 (CLC) applies to oil tankers carrying persistent oils such as crude oil, fuel oil, heavy diesel oil and lubricating oil.
3. This Convention requires ships carrying more than 2000 tonnes of oil in bulk as cargo to maintain adequate insurance to cover specified liability limits. A certificate is issued to each ship by the flag State (or another Government if the Flag State is not a Party to the Convention) attesting that insurance or other financial security is current and adequate.
4. For ships carrying oil as bunkers (i.e. fuel for a ship's engines, including diesel fuel) the International Convention on Civil Liability for Bunker Oil Pollution Damage 2001 applies. This Convention requires ships of more than 1000 GRT to maintain adequate insurance to cover specified liability limits. A 'Bunkers certificate' is issued to each ship by the Flag State, attesting that insurance or other financial security is current and meets the liability limit amount prescribed under the Convention, according to the vessel's GT.
5. Under Australian legislation, ships of 400 GRT or more are required to carry a relevant insurance certificate.
6. The majority of commercial vessels carry insurance coverage through Protection and Indemnity (P&I) Clubs, which covers the shipowner's liability for pollution damage described above. P&I Clubs are independent, non-profit making mutual insurance associations, providing cover for their shipowner and charterer members against third party liabilities relating to the use and operation of ships.
7. The CLC and/or Bunkers certificate that has been issued by the Flag State will need to be produced on request during Port State Control inspections and when clearing Australian Immigration and Border Protection. Further information can be obtained from the AMSA website.

6.13 INTRODUCED MARINE PESTS

1. Marine plants and animals can be transported across oceans on the hulls of recreational, fishing and commercial vessels, and in the ballast water of ships. The introduction of marine invasive species into new environments is considered one of the greatest threats to the world's oceans. More than 250 exotic marine species have been reported in Australian waters, most of which were introduced unintentionally via shipping and mariculture. Only a few of these species are considered pests but they can have a major impact on the environment, economy, human health or amenity.

6.13.1 BALLAST WATER

1. All overseas vessels are required to undertake one of the Department of Agriculture and Water Resources (DAWR) approved ballast water management options, or a combination of options, prior to arrival in Australian waters or ports. More details of Australia's mandatory ballast water management requirements can be found in Chapter 10.

6.13.2 HULL FOULING

1. The growth of marine organisms on a vessel hull increases drag and decreases performance. Heavily fouled vessels can carry up to five kilograms of fouling material per square metre of hull. The hulls of vessels can carry many exotic species into new environments.
2. The National Biofouling Management Guidelines provide tailored advice about how to minimise biofouling for different vessel types to help reduce the risk of introducing and spreading marine pests around the Australian coastline.

Website:	www.marinepests.gov.au/commercial/vessels#manage-biofouling
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3. Currently, in-water cleaning activities in Australian waters are considered under the 'Anti-fouling and in-water cleaning guidelines'.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/biofouling/anti-fouling-and-inwater-cleaning-guidelines
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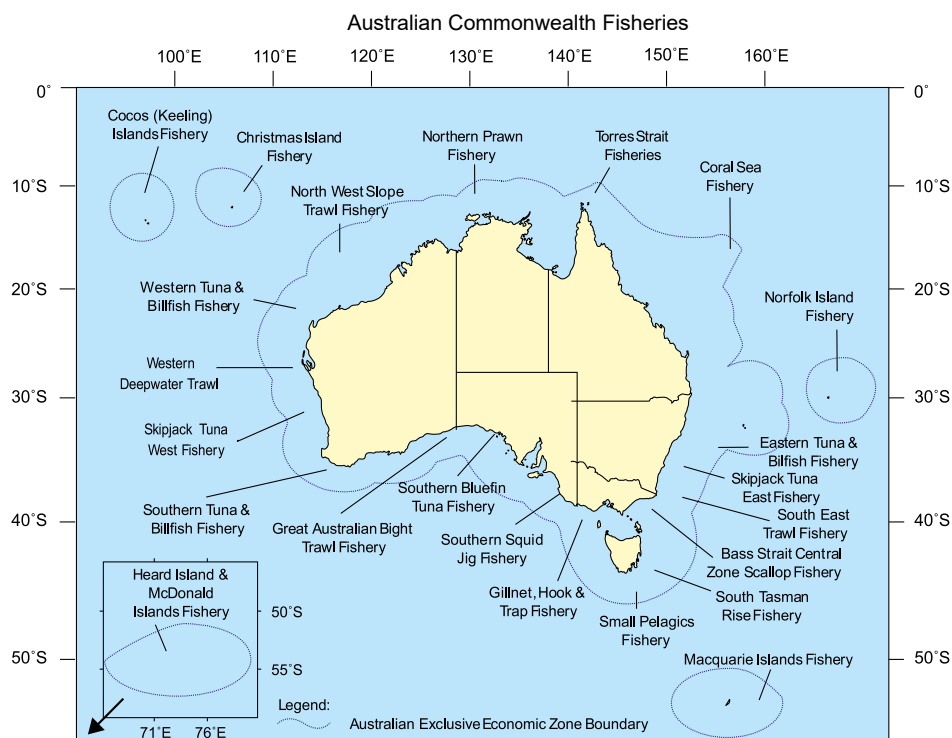
6.13.3 ANTI-FOULING PAINTS

1. Anti-fouling paints are used on a ship's hull to deter the build up of organisms such as molluscs and algae. They are critically important in impeding the spread of marine pests, parasites and diseases, and contribute to fuel consumption efficiencies. Some anti fouling paints can be harmful to the marine environment and are toxic to some marine species, particularly those containing organotin compound based biocides such as tributyltin (TBT).
2. The International Convention on the Control of Harmful Anti fouling Systems on Ships 2001 was developed by the IMO to protect the marine environment and human health from the adverse effects of anti fouling systems on ships.
3. The Convention defines 'anti-fouling systems' as 'a coating, paint, surface treatment, surface or device that is used on a ship to control or prevent attachment of unwanted organisms'. The Convention requires each party to prohibit or restrict the application, re-application, installation or use of organotin compounds which act as biocides in anti-fouling systems on ships. Under the Convention, all ships are required to either be free from these compounds on their hulls or external parts, or have a coating that form a barrier to these compounds to stop leaching from the underlying non-compliant anti-fouling system. TBT paints are no longer used in Australian docks.
4. Ships of 400 GT and above engaged in international voyages must have an International Anti-Fouling System Certificate. Ships of 24 metres or more in length but less than 400 GT engaged in international voyages must have a Declaration on Anti-Fouling Systems signed by the owner or authorised agent.

6.14 MANAGEMENT OF COMMONWEALTH FISHERIES

1. The Australian Fisheries Management Authority (AFMA) is the Australian Government agency responsible for the efficient management and sustainable use of Commonwealth fish resources on behalf of the Australian community.
2. AFMA manages and monitors commercial Commonwealth fishing to ensure Australian fish stocks and Australia's fishing industry are viable now and in the future. The aim is to make sure that healthy and fresh local seafood is available and affordable to all Australians for current and future generations. For this to happen, AFMA has strict fisheries management practices in place.
3. Generally, AFMA looks after commercial fisheries from 3nm out to the extent of the Australian Fishing Zone (AFZ). The States and the Northern Territory (NT) look after recreational, commercial coastal and inland fishing and aquaculture.
4. In addition, AFMA provides fisheries management services to Joint Authorities of the Australian and State governments, including the Torres Strait Protected Zone Joint Authority (PZJA).
5. Through our foreign compliance functions, AFMA works together with other Australian Government agencies and our international counterparts to deter and detect illegal fishing in the AFZ.

Website:	www.afma.gov.au
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Source: Australian Fisheries Management Authority

6.14.1 LICENSING AND COMPLIANCE MONITORING

1. AFMA uses a range of tools to ensure that stocks are protected and commercial fishers only take what they are allowed.
2. **Licensing operators.** Appropriate fishing concessions are required to undertake commercial fishing in Commonwealth fisheries. AFMA grants Statutory Fishing Rights, Fishing Permits, Scientific Permits, and Foreign Fishing Licences, and collects management levies from fishers on behalf of the Australian Government. Various application forms are available from the AFMA website.
3. **Extensive catch reporting.** AFMA collects data for use in the assessment of the status of target and by product fishery stocks. Prior-to-Landing Reports, Catch Disposal Records and Fish Receiver Records are required in certain fisheries. AFMA also places observers on Australian and foreign vessels operating in the AFZ. Vessel Monitoring System tracking units are compulsory in all AFMA managed fisheries.
4. **Coordinating efforts against illegal fishing activities.** Through AFMA's foreign compliance functions, the agency works together with other Australian Government agencies and Australia's international counterparts to deter illegal fishing in the AFZ.

6.15 SEA INSTALLATIONS

1. In Australia, the *Sea Installations Act 1987* (Cth) (the *SI Act*) regulates the construction and operation of sea installations to ensure that they are constructed and operated safely and in a manner that is consistent with the protection of the environment. Sea installations include human made structures such as floating hotels, tourism pontoons and artificial islands.
2. The *SI Act* is administered by the DEE or the GBRMPA (if the activity is taking place within the GBRMP), and applies from the limit of the States and NT waters to the outer limits of the EEZ (or the Continental Shelf of Australia where it extends beyond the EEZ).
3. The Environmental Permitting Regime (EPR) of the *SI Act* was originally used to regulate the construction and operation of sea installations by the issue of permits. Since the introduction of the *EPBC Act* it has become common practice for the DEE to issue exemption certificates under the EPR of the *SI Act*.

4. Exemption certificates may also be issued for sea installations used in relation to scientific activities or activities relating to marine archaeology, and any other activity deemed appropriate by the determining authority. Applications for exemption certificates can be obtained from the DEE website. Further information on the *SI Act* can be obtained from:

Website:	www.environment.gov.au/topics/marine/marine-pollution/sea-dumping/sea-installations
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6.16 INTERVENTION, SALVAGE AND WRECKS

6.16.1 INTRODUCTIONS TO INTERVENTION

1. Interventions are exercised in Australian waters and high seas in accordance with the *Protection of the Sea (Powers of Intervention) Act 1981* or equivalent State and Territory legislation.
2. *Protection of the Sea (Powers of Intervention) Act 1981* gives effect to International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 and Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil, 1973 in Australia.

6.16.2 SALVAGE

1. Salvage operations are:
 - conducted in Australian waters in accordance with the salvage agreement between the shipowner and salvor
 - regulated by Part 3 of Chapter 7 of the *Navigation Act 2012*
2. Section 17 of the Navigation Regulation 2013 gives specified provisions of the International Convention on Salvage, London 1989.

6.16.3 WRECKS (OTHER THAN HISTORIC WRECKS)

1. At the Commonwealth level, Chapter 7 of the *Navigation Act 2012* gives AMSA the power to deal with, mark, destroy, sink and remove wrecks and recover from the owner of the wreck any expenses incurred by AMSA in doing so.
2. Part 2 of Chapter 7 of the *Navigation Act 2012*:
 - gives AMSA broad powers in respect of any 'wreck' (including any wrecked, derelict, stranded, sunk, abandoned or foundered vessel)
 - only applies to 'regulated Australian vessels' (wherever located) and wrecks of foreign vessels (if located in the territorial sea of Australia)
3. A master or owner of a wreck to which Part 2 of Chapter 7 of the *Navigation Act 2012* applies must notify AMSA of the vessel's details, location and nature and quantity of cargo and oil on board the vessel.
4. Dealing with wrecks of Australian flagged vessels that are not regulated Australian vessels remains a matter primarily for the States and Territories.
5. The *Marine Safety (Domestic Commercial Vessel) Act 2012* does give AMSA some powers to deal with safety and environmental aspects of domestic commercial vessel operations generally, and the owners and masters of those vessels are obliged to report marine incidents, including 'the loss' of the vessel, to AMSA.

6.16.4 NATIONAL MARITIME EMERGENCY RESPONSE ARRANGEMENT

1. The National Plan for Maritime Environmental Emergencies (National Plan) sets out national arrangements, policies and principles for the management of maritime environmental emergencies, including maritime casualties. It outlines roles and responsibilities of jurisdictions and entities, to enable a comprehensive and coordinated response to maritime environmental emergencies regardless, of how costs might be attributed or ultimately recovered.

2. AMSA manages Australia's national emergency towage capability which provides various levels of emergency towage capability around the Australian coastline.
3. The primary role of an Emergency Towage Vessel (ETV) is to stabilise a maritime casualty vessel to ensure it remains safe from navigational hazards until a commercial arrangement can be arranged. In addition to providing stabilisation to a maritime casualty, the ETV may be required to undertake additional 'first strike capabilities' such as, but not limited to:
 - preserving life
 - assist with protection of the marine environment from pollution
 - provide a passive escort
 - provide firefighting assistance (if so equipped), and
 - tow or escort a casualty to a Place of Refuge (as opposed to a place of repair)
4. The national emergency towage program includes three tiers of Emergency Towage Capability (ETC) dispersed across various geographic locations:
5. Level 1 Capability – a dedicated ETV Coral Knight operating in Far North QLD ETC region.
6. Level 2 Capability – contracted port towage within the other ten regions that is capable of undertaking open water towage operations.
7. Level 3 Capability – vessels of opportunity that can be directed or contracted at the time of an incident to assist or supplement the Level 1 or 2 capability.
8. The ETC can only be activated by AMSA. AMSA has identified 11 separate ETV regions extending from the coast out to Australia's 200nm EEZ boundary. Each region is provisioned with either a contracted Level 1 or Level 2 ETV capability.
9. The Maritime Emergency Response Commander (MERCOT) is responsible for the management of emergency intervention issues in response to maritime casualty incidents where there is an actual or potential risk of significant pollution.
10. The MERCOT is appointed by AMSA and is supported by statutory powers under the *Protection of the Sea (Powers of Intervention) Act 1981*.
11. The MERCOT will consider the reasonable views and stated positions of the relevant states, Northern Territory and stakeholders. These entities represent community views about economic, environmental, community and social interests that could be impacted by the MERCOT's decisions. Decisions made by the MERCOT will be expeditiously communicated to all relevant stakeholder groups and fully documented.
12. Under the National Plan, State and NT governments also ensure that emergency towage arrangements are in place within their area of jurisdictional responsibility, to manage local risks in support of the national program.

Website:	www.amsa.gov.au/marine-environment/national-plan-maritime-environmental-emergencies
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6.16.5 INTERVENTION ACT

1. The International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (Intervention Convention) and its Protocol, which addresses pollution by substances other than oil (Protocol) is implemented in Australia through the *Protection of the Sea (Powers of Intervention) Act 1981 (Intervention Act)*.
2. The *Intervention Act* provides AMSA with powers to intervene or take action where it is assessed that Australian interests are threatened by actual or likely pollution from a ship. The *Intervention Act* does not apply to warships, or to other vessels owned or operated by a foreign State and used, for the time being, only on government non-commercial service.
3. Appendix A to the *Intervention Act* provides a summary of the specific powers, measures, triggers and principles contained within the *Intervention Act*. Sections 8 and 9 of the *Intervention Act* implement Australia's international obligations under the International Convention and Protocol. These sections provide AMSA's powers, measures, triggers and principles following a maritime casualty on the high seas.

4. Section 10 of the *Intervention Act* Australia's domestic regulatory powers, measures, triggers and principles where oil or a noxious substance is escaping, has escaped, or is likely to escape from a ship.
5. The *Intervention Act* states that, if the measure is to sink or destroy the ship or part of the ship, that AMSA must first seek the relevant Minister's approval.

6.16.6 EXCHANGE OF INFORMATION

1. The ship's master, salvor, AMSA and/or the State or Territory government should keep each other fully informed of all aspects of the maritime casualty and/or salvage operation, regardless of whether intervention powers are used. As a minimum the following information should be provided:
 - structural integrity of the casualty
 - amount and location of pollutants on board
 - cargo manifest information (amount and type of oil or chemical cargo carried)
2. In more complex operations, AMSA may appoint one of its marine surveyors to be a Maritime Casualty Officer (MCO). The role of the MCO is to provide liaison and relay information between the salvor / master and the National Plan Marine Pollution Controller / Incident Controller and AMSA. This appointment will not interfere with or absolve the master, salvage master or shipowner of any of their statutory or commercial responsibilities or legal liabilities. The MCO may be stationed on board the vessel during the salvage operation or visit the vessel on a regular basis depending on circumstances such as location and the severity of the incident.

6.16.7 THE SALVAGE AGREEMENT

1. Where a Lloyds Open Form agreement or other form of agreement is signed, there is a direct contractual relationship between the salvor and shipowner. The salvage contractor then remains in overall charge of the salvage operation at all times. However, AMSA or the relevant State or Territory government may still issue directions under their powers of intervention if warranted.

6.16.8 PLACES OF REFUGE

1. A place of refuge is a place where a ship in need of assistance can take action to enable it to stabilise its condition (including the status of cargo), protect human life and the environment and reduce the hazards to navigation.
2. The National Maritime Place of Refuge Risk Assessment Guidance is an arrangement, agreed by the Australian, State and NT governments, for the management of requests for, or circumstances that require, a place of refuge.
3. The guidance states that a place of refuge should be provided by an Australian maritime agency when necessary and appropriate to protect:
 - the safety of the ship's crew, passengers and salvage crew
 - the safety of human life and health within the immediate vicinity of the distressed ship
 - ecological and cultural resources, and the marine, coastal and terrestrial environments
 - economic and socio-economic infrastructure, including sensitive installations, within the coastal zone and ports
 - the safety of the ship and its cargo
4. The guidance, while optional, may be implemented within the relevant jurisdiction level contingency plans, and jurisdictions may choose (or not) to pre-designate or identify possible places of refuge.

6.16.9 AMSA'S POINT OF CONTACT

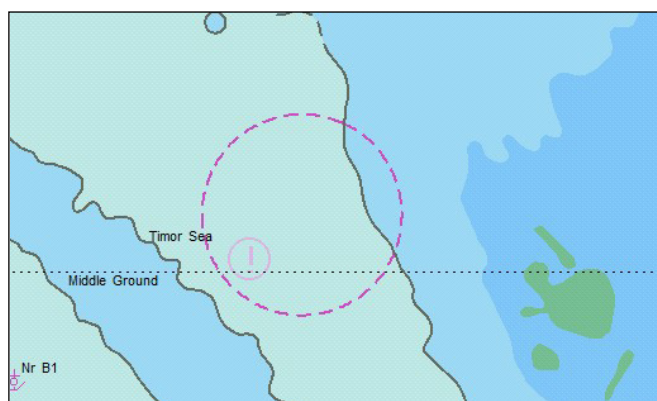
1. The initial point of contact for maritime casualties and salvage operations is via AMSA's 24 hour JRCC Australia.

Telephone:	+61 2 6230 6811 / 1 800 641 792
Fax:	+61 2 6230 6868
email:	rccaus@amsa.gov.au
Website:	www.amsa.gov.au

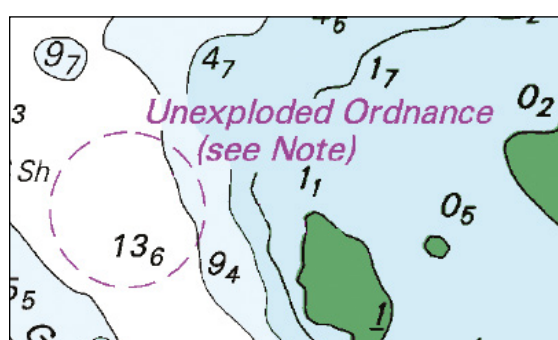
6.17 FORMER MINED AREAS AND FORMER MUNITIONS DUMPING GROUNDS

1. Minefields were laid in Australia and Papua New Guinea (PNG) during World War II. These minefields have been swept and have been used safely by shipping for many years.
2. Due to the lapse of time, navigation through these areas is now considered no more dangerous from mines than from any other of the usual hazards to navigation. However, there is a remote risk that mines may still remain. Danger still exists with regard to anchoring, fishing or any form of submarine or seabed activity.
3. Drifting mines may occasionally be sighted. Sightings of mine like objects should be reported to the nearest Royal Australian Navy (RAN) authority without delay, ensuring that a clear description is provided.
4. Mines, torpedoes, depth charges, bombs and other explosive missiles are sometimes picked up in trawls often in waters comparatively distant from Australia. Explosive weapons may still be dangerous even if they have been in water for many years. Mariners are to adhere to the following guidance when dealing with a suspected explosive weapon:
 - a suspected explosive weapon should not be landed on deck if it has been observed while the trawl is still outboard. The trawl should be lowered and then towed clear of regular fishing grounds before cutting away the net as necessary
 - in the event of the weapon not being detected until the contents of the trawl have been discharged on deck, mariners must decide whether to rid the ship of the weapon by passing it over the side or to make for the nearest port informing the RAN authority without delay. In these circumstances:
 - great care should be taken to avoid bumping the weapon
 - if retained onboard the weapon should be stowed on deck, away from heat and vibration firmly chocked and lashed to prevent movement
 - the weapon should be kept covered up and dampened down. This is important because any explosive which may have become exposed to the atmosphere is liable to be very sensitive to shock if allowed to dry out
 - the weapon should be kept onboard for as short a time as possible
 - if within two or three hours steaming of the Australian coastline, the safest measure will generally be to head towards the nearest port and wait at a safe distance offshore for an Explosive Ordnance Disposal Unit
 - no attempts should be made to clean the weapon for identification purposes
 - a ship with an explosive weapon on board, or in her gear, should warn other ships in the vicinity giving her position and, if applicable, intended position of jettisoning
 - under no circumstances should an attempt be made to recover a mine and bring it to port. Rewards formerly paid to mariners for such recovery have been discontinued

Unexploded ordnance depicted on an Australian Electronic Navigational Chart (ENC)



Unexploded ordnance depicted on an Australian Paper Nautical Chart plus note (note provided as a text note in ENC)



UNEXPLODED ORDNANCE
This area is safe for surface navigation only; it is not safe for anchoring, trawling or seabed activities. For details see the Mariner's Handbook for Australian Waters (AHP20).

6.17.1 CHEMICAL WARFARE AGENTS

1. Sea dumping of unwanted Chemical Warfare Agents (CWA) has occurred at many sites around the world. Most of the dumping episodes occurred after the end of World War II when unused war stocks needed disposal. At least 21 030 tonnes of chemical warfare munitions were dumped into Australian seas at the end of World War II. The sea dumping of all significant amounts of CWA war stocks had occurred by the end of 1946, aside from the dumping of 1 634 tonnes of CWA off Victoria (VIC) in 1948. Records indicate there have been two ad hoc dumping episodes since then, one in 1965 and another in 1970. Dumping can be confirmed in the seas off three States, QLD (east of Cape Moreton), New South Wales (south east of Sydney) and VIC (west of King Island).
2. Today, Australia fully adheres to the *Convention on the Prevention of Maritime Pollution by Dumping of Wastes and Other Matter, 1972* and the *1996 Protocol* to that Convention.
3. Information on the dumping at sea of hazardous substances has been made public in the interests of public safety and particularly for mariners to help prevent accidental discovery of dumped hazardous substances. It can be found on the Australian Hydrographic Office website below:

Website:	www.hydro.gov.au/n2m/dumping/dumping.htm
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Notes:

CHAPTER 7 NAVIGATION

7.1 INTRODUCTION TO NAVIGATION

1. The Australian Government and state and territory agencies are responsible for providing appropriate navigational services (such as aids to navigation, vessel traffic services and pilotage services) for seafarers in Australian waters. These navigation services are vital to safe and efficient transit of shipping and the protection of Australia's sensitive sea areas.

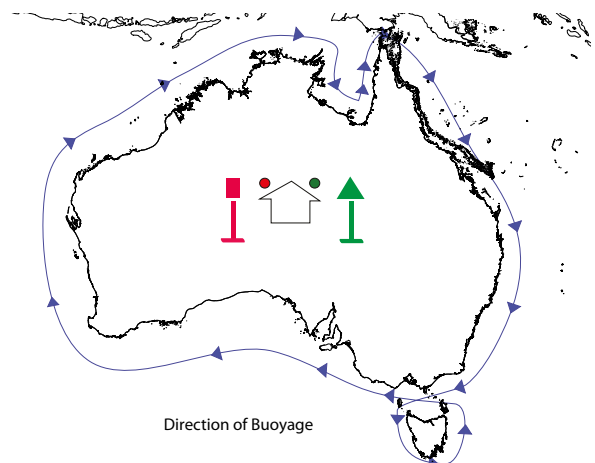
7.2 CHARTS AND NAUTICAL PUBLICATIONS

1. Carriage of official, and up-to-date charts of suitable scale, and nautical publications such as tide tables, sailing directions and list of lights is vital for safe navigation. These carriage requirements are specified in SOLAS Chapter V Regulation 27, given effect through Marine Order 27 (*Safety of Navigation and Radio Equipment*) and enforced by Australian Maritime Safety Authority (AMSA).
2. More information on Electronic Navigational Charts (ENC), Paper Nautical Charts (PNC) and nautical publications can be found in Chapter 12 of this publication.

7.3 BUOYAGE SYSTEM IN AUSTRALIA

1. Buoyage in Australia conforms to the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Maritime Buoyage System, Region A (red to port). In offshore coastal waters the direction of buoyage is as follows:

- East Coast - north to south
- South Coast - east to west
- Tasmania - anticlockwise
- West Coast - south to north
- North Coast and Torres Strait - west to east
- Gulf of Carpentaria - anticlockwise



7.4 AGENCIES RESPONSIBLE FOR AIDS TO NAVIGATION

1. At the national level, AMSA is responsible for the provision of coastal and offshore aids to navigation including: lights, RACONs (RADar BeaCON), beacons, buoys and a Differential Global Positioning System (DGPS) network. This component of the navigation services network focuses on the needs of levy paying commercial ships conducting offshore and coastal navigation and port approaches.

Website	www.amsa.gov.au/safety-navigation/navigation-systems/visual-and-electronic-navigation-tools
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2. State and Territory marine authorities, in conjunction with local port and harbour authorities, provide aids to navigation to meet the needs of intrastate commercial shipping, fishing and recreational vessels. These aids are typically located within ports, rivers, and approach channels, but may also exist in coastal areas.

7.4.1 PROMULGATION OF NAVIGATION INFORMATION

1. The primary method of disseminating maritime safety information of an immediate nature is via a radio-navigational warning – either:
 - Long Range Navigational Warnings (see Section 8.2.1)
 - Coastal Navigational Warnings (see Section 8.2.2)

2. The Joint Rescue Coordination Centre (JRCC) Australia issues warnings via the Inmarsat C Enhanced Group Calling (EGC) SafetyNET service (see Section 8.3.2). If deemed necessary, these warnings are repeated by the relevant State or Territory Limited Coast Radio Stations on High Frequency (HF) voice (8176 kHz) at scheduled times (see Section 8.3.4).
3. Once the subject of a radio-navigational warning has been issued as a Notices to Mariners (NtM), the warning is normally cancelled. The warning may not be cancelled if the subject of the warning is considered to be important enough to have both the radio-navigational warning and an NtM in circulation.
4. Additional information about JRCC Australia warnings and Maritime Safety Information (MSI) can be found in Chapter 8.

7.4.2 REPORTING FAILURES OF AIDS TO NAVIGATION

1. With the exception of aids to navigation located within a harbour or port limit, failures of aids to navigation should be reported as a matter of priority to the JRCC Australia.
2. Within the Great Barrier Reef (GBR) and Torres Strait, reports of failures to aids to navigation can also be made to Reef VTS by VHF radio, Inmarsat C message, or by telephone (see Section 9.3.4).
3. All failures of aids to navigation within harbour or port limits should normally be reported to the local harbour authorities. However, if it is deemed that a particular aid to navigation failure within a port or harbour constitutes a danger to shipping then JRCC Australia should also be advised as soon as possible.

JRCC Australia contact details	
Telephone:	+61 2 6230 6811 / 1800 641 792
Fax:	+61 2 6230 6868
Email:	rccaus@amsa.gov.au
Radio:	via AMSA HF DSC network

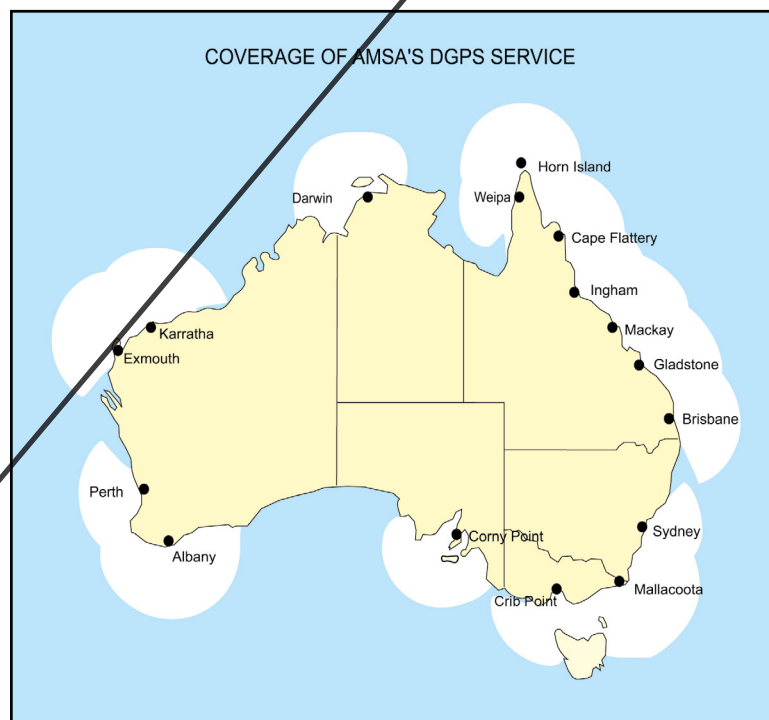
7.5 AUSTRALIAN MARITIME SAFETY AUTHORITY'S DIFFERENTIAL GLOBAL POSITIONING SYSTEM SERVICE

With reference to Australian Maritime Safety Authority (AMSA) Marine notice 03/2020 and in accordance with Australian Hydrographic Office (AHO) NtM 941/2020 Section 7.5 - Australian Maritime Safety Authority's Differential Global Positioning System Service has been deleted. The service was shutdown on 1 July 2020.

1. ~~Australian Maritime Safety Authority (AMSA) has established 16 DGPS broadcasting stations along Australia's coastline. The aim of the system is to provide mariners with GPS integrity monitoring and improved GPS accuracy in critical areas of Australia's coastal waters. The areas covered by the service include the GBR, Torres Strait region, the south west and north west coasts, Bass Strait and all major port approaches.~~
2. ~~Broadcasts from these stations are free to air, allowing mariners to achieve position fixing accuracies of better than 10 metres (95% confidence) within the coverage area. The range of coverage is approximately 150 nautical miles (nm) from each of the stations. The DGPS radio beacons are remote controlled and monitored 24 hours a day. Information on any DGPS radio beacon in an out of tolerance condition is promulgated via AUSCOAST radio-navigational warnings.~~
3. ~~Each station transmits DGPS data on a radio frequency in the LF/MF band allocated for marine radio navigation (285 to 325 kHz). Individual station details are in the AMSA's DGPS service stations table on the following page. Further details are available at AMSA's website.~~
4. ~~To use the DGPS service, mariners need a GPS receiver capable of processing DGPS data in accordance with the Radio Technical Commission for Maritime Services (RTCM) standards. They will also require a DGPS radio beacon receiver. Some sets combine the differential signal receiver with the GPS signal antenna in one unit.~~
5. ~~AMSA's DGPS service conforms to the RTCM recommendations (RTCM SC-104 Recommended Standards for Differential Navstar GPS Service) when transmitting data. It defines the correction message format and 16 different correction message types.~~
6. ~~The DGPS service also complies with the relevant recommendations of the International Telecommunications Union (ITU) and IALA.~~

AMSA's DGPS service stations

Station	Position (WGS84)		Frequency kHz	RTCM message formats used
Albany	35° 05'.25 S	117° 54'.03 E	315	3, 5, 7, 9, 16
Brisbane	27° 04'.15 S	153° 03'.32 E	294	3, 5, 7, 9, 16
Cape Flattery	14° 57'.94 S	145° 18'.05 E	304	3, 5, 7, 9, 16
Crib Point	38° 29'.52 S	144° 53'.19 E	314	3, 5, 7, 9, 16
Cornly Point	34° 53'.97 S	137° 00'.88 E	316	3, 5, 7, 9, 16
Darwin	12° 26'.72 S	130° 57'.51 E	294	3, 5, 7, 9, 16
Exmouth	21° 53'.06 S	114° 08'.04 E	297	3, 5, 7, 9, 16
Gladstone	24° 02'.21 S	151° 21'.53 E	313	3, 5, 7, 9, 16
Horn Island	10° 35'.52 S	142° 16'.48 E	320	3, 5, 7, 9, 16
Ingham	18° 33'.34 S	146° 18'.35 E	306	3, 5, 7, 9, 16
Karratha	20° 42'.41 S	116° 46'.44 E	304	3, 5, 7, 9, 16
Mackay	21° 06'.19 S	149° 12'.68 E	315	3, 5, 7, 9, 16
Mallacoota	37° 34'.09 S	149° 44'.16 E	318	3, 5, 7, 9, 16
Perth	31° 47'.88 S	115° 56'.01 E	308	3, 5, 7, 9, 16
Sydney	33° 59'.18 S	150° 58'.67 E	308	3, 5, 7, 9, 16
Weipa	12° 39'.21 S	141° 51'.61 E	316	3, 5, 7, 9, 16



SOURCE: Australian Maritime Safety Authority

7.6 PASSAGE PLANS

- Mariners should be familiar with the provisions of:
 - Marine Order 28 (*Operations Standards and Procedures*)
 - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, Chapter VIII – Watchkeeping
 - requirement to plan their voyage as stipulated in International Convention for the Safety of Life at Sea (SOLAS) Chapter V, Regulation 34

2. Prior to each voyage, the master of every vessel must ensure that a detailed plan of the entire voyage from berth to berth, including those areas where a pilot is required, is complete. The plan must use adequate and up-to-date charts and nautical publications in its development. The planned route must be clearly displayed on appropriate charts and be available continuously to the officer of the watch.
3. Any amendment to the voyage plan while on passage should be thoroughly checked, and approved by the master before implementation
4. Passage plans may be checked during Port State Control (PSC) inspections.

7.6.1 QUEENSLAND COASTAL PASSAGE PLAN

1. AMSA has produced a Queensland Coastal Passage Plan (QCPP) for the GBR and Torres Strait. It seeks to improve pre-pilotage communications between coastal pilotage providers, the vessels they service and the pilots embarked on these vessels. The QCPP helps to prepare vessels for transits of the coastal pilotage areas described in Marine Order 54 (*Coastal Pilotage*).
2. The QCPP improves the readiness of vessels transiting coastal pilotage areas within the GBR and Torres Strait, by ensuring that voyage plans, waypoints and other planning considerations have been completed in a standardised manner. The QCPP seeks to achieve consistency by ensuring that vessels arrive at the Pilot Boarding Ground (PBG) in a state that is standardised, predictable and well informed. In doing so, the pilot can embark with confidence at the 'starting position' for the pilotage. Masters are encouraged to keep a copy of the QCPP on the bridge for quick reference and to ensure it is available for the initial Master-Pilot Exchange (MPX).
3. The QCPP has been developed primarily for the benefit of masters and mates of vessels transiting any of the coastal pilotage areas described within the QCPP, including Torres Strait, the Great North East Channel (GNEC), the Inner Route of the GBR and Hydrographers Passage. Vessel owners, charterers and agents may also find the document useful.
4. Vessel masters are encouraged to prepare their voyage plans for the GBR and Torres Strait using the QCPP to ensure revisions made by the pilot (to cater for the specific conditions of each pilotage) are kept to a minimum. The pilot will expect vessels to have the waypoints and courses detailed in the QCPP accurately transferred to charts and electronic navigation systems prior to boarding.
5. The QCPP can be found at the Coastal Pilotage Portal on AMSA website.

AMSA Portal:	https://www.amsa.gov.au/safety-navigation/navigating-coastal-waters/about-coastal-pilotage
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7.7 PILOTAGE

1. The presence of a pilot on board can enhance the safety of the vessel when it is in confined waters. Pilots provide expert guidance for a vessel through navigationally hazardous parts of the coast, or into and within ports. A pilot is expected to have highly developed navigation and ship handling skills, as well as an intimate knowledge of the local area and its environment. Carriage of a pilot, however, does not relieve the ship's master from overall responsibility for the safe operation of the vessel.

7.8 PILOTAGE - TORRES STRAIT AND GREAT BARRIER REEF

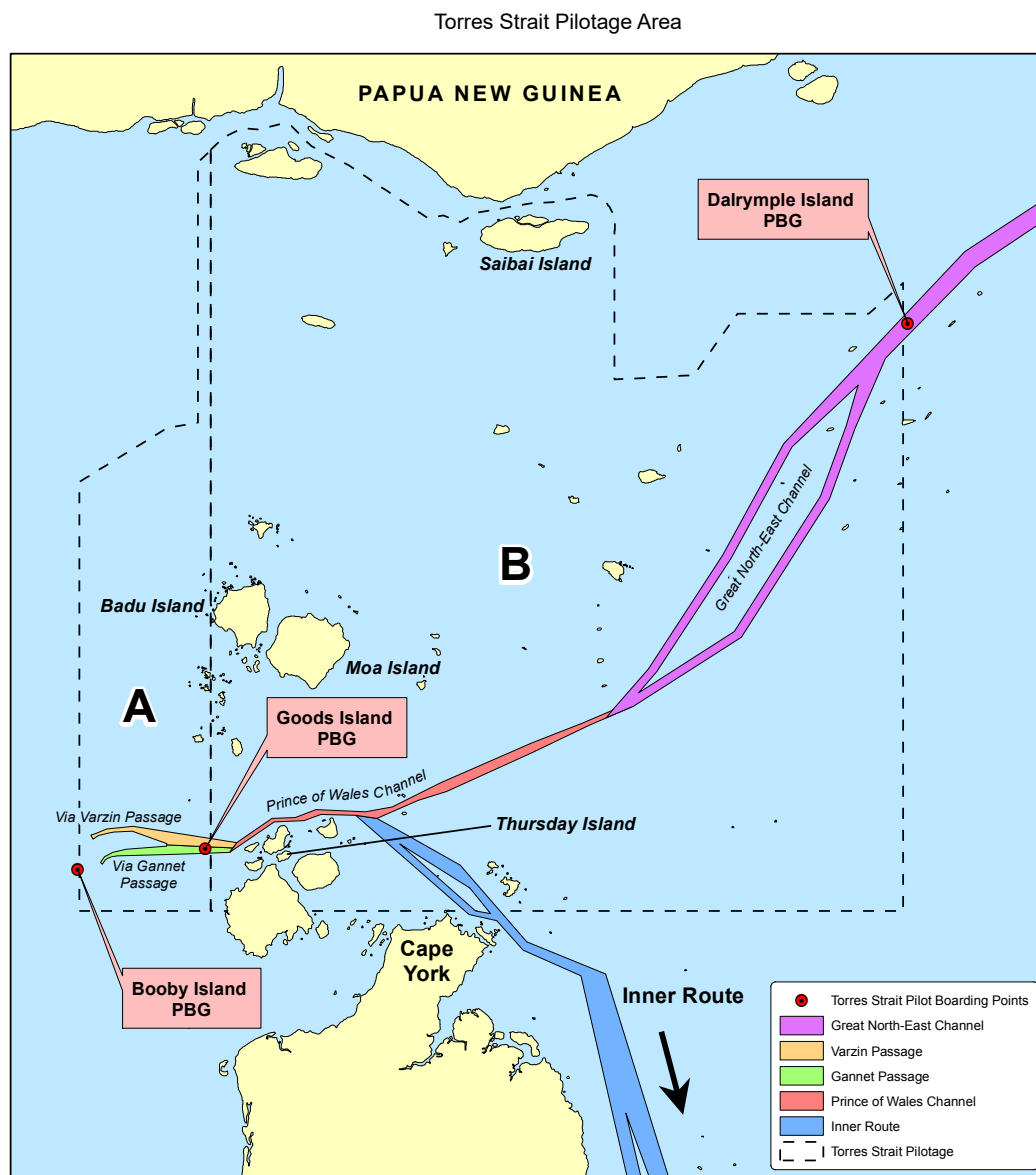
1. Compulsory pilotage requirements are contained in the *Great Barrier Reef Marine Park Act 1975* (Cth), the *Navigation Act 2012* (Cth) and Marine Order 54 (*Coastal Pilotage*). The requirement to carry a pilot in the Inner Route (Cape York to Cairns Section), Hydrographers Passage, The Whitsundays and Torres Strait (including the GNEC) has been endorsed by the International Maritime Organization (IMO) under *Resolutions A710* (17) and *MEPC 133* (53).
2. Vessels to which these requirements apply are:
 - any vessel that is 70 metres or longer in overall length
 - any loaded oil tanker (irrespective of length)
 - any loaded chemical carrier (irrespective of length)
 - any loaded liquefied gas carrier (irrespective of length)

3. Note: Pilotage requirements under Australian law do not apply to a vessel belonging to an Australian or foreign military force, or to a vessel which has a pilotage exemption issued by the GBRMPA and AMSA.
4. There are five pilotage areas where pilots licensed by AMSA **must** be carried:
 - the Inner Route pilotage area (Cape York to Cairns)
 - the GNEC pilotage area
 - the Hydrographers Passage pilotage area
 - the Whitsundays pilotage area
 - the Torres Strait (as defined in Marine Order 54 (*Coastal Pilotage*))
5. A master or owner may apply to GBRMPA and AMSA to seek an exemption from the requirement to navigate with a pilot in a pilotage area of the Great Barrier Reef Marine Park (GBRMP) and Torres Strait. A technical assessment of the vessel and a review of the qualifications and recent GBR experience of the entire bridge team will be taken into consideration when deciding whether or not to grant a pilotage exemption.

Website:	www.amsa.gov.au/safety-navigation/navigating-coastal-waters/coastal-pilotage-exemptions
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7.8.1 PILOTAGE AREAS IN TORRES STRAIT

1. Marine Order 54 (*Coastal Pilotage*) states that for the purposes of coastal pilotage requirements, Torres Strait means the waters bounded by:
 - (a) on the south by latitude $10^{\circ} 41.00' \text{ S}$; and
 - (b) on the east:
 - (i) for a vessel moving eastward - by longitude $143^{\circ} 22.00' \text{ E}$; or
 - (ii) for any other vessel - by longitude $143^{\circ} 24.00' \text{ E}$; and
 - (c) on the north by the line of Australia's exclusive economic zone; and
 - (d) on the west:
 - (i) for a vessel of less than 8 metres draught - by longitude $142^{\circ} 05.00' \text{ E}$; or
 - (ii) for a vessel of 8 metres draught or more moving eastward - by longitude $141^{\circ} 50.00' \text{ E}$; or
 - (iii) for a vessel of 8 metres draught or more moving westward - by longitude $141^{\circ} 51.70' \text{ E}$
2. The Torres Strait Pilotage Area is comprised of 'Area A' and 'Area B' as depicted in the Torres Strait Pilotage Area image. These areas provide a graphical representation of the greater Torres Strait Pilotage Area as defined in Marine Order 54 (*Coastal Pilotage*) and reflect the different requirements which apply to vessels with a draught of eight metres or more.



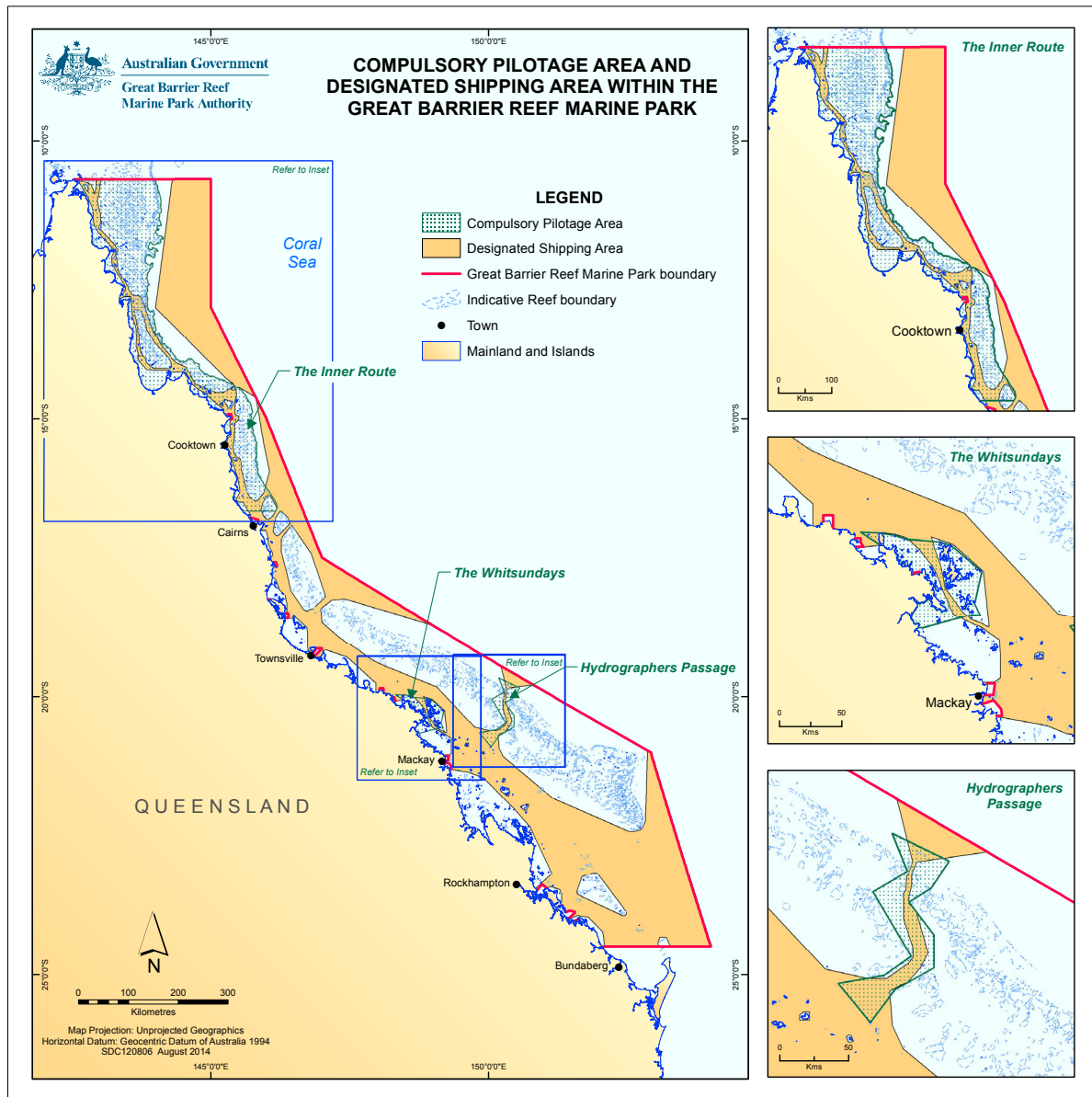
7.8.2 PILOTAGE AREAS IN THE GREAT BARRIER REEF

- The boundaries of the three compulsory pilotage areas in the GBR described below are cited from the *Great Barrier Reef Marine Park Regulations 1983 Part 5 (118)* which was made under the *Great Barrier Reef Marine Park Act 1975 (Cth)*.

The Inner Route

- The inner route is the waters bounded by:
 - the Australian mainland; and
 - the outer eastern edge of the Great Barrier Reef; and
 - the northern boundary of the Great Barrier Reef Region (parallel 10° 41.00'S); and
 - the parallel 16° 39.91'S.
- See diagram “Great Barrier Reef pilotage areas” on page 113 below.

Great Barrier Reef pilotage areas



The Whitsundays Compulsory Pilotage Area

3. The Whitsundays area (including Whitsunday Passage, the Whitsundays Group of islands and the Lindeman Group of islands) is a popular tourist and cruise vessel destination.
4. Ship masters and cruise ship companies wishing to operate regulated vessels in the Whitsundays pilotage area are required to engage the services of a licensed pilot for the Whitsunday area and/or Whitsundays anchorages. Pilotage services for the Whitsundays can be arranged by contacting pilotage providers as required (see Section 7.13).
5. The Whitsundays compulsory pilotage area is the area bounded by a line that begins at the northernmost point of Cape Gloucester at low water, at about 20°03.606' S, 148° 27.15' E, and continues progressively:

(a) on geodesic lines to the following points:

Item	Latitude	Longitude	Item	Latitude	Longitude
1	19° 58.020' S	148° 18.600' E	9	20° 03.580' S	148° 57.920' E
2	19° 57.830' S	148° 18.530' E	10	20° 14.420' S	149° 10.470' E
3	19° 58.000' S	148° 21.680' E	11	20° 15.200' S	149° 11.150' E
4	19° 58.280' S	148° 27.050' E	12	20° 28.930' S	149° 08.030' E
5	19° 58.370' S	148° 27.400' E	13	20° 31.200' S	149° 09.070' E
6	19° 59.280' S	148° 33.620' E	14	20° 34.280' S	149° 10.500' E
7	20° 00.820' S	148° 37.480' E	15	20° 33.910' S	149° 07.060' E
8	20° 02.170' S	148° 53.070' E	16	20° 39.730' S	148° 45.820' E
It follows the Australian Territorial Sea baseline, as defined in Australian Maritime Boundaries (AMB) 2014 data, published by Geoscience Australia .					

(b) west along the parallel 20°39.73' S to the coastline of the mainland at low water, near Midge Point; and

(c) generally northerly, easterly, south easterly and north westerly along the coastline of the mainland at low water to the point where the boundary began.

Hydrographers Passage Pilotage Area

6. Hydrographers Passage (ENC AU420150 / PNC Aus 821) offers the shortest route to the Coral Sea for vessels departing from central and southern Queensland (QLD). The route is used, in particular, by bulk carriers carrying coal from the port of Hay Point and Dalrymple Bay. Hydrographers Passage is approximately 1nm wide at its narrowest point has a minimum depth of 25 metres on, or near, the recommended track.
7. The passage is the area bounded by a line that progressively joins the following points on geodesy lines:

Item	Latitude	Longitude	Item	Latitude	Longitude
1	20° 39.110' S	149° 49.360' E	8	20° 01.410' S	150° 25.860' E
2	20° 35.910' S	150° 07.360' E	9	20° 06.910' S	150° 17.260' E
3	20° 28.310' S	150° 18.060' E	10	20° 19.910' S	150° 27.060' E
4	20° 02.910' S	150° 03.060' E	11	20° 32.910' S	150° 27.060' E
5	19° 54.910' S	150° 16.560' E	12	20° 41.510' S	150° 11.660' E
6	19° 39.910' S	150° 10.560' E	13	20° 54.410' S	150° 01.960' E
7	19° 50.910' S	150° 33.060' E	14	20° 39.110' S	149° 49.360' E

8. Hydrographers Passage is subject to pilotage requirements. All vessels described in Section 7.8 are required to engage the services of a coastal pilot licensed by AMSA when operating in the Hydrographers Passage pilotage area. Pilots board and disembark ships by helicopter outside Blossom Bank (located approximately 14nm seaward of White Tip Reef) by arrangement with a licensed pilotage provider.
9. Hydrographers Passage is also subject to the mandatory Great Barrier Reef and Torres Strait Ship Reporting System (REEFREP). Further information about REEFREP can be found at Section 7.11, Section 9.3.3 and at AMSA's website.

10. See Section 7.13 for further information about coastal pilotage services for the pilotage areas described above.

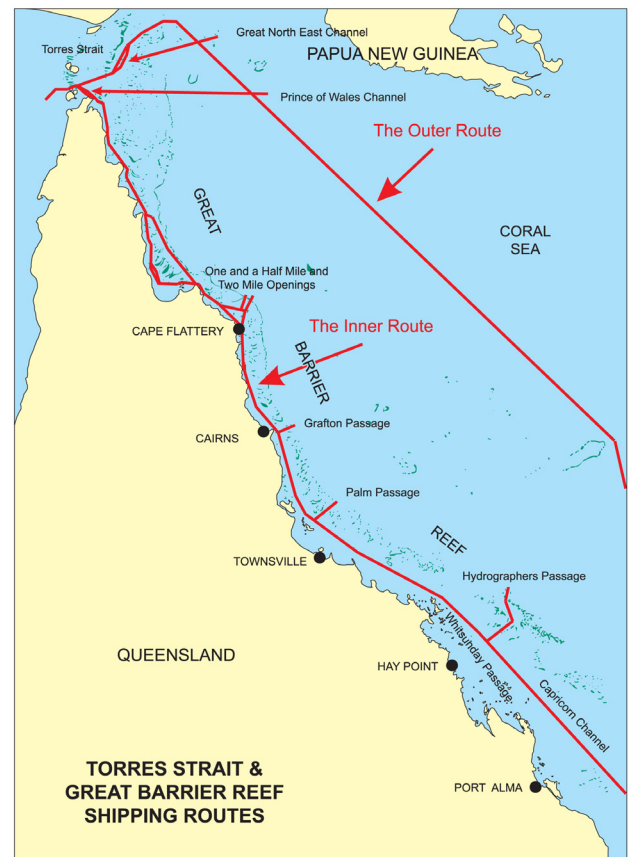
Website:	www.amsa.gov.au
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7.9 SHIPPING ROUTES - TORRES STRAIT AND GREAT BARRIER REEF

- There are stringent management arrangements for commercial shipping in the waters of the GBR and Torres Strait. These areas are designated Particularly Sensitive Sea Areas (PSSA) by the IMO.
- There are several measures in place to increase navigational safety and reduce the risk of ship groundings and collisions in these areas, including:
 - Designated Shipping Areas (DSA) (see GBRMP Zoning Plan 2003)
 - Australia's system of pilotage
 - an Under Keel Clearance Management (UKCM) system
 - mandatory vessel reporting and monitoring
 - aids to navigation
 - Automatic Identification Systems (AIS)

7.9.1 VARZIN PASSAGE, GANNET PASSAGE AND PRINCE OF WALES CHANNEL

- The recommended western entry to Torres Strait is through Varzin or Gannet Passages (see ENC AU411142 / PNC Aus 296).
- Prince of Wales Channel (POWC) is the main shipping route through Torres Strait (see ENC AU411142 / PNC Aus 293 and Aus 296). POWC lies between North West Reef and Goods, Hammond and Wednesday Islands and is 1200 metres wide at its narrowest point on the Western side of the channel (between Sunk and Mecca Reefs). At the Eastern end of the channel, the route passes between Alert Patches and Herald Patches where the marked channel narrows to 800 metres at its narrowest point.
- Torres Strait is an interface between the diurnal tidal regime of the Indian Ocean and the semi-diurnal tidal regime of the Pacific Ocean. This creates a highly variable and complex tidal regime, along with fast flowing tidal streams. Tidal streams of up to eight knots have been observed within POWC. When passing through Torres Strait, allowance must be made for such strong tidal streams. Tidal Stream predictions for Varzin Channel, Harrison Rock, Hammond Rock, Nardana Patches and Alert Patches can be found in the *Australian National Tide Tables* (ANTT).
- Accurate under keel clearance calculations and local knowledge are necessary to establish a tidal window for any particular day and vessel draught. Masters of deep draught vessels, restricted to the use of a tidal window, must make allowance for the effect of tidal stream on vessel speed and the time of arrival at depth restricted areas. The pilot will assist with under keel clearance and tidal window calculations using AMSA's UKCM system (see Section 7.10).



5. Tidal height predictions based on long term data are available for Torres Strait. Tidal levels in this area are affected by long and short term fluctuations in Mean Sea Level (MSL) at both ends of the Strait and also by meteorological effects. Deviations of the actual tidal height from that predicted are common and can be large. Mariners are advised to monitor the real time tidal heights transmitted on VHF Channel 68 by the five tide gauges in Torres Strait located at: Booby Island, Goods Island, Turtle Head, Nardana Patches and Ince Point (see Section 7.12).

6. Approximate minimum depths at chart datum are:

Gannet Passage:	10.4 metres*
Varzin Passage:	10.5 metres*
Prince of Wales Channel:	11.4 metres*
*Note: refer to latest electronic or paper chart for up to date minimum depths.	

7. See Section 7.13 for coastal pilotage services.

7.9.2 THE GREAT NORTH EAST CHANNEL

1. The GNEC links POWC to the most northern entrance to the GBR, approximately 120nm to the North East.
2. The GNEC offers two choices of route, with the eastern route being the deepest. When compared with the POWC, the GNEC is generally wider and deeper. However, constant attention to a vessel's position is required, as tidal streams set strongly across the track and leeway induced by wind can be significant.
3. Fishing vessels are often encountered in Torres Strait. They usually work in concentrations and at night. Their movements are frequently erratic and working deck lights can make their navigation lights hard to identify. Bridge teams must maintain a vigilant visual and radar lookout for these vessels.
4. For west-bound vessels, pilots are embarked by pilot launch in the vicinity of Dalrymple Island.
5. See Section 7.13 for coastal pilotage services.

7.9.3 THE INNER ROUTE

1. The Inner Route (from Cape York to Cairns) requires navigation within confined waters for a period of up to 40 hours, over a distance of approximately 500nm between latitude 10° 41.0'S and latitude 16° 39.9'S. The Inner Route between these latitudes is subject to compulsory pilotage.
2. The GBRMP Zoning Plan 2003 the established DSA including recognised passages and approaches to ports in the GBRMP. The DSA accommodates vessels using accepted or 'normally used' routes (see Section 6.3.1).
3. Details of the Inner Route and the boundaries of the DSA are shown on Australian ENC and PNC.
4. Fishing vessels are often encountered in the Inner Route. They usually work in concentrations and at night. Their movements are frequently erratic and working deck lights can make their navigation lights hard to identify. Bridge teams must maintain a vigilant visual and radar lookout for these vessels.
5. See Section 7.13 for coastal pilotage services.

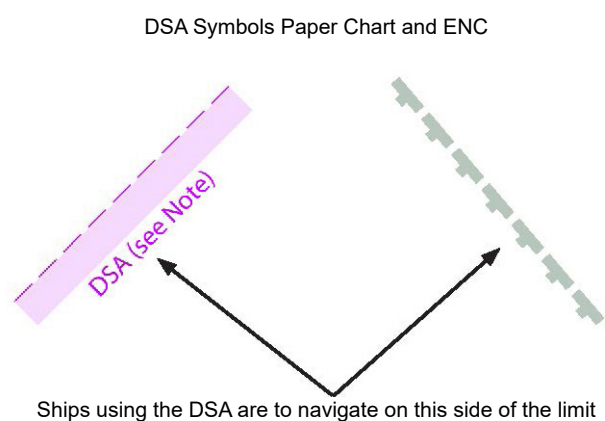
7.9.4 THE OUTER ROUTE

1. The Outer Route offers an alternative route for vessels which do not wish to use the Inner Route (see ENC AU220140, AU318151, AU230150 / PNC Aus 4620, Aus 4621, Aus 4635).
2. The Outer Route has been surveyed to a width of approximately 5nm and is indicated on the appropriate Australian ENC and PNC.
3. Southbound vessels intending to use the Outer Route (proceeding from west of POWC) should proceed:
 - east through POWC, then
 - northeast via the GNEC (North and East of East Cay), then
 - southeast through Pandora Passage (East of Lihou Reef), then
 - east of Saumarez Reef to a position east of Sandy Cape.

- 4. While the Outer Route is some 200nm longer than the Inner Route, it is considerably simpler to navigate. For the majority of the route vessels are not subject to compulsory pilotage, REEFREP or GBRMP zoning requirements.
- 5. Smaller vessels and vessels of low power should note that the south east trade wind regime predominates in the Coral Sea for nine months of the year. Adverse winds and heavy seas can be encountered by South bound vessels.

7.9.5 DESIGNATED SHIPPING AREAS

- 1. All commercial vessels of a length overall (LOA) of 50 metres or more, specialised product carriers, and vessels engaged in towing or pushing another vessel where the total length of the tow exceeds 150 metres, must navigate within the limits of the DSA or the General Use Zones of the GBRMP.
- 2. Penalties apply when operating outside these areas without the written permission of the GBRMPA.
- 3. The DSA has been established to minimise impact on the shipping industry (in terms of route planning) whilst having regard for Australia's international obligations and environmental protection measures.
- 4. The DSA takes into account historical and forecast vessel usage patterns in the inner and outer shipping routes, existing recommended tracks and proposed new routes.
- 5. The depiction of the DSA on charts is show below. Mariners should note that the shaded side of the DSA boundary indicates the side of the boundary on which navigation should be undertaken.



7.9.6 FURTHER INFORMATION ON SHIPPING ROUTES

- 1. More information on navigating through the GBR and Torres Strait can be found on AMSA's website. Additional information can also be found on the latest charts and within the *Great Barrier Reef Marine Park Zoning Plan 2003* and the *Great Barrier Reef Marine Park Regulations 1983*.

AMSA Pilotage Portal:	www.amsa.gov.au/safety-navigation/navigating-coastal-waters/navigation-through-great-barrier-reef-and-torres-strait
GPRMP Zoning Plan:	www.gbrmpa.gov.au/access-and-use/zoning
GPRMP Regulations:	www.gbrmpa.gov.au/about-us/legislation-regulations-and-policies/great-barrier-reef-marine-park-regulations-2019

7.10 TORRES STRAIT - UNDER KEEL CLEARANCE MANAGEMENT SYSTEM

7.10.1 INTRODUCTION

- 1. The UKCM system is one of a number of protective measures implemented by AMSA to enhance the safety of shipping in Torres Strait and the GBR. Complementing Australia's system of pilotage and Reef VTS coverage, the UKCM system provides a modern aid to navigation that seamlessly links complex shore-based calculations with ship-based operations.

2. The UKCM system allows vessel operators and coastal pilots to plan the safe and efficient passage of 'deep draught' vessels (in the context of the amount of available water) through Torres Strait. AMSA's UKCM system is a web-based aid to navigation. It combines dynamic vessel information, hydrodynamic modelling and environmental data from tide, tidal stream, wind and wave sensors, to calculate a vessel's under keel clearance.
3. The UKCM system provides vessel operators, masters, watchkeepers, pilotage providers and coastal pilots the ability to use the system to:
 - assess loading scenarios based on final draught for 'deep draught' vessels
 - optimise the scheduling of 'deep draught' transits and pilot transfer, and
 - improve the safety and efficiency of 'deep draught' transits through Torres Strait
4. Use of the UKCM system is compulsory for all vessels with a deepest draught of eight metres or more. Circumstances may warrant use of the UKCM system for vessels of lesser draught. AMSA considers the use of the system to be an effective way of minimising under keel clearance risks. Pilotage providers that assign an AMSA licensed coastal pilot to the transit of a vessel through Gannet Passage, Varzin Passage or POWC are required to ensure the UKCM system is used.
5. Precautions have been taken to ensure that the information in, and generated by, the UKCM system is accurate. However, the responsibility for safe navigation continues to reside with mariners, (masters and pilots) through the appropriate use of the system in conjunction with other aids to navigation, official hydrographic products and prudent seamanship. This includes voyage planning as defined in IMO Resolutions. AMSA accepts no liability arising from misuse of the system or misinterpretation of information provided or generated by the system.

7.10.2 UNDER KEEL CLEARANCE MANAGEMENT SYSTEM SERVICES AND ACCESS

1. The system provides the services to authorised users as seen in the UKCM system service table.

Access to the Under Keel Clearance Management System

2. Access to the UKCM system is available for approved users through a vetted registration process. To request registration, follow the registration process available at:

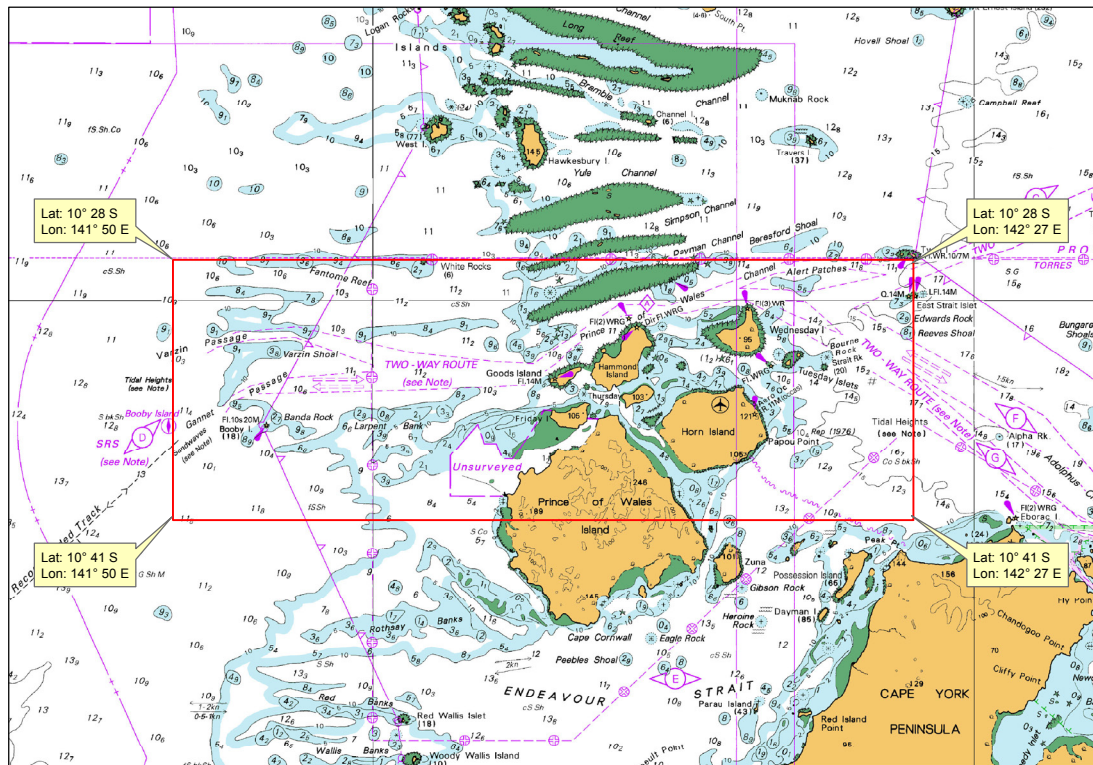
AMSA link:	https://www.amsa.gov.au/safety-navigation/navigating-coastal-waters/under-keel-clearance-management-coastal-pilots
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UKCM System Service	Description
Registration Services	Service to support the management of users registration
Vessel Service	Service to input relevant vessel particulars
Voyage Planning Service	Service to support the long term planning of transits through the Torres Strait. Includes determination of maximum safe draught for a transit and tide windows
Transit Planning Service	Service to support the planning of transits through the Torres Strait. Includes determination of maximum draught for a transit, times at key way points (and speeds to make good those way points) and the resultant net under keel clearance throughout the transit
Transit Monitoring Service	Service to monitor vessel transits in real-time through Torres Strait (pilots and pilotage providers only)
Met Ocean Data Service	Service to view met-ocean sensor data and predictions
Help Service	Services to support the provision of electronic help

7.10.3 AREA OF OPERATION

- The UKCM System is applicable for use by vessels transiting Torres Strait as outlined in the diagram below.

UKCM System area of operation



7.10.4 UNDER KEEL CLEARANCE REQUIREMENTS FOR TORRES STRAIT

- The following extracts from Marine Order 54 (*Coastal Pilotage*) detail the various pilot and pilotage provider licence conditions related to use of the UKCM system:
- The pilot may pilot a vessel through the Prince of Wales Channel, Gannet Passage or Varzin Passage only if the vessel:
 - has a draught of 12.20 m or less; and
 - has a net under keel clearance of:
 - if the vessel has a draught of less than 11.90 m – at least 1 m; or
 - if the vessel has a draught of 11.90 m or more – at least 10% of the draught of the vessel -; or
 - for a vessel piloted through the Gannet or Varzin Passages – at least 1 m.
- The pilot must use the UKCM system to pilot a vessel through the areas mentioned above if the vessel has a draught of at least 8 m.
- The pilot may only use the UKCM system if the pilot has completed to the satisfaction of AMSA:
 - training in the use of the UKCM system; and
 - a competency assessment in the use of the UKCM system.
- If a pilotage provider assigns a licensed pilot to the transit of a vessel through the POWC, Gannet Passage or Varzin Passage, the provider must ensure the pilot complies with the above requirements.

7.11 GREAT BARRIER REEF AND TORRES STRAIT SHIP REPORTING SYSTEM

1. The Torres Strait and GBR are subject to the compulsory Reef VTS Ship Reporting System (see Section 9.3).

7.12 TORRES STRAIT TIDE GAUGES AND CURRENT METERS

1. AMSA has a network of five tide gauges and one tidal stream gauge in Torres Strait. The gauges provide real-time, accurate tidal data to the mariner via VHF Marine Channel 68 (156.425MHz).
2. Mariners are strongly advised to make use of this service as actual tides and streams may differ considerably from those predicted due to meteorological effects and Mean Sea Level (MSL) fluctuations (see Section 4.11.3).
3. All broadcasts are made from the Hammond Island radio transmitter and radar tower on Hammond Hill (152m, located 0.5 miles SSE of Turtle Head Lighthouse). The nominal range is 24 miles. Where line of sight to Hammond Hill is obscured reception may be lost.
4. The five transmitting tide gauges and one transmitting current meter are at the following locations:

Name	Station Identifier	Position (World Geodetics System (WGS 84))	Hours of Operation
Booby Island (tidal height)	Booby Island tide	10° 36' 09" S 141° 54' 36" E	H 24
Goods Island (tidal height)	Goods Island tide	10° 33' 53" S 142° 08' 44" E	H 24
Turtle Head (tidal height) (Hammond Island)	Turtle Head tide	10° 31' 14" S 142° 12' 47" E	H 24
Nardana Patches (tidal height) Nardana Patches (tidal stream)	Nardana tide Nardana stream	10° 30' 17" S 142° 14' 38" E	H 24
Ince Point (Wednesday Island)	Ince Point tide	10° 30' 51" S 142° 18' 17" E	H 24

5. The tidal data is broadcast in the sequence listed in the table above.
6. For each tide station, the broadcast includes:
 - the station identifier, and
 - the height of tide to two decimal place.
7. For the Nardana tidal stream station, the broadcast includes:
 - the station identifier, and
 - the direction and velocity of the tidal stream to one decimal place.
8. Following the Ince Point tidal data transmission, there is a three-second interval of no radio transmission.
9. The broadcast is repeated on a loop, recommencing with Booby Island, then all others in the same sequence. Tidal data is updated every two minutes.
10. If no data is available from a tidal station, the message 'no data available' will be broadcast after the respective station identifier.
11. For more information refer to the Australian National Tide Tables (ANTT) (AHP11).

7.13 COASTAL PILOTAGE SERVICES

- Pilotage services in Torres Strait, the Inner Route, Hydrographers Passage and Whitsundays pilotage areas are provided by two commercial companies:
 - Australian Reef Pilots Pty Ltd (known as ARP)
 - Torres Pilots Pty Ltd (known as Torres Pilots, or TP)
- Coastal pilots are not licensed for areas other than the pilotage areas mentioned in Marine Order 54 (*Coastal pilotage*) and listed in the various tables that follow.

7.13.1 AUSTRALIAN REEF PILOTS PTY LTD

Booking Procedures for Torres Strait, Great North East Channel and the Inner Route

- Inbound: contact ARP operations five days (if possible) before arrival with following details:
 - vessel name / IMO Number / Call Sign / Maritime Mobile Service Identity (MMSI)
 - required boarding ground (Booby Island, Goods Island, Dalrymple Island, Yorkeys Knob, Blossom Bank, Hilder Reef.)
 - preferred route (GNEC, INNER ROUTE, HYDRO INBOUND, 2 MILE INBOUND)
 - estimated time of arrival in local time (Note: LT = UTC + 10 hours)
 - deepest draught
 - destination
 - sea speed
- Outbound: Notify Reef Pilots Operations as early as possible, with relevant information as above.
- Once the booking is received ARP Operations confirms a booking reference number and commences liaison with master and agents (if applicable) directly to ensure on-time pilot boarding.
- The Duty Pilot will also be in touch with master advising pre-arrival technical information such as way points, tidal windows and AMSA requirements as applicable etc.
- The Duty Pilot is accessible 24 hrs a day on the contact details below:

Email:	DutyPilot@reefpilots.com.au
Telephone:	+61 7 3666 4092

Brisbane Head Office: Telephone: +61 7 3666 4000 Fax: +61 7 3666 4040 Email: admin@reefpilots.com.au Website: www.reefpilots.com.au	Cairns Pilot Station (services Yorkey's Knob Pilot Boarding Ground (PBG)): Telex: +51 9407 6258 ARPC G Telephone: +61 7 4055 8311 Email: CNS@reefpilots.com.au
ARP Operations: Telex: +51 9407 6260 ARPB G Telephone: +61 7 3666 4041 Fax: +61 7 3666 4040 Mobile: +61 413 878 792 Email: operations@reefpilots.com.au	Thursday Island Pilot Station (services Booby & Goods Is PBG): Telex: +51 9407 6256 ARPT G Telephone: +61 7 4069 1570 Fax: +61 7 4069 1812 Email: TIS@reefpilots.com.au
Mackay Pilot Station (Hydrographers Passage services for Mackay, Hay Point, Dalrymple Bay Coal Terminal (DBCT)): Telex: +51 9407 6257 ARPM G Telephone: +61 7 4957 4877 Email: MKY@reefpilots.com.au	Yorke Island Pilot Station (services Dalrymple Is PBG): Telex: +51 9407 6256 ARPT G Telephone: +61 7 4090 0052 Email: YKI@reefpilots.com.au

Australian Reef Pilots - pilot boarding places

Location	Position	ENC / PNC	VHF Channel	Method
Hydrographers Passage (Blossom Bank)	19°43'S 150°26'E	AU420150 / Aus 821	16, 09	Helo Only
Cairns (Yorkeys Knob)	16°44'S 145°45'E	AU417145 / Aus 830	20	Launch or Helo
Two Mile, One & Half Mile (Hilder Reef)	14°21'S 145°29'E	AU415145 / Aus 831	16, 11	Helo Only
Great North East Channel (Dalrymple Is)	9°34'S 143°24'E	AU410143 / Aus 700	13	Launch
Booby Island (Torres Strait)	10°36'S 141°50'E	AU411141 / Aus 700	20	Launch or Helo
Goods Island (Torres Strait)	10°34'S 142°04'E	AU411142 / Aus 700	20	Launch or Helo

7.13.2 TORRES PILOTS PTY LIMITED

Ordering a pilot - Torres Strait, Great North East Channel and the Inner Route

1. Inbound: Arrange through the Brisbane Head Office giving four or five days notice, advising the boarding place, ETA, draught, communications number, destination and pilot disembarkation point.
2. Boarding may be arranged for any QLD ports by request to Torres Pilots Brisbane office.
3. For an arrival at Booby Island or Goods Island, confirm ETA to the Thursday Island Pilot Station 72, 48, 24 and 12 hours before arrival. For an arrival at other locations confirm ETA to Brisbane Head Office 72, 48, 24 and 12 hours before arrival.
4. Outbound: Arrange through the Brisbane Head Office.

Hydrographers Passage

5. Inbound: Arrange through the Brisbane Head Office giving five days notice advising ETA at the Blossom Bank Pilot Boarding Place (see table), draught, destination, and confirming suitability for helicopter land-on. Vessels should confirm their ETA at 72, 48, 24, 12 and six hours before arrival to FLYON Pilot base. Pilots board by helicopter only.
6. Outbound: Arrange through the Brisbane Head Office.
7. For an arrival at Booby Island or Goods Island confirm ETA to the Thursday Island Pilot Station 48, 24 and 12 hours before arrival. For an arrival at other locations confirm ETA to Brisbane Head Office 48, 24 and 12 hours before arrival.

Brisbane Head Office (24 Hours) Telephone: +61 7 3217 9544 Fax: +61 7 3217 9722 Email: operations@torrespilots.com.au Internet: www.torrespilots.com.au	Thursday Island Pilot Base (24 Hours) Telephone: +61 7 4069 2251 Fax: +61 7 4069 2252 Email: tioperations@torrespilots.com.au
Mackay Pilot Base (24 Hours) Operators: FLYON helicopters Pty Ltd. Telephone: +61 7 4953 0148 Mobile: +61 437 279 861 Email: operations@flyon.com.au	Cairns Pilot Base (24 Hours) Fax: +61 7 4035 5278 Email: cairnsoperations@torrespilots.com.au

Torres Pilots - pilot boarding places

Location	Position	ENC/ PNC	VHF Channel	Method
Cairns Fairway (Cairns)	16°45'S 145°50'E	AU5CNS01 / Aus 830	79	Launch or Helo
Goods Island (Torres Strait)	10°34'S 142°04'E	AU411142 / Aus 700	79	Launch
Booby Island (Torres Strait)	10°36'S 141°50'E	AU411141 / Aus 700	79	Launch
Dalrymple Island (GNE Channel)	9°34'S 143°24'E	AU410143 / Aus 840	79	Launch
Hydrographers Passage (off Blossom Bank)	19°43'S 150°26'E	AU420150 / Aus 821	79	Helo

7.14 PILOT BOARDING ARRANGEMENTS

7.14.1 BOARDING LADDERS

1. A ship intending to receive a pilot on board from a pilot launch must provide boarding arrangements in accordance with Regulation 23 of SOLAS Chapter V and IMO Resolution A.1045(27). In Australia, this is a legally enforceable requirement prescribed by AMSA's Marine Order 21 (*Safety and Emergency Arrangements*) 2016. Further guidance is provided in AMSA's Marine Notice 19/2015 (*Use of Pilot Ladders*).

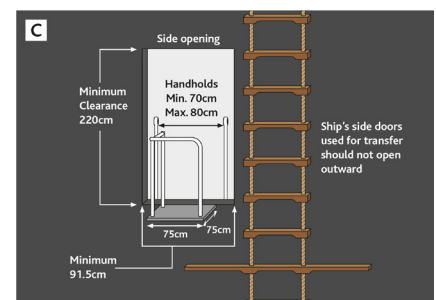
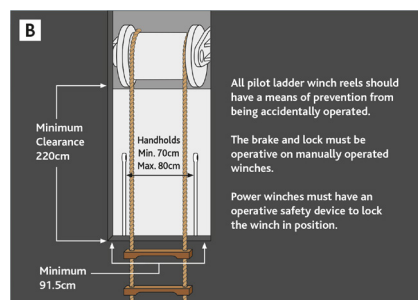
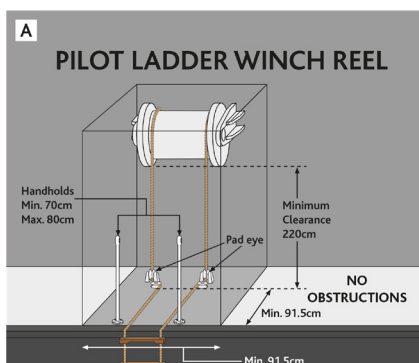
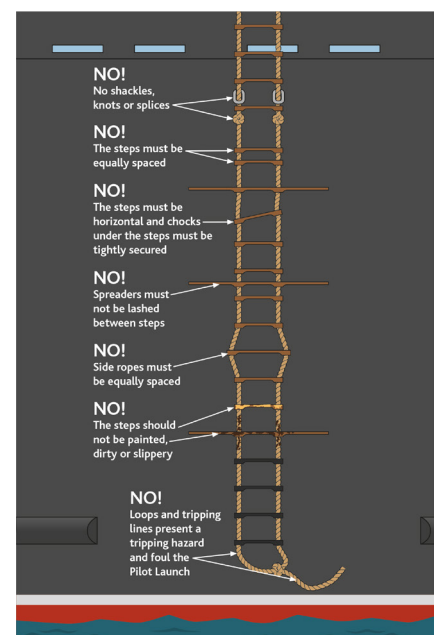
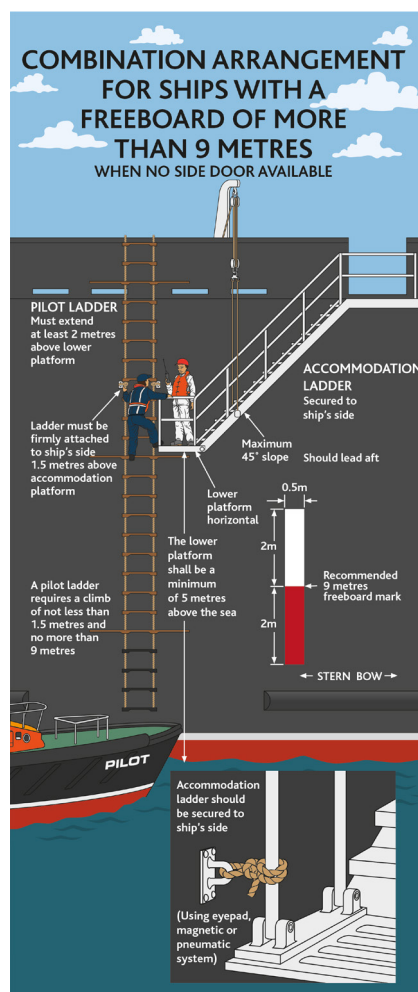
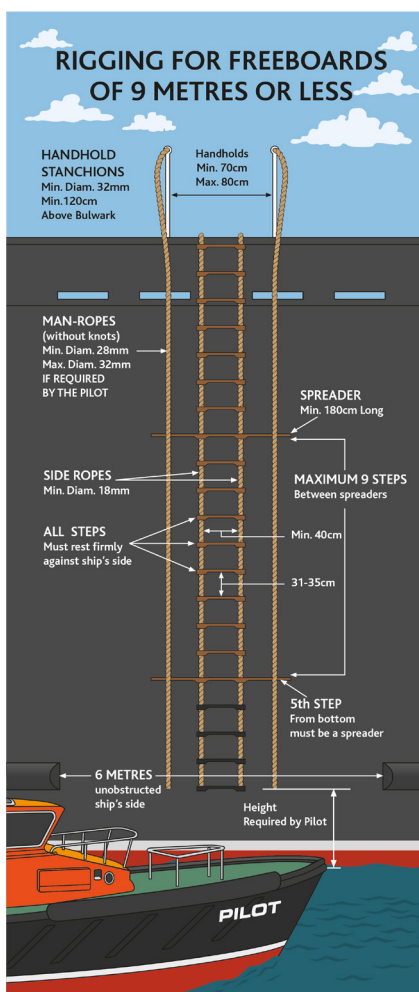
REQUIRED BOARDING ARRANGEMENTS FOR PILOT

In accordance with SOLAS Regulation V/23 & IMO Resolution A.1045(27)

INTERNATIONAL MARITIME PILOTS' ASSOCIATION

H.Q.S. "Wellington" Temple Stairs, Victoria Embankment, London WC2R 2PN Tel: +44 (0)20 7240 3973 Fax: +44 (0)20 7210 3518 Email: office@impahq.org

This document and all IMO Pilot-related documents are available for download at: <http://www.impahq.org>



7.14.2 HELICOPTER BOARDING

- Boarding by helicopter is used as an alternative to launch services at some pilot boarding places. Boarding by helicopter, is by 'land-on' operations only. Masters should consult Marine Order 57 (*Helicopter Operations*) and the Australian Code of Safe Practice for Ship Helicopter Transfers (see AMSA's website) or the International Chamber of Shipping's Guide to Helicopter / Ship Operations to confirm that the vessel is suitable for land-on operations when ordering a pilot at a boarding place where this method of embarkation is an option.

Website:	www.amsa.gov.au
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7.14.3 CONDUCT OF PILOT

- When a pilot is on the bridge they become part of the bridge team but do not replace it. The Officer of the Watch should continue to frequently plot the vessel's position on the chart and monitor the vessel's progress visually and by other means. A good lookout must be maintained by the ship's staff to assist the pilot while conducting a pilotage in confined waters. If the master or officer of the watch has any concern with the ship's position or intended course, they must immediately bring it to the notice of the pilot.
- Further information about Bridge Resource Management (BRM) and expected actions of bridge teams in Australian pilotage waters can be found in AMSA's *Pilot Advisory Note 2016/11*. Further information about Bridge Resource Management and the reduction of single person errors can be found in AMSA's *Pilot Advisory Note 03/2017*.
- Masters of vessels employing the services of a pilot should note that the pilot will have some specific requirements of the ship to assist with the pilotage. On boarding, the pilot will wish to see a vessel equipment check list and to confirm the following:
 - maximum draught
 - gyro error
 - main engine notice required
 - manoeuvring speeds
 - Aldis lamp available
 - deep draught shapes/lights
 - anchors cleared for lowering
 - vessel in the Modernised Australian Ship Tracking and Reporting System (MASTREP) and The Great Barrier Reef and Torres Strait Ship Reporting System (REEFREP) system
 - pilot card sighted
- For pilotage through the GBR and Torres Strait, the QCPP should be consulted for full details of the requirements before and during the pilotage. The QCPP can be viewed on the AMSA website.

Website:	www.amsa.gov.au/safety-navigation/navigating-coastal-waters
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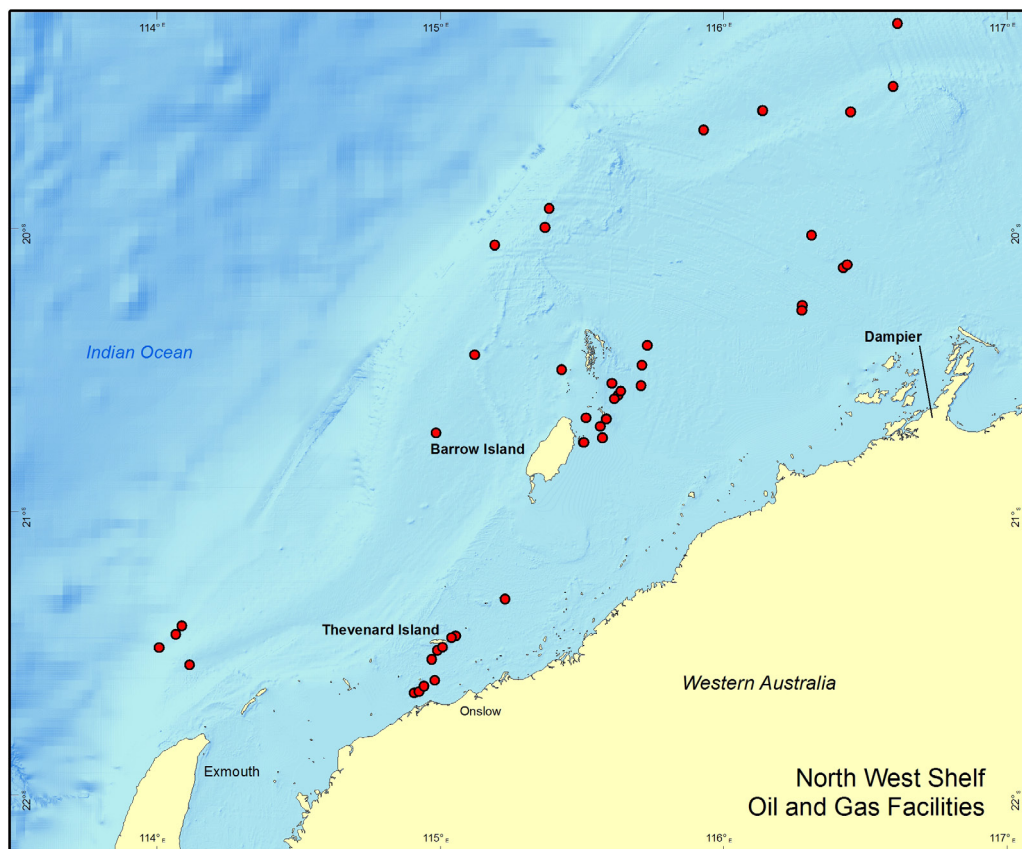
- All Australian pilots are encouraged to report suspected instances of non-compliant pilot transfer arrangements to AMSA. Pilots can use AMSA's Marine Pilot Reporting App (AMSA Pilot) to make reports to AMSA using smartphone devices and tablets.

7.15 OIL RIGS AND OFFSHORE STRUCTURES - NORTH WEST SHELF, TIMOR SEA AND BASS STRAIT

- Exploration rigs, petroleum and Liquefied Natural Gas (LNG) production platforms and Floating Production, Storage and Offtake (FPSO's) vessels can be encountered off the Australian coast. Principal areas of activity are the North West Shelf, Timor Sea and Bass Strait.

2. Mariners are advised that they must closely monitor radio-navigational warnings (AUSCOAST and NAVAREA X warnings) issued by the JRCC Australia and NtM issued by the AHO. NtM published by other hydrographic offices may not be up to date due to rapidly changing circumstances.
3. Petroleum Safety Zones are administered by the National Offshore Petroleum Safety and Environmental Management authority (NOPSEMA) under Section 616 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGs Act)*. Safety zones may extend for a radius of up to 500 metres and are gazetted around wells, structures and equipment. Entry into these Safety Zones is prohibited to all except those vessels authorised to do so by NOPSEMA (as detailed in the gazetted notice) or exempt under Section 615 of the *OPGGs Act*.
4. Drilling rigs are usually moored within a ring of large anchor buoys. This ring may exceed one mile in diameter. The buoys are generally unlit and may not give a good radar echo.
5. When navigating near production platforms or exploration rigs and FPSO's, an adequate safe distance should be allowed. Where there is sufficient sea room, vessels should keep at least 2.5nm clear of these installations. Due allowance should always be made for prevailing weather conditions and the possibility of mechanical failures. Production platforms and exploration rigs maintain a continuous watch on VHF Channel 16 and will attempt to make contact with any ship entering an area to be avoided or heading towards an exploration rig outside the area.

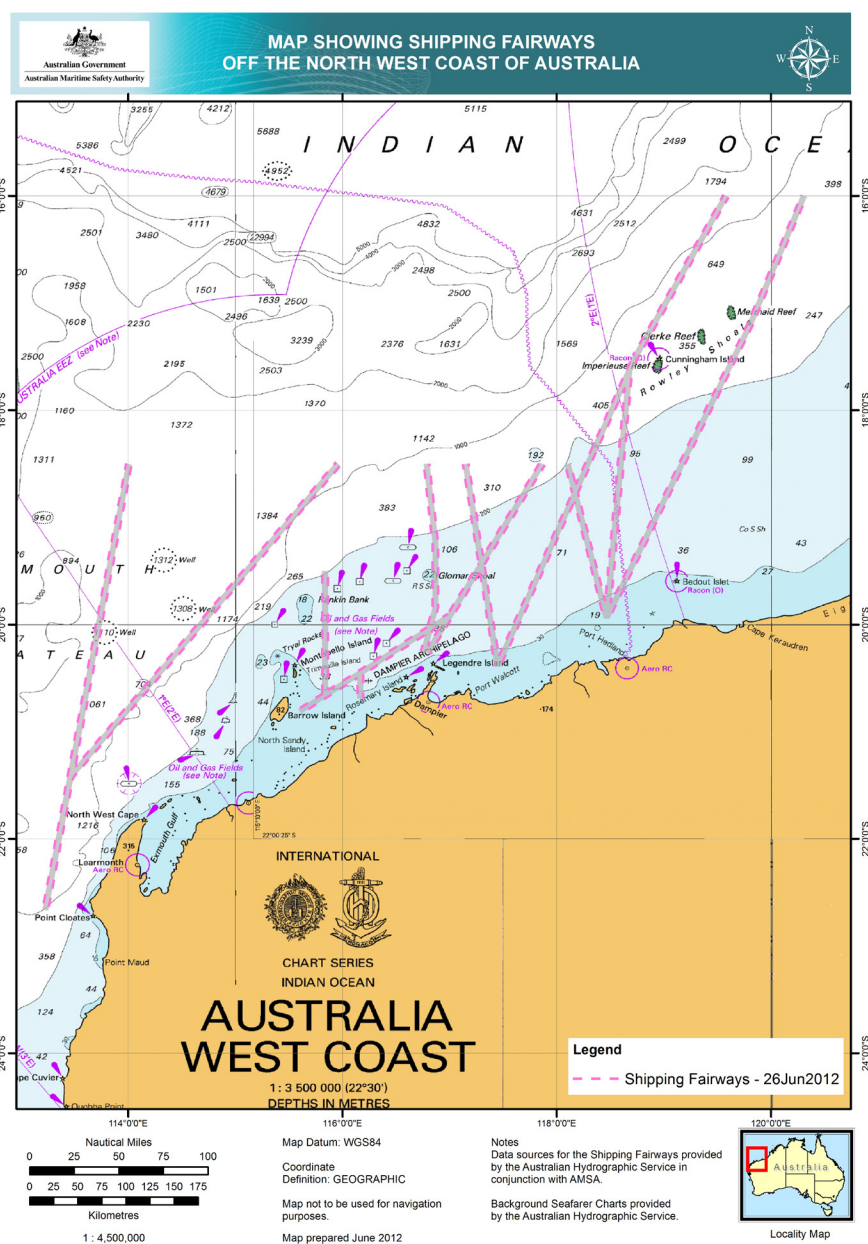
North-West Shelf oil and gas facilities



7.15.1 NORTH WEST REGION - SHIPPING FAIRWAYS

1. The growth in commodities exports in the early part of this decade led to a significant increase in shipping activity in the north west region of Australia, both at major ports and offshore. This increase in traffic, some of it close to environmentally sensitive areas (such as Ningaloo Reef and Rowley Shoals Marine Parks), implied that the degree of risk would increase. In order to manage the increased risk, AMSA, in conjunction with Western Australia (WA) Department of Transport, keeps maritime safety and environment protection measures such as vessel traffic services, ship routing measures, aids to navigation, pilotage and permit systems in the north west region of Australia under review.

2. AMSA has established a network of shipping fairways off the north-west coast of Australia.



3. The shipping fairways aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports, into pre defined routes that will keep them clear of existing and planned off-shore infrastructure. Any such collision could potentially be catastrophic, with significant loss of life and environmental harm.
4. Use of the fairways while not mandatory, is strongly recommended. The *International Regulations for Preventing Collisions at Sea 1972* apply to all vessels navigating within or outside the shipping fairways. The use of these fairways does not give vessels any special right of way.
5. The AHO has incorporated the fairways in relevant ENC and PNC.

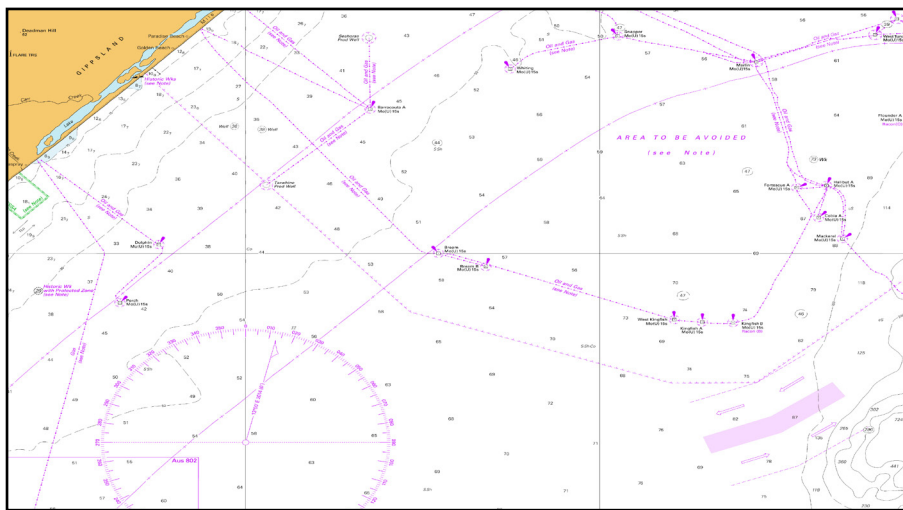
7.15.2 TRAFFIC SEPARATION SCHEMES

1. Australia has several Traffic Separation Schemes (TSS) approved by the IMO. Ships operating in or near these schemes must comply with Rule 10 of the *Regulations for Preventing Collisions at Sea 1972*.

Website:	www.imo.org/en/About/conventions/listofconventions/pages/colreg.aspx
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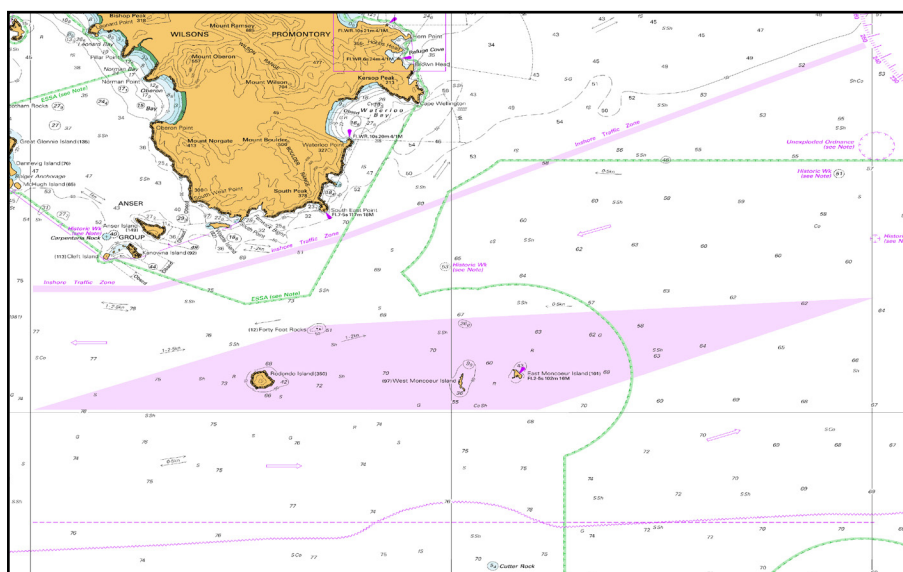
Bass Strait

2. Australia's Bass Strait offshore oil fields lie across the main shipping track. Damage to a structure or pipeline could endanger many lives and seriously disrupt production. This TSS has been designed for the protection of installations in the Bass Strait area and for the safety of shipping. It consists of a 1.5nm wide separation zone and an eastbound and westbound shipping lane. An Area To Be Avoided is declared and should be avoided by ships of more than 200 Gross Registered Tonnage (GRT). For more information see Section 7.21.



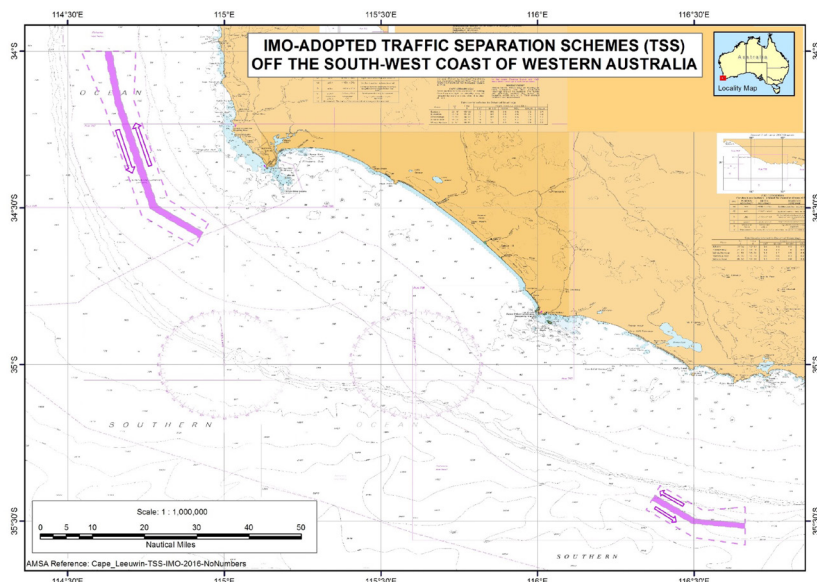
South of Wilsons Promontory

3. This TSS has been designed for the safety of shipping. It consists of a separation zone encompassing islands and shoals, and an eastbound and westbound shipping lane. The area between Wilsons Promontory and the northern separation line is designated as an inshore traffic zone.



South West - Cape Leeuwin and Chatham Island

- These two TSS off the south-west coast of Australia are intended to keep larger vessels well off exposed and potentially dangerous shores due to the presence of frequent strong south westerly winds, the possibility of breakdown, and the potential time taken for a response vessel to arrive in the area. Use of the two TSS off Cape Leeuwin and Catham Island (depicted in the image below) is strongly recommended.



- Several ports have established traffic regulated areas both in the approaches to and within the port. These are local arrangements that have not been adopted by the IMO. These include both fairways and traffic separation lines for inbound and outbound vessels. Vessels should conform to these local traffic regulations to the maximum practicable extent.

7.16 TWO-WAY ROUTES

7.16.1 JOMARD PASSAGE

- The routing measure came in to effect on 1 June 2015 at Jomard Strait. The majority of traffic through this entrance is from or bound for east Australian ports. The Two-Way Route is shown on ENC AU412152 and PNC Aus 627.

7.16.2 DIAMOND PASSAGE

- The routing measure passes between Lihou Reef and East Diamond Islet. The route is used for shipping using Hydrographers Passage and principally bound to or from Hay Point. The new routing measure came in to effect on 1 January 2016 and is shown on ENC AU318151 and PNC Aus 614 and Aus 4621 (INT 621). For more information on the adjacent Area To Be Avoided see Section 7.21.

7.16.3 WEST OF HOLMES REEF

- The routing measure passes west of Flora and Holmes Reefs and takes vessels around the western limit of the 'Coral Sea Area to be Avoided'. The new routing measure came into effect on 1 January 2016 and is shown in its entirety on ENC AU220140 and PNC Aus 4620 (INT 620). For more information on the adjacent Area To Be Avoided see Section 7.21.

7.17 OCEANOGRAPHIC DATA ACQUISITION SYSTEM BUOYS

- The Data Buoy Cooperation Panel (DBCP) (working under the auspices of the World Meteorological Organization and the Intergovernmental Oceanographic Commission) maintains arrays of instrumented drifting and moored buoys in the world oceans. These automated buoys make routine measurements and transmit their data in real time through satellites. Such measurements include wind speed and direction, air temperature, air humidity, atmospheric pressure, currents, sea surface temperature, and water temperature at various depths to 500 metres. All buoys transmit their positions along with the data.

NP5011 / 5012 Reference	Description	Encoded on an ENC as:	Display on ECDIS (Symbolised)	Symbol
Q58	Oceanographic Data Acquisition System	BOYSPP		

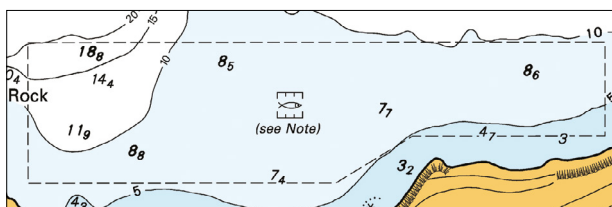
- Advice to fishermen and mariners:
 - ALWAYS:
 - keep watch for the moored buoys at sea; they should be visible on radar and can be avoided
 - keep your fishing operations well clear of the buoys in order to avoid entanglements of your net with the buoy moorings
 - educate your fellow community about the use of data buoys
 - NEVER:
 - pick up drifting buoys. Buoy operators do not refurbish the drifting buoys once deployed. They would continue to transmit their position along with erroneous meteorological and oceanographic data from the deck of the ship
 - moor to, damage, or destroy any part of the buoys
- More information can be found on DBCP website.

Website:	www.jcommops.org/dbcp/
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7.18 MARINE FARMS

- Marine farms (which may be floating or fixed structures) and their associated moorings should be avoided. The farms and beds are generally marked by buoys or beacons, which may be lit. Their charted positions are approximate.
- Mariners must stay outside the dotted line boundary which is depicted on the chart.

Depiction on a PNC



Depiction on an Electronic Chart Display and Information System (ECDIS) (ENC)



7.19 SEISMIC SURVEYS

- Seismic survey vessels tow an array up to 5nm long and are unable to manoeuvre freely. Vessels should therefore give them an appropriately wide berth. Seismic activity is mainly concentrated around the waters of the North West Shelf, Timor Sea and Bass Strait, however seismic vessels may be encountered elsewhere. Details of seismic operations are broadcast as AUSCOAST Warnings.

7.20 SUBMARINE CABLES AND PIPELINES

7.20.1 BACKGROUND

1. Submarine cables are underwater telecommunications cables, either linking Australia with other countries or linking places within Australia (domestic submarine cables). Submarine cables are a vital component of Australia's national communications infrastructure. Submarine pipelines are pipelines laid on the seabed or below it inside a trench and are primarily used to carry oil or gas.
2. Submarine cables and pipelines are depicted on Australian charts. Over time cables and pipelines may be displaced up to 1nm from the charted position, therefore the most recent updated charts should always be consulted.
3. Cables, cable areas, pipelines and pipeline areas are shown on charts in magenta using the appropriate symbol. Mariners should note the Caution and '(see Note)' on charts which have these symbols.

Submarine cables are shown as wavy lines. Submarine cable areas are shown bounded by pecked lines or by dashed T-shape lines interspersed with a short section of the wavy cable symbol.

NP5011 / 5012 Reference	Description	Encoded on an ENC as:	Display on ECDIS (Symbolised)	Symbol
L30.1	Submarine cable	CBLSUB		
L30.2	Submarine cable area	CBLARE		

4. Submarine pipelines are shown as a pecked line using a bulbous type symbol with an annotation such as gas, chem, oil.

NP5011 / 5012 Reference	Description	Encoded on an ENC as:	Display on ECDIS (Symbolised)	Symbol
L40.1	Submarine pipeline (Supply pipeline)	PIPSOL		
L40.2	Submarine pipeline area (Supply pipeline)	PIPARE		

7.20.2 CAUTION AGAINST ANCHORING OR TRAWLING IN THE VICINITY OF SUBMARINE CABLES AND PIPELINES

1. Mariners are warned to avoid anchoring or trawling within 1nm in the vicinity of submarine cables or pipelines. Damaging or severing a submarine cable or pipeline could have serious consequences and criminal penalties may apply.

- In the event of fouling a submarine cable or pipeline every effort should be made to clear the anchor or gear by normal methods. Should these efforts fail, the anchor or gear should be slipped and abandoned without attempting to cut the cable or to get clear of the pipeline. High voltages are often fed into submarine cables and there is a serious risk of harm if an attempt is made to cut the cable. Similarly, an excessive force applied to get clear of a pipeline could result in a rupture and, in the case of a gas pipeline, an explosion.

7.20.3 SUBMARINE CABLE PROTECTION ZONES

- Under Schedule 3A of the *Telecommunications Act 1997* (Cth), the Australian Communications and Media Authority (ACMA) has responsibility for regulating the installation and protection of submarine cables landing in Australia. This includes declaring 'protection zones' in relation to certain international cables. To date, ACMA has declared three protection zones: Northern Sydney, Southern Sydney and Perth. These zones protect submarine cables that are of national significance to Australia by prohibiting or restricting activities that may damage the cables.

Northern Sydney Protection Zone

- This zone extends from Narrabeen Beach to 40nm off-shore (see ENC AU435151 / PNC Aus 197). It covers the Australia Japan Cable, Southern Cross Cable, Pipe Pacific Cable, Australia / Papua New Guinea Cable-2, Gondwana Cable and the Tasman Global Access cable, including the area between these cables.

Southern Sydney Protection Zone

- This zone extends from Tamarama and Clovelly Beaches to 30nm offshore (see ENC AU435151 / PNC Aus 197). It covers the Australia Japan Cable, Southern Cross Cable, Endeavour Cable and the Hawaiki Cable including the area between these cables.

Perth Protection Zone

- This zone begins at City Beach and extends approximately 51nm offshore (see ENC AU432115 / PNC Aus 334). It covers the SEA-ME-WE3 cable and encompasses up to 1nm either side of the cable.

Activities prohibited and restricted within protection zones

- Within each of these protection zones activities such as operating trawl gear designed to work on or near the seabed, a mid water trawl and dredging are prohibited whilst activities such as anchoring and the use of pots and traps that could damage submarine cables are restricted. Details of the activities restricted or prohibited by the protection zones can be found in each of the declaration documents; *Submarine Cable (Northern Sydney Protection Zone) Declaration 2007*, *Submarine Cable (Southern Sydney Protection Zone) Declaration 2007* or *Submarine Cable (Perth Protection Zone) Declaration 2007* which can be found on the Submarine Cable Protection Zone page on the ACMA website.
- It is an offence under the *Telecommunications Act 1997* (Cth) to damage a submarine cable within a protection zone and significant criminal and civil penalties apply. Further information about the location and restrictions for each of the protection zones can be found on the ACMA website. Protection zones can also be viewed on Google Earth™.

ACMA Website:	www.acma.gov.au/Industry/Telco/Infrastructure/Submarine-cabling-and-protection-zones
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7.20.4 SUBMARINE CABLES IN OTHER LOCATIONS (NON-PROTECTION ZONES)

- Submarine cables may also be installed in Australian waters that are outside protection zones. This includes both international and domestic submarine cables.
- Submarine cables installed in Australian waters that are outside protection zones are marked on nautical charts. Incidents involving these cables are covered by the *Submarine Cables and Pipelines Protection Act 1963* (Cth), which gives effect to Australia's obligations under the UNCLOS (including petroleum and gas pipelines, electricity cables and telecommunications cables).

7.20.5 REPORTING AND COMPENSATION

1. Under the *Submarine Cable and Pipeline Protection Act 1963* (Cth), mariners are entitled to claim compensation from cable companies or oil/gas companies if they have sacrificed an anchor, net or other fishing gear in order to avoid damaging a submarine cable or pipeline. Details of the incident must be entered into the vessel's log to support the claim.
2. To report an incident with a submarine cable or pipeline, or to claim compensation for lost gear, the vessel involved must lodge a report in writing within 24 hours of arrival at the next port of call. The report must include:
 - vessel's name, registration number, master's name and contact details
 - name and address of the vessel's owner
 - the vessel's position at the time of the incident (indicate land bearings and readings off navigation systems used)
 - water depth
 - charts in use
 - a description of the cable or pipeline if sighted
 - a copy of the relevant page from the vessel's log
 - action taken to free gear and/or avoid damage to the cable or pipeline
3. This information will be used to process claims and to identify if there is any error in the charted position of the cable or pipeline.
4. Incidents involving submarine cables or pipelines should be reported to the Australian Federal Police Canberra Operations Centre.

Federal Police Telephone:	+61 2 6218 8888
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5. Claims for compensation should be sent to the owner of the submarine cable or pipeline involved.
6. Contact details for cable owners operating in protection zones can be obtained using the details below:

ACMA submarine cable enquiries	
Telephone:	+61 3 9963 6800 (Networks and National Interests Section)
Email:	subcablesenquiries@acma.gov.au

7.21 AREAS TO BE AVOIDED

1. An 'Area To Be Avoided' (ATBA) is a routing measure comprising an area within defined limits in which either navigation is particularly hazardous or where it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ships.
2. There are three areas declared (and shown in diagrams on the next pages):
 - Bass Strait - all ships in excess of 200 GT should avoid the area (ENC AU240140 / PNC Aus 357)
 - Ningaloo Reef - all ships over 150 GT and by ships engaged in towing operations should avoid the area (ENC AU323113 / PNC Aus 329)
 - Coral Sea (ENC AU220140 / PNC Aus 4620)

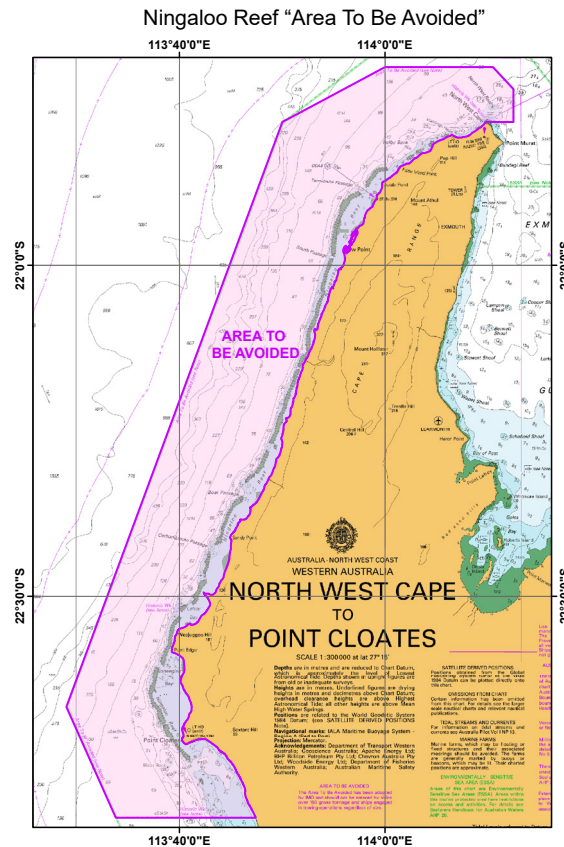
Bass Strait

3. The Bass Strait ATBA is an area off the coast of Victoria described in Schedule 2 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) and excludes waters not within the coastal waters of Victoria and not within a safety zone.
4. The NOPSEMA considers applications for vessels to enter and be present in the ATBA and, where applicable, provides authorisation. Current authorisations can be accessed from the NOPSEMA website.

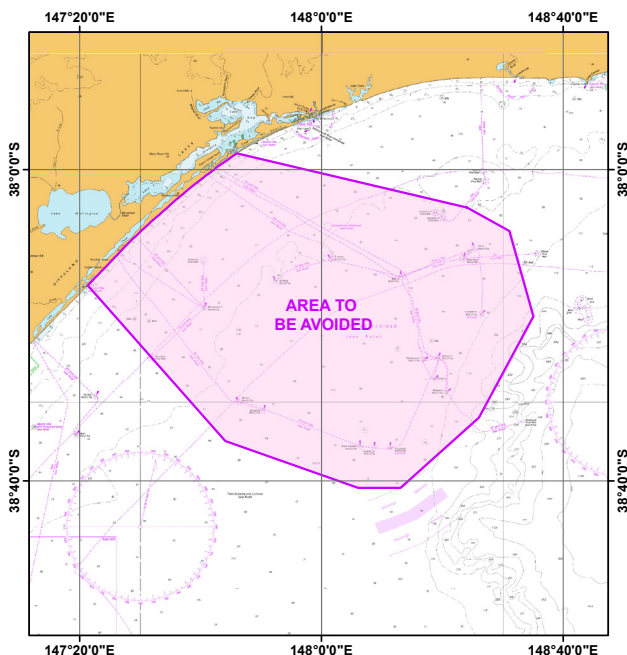
Coral Sea

5. The Coral Sea ATBA came into force on 1 January 2016.
6. Ships (eg: cruise ships) that demonstrate an operational need to visit a location within the ATBA and that have adequate risk mitigation measure in place, may enter the ATBA.
7. More information can be found in the IMO Ships' Routing Guide which can be purchased online on the IMO website.

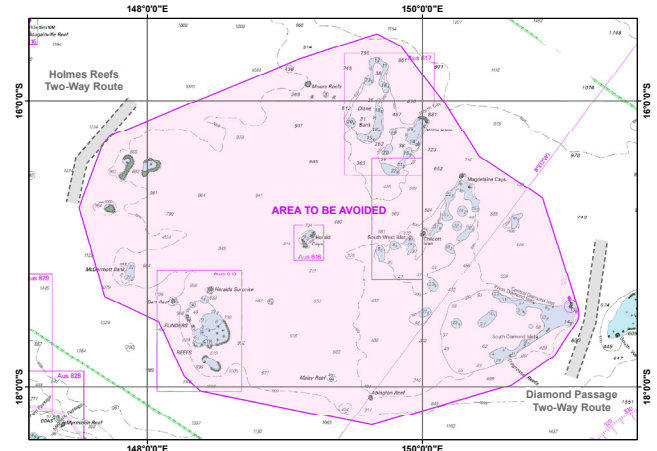
Website:	www.imo.org
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Bass Strait "Area To Be Avoided"



Coral Sea "Area To Be Avoided"



7.22 ACCIDENT AND INCIDENT REPORTING

7.22.1 APPLICATION

1. Australian law requires Australian and foreign flagged vessels in Australian waters or on a voyage to or from an Australian port to report a range of marine incidents to AMSA. If a master has any doubt about the reporting requirements they should contact their agent or email AMSA at the following address:

Email:	reports@amsa.gov.au
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7.22.2 TYPES OF ACCIDENTS AND INCIDENTS

1. Types of accidents / marine incidents are defined in S.14 of the *Navigation Act 2012* (Cth).

Website:	www.amsa.gov.au/about/regulations-and-standards-vessels/navigation-act-2012
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2. A report of marine incidents from the owner or master is required under Sections 185 and 186 of the *Navigation Act 2012* (Cth), where:
3. An owner of a vessel contravenes this subsection if:
 - (a) the vessel is involved in a marine incident that has affected, or is likely to affect, the safety, operation or seaworthiness of the vessel; and
 - (b) neither the owner nor the master of the vessel gives a written report of the incident in the approved form to AMSA, within the period prescribed by the regulations, after the owner becomes aware of the incident
4. An owner of a vessel contravenes this subsection if:
 - (a) the vessel is involved in, or causes, a marine incident that involves:
 - (i) the death of a person; or
 - (ii) serious injury to a person; or
 - (iii) the loss of a vessel; or
 - (iv) the loss of a person from the vessel; or
 - (v) significant damage to a vessel; or
 - (vi) loss of cargo of a vessel; and
 - (b) neither the owner nor the master of the vessel reports the incident to AMSA, within the period prescribed by the regulations, after the owner becomes aware of the incident.
5. Other matters are defined in Marine Orders issued by AMSA.

Dangers to navigation

6. A report of danger to navigation from the master of a vessel is required under Section 187 of the *Navigation Act 2012* (Cth) where:
 - the master meets with, or is informed of, any serious danger to navigation on or near his or her course.
 - A serious danger to navigation includes, but is not limited to, any of the following:
 - (a) dangerous ice
 - (b) a dangerous derelict
 - (c) a tropical storm
 - (d) sub-freezing air temperature associated with gale force winds causing severe ice accretion on superstructures
 - (e) winds of force 10 on the Beaufort scale for which no storm warning has been received

Cargo handling equipment

7. Section 15.3 of Marine Order 32 (*Cargo handling equipment*) requires a report to be submitted for any incident involving breakage or failure of a ship's cargo, or injury to any person on any ship in Australia waters when engaged in cargo work.

Births, deaths, etc.

8. A report and an official logbook entry for Regulated Australian Vessels anywhere, are required under Section 312 of the *Navigation Act 2012* (Cth) if:
- a person carried on the vessel gives birth to a child, dies or disappears; or
 - a seafarer is injured or contracts an illness that incapacitates him or her from the performance of his or her duty

Marine pollution

9. All observed pollution incidents in Australian waters, including accidental discharges, should be reported to AMSA by submission of a Marine Pollution Report (POLREP form) or by calling AMSA's incident response telephone number. Such incidents may involve the discharge into the sea of oil, tank washings of chemicals or dry cargoes, sewage or the disposal of garbage, including any plastics, paper, bottles, metal, ashes and other general waste.
10. For ships that are required to comply with the International Convention for the Prevention of Pollution from Ships (MARPOL), additional requirements for reporting pollution or potential pollution incidents involving oil, chemicals, or harmful substances are provided for in Marine Orders 91, and 93 and 94, respectively. Further information on MARPOL reporting requirements is provided in Section 6.7.1 of this document. If the pollution relates to a marine incident as defined under the *Navigation Act 2012* (Cth), such as a burst pipe, it must be also be reported by the ship's master or owner using the incident alert and report.

Transport safety investigations

11. Section 19 of the *Transport Safety Investigation Act 2003* (Cth) (the TSI Act) requires a responsible person to submit a written report within 72 hours of any marine accident or serious incident. Occurrences such as the death of, or serious injury to, a person on board a ship, the loss of a ship, or a ship being involved in a collision or grounding or fire, must be reported as soon as practicable to the Australian Transport Safety Bureau (ATSB) or to AMSA. Persons responsible for reporting an occurrence include the master or pilot of a ship or the owner of a ship, or the agent of the owner. The TSI Act applies in general to all ships in Australian waters or en route to/from an Australian port, and to Australian ships anywhere in the world.

Occupational health and safety

12. For prescribed ships or units on international or interstate voyages, Section 107 of the *Occupational Health and Safety (Maritime Industry) Act 1993* (Cth) (OHS (MI)) requires notification and reporting of:
- (a) an accident that causes the death of, or serious personal injury to, any person; or
 - (b) an accident that causes an employee who performs work in connection with the undertaking to be incapacitated from performing work for a period prescribed for the purposes of this paragraph; or
 - (c) dangerous occurrence

7.22.3 METHODS OF REPORTING

1. For incidents under the *Navigation Act 2012* (Cth) (all incidents noted in Section 7.22, except pollution):
- an Incident Alert form (form AMSA 18) is to be submitted within four hours of an incident
 - an Incident Report form (form AMSA 19) is to be submitted within 72 hours of the incident
2. Forms are available on AMSA's website and completed forms are to be submitted to the below email address or fax number.

Email:	reports@amsa.gov.au
Fax:	1800 622 153 or +61 2 6230 6868
Website:	www.amsa.gov.au/forms

3. For pollution (MARPOL) incidents:

Email:	Submit an POLREP form online
Telephone:	1800 641 692 or +61 2 6230 6899 (outside Australia)
Website:	www.amsa.gov.au/forms/harmful-substances-report-polrep-oil

7.23 ACCIDENT INVESTIGATION

- The ATSB works to promote safety at sea and conducts marine safety investigations in accordance with SOLAS to determine and report on the factors contributing to marine accidents and serious incidents (occurrences). The aim of these investigations is to promote industry awareness (nationally and internationally) of such factors and to prevent similar occurrences in the future. It is not the purpose of ATSB investigations to determine blame or liability.
- Under the *TSI Act 2005* (Cth), the following must report any accident or serious incident as soon as practicable to the ATSB:
 - the master of the ship, or person in charge of the ship
 - the owner or operator of the ship
 - an agent of the owner or operator of the ship
 - or a pilot who has duties on board the ship
- Normally, such a report will be raised through AMSA via JRCC Australia (see Section 9.1).
- On receiving a report of an accident or serious incident, ATSB will decide on what action to take. While details of all reported occurrences are entered into its database, ATSB investigates selectively by focusing resources on occurrence investigations that are most likely to enhance marine safety. Depending on the type and severity of an occurrence, the ATSB may initiate:
 - an on site investigation normally carried out by ATSB marine investigators, or
 - a limited scope, fact gathering investigation without deploying investigators on-site, and/or
 - a request for more information from the ship's master, owner or agent, AMSA or other organisation/s
- The ATSB undertakes approximately 10 marine occurrence investigations each year, most of which involve large seagoing ships. An investigation report is completed for each occurrence investigation undertaken. All investigation reports are released publicly and published on ATSB's website.

Accident/incident reports to ATSB, Telephone (24 hours):	+61 2 6230 4408 1800 011 034
ATSB enquiries, Telephone (business hours):	+61 2 6257 4150 Toll-free 1800 020 616
Email:	atsbinfo@atsb.gov.au
Fax:	+61 2 6247 3117
Website:	www.atsb.gov.au

Notes:

Notes:

CHAPTER 8 MARITIME SAFETY

8.1 GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM

1. The Global Maritime Distress and Safety System (GMDSS) is a network of systems (both satellite and radio) which enables a distress alert to be transmitted and received automatically over long range, with a high reliability.
2. A key concept of the GMDSS is that of 'Sea Areas'. Because the different radio systems incorporated into GMDSS have individual limitations with respect to range and service provided, the equipment required to be carried by a ship is determined by the ship's area of operation. The GMDSS has divided the world's oceans into four distinct areas:
 - Sea Area A1 - within the radiotelephone coverage of at least one Very High Frequency (VHF) coast station where continuous VHF Digital Selective Calling (DSC) alerting is available
 - Sea Area A2 - within the radiotelephone coverage of at least one Medium Frequency (MF) coast station where continuous MF DSC alerting is available (excluding Sea Area A1)
 - Sea Area A3 - within the coverage area of an Inmarsat geostationary satellite where continuous alerting is available (excluding Sea Areas A1 and A2)
 - Sea Area A4 - the remaining Sea Areas outside A1, A2 and A3 (the polar regions)
3. GMDSS equipment carriage requirements are based not on the size of the ship, but on the Sea Areas in which it operates.
4. GMDSS uses satellite and digital selective calling techniques on MF, HF and VHF bands, enabling a distress alert to be transmitted and received automatically over short and long distances.
5. Additionally, the GMDSS provides for emergency and safety communications; and navigational and meteorological information to ships as well as general communications.
6. Australia has declared Sea Area A3 to cover all of the Australian Search and Rescue Region (SRR) and maritime approaches. The Asia / Pacific Ocean (APAC) I-4 satellite provides complete coverage of Australia's maritime area of interest (SRR and NAVAREA X).
7. Broadcasts under GMDSS and further information can be found in the *Australian GMDSS Handbook* published by Australian Maritime Safety Authority (AMSA), available online via the AMSA website and available as a hard copy for purchase from all AMSA offices.

Website:	www.amsa.gov.au/safety-navigation/navigation-systems/global-maritime-distress-safety-system
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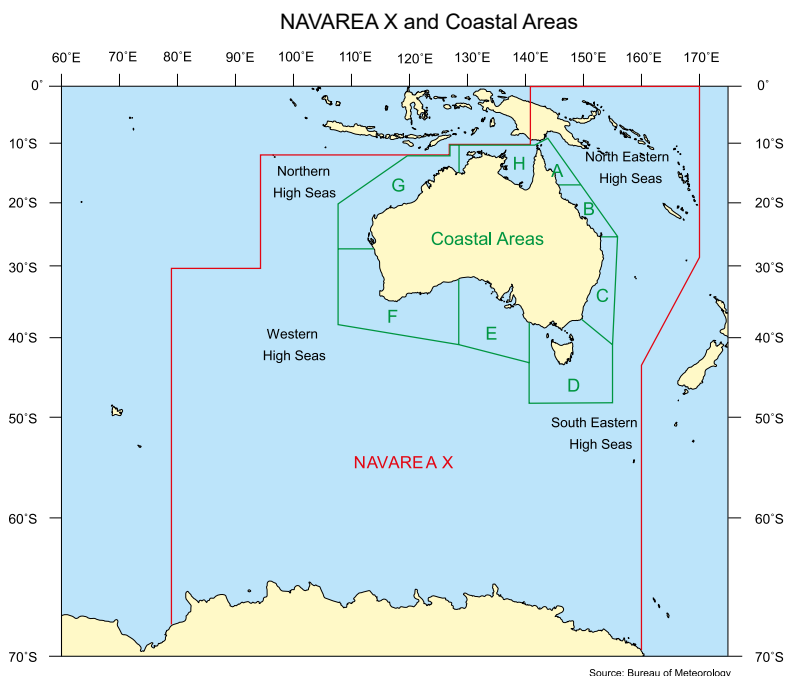
8.2 MARITIME SAFETY INFORMATION

1. Maritime Safety Information (MSI) includes navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages of vital importance to ships at sea.
2. The Bureau of Meteorology (BOM) issues weather information. Navigational warnings and safety messages are issued by the Joint Rescue Coordination Centre (JRCC) Australia.
3. JRCC Australia issues two types of navigational warnings - Long Range Warnings and Coastal Warnings. The warning system is designed to align as closely as possible with World Wide Navigational Warning Service (WWNWS) and Inmarsat recommendations.

8.2.1 LONG RANGE NAVIGATIONAL WARNINGS

1. Under the WWNWS, Australia is the area coordinator for NAVAREA X. In addition, each NAVAREA is divided into coastal areas. Australia uses coastal navigational warning areas A to H.
2. NAVAREA X warnings are issued for navigational aids or dangers within NAVAREA X but outside the Australian coastal areas. Warnings such as major aids to navigation failures are issued as NAVAREA X warnings.

3. NAVAREA X warnings are broadcast and promulgated by the following means:
 - Inmarsat C EGC (SafetyNET) on both Pacific Ocean Region (POR) and Indian Ocean Region (IOR) satellites
 - at AMSA's website (under the Search and Rescue (SAR) / Distress and Safety Communications tabs)



4. Further details can be found at Appendix 2 of the *Australian GMDSS Handbook*.

Website:	www.amsa.gov.au/safety-navigation/navigation-systems/global-maritime-distress-safety-system
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8.2.2 COASTAL NAVIGATIONAL WARNINGS

1. Coastal Navigational Warnings are important navigational warnings, prefixed AUSCOAST and numbered consecutively on an annual basis. They are broadcast for as long as the information is valid.
2. AUSCOAST warnings are broadcast by the following means:
 - Inmarsat C EGC (SafetyNET) on both POR and IOR satellites
 - AMSA's website (under the Search and Rescue / Distress and Safety Communications tabs)

Website:	www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information
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8.2.3 WEATHER BROADCASTS

1. The BOM provides a range of MSI forecasts and warnings via Inmarsat C EGC (SafetyNET). Services for Meteorological Area (METAREA) X are provided for Bass Strait, Torres Strait, Western Australian (WA) and Northern Territory (NT) coastal waters and Australian High Seas Areas.
2. Further information about meteorological broadcasts is detailed on the BOM website.

Website:	www.bom.gov.au/marine
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3. Warnings are broadcast immediately.
4. Forecasts are broadcast via Inmarsat C EGC (SafetyNET) as indicated by the following schedule:

Forecast type	Areas	Times
High Seas	North Eastern, South Eastern, Western, Northern, Southern	1100, 2300 Coordinated Universal Time (UTC)
Coastal Waters	Bass Strait	0530 LST, 1930 UTC ¹ 1715 LST, 0715 UTC ¹
	Torres Strait	0445 LST, 1845 UTC 1600 LST, 0600 UTC
	Northern Territory (NT) (Cape Fourcroy to NT - Queensland (QLD) border)	0445 LST, 1915 UTC 1600 LST 0630 UTC
	Western Australian (WA), NT (WA - NT border to Cape Fourcroy)	0430 LST, 2030 UTC 1630 LST, 0830 UTC

Note: 1. One hour later during Australian Eastern Daylight saving Time - see Chapter 1 - Time Zones.

8.2.4 WEAPONS PRACTICE WARNINGS

1. Major exercises are the subject of special warnings. Vessels approaching weapons practice areas are requested to maintain a radio listening watch on VHF Channel 16 (see Section 10.10).

8.2.5 NOTICES TO MARINERS AND ENC UPDATES

1. Up to date and navigational critical information is included in, and removed from, Electronic Navigational Charts (ENC) via published ENC updates. The same information for Paper Nautical Chart (PNC), as well as Australian Hydrographic Publications (AHP) is published in Notices to Mariners (NtM) (see Chapter 12).

8.3 MARITIME SAFETY INFORMATION SERVICE

1. The MSI service is an internationally coordinated network of radio broadcasts containing information which is necessary for safe navigation. Ships must be able to receive the MSI broadcasts for the area in which they are operating. These requirements are set out in the International Convention for the Safety of Life at Sea (SOLAS) 1974.
2. Australia does not broadcast coastal warnings via Navtex. The maritime areas around Australia have been designated GMDSS Sea Area A3 and A4.
3. Coastal and high seas MSI are broadcast using Inmarsat C EGC (SafetyNET). See Section 8.3.2.
4. In addition to SafetyNET, MSI is also broadcast by two other radio systems, via:
 - HF Maritime Communications Stations. See Section 8.3.3.
 - HF and VHF Coastal Radio Stations:
 - Limited (See Section 8.3.4)
 - Volunteer (See Section 8.3.5)

8.3.1 NAVTEX

1. Australia does not operate a NAVTEX service due to Australia's long coastline and the limited range of NAVTEX service.

8.3.2 SAFETYNET

1. SafetyNET is an international safety service, which allows authorised MSI providers, such as meteorological offices, hydrographic offices and JRCC's to broadcast messages to all ships in certain geographical areas.
2. The SafetyNET service is available through the Inmarsat C system. This system has a special capability known as Enhanced Group Calling (EGC), which enables authorised information providers to broadcast messages to selected groups of ships fitted with Inmarsat C terminals.
3. To receive scheduled navigational warnings for a particular area the terminal must be logged into the correct ocean region Network Coordination Station. The terminal must be programmed with:
 - the vessel's current location
 - the NAVAREA (not stations)
 - message types that are required
4. Australia is in NAVAREA X. Coastal navigational warning areas A to H are used around the Australian mainland. Once the terminal is programmed, the service is automatic and free of charge.
5. Navigational warnings and meteorological information issued by JRCC Australia and the BOM are promulgated using SafetyNET via the POR and IOR satellites. NAVAREA X and AUSCOAST warnings are issued immediately on receipt of the information, and then repeated at the scheduled times of 0700 and 1900 UTC. A scheduled broadcast may not occur at precisely these times, so it is recommended that the terminal remains correctly configured until at least 40 minutes after the scheduled time. Full details of the SafetyNET service can be found in Admiralty List of Radio Signals (ALRS) Volume 5 and via the BOM website.

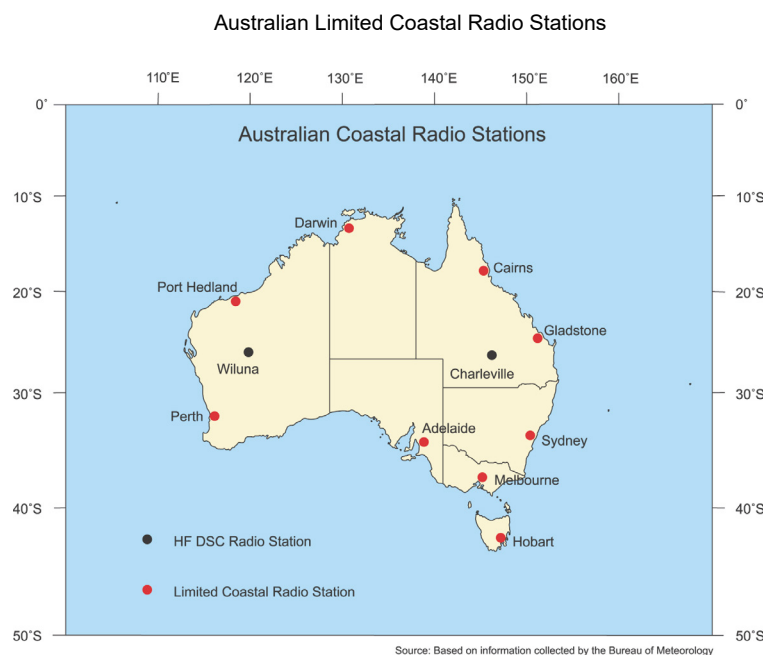
Website:	www.bom.gov.au
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8.3.3 MARITIME COMMUNICATIONS STATIONS

1. Maritime Communications Stations provide:
 - search and rescue services in conjunction with JRCC Australia
 - automatic weather forecasts for the high seas and coastal waters
 - a continuous automated watch for HF DSC distress, urgency and safety calls
2. JRCC Australia transmits MSI via Inmarsat C EGC (SafetyNET). The BOM transmits weather related MSI via MF / HF radiofacsimile, HF radiotelephony and Inmarsat C EGC (SafetyNET).

8.3.4 LIMITED COASTAL RADIO STATIONS

1. Limited Coastal Radio Stations provide:
 - safety communications services for small craft
 - twice daily navigation warnings
 - urgent navigation warnings as required
2. There are nine Government administered 'Limited Coast Radio Stations'. These continuously monitor the following voice channels for distress and safety:
 - HF - 4125, 6215 and 8291 kHz
 - VHF - Marine VHF Channels 16 and 67
3. Charleville Radio also monitors 12290 kHz as follows:
 - 0730-1930 Australian Eastern Standard Time (EST)
(0700-1900 Australian Central Standard Time (CST))



4. Navigation warnings are broadcast twice daily on 8176 kHz at the times shown in the following table:

Limited Coastal Radio Stations Navigation Warning broadcast times

Limited Coastal Radio Station	Callsign	Navigation warnings	Broadcast Time	Further Information
Adelaide	Charleville Radio (formerly "Coast Radio Adelaide")	8176 kHz	1255, 1655 CST	www.sa.gov.au
Cairns	Charleville Radio (formerly "Coast Radio Cairns")	8176 kHz	0925, 2225 EST	www.msq.qld.gov.au
Darwin	Charleville Radio (formerly "Coast Radio Darwin")	8176 kHz	1055, 1855 CST	www.nt.gov.au
Gladstone	Coast Radio Gladstone	8176 kHz	0825, 2125 EST	www.msq.qld.gov.au
Hobart	Tas Maritime Radio (formerly "Coast Radio Hobart")	8176 kHz	1525 EST	www.mast.tas.gov.au
Melbourne	Charleville Radio (formerly "Coast Radio Melbourne")	8176 kHz	0725, 1225 EST	www.transportsafety.vic.gov.au
Perth	Coast Radio Perth	8176 kHz	1425, 1825 WST	www.transport.wa.gov.au
Port Hedland	Coast Radio Hedland	8176 kHz	1225, 1625 WST	www.transport.wa.gov.au
Sydney	Charleville Radio (formerly "Coast Radio Sydney")	8176 kHz	1025, 2325 EST	www.rms.nsw.gov.au

8.3.5 VOLUNTEER COAST RADIO STATIONS

1. Volunteer Coast Radio Stations are run by bodies such as volunteer marine rescue services and clubs. They operate mainly on VHF and 27 MHz. Some Volunteer Coast Radio Stations also monitor 2182 kHz and other HF frequencies. Transmission times can vary. Further information can be obtained from the Australian Volunteer Coast Guard Association website.

Website:	www.coastguard.com.au
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8.4 METEOROLOGICAL BROADCASTS

- The BOM provides meteorological forecasts, warnings and observations and these are transmitted to mariners by various means, including HF voice and facsimile, VHF voice, telephone voice, Inmarsat C EGC and through media outlets. Marine weather information can be found on the BOM website.

Website:	www.bom.gov.au/marine
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8.4.1 MARINE RADIO - VOICE

- The BOM broadcasts marine weather radio services for High Seas and Australian coastal waters from the two HF transmitters located at Charleville, QLD (call sign VMC 'Australian Weather East') and at Wiluna, WA (call sign VMW 'Australian Weather West'). Voice services provide bulletins of warnings (repeated every hour), forecasts and observations (repeated every four hours). The full voice schedule is available at the following website.

Website:	www.bom.gov.au/marine/radio-sat/voice-services.shtml
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Charleville (VMC) broadcast schedule

- The broadcast is available on the following frequencies (kHz):
 - day-time (0700 - 1800 EST): 4426, 8176, 12365, 16546
 - night-time (1800 - 0700 EST): 2201, 6507, 8176, 12365
 - navigation MSI notices are broadcast at 25 minutes past each hour
- Marine weather warnings are broadcast on the hour (on the half-hour in CST) for QLD, NSW, VIC, SA and TAS coastal waters zones and for all high seas areas.
- Marine forecasts and observations are broadcast from Charleville (VMC) on a four hour repeat cycle according to the schedule below.

Charleville Broadcast Time				Frequencies (kHz)	Forecasts
EST	CST*	WST	UTC		
0730	0700	0530	2130	4426 8176 12365 16546	QLD
0830	0800	0630	2230		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
0930	0900	0730	2330		NSW & VIC
1030	1000	0830	0030		TAS
1130	1100	0930	0130		QLD
1230	1200	1030	0230		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
1330	1300	1130	0330		NSW & VIC
1430	1400	1230	0430		TAS
1530	1500	1330	0530		QLD
1630	1600	1430	0630		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
1730	1700	1530	0730		NSW & VIC
1830	1800	1630	0830	2201 6507 8176 12365	TAS
1930	1900	1730	0930		QLD
2030	2000	1830	1030		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
2130	2100	1930	1130		NSW & VIC
2230	2200	2030	1230		TAS
2330	2300	2130	1330		QLD
0030	0000	2230	1430		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
0130	0100	2330	1530		NSW & VIC
0230	0200	0030	1630		TAS
0330	0300	0130	1730		QLD
0430	0400	0230	1830		High Seas (Northern, North Eastern, South Eastern, and Southern areas)
0530	0500	0330	1930		NSW & VIC
0630	0600	0430	2030		TAS

* During daylight saving time, add one hour to Australian EST and CST to obtain Australian Eastern Daylight Time (EDT) and Australian Central Daylight Time (CDT) equivalent. Australian Western Standard Time (WST)

Wiluna (VMW) broadcast schedule

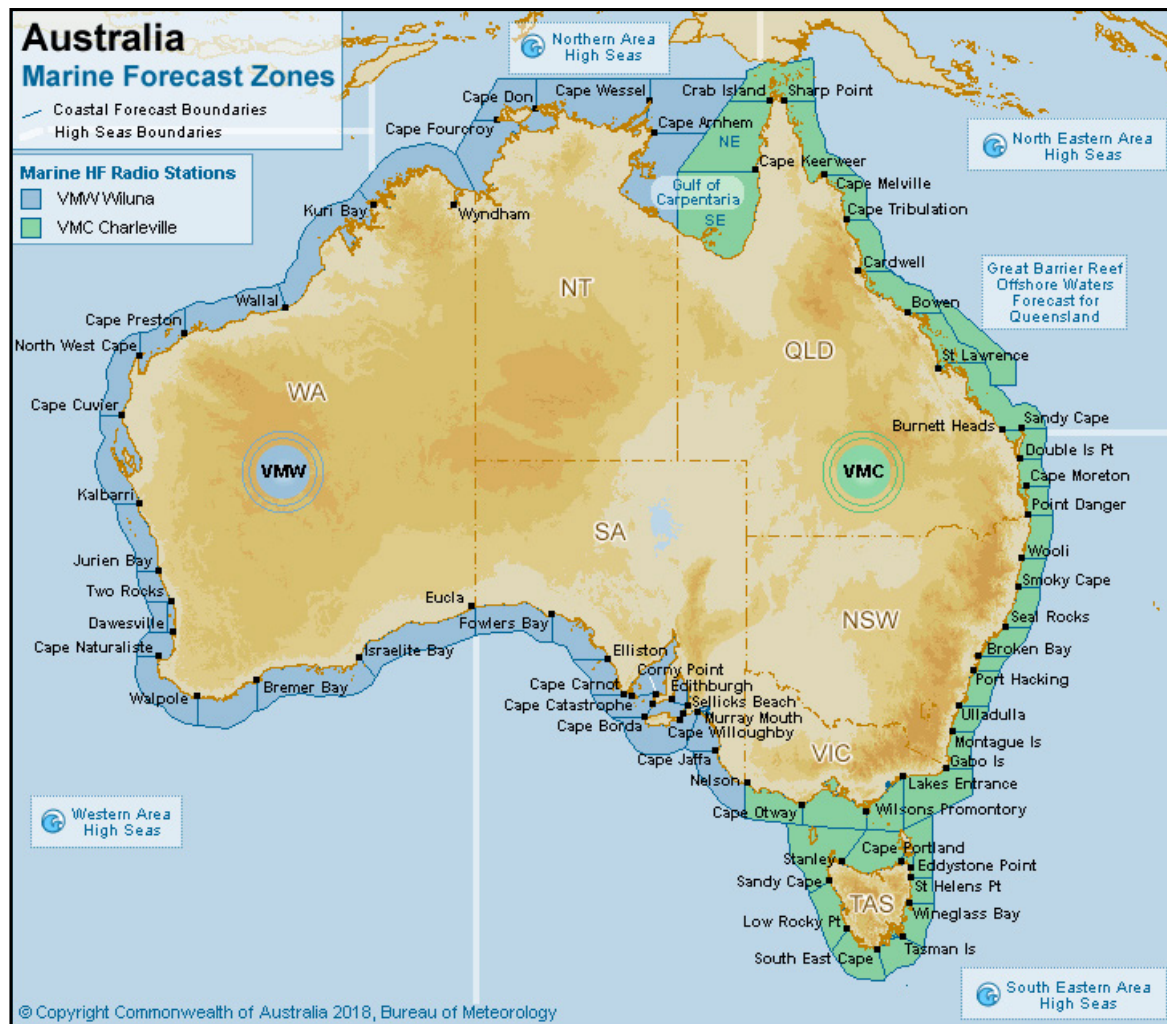
5. The broadcast is available on the following frequencies (kHz):
 - day-time (0700 - 1800 WST): 4149, 8113, 12362, 16528
 - night-time (1800 - 0700 WST): 2056, 6230, 8113, 12362
 - navigation MSI notices are broadcast at 25 minutes past each hour
6. Marine weather warnings are broadcast on the hour (on the half-hour in CST) for QLD Gulf, NT, WA and SA coastal waters zones and for all High Seas Areas.
7. Marine forecasts and observations are broadcast from Wiluna (VMW) on a four hour repeat cycle according to the schedule below.

Website:	www.bom.gov.au/marine/radio-sat/voice-services.shtml
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Wiluna Broadcast Time				Frequencies (kHz)	Forecasts
WST	CST*	EST*	UTC		
0730	0900	0930	2330	4149 8113 12362 16528	WA (Northern Zones: NT - WA Border to North West Cape) NT
0830	1000	1030	0030		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
0930	1100	1130	0130		SA
1030	1200	1230	0230		QLD (Gulf waters), High Seas (Northern, Southern and Western areas)
1130	1300	1330	0330		WA (Northern Zones: NT - WA Border to North West Cape) NT
1230	1400	1430	0430		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
1330	1500	1530	0530		SA
1430	1600	1630	0630		QLD (Gulf waters), High Seas (Northern, Southern and Western areas)
1530	1700	1730	0730		WA (Northern Zones: NT - WA Border to North West Cape) NT
1630	1800	1830	0830		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
1730	1900	1930	0930		SA
1830	2000	2030	1030	2056 6230 8113 12362	QLD (Gulf waters), High Seas (Northern, Southern and Western areas)
1930	2100	2130	1130		WA (Northern Zones: NT - WA Border to North West Cape) NT
2030	2200	2230	1230		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
2130	2300	2330	1330		SA
2230	0000	0030	1430		QLD (Gulf waters), High Seas (Northern, Southern and Western areas)
2330	0100	0130	1530		WA (Northern Zones: NT - WA Border to North West Cape) NT
0030	0200	0230	1630		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
0130	0300	0330	1730		SA
0230	0400	0430	1830		QLD (Gulf waters), High Seas (Northern, Southern and Western areas)
0330	0500	0530	1930		WA (Northern Zones: NT - WA Border to North West Cape) NT
0430	0600	0630	2030		WA (Western Zones: North West Cape to Cape Naturaliste) WA (Southern Zones: Cape Naturaliste to WA - SA Border)
0530	0700	0730	2130		SA
0630	0800	0830	2230		QLD (Gulf waters), High Seas (Northern, Southern and Western areas)

* During daylight saving time, add 1 hour to EST and CST to obtain EDT and CDT equivalent

Australia Marine Forecast Zones



8.4.2 FORECASTS

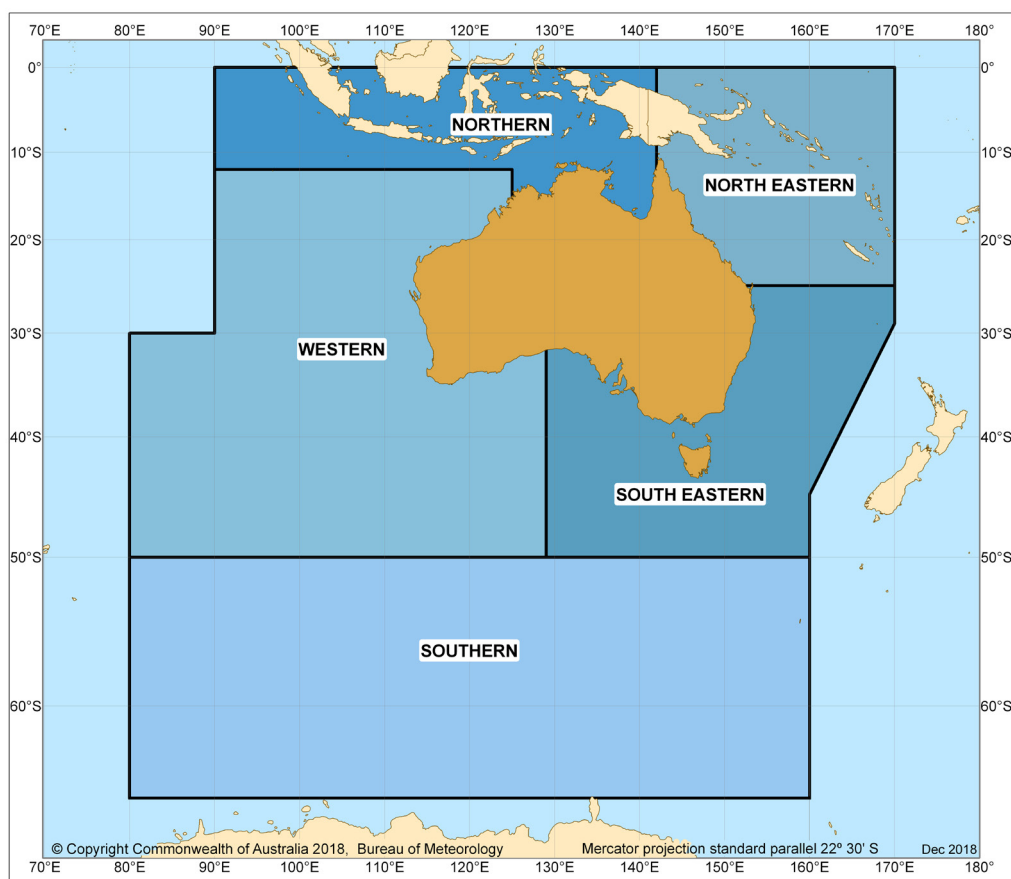
Routine coastal waters forecasts

1. Routine coastal waters forecasts and observation reports are for areas within 60 nautical miles (nm) of the coast. They are generally issued twice a day with updates at other times if weather conditions change significantly from those forecasts. The BOM provides forecasts up to four days ahead.

High Seas Forecasts

- Routine High Seas forecasts are issued twice daily for sea areas surrounding Australia. A high seas forecast is issued once daily for the Southern area. The Australian High Seas areas extend from the coastline to the limits shown in the diagram below.

Australian High Seas Forecast areas



8.4.3 WARNINGS

- Warnings are issued by the BOM under the following categories:

Warning Category	Wind Strength
Strong Wind Warning	26 - 33 knots
Gale Warning	34 - 47 knots
Storm Force Wind Warning	48 - 63 knots
Hurricane Force Wind Warning	> = 64 knots

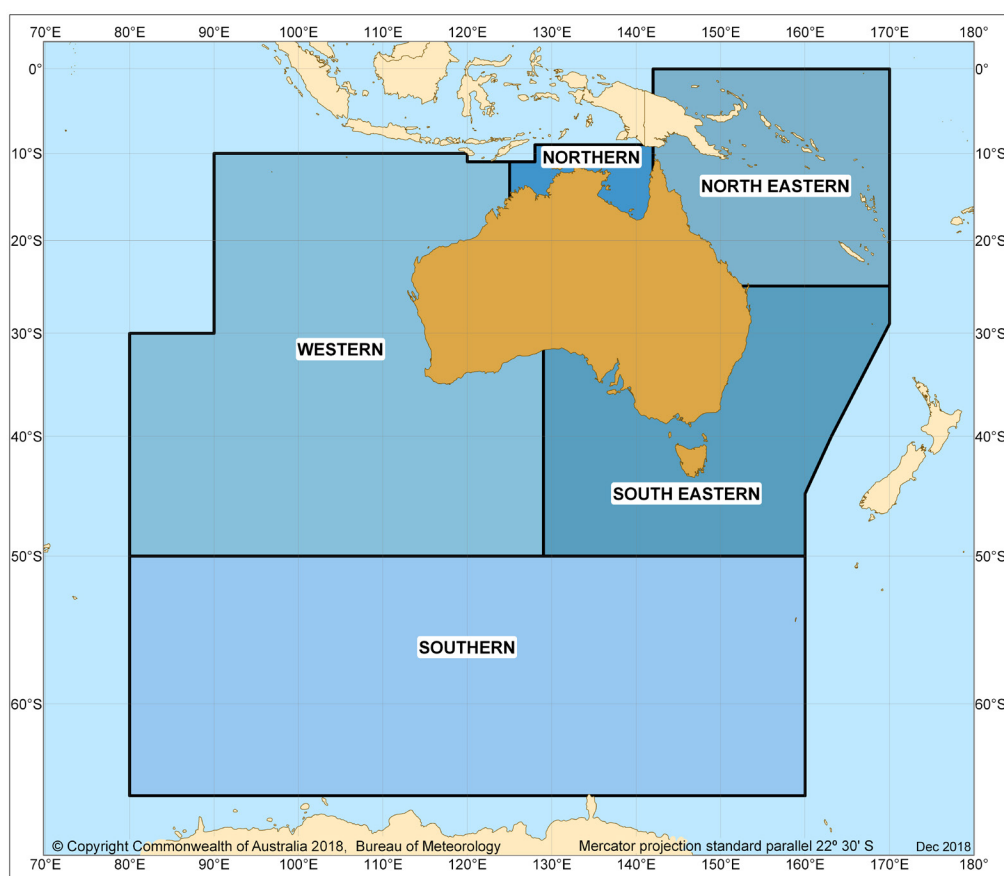
Warnings for coastal waters

- Warnings for coastal waters are issued whenever strong winds, gales, storm force or hurricane force winds are expected. Warnings are renewed every six hours.

Warnings for the High Seas

- Warnings to shipping on the High Seas are issued whenever gale, storm or hurricane force winds are expected. The initial warning attempts to provide a 24 hour lead time and warnings are renewed every six hours. Australia is responsible for issuing gale and storm warnings in the areas shown in the diagram below.

Areas of responsibility for High Sea warnings



- More information on warnings for the High Seas can be found on the BOM website.

Website:	http://www.bom.gov.au/marine/high-seas.shtml
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8.4.4 TROPICAL CYCLONE WARNINGS

- Australia is responsible for issuing Tropical Cyclones Warnings in the areas shown in the diagram below.
- For current tropical cyclone warning information visit the BOM website.

Website:	www.bom.gov.au/cyclone
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- Tropical cyclones are defined when, among other factors, wind speeds equal to or greater than 34 knots are expected. Each tropical cyclone is assigned a distinctive name which it retains throughout its existence. Tropical cyclones vary in both size and intensity. Tropical cyclones are allocated a category which provides an indication of the strength of the strongest wind associated with the system. Categories range from '1' for a cyclone with gale force winds, through to '3' for cyclones with winds to hurricane force, to '5' for the very strongest cyclones (see Section 4.4).

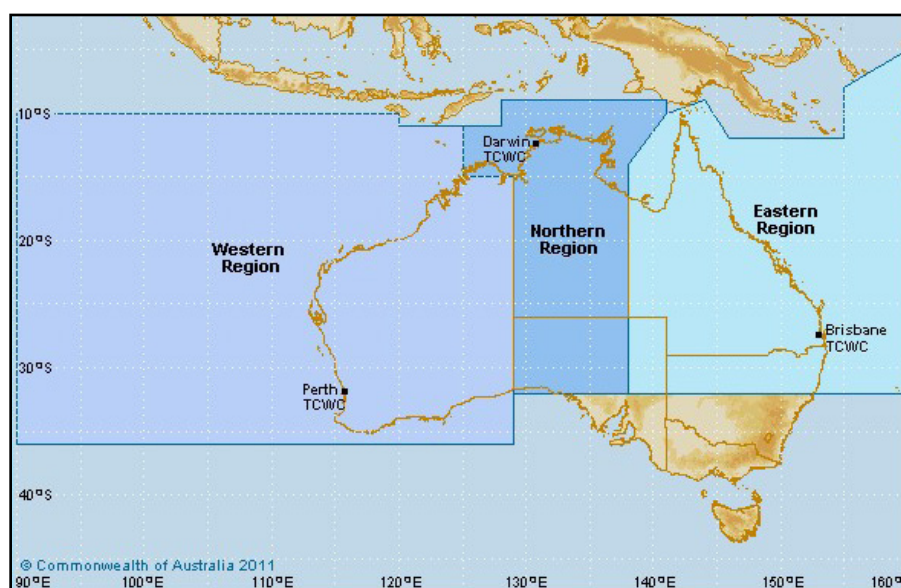
4. The severity category relates to Tropical Cyclone Warnings issued for coastal communities and emergency services that may be affected by the cyclone.
5. A gale, storm force or hurricane force wind warning is issued to shipping immediately upon indication that a tropical cyclone is developing.
6. Severity categories are not normally used in Tropical Cyclone Warnings for the High Seas (see severity category table below).

Severity Category	Beaufort	Average winds in knots (ten minute averages)	Approximate maximum wind gusts in knots
1	Gale	34 - 47	50 - 65
2	Storm Force	48 - 63	65 - 90
3	Hurricane Force	64 - 85	90 - 120
4	Hurricane Force	86 - 106	120 - 150
5	Hurricane Force	More than 106	More than 150

Tropical cyclone watch

7. A Tropical Cyclone Watch message is issued whenever a cyclone or potential cyclone is expected to produce gales in the area within 72 hours, but not within 24 hours. It is designed to alert recipients to the possibility of a Tropical Cyclone Warning being issued within the following 24 hours. A Tropical Cyclone Watch is reviewed every three hours and a new message issued six hourly until it is either replaced by a Tropical Cyclone Warning, or cancelled.

Tropical Cyclone Warning areas



Tropical Cyclone Warning

8. A Tropical Cyclone Warning is issued when a cyclone is expected to produce gale force or stronger winds in the area within 24 hours. Tropical Cyclone Warnings are issued at least three hourly and may be issued hourly when the cyclone is close to the coast.
9. Tropical Cyclone Warnings and messages are sent as warnings for coastal waters and high seas areas. The BOM cyclone warning strategy takes into account the level of confidence in the location of cyclones and their characteristic variability in movement and intensity. Generally, when there is any doubt, a warning will be issued. At times this strategy may result in warnings over an area somewhat larger than that which is seriously affected. The forecast positions given in cyclone warnings have an average error of around 50nm for a 12 hour forecast, and 100nm for a 24 hour forecast, although on some occasions the errors are larger than this. Survival strategies at sea need to take this uncertainty into account.

8.4.5 OTHER DELIVERY SYSTEMS

Recorded telephone services

- The BOM operates a number of recorded services for coastal waters forecasts and warnings. These services include:
 - Local Waters Forecasts: supplied for inland waters or bay areas comprising significant boating activities
 - Severe Weather Warning Service: marine and land based warnings
 - Marine Forecasts: coastal waters forecasts and latest reports

National marine forecasts directory (costs 77c / minute including Goods and Services Tax (GST)):	1900 955 370
National warnings directory (local call charges apply):	1300 659 210

- Call charges may be higher from mobile and international phones. Satellite phones may not be able to access these telephone services.

Weather by HF radio fax

- The BOM HF radio fax service transmits a range of weather charts and warning summaries on a 24 hour schedule. The system uses two HF transmitters located at Charleville, Queensland (call sign VMC) and at Wiluna, Western Australia (call sign VMW). Reception requires a marine fax unit or a computer attached to a HF radio.

Station	Frequencies (kHz) 0500 to 1900*	Frequencies (kHz) 1900 to 0500*
VMC	20469, 5100, 11030, 13920	2628, 5100, 11030, 13920
VMW	18060, 7535, 10555, 15615	5755, 7535, 10555, 15615
* Times relate to local time - EST for VMC and Australian Western Standard Time (AWST) for VMW. If using a Single sideband (SSB) receiver, tune 1.9 kHz below these frequencies		

- The full schedule is available on the BOM website.

Website:	www.bom.gov.au/marine
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Internet

- Forecasts and warning services are available at the BOM website. The website publishes the latest satellite images, weather maps, marine forecasts and warnings, radar, computer model maps and a range of educational pages.
- For satellite internet and areas with marginal mobile phone internet coverage, BOM provides MarineLite web pages for small and fast downloads of marine forecasts and warnings. Web pages are generally 4Kb in size.

Website:	www.bom.gov.au
MarineLite web pages:	www.bom.gov.au/marine/lite

8.4.6 VHF MARINE BROADCASTS

- Weather forecasts and warnings are broadcast by marine radio operators along the majority of the Australian coastline. Announcements of broadcasts are made on Channel 16, and then broadcast on the advised channel.

8.4.7 JOINT AUSTRALIAN TSUNAMI WARNING CENTRE

1. The Joint Australian Tsunami Warning Centre (JATWC) is operated by BOM and Geoscience Australia (GA).
2. JATWC's role is to:
 - detect tsunamigenic earthquakes in the Indian, Pacific and Southern Ocean
 - use its network of sea-level monitoring equipment to confirm the existence of a tsunami and estimate its likely intensity at the Australian coast
 - issue the relevant tsunami warnings and bulletins for Australia (including islands and territories) as required
 - issue tsunami threat information to 28 national tsunami warning centres in the Indian Ocean Tsunami Warning & Mitigation System (IOTWMS) as one of the three United Nations Educational, Scientific and Cultural Organization (UNESCO) designated Tsunami Service Providers (TSP) for the Indian Ocean
3. BOM will issue advice and warnings on any identified tsunami threat to emergency management agencies and the public using procedures similar to those used for warnings of other severe weather or hazardous events.
4. For more information visit the following websites:

Bureau of Meteorology:	www.bom.gov.au/tsunami/
Geoscience Australia:	www.ga.gov.au/scientific-topics/hazards/tsunami

8.5 MEDICAL

8.5.1 AUSTRALIAN MARITIME SAFETY AUTHORITY - MEDICAL ADVICE

1. Vessels at sea can request medical advice via HF DSC radio or Inmarsat satellite services. The service has been put into place for SOLAS vessels but other craft may use the service in emergencies. This service is free and available via:

Inmarsat C fitted vessels	Special Access Code (SAC 32)
HF DSC fitted vessels	JRCC Australia / VIC using the Urgency priority DSC Call
Non - SOLAS vessels	JRCC Australia on +61 2 6230 6811

2. JRCC Australia will put the vessel in contact with the Duty Medical Officer for the Australian Telemedical Assistance Service (TMAS).

8.5.2 HEALTHDIRECT AUSTRALIA

1. Healthdirect Australia is an Australian health advice line which provides 24 hour fast and simple expert advice about any health issue and what to do next. Every time you call Healthdirect Australia you'll talk directly with a registered nurse. Callers can also speak to a doctor if the nurse determines that is necessary.

24hour advice line:	1800 022 222
Website:	www.healthdirect.gov.au

8.5.3 MEDICAL ASSISTANCE

1. Requests for medical assistance by vessels using Inmarsat C EGC (SafetyNET) (Special Access Code 38) (medical assistance) will be delivered directly to an JRCC.
2. When possible, pleasure craft and fishing vessels should seek medical assistance from the relevant State emergency services (DIAL 000).

3. SAR services will normally only consider a medical evacuation (MEDEVAC) after advice has been received from medical authorities. Medical advice is required to determine the best course of action. A vessel may need to divert to port, conduct a boat transfer or make ground towards the coast to permit a helicopter transfer.

8.5.4 MEDICAL EVACUATIONS

1. JRCC Australia is operated by AMSA, a statutory authority established under the *Australian Maritime Safety Act 1990*. The International Convention on Maritime Search and Rescue 1979 requires parties to the Convention to provide (among other things) on request, medical advice, initial medical assistance and MEDEVAC.
2. JRCC Australia coordinates these services in the Australian Search and Rescue Region (SRR). JRCC Australia will arrange medical advice through a dedicated TMAS.
3. The assessment by the TMAS doctor determines the type and level of medical assistance required. This includes when a person is deemed to be in grave or imminent danger and requires immediate assistance and MEDEVAC. For SAR purposes this would be considered a 'distress' incident.
4. If a MEDEVAC is required, the JRCC will determine the most appropriate way to remove and transport the casualty to a medical facility or a place where medical assistance can be provided. Considerations including vessel type and facilities, time of day, on scene weather, available assets, location (in particular distance offshore), requirements for accompanying medical staff and suitability for recovery of patient by helicopter, may all play a factor in determining the most appropriate MEDEVAC response.
5. Once the requirement for a MEDEVAC and the use of state/territory resources is confirmed, JRCC Australia may, in consultation with Australian state/territory health organisations, transfer coordination of the incident to the appropriate state/territory medical coordinator.
6. If, on TMAS advice the crewmember's life is not at risk, then a medical evacuation would not be required. In these circumstances, a medical transport of the person should be arranged by the vessel owner / operator / agent as considered appropriate; assistance can be requested of JRCC Australia to identify suitable assets as required.

8.5.5 STANDARD MEDICAL EVACUATION MESSAGE

1. In respect to helicopter evacuation the following is to be advised.
2. General:
 - (a) description, colour and distinguishing features of vessel
 - (b) can a helicopter land on your vessel?
 - if yes, please provide following details:
 - position of helicopter landing area
 - dimensions of clear zone
 - how landing zone is marked
 - maximum load deck can support at landing area
 - if no, please provide following details:
 - position and description of winching area and dimension of manoeuvring zone.
 - note radio mast, derricks, cranes may need to be lowered to provide sufficient clearance for helicopter operations
 - (c) weather report including sea state, barometric pressure, cloud base and relative wind
 - (d) rate of pitch and roll that ship is currently experiencing
 - (e) be prepared to switch on 406mhz epirb as directed if homing signal is required
 - (f) is crew experienced in helicopter operations? if yes, when was the last helicopter transfer completed

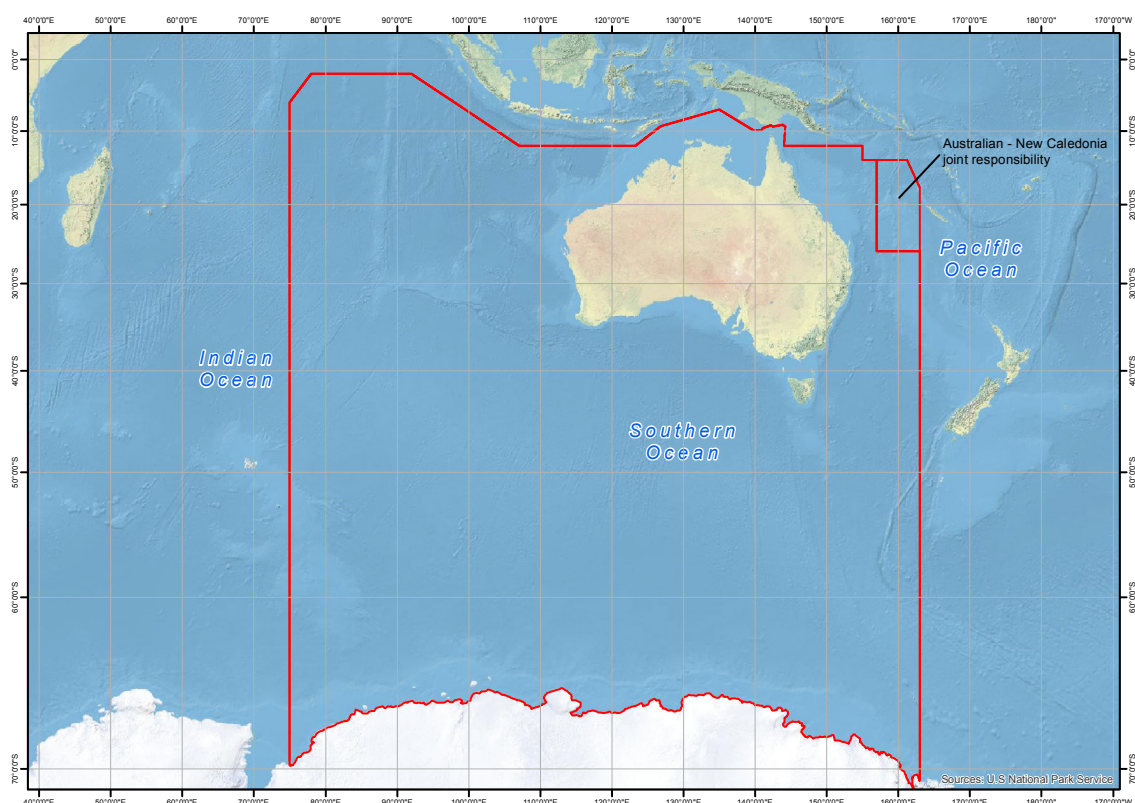
- (g) is a copy of ics guide to helicopter/ship operations or iamsar manual vol iii (mobile facilities) carried onboard?
 - (h) vessels direct tele communications methods (satphone/email/inmarsat-c)
 - (i) australian agents name and 24 hr contact numbers (telephone and facsimile or email)
 - (j) p&i club details (telephone and email)
 - (k) 24 hour contact numbers for vessels owner/operator
 - (l) vessels last port of call
 - (m) personal details of patient:
 - name
 - date of birth
 - sex
 - weight
 - nationality
 - passport or seamans book number
3. Rendezvous/transfer details – instructions will be provided to vessel as relevant.
 4. Note: This is the standardised MEDEVAC Helicopter Questionnaire provided by AMSA.

8.6 SEARCH AND RESCUE

8.6.1 ARRANGEMENTS IN AUSTRALIA

1. As a signatory to the Convention on International Civil Aviation 1944, SOLAS and the International Convention on Search and Rescue 1979, Australia is responsible for SAR in an area comprising the East Indian, South West Pacific, and Southern oceans. Australia's SRR covers almost 53 million square kilometres, or about one tenth of the earth's surface. SAR in this area is coordinated by JRCC Australia.
2. JRCC Australia is located in Canberra and operates 24 hours a day. By agreement with other Australian SAR agencies, JRCC Australia is responsible for SAR for all civil aircraft, for merchant ships outside port limits, and for small craft beyond the capacity of local SAR resources, within the SRR when best placed to do so. JRCC Australia does not own any search and rescue craft. It utilises and coordinates search and rescue assets contracted specifically for SAR response and also from the private sector, the Police, the Australian Defence Force (ADF), and volunteer rescue groups.

Australian search and rescue area



State and Territory Police

3. In each State and Territory, the Police are the SAR authority. They are typically responsible for the following:
 - all persons and vehicles on land
 - ships within port limits
 - fishing vessels and small craft when best placed to respond
 - land component of searches for aircraft
4. The Police will request JRCC Australia assistance if the SAR operation is beyond the capabilities of their resources.

Australian Defence Force

- The Royal Australian Air Force (RAAF) is responsible for SAR for Australian and foreign military land based aircraft. The Royal Australian Navy (RAN) is responsible for SAR in respect of naval ships and shipborne aircraft. The ADF often provides assistance to JRCC Australia, particularly in the provision of long range assets when civil assets are not available or suitable.

Volunteer, commercial and private organisations

- Numerous volunteer rescue organisations promote safety and effect local rescues. They come under the control of the State or Territory Police for these operations. There are certain commercial and private organisations capable of providing assistance during a SAR operation. JRCC Australia provides specific training to selected aircraft operators, who are known as Search and Rescue Units (SRUs). Other organisations which may volunteer to assist include commercial airlines, general aviation operators, oil companies, fishing companies and aero clubs.

8.6.2 OBLIGATION TO RENDER ASSISTANCE

- Under SOLAS (which is implemented in Australian law by the *Navigation Act 2012* (Cth)), the master of a ship at sea is bound to render assistance in distress situations; unless in special circumstances they consider it unnecessary or unreasonable to do so. In such cases the master must enter the reasons in the Ship's Log and advise JRCC Australia.
- General guidance for masters involved in SAR operations is contained in Volume III of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, jointly published by IMO and the International Civil Aviation Organization (ICAO).

Website:	www.imo.org
Website:	www.icao.int

- The Australian Government has released guidelines to clarify the responsibilities of ship's masters rescuing people at sea in or adjacent to the Australian SRR in relation to arrangements for landing survivors. Extracts from the protocol are highlighted below. The complete protocol is available from the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD) website.

Website:	www.infrastructure.gov.au/maritime/safety/sea_rescue.aspx
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- On completion of a rescue, the master of the vessel should advise JRCC Australia that the rescue is complete and provide the following:
 - details of the rescuing ship(s)
 - the number of rescued persons on each ship
 - the name, flag, description, call sign and intended destination of the vessel in distress
 - the port of origin of the vessel in distress, if known
 - the nationality of those rescued, if known
 - the countries where those rescued have right of entry, if known
 - the port(s) of disembarkation preferred by the master, and
 - if the master intends to deviate from the originally intended voyage as a result of picking up shipwrecked survivors, the reasons for the deviation
- JRCC Australia, acting on instructions from the Australian Government, will liaise with the master as to whether and where the passengers can be disembarked or transferred to another ship. This may involve consultation with the master, the Flag State and the State of the preferred port for disembarkation. The master is expected to respect the final decision.
- Once the disembarkation is complete the rescuing ship will be released to continue its voyage.

8.6.3 DISTRESS ALERTS

1. Australia's SAR authorities may be alerted to an emergency incident through:
 - radio and satellite communications distress calls
 - *International Regulations for Preventing Collisions at Sea 1972 (COLREGS)* distress signals sightings
 - overdue reports
 - Emergency Position Indicating Radio Beacons (EPIRBs)
 - any other means available
2. Ships fitted with suitable radio equipment can make a significant contribution to safety by guarding an appropriate international distress frequency for as long as practicable, whether or not required to do so by regulations.

8.6.4 RADIO SILENCE PERIODS

1. International regulations no longer require silence periods to be observed on the distress and calling frequencies. However, to increase safety of life at sea in Australia, two three minute periods of radio telephony silence should be observed in each hour. They start on the hour and continue to three minutes past the hour, and on the half hour until 33 minutes past the hour. With the exception of distress calls and messages, all transmissions from all stations should cease during these periods.

8.6.5 SEARCH AND RESCUE COMMUNICATIONS

1. JRCC Australia is well equipped with systems enabling communications worldwide.

Distress beacons

2. A distress beacon is a small electronic device that, when activated in a life threatening situation, assists rescue authorities in their search to locate those in distress.
3. Distress beacons carried on vessels are called EPIRBs. When a distress beacon is activated, it transmits a signal that is detectable by satellites and overflying aircraft. As the satellites orbit the earth they listen for any active beacons and report their position to rescue authorities.
4. The Cospas-Sarsat satellite system operates on 406 MHz and uses digital technology that allows the beacon to transmit a unique code (HexID or Unique Identification Number (UIN)) that identifies the beacon. When registered with AMSA, the code provides information about the vessel carrying the beacon. This includes the owner's emergency contact and the country of registration. All Australian coded 406 MHz beacons should be registered with AMSA. Beacons can be registered online and via telephone. Registration services for Australian coded 406 MHz beacons are provided free of charge.
5. EPIRBs should be switched on as soon as a distress situation occurs, and remain switched on until the rescue is conducted or otherwise as instructed by the SRU or the rescue authority. In the event of an accidental EPIRB activation, the beacon should be switched off and every effort made to inform JRCC Australia by any means available. This report should include the vessel's position and the time of activation, if known. No action will be taken against any person reporting the accidental activation of an EPIRB.

EPIRB Registration	www.beacons.amsa.gov.au
Telephone:	+61 2 6279 5766 +61 2 6279 5000
JRCC Australia Maritime:	1800 641 792 +61 2 6230 6811
JRCC Australia Aviation:	1800 815 257 +61 2 6230 6899
Email:	rccaus@amsa.gov.au
Fax:	+61 2 6230 6868
Inmarsat:	LES Code 212 or 312 using SAC 1250

6. For further information on beacons and the Cospas-Sarsat system refer to the *Australian GMDSS Handbook* or visit the following websites:

Websites:	www.cospas-sarsat.org www.beacons.amsa.gov.au
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Radio via AMSA HF DSC Network

7. The AMSA HF Digital Selective Calling (DSC) Network has stations located at Wiluna (WA) and Charleville (QLD). This network will respond to initial calls on HF DSC. Vessels wishing to communicate with the network should initiate a DSC call on the International Distress DSC alerting frequencies, and indicate the subsequent mode of communications (either voice (single side-band) or narrow-band direct printing (NBDP)). The DSC frequencies being guarded by the AMSA HF DSC network are:

HF DSC Watch frequency	Associated voice frequency	Associated NBDP frequency
4207.5 kHz	4125.0 kHz	4177.5 KHz
6312.0 kHz	6215.0 kHz	6268.0 KHz
8414.5 kHz	8291.0 kHz	8376.5 KHz
12577.0 kHz	12290.0 kHz	12520.0 KHz
16804.5 kHz	16420.0 kHz	16695.0 KHz

8. The network employs the following callsigns:

- RCC Australia
- VIC
- MMSI: 005030001

HF radiotelephone (voice) via the national coast radio network

9. HF voice Limited Coast Radio Stations have been established in the following areas:
- Coast Radio Melbourne, and Charleville Radio
 - Coast Radio Adelaide (provided via “Charleville Radio & Wiluna Radio”)
 - Coast Radio Cairns
 - Coast Radio Darwin (provided via “Wiluna Radio & Charleville Radio”)
 - Coast Radio Gladstone
 - TAS Maritime Radio
 - Coast Radio Perth
 - Coast Radio Port Hedland
10. These stations maintain a 24 hour listening watch on the following HF radiotelephone distress and calling frequencies (upper sideband):
- 4125.0 kHz
 - 6215.0 kHz
 - 8291.0 kHz
 - 12290 kHz during daylight hours from Wiluna Radio and Charleville Radio

Inmarsat C / F77 / FleetBroadband

11. Inmarsat equipped ships can communicate with shore telephone, other ships, and log on to networks enabling direct data communications. The level of communications depends on the mobile system installed on the ship.

12. Ships can use Inmarsat to communicate with JRCC Australia by:
 - Inmarsat C - provides store and forward data messaging and in built EGC reception
 - Inmarsat F77 - voice, facsimile, email and data (both packet and circuit switched)
 - Inmarsat FleetBroadband - Voice and data
 - Inmarsat FleetBroadband – F505 Service
13. Inmarsat F77 / C terminals, being GMDSS approved, provide four levels of message priority with pre-emption for distress, urgency and safety messages.

8.6.6 SEARCH AND RESCUE PROCEDURES

1. On receiving a distress signal or being notified of a missing civil aircraft or seagoing vessel, JRCC Australia will take action to establish the safety of the craft, or source of the signal. This action may include but not be limited to:
 - communication checks
 - harbour or airport checks
 - intelligence gathering
 - database checks
 - issuing of distress or urgency broadcasts
 - development of a search plan
 - development of a rescue plan including an alternate plan
 - establishing a forward field base if necessary
 - coordinating a SAR
 - passing coordination to the Police or other SAR authority to conduct SAR within their jurisdiction if appropriate

8.6.7 ASSISTANCE BY SEARCH AND RESCUE AIRCRAFT

1. Aircraft (other than helicopters) employed on SAR duties may carry droppable survival equipment and marine markers. These aircraft may be able to assist a ship in distress by confirming location, marking position, dropping survival equipment or directing rescue vessels to the area.
2. Droppable equipment may consist of life rafts with bright yellow or orange buoyant rope attached, heliboxes or other marine containers containing survival equipment, radios, satellite telephones, water, medical equipment, etc.
3. Australia maintains dedicated SAR aircraft and a mixture of semi-dedicated aircraft and helicopters around the Australian coast that may be available at short notice. Where possible, aircraft will be equipped with marine VHF Direction Finding (DF) equipment for the location of EPIRB transmissions.
4. To assist in recognition by aircraft, the position of the vessel should be given as accurately as possible. When time permits, a description of the vessel, including any unusual features, colour of hull, funnel and superstructure should be given.
5. More information can be found in IAMSAR Vol III.

Use of helicopters

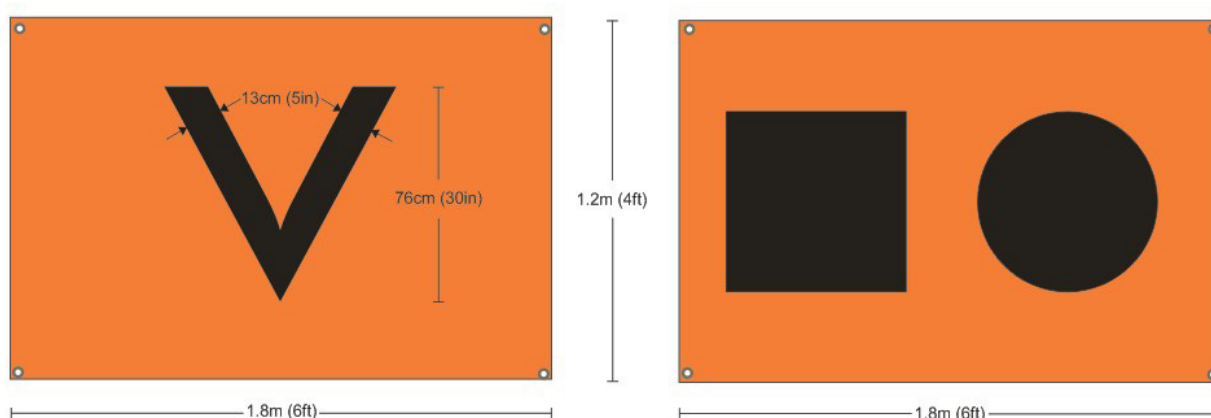
6. Helicopter assistance in the Australian SRR is generally limited by relatively short ranges (out to 120nm from land) and low operating speeds. Helicopters may be used to supply equipment and / or rescue or evacuate personnel. Advice concerning helicopter-ship operations is contained in IAMSAR or may be sought from JRCC Australia.
7. Where a helicopter is unable to safely operate over the deck of a vessel, the helicopter may be able to lift a person from a boat or raft towed astern on a long painter. In bad weather, survivors are sometimes more easily recovered from the sea than the vessel itself, particularly if it is a yacht.

8. If a ship wishes to contact a helicopter during a SAR operation it may do so by visual signals, direct radio communication (if the correct type of radio is carried), through another SAR asset or JRCC Australia.
9. On no account should the strop or winch wire, when lowered to the vessel, be secured to any part of the vessel or allowed to become entangled with any rigging or fixtures.

Distress signals for Search and Rescue

10. Searching aircraft frequently experience difficulty in the identification of a distressed vessel, especially when close to a number of other small vessels. To help overcome this problem in the Australian SRR either of the two signals illustrated (see below) may be used to indicate a vessel in distress requiring assistance. These signals are not meant to replace pyrotechnic signals already carried by small craft, but should be carried in addition to those signals.

Distress signals that can be used in the Australian SRR



11. These signals are supplementary to the international distress signals and if possible, the international signal NC (ie flag N over flag C - see diagram on the right) should be hoisted.

Use of ships in assisting aircraft

12. Aircraft that ditch in the sea generally remain afloat for only a short time, therefore masters of vessels proceeding to assist should do so with the greatest possible speed.
13. Merchant ships may receive information of distress on any of the internationally recognised distress frequencies for DSC, radiotelephony or Inmarsat. Additionally, information may be received by visual signals from a distress aircraft, by an aircraft directing a ship to the location of a distress or by signals from survivors. Further advice concerning action to be taken in any of these eventualities can be found in IAMSAR.
14. All information concerning an aircraft in distress at sea is to be passed to JRCC Australia by the most expedient method; further action will then be initiated by shore authorities. Where possible, if DF equipment is fitted, bearings of any radio signal should be obtained.



Communications with aircraft searching for survivors

15. An aircraft engaged on SAR operations will be briefed to listen on a specified marine frequency and merchant ships will be advised by JRCC Australia of the frequency adopted.
16. In the absence of specific advice, the primary air / sea communications frequency is 156.8 MHz (Channel 16). If aircraft are not fitted with Ch 16, the secondary frequency 4125 kHz may be used.

17. When it is necessary for an aircraft to direct a surface craft to the place of distress the aircraft may do so by transmitting precise instructions by any means at its disposal. If such instructions cannot be transmitted, or if considered desirable for any other reasons the following manoeuvres performed in sequence mean that the aircraft wishes to direct a surface craft towards a distress position:
 - (a) circling the surface craft at least once
 - (b) crossing the projected course of the surface craft close ahead at low altitude and:
 - (i) rocking the wings, or
 - (ii) opening and closing the throttle, or
 - (iii) changing the propeller pitch
 - Note: Due to high noise level on board surface craft, the sound signals in (ii) and (iii) may be less effective than the visual signal in (i) and are regarded as alternative means of attracting attention. Repetition of such manoeuvres has the same meaning.
 - (c) heading in the direction in which the surface craft is to be directed
18. A ship receiving the above signals should reply in the following manner:
 - (a) when acknowledging receipt of the signals:
 - hoist the 'ANSWERING' pennant close up, or
 - flash the Morse Code procedure signal 'T' by light, or
 - change heading onto the indicated direction
 - (b) when indicating inability to comply:
 - hoist the international flag "N" (NOVEMBER), or
 - flash the Morse Code procedure signal "N" by light
19. The following manoeuvre by an aircraft means that the assistance of the surface craft to which the signal is directed is no longer required, crossing the wake of the surface craft close astern at low altitude, and:
 - (a) rocking the wings or
 - (b) opening and closing the throttle, or
 - (c) changing the propeller pitch

8.6.8 FURTHER INFORMATION ON SEARCH AND RESCUE IN AUSTRALIA

1. More information on SAR can be found in the following publications:
 - *National Search and Rescue Manual* - published by AMSA
 - *IAMSAR Manual Vol III* - published by IMO

8.7 AUTOMATIC IDENTIFICATION SYSTEMS

1. IMO requires certain ships (See Section 8.7.1) to carry an Automatic Identification System (AIS). The objective of AIS is to enhance the safety of life at sea, the safety and efficiency of navigation and the protection of the marine environment.
2. AIS uses dedicated VHF digital transceivers carried on vessels. It automatically broadcasts the following information about the vessel to appropriately equipped shore stations, other ships and aircraft:
 - ship's identity and type
 - position, course and speed
 - navigational status and other safety related information
 - voyage related information such as vessel draught, destination port and Estimated Time of Arrival (ETA)
3. AIS will present real-time navigation and vessel traffic information to both the mariner in the wheelhouse and at the Vessel Traffic Services (VTS) centre.

8.7.1 CARRIAGE REQUIREMENTS

1. Regulation 19 of SOLAS Chapter V - Carriage requirements for ship-borne navigational systems and equipment states the following vessels shall carry AIS equipment:
 - all ships of 300 Gross Tonnage (GT) and upwards engaged on international voyages
 - cargo ships of 500 GT and upwards not engaged on international voyages
 - all passenger ships irrespective of size
2. Ships fitted with AIS are required to maintain AIS in operation at all times except where international agreements, rules or standards provide for the protection of navigational information.
3. More information on vessel tracking can be found on AMSA's website.

Website:	https://www.amsa.gov.au/safety-navigation/navigation-systems
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8.8 LONG RANGE IDENTIFICATION AND TRACKING

1. The IMO has adopted an amendment to Chapter V of SOLAS which introduced mandatory position reporting for SOLAS ships from 1 July 2009.
2. This system is called Long Range Identification and Tracking (LRIT). It automatically collects and distributes basic information on vessels engaged in international voyages. The system offers a range of benefits to assist search and rescue, environment protection, safety, port efficiency and maritime security.
3. LRIT requires the establishment of data centres. Several countries can cooperate to form a regional or cooperative data centre. The exchange and routing of LRIT information between data centres is the responsibility of the International Data Exchange, which is hosted by the IMO.

8.8.1 CARRIAGE REQUIREMENTS

1. LRIT applies to the following vessels:
 - all passenger ships including high speed craft
 - cargo ships, including high speed craft of 300 GT and above
 - mobile offshore drilling units
2. Ships operating in:
 - Sea Area A1 and fitted with AIS are exempt
 - Sea Area A2 which are not fitted with Inmarsat C GMDSS, may be required to fit an LRIT terminal
 - Sea Area A3 may use an LRIT-compliant Inmarsat C terminal for automatic position reporting or other LRIT-compliant approved terminal via Iridium satellites
 - Sea Area A4 may require a dedicated LRIT terminal that operates in conjunction with an approved low-earth orbit communication service provider
3. See Section 8.1 for Sea Area information.

8.8.2 REPORTING AND RECEIVING DATA

1. Ship LRIT equipment must be capable of transmitting the following information every six hours:
 - identity
 - position
 - date and time of the position
2. Coastal States can purchase reports when vessels are within 1000nm or when vessels are seeking entry to a port at a pre-determined distance or time from that port (up to 96 hours pre-entry).

3. Data derived through LRIT will be available only to the recipients who are entitled to receive such information. Safeguards concerning the confidentiality of this data have been built into the regulatory provisions.
4. More information on LRIT can be found on AMSA's website.

Website:	https://www.amsa.gov.au/safety-navigation/navigation-systems/long-range-identification-and-tracking
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8.9 ANCHORING OFF AUSTRALIAN PORTS

1. Vessels, mainly bulk-carriers, may be required to anchor off some Australian ports whilst waiting for their turn to berth.
2. Masters should apply the tenets of good seamanship when anchoring in offshore and exposed anchorages. Ports where offshore anchoring will occur are on the NSW coast, mid QLD coast, and the north west coast of WA. All can be subject to extremes of weather and the danger of a lee shore.

8.9.1 SELECTING AN ANCHOR LOCATION / POSITION

1. There are designated anchorages at some ports and these are shown on large scale charts. Their port authority or Vessel traffic services (VTS) may instruct the master to proceed to a specified anchorage.
2. Where anchorages are not designated, the master should select an anchor position taking into account the following:
 - good holding ground is sought whenever possible. Recommendations may be found in Admiralty Sailing Directions and commercially available port entry guides
 - an adequate length of cable is veered
 - ample swinging room is left from charted dangers and other anchored vessels

8.9.2 WATCHKEEPING

1. In accordance with the requirements of *Part A of the Seafarers' Training, Certification and Watchkeeping Code* (STCW Code) *section A-VIII/2, part 4-1, provision 51*, regarding vessels at anchor:
 - It is essential that routines are in place to check the vessel's position regularly. Use of Global Positioning System (GPS), visual bearings and radar ranges is recommended
 - Prevailing and forecast weather, tides and tidal streams, proximity of land and hazards, proximity of other vessels at anchor and traffic congestion at the anchorage should all be taken into account, when deciding on the position checking routine

8.9.3 WEATHER

1. It is essential that current weather forecasts and warnings are monitored. Weather forecast services are listed in the *ALRS Volume 3 Part 2*. Information on weather forecast services can also be found in Section 8.2.3. The BOM provides coastal forecasts and warnings on its website (see below). Particular meteorological conditions which may affect the vessel at anchor should be monitored. For example intense depressions may form in the Tasman Sea which causes gale force winds and heavy seas off the south east coast ports. Ports on the QLD and north west coasts are subject to extreme tropical cyclones (typhoons).

Website:	www.bom.gov.au
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8.9.4 MACHINERY

1. Where possible, the main engines, steering gear and windlasses should not be dismantled or immobilised whilst at anchor as conditions may deteriorate at short notice.
2. If repairs are essential to any of these machinery items, the relevant port authority or VTS should be advised of the situation. Such actions should be recorded in the vessel deck log book.

8.9.5 BALLAST

1. At all times, the ballast condition should comprise the vessel's propeller fully immersed, adequate seagoing stability is maintained and that the vessel's forward draught is maintained in accordance with the requirements of the vessel's stability book.
2. In the event that deteriorating weather is forecast, the master should make a timely decision to take on heavy weather ballast before conditions become severe enough to prevent ballasting operations.

8.9.6 GETTING UNDERWAY

1. The master should assess the forecast wind and sea conditions and, if necessary leave an anchorage, to avoid the risk of dragging anchor and possibly grounding. The master should not wait for instructions from a VTS or port authority, (whether in a designated anchorage within port limits or not) if the master considers the safety of the vessel requires such action. Masters are also to pay due regard to any instructions a VTS or port authority may provide them.

8.10 BIG SHIPS, LITTLE BOATS

1. Recreational vessels have a responsibility to stay well clear of large vessels. Small craft are prohibited from impeding the passage of big ships in channels.
2. All boat operators should take note of the following:
 - big ships operate at all times of the day and night
 - ship speed can be deceptive, they may travel at speeds in excess of 20 knots
 - ships can weigh up to 100 000 tonnes or more - unable to stop or change course suddenly and will travel a long distance before stopping
 - ships' blind spots can extend for many hundreds of metres ahead
 - ships' bow waves can swamp a small boat hundreds of metres away
 - sailing vessels do not have right of way, for example, over ships restricted in their ability to manoeuvre
 - a ship may sound five or more short blasts on its whistle if it believes you are at risk of collision. Small vessels must take evasive action immediately

8.10.1 TRANSIT ONLY ZONES

1. A transit only zone is a regulated area of water in the vicinity of a commercial shipping channel or fairway. Small boat operators must not anchor, moor, drift or engage in fishing activities within a transit only zone.
2. The purpose of designating a transit only zone is:
 - to avoid potential collisions between small boats and large commercial ships
 - for the safety of small boat operators and their passengers
3. More information on Big Ships and Little Boats can be found on the State Authorities websites (see Section 2.5 for web addresses).

8.11 SAFETY OF FISHING VESSELS

1. Fishing vessels may be encountered anywhere off the Australian coast at any time of the year and using a variety of fishing techniques. The vessels tend to be less than 20 metres in length, with a crew of two or three. They often exhibit very bright working lights and have a large number of separate radar reflectors, none of which are large enough to provide a constant echo.
2. An unacceptable number of collisions and close quarters situations continue to occur in Australian waters between trading vessels and fishing vessels, primarily off the east coast and in the Great Barrier Reef (GBR). Investigations of these incidents indicate that, in almost every case, the fundamentals of good seamanship and basic adherences to COLREGs were contravened to varying degrees, and that both parties contributed to the incident.

3. Under the COLREGs, vessels are only considered to be engaged in fishing when fishing with 'nets, lines or trawls or other fishing apparatus which restrict manoeuvrability.' Vessels are not considered to be engaged in fishing when 'trolling lines or other fishing apparatus which do not restrict manoeuvrability.'
4. The Australian coast generally has good visibility and relatively light traffic but the safety of fishermen (and other people in small boats) is a continuing concern.
5. The following issues are often identified in collisions:
 - inadequate watchkeeping / lookout
 - a heavy reliance on radar to the detriment of a proper systematic visual lookout
6. The skippers of fishing vessels need to be aware that:
 - large vessels cannot turn quickly and cannot make rapid speed reductions. In confined waters such as the northern section of the GBR they may be confined by the narrowness of the charted route and the proximity of navigational dangers.
 - in certain visibility or sea state conditions, or in the presence of some radar propagation effects, the bridge team on the large vessel may not detect the smaller craft either visually or on radar. It is recommended that fishing vessels, especially those of fibreglass or timber construction, fit radar reflectors.
7. In complying with the COLREGs, the following are basic precautions that should be taken:
 - maintaining a radar watch and listening on VHF radio Channel 16 and DSC Channel 70 where fitted
 - ensuring that the required fishing or trawling lights and shapes are not obscured
 - ensuring that the required fishing or trawling lights and shapes are extinguished or hauled down when no longer engaged in fishing
 - avoiding erratic and unpredictable manoeuvres when in the vicinity of a large vessel
 - having enough trained crew to keep a full lookout as required by COLREGs
8. Australian and State Government authorities may investigate incidents at sea involving fishing vessels.
9. Incidents should be reported as soon as possible and in detail. The master of the vessel must forward an initial report (form AMSA 18) within four hours to JRCC Australia of AMSA in Canberra.

Fax:	+61 2 6230 6868 or 1800 622 153 (free fax within Australia)
Email:	reports@amsa.gov.au
Telephone:	1800 641 792 (toll free within Australia) +61 2 6230 6811 (from outside Australia)

10. A detailed report (form AMSA 19) is to be forwarded to JRCC Australia within 72 hours of the lodgement of form AMSA 18. Copies of incident reporting forms (AMSA 18 and AMSA 19) can be downloaded from the AMSA website.

Website:	https://www.amsa.gov.au/forms
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11. Information on Fisherman and Safety Awareness at Sea is available from the Australian Transport Safety Bureau (ATSB) website.

Website:	www.atsb.gov.au/publications/2004/fisherman_safety.aspx
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8.12 COLLISION RISKS TO OFFSHORE YACHTS

1. Masters, officers of the watch and seafarers are alerted to the risks of collision between offshore yachts and commercial trading vessels when yachts voyage in the vicinity of commercial shipping lanes.
2. Under the COLREGs, a power driven vessel underway shall generally keep out of the way of a vessel under sail. However, there are provisions in the COLREGs, for example, where a vessel under sail cannot impede the passage of a vessel in a confined channel or fairway. Yachtsmen are advised to be fully familiar with the details of the COLREGs.

3. The skippers of yachts need to be aware that investigations into collisions between commercial trading vessels and yachts, both in Australia and overseas, repeatedly show that yachts are extremely difficult to see from the bridge of a major vessel in some circumstances. Factors contributing to this difficulty include:
 - yachts are usually painted white, or light pastel colours, and merge with the seascape
 - yachts make poor radar targets due to their construction and size
 - yachts frequently do not maintain a steady course and make unexpected course alterations
 - at night the lights prescribed by the COLREGs for yachts (small yachts in particular) have very limited visual range - as little as one mile for yachts of less than 12 metres length over all
4. As a result, yachts should not presume that they can be seen by an approaching vessel and should act accordingly.
5. Additional exacerbating factors are:
 - large vessels can not alter course or reduce speed quickly
 - the visual lookout from yachts, particularly in a seaway, is often poor
 - in confined waters, harbour channels or some designated routes (the Inner Route of the GBR for example); large vessels can not deviate from their intended course without raising the risk of grounding
6. As a result, both the officers of the watch on large vessels, and all crew aboard yachts are encouraged to exercise caution in circumstances where large vessels and yachts might be at close quarters.
7. Some simple precautions recommended for yachts on coastal voyages are:
 - keep a good visual and radar lookout with a trained crew member on active lookout at all times
 - if possible avoid recognised shipping routes
 - fit and activate a radar reflector, an anti-collision radar transponder or radar target enhancer
 - fit and utilise AIS
 - maintain a listening watch on VHF Channel 16
 - do not make unexpected course alterations when in the vicinity of other vessels
 - do not impede large vessels that have restricted room to manoeuvre
8. Yachts should also carry a registered 406 MHz EPIRB (GPS enabled version is recommended) and marine radios, have an agreed contact schedule and make details of their intended voyage available to their emergency contacts for use should the need arise. See AMSA's *Marine Notice 2015/14* for more information.

8.13 SAFETY IN ANTARCTIC AND SUBANTARCTIC WATERS

1. The number of ships operating in Antarctic and sub-Antarctic waters has increased in recent years. In addition to vessels supporting Antarctic research activities, other visitors include; cruise ships carrying large numbers of tourists to the area, commercial fishing vessels, yachts participating in round the world races and small private polar expeditions.
2. Mariners are warned of the dangers and extreme risks of operating in Antarctic and sub-Antarctic waters. The remoteness of Antarctica presents major problems in responding to any marine incident. Rescue services are almost non-existent and there are sparse medical or other facilities available to assist with handling casualties. Shelter is extremely limited. Self-sufficiency is particularly important, as it is highly unlikely that any of the widely scattered research stations in Antarctica or on the sub-Antarctic Islands could provide significant or timely assistance in the event of a marine casualty. Other vessels could be many days away.
3. EPIRBs working on a frequency of 406 MHz generally work well in the area. Antarctic and sub-Antarctic waters within the Australian SRR are covered by the Modernised Australian Ship Tracking and Reporting System (MASTREP). Mariners are strongly urged to avail themselves of MASTREP (see Section 9.1).
4. Weather conditions can change very quickly. Fog, low cloud and ice pose a continual problem to navigation. Extremely strong winds, reduced visibility, icebergs and pack ice are ever present. Access to adequate weather forecasts is limited.

5. Ice conditions in Antarctica are severe and ships operating in this environment require hull strengthening. In many instances, ice has been responsible for ship damage and / or loss. Climatic conditions and iceberg distributions are discussed in Section 4.1.2 - Antarctic Region, and Section 4.6 - Ice.
6. Antarctic and subantarctic waters are not well surveyed. There are serious deficiencies in the amount, quality and accuracy of hydrographic data available. Uncharted hazards, which can endanger vessels of all sizes, certainly exist. Australian hydrographic survey and charting activities have concentrated on the approaches to the Australian Antarctic stations. The large majority of Antarctic and subantarctic waters shown on Australian charts are unsurveyed. The waters around Heard Island and the McDonald Islands are undergoing significant geographic change which may impact vessel navigation. Close attention should be paid to the Zones of Confidence (ZOC) Diagrams on these charts (see Chapter 13).
7. There is a lack of navigation aids in the Antarctic region. Due to the lack of modern surveys the geographic positions of charted features may be unreliable and may not be consistent with the GPS datum. While GPS generally works well in the area, magnetic compasses are generally unreliable within 1000nm of the South Magnetic Pole (in 2015 at about 64.28°S and 136.59°E). Gyroscopic compasses tend to lose directive force at very high latitudes and are therefore prone to errors.
8. Mariners should be aware of how standard vessel operations may need to be altered to suit the Antarctic environment. Items to consider and prepare for include:
 - freezing of water within fire mains, pipes on deck, ballast tanks and freshwater tanks and pipes
 - ice aggregation on decks and rigging and its effect on vessel stability
 - the resultant effect on stability should the vessel ride up onto ice formations
 - all crew and passengers having a pre-prepared bag of warm clothing to be taken to muster stations and used in emergencies
 - search lights to allow navigation through ice affected areas during any periods of night
 - additional stores and fuel should the vessel become beset in ice for any period of time
9. The list in the previous paragraph is by no means exhaustive, but serves to raise the mariner's awareness that vessel operations in Antarctic waters need to be specifically adapted to the conditions, and as such, should be planned well in advance of the voyage.
10. Further advice can be obtained from the Admiralty Nautical Publication *Antarctic Pilot (NP9)* and by contacting the Australian Antarctic Division during voyage planning as they can advise on many aspects of Antarctic waters operations.
11. The *International Code for Ships Operating in Polar Waters* (Polar Code) is a mandatory international regime developed by the IMO and sets out requirements for the design, construction, equipment, operation, training, search and rescue and environmental protection matters for vessels operating in polar waters. Australia has implemented the Polar Code requirements through Marine Orders 53, 91 and 96 (see Section 3.1.14). The Polar Code can be downloaded at the following website:

Website:	www.imo.org
Website:	www.antarctica.gov.au
Website:	https://www.amsa.gov.au/about/regulations-and-standards/index-marine-orders

8.14 CONFIDENTIAL MARINE REPORTING SCHEME

1. The Marine Investigation Unit of the ATSB operates Australia's Confidential Marine Reporting Scheme (REPCON) under the *Navigation (Confidential Marine Reporting Scheme) Regulations 2004* (Cth).
2. REPCON is a voluntary confidential reporting scheme. It allows any person who has a marine safety concern to report to the ATSB.
3. Matters which must be reported under a mandatory reporting scheme should not be reported under REPCON. This will not discharge your reporting obligations under a mandatory reporting scheme.

4. The following are examples of what may be reported:
 - a breach of safety procedures
 - poor ship maintenance
 - inadequate crew language skills
 - inadequate training of crew
 - defective fire prevention, detection or extinguishing devices
 - unsafe engineering operational and maintenance procedures or practices
5. The following are not reportable safety concerns and are not guaranteed confidentiality:
 - a serious and imminent threat to a person's health or life
 - terrorist acts
 - industrial relations matters
 - a serious crime
6. When dealing with reports, any reference to, or any information that might identify a reporter will be removed to 'de-identify' the report. The 'de-identified' information may be forwarded to AMSA or be used to issue alert bulletins or information briefs to the marine community. Reviews of information from reports will be published and the effectiveness of the scheme will be periodically assessed.
7. Reporting forms may be obtained and completed by telephone. In addition, forms for reporting online are available from the ATSB's website.

Website:	www.atsb.gov.au/voluntary/repcon-marine.aspx
Telephone:	1800 020 505

8.15 COLLECTING WEATHER OBSERVATIONS AT SEA

1. The Australian Voluntary Observing Fleet (AVOF) is a fleet of Australian and foreign owned ships that have been recruited by BOM to record and transmit weather observations whilst at sea. These ships operate mainly in the Australian area and form part of the much larger global Voluntary Observing Ship Scheme (VOS) of about 7000 vessels.
2. Ships recruited into the AVOF are equipped with meteorological instruments supplied by the BOM and also receive stationery to record the observations. The observations, which are valuable for analysing weather systems and helping to formulate forecasts and warnings, are sent free of charge from the ship through Inmarsat.
3. For further details about the VOS, visit the Joint Commission for Oceanography and Marine Meteorology (JCOMM) VOS website or contact the Marine Operations Group of the BOM.

Telephone:	+61 3 9669 4000
Website:	www.bom.gov.au/jcomm/vos/

8.16 IMO REQUIREMENTS FOR CARRIAGE OF PUBLICATIONS ON BOARD SHIPS

Ref: IMO MSC – MEPC.2/Circ.2 – 1 June 2006				
Name of Publication	Required by	Applicable ship	Remarks	Australian Reference
IBC Code - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk	IBC, paragraph 16.2.1	Chemical Tankers	Built after 1 July 1986	<i>Marine Orders Part 17</i>
BCH Code - Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk	BCH, paragraph 5.2.1	Chemical Tankers	Built before 1 July 1986	<i>Marine Orders Part 17</i>
IGC Code - The International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk	IGC, paragraph 18.1.3	Gas Carrier	Built after 1 July 1986	<i>Marine Orders Part 17</i>
IAMSAR Manual Volume III**	SOLAS V/21.2	All ships		<i>Marine Orders Part 21</i>
International Code of Signals**	SOLAS V/21.1	All ships		<i>Marine Orders Part 21</i>
Nautical Charts & Publications	SOLAS V/19.2.1 & V/27	All ships		<i>Marine Orders Part 21</i>
ISM Code - Publications required by International Safety Management code	ISM Code, paragraphs 1.2.3 and 11.3	All ships	Required publications are those specifically mentioned to be carried by the ship's Safety Management System (SMS) manual.	<i>Marine Orders Part 58</i>
Notes: All publications on board ships, regardless of format, should be the latest editions or duly corrected up to date. In case where copies of national regulations incorporating the provisions of the required instruments are provided on board, publications of such instruments need not be carried on board. **These publications for emergency use should always be available on board ships in the form of hard copy.				

1. See also MSC.1/Circ.1462 List of certificates and documents required to be carried on board ships, 2013.

CHAPTER 9 SHIP REPORTING SYSTEMS

9.1 THE MODERNISED AUSTRALIAN SHIP TRACKING AND REPORTING SYSTEM

1. The Modernised Australian Ship Tracking and Reporting System (MASTREP) is a ship reporting system designed to contribute to safety of life at sea and is operated by the Australian Maritime Safety Authority (AMSA) through the Australian Joint Rescue Coordination Centre (JRCC Australia) in Canberra.
2. The MASTREP system provides positional data on vessels transiting Australia's Search and Rescue Region (SRR) (See Section 8.6.1) and ensures that only the closest vessels are requested to assist in a Search and Rescue (SAR) incident, reducing the need for vessels to steam long distances from their intended voyage plan. Given the size of Australia's SRR, merchantmen are often the closest resources available that can respond to an incident.
3. The MASTREP system allows Australia to meet its obligations under Chapter 5 of the Annex to the Search and Rescue Convention as it relates to Ship Reporting Systems.
4. MASTREP, the requirements for which are prescribed in Marine Order 63 (*MASTREP*) 2013, is used to track the location of vessels. Under this system:
 - positional reporting for vessels is sourced from the vessel's Automatic Identification System (AIS)
 - communications between vessels and JRCC Australia continues to be available through Inmarsat, High Frequency (HF), satellite telephony and other means
 - Special Reports are required to support AMSA's role in shipping oversight and incident reporting management

9.1.1 CONCEPT OF OPERATIONS

1. MASTREP uses Position Reports, which must be transmitted by the AIS in accordance with the *International Convention for the Safety of Life at Sea (SOLAS), Chapter 5, Regulation 19.2.4*. Position Reports must transmit the following information:
 - (a) identity
 - (b) type
 - (c) position
 - (d) course
 - (e) speed
 - (f) navigational status
 - (g) safety related information
2. Position reporting is automated and the data is fed in to the system using AIS. Positional data is usually updated at time intervals between five minutes and five hours depending on the location and source. There is no requirement in MASTREP to transmit Sail Plans (SP), Deviation Reports (DR) or Final Reports (FR).
3. No positive SAR watch is maintained in MASTREP. MASTREP is a passive ship reporting system and does not involve shore to vessel communications. **ALL DISTRESS MESSAGES SHOULD BE SENT DIRECTLY TO JRCC AUSTRALIA WHILE IN THE MASTREP AREA.** Similarly, any vessel copying an SOS, MAYDAY or Digital Selective Calling (DSC) Alert from a distressed vessel, or otherwise becoming aware that a distress incident has occurred, should contact JRCC Australia (see Communications with JRCC Australia Section 9.1.4).
4. The master of a vessel must report any malfunction of the vessel's AIS equipment to JRCC Australia in accordance with Section 186 of the *Navigation Act 2012* (Cth).

9.1.2 MANDATORY PARTICIPATION

1. Australia's *Navigation Act 2012* (Cth) and Marine Order 63 (*Vessel Reporting Systems*) 2016, makes the automated provision of Position Reports mandatory for certain vessels. The following vessels must report to MASTREP:
 - foreign vessels from the arrival at first port in Australia until departure from final port in Australia
 - all regulated Australian vessels whilst in the MASTREP area

9.1.3 VOLUNTARY PARTICIPATION

1. Masters are strongly encouraged to report to MASTREP voluntarily even where participation is not mandatory. Such participation will enhance the safety of all vessels operating in the Australian SRR.
2. Australian domestic commercial vessels fitted with Global Maritime Distress and Safety System (GMDSS) and AIS technology are also encouraged to participate in the system.

9.1.4 COMMUNICATIONS WITH JOINT RESCUE COORDINATION CENTRE AUSTRALIA

1. The primary means of communication with JRCC Australia are:
 - AIS
 - Inmarsat C: Messages sent to MASTREP using special access code (SAC) 1243 via the Perth Land Earth Station (LES) (Pacific 212 or Indian 312 Ocean Region satellites) will be reverse charged to JRCC Australia.
 - HF DSC: Messages sent via the AMSA HF DSC network will be free of charge. Initial contact through the AMSA HF DSC station is made by using a DSC safety priority call to Maritime Mobile Service Identity (MMSI) 005030001. The message can then be passed on an appropriate RT frequency. All reports sent by voice should include the mandatory format fields including the identifying letter (See Section 9.1.1).
2. If Inmarsat C reports are not sent using SAC 1243 via 212 or 312 it is likely that the message will not be received by JRCC Australia and charges will apply to the vessel.
3. If for any reason communications are not possible via AIS, Inmarsat C or via the AMSA HF DSC station, the required information must be passed by alternative means to JRCC Australia using one of the following:
 - other Inmarsat phone / fax services: Vessels will be charged for messages sent to JRCC Australia using Inmarsat systems other than Inmarsat C
 - other (non-Inmarsat) satellite phone / fax service: A reverse charge telephone call or facsimile may be used to pass reports when in port
4. Further information or advice on MASTREP and copies of MASTREP instructions are available free of charge from:

JRCC Australia- Maritime Telephone:	+61 (0)2 6230 6811 or free call 1800 641 792 (within Australia)
JRCC Australia Fax:	+61 (0)2 6230 6868 or free call 1800 622 153 (within Australia)
JRCC Australia email:	rccaus@amsa.gov.au
Website:	www.amsa.gov.au

9.2 THE AUTOMATED MUTUAL ASSISTANCE VESSEL RESCUE SYSTEM ORGANIZATION

1. The Automated Mutual Assistance Vessel Rescue System (AMVER) is a computer based, voluntary global ship reporting system sponsored by the United States Coast Guard. Approximate ship position information is made available to recognised SAR agencies of any nation to aid the assistance of persons in distress at sea.

- Masters of vessels outside the MASTREP area are encouraged to make reports to AMVER. This can be sent via email or transmit Inmarsat C messages through TELENOR using Aussaguel Land Earth Stations (LES) (321) when in the Indian Ocean Region and Santa Paula LES (201) when in the Pacific Ocean Region (POR) to ensure the reports are received by AMVER. AMVER communications stations and message formats are described in *Admiralty List of Radio Signals Volume 1* (ALRS Vol 1).

Website:	www.amver.com
Email:	amvermsg@amver.org

9.3 THE GREAT BARRIER REEF AND TORRES STRAIT VESSEL TRAFFIC SERVICE

- The purpose of the Great Barrier Reef and Torres Strait Vessel Traffic Service (Reef VTS) is to enhance navigational safety in Torres Strait and the Inner Route of the Great Barrier Reef (GBR) minimising the risk of a maritime accident, and avoiding pollution and damage to the marine environment. Reef VTS also provides the ability to assist with quick response in the event of any safety or pollution incident. Within the Reef VTS area ships identify themselves and report their intended passage through the region. This information, together with the monitoring and surveillance systems used by Reef VTS, assists with the proactive monitoring of a ship's transit through the GBR and Torres Strait.

9.3.1 SYSTEM OVERVIEW

- Reef VTS is manned 24 hours a day by personnel operating from a centre located in Townsville.
- Reef VTS provides both an information service and a navigational assistance service, if required or requested, throughout the Reef VTS area. The services delivered include:
 - Ship Encounter Information (SEI) - Reef VTS predicts ship encounters and this information is sent to individual ships as Ship Traffic Information (STI), usually through Inmarsat C messaging. STI is specific for each individual vessel and there are no general broadcasts
 - Maritime Safety Information (MSI) - Information that is relevant to the ships location and intended movement is provided
 - Navigational Assistance - Reef VTS may contact a ship if there is information available to Reef VTS which may help onboard decision making such as where the ship is heading into shallow water or deviating from a planned route
- Reef VTS may not know about all the hazards in the area. If a ship encounters any hazard that is not already included in MSI (e.g. a faulty navigational aid) they should advise Reef VTS so they may pass that information on to other mariners.

9.3.2 GREAT BARRIER REEF AND TORRES STRAIT VESSEL TRAFFIC SERVICE AREA

- The Reef VTS Area is depicted on the diagram on page 173.
- Electronic Navigational Charts (ENC) and Paper Nautical Chart (PNC) at a certain scale provide details of the Reef VTS Area.

9.3.3 MANDATORY REPORTING REQUIREMENT

- The Great Barrier Reef and Torres Strait Ship Reporting System (REEFREP) was established as a mandatory ship reporting system under SOLAS *Chapter V Regulation 11*. REEFREP was formally adopted by the International Maritime Organization (IMO) Maritime Safety Committee (MSC) in *Resolution MSC.52(66)*, and later amended by *Resolutions MSC.161(78)* and *MSC.315(88)*. REEFREP reports must be made to Reef VTS.

2. The following categories of ships are required to report to Reef VTS:
 - all ships of 50 metres or greater length overall
 - all oil tankers, liquefied gas carriers, chemical tankers or ships coming within the Irradiated Nuclear Fuel (INF) Code, regardless of length
 - ships which are towing or pushing or being towed or pushed where the length of the tow exceeds 150 metres, or the involvement of one of the vessels listed in the two previous dot points
3. Other vessels transiting the Reef VTS area may report on a voluntary basis.
4. SOLAS Regulation V/11 does not apply to any warship, naval auxiliary, or any ship owned or operated by government. However SOLAS does state that 'such ships are encouraged to participate in ship reporting systems'.
5. Mariners are referred to AMSA Marine Order 63 for details of their obligations under REEFREP. This is available on the AMSA website.

Website:	www.amsa.gov.au
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9.3.4 COMMUNICATING WITH GREAT BARRIER REEF AND TORRES STRAIT VESSEL TRAFFIC SERVICE

1. A Very High Frequency (VHF) radio network is available along the Queensland (QLD) coast and Torres Strait to communicate with Reef VTS. Reef VTS keeps a listening watch at all times on the VHF working Channel 11 and 14. See Reef VTS VHF Channel overview.
2. The relationship between VHF Channels and associated Entry/Exit Reporting Points are dependent on a ship's position in relation to the area of that Reporting Point (see table).
3. Position of entry and exit of the Reef VTS area to QLD ports will be upon passing port VTS areas. For those ports with no declared VTS area, port limits will be considered the entry and exit point.

Name of approved Entry/Exit position	VHF Working Channel	Name of approved Entry/Exit position	VHF Working Channel
Bramble	14	Palm Passage	14
Booby	14	Blossom	14
Endeavour	14	Swain	14
Grafton Passage	11	Sandy Cape	14

Inmarsat C Messaging

4. Reef VTS will pay the cost of messages sent by Inmarsat C if the ship uses the special access codes (SAC) SAC 862 for North entry exit points or SAC 863 for Southern entry/exit points via POR LES 212. Inmarsat C terminals must be logged into the Pacific Ocean Region (POR).
5. Inmarsat C terminals must be logged into the POR.

Other Communications

6. If for any reason a ship cannot communicate via Inmarsat C or the VHF working channel, the ship must send the required information to Reef VTS in another way. The ship can use one of the following:

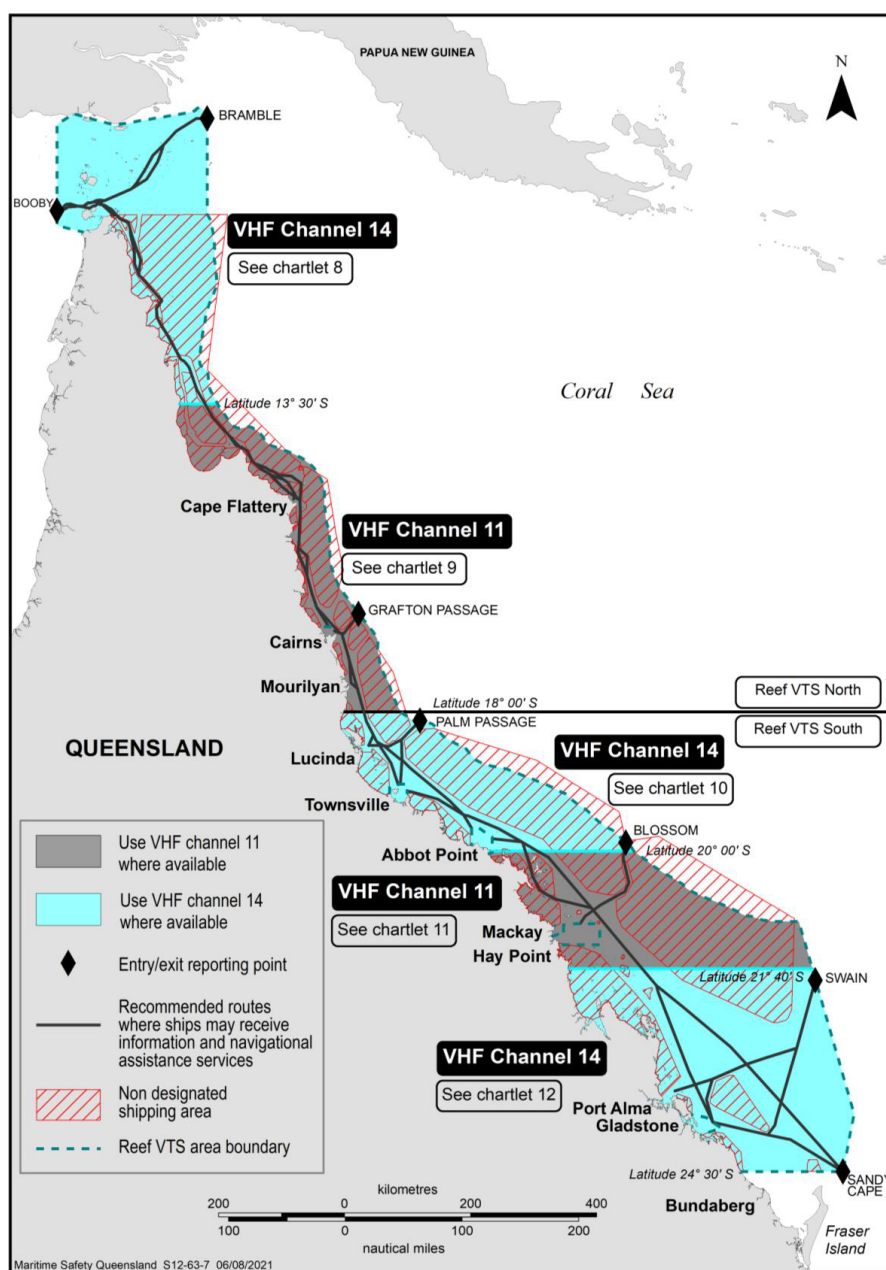
Telephone:	+61 1300 721 293
Fax:	+61 7 4721 0633
Email:	reefvts@vtm.qld.gov.au

7. If a ship's radio equipment fails and the ship cannot send the required reports to Reef VTS, the failure must be recorded in the ship's radio log book or the official log book.

9.3.5 REEF VTS AREA

1. The Reef VTS Area is area of water bounded as follows:
 - (a) the waters bounded by a line commencing at:
 - Slade Point on the coastline of the mainland of Australia on the north-west coast of Cape York Peninsula in approximate position Latitude 10° 56.973' South, Longitude 142° 08.088' East
 - then north-west to Latitude 10° 51.070' South, Longitude 141° 44.130' East
 - then north to Latitude 09° 20.100' South, Longitude 141° 44.130' East

- then north-easterly to Latitude 09° 10.680' South, Longitude 141° 58.960' East
- then south-easterly to Latitude 09° 20.910' South, Longitude 142° 36.066' East on the PSSA boundary,
- then generally easterly along the PSSA boundary to its intersection with the meridian of Longitude 144° 00.000' East (includes the waters of Torres Strait with Endeavour Strait, Great North East Channel and to Bramble Cay),
- then south along the meridian of Longitude 144° 00.000' East to its intersection with the outer edge of the Great Barrier Reef at approximate Latitude 10° 41.000' South
- then in a generally south and south-east direction along the outer edge of the Great Barrier Reef to approximate Latitude 21° 00.000' South, Longitude 152° 30.000' East,
- then east to Latitude 21° 00.000' South, Longitude 152° 55.000' East,
- then south-easterly to Latitude 23° 42.000' South, Longitude 153° 45.000' East,
- then generally south-south-westerly to Latitude 24° 30.000' South, Longitude 153° 35.000' East,
- then east to the coastline at approximate Latitude 24° 30.000' South, Longitude 152° 02.581' East, then generally northerly following the coastline of the mainland to the starting point by also excluding the Vessel Tracking Service areas at the limits of Gladstone, Hay Point, Mackay, Abbott Point, Townsville



Reef VTS VHF Channel overview

9.4 GREAT BARRIER REEF AND TORRES STRAIT VESSEL TRAFFIC SERVICE REPORTS

1. The master is responsible for ensuring the following reports are provided to Reef VTS:
 - Entry Report (ER)
 - Final Report (FR)
2. Additional Reports which may be sent include:
 - Route Deviation Report (DR)
 - Intermediate Position Reports (IP)
 - Defect Reports (IR)
3. Below is the reporting codes reference table:

Entry Report code table

ID	Message type (ER, FR, DR, IP, or IR)	Example
A	Ship name, call sign and IMO number	A/HAPPY SAILOR/ ABCD/1234567
B	Date and time (Coordinated Universal Time (UTC))	B/010200UTC
C	Current Position Latitude and longitude (in degrees and minutes)	C/1120S/14430E
E		
F	Speed The planned speed of the ship in knots and tenths of a knot	F/13.5
G	Last Port of Call/Port Departing from within the Reef VTS area If entering the Reef VTS Area for the first time state the last port of call. If departing from a port within the Reef VTS Area, the name of that port	G/Singapore or G/Hay Point
H	Date, time (UTC) and point of entry to Reef VTS Area Either the name of the entry point or the position (latitude and longitude) of entry of the Reef VTS area	H/010400UTC/BOOBY or C/1030S14120E
I	Next Port of Call Name of the next port of call date and time in UTC	I/Gladstone/050500UTC NOV 16
J	Pilot Company Details Give the pilot company name	J/Australian Reef pilots or J/Torres Pilots
K	Date, time (UTC) and point of exit from area Either the name of the point, or the position (latitude and longitude) of exit leaving from the area	K/042100UTC/SANDY CAPE or K/042100UTC/2420S 15110E
L	Route information Usually a Route Plan Report. Recommended standard route plans, taking into account vessel draught, are set out in the Reef VTS User Guide	L/INNER ROUTE DEEP DRAUGHT or L/ALPHA NORTH VIA VARZIN PASSAGE/ HANNIBAL
M	Communication methods 1) Primary Inmarsat C details: Inmarsat Mobile Number (IMN), manufacturer and model. 2) Ship's satellite phone number	M/423456789/JRC/JUE- 85C or M/870773123456
O	Draught Fore and aft, in metres and decimetres	O/FORE 11.5/AFT 11.3

P	Cargo onboard Give the normal name of cargo and state whether it is classified as hazardous (yes or no). Note: If required, this information may be given by non-voice means before the first Reef VTS report	P/BULK CHEMICALS/ DG YES
Q	Defects, damage, deficiencies or other limitations Describe details of any damage, failure or breakdown: (i) collision, grounding, fire, explosion, structural failure, flooding, cargo shifting; (ii) failure or breakdown of steering gear, propulsion plant, electrical generating system, essential shipboard navigational equipment	Q/Include details as required
R	Pollution/dangerous goods lost overboard Give brief details of the type of pollution (oil, chemicals and so on) or dangerous goods lost overboard. State the ship's position	R/Include details as required
U	Ship type, length (metres) and gross tonnage Give details of the ship, including ship type, length (metres) and gross tonnage	U/TANKER/180/28000
X	COVID -19 Crew health declaration Is anyone onboard showing any Novel Coronavirus symptoms that include fever, cough, sore throat, headache, difficulty breathing or flu-like symptoms? Remarks Give any additional information which would help the navigational safety of shipping in the Reef VTS Area; for example, abnormal weather; faulty navigational aid; or any Dangerous Goods (DG), Harmful Substances (HS) or Marine Pollution (MP) incident reports	X/Yes or X/No X/Include details as required

9.4.1 ENTRY REPORT

1. A ER is required at least one hour prior to entering the Reef VTS area or departing from a port within the Reef VTS area.
2. The purpose of a ER is to advise Reef VTS of the ship intentions (e.g. entry to the Reef VTS area) and take the necessary steps to ensure that the ship's Inmarsat C terminal is operational when the vessel enters the region. The vessel's Inmarsat C terminal is to be logged into the POR.
3. The following message fields are required:

Mandatory fields:	A, B, G, H, I, J, K, M, O, P, Q, U
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9.4.2 FINAL REPORT

1. A final report is required when exiting the Reef VTS area, or when arriving at a port within the Reef VTS area.
2. The following message fields are required:

Mandatory fields:	A, B, K
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9.4.3 INTERMEDIATE POSITION REPORTS

1. In most cases, a ship's position is being tracked by sensors. Therefore intermediate position reports are not required.
2. If the ship's position is not being tracked by sensors, then a brief position report must be given as advised by Reef VTS, until sensor data is obtained, at which time intermediate position reports will no longer be required.
3. The following message fields are required:

Mandatory fields:	A, B, C, F
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9.4.4 ROUTE DEVIATION REPORT

1. If the ship deviates from the route plan which was sent to Reef VTS, this information should be reported to Reef VTS before the deviation is made. However, in situations where a deviation is made without much warning, a report should be sent to Reef VTS as soon as possible.
2. The following message fields are required:

Mandatory fields:	A, B, K, L, O
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9.4.5 DEFECT REPORT

1. An IR must be provided immediately if a ship suffers damage, failure or breakdown which affects the ship safety.
2. The following message fields are required:

Mandatory fields:	A, B, F, Q
Additional fields (if applicable):	R, X

3. The requirement to report all marine incidents including defects and deficiencies using form 'AMSA 18' and form 'AMSA 19' remains.

Websites:	www.amsa.gov.au/forms
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9.4.6 ADDITIONAL INFORMATION

1. For more information the Reef VTS User Guide should be consulted for a more detailed description. Copies of the Reef VTS User Guide are available online, hardcopies are available from Maritime Safety Queensland (MSQ) or can be requested via email.

Websites:	www.msq.qld.gov.au/Shipping/Reefvts.aspx
Email:	reefvts@vtm.qld.gov.au

Notes:

1. In accordance with NtM 1020/2020 all references throughout AHP20 to REEFVTS should now read Reef VTS.

Notes:

CHAPTER 10 SHIP OPERATIONS

10.1 MARITIME SECURITY

1. The Australian Government has implemented a maritime security framework to help safeguard Australia's maritime transport system and offshore facilities against acts of terrorism and unlawful interference. Under this framework, all security regulated ports, ships, port facilities, offshore facilities, and other designated maritime industry participants undertake security risk assessments and implement security plans which put in place appropriate measures to safeguard against unlawful interference with maritime transport.

10.1.1 LEGISLATION AND REGULATIONS

1. The *Maritime Transport and Offshore Facilities Security Act 2003* (Cth) (MTOFSA) and the *Maritime Transport and Offshore Facilities Security Regulations 2003*, establish a regulatory framework that safeguards maritime transport and offshore facilities against unlawful interference. Reference documents and relevant legislation can be accessed through the following website:

Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security/maritime-security
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10.1.2 MARITIME TRANSPORT OR OFFSHORE FACILITY SECURITY INCIDENTS

1. Maritime transport or offshore facility security incidents must be reported by all maritime industry participants and persons with incident reporting responsibilities. Such incidents must be reported as soon as possible after its occurrence.
2. Incidents should be reported to the Department of Home Affairs (DHA), the Australian Federal Police (AFP) or the police force of a State or Territory in which the incident took place. Notices created under MTOFSA set out the steps and processes associated with industry reporting i.e. Notice About How Incident Reports Are To Be Made. Details may be accessed through the following website:

Telephone:	1300 791 581
Email:	transport.security@homeaffairs.gov.au
Fax:	+61 2 6274 6089
Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security/maritime-security/report-an-incident

10.1.3 INTERNATIONAL SHIP AND PORT FACILITY SECURITY CODE

1. The *International Ship and Port Facility Security Code 2003* (ISPS Code) was developed by International Maritime Organization (IMO) members, and it sets out three maritime security levels (MARSEC) that have been incorporated into MTOFSA taking into account the prevailing threat environment. The three maritime security levels are:

Security Level 1 (MARSEC 1)

2. This level is the default level at which ships, port and offshore facilities normally operate.

Security Level 2 (MARSEC 2)

3. This level will apply in circumstances where there is a heightened risk of a security incident. Additional protective measures shall be activated for a particular period of time.

Security Level 3 (MARSEC 3)

4. This level is activated where there is a probable or imminent risk of a security incident. This will mean further specific security measures shall be activated for a limited period of time.
5. Once a higher level has been declared by the Secretary of the DHA, maritime industry participants, including security regulated foreign ships, must comply with the relevant requirements for that MARSEC level set out in their security plans.

6. Upgrades or downgrades in security levels will be advised in writing by DHA. Once a Security Level 2 or 3 declaration has been made to a maritime industry participant, they have an obligation to notify all other maritime industry participants covered by their security plan.

10.1.4 MARITIME SECURITY PLANS

1. Regulated ports, port facilities and port service providers develop maritime security plans which set out the security measures and procedures to be implemented at each MARSEC level. Regulated maritime industry participants are also required to comply with maritime security plans of other participants (where appropriate). Maritime industry participants who must have and comply with a maritime security plans are:
 - operators of security regulated ports
 - operators of facilities at security regulated ports
 - providers of services at such ports and facilities

10.1.5 SHIP SECURITY PLANS

1. Ship Security Plans (SSPs) are required by, and to be complied with by:
 - regulated Australian ships
 - certain other ships and maritime industry participants (see regulations via DHA website)
2. SSPs are required to:
 - identify the security measures to be implemented at each MARSEC level
 - include a security risk assessment of the ships operations
 - details on security equipment, and
 - incident reporting procedures, including the ship security alert system
3. Accompanying the SSP must be a document which includes all identifying details for the ship, specifications and other relevant information. This document must also contain contact details, training duties, responsibilities, and lines of communication for the ship operator, company security officer and ship security officer. A ship operator of a security regulated Australian ship must notify DHA within two working days if there is any change to the information supplied.

10.1.6 OFFSHORE SECURITY PLANS

1. Offshore Security Plans are required by, and to be complied with by:
 - offshore oil and gas facility operators
 - offshore oil and gas service providers
2. Offshore security plans are designed to aid in the protection of Australia's oil and gas industry. Plans describe the measures and procedures that will be implemented to safeguard offshore oil and gas facilities within Australian waters against unlawful interference and identify those security measures that will be implemented when different maritime security levels are in force.
3. All Australian and foreign ships regulated as an offshore facility are also required to have an offshore security plan and a International Ship Security (ISSC). Foreign ships regulated as offshore facilities are also obliged to provide pre arrival information and comply with security and control directions.
4. ISSCs are required by:
 - Australian security regulated ships visiting a security regulated port in Australia
 - foreign regulated ships visiting a security regulated port in Australia
 - all regulated Australian ships wishing to engage in overseas voyages
 - Australian ships regulated as an offshore facility
 - foreign ships regulated as an offshore facility

5. To obtain an ISSC a ship operator for an Australian ship must:
 - apply to the DHA's Aviation and Maritime Security (AMS) Division
 - have an approved SSP in force
 - be ISSC verified
6. For a regulated Australian ship to be ISSC verified, a maritime security inspector needs to inspect the ship to verify that it meets the requirements of the MTOFSA.

10.1.7 SHIP SECURITY ALERT SYSTEMS

1. A ship security alert system must be capable of transmitting a ship to shore security alert identifying the ship, giving its location and indicating that the security of the ship is, or was, under threat. A regulated Australian SSP must include certain information about the ship security alert system.

10.1.8 REGULATED FOREIGN SHIPS

1. A foreign ship which is regulated under the MTOFSA is one that possesses an SSP and ISSC issued under its Flag State and is in Australian waters or is intending to proceed to, a port in Australia. Regulated foreign ships are also one of the following:
 - a passenger ship of 12 passengers or more
 - a cargo ship of 500 or more gross tonnage (GT)
 - a mobile offshore drilling unit
2. The master of a regulated foreign ship intending to enter Australian waters is required to provide pre-arrival information. This information is collected by the Australian Border Force (ABF). Pre-arrival information includes details of the ship's ISSC, the ship's MARSEC level and details of the last 10 ports of call. Australian Maritime Safety Authority (AMSA) inspects foreign-flagged ships to confirm compliance with the ISPS Code as part of their Port State Control function.
3. The master of a regulated foreign ship, if requested, must allow a maritime security inspector to board and inspect the ship when in Australian waters. The maritime security inspector may request the ship security records, which must be provided. Failure to comply may mean the ship is issued with an Infringement Notice, a Security or Control Direction.
4. Regulated foreign ships must comply with the MARSEC level in force at any Australian security regulated port. The ship must at all times, implement MARSEC level 1 measures. If maritime Security Level 2 or 3 is in force, the ship must implement the corresponding MARSEC level measures.
5. Regulated foreign ships must comply with security directions from DHA. Failure to comply with a direction to implement a higher level of security may result in a Control Direction to ensure that security standards are maintained. This may include removal of the ship from a security regulated port or offshore security zone, should it be necessary.

10.1.9 MARITIME SECURITY ZONES

1. Maritime Security Zones (MSZ) are established to provide additional security measures for particular areas within a security regulated port, ships (in port or at sea) or offshore facility. These zones may be established to control the movement of people, to provide cleared areas, to prevent interference with port operations, ships and offshore facilities or to restrict access to critical installations and areas. Persons accessing a MSZ must hold and display a valid Maritime Security Identification Card (MSIC), or be escorted by someone who holds a valid MSIC.

Ship security zones

2. DHA can declare Ship Security Zones (SSZ) around a ship when a ship is within a security regulated port or in the proximity of an offshore facility. Subject to certain requirements, a SSZ is to operate around a security regulated ship within the boundaries of a security regulated port. Boundaries of on-board SSZ must be clearly identifiable.

Offshore security zones

3. DHA can establish Offshore Security Zones (OSZ) within and around a security regulated offshore facility. The purpose of OSZ is to subject those areas to additional security requirements. If an OSZ is established, the offshore facility operator must notify all maritime industry participants who conduct operations within the zone of its establishment.
4. In addition, petroleum safety zones can be established by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as part of the administration of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth).

10.1.10 MARITIME SECURITY IDENTIFICATION CARDS

1. A MSIC is the nationally recognised security identification card scheme for the maritime industry. The display of an MSIC demonstrates a person has successfully completed a background check. MSIC do not automatically grant access to the MSZ within security regulated ports, port facilities, on ships and offshore oil and gas facilities. Individuals must have an operational need to be issued with an MSIC, and must be granted access to MSZ by the facility operator.
2. MSIC must be held and displayed by all unescorted or unmonitored persons who have an operational need to be in MSZ.
3. MSIC must be properly displayed by the holder when in a MSZ. This means the card must be worn at or above waist height, at the front or side of the body, or on a band around the upper arm. The whole of the front face of the card must be clearly visible at all times.
4. An MSIC can only be issued by a MSIC issuing body approved by DHA. For up-to-date information on MSIC issuing bodies and other relevant information go to the following website.

Email:	idsecurity@homeaffairs.gov.au
Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security/identity/asic-and-msic-identification-cards

10.1.11 WEAPONS AND PROHIBITED ITEMS, SCREENING AND CLEARING

1. The purpose of screening is to prevent weapons and prohibited items from being taken into certain areas of security regulated ports and/or onboard security regulated ships and offshore facilities. The control of weapons and prohibited items is an important aspect of preventing acts of terrorism and unlawful interference with maritime transport and offshore facilities. All persons, goods, vehicles and vessels, unless exempt under the legislation, that pass through a screening point to enter a cleared zone or board a security regulated passenger ship will be required to undergo screening and must be cleared to enter the zone by a port security officer if screening is being conducted landside, or by the ship security officer if screening is being conducted onboard. These requirements are specified in the MTOFSA, and further guidance on the maritime security framework is available from the Maritime Security Division.

Website:	www.homeaffairs.gov.au/about-us/our-portfolios/transport-security/maritime-security
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10.1.12 SHORE LEAVE AND VISITORS

1. The ISPS Code requires contracting governments to ensure relief for seafarers. The regulations require port facility operators in their maritime security plans to provide access for seafarers to shore leave and access by visitors (including representatives of welfare groups and labour organisations). If transiting through a MSZ all crew members and visitors without an MSIC must be under escort.

10.1.13 FURTHER SECURITY INFORMATION

1. Queries can be directed to the AMS Division of DHA by:

Mail:	Aviation and Maritime Security Division PO Box 25 Belconnen, ACT 2616
Telephone:	Security: 1300 791 581 (Aust only) +61 2 6274 6992
Fax:	+61 2 6274 6089
Email:	transport.security@homeaffairs.gov.au

10.1.14 PIRACY

1. The International Maritime Bureau (IMB) Piracy Reporting Centre (PRC) maintains a 24 hour watch, 365 days a year, and publishes a weekly update of attacks and warnings. The weekly reports contain details of the location and nature of piracy attacks, suspicious craft and areas prone to piracy. Weekly reports are freely available from the PRC website. Reports can be made to the PRC of suspicious or unexplained craft movements, boarding and armed robbery from ships. These are used to alert other ships and law enforcement agencies in the area. The PRC can be contacted via the IMB or directly at:

Mail:	ICC IMB (Asia Regional Office) PO Box 12559 50782 Kuala Lumpur Malaysia
Telephone:	+60 3 2078 5763 +60 3 2031 0014 (24 Hours Anti Piracy HELPLINE)
Fax:	+60 3 2078 5769
Email:	imbkl@icc-ccs.org piracy@icc-ccs.org
Website:	www.icc-ccs.org/index.php/piracy-reporting-centre

10.2 DANGEROUS CARGO

1. SOLAS Chapter VII requires that the carriage of dangerous goods in packaged form shall be in compliance with the relevant provisions of the *International Maritime Dangerous Goods* (IMDG) Code. In Australia the IMDG Code is implemented by Marine Order 41 (*Carriage of Dangerous Goods*).
2. The carriage of dangerous goods in solid form in bulk is amplified in the *International Maritime Solid Bulk Cargoes Code* (IMSBC) code. This code was adopted via Resolution MSC.268 (85) in December 2008. The IMSBC Code requires that solid bulk cargoes are classified with the criteria in the IMDG Code - hence cargoes classified as dangerous goods in packaged form are dangerous goods when loaded as solid bulk cargoes. In Australia the IMSBC Code is implemented by Marine Order 34 (*Solid Bulk Cargoes*).
3. When intending to load dangerous goods in packaged form or in solid form in bulk, a special list or manifest must be sent to the nearest AMSA Office as prescribed in the respective Marine Order.
4. For packaged dangerous goods, the master must provide the special list or manifest, including the following information, at least 24 hours prior to loading:
 - ship name
 - IMO number
 - port of loading
 - date of loading and departure
 - classes and locations of goods being loaded

5. For dangerous goods in solid form in bulk, the shipper must provide the special list or manifest, including the following information, at least 48 hours prior to loading:
 - ship name
 - IMO number
 - port and berth of loading
 - cargo information prescribed by Section 4.2 of the IMSBC Code.
 - date of berthing
 - classes and locations of goods being loaded
6. Vessel certification when carrying dangerous goods, whether in packaged form or in solid form in bulk, is required to comply with the requirements of Regulation 19 of Chapter II-2 of SOLAS. Carriage of dangerous goods is permitted only in accordance with the vessel's *Document of Compliance for Carriage of Dangerous Goods*.
7. Marine Orders can be found on AMSA's website.
8. IMO publications, IMDG Code and IMSBC Code, are sold through chart agents and book shops in Australia that are listed as IMO sellers on the IMO website.

Website:	www.amsa.gov.au
	www.imo.org

10.3 TRANSFER OPERATIONS AT SEA AND IN COASTAL WATERS

1. The practice of transfers at sea is commonplace in some designated areas overseas, where special precautions are taken to counter the associated risks of collision and pollution. No areas have been designated off the Australian coast for such purposes and the practice of using random locations to suit commercial requirements is viewed with concern.
2. AMSA requires that all necessary precautions are taken whenever a ship-to-ship transfer of persons, cargo or other goods is undertaken at sea in the vicinity of the Australian coast or within port limits. To enable Maritime Safety Information (MSI) to be promulgated, it is requested that notification be forwarded to AMSA when operations are intended, together with the contingency plans. The plans should take into account the 'Ship to Ship Transfer Guide (Petroleum)' developed by the International Chamber of Shipping Marine Forum. Notifications should be directed to AMSA's Canberra office, as listed below, and to the appropriate AMSA area office.
3. Information should include: the date and place of the proposed transfer, full details of the ships involved, the purpose of the transfer, whether other craft (such as tugs) are to be in attendance and what equipment is to be provided to assist in manoeuvring and cargo transfer.
4. It is requested that early advice be forwarded to AMSA if such operations are intended. Notifications should be directed to:

AMSA's Address:	PO Box 2181 Canberra ACT 2601
Telephone:	+61 2 6279 5935
Fax:	+61 2 6279 5071
Email:	reports@amsa.gov.au

5. Transfer operations at sea requirements are detailed in AMSA's *Marine Notices 2017/15*.
6. The ABF requires the operator of ships to request permission to transfer goods between vessels prior to such activity taking place. The request must be made on the form available at:

Website:	www.abf.gov.au/form-listing/forms/s.175.pdf
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7. Requests for permission to transfer goods between vessels at sea should be submitted to the relevant port where the activity is occurring, the location of relevant offices can be found at:

Website:	www.abf.gov.au/help-and-support/contact-us/offices
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10.4 CONFINED SPACE ENTRY AND SAFE ATMOSPHERE

10.4.1 CONFINED SPACES

- A confined space is an enclosed or partially enclosed space that:
 - is not designed or intended primarily to be occupied by a person
 - is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space
 - is or is likely to be a risk to health and safety from:
 - an atmosphere that does not have a safe oxygen level
 - contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion
 - harmful concentrations of any airborne contaminants
 - engulfment
- Under the *Occupational Health and Safety (Maritime Industry) Act 1993* (Cth) (OHS(MI) Act) and the Australian / State Work Health and Safety legislation, there is a duty of care to manage health and safety risks associated with confined space, including risks when entering, working in, on or near a confined space. Ship operators are required to establish appropriate control measures to eliminate the risk so far as is reasonably practicable. Procedures should be part of the ship's Safety Management System as required by the International Safety Management Code.
- The *Model Code of Practice* - confined spaces provides practical guidance for confined space entry and is located on the Safe Work Australia website. The Seafarers Safety, Rehabilitation and Compensation Authority (Seacare Authority) website also contains a guidance document relating to confined space.
- Appropriate training is required to ensure that all workers involved in confined space entry are aware of the hazards associated with confined space and have sufficient knowledge to assess the risks and apply measures to minimise the risks.

AMSA's website:	www.amsa.gov.au
Seacare Authority website:	www.seacare.gov.au

10.4.2 CARGO SPACES

- Loading or unloading must not be carried out in a cargo space in which the atmosphere is liable to be contaminated by harmful concentrations of dust or toxic gas, or in which there is liable to be an oxygen deficiency, unless adequate precautions have been taken to protect involved personnel. The space should be adequately ventilated prior to entry being permitted.
- A mechanical stowing appliance or other vehicle powered by an internal combustion engine must not be used in a cargo space during loading or unloading unless that cargo space is provided with natural or mechanical ventilation that is adequate to prevent the accumulation of harmful concentrations of gases, fumes and vapour. Where doubt exists, the advice of a competent chemist should be obtained.
- Cargo handling requirements are detailed in AMSA Marine Order 32 (*Cargo Handling Equipment*).

10.5 DUMPING WASTE AT SEA

1. To help protect the marine environment, Australia has entered international agreements and enacted legislation to facilitate the preservation of marine ecosystems and the prevention of marine pollution. The *Environment Protection (Sea Dumping) Act 1981* (Cth) regulates the deliberate loading and dumping of wastes and other matter at sea. Dumping, or loading for the purposes of dumping, without a permit is a criminal offence under the *Environment Protection (Sea Dumping) Act 1981* (Cth), and may incur a substantial penalty, including imprisonment and fines. For further information see Section 3.1.10.

10.6 MOVEMENT OF TRAVELLER AND GOODS

1. The DHA monitors the entry and exit of vessels, aircraft, goods and people. DHA contributes to the management (through prevention, preparedness, response and recovery) of all security threats within Australia's maritime domain, while facilitating the legitimate movement of travellers and goods. Under the *Customs Act 1901* (Cth), officers may board and search vessels.
2. Maritime Border Command (MBC; see Section 2.4.7), operates within the ABF, and is a Australian Government multi-agency taskforce which utilises both ABF assets and assigned Department of Defence assets to conduct its civil maritime surveillance operations. The operational area covers the Australian coastline, Australia's offshore territories, the Australian Fishing Zone (AFZ) and the Exclusive Economic Zone (EEZ).
3. MBC assigned assets regularly contact vessels at sea and may request the following information:
 - vessel's name and correct spelling
 - last port of call
 - next port of call
 - port of registration
4. The initial call will be on Very High Frequency (VHF) Channel 16, with a change to a working channel being requested after conformation of the identity of the vessel being called. MBC assigned aviation assets will not directly overfly any vessel at sea below 1500 feet, but may conduct low passes (minimum aircraft height of 200 feet above sea level and 150 feet abeam the vessel) to obtain photographs and a positive identification of a vessel. If a vessel has not yet cleared customs in Australia, the aircrew will read the *Pratique* (see Section 10.9.1) and request the vessel's crew confirm they understand the requirements of the *Pratique*. They may also request the number of persons onboard and number of animals onboard.

10.6.1 BORDER WATCH

1. Border Watch is a DHA program that receives information about suspicious activities. It relies on the knowledge of industry and the community. Border Watch members know their local environments. Members range from large, multi-national corporations to community organisations to individuals located in capital cities, regional centres and remote areas, and in environments as varied as transport and cargo logistics, caravan parks and fishing clubs.
2. By reporting suspicious activities, Border Watch members actively help DHA protect Australia's border.

10.6.2 REPORT SUSPICIOUS BEHAVIOUR

1. Reporting suspicious or criminal behaviour actively helps to protect Australia's border and manage the movement of people and goods across it. If you suspect that someone is working illegally, has no right to be in Australia or is involved in smuggling or other criminal activities, contact Border Watch.

To report suspicious border activities call Border Watch or complete the online form:	1800 009 623 (inside Australia) +61 2 6246 1325 (if you are outside of Australia or using a satellite phone) www.homeaffairs.gov.au/about-us/what-we-do/borderwatch/reporting
Website:	www.homeaffairs.gov.au

2. The telephone is answered by experienced DHA officers, 24 hours a day, seven days a week. The information provided could be the key piece of the puzzle that leads to the seizure of narcotics or other prohibited imports. A small piece of information could lead to a big seizure.
3. Reports can be made anonymously and normal call costs apply when calling from overseas or a satellite phone.

What to Report

4. Immigration and border protection offences:
 - importation of illicit drugs and precursor chemicals
 - people smuggling
 - foreign fighters
 - illegal and dangerous weapons
 - performance and image enhancing drugs (steroids)
 - illegal import or export of currency or fauna
 - fraud against DHA, including a person working for DHA or ABF who is committing fraud of any type
 - helping people to remain or work in Australia unlawfully
 - visiting Australia to promote extremist ideologies, advocate violence as a means to an end, or to vilify a segment of the community

Common indicators of suspicious behaviour

5. The person is:
 - overly nervous, evasive or refusing reasonable assistance
 - attempting to conceal their identity
 - preferring to settle accounts early
 - enquiring about Customs, Police or other law enforcement agencies' activities

Suspicious activity

6. The person is:
 - interested in specific or unusual locations
 - insisting on paying in cash only
 - making unusual purchases
 - carrying unusual equipment or hardware

Suspicious goods

7. Are the goods:
 - misdescribed, misspelt or have incorrect information on them?
 - labelled in an obscure manner?
 - damaged, modified or tampered with?
 - too heavy or too light for the given goods description?
 - emitting an unusual odour?

10.6.3 FURTHER INFORMATION

1. Information on DHA electronic reporting requirements, documents, manual reporting forms, or advice on procedures can be obtained by completing the general enquiries online form on the DHA website.

Telephone:	1800 06 1800 (within Australia)
Website:	www.homeaffairs.gov.au

10.7 MOVEMENT OF TRAVELLER AND GOODS - PROCEDURES FOR SHIPS ENTERING AUSTRALIA

1. The following DHA information is applicable for the entry of non-military vessels to Australia.

10.7.1 FIRST PORT ARRIVALS

1. The master or owner of a ship arriving in Australia is required to provide DHA with a notice of the ships impending arrival, all cargo and all sea travellers on board as well as details of security and certificate arrangements. The reports are required 96 hours before the nominated date of arrival indicated by the impending arrival report.
2. If the voyage is likely to take less than 96 hours then the report is required 72 hours (voyages less than 96 hours), 48 hours (voyage less than 72 hours), 24 hours (voyage less than 48 hours) or 12 hours (voyage less than 24 hours) in advance of arrival.
3. Ships carrying cargo must communicate the impending arrival report, actual arrival report and cargo reports to DHA electronically. The cargo report must detail particulars of all goods intended to be unloaded from the ship as well as any goods that are intended to be kept on board the ship for shipment on to a place outside Australia, such as transit cargo.
4. Shipping representatives or agents in Australia can assist with how to meet reporting obligations determined by DHA legislation.
5. Prior to arrival the following forms must be submitted. These are able to be submitted electronically:
 - Impending Arrival Report (SEA)
 - Cargo Report
 - Inwards/Outwards Crew report (Form 3)
 - Passenger Report (Form 2B)
 - Ship Pre-Arrival Report (PAR) (Form 13) (Security and certificates)
6. Ships will be required to produce the following reports on arrival. These are able to be submitted electronically:
 - Arrival Report (SEA)
 - Crew Report
 - Passenger Report
 - Report of Ships Stores (Form 5 - Part Four)
7. These are available from the ABF website. Report submission details are included on the forms.

Website:	www.abf.gov.au
Inwards/Outwards Crew Report (Form 3):	www.abf.gov.au/crossing/files/form-3.pdf
Passenger Report (Form 2B):	www.abf.gov.au/crossing/files/form-2b.pdf
Ship Pre-arrival Report (Form 13)	www.abf.gov.au/form-listing/forms/form13.pdf
Report of Ship's Stores (Form 5 - Part Four):	www.abf.gov.au/form-listing/forms/form5-4.pdf

8. There is no limit on the amount of Australian or foreign cash that may be brought into or taken out of Australia. However, individuals carrying AUD \$10 000 or more (including in the foreign currency equivalent) must declare this on arrival and departure. The master of a ship who is responsible for more than AUD \$10 000 on behalf of the ship operator must declare this money to ABF.

10.7.2 SMALL CRAFT

1. Small craft and recreational vessels are not exempt from the requirement to report impending arrival at an Australian port 96 hours in advance. Operators of these vessels intending to arrive in Australia should check the ABF website (see table in Section 10.7.1) for current information.

10.7.3 WEAPONS AND FIREARMS

1. The Australian Government's policy is firmly against the carriage of firearms and prohibited items by foreign security personnel into Australia. The Australian Government recognises that there may be instances where requests are made to bring firearms and prohibited items into Australia, particularly where foreign vessels are transiting through Australia to other countries and additional security may be required for protection against piracy in international waters. In these circumstances, the Australian Government expects that security personnel fully declare all firearms and other prohibited items that are on-board vessels transiting through Australia.
2. While in Australia, the Australian Government requires that the firearms and prohibited items are properly secured and under the effective control of the Australian Government at all times. Firearms and other prohibited items may either be secured onboard the vessel or held by ABF for secure storage during the duration of the visit. Where the goods are to be secured on-board a vessel, ABF will assess whether the level of security is adequate and seal them on board. If not, the goods will be securely held by ABF for the duration of the visit.
3. Any undeclared firearm and prohibited item detected at the border in the possession of foreign security personnel by ABF are liable to be seized and could result in criminal prosecution.

10.7.4 OTHER PROHIBITIONS OR RESTRICTIONS

1. Australia has a variety of border controls covering the importation of a wide range of items. Goods subject to prohibition or restriction include but are not restricted to:
 - animal and plant material
 - cultural heritage items
 - drugs, including performance enhancing drugs
 - hazardous waste
 - ozone depleting substances
 - asbestos containing materials
 - counterfeit goods
 - protected wildlife
 - some medicinal products
2. Penalties for border offences can be severe. Any queries about whether goods require a permit or are subject to special conditions should be directed to ABF by completing the general enquiries online form on the ABF website.

Telephone:	133 177 (within Australia)
Website:	www.border.gov.au/about/contact/make-enquiry/general

10.7.5 IMPORTING GOODS

1. All goods imported into Australia must be cleared by ABF. Importers are responsible for obtaining a formal customs clearance for goods above set value limits. This is done through lodging an import declaration. The onus is on importers to meet all requirements at the border.
2. Consignments valued at or below these amounts may be cleared through use of a self assessed clearance declaration. These must be made electronically.

Website:	www.abf.gov.au/importing-exporting-and-manufacturing/importing/how-to-import/import-declaration
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3. The Department of Immigration and Border Protection (DIBP) applies cost recovery charges for the processing of declarations. These costs depend on the type of declaration.
4. Goods entering Australia can attract customs duty and/or Goods and Services Tax (GST), and other taxes and charges. Customs duty rates vary and depend on a number of factors, such as type of goods and country of origin.

10.7.6 TEMPORARY IMPORTS

1. Commercial goods brought into Australia with the intention of being sold are subject to the normal rates of duty and tax where applicable.
2. Goods, commercial or personal, that are brought into Australia on a temporary basis may be admitted without the payment of duty or taxes, subject to certain conditions. Carnets (permits) may be obtained for temporary duty free entry of goods such as commercial samples, jewellery, goods for international exhibitions, equipment for sporting events, professional television and film equipment. Contact your International Chamber of Commerce for application details.

10.7.7 TRANSSHIPMENTS

1. Goods being transshipped through Australia must be reported on a cargo report. DHA will allocate a transaction number for the transshipped goods. This number will be acquitted after the consignment is exported. The number will be used on the export manifest to reconcile the two movements.

10.7.8 CREW ENTITLEMENTS

1. The master of the ship is responsible for bond store releases. The allocation of tobacco and alcohol to crew members is for consumption on board only. Crew members permanently disembarking the vessel will only be allowed to remove duty free goods within normal concessions limits.
2. Crew signing off ships in Australia can only bring one of the following duty-free into Australia:
 - 50 cigarettes
 - 50 grams of cigars
 - 50 grams of tobacco products
3. All tobacco products in accompanied baggage are included in this category, regardless of how or where they were purchased.

10.7.9 OUTWARDS CLEARANCE

1. All ships departing an Australian port must apply for and receive a certificate of clearance. The application for clearance must be made electronically.

10.8 MOVEMENT OF TRAVELLER AND GOODS - PROCEDURES FOR PERSONS ENTERING AUSTRALIA

1. Only Australian citizens have an unfettered right of entry to Australia. All other persons must hold an authority, in the form of a visa, to enter and remain in Australia.
2. The Australian Government seeks to ensure only appropriately documented persons travel to Australia. International carriers entering Australia from overseas must comply with all obligations under the *Migration Act 1958* (Cth) in relation to their vessel and the persons on board the vessel.

10.8.1 ENTRY DOCUMENTATION REQUIRED

1. All crew, spouses, dependent children of crew members and passengers on board ships entering Australia must hold appropriate travel documentation and comply with Australia's immigration clearance requirements, regardless of whether or not they are disembarking the vessel in Australia. The master of the vessel is expected to ensure all persons on board have correct and valid travel documentation.
2. Non-citizens unable to comply with immigration clearance requirements may be refused immigration clearance. Further, if a non-citizen is brought to Australia without a valid visa, the master, owner, agent, charterer or operator of the ship may be issued with a fine.
3. Definition of non-military ship (from the *Migration Act 1994* (Cth)):
 - means a ship that:
 - is engaged in commercial trade; or the carriage of passengers for reward; or
 - is owned and operated by a foreign government for the purposes of scientific research; or
 - has been accorded public vessel status by Foreign Affairs; or
 - has been imported under section 49A of the *Customs Act 1901*; and
 - is registered in the Australian International Shipping Register (AISR); or that has been entered for home consumption under section 71A of that Act; and
 - is registered in the AISR
 - does not include a ship that:
 - has been imported under section 49A of the *Customs Act 1901*; and
 - is not registered in the AISR; or
 - has been entered for home consumption under section 71A of that Act
 - is not registered in the AISR
4. Immigration clearance requirements for various categories of sea arrivals are listed below:

Crew

5. Australian citizen crew are required to present a valid Australian passport. If on a 'non-military ship' they are not required to complete an Incoming Passenger Card (IPC).
6. New Zealand citizen crew may apply for a Special Category Visa (SCV) (Subclass 444) upon arrival in Australia by presenting a valid New Zealand passport and completed IPC. Those not eligible for an SCV must apply for another type of visa before travelling to Australia.
7. Non-citizen crew (including New Zealand citizens ineligible for an SCV), must hold a valid passport / travel document and a visa. Generally, the Maritime Crew Visa (MCV) (Subclass 988) is the most appropriate type of visa for crew of non-military ships. MCV holders must also present another document establishing the crew member's employment on the vessel (e.g. crew list, seaman's book, contract). If on a 'non-military ship', they are not required to complete an IPC.

Spouses and dependent children of crew

8. If the spouse or dependent children of a crew member seek to accompany a crew member to Australia they:
 - must hold a valid passport / travel document
 - must hold a valid a MCV (further information below), or other appropriate type of visa
 - are not required to complete an IPC if on a 'non-military ship'
9. Spouses / children who hold an MCV must travel to Australia on the same vessel as their spouse / parent crew member (whose MCV must be valid) and be listed either on the vessel's crew list (identified as a spouse or dependent) or passenger list. They must also hold documentation verifying they are a dependent child or spouse of a crew member.

Maritime Crew Visa

10. The MCV allows holders to:
 - undertake work as the member of the crew of a non-military ship or accompany their spouse/parent who holds a valid MCV
 - enter Australia multiple times within a three year validity period
 - only enter Australia by sea, if an MCV holder needs to enter Australia by air to join a ship, they must obtain another type of visa - usually a Transit visa, Electronic Travel Authority or a visitor visa
11. There is no application charge for an MCV. With the applicant's knowledge and consent, a third party, such as a shipping agent, can complete and lodge an application on the applicant's behalf. To be eligible to apply for an MCV, a person must:
 - be outside Australia at time of application
 - provide details of their valid passport / travel document
 - be employed on a non-military ship or under offer of employment on a non military ship OR be the spouse or dependent child of a crew member who holds or has applied for an MCV, and intend to accompany that person on the ship.
12. If an MCV holder is granted a new passport / travel document within the three year validity of the MCV, they must notify the Maritime Global Processing Centre of the new passport/travel document details via email.

Email:	mcv@homeaffairs.gov.au
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Passengers

13. Persons on board a vessel not listed on the crew list should be included on the passenger list.
14. All passengers (including Australian and New Zealand citizens) are required to complete an IPC. Additionally:
 - Australian passengers must present a valid Australian passport
 - New Zealand passengers can apply for an SCV by presenting a valid New Zealand passport (although those who know they are ineligible for an SCV should apply for another type of visa ahead of travel to Australia)
 - other non-citizen passengers must present a valid passport / travel document and hold a valid visa

Yachts

15. On arrival in Australia, all persons on yachts or superyachts are subject to immigration clearance and must present both a valid passport/travel document and a completed IPC. Non-citizens must hold a valid visa. New Zealand citizens can apply for an SCV on arrival (although those who know they are ineligible for an SCV should apply for another type of visa ahead of travel to Australia).
16. If a non-citizen without a valid visa is brought to Australia by yacht, the master, owner, agent, charterer or operator of the yacht may be issued with a fine. Additionally, the non-citizen may be refused entry to Australia.

10.8.2 ADVANCE PASSENGER AND CREW REPORTING

1. Advance Passenger Processing (APP) is an electronic system for providing information on all crew and passengers on board a ship travelling to Australia prior to arrival. APP is mandatory for all international passenger cruise ships entering Australia. Further information on the APP system and APP reporting requirements can be obtained by contacting ABF or visiting the website.

Website:	www.abf.gov.au
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10.8.3 CREW CHANGES IN AUSTRALIA

Crew leaving a vessel in Australia

1. Sign-off procedures enable non-citizen crew members (and their spouses / dependants) to depart Australia for repatriation, hospitalisation or to sign on to another vessel. Crew signing off a vessel generally have five days to depart Australia or sign on to a non imported vessel.
2. Shipping agents/masters are expected to provide the ABF with a notification of crew that sign-off 24 hours in advance to enable officers to establish if crew will be lawfully in Australia at the time of sign-off and identify any crew currently restricted on board the vessel.
3. Non-citizen crew members signing off for a holiday, or to reside in Australia must present a valid passport/ travel document and hold a valid visa.

Crew joining a vessel in Australia

4. Shipping agents / masters are expected to provide the ABF with notification of crew (and spouse/dependant) sign on 24 hours in advance to enable ABF officers to establish if crew will be lawfully in Australia at the time of sign on and hold an appropriate visa.
5. A crew member who holds an MCV and has previously signed off another vessel in Australia must sign onto a new vessel within five days to avoid becoming an unlawful non-citizen due to their MCV ceasing.
6. Crew holding MCVs who are travelling to Australia by air to join a ship must hold an additional valid visa for air travel such as a Transit visa, Tourist visa or an Electronic Travel Authority. Transit visas for crew will generally not be granted until the crew member's MCV is granted.

10.8.4 REPORTING ABSENT CREW - INCLUDING DESERTERS

1. Crew members absent from a vessel with or without the master's permission must be reported to the ABF on departure from each port. Absences must be reported on Form 25 'Report of Absent Members of Crew' (available from the ABF office at the port) and must indicate, whether the crew member left the vessel with or without the master's permission. Failure to report all absences may result in a penalty to the master.

10.8.5 REPORTING STOWAWAYS

1. A stowaway or concealed person is a person who is secreted on a vessel, or in cargo subsequently loaded onto a vessel, without the consent of the ship owner, the master, or any other responsible person.
2. The master, owner, agent or charterer must notify the ABF of any stowaways or concealed persons on board the vessel before arrival in Australia and prevent these persons from leaving the vessel. Failure to report a stowaway may make the master, owner, agent or charterer of the vessel liable to be issued with a fine.

10.8.6 CONTACTS AND FURTHER INFORMATION

1. Information in relation to requirements for entry by sea is available by contacting DHA by telephone or visiting their website.

Telephone:	131 881 (Australia only)
Website:	www.homeaffairs.gov.au

10.9 QUARANTINE AND BIOSECURITY

1. The Department of Agriculture and Water Resources (DAWR) provides biosecurity inspection services for the arrival of international passengers, vessels, cargo, mail, animals and plants or their products into Australia. This department also provides biosecurity inspection services and certification for a range of animal and plant products exported from Australia.
2. Australia's remote location has created a unique environment and biosecurity helps to protect this. Food, plant material and animal products from overseas - including many common souvenirs - could introduce some of the world's most serious pests and diseases into Australia.
3. Vessels entering Australia could unknowingly carry unwanted pests and diseases that can threaten Australia's unique flora and fauna, aquaculture and agricultural industries as well as human health. DAWR ensures that all vessels arriving in Australia from overseas comply with International Health Regulations and ensures that all biosecurity risk posed by the vessel is adequately managed. This is achieved by monitoring, assessing and managing the risks associated with vessels, crew, marine pests and ballast water of all international vessels arriving in Australia, including wharf surveillance activities.
4. Many types of vessels enter Australia. Our legislation manages them in two streams:
 - Commercial vessels and non-commercial, above and below 400 GT
 - commercial vessels - barges, military, livestock and cruise vessels
 - Australian vessels returning to Australian waters from overseas
 - offshore installations
 - non-commercial vessels - yachts and other recreational vessels including superyachts
5. Additional information and forms are available from the DAWR website.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels
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10.9.1 PRATIQUE

1. Pratique is permission granted by the DAWR for passengers and crew to disembark in Australia from an overseas vessel. Pratique is only granted to a vessel after it has been determined that it is free from any high risk disease. The vessel and people onboard remain subject to biosecurity measures until such time as pratique is granted.
2. As part of the pratique process, all international vessels on their way to Australia must provide the DAWR with a biosecurity PAR. The PAR provides DAWR with the information it requires to perform a biosecurity risk assessment of the vessel prior to its arrival, utilising the Maritime Arrivals Reporting System (MARS). See Section 10.9.7.

10.9.2 FIRST POINTS OF ENTRY AND NON FIRST POINTS OF ENTRY

1. Under section 229 of the *Biosecurity Act 2015* (Cth) masters of commercial vessels entering Australian ports must enter at a first point of entry after:
 - submitting a mandatory PAR in MARS
 - receiving biosecurity advice on the Biosecurity Status Document (BSD), on matters such as pratique, berthing conditions
2. Masters of vessels of non-commercial vessels arriving in Australia are required by law to give notice of impending arrival at least 96 hours before arrival. Notification of arrival must be completed by:

Email:	yachtreport@homeaffairs.gov.au
Phone:	+61 2 6246 1325
Fax:	+61 2 6275 5078

3. First points of entry are usually major seaports with the necessary infrastructure in place to manage pest and disease risks associated with vessels and the cargo or passengers they may be carrying. Ports which are not listed as proclaimed first ports of entry are classed as non first points of entry for biosecurity purposes.

4. View a map of Australia's first ports of entry for vessels at the following link:

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/first-point-entry-and-non-first-point-entry#general-entry-requirements
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Vessels with timber components

5. All vessels with timber components entering Australia must be inspected for timber pests whether the vessel is sailed in as itinerant, a returning Australian vessel or imported as cargo.
6. When a vessel is sailed in, the inspection of timber components is likely to be included as part of the arrival inspection, if not, the inspection must be completed within 14 days. It is the operators responsibility to make arrangements for the inspection to occur. The vessel will be subject to biosecurity controls until the inspection has been conducted.

10.9.3 COMMERCIAL VESSELS

Pre-arrival

1. All vessels must submit a PAR within MARS to DAWR 12 to 96 hours prior to arriving in an Australian port. The report provides important information to DAWR so that a biosecurity risk assessment of the vessel can be conducted prior to arrival.
2. The PAR form may be submitted via a ship's Australian agent, or MARS. The ship's agent will be able to pass on any directions to mariners for any pre- and post-arrival biosecurity requirements.
3. The Maritime National Coordination Centre (MNCC) manages all pre-arrival matters relating to vessels entering Australian waters that may occur outside of MARS functionalities.
4. All vessels must also comply with the ABF pre-arrival reporting conditions.

Arrival and inspection

5. When entering Australian waters the vessel is required to display the International Signals Code flag Q / Quebec - a plain yellow flag with the meaning: 'My vessel is healthy and I request free pratique'.
6. Once the vessel has submitted a PAR, the vessel will receive a Biosecurity Status Document (BSD) which outlines the conditions a vessel must comply with whilst in Australian waters. Biosecurity officers may board the vessel and interview the master to verify the information submitted on the PAR and any other relevant paperwork.
7. The interview is also an opportunity for the master to declare if anything may have changed. The biosecurity officer will then request to be escorted around the vessel by a crew member to undertake a physical inspection. The inspection involves inspecting food stores, the galley, the freezer, mess rooms, the deck, waste storage areas and accommodation areas.
8. The biosecurity officer will provide written instruction to the master on remedial action if required and issue an updated BSD once satisfied that the risks are minimal and contained.

Post-arrival

9. Biosecurity officers may also conduct random, follow up or targeted inspections to ensure compliance with all biosecurity directions. A core function of biosecurity officers is surveillance at ports and vector monitoring for things of biosecurity concern.
10. Visit the DAWR website for more information on biosecurity requirements.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels
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10.9.4 YACHTS

1. Owners and/or operators of yachts visiting or returning to Australia, or those importing a yacht must comply with relevant biosecurity checks to reduce the risk of harmful pests and diseases entering and establishing in Australia.

2. When a yacht arrives in Australia, a biosecurity officer will board the vessel to interview the master, assess documents and conduct a physical inspection. The outcome of these activities is to assess the common biosecurity risks associated with yachts such as timber pests, food, plant material, animals and/or human health concerns. Visit the DAWR website for more information on biosecurity requirements.
3. Preparing for a yacht inspection:
 - report pending arrival with DHA
 - do not let anyone leave or board the vessel before the inspection
 - secure the vessel in such a way that prevents excessive movement during the inspection
 - remove all hazardous items
 - remove panels, personal effects and other equipment from lockers and cupboards
 - have fresh fruit, meat and waste bagged on arrival for removal
 - ensure all areas of the vessel are accessible for inspection, particularly timber surfaces
 - have information available regarding timber components, such as history of refits etc
 - contain or confine pets or animals on board

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/non-commercial-vessels
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10.9.5 CRUISE VESSELS

1. DAWR considers cruise vessels to be a high biosecurity risk. Under the *Biosecurity Act 2015* (Cth), cruise vessels must submit the following documents to the department prior to entering Australian ports or waters:
 - submit a PAR within MARS from 12 to 96 hours prior to the estimated time of arrival (ETA) of the vessel at the first Australian port of call
 - ballast water reports are to be entered into MARS no later than 12 hours before the operators intend to discharge ballast in Australian waters. Reports may also be entered on completion of ballasting operations prior to arrival. However, if there are any subsequent changes to ballast operations after entering the report, the report must be updated as soon as is practicable
 - a human health form must be submitted 12 hours prior to arrival at every subsequent port outlining any new illnesses and / or deaths on board since their last assessment/inspection
 - a Live Plants Conveyances Log must be submitted prior the voyage, detailing all live plants on board the vessel, location and the condition and maintenance history
2. To assist industry to plan cruise itineraries for the next cruise season in advance (up to two years), all proposed itineraries must also be submitted to the Maritime Travellers Processing Committee (MTPC) for approval by the Australian Government agencies concerned.
3. The MTPC can be contacted at:

Website:	www.abf.gov.au/entering-and-leaving-australia/entering-and-leaving-by-sea/requirements-for-cruise-ships-entering-australia
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10.9.6 VESSEL CLEARANCE FEES AND CHARGES

1. Services provided by DAWR to manage incoming international vessels; and returning Australian vessels, are administered through cost-recovered arrangements, as per the *Biosecurity Cost Recovery Implementation Statement 2015*. For information on relevant fees for vessel clearances see:

Website:	www.agriculture.gov.au/fees/charging-guidelines
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10.9.7 BIOSECURITY REPORTING OBLIGATIONS

1. Delivery of biosecurity inspection services is a crucial part of DAWR business that regulates approximately 17 000 commercial vessels and 1 000 non-commercial vessels (such as itinerant yachts) per year.
2. Pre-arrival information, and changes, for maritime conveyances (vessels) must be reported in a form approved by the Director of Biosecurity, which is the MARS. Electronic offline forms can be used where there is limited connectivity, but they do not constitute the approved form. Your reporting obligations are met once your information has been submitted in MARS.
3. MARS is an online web portal to be used by commercial vessel masters and shipping agents to submit pre-arrival documents required of all international vessels seeking Australian biosecurity clearance. MARS has functionality to view information related to the status of your vessel.
 - **Vessel Operator Responsibilities:** The operator of the vessel is obligated to accurately report information in accordance with Section 193 of the *Biosecurity Act 2015*. This information must be lodged in MARS no later than 12 hours prior to arrival.
 - **Shipping Agent Responsibilities:** Where the vessel operator uses a shipping agent, the agent is responsible for lodgement of accurate and timely information into MARS. The agent must ensure that this information is a true and correct representation of the reports provided by the vessel operator, and that any changes have been confirmed with the operator.
 - **Any changes in circumstances during the voyage in Australian waters must be reported to DAWR as soon as practicable.**
4. There is now a single source of information for biosecurity directions and advice for each voyage. This is the BSD. The BSD is auto generated in MARS and is version controlled to reflect any reported changes to directions or status occurring during a voyage. It uses a traffic light system as a visual cue to alert the user regarding the vessel status and any associated directions or advice issued by the department.
5. The BSD document will be emailed to the port agent (and master where there is an email address) any time conditions change and will include:
 - approval to berth
 - certificate of pratique
 - ballast water
 - treatment directions

Accessing Maritime Arrivals Reporting Systems (MARS)

6. MARS is a secure portal environment and accessible only through registration which will provide and a user name and the password. Access to information will be based on security permissions. Access to the portal will be via the DAWR website.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/mars
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Commercial vessel types must use Maritime Arrivals Reporting Systems (MARS)

- cruise
- general cargo
- barges
- break bulk
- heavy lift
- tugs
- tankers
- livestock carriers
- containers
- ro-ro
- government and military
- fishing

A key policy initiative, the Vessel Compliance Scheme

7. One of the key policy initiatives being developed in conjunction with MARS is the Vessel Compliance Scheme (VCS). This compliance scheme provides a transparent and flexible regime for improved compliance by vessel operators. The core objective of the VCS is to provide greater visibility to clients on what department officers look for when they board a vessel and the consequences of failing to comply with these requirements.
8. An efficient and effective compliance scheme is essential to ensuring resources are targeted at vessels that present the greatest risk to the favourable pest and disease status of Australia. The key aim of this scheme is providing a framework of 'informed compliance' where vessels understand the department's requirements and seek to comply in order to receive reduced intervention and costs. This encourages vessel masters and agents to comply with the department's requirements, reducing inadvertent and opportunistic non-compliance and create an effective penalty mechanism for deliberate non-compliance. Vessels that continue to demonstrate high levels of non-compliance will still be able to visit Australia, but will be subject to increased fees and intervention.
9. DAWR has produced a number of publications to help vessel masters and agents prepare for biosecurity inspection.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/mars/vessel-compliance
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10.9.8 BALLAST WATER MANAGEMENT

1. Each year approximately 150 million tonnes of ballast water is discharged in Australian waters from overseas vessels. Australian scientists have identified over 200 introduced marine species in Australian coastal waters, most of which have been translocated from overseas ports to Australian ports via shipping. A number of these organisms have become harmful to Australia's marine environment, threatening fisheries, aquaculture, tourism industries and public health.
2. Unlike other major pollutants of the oceans that can eventually be cleaned up, harmful aquatic organisms and pathogens, once established, are virtually impossible to eradicate and can have serious and permanent consequences.
3. The impact from harmful aquatic organisms threatens marine and estuarine environments in Australia and around the world.
4. The shipping industry operates within a highly regulated environment established by the IMO. The International Convention for the Control and Management of Ships Ballast Water and Sediments 2004 (BWM Convention) aims to prevent the potentially devastating effects of the transfer of harmful aquatic organisms through ballast water discharge.
5. Under the IMO BWM Convention, ballast water exchange in the open sea will be progressively replaced by ballast water treatment using onboard Ballast Water Management (or treatment) Systems (BWMS). The feasibility of this replacement is related to the effectiveness of the treatment of ballast water and the probability aquatic organisms have of surviving after the treated ballast water is discharged into the sea. In addition, the exchange of ballast is not always possible in areas that do not meet the requirements of depth and distance from land.
6. It is important that officers and crew are familiar with the procedures for managing ballast, whether that be by exchange or treatment. Regular training must be undertaken with the aim to minimise possible safety hazards, for example during the exchange of ballast water as this operation can directly influence the safety of the vessel.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/ballast
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10.9.9 MANDATORY BALLAST WATER MANAGEMENT REQUIREMENTS

1. The Conveyances and Ports Section of DAWR is the Australian Government's lead agency for the regulation of ballast water taken up outside Australia's Territorial Sea (TS).
2. On 1 July 2001, after extensive consultation with the IMO and the shipping industry, Australia implemented mandatory Ballast Water Management Requirements requiring vessels to achieve a 95% volumetric exchange of ballast water.

3. All internationally plying vessels intending to discharge ballast water anywhere inside the Australian TS are required to manage their ballast water in accordance with Australia's Ballast Water Management Requirements.
4. The Australian Ballast Water Management Requirements provide guidance on how vessel operators should manage ballast water when operating within Australian seas in order to comply with the *Biosecurity Act 2015 (Cth)*. They also align to the BWM Convention, which entered into force internationally on 8 September 2017.
5. Visit the DAWR website for more information on Australian Ballast Water Management Requirements.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/ballast/australian-ballast-water-management-requirements
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6. All commercial vessels arriving in Australia from international waters are required to submit a Ballast Water Report (BWR) within MARS as part of the vessel's pre-arrival process. The BWR requires masters to declare:
 - whether or not they intend to discharge ballast in Australian waters
 - details of the vessel's ballast pumps
 - tank volumes, including residual tank volumes
 - exchange locations
 - if the vessel operators have utilised a ballast water management/treatment system
7. DAWR has an expectation of vessel operators to keep accurate records of ballast management for verification purposes.
8. Vessels are not permitted to discharge ballast water in Australian waters until the DAWR has issued ballast information within the BSD.
9. Vessels arriving from ports outside Australia, cannot discharge ballast water without written permission from DAWR.

10.9.10 TYPE-APPROVED BALLAST WATER MANAGEMENT SYSTEMS

1. Under the BWM Convention, Australia recognises the IMO's approval process and accepts discharge from BWMS that have received Type Approval.
2. Specific information (including vessel details, type of BWMS, BWMS certification, discharge intentions and voyage details) will need to be provided to DAWR when the vessel details are being entered into MARS. The intention of the verification inspection is to determine whether the crew is familiar with the operation of the system and that it has been operated in accordance with systems stated operating parameters and the ships' ballast water management plan. If the vessel meets DAWR verification requirements it will be granted approval to use the BWMS on future visits to Australia.
3. Further information on Australia's BWM requirements and ballast water reporting requirements can be obtained by contacting the National Maritime Coordination Centre at the DAWR.

10.9.11 DOMESTIC BALLAST WATER MANAGEMENT REQUIREMENTS

1. Australia introduced additional requirements for the management of Australian sourced domestic ballast water in 2017.
2. The key purpose of the policy is to protect Australia's marine environment from established marine pests spreading further via domestic ballast water (ballast water that originates from an Australian port or within Australia's TS).

- The Australian Government requires all ships undertaking coastal trading within Australian waters to comply with the Australian Ballast Water Management Requirements when moving ballast water between Australian ports. Visit the DAWR website for more information on domestic ballast water management requirements.

Website:	www.agriculture.gov.au/biosecurity/avm/vessels/ballast
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	National Seaports Program:	Maritime National Coordination Centre:
Email:	seaports@agriculture.gov.au	maritimenc@agriculture.gov.au
Telephone:	+61 409 604 543 (mobile) / 1800 020 504 (Aust only)	1300 004 605 (Aust only)
Fax:		1300 005 882
Website:	www.agriculture.gov.au/biosecurity/avm/vessels	

10.9.12 SEDIMENT MANAGEMENT

- Sediment that has settled out of ballast water has the potential to harbour marine pests in the form of viable organisms such as cysts and eggs that can remain dormant for long periods of time.
- When sediment is removed from the ship's ballast tanks and is to be disposed of by that ship at sea, such disposal should only take place in areas outside 200nm from land and in water depths of over 200 metres.
- When disposing of sediment to a designated reception facility all sediment shall be prevented from entering the marine environment. This includes sediment that has settled out of ballast water or comes from the routine cleaning or repair of spaces used to carry ballast water (such sediment may be mixed with water and constitute a slurry or tank washings). All sediment disposed of at reception facilities must be managed in accordance with all relevant State requirements including human health, environmental and safety requirements.
- A designated reception facility is a facility identified by a jurisdiction where the cleaning or repair of ballast water tanks occurs.

10.9.13 HULL INSPECTION REQUIREMENTS FOR VESSELS ENTERING DARWIN MARINAS

- To prevent the recurrence of a marine pest outbreak in the Northern Territory (NT), the NT Fisheries Division has in place routine screening of vessels wishing to enter Darwin marinas.
- As a consequence of marine pests being well established in many ports along the international yacht cruising routes, NT Fisheries requests the cooperation of skippers of all internationally travelled vessels intending to enter Darwin marinas. Any vessel unable to demonstrate that the hull has been cleaned or antifouled or has been out of the water for less than 14 days in Australia will be requested to undergo a hull inspection and treatment of internal seawater systems to kill any marine pests.
- Further information can be obtained from the NT Fisheries Aquatic Biosecurity Unit website.

Telephone:	+61 413 381 094
Email:	aquaticbiosecurity@nt.gov.au
Website:	https://nt.gov.au/marine/for-all-harbour-and-boat-users/hull-pest-inspections-for-visiting-boats

10.9.14 BIOFOULING MANAGEMENT REQUIREMENTS FOR VESSELS ENTERING WESTERN AUSTRALIA

- The Western Australian (WA) Department of Primary Industries and Regional Development (DPIRD) encourages best practice management to prevent the presence of marine pests in WA, and relevant guidelines and tools are provided on the DPIRD website.
- The DPIRD policy is that vessels should be 'clean' before leaving for WA. This means the risk of marine pest transport should be kept to an acceptable (low) level by vessel managers complying with relevant international, national and state obligations, legislation and guidelines prior to travel into and within WA waters.

3. One of the tools to support this is 'Vessel Check', an online risk assessment system designed to help operators manage the biofouling risk of commercial, non-trading, petroleum and commercial fishing vessels. It will assist in determining the risk of a vessel carrying marine pests to WA, as well as providing advice on how to keep this risk low.
4. Vessel operators can also demonstrate taking reasonable measures by ensuring they have an 'in-service' anti-foul coating applied over all wet areas of their vessel. Additional measures should include the active use of a biofouling management plan and biofouling record book which meet all the requirements under Appendix 2 of the Guidelines for the Control and Management of Ships' Biofouling to Minimise the Transfer of Invasive Aquatic Species (2012 edition or as amended) published by the IMO.
5. The DPIRD may conduct vessel audits and inspections to determine compliance with these requirements and the relevant Act.
6. If you have any queries, contact the WA Department of Fisheries' Aquatic Biosecurity Section by email.
7. Visit the WA Department of Fisheries website for more information.

Email:	biosecurity@fish.wa.gov.au
Website:	www.fish.wa.gov.au

10.9.15 REQUIREMENTS FOR WASTE DISPOSAL AND ON BOARD STORAGE OF WASTE

1. No garbage or foodstuffs is to be removed from any international vessel unless with the permission of a Biosecurity officer or by the DAWR-approved waste service provider. The disposal of waste from ships in Australian ports must be arranged through approved biosecurity waste service providers. Biosecurity officers may inspect and/or conduct surveillance on international vessels. The Biosecurity officer will be able to advise you if such an approved quarantine waste disposal service is available in your port. If no such service is available, all ship's waste must be retained on board in leak-proof garbage containers with tight fitting lids to prevent the access of vermin or bird life. Swing bins and galley grinders must not be used in Australian ports and waters (the 12nm limit generally applies).

10.9.16 RESTRICTIONS ON BRINGING GOODS ASHORE

1. The exchange of foodstuffs between vessels subject to quarantine, or the landing of such material in Australia, is prohibited without approval from DAWR. Mariners should seek DAWR approval before taking any kind of food or goods from their vessels ashore in Australia.
2. The following items are of particular biosecurity concern and need to be declared:
 - dairy products - other than from New Zealand
 - eggs - and products containing eggs
 - live plants, animals or insects
 - meat and meat products - includes uncanned or fresh, dried, frozen, smoked or salted meat
 - seeds and nuts - includes raw unroasted nuts, raw peanuts, chestnuts and popping corn
 - fresh fruit and vegetables - includes all fresh and frozen fruit and vegetables except commercially packaged frozen produce
 - handicrafts and souvenirs that contain or are made from seeds
 - salmon and trout products - ask about special import conditions (canned salmon is allowed)
 - soil and sand - includes items filled with soil or sand (rocks that are free from soil and sand are allowed)
 - birds, feathers or poultry products

10.9.17 INSECTS

1. Vessels must be kept free from insects - especially stored product pests, bees, mosquitoes and timber borers.

10.9.18 SHIP SANITATION CERTIFICATION

1. The Ship Sanitation Certification (SSC) regime is aimed at controlling the international spread of human diseases by controlling any vectors of these diseases that could potentially be carried on a vessel.
2. In Australia, this is achieved by inspecting for, and controlling, animal vectors (rodents and mosquitoes), preventing the discharge of untreated ballast water, checking certification of potable water and sewage, and quarantine measures for human carriers of disease. DAWR administers SSC requirements on behalf of the Department of Health.
3. Ship Sanitation Control Exemption Certificate (SSCEC) and Ship Sanitation Control Certificate (SSCC) are issued in accordance with Article 39 of the International Health Regulations (2005) (IHR) and may only be issued by the health authority approved for that purpose. An SSC may be required for all vessels on international voyages that call at a port of a State party.

Validity of SSC

4. Certificates remain valid for a period of six months from the date of issue. This period may be extended by one month if the inspection or control measures required cannot be accomplished at a port but mariners should avoid postponing the renewal of these certificates because some nations will not permit vessels without a current certificate to enter their ports.

Renewing SSC

5. Renewal of a Ship Sanitation Exemption Certificate may be requested by the master or agent of a vessel when submitting the quarantine pre-arrival report (QPAR) or contacting a local DAWR office to arrange for an inspection. Ship sanitation inspections and issuing of subsequent certificates can only be issued at proclaimed ports.

Validation of SSC

6. The original SSCC needs to be sighted by a biosecurity officer. The certificate must be issued by an appropriate authority in the country of origin, and regardless of the language of issue, must be identifiable as to what it certifies, and any specified conditions.
7. Prior to a biosecurity officer renewing a certificate, the vessel will be inspected for sanitary conditions and any evidence of vector infestation.
8. In the event that no such evidence can be found, and the sanitation of the vessel is satisfactory, DAWR officer will issue a Ship Sanitation Exemption Certificate.
9. In the event that evidence of vector infestation / poor sanitation is found during the inspection of the vessel, DAWR will issue a Ship Sanitation Control Certificate with directions for certain treatments to be carried out to eradicate the vectors or rectify the sanitation concerns. Such treatments may need to be carried out by a specialist at the vessel's expense.
10. A biosecurity officer will re-inspect the vessel where possible to monitor the effectiveness of the treatment either at the same port or at a subsequent Australian port of call. If on re-inspection, the prescribed treatment is found to have eradicated the pests / vectors / sanitation of concern, the biosecurity officer will issue a new Ship Sanitation Exemption Certificate with a period of validity of six months.

10.9.19 INTERNATIONAL SEWAGE POLLUTION PREVENTION

1. All international vessels that are greater than 400 GT or are certified to carry more than 15 people are required to carry an International Sewage Pollution Prevention (ISPP) Certificate under the requirement of the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex IV. The ISPP certificate certifies that the sewage systems on board an international ship are in compliance with MARPOL requirements.

10.9.20 GRAIN, PLANTS AND PLANT PRODUCTS

1. The provisions of the *Export Control Act (1982)* (Cth) and its subordinate legislation *Export Control (Plants and Plant Products) Order 2011* and *Export Control (Prescribed Goods-General) Order 2005* provide the legal framework for Australian exporters to export their plant products. DAWR is the agency responsible for determining if the requirements of the legislation are met.
2. The following notes outline the standards of cleanliness and pest control required of ships presented for loading of grain, plants and plant products in Australia. Certain grains, plants and plant products may only be exported if the vessel or other transport units meet prescribed standards of cleanliness and pest control. The Australian legislation detailing these requirements is the *Export Control (Plants and Plant Products) Order 2011*.

Application for permission to load

3. Ship's masters must apply for permission to load 500 tonnes or more of grain (barley, canola, chick peas, dried field peas, faba beans, lentils, lupins, oats, sorghum, soybeans, vetch or wheat), or plants and plant products for which the importing country requires a Phytosanitary Certificate (to certify the health and disease-free status of plants) or other official certificate under the provisions of the Australian export legislation. These commodities are referred to as 'prescribed goods' in this document. The application must include details of other cargo, including empty sacks that could harbour pests, so that all may be inspected prior to loading.
4. Australia's export legislation and information about plant material requiring phytosanitary certification is published at the following website.

Website:	www.agriculture.gov.au/export/plants-plant-products
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Inspections

5. Vessels that intend to load prescribed goods for export from Australia must be examined by authorised inspectors from DAWR. The holds of cargo loading vessels must be free from pests or from residues that could harbour pests. Prior to issuing a 'Permit to Load' and to ensure satisfactory outturn of the cargo overseas, DAWR inspectors are empowered to board ships and to order cleaning, treatment and any other measures deemed necessary.
6. In addition to the biosecurity inspection, an approved marine surveyor must also inspect the holds of vessels intending to load grain. DAWR will not issue a 'Permit to Load' until sighting a certificate from an approved marine surveyor stating that the holds will not contaminate or otherwise affect the grain cargo.

Trogoderma species

7. There is a nil tolerance policy for *Trogoderma* species on ships loading prescribed goods. Fumigation is required for any level of infestation by these species in hold spaces.

Cargo holds

8. There is a nil tolerance for live pests in holds nominated to load prescribed goods. All parts of these holds must be free from any previous cargo residue that can harbour pests, including spaces beneath timber linings and the interiors of trunks and casings. Masters or agents are legally required to make facilities available to permit inspection of ledges, casings, bulkheads etc. that would otherwise be inaccessible. All non-infestible residues, including loose flaking rust and paint scale that could conceal pests or infestible residues must be removed to the extent necessary to enable the inspector to carry out a thorough inspection. Adequate natural light is necessary for all hold spaces and associated areas. Inspections are not undertaken before half an hour after sunrise or after half an hour before sunset. Hatch covers must be opened sufficiently to provide good natural lighting.

Non-cargo loading holds

9. Non-cargo loading holds are examined when a full cargo is not to be carried. Pest infestation in non-cargo loading holds must be controlled to such an extent that the risk of cross infestation to prescribed goods is eliminated.

Ship stores and associated galley areas

10. Experience has shown that storerooms are often infested with insect pests to such a degree that a risk of cross infestation to cargo loading holds exists. Inspectors are empowered to inspect these areas and to withhold permits to load until that risk has been eliminated. These areas, being partly or fully lit by artificial light, may be inspected outside the time limits laid down for holds.

Other areas

11. Areas of ships such as mast houses, forecastle weather deck etc. must not present a cross infestation or contamination risk to the cargo loading holds. The 'Permit to Load' will be withheld until such risks have been removed.

Ship inspection report and treatment order

12. Following initial inspection of a vessel, a 'Ship Inspection Report' is issued to the master. If cleaning, treatment or other measures are required this is indicated in a combined 'Treatment Order'. Where hold fittings such as pipe casings, cable casings, spar ceilings and timber bulkhead linings are required to be removed to facilitate further inspection or cleaning and de-infestation measures, this is also included on the Treatment Order.
13. All procedures in the nomination holds to remove the risk of infestation or infection of the cargo are specified. Criteria for deciding on treatments followed by inspectors when issuing Treatment Orders are laid down in the 'Grain, Plants and Plant Products Orders'. Subsequent 'Ship Inspection Reports' and 'Treatment Orders' may be issued as a result of re-inspection of a vessel. A re-fumigation is normally ordered following an unsatisfactory fumigation treatment of cargo holds.

10.9.21 LIVESTOCK VESSELS REQUIREMENTS

1. Livestock vessels entering Australia are considered to be of high biosecurity risk due to the nature of the cargo. All livestock vessels must undergo inspection on every visit to Australia, irrespective of the vessel's history or last port of call.
 - all livestock vessels other than those that have only carried Australian and/or New Zealand origin livestock must be inspected offshore prior to arrival at port. These vessels must also be thoroughly cleaned, disinfected and dis-insected prior to arrival
 - while loaded, such vessels possess an ideal population of attractive potential hosts for a number of disease carrying organisms
 - after unloading, complete cleaning, disinfection and disinsection is essential. In some cases, fodder and waste can form ideal breeding sites for parasitic arthropods (e.g. screw-worm fly, sand flies, mosquitoes, and ticks). Vessels trading between countries where diseases exotic to Australia are endemic (e.g. foot and mouth disease) could carry animals excreting such pathogens into the vessel and its holding tanks. Faecal and other organic material provides protection for some viruses and bacteria against chemical inactivation. Micro organisms on lower decks are well protected from sunlight and desiccation. It is for these reasons that a high standard of cleanliness and disinfecting / de-infestation throughout the vessel is of such importance
2. DAWR uses the information supplied in the QPAR, the 'Statement by Master of Livestock Vessel', and the inspection history of the vessel to assess the risk posed by these vessels.

Vessel Actions

3. At the time of requesting submitting the QPAR, the ship's agent must submit the following information to DAWR:
 - on QPAR report the last 10 cargoes, loading and discharge ports and the cleaning performed since the livestock cargo was discharged
 - completion and submission of the 'Statement by Master of Livestock Vessel'
 - advise DAWR (as soon as practicable) of any variations to arrival times or of any other specific information relative to clearance of the vessel (e.g. if the livestock vessel has carried overseas cattle on the last voyage, and is not approved for wharf-side clearance other arrangements will need to be made)

4. Only those livestock vessels that have met all obligations under routine vessel clearance formalities on previous visits to Australia may be approved for wharf-side clearance. If a vessel has carried livestock of other than Australian / New Zealand origin as the last cargo, and/or is on its first Australian visit, the vessel must be disinfected under DAWR supervision at a 'Contingency Cleaning Zone' at anchor.

Website:	www.agriculture.gov.au/export/controlled-goods/live-animals/livestock/information-exporters-industry/forms
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10.9.22 ANIMALS (SHIP'S PETS) ON VESSELS

1. Animals on board vessels that have recently visited overseas countries may have come in contact with other animals carrying exotic pests and diseases, such as African swine fever, screw worm fly, rabies, Newcastle disease and foot and mouth disease, and therefore pose a quarantine risk.
2. 'Animals' includes fish, birds and reptiles. A ship's pet may be any type of animal except for ruminants (such as goats and cattle), fowl (including chickens and pigeons) or rodents of any kind.
3. DAWR has strict requirements for the management of animals (ship's pets) on board vessels in Australian ports and territorial waters.
4. It is important that all animals be confined and controlled at all times while the vessel is in Australian ports or waters. The control and confinement of the animal/s is most important during cyclonic conditions or other emergency situations, or in other circumstances as advised by DAWR (i.e. when the vessel is left unattended).
5. All animal waste must be disposed of in a manner approved by DAWR. These arrangements may change on a port-by-port basis, therefore you are advised to check with the local port quarantine officer.
6. Depending on the type of ship's pet declared, a biosecurity officer may need to board a vessel immediately on its arrival at its first Australian port of call. In such cases, officer will conduct an inspection of the animals during the routine ship inspection and will require the vessel master to complete a 'Reporting Requirements for Animals on Vessels' form which will be provided to the master during the inspection.
7. DAWR officers will ensure that the master of the vessel is fully aware of all their obligations when carrying an animal and will issue the master with written advice regarding biosecurity requirements for maintaining the animal/s while in Australian ports and waters.
8. Failure to comply with directions issued by DAWR or the prescribed conditions relating to the control or confinement of an animal may result in the destruction of the animal and prosecution of the master. An approved veterinarian may destroy all animals that are not a bona fide ship's pet or manifested as cargo. If an animal comes ashore or has contact with Australian animals, including birds, it may be destroyed.

Procedures

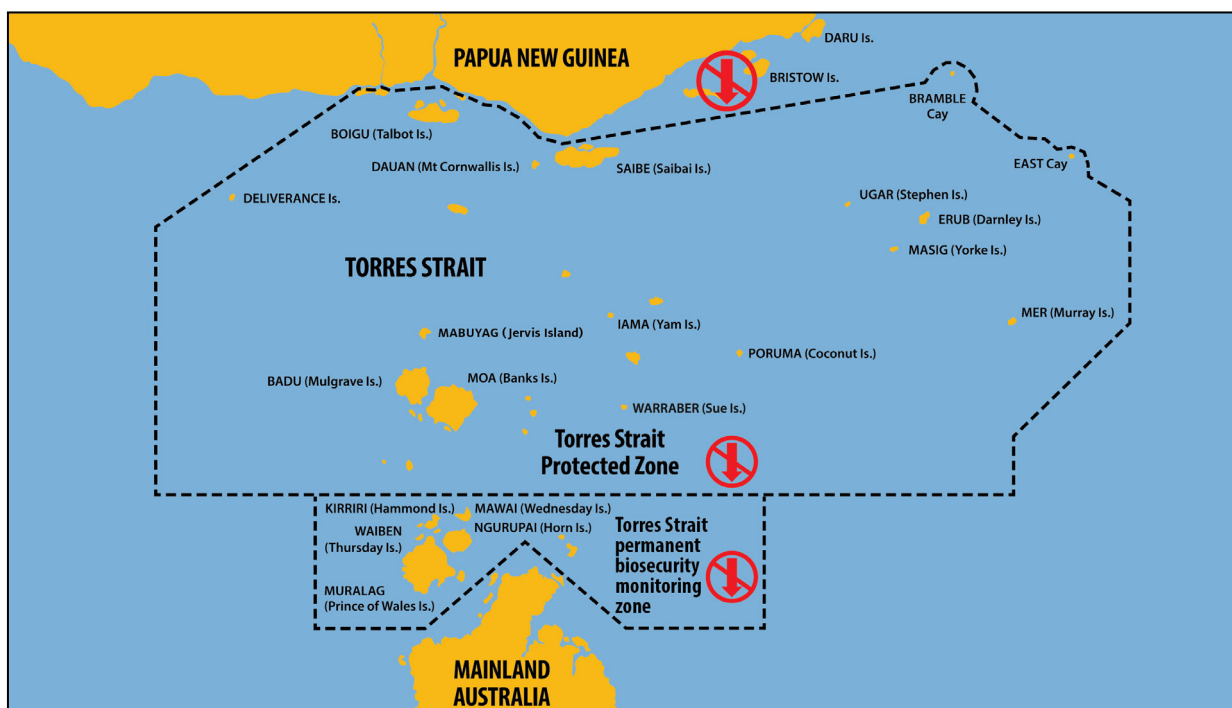
9. The following procedures should be followed when a ship has a pet on board:
 - use the QPAR (or eQPAR) to provide the number and description of all animals on board the vessel 12 to 96 hours before arrival
 - comply with all directions issued by DAWR
 - comply with all directions issued by biosecurity officers on the 'Reporting Requirements for Animals on Vessels' form
 - confine and / or control all animals as directed by biosecurity officers
 - dispose of all animal waste in a manner approved by DAWR provide immediate notification if any animal on board becomes ill, dies or escapes

10.9.23 TORRES STRAIT BIOSECURITY TRAVEL REGULATIONS

1. Australian Biosecurity regulations apply in the Torres Strait that prevent certain goods such as fresh produce, live plants and animals from travelling southward within the region and from the region to mainland Australia.
2. All vessels over seven metres which have been in the Torres Strait and are returning to mainland Australia must report to DAWR 12 to 96 hours before making landfall on the mainland. After biosecurity assessment, masters will be issued with a notification number. Masters are required to record this number in their vessel's logbook for auditing purposes. Vessels transiting the Torres Strait in the main shipping channel and not travelling into and stopping in the Torres Strait are exempt from these requirements. The DAWR can be contacted on VHF Channel 16 on Thursday Island or through harbour authorities at most mainland ports. Masters are strongly advised to contact DAWR on Thursday Island or Cairns, prior to travelling into the Torres Strait for further biosecurity information.
3. For more information:

Telephone	
Thursday Island:	+61 7 42120185
Cairns:	+61 7 1800 900 090 (select option 1, then option 6)
Website:	www.agriculture.gov.au/biosecurity/australia/naqs/torres-strait

Torres Strait Special Biosecurity Zones



10.10 MILITARY INFORMATION

10.10.1 MILITARY FIRING PRACTICE AND EXERCISE AREAS

1. Military practice areas are published in the Australian Government Gazette and the *Designated Airspace Handbook* (published on Airservices Australia website). View the Military Firing Practice and Exercise Areas Fact Sheet on the Australian Hydrographic Office (AHO) website for more information.

Website:	www.hydro.gov.au/factsheets/factsheets.htm
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Notification of warnings

2. As clear range procedures are followed no broadcast warnings will be issued in respect of weapons firing practices in the areas depicted in the fact sheet and diagram. Vessels approaching weapons practice areas are requested to maintain a radio listening watch on VHF Channel 16.
3. Warnings of firing practices are promulgated as Notices to Airmen (NOTAM) originated by the Royal Australian Navy (RAN) and the Royal Australian Airforce (RAAF). NOTAM are published by Airservices Australia on their website.
4. Shoalwater Bay Training Area (Queensland (QLD)) closures (ENC AU423150 / PNC Aus 260) are circulated by the QLD Department of Transport Notices to Mariners which are published on their website.

Air Services Australia website:	www.airservicesaustralia.com
Maritime Safety Queensland website:	www.msq.qld.gov.au/Notices-to-Mariners.aspx
AHO website:	www.hydro.gov.au
Shoalwater Bay Training Area Range Control	
Telephone:	+61 7 4935 5000
Facsimile:	+61 7 4935 5024
Email:	shoalwater.bay@defence.gov.au

5. Visual warnings on ships:
 - ships engaged in firing practices fly a red flag by day
 - ships and aircraft carrying out night exercises may illuminate with bright white flares
6. All safety craft, target towers or control launchers for radio controlled targets will display:
 - a large red flag at the masthead
 - a painted canvas strip (1.8 metre x 0.9 metre) with red and white or red and yellow checks in 0.3 metre squares on the foredeck or cabin roof
7. Vessels should comply with requests made by Range Safety Craft.
8. The absence of warning signals cannot be accepted as evidence that a practice does not exist.

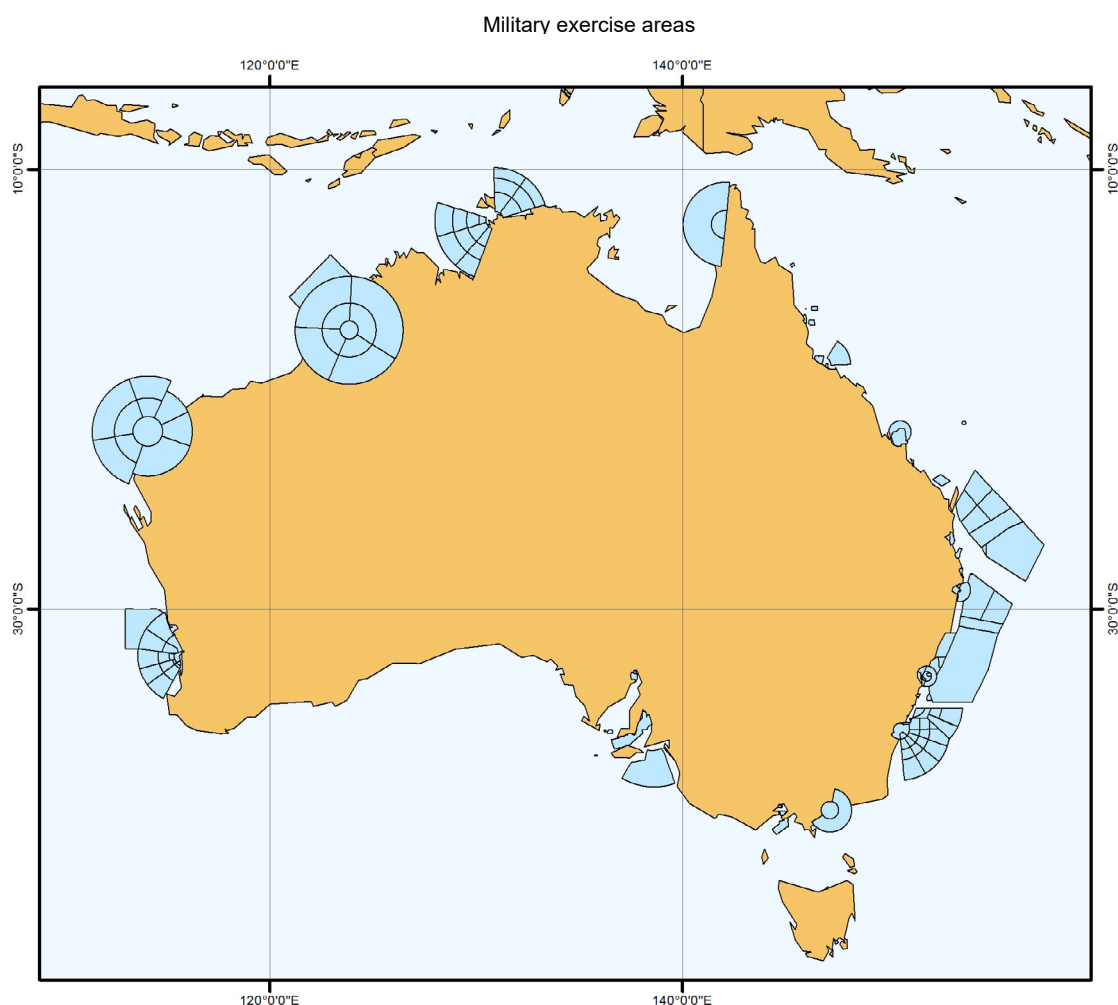
Cautions

9. Range authorities are responsible for ensuring that there should be no risk of damage due to the firing to any vessel in the practice area. Clear Range Procedure means firings cannot take place where such a risk exists. If a vessel finds herself in an area where a practice is in progress she should maintain her course and speed, however if she is prevented from doing so due to the navigation situation, she should endeavour to clear the area at the earliest possible moment.
10. Fishing vessels operating near firing practice and exercise areas may occasionally bring unexploded ordnance or portions of them to the surface in their nets or trawls. These objects may be dangerous and should be treated with great caution and jettisoned immediately. No attempt should be made to tamper with them or bring them back for inspection by RAN authorities. Such objects should be reported immediately to Joint Rescue Coordination Centre (JRCC) Australia or the Police.

Types of firing practices

11. The principal types of practices carried out are:

- Bombing practice from aircraft - warning signals usually shown
- Air to air - is carried out by aircraft at a large white or red sleeve, a winged target, or flag towed by another aircraft moving on a steady course
- Air to sea or ground firing - is carried out from aircraft at towed or stationary targets on sea or land, the firing taking place to seaward in the case of those on land
- Anti aircraft (AA) firing - this may be from AA guns or machine guns at a target towed by an aircraft, a pilotless target aircraft or, at balloons or kites. Practice may take place from shore batteries or ships
- Firing from shore batteries or ships - at fixed or floating targets
- Remote controlled craft - these are 6.4 metre surface craft, orange in colour and carry no distinctive shapes or lights. They are however, fitted with navigation lights appropriate to their size in accordance with the International Regulations for Preventing Collisions at Sea, 1972. Such craft are remotely controlled from helicopters, ships and occasionally from the shore
- Rocket and guided weapons firing - these may take the form of (b), (c) or (d). All such firings are conducted under Clear (Air and Sea) Range Procedure. Devices are generally incorporated whereby the missiles may be destroyed should their flight be erratic



10.10.2 SUBMARINES

1. Australia operates six Collins Class submarines, home ported in WA. Allied submarines often visit the region.

Warning signals

2. Mariners are warned that considerable hazard to life may result from the disregard of the following signals which denote the presence of submarines just below the sea surface:
 - Visual signals. Australian warships fly the International Code Group "NE2" to denote that submarines, which may be submerged, are in the vicinity. Vessels are cautioned to steer so as to give a wide berth to any vessel flying this signal. If from any cause it is necessary to approach her, a good lookout must be kept for submarines whose presence may be indicated only by their periscopes or snort masts showing above the water
 - Pyrotechnics (pyro) and Smoke Candles. A submerged submarine may use one of the following signals to indicate their position:

Signal	Description	Duration	Signification
White smoke candle (with flame)	Emits a flame as well as smoke and therefore is suitable for use by day or night. May contain an additional message carrier and fluorescent dye marker which produces a bright green stain on the water to indicate the presence of a message inserted in a watertight tube, located in the top section of the pyrotechnic, if prudent this should be recovered as it contains essential information with regard to a sunken submarine.	Six minutes of white smoke.	Indicates position in response to request from ship or aircraft or as required.
Green pyrotechnic flare	Firing of Green Flares is a normal exercise activity and will always be accompanied by naval surface assets in the vicinity. A flare is ejected up to 100 metres. Suitable for use by day or night.	Green pyro 30 - 40 seconds.	Indicates position in response to request from ship or aircraft or as required.
Red pyrotechnic flares (accompanied by white smoke candles as often as possible).	A flare is ejected up to 100 metres. Suitable for use by day or night. Red flares are ONLY used in emergency.	30 - 40 seconds.	Keep clear. I am carrying out emergency surfacing procedure. Do not stop propellers. Clear the immediate area, but stand by to render assistance.

3. Note - If the red pyro flare signal is sighted and the submarine does not surface within five minutes it should be assumed that the submarine is in distress and has sunk. An immediate attempt should be made to fix the position in which the signal was sighted, after which action in accordance with paragraphs 16 - 21 should be taken.
4. It must not be inferred from the above that submarines exercise dived only when in company with escorting vessels.

White smoke candle



Red flare



Source: Department of the National Defence, Canada

Australian submarine exercise areas

5. The whole of the EEZ is a permanently established Australian submarine exercise area. Under certain circumstances warnings that submarines are exercising in specified areas may be broadcast by a coast radio station or promulgated in printed navigational warnings. Beacons and flares may frequently be encountered in areas where Her Majesty's Australian Ship (HMAS) and Aircraft exercise, whether or not submarines are present, and should not be confused with submarine emergency beacons and flares. In case of doubt the object should be approached at a safe distance to confirm, visually, whether or not it is a submarine emergency buoy or beacon before reporting it. In addition submarines will conduct dived transits of the open ocean, which may at times require the submarine to be in close proximity to the surface of the ocean. In this instance the maintenance of a good visual and radar lookout cannot be over emphasised.

Navigation lights

6. Submarines have their masthead and side lights placed well forward and very low over the water in proportion to the length and tonnage of these vessels. In particular:
 - some submarines can only show a forward masthead light in calm confined waters
 - in other submarines the forward masthead light may be lower than the sidelights
 - the main masthead light may be well forward of the mid-point of the submarine's length
7. Stern lights are placed very low indeed, and may at times be partially obscured by spray and wash. In some cases the stern lights will be well forward of the after part of the submarine, and thus will not give a true indication of the submarine's length. They are invariably lower than the side lights.
8. The after light of nuclear submarines at anchor is mounted on the upper rudder which is some distance astern of the hull's surface waterline. Care must be taken to avoid confusion that this is two vessels of less than 50 metres length at anchor.
9. The overall arrangement of submarine lights is therefore unusual and may well give the impression of markedly smaller and shorter vessels than they are. Their vulnerability to collision when proceeding on the surface and the fact that some submarines are nuclear powered dictates particular caution when approaching them. When transiting in the surface, within Australian Harbour and Port limits, nuclear submarines will normally be provided with an escort vessel. This may be a State Police or Naval vessel. Vessels will be warned to stand clear.
10. Nearly all submarines are fitted with an amber quick-flashing light (Submarine Identification "SID" Light) situated above or abaft the main steaming light. This additional light is for use as an aid to identification in narrow waters and areas of dense traffic. Australian submarines will normally burn this identification light under the above conditions and when entering or leaving harbour at night, showing a Very Quick flashing Yellow (VQ.Y) identification light (120 flashes per minute). This identification light should not be confused with an air cushion vessel operating in a non-displacement mode which displays the same light.

Collins Class submarine illustrating typical navigation light configuration



Sunken submarine

11. A submarine that is disabled or in distress and unable to surface will indicate her position by firing red pyro flares, also referred to as red grenades, and Submarine Emergency Radio Beacons (SERB).
12. Note: It should be remembered that it may not be possible for a submarine to fire her flares or smoke candles. Correspondingly a partially flooded submarine may have only a certain number of her smoke candles available and searching ships should not therefore expect many to appear.

13. Since oil slicks or debris may be the only indication of the presence or whereabouts of the sunken submarine, it is vitally important that surface ships refrain from discharging anything which might appear to have come from a submarine while they are in the submarine probability area. Searching ships and aircraft can waste many valuable hours investigating these false contacts.
14. Some submarine pyrotechnics can be fitted with message carriers. If a message has been attached, the pyrotechnic will be fitted with a dye marker, giving off a green dye on the surface. Such a pyrotechnic should be recovered as soon as it has finished burning.
15. **The sighting of any aforementioned emergency flares (red grenade) or beacon should at once be reported by the quickest available means to the JRCC Australia, the RAN or Police.** Every effort should be made to include in the report the serial number of the beacon; this number is affixed on top of the SERB. However, if vessels are unable to establish communications with the above authorities without leaving the vicinity of the submarine, priority should be given to remaining in the vicinity of the submarine to stand by to rescue survivors should they attempt an escape.
16. At any time after a submarine accident survivors may start attempting to escape. Survivors should wait before escaping until:
 - rescue vessels are known to be standing by
 - conditions inside the submarine deteriorate to such an extent that an attempt to escape must be made
17. It should be noted that, in certain circumstances, the situation in paragraph 16(b) may not arise through lack of air supply until several days after the accident. However, if the submarine is badly damaged, survivors may have to make an escape attempt immediately. Any ship finding a SERB should not therefore leave the position but stand by well clear ready to pick up survivors. Survivors will ascend nearly vertically, so plenty of sea room must be allowed for their safety. Some personnel may require a recompression chamber, and it will therefore be the aim of the RAN authorities to get such a chamber to the scene as soon as possible.
18. In order that those trapped in the submarine shall be made aware that help is at hand, RAN vessels drop small charges into the sea, which can be heard from inside the submarine. There is no objection to the use of small charges for this purpose; but it is vital that they are not dropped too close since personnel in the process of making ascents are particularly vulnerable to underwater explosions and may easily receive fatal injuries. A distance of a quarter of a mile is considered to be safe. If no small charges are available, the running of an echo sounder or the banging of the outer skin of the ship's hull with a hammer from a position below the waterline is likely to be heard in the submarine, and such banging and/or sounding should therefore be carried out at frequent intervals. They are likely to acknowledge such sound signals by releasing pyrotechnic flares.
19. To sum up, the aims of a submarine rescue operation are:
 - to fix the exact position of the submarine
 - to get a ship standing by to pick up survivors if practicable with boats already lowered
 - to get medical assistance to survivors picked up
 - to get a diver's decompression chamber to the scene in case this is required by those seriously ill after being exposed to great pressure
 - to inform the trapped survivors that help is at hand
 - to notify appropriate authorities
20. There is a large RAN organisation designed to fulfil these aims which is always kept at instant readiness for action. It is clear, however, that any ship may at anytime find evidence of a submarine disaster, and if she takes prompt and correct action as described she may be in a position to play a vital part.

Submarine Emergency Radio Beacon

21. This beacon is made of aluminium, coloured orange and is cylindrical in shape, with two whip aerials. The beacon is fitted with an automatic transmitting unit, with a battery life of 48 hours operating on the following frequencies:
 - 406.025 MHz COSPAS-SARSAT/EPIRB Cospas/Sarsat
 - 243 MHz Military Air Guard
 - 121.5 MHz Civil Air Guard

10.10.3 CONVOYS, WARSHIPS OPERATING TOGETHER AND WITH AIRCRAFT

Formations and convoys

1. Mariners are warned that single vessels should adopt early measures to keep out of the way of a formation or convoy.
2. Although a single vessel is advised to keep out of the way of a formation or convoy, this does not entitle vessels sailing in company to proceed without regard to the movements of the single vessel. Vessels sailing in formation or convoy should accordingly keep a careful watch on the movements of any single vessel approaching the formation or convoy and should be ready, in case the single vessel does not keep out of the way, to take such action as will best aid to avoid collision.

Navigation light arrangements

3. Some warships, in accordance with Rule 1(c) and (e) of the International Regulations for Preventing Collisions at Sea 1972 (COLREGS), cannot comply fully with the requirements of the rules in this regard.

Ships operating aircraft

4. Attention is called to the uncertainty of movements of warships (and other vessels) when aircraft or helicopters are operating to or from their decks. Such ships are required usually to steer a course which is determined by the wind direction. While operating aircraft or helicopters from their decks, vessels may show the lights and shapes prescribed by Rule 27(b) COLREGS if their manoeuvrability is affected by the flying operations.

Replenishment at sea

5. Warships and support ships frequently exercise Replenishment at Sea. While doing so, the two or more ships taking part may be connected by jackstays and hoses. They display the signals prescribed by Rule 27(b) COLREGS (ball/diamond/ball in a vertical line by day, red/white/red lights in a vertical line by night).
6. Mariners are warned that while carrying out these exercises the ships are severely restricted; both in manoeuvre ability and speed. Other vessels are therefore advised to keep well clear in accordance with Rule 18(a) COLREGS.

10.10.4 SURVEY VESSELS AND SURVEY AIRCRAFT

Survey vessels

1. Survey vessels, while carrying out hydrographic, geotechnical or oceanographic surveys, will display the signals prescribed in Rule 27(b) COLREGS. The ship may also show an international two-letter group India Romeo (IR) stating - I am engaged in submarine survey work. You should keep clear of me and go slow.
2. Mariners are warned that in carrying out this work, which may often be run across the normal shipping lanes, survey vessels may be towing multiple instruments up to 8,200 metres in length. These will restrict their manoeuvrability and ability to change speed or stop quickly. Other vessels are therefore advised to keep well clear in accordance with Rule 18(a) COLREGS giving a clearance of at least 0.5nm if passing astern of any towed instrument.
3. Bathymetric surveys can also be conducted via aircraft fitted with a laser system called Lidar. Lidar is used over shallow Australian coastal waters, predominately in the Great Barrier Reef (GBR) region.
4. The aircraft operates between an altitude of 400 to 700 metres; using green and infra red laser beams to measure sea depth down to 70 metres.

5. The laser meets the requirement of the Australian Laser Safety Standard AS 2211 (1991) and is eye safe to the unaided eye at the normal operating altitude. System interlocks automatically inhibit the laser if the aircraft flies below a safe altitude.
6. Mariners are advised that under certain conditions a green light may be seen under the aircraft.

10.11 MARITIME TRADE OPERATIONS / NAVAL COOPERATION AND GUIDANCE FOR SHIPPING

1. This section describes the arrangements for the safety of seaborne trade and merchant shipping in the Australian area in the event of humanitarian assistance and disaster relief, crisis, international tension or hostility.
2. Commercial shipping will always be the most cost effective means of moving Australian imports and exports given the types of commodity traded, the volumes involved and the distances between Australia and its trading partners. The importance of efficient seaborne trade has become more critical with the adoption of 'just-in-time' supply and manufacturing practices by global and national industries. During conflict, commercial shipping also makes crucial contributions to military strategic lift and the logistics supply chain.
3. The protection of seaborne trade and merchant shipping will likely involve both military and civilian authorities including the Australian Defence Force (ADF), the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD), the Department of Foreign Affairs and Trade (DFAT), the ABF and stakeholders from across seaborne trade and merchant shipping sectors; including offshore fishing and tourist boat operators.
4. Protecting Australia's maritime interests during humanitarian assistance and disaster relief, crisis, international tension or hostility is an ADF role and as such the ADF takes an interest in shipping movements in the Australian region. During periods of crisis, tension or hostility a greater degree of involvement is necessary to incorporate the location of merchant shipping into ADF planning considerations. An awareness of shipping movements allows the ADF to:
 - gain an accurate real-time picture of commercial shipping provide advice on threat areas
 - provide advice regarding possible threats to commercial shipping
 - provide advice on safe shipping routes
 - deconflict commercial and military shipping operations
 - where necessary, provide guidance and offer assistance through military presence, accompaniment or escort
 - integrate commercial shipping and ports into the ADF logistics capability
5. Australia and New Zealand utilise Maritime Trade Operations (MTO) procedures to enable safe seaborne trade and shipping during humanitarian assistance and disaster relief, crisis, international tension or hostility. MTO procedures are consistent with North Atlantic Treaty Organisation (NATO) Naval Cooperation and Guidance for Shipping (NCAGS) procedures.
6. If MTO arrangements for the protection of seaborne trade and merchant shipping are required, guidance will be issued to masters, owners, operators and agents. This guidance will outline:
 - the area of interest/concern
 - the reasons for its implementation
 - the nature of ADF involvement
7. The decision to implement MTO procedures is the prerogative of the Australian Government.

10.11.1 AUSTRALIAN DEFENCE FORCE PROTECTION

1. ADF protection may be extended to all vessels irrespective of flag, or nationality of their owners, operators and crews. Protection may be extended to all shipping whether they are engaged in the Australian trade or transiting through the Australian area of responsibility.

10.11.2 COMMUNICATIONS

1. The ADF will communicate with vessels via the following means:
 - Inmarsat C EGC (SafetyNet) broadcast message
 - VHF and HF Digital Selective Calling (DSC) broadcast message
 - messages sent via owners, charterers or operators commercial communication channels
 - Coast Radio Station HF / VHF voice broadcast message
 - visits by ADF personnel
2. Masters may communicate with the ADF via most suitable means however, Inmarsat C is recommended.

10.11.3 WARNINGS

1. ADF warnings will be issued as a Navigational Warning and will:
 - give details of the area
 - state the reason for the warning
 - describe the ADF's involvement
2. Vessels intending to enter an area prescribed by the ADF are encouraged to send a Passage Intentions Report to the ADF. The message format is based upon the IMO Standard Ship Reporting format. Further details can be found in *Admiralty List of Radio Signals Volume 6 and Chapter 9*.
3. Masters must note that contacting the ADF does not replace the requirement to report to Modernised Australian Ship Tracking and Reporting System (MASTREP) as normal.

10.11.4 PASSAGE INTENTIONS AND AMENDMENT REPORT

1. Passage Intention Reports may be used at any time and should be raised to report amendments involving changes in destination or passage time differences of +12 hours from the previous report.
2. Passage Intention Report format:
 - A. SHIP / CALLSIGN / IMO NUMBER
 - B. DATE/TIME
 - C. POSITION LAT / LONG
 - E. COURSE
 - F. SPEED
 - G. LAST PORT OF CALL
 - L. ROUTE INTENTIONS
 - M. COMMUNICATION ARRANGEMENTS
3. Reports are to be sent to the Watchkeeper at Headquarters Joint Operations Command and the MTO Team 1 Duty Officer.

10.11.5 AUSTRALIAN DEFENCE FORCE ADVICE TO SHIPPING / ACKNOWLEDGMENT

1. ADF advice to shipping may suggest an increase of vigilance, a limit of particular types of electronic emissions or a preferred route through a specified area. The advice may be issued as a general broadcast or addressed to a particular vessel. Advice which affects a vessel's intended route would be contemplated only when other options have been exhausted. Whenever practicable, the vessel's commercial operators in Australia would be consulted to make a final decision.
2. The advice message will be in the following format:
From: JOINT OPERATIONS COMMAND
ADF ADVICE TO MERCHANT SHIPPING
 1. RECOMMENDATIONS TO THE MASTER
 2. REMARKS AND REASONS FOR RECOMMENDATIONS
3. Master's Acknowledgment Message format:
PASSAGE INTENTION AFTER RECEIPT OF ADF ADVICE
 - A. SHIP/CALLSIGN/IMO NUMBER
 - L. ROUTE INTENTIONS (unchanged / new)
4. Master's acknowledgements are to be sent to the Watchkeeper at Headquarters Joint Operations Command and the MTO Team 1 Duty Officer.

10.11.6 SUSPICIOUS ACTIVITY OR SIGHTING REPORT

1. Where there is concern regarding the safety of shipping in Australian waters, reports of sightings while at sea will assist ADF operations. These reports should include details of any unusual or suspicious activity observed. Sighting reports should be forwarded in the following format:
 - A. SHIP / CALLSIGN / IMO NUMBER
 - B. DATE/TIME
 - C. POSITION LAT / LONG
 - E. COURSE
 - F. SPEED
 - M. COMMUNICATION ARRANGEMENTS
 - X. ACTIVITY OR SIGHTING INFORMATION
2. Sighting reports should be forwarded to the Watchkeeper at Headquarters Joint Operations Command and the MTO Team 1 Duty Officer.
3. Reports of suspicious activity in an Australian port should also be referred to the Port Security Officer.

10.11.7 AUSTRALIAN DEFENCE FORCE CONTACTS

Headquarters Joint Operations Command	
Attention:	Watchkeeper
Telephone:	+61 2 6128 4339
Email:	marops.watchkeeper@defence.gov.au
Maritime Trade Operations Team 1	
Attention:	MTO Duty Officer
Telephone:	0431 764 980
Email:	mto.opso@defence.gov.au
MTOT1 - Maritime Operations	
c/o HMAS Moreton	
Address:	Apollo Road
	Bulimba
	QLD 4171

Notes:

Notes:

CHAPTER 11 PORT INFORMATION

11.1 PORTS AUSTRALIA

1. Ports Australia is an association representing the interests of port and marine authorities in Australia. All Government owned ports, some privatised ports, most State marine regulatory authorities and the Royal Australian Navy (RAN) and the Australian Hydrographic Office (AHO) are members of Ports Australia.
2. Ports Australia's mission is to provide leadership and support in areas of common interest related to ports, and to promote achievement of their trade facilitation objectives.
3. The Ports Australia website provides links to port and marine regulatory authorities within Australia.

Website:	www.portsaustralia.com.au
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11.2 PORT HANDBOOKS

1. Most of Australia's port authorities publish their own port handbooks, which are available on the internet. Website addresses are listed in the port information tables under each state in this chapter.
2. Port handbooks define the standard procedures to be followed in the pilotage area of a port. They may also contain:
 - arrival and departure procedures
 - port services
 - port description
 - port infrastructure
 - port navigation and restrictions
 - pilotage / tug services
 - port security
 - biosecurity
3. Port handbooks are updated on a regular basis, so printed copies may not be current. Mariners are advised to visit port websites prior to entering a port to ensure currency of information.

11.3 FIRST PORTS OF ENTRY

1. Before landing or embarking any personnel or cargo in Australia (including islands), vessels are required to complete customs, immigration and biosecurity formalities at an approved first port of entry. First ports of entry for customs, immigration and biosecurity matters are gazetted by the Australian Government. Customs, immigration and biosecurity / quarantine are the responsibility of Australian Government agencies (see Section 2.4).
2. Vessels wishing to clear customs, immigration and biosecurity at a place other than an approved first port of entry should contact the Australian Border Force (ABF) and the Department of Agriculture and Water Resources (DAWR) well before arrival to ascertain the availability of clearance officers and any potential clearance costs. Unless otherwise approved by the agencies, the vessel will be required to proceed to an approved first port of entry to obtain relevant clearances.

11.4 HARBOUR MASTER POWERS TO DIRECT

1. Within port waters the harbour master acts as safety regulator, ensuring the safe and efficient movement of shipping, and protection of the environment. Harbour masters are generally empowered under State legislation. The powers of the harbour master are exercised through the promulgation of standards, procedures and notices, the provision of pilotage, and Vessel Traffic Services (VTS). Harbour masters may give directions in respect of the:
 - time and manner in which a vessel may enter or leave port waters
 - navigation and movement of vessels within port waters
 - position and manner of anchoring and securing within port waters
 - time and manner of taking or discharging cargo, ballast or stores
2. Additional powers may be conferred by particular legislation, notably powers in emergencies.

11.5 DREDGED AREAS WITHIN PORTS

1. Ports maintain a program of surveying to monitor depths, and dredging when silting has reached a minimum depth determined by the Harbour Master. Most charts therefore show a designed depth within a dredged area; while true depths will generally be maintained by dredging to be deeper than the designed depth, they may also be shoaler under certain circumstances. Australian Electronic Navigational Charts (ENC) and Paper Nautical Charts (PNC) therefore carry the following note:

DREDGED AREAS

Depths in dredged areas, although generally maintained, may be less than charted. For the latest information, consult the Harbour Master.

DREDGED AREAS

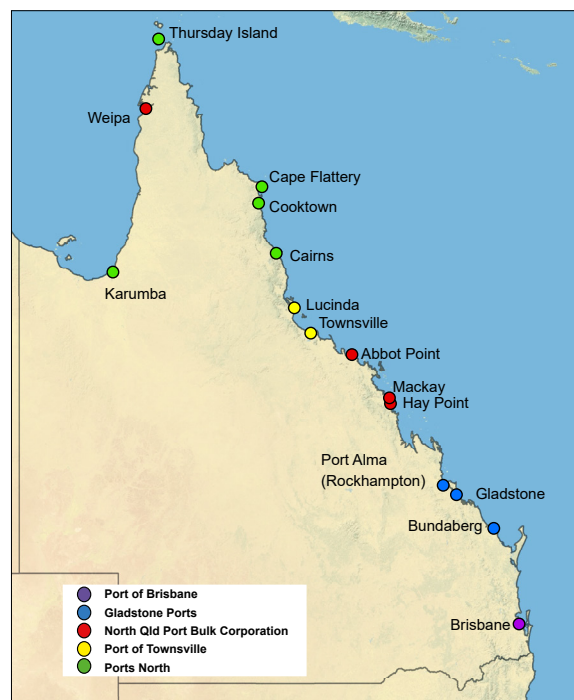
Depths in dredged areas, although generally maintained, may be less than charted. For the latest information, consult the Harbour Master.

11.6 QUEENSLAND

1. Queensland (QLD) has 15 modern and efficient trading ports, two community ports, and a number of non-trading ports. Five port authorities administer these ports:
 - North Queensland Ports Bulk Corporation
 - Far North Queensland Ports Corporation (Ports North)
 - Gladstone Ports Corporation
 - Port of Brisbane Corporation
 - Port of Townsville
2. See QLD Ports table for contact details (Section 11.6.3).
3. Information and links are also published by Maritime Safety Queensland (MSQ) at:

Websites:

www.msq.qld.gov.au
www.tmr.qld.gov.au



11.6.1 THE REGIONAL HARBOUR MASTER

1. The point of contact for all matters relating to the safe movement of shipping in QLD waters is the Regional Harbour Master. For maritime transport purposes QLD is divided into six regions - Brisbane, Gladstone, Mackay, Townsville, Cairns and the Gold Coast. A Regional Harbour Master is employed in each of these regions, with the exception of the Gold Coast which has an Area Manager. Each Regional Harbour Master

or Manager maintains offices at a number of outports within their region. They all report to the General Manager MSQ.

2. The limits of QLD pilotage areas are depicted on charts and represent the primary area in which the Regional Harbour Master exercises authority. Port and Pilotage limits are often coincident but differences do exist. For example, Hay Point has both a compulsory and non-compulsory pilotage area within the limit of the port area.
3. The role of the Regional Harbour Master is to ensure safe operation of ships, preparedness for and prevention of marine pollution and marine incidents in QLD waters, and to manage the regional delivery of MSQ's marine services.
4. The Regional Harbour Master is responsible for the provision of the following marine services within QLD waters:
 - advice on vessel standards, operation and movement, including pilotage, towage requirements and the movement of dangerous goods
 - the management of vessel traffic services inside ports and in high risk areas along the coast, including the Great Barrier Reef and Torres Strait Vessel Traffic Service (Reef VTS) reporting centre operating from Townsville
 - maintenance of their respective portion of the State's aid to navigation network
 - marine incident investigation and reporting for incidents involving commercial and recreational vessels.
5. Marine incident investigations involving Safety of Life at Sea (SOLAS) ships is the responsibility of the Australian Transport Safety Bureau (ATSB), however MSQ has concurrent jurisdiction for such investigations:
 - marine pollution preparedness and direct response to incidents, under the *Transport Operations (Marine Pollution) Act 1995* (QLD)
 - administration and issue of commercial licences and certificates
 - vessel safety compliance under the *Transport Operations (Marine Safety) Act 1994* (QLD)
6. Regional Harbour Master contact details:

Brisbane Telephone: +61 7 3632 7500 Fax: +61 7 3632 7571 Email: brisbane.maritime@msq.qld.gov.au	Townsville / Abbot Point / Lucinda Telephone: +61 7 4421 8100 Fax: +61 7 4721 2028 Email: townsville.maritime@msq.qld.gov.au
Gladstone / Bundaberg / Port Alma Telephone: +61 7 4971 5200 Fax: +61 7 4971 5243 Email: gladstone.maritime@msq.qld.gov.au	Cairns / Weipa / Mourilyan / Cooktown / Port Douglas / Cape Flattery / Thursday Island / Karumba Telephone: +61 7 4052 7400 Fax: +61 7 4052 7451 Email: cairns.maritime@msq.qld.gov.au
Mackay / Hay Point Telephone: +61 7 4944 3700 Email: mackay.maritime@msq.qld.gov.au	Gold Coast Telephone: +61 7 5585 1810 Fax: +61 7 5585 1818 Email: goldcoast.maritime@msq.qld.gov.au

11.6.2 MARITIME INFORMATION

1. MSQ publish QLD Notices to Mariners (NtM) and regulations on their website.

Website:	www.qld.gov.au/transport/boating/notices/about/
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11.6.3 PORTS

Abbot Point, QLD (19° 52'S, 148° 05'E)	
UN/LOCODE: AU ABP	
Paper chart:	Aus 255
AusENC cells:	AU5ABP01, AU320148, AU320147
Security Regulated Port:	Yes
Port Authority:	North Queensland Bulk Ports Corporation
Website:	www.nqbp.com.au
Email:	info@nqbp.com.au
Telephone:	+61 7 3011 7900
Vessel Traffic Service:	Abbot Point VTS
Telephone:	1300 726 263
Email:	vtstownsville@msq.qld.gov.au
Abbot Point Pilots	
Telephone:	1300 721 263
Ordering:	Via agent 48 hours in advance
Pilotage:	Compulsory
Pilot Boarding Ground:	19° 48.20'S, 148° 03.50'E
Communication:	"Abbot Point VTS"
Call up, emergencies:	VHF Channel 12
Pilot and Tugs:	VHF Channel 06, 08
Notice of Estimated Time of Arrival (ETA):	Vessels requiring a pilot 48 hours in advance
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-abbot-point.aspx

Bundaberg, QLD (24° 46'S, 152° 23'E)	
UN/LOCODE: AU BDB	
Paper charts:	Aus 242
AusENC cells:	AU5BDB01, AU425152
Security Regulated Port:	Yes
Port Authority:	Gladstone Port Corporation
Website:	www.gpcl.com.au
Email:	info@portofbundaberg.com.au
Telephone:	+61 7 4130 2200
Port Harbour Control	Gladstone VTS
Telephone:	+61 7 4971 5208
Email:	vtsgladstone@msq.qld.gov.au
Pilotage:	Compulsory
Bundaberg Pilots	
Telephone:	+61 7 4976 8201
Fax:	+61 7 4976 8250
Pilot Boarding Ground:	24° 45.6'S, 152° 29.7'E
Communication	"Bundaberg Harbour Control"
Call up, emergencies:	VHF Channel 16
VTS:	VHF Channel 13
Operations:	VHF Channel 13, 82
Pilots and Tugs:	VHF Channel 13
Pilot Boat:	VHF Channel 16
Notice of ETA:	ETA and maximum draught to Harbour Master - Gladstone 48 hours prior to vessels arrival
For more information:	https://www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-bundaberg

Brisbane, QLD (27° 23'S, 153° 09'E)	
UN/LOCODE: AU BNE	
Paper charts:	Aus 236, 237
AusENC cells:	AU5BNE01, AU428153, AU427153
Security Regulated Port:	Yes
Port Authority:	Port of Brisbane Pty Ltd
Website:	www.portbris.com.au
Email:	info@portbris.com.au
Telephone:	+61 7 3258 4888
Vessel Traffic Service:	Call Brisbane VTS
Telephone:	+61 7 33051700
Email:	vtbsbrisbane@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Brisbane Marine Pilots
Telephone:	+61 7 3624 6555
Fax:	+61 7 3862 2240
Email:	operations@brisbanepilots.com.au
Ordering:	via agent 48 hours in advance
Pilot Boarding Ground:	26°42.90'S, 153°10.68'E
Communication:	"Brisbane VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 12
Small Craft:	VHF Channel 67
Pilots and Tugs:	VHF Channel 06, 08, 09, 10
Water Police and Coast Guard:	VHF Channel 63, 73
Notice of ETA:	48 hours and 24 hours prior to arrival
Estimated Time of Departure (ETD):	1 hour
For more information:	www.portbris.com.au/Operations-and-Trade

Cape Flattery, QLD (14° 59'S, 145° 21'E)	
UN/LOCODE: AU CQP	
Paper chart:	Aus 270
AusENC cells:	AU5CQP01, AU415145, AU416145
Security Regulated Port:	Yes
Port Authority:	Ports North
Website:	www.cairnsport.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4052 3888
Regional Harbour Master:	+61 7 4052 7400
Vessel Traffic Service:	Cape Flattery Port Control VHF 13
Pilotage:	Compulsory
Pilot:	See Cairns
Pilot Boarding Ground:	14° 56.80'S, 145° 23.00'E
Communication	
Call up, emergencies:	VHF Channel 16 Cape Flattery Port Control VHF 13
Notice of ETA:	7 days
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-cape-flattery-cooktown-port-douglas

Cairns, QLD (16° 56'S, 145° 47'E)	
UN/LOCODE: AU CNS	
Paper charts:	Aus 263, 264
AusENC cells:	AU5CNS01, AU417145, AU417146
Security Regulated Port:	Yes
Port Authority:	Ports North
Website:	www.portsnorth.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4052 3888
Regional Harbour Master:	+61 7 4052 7400
Vessel Traffic Service	
Telephone:	+61 7 4052 7470
Email:	vtscairns@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Cairns Duty Pilot
Telephone:	+61 7 4041 4214
Fax:	+61 7 4052 3844
Email:	cns_pilot_duty@bigpond.com
Ordering:	Via Cairns VTS
Pilot Boarding Grounds:	16° 45.00'S, 145° 50.00'E 16° 48.60'S, 145° 50.60'E 16° 50.26'S, 145° 49.04'E
Communication:	"Cairns Harbour"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 12
Pilots and Tugs:	VHF Channel 16, 08
VTS:	VHF Channel 16, 12 (Call sign "Cairns VTS")
Notice of ETA:	72 hrs, 48 hrs and 24 hrs confirmation
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-cairns

Cooktown, QLD (15° 28'S, 145° 15'E)	
UN/LOCODE: AU CTN	
Paper chart:	Aus 270
AusENC cells:	AU5CTN01, AU416145
Security Regulated Port:	No
Port Authority:	Ports North
Website:	www.portsnorth.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4052 3888
Vessel Traffic Service call:	Cairns VTS
Telephone:	+61 7 4052 7470
Email:	vtscairns@msq.qld.gov.au
Pilotage:	Not compulsory
Pilot:	See Cairns Duty Pilot
Pilot Boarding Ground:	14° 27.00'S, 145° 18.00'E
Communication:	
Call up, emergencies:	VHF Channel 16 No VTS service in Cooktown
Notice of ETA:	48 hours
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-cape-flattery-cooktown-port-douglas

Gladstone, QLD (23° 50'S, 151° 15'E)	
UN/LOCODE: AU GLT	
Paper charts:	Aus 45, 246
AusENC cells:	AU5GLT01, AU424151
Security Regulated Port:	Yes
Port Authority:	Gladstone Ports Corporation
Website:	www.gpcl.com.au
Email:	geninfo@gpcl.com.au
Telephone:	+61 7 4976 1333
Vessel Traffic Service	Gladstone VTS
Telephone:	+61 7 4971 5208
Email:	vtsgladstone@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Gladstone Pilots
Telephone:	+61 7 4976 8201
Pilot Boarding Grounds:	Alpha) 23° 51.00'S, 151° 31.50'E Bravo) 23° 51.90'S, 151° 32.70'E Charlie) 23° 53.00'S, 151° 33.00'E Delta) 23° 55.00'S, 151° 31.00'E LNG) 23° 50.09' S, 151° 34.67'E
Communication:	"Gladstone VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 13
Pilot boat /helicopter:	VHF Channel 10
Tugs:	VHF Channel 08, 12
Notice of ETA:	48 hours notice prior to vessels arrival
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-gladstone

Hay Point, QLD (21° 16'S, 149° 18'E)	
UN/LOCODE: AU HPT	
Paper charts:	Aus 250, 249
AusENC cells:	AU5250P0, AU422149
Security Regulated Port:	Yes
Port Authority:	North Queensland Bulk Ports Corporation
Website:	www.nqbp.com.au
Email:	info@nqbp.com.au
Telephone:	+61 7 4955 8147
Vessel Traffic Service call:	Hay Point VTS
Telephone:	1300 645 022
Email:	vtshaypoint@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Duty Pilot
Telephone:	+61 7 4942 8320
Ordering:	24 hours in advance
Pilot Boarding Grounds:	Bravo) 21° 13.50'S, 149° 20.70'E Charlie) 21° 17.35'S, 149° 22.50'E
Communication:	"Hay Point VTS"
Call up, emergencies:	VHF Channel 16
Operations / VTS:	VHF Channel 10
Pilots / tugs HPS	VHF Channel 08
Pilots / tugs DBCT	VHF Channel 12
Notice of ETA:	48 Hours
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-hay-point

Karumba, QLD (17° 29'S, 140° 50'E)	
UN/LOCODE: AU KRB	
Paper chart:	Aus 6
AusENC cells:	AU5006P0, AU418140
Security Regulated Port:	No
Port Authority:	Ports North
Website:	www.cairnsport.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4052 3888
Regional Harbour Master:	+61 7 4052 7400
Vessel Traffic Service call:	Karumba Harbour
Telephone:	+61 7 4052 7470
Email:	vtscairns@msq.qld.com.au
Pilotage:	Compulsory
Pilot:	See Cairns
Pilot Boarding Grounds:	A) 17° 22.30'S, 140° 40.40'E B) 17° 24.90'S, 140° 42.60'E
Communication:	"Karumba Harbour"
VTS:	VHF Channel 16
Pilots:	VHF Channel 16
Notice of ETA:	7 days
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-karumba

Lucinda, QLD (18° 31'S, 146° 20'E)	
UN/LOCODE: AU LUC	
Paper chart:	Aus 267
AusENC cells:	AU5267P0, AU419146
Security Regulated Port:	Yes
Port Authority:	Port of Townsville Limited
Website:	www.townsville-port.com.au
Email:	info@townsville-port.com.au
Telephone:	+61 7 4781 1500
Pilotage:	Compulsory
Pilot:	Port of Townsville Pilot Service
Telephone:	1300 721 263
Ordering:	Via agent 48 hours in advance
Pilot Boarding Ground:	18° 29.91'S, 146° 23.97'E
Communication:	"Lucinda VTS"
Call up, emergencies:	VHF Channel 13
Port Operations and Pilot:	VHF Channel 13, 06
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-lucinda

Mackay, QLD (21° 06'S, 149° 13'E)	
UN/LOCODE: AU MKY	
Paper charts:	Aus 249, 250
AusENC cells:	AU5250P0, AU422149
Security Regulated Port:	Yes
Port Authority:	North Queensland Bulk Ports Corporation
Website:	www.nqbp.com.au
Email:	portoperations@nqbp.com.au
Telephone:	+61 7 4955 8147
Vessel Traffic Service call:	VTS Mackay
Telephone:	+61 7 4956 3489
Email:	vtshaypoint@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Duty Pilot
Telephone:	+61 7 4421 8199
Ordering:	24 hours in advance
Pilot Boarding Ground:	21° 07.03'S, 149° 17.14'E
Communication:	"Mackay VTS"
Call up, emergencies:	VHF Channel 16, 10
Port Operations:	VHF Channel 10
Pilots and Tugs:	VHF Channel 13
Notice of ETA:	48 hours
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-mackay

Port Alma, (Rockhampton) QLD (23° 34'S, 150° 51'E)	
UN/LOCODE: AU PTL	
Paper chart:	Aus 265
AusENC cells:	AU5PTL01, AU424150, AU424151
Security Regulated Port:	Yes
Port Authority:	Gladstone Ports Corporation
Website:	www.gpcl.com.au
Email:	geninfo@gpcl.com.au
Telephone:	+61 7 4934 6931
Port Operator:	Gladstone VTS
Telephone:	+61 7 4971 5208
Fax:	+61 7 4971 5520
Email:	vtsgladstone@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Gladstone Pilots
Telephone:	+61 7 4976 8201 +61 7 4976 8250
Pilot Boarding Ground:	23° 24.40'S, 151° 00.94'E
Communication:	"Gladstone VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 13
Port Alma Wharves:	VHF Channel 06
Notice of ETA:	48 hours prior to arrival
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-port-alma

Skardon River, QLD (11° 45'S, 142° 04'E)	
UN/LOCODE: AU SKE	
Paper chart:	Aus 701
AusENC cells:	AU412142, AU412141
Security Regulated Port:	Yes
Port Authority:	Ports North
Website:	www.portsnorth.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4051 2558
Regional Harbour Master:	+61 7 4052 7400
Vessel Traffic Service	
Telephone:	07 40527470
Email:	vtscairns@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Ports North
Ordering:	+61 7 4031 6371
Pilot Boarding Grounds:	11° 46.32'S, 141° 55.5'E
Communication:	"Skardon River Port Control"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 9
Notice of ETA:	48 hours
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-Procedures-Skardon-River

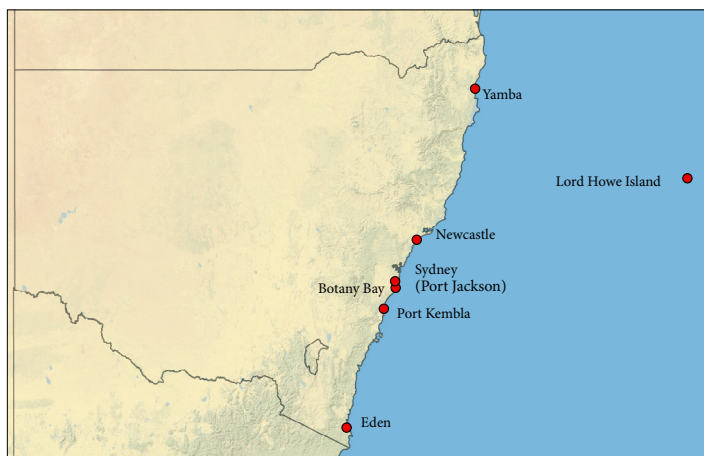
Thursday Island, QLD (10° 35'S, 142° 13'E)	
UN/LOCODE: AU TIS	
Paper chart:	Aus 299
AusENC cells:	AU5TIS01, AU411142
Security Regulated Port:	Yes
Port Authority:	Ports North
Website:	www.portsnorth.com.au
Email:	enquiries@portsnorth.com.au
Telephone:	+61 7 4052 3888
Regional Harbour Master	
Telephone:	+61 7 4052 7412
Email:	rhmcairns@msq.qld.gov.au
Port Operations call:	Thursday Island Harbour
Telephone:	+61 7 4069 1405
Pilotage:	Compulsory
Pilot:	See Cairns
Ordering:	72 hours notice via Cairns VTS
Pilot Boarding Grounds:	10° 33.30'S, 142° 17.30'E 10° 33.99'S, 142° 04.40'E 10° 34.70'S, 142° 08.70'E 10° 36.00'S, 142° 12.40'E
Communication:	"Thursday Island Port Control"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 12
Notice of ETA:	7 days
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-thursday-island

Townsville, QLD (19° 15'S, 146° 50'E)	
UN/LOCODE: AU TSV	
Paper charts:	Aus 256, 257
AusENC cells:	AU5TSV01, AU420146
Security Regulated Port:	Yes
Port Authority:	Port of Townsville Limited
Website:	www.townsville-port.com.au
Email:	info@townsville-port.com.au
Telephone:	+61 7 4781 1500
Vessel Traffic Service call:	Townsville VTS
Telephone:	1300 726 263
Email:	vtstowns@msq.qld.gov.au
Pilotage:	Compulsory
Pilot:	Port Townsville Pilot Service
Telephone:	1300 721 263
Pilot Boarding Grounds:	A) 19° 06.57'S, 146° 54.16'E B) 19° 09.50'S, 146° 55.50'E
Communication:	"Townsville VTS "
Call up, emergencies:	VHF Channel 16
Port Operations VTS:	VHF Channel 12
Pilots:	VHF Channel 06, 08
Tugs:	VHF Channel 06, 08
Notice of ETA:	Vessels requiring a pilot 48 hours in advance
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-townsville

Weipa, QLD (12° 40'S, 141° 50'E)	
UN/LOCODE: AU WEI	
Paper chart:	Aus 4
AusENC cells:	AU5004P1, AU413141
Security Regulated Port:	Yes
Port Authority:	North Queensland Bulk Ports Corporation
Website:	www.nqbp.com.au
Email:	portoperations@nqbp.com.au
Telephone:	+61 7 4955 8147
Harbour Control (VTS) call:	Weipa VTS
Telephone:	+61 7 4052 7470
Fax:	+61 7 4052 7460
Email:	vtscairns@msq.qld.gov.au
Pilotage:	See Cairns
Pilot	
Telephone (office hours):	+61 7 4069 7170
Telephone (after hours):	+61 7 4069 9497
Ordering:	48 hours (contact VTS)
Pilot Boarding Grounds:	12° 43.90'S, 141° 36.00'E
Small vessels <100 LOA:	12° 40.45'S, 141° 43.33'E
Communication:	"Weipa VTS"
Call up, emergencies:	VHF Channel 16
Port Operations VTS:	VHF Channel 06, 08
Tugs:	VHF Channel 06, 08
Working Channel:	VHF Channel 12
Notice of ETA:	48 hours
For more information:	www.msq.qld.gov.au/Shipping/Port-procedures/Port-procedures-weipa

11.7 NEW SOUTH WALES

1. New South Wales (NSW) has four modern and efficient trading ports, two modern and efficient regional trading ports, and a number of non-trading community ports.
2. Port Authority of NSW manages pilotage, navigation, security and operational safety needs of commercial shipping in Newcastle, Sydney Harbour, Port Botany and Port Kembla and the regional ports of Eden and Yamba.
3. The commercial functions of the Port of Newcastle are managed by the private port operator Port of Newcastle. The commercial functions of Port Botany and Port Kembla are managed by the private port operator NSW Ports.



11.7.1 MARITIME INFORMATION

1. Port Authority of NSW publishes commercial navigation warnings and other safety information for commercial vessels on their websites. The Roads and Maritime Services (RMS) publish navigation warnings and other safety information for non-commercial ports and waterways on their website.

Website:	www.rms.nsw.gov.au/maritime
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11.7.2 PORTS

Botany Bay, NSW (34° 00'S, 151° 13'E)	
UN/LOCODE: AU BTB	
Paper charts:	Aus 198
AusENC cells:	AU5BTB01, AU6BTB01, AU6KUR01, AU6BTB02
Security Regulated Port:	Yes
Port Authority:	Port Authority of NSW
Website:	www.portauthoritynsw.com.au
Email:	enquiries@portauthoritynsw.com.au
Telephone:	+61 2 9296 4999
Sydney VTS	
Telephone:	+61 2 9296 4999
Email:	VTS@portauthoritynsw.com.au
Pilotage:	Compulsory
Pilot	
Telephone:	+61 2 9296 4999
Fax:	+61 2 9296 4744
Email:	pilotenquiries@portauthoritynsw.com.au
Ordering:	Through local agent
Pilot Boarding Ground:	34° 01.02'S, 151° 18.88'E
Communication:	"Sydney VTS"
Call up, emergencies:	VHF Channel 16
Sydney VTS:	VHF Channel 12
Pilot Boarding:	VHF Channel 06
Tugs:	VHF Channel 68, 69
Notice of ETA:	60 hours
For more information:	www.portauthoritynsw.com.au

Eden, NSW (37° 04'S, 149° 54'E)	
UN/LOCODE: AU QDN	
Paper chart:	Aus 192
AusENC cells:	AU5QDN01, AU438149, AU438150
Security Regulated Port:	Yes
Port Authority:	Port Authority of NSW
Website:	www.portauthoritynsw.com.au
Email:	edenpilots@portauthoritynsw.com.au
Telephone:	+61 2 9296 4999
Pilotage:	Compulsory vessel over 30m Compulsory vessel over 30m length overall (LOA)
Pilot	
Telephone:	+61 2 6496 1719
Email:	edenpilots@portauthoritynsw.com.au
Ordering:	7 days
Pilot Boarding Ground:	37° 04.04'S, 149° 56.56'E
Communication:	"Eden Harbour"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 12, 08
Notice of ETA:	7 days
For more information:	www.edenport.com.au

Lord Howe Island, NSW (31° 31'S, 159° 03'E) UN/LOCODE: AU LDH	
Paper chart:	Aus 610
AusENC cells:	AU5LDH01, AU432158, AU4321159
Security Regulated Port:	No
Port Authorities:	Roads and Maritime Services
Websites:	www.rms.nsw.gov.au/maritime/index.html Lord Howe Island Board www.lhib.nsw.gov.au
Pilotage:	Advice given when mooring/anchoring
Port Operations Manager:	Lord Howe Island Police
Telephone:	+612 6563 2199
Fax:	+612 6563 2131
Anchoring:	NSW Marine Parks Authority or LHI Police (see above)
Telephone:	+61 2 6563 2359
Booking Moorings:	Lord Howe Island Board
Telephone:	+61 2 6563 2066
Fax:	+61 2 6563 2127
Website:	www.lhib.nsw.gov.au
Communication	
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 12
For more information:	www.lhib.nsw.gov.au

Newcastle, NSW (32° 55'S, 151° 47'E) UN/LOCODE: AU NTL	
Paper charts:	Aus 207, 208, 809
AusENC cells:	AU5NTL01, AU433151, AU433152
Security Regulated Port:	Yes
Port Authority:	Port Authority of NSW
Website:	www.portauthoritynsw.com.au
Email:	mail@portauthoritynsw.com.au
Telephone:	+61 2 4985 8222
Port Operator:	Port of Newcastle
Website:	www.portofnewcastle.com.au
Email:	Info@portofnewcastle.com.au
Telephone:	+61 2 4908 8200
Newcastle Vessel Traffic Information Centre (VTIC)	
Telephone:	+61 2 4985 8321
Email:	nc_vtic@portauthoritynsw.com.au
Pilotage:	Compulsory vessel over 30m LOA
Pilot Boarding Grounds:	Alpha: 32° 57.85'S, 151° 51.38'E Bravo: 32° 58.87'S, 151° 52.70'E Charlie: 32° 56.00'S, 151° 52.65'E
Communication:	"Newcastle Harbour"
VTIC Call up:	VHF Channel 09
Emergencies:	VHF Channel 16, 09
Pilot working channels:	VHF Channel 08, 11, 72, 77
Pilot transfer Channels:	VHF Channel 06
Notice of ETA:	48 hours
For more information:	www.portofnewcastle.com.au (Port handbook) www.portauthoritynsw.com.au

Port Kembla, NSW (34° 28'S, 150° 54'E) UN/LOCODE: AU PKL	
Paper charts:	Aus 195, 808
AusENC cells:	AU5PKL01, AU435150
Security Regulated Port:	Yes
Port Authority	Port Authority of NSW
Website:	www.portauthoritynsw.com.au
Email:	portkemblavts@portauthoritynsw.com.au
Telephone:	+61 2 4575 0100
Vessel Traffic Information Centre	
Call:	"Port Kembla VTS"
Telephone:	+61 2 4275 0197
Pilotage:	Compulsory
Pilot Boarding Grounds:	(Inner) 34° 25.15'S, 150° 56.85'E (Outer) 34° 24.18'S, 150° 57.62'E
Communication:	"Port Kembla VTS"
Call up, emergencies:	VHF Channel 11, 16
Port Operations:	VHF Channel 08
Notice of ETA:	48 hours notification required - booking must be confirmed 24 hours in advance
For more information:	https://www.portauthoritynsw.com.au/port-kembla/

Sydney (Port Jackson) , NSW (33° 51'S, 151° 12'E) UN/LOCODE: AU SYD	
Paper charts:	Aus 200
AusENC cells:	AU5SYD01, AU5SYD02, AU6SYD0, AU6SYD02
Security Regulated Port:	Yes
Port Authority:	Port Authority of NSW
Website:	www.portauthoritynsw.com.au
Email:	enquiries@portauthoritynsw.com.au
Telephone:	+61 2 9296 4999
Sydney VTS	
Telephone:	+61 2 9296 4999
Fax:	+61 2 9247 7804
Email:	VTS@portauthoritynsw.com.au
Pilotage:	Compulsory >30m LOA
Pilot	
Telephone:	+61 2 9296 4999
Fax:	+61 2 9296 4744
Email:	pilotenquiries@portauthoritynsw.com.au
Ordering:	Through Agent
Pilot Boarding Grounds:	34° 01.02'S, 151° 18.88'E 33° 50.05'S, 151° 21.68'E
Communication:	"Sydney VTS"
Call up, emergencies:	VHF Channel 16
VTS:	VHF Channel 13
Pilot Boarding:	VHF Channel 06
Tugs:	VHF Channel 08, 10, 72
Notice of ETA:	60 hours
For more information:	www.portauthoritynsw.com.au

Yamba, NSW (29° 26'S, 153° 21'E)	
UN/LOCODE: AU YBA	
Paper chart:	Aus 222
AusENC cells:	AU5YBA01, AU430153
Security Regulated Port:	Yes
Port Authority:	Port Authority of NSW (Sydney Office)
Website:	www.yambaport.com.au
Email:	yambaenquiries@portauthoritynsw.com.au
Telephone:	+61 2 9296 4999
Yamba Harbour Control:	
Telephone:	+61 2 6646 2002
Fax:	+61 2 6646 1596
Email:	yambapilots@portauthoritynsw.com.au
Ordering:	Through Agent
Pilotage:	Compulsory ≥ 30 metres LOA
Pilot Boarding Grounds:	North Outer: 29° 24.63'S, 153° 24.21'E (all vessels unless advised otherwise by the Port VIS or assigned pilot) North Inner: 29° 25.17'S, 153° 23.24'E (by assignment only) South East: 29° 26.02'S, 153° 22.74'E (by assignment only) Harwood Bridge: 29° 25.85'S, 153° 14.25'E (Located 0.20 miles upstream of the Harwood Bridge.
Communication:	"Yamba Harbour"
Call up, emergencies:	VHF Channel 16, 11
Operations / Pilots :	VHF Channel 11
Port working:	VHF Channel 09, 10
Notice of ETA:	72 hours; thence 48 and 24 hours
For more information:	www.portauthoritynsw.com.au

11.8 VICTORIA

1. Victoria (VIC) has four modern and efficient trading ports and a number of non-trading regional ports. Three port authorities administer the commercial ports. The Port of Melbourne is operated by a private consortium, while navigation is managed by Ports Victoria. The ports of Westernport (Hastings) and Geelong are operated by private companies, with navigational oversight by Ports Victoria (formally Victorian Regional Channels Authority) and the port of Portland is managed by another private company. The port authorities have their own websites detailed in the Port Details Table on page 230.

11.8.1 PORTS VICTORIA

1. Ports Victoria formed on 1 July 2021 is the successor organisation to Victorian Ports Corporation (Melbourne), which was established following the lease of the port of Melbourne's commercial operations effective 1 November 2016.
2. Ports Victoria is a public entity established under section 10 of the *Port Services Act 1995* (Vic) and continued under section 141B of the *Transport Integration Act 2010* (Vic).
3. Ports Victoria retains responsibility for the Harbour Master, Station Pier, relevant safety and environmental regulation, waterside emergency management and marine pollution response.
4. All shipping movement within port waters is governed by the requirements of Harbour Master's Directions and is controlled by the Harbour Master through Melbourne VTS (located at the Port Operations Control Centre, Fishermans Bend) and Lonsdale VTS.

11.8.2 VICTORIAN REGIONAL CHANNELS AUTHORITY

1. The Victorian Regional Channels Authority (VRCA) is responsible for the management of the channels and in port waters at the Victorian regional ports:

- Port of Geelong
- Port of Hastings
- Port of Portland



11.8.3 VESSEL OPERATIONS

Ports Victoria

1. Ports Victoria (formerly Victorian Ports Corporation Melbourne) operates a 24 hour VTS covering the declared VTS area. The services provided include traffic organisation and information service designed to improve the safe and efficient movement of shipping in port waters. Melbourne VTS based at the Port Operations Control Centre is also an ordering point for all shipping services required for berthing and departure, including berth allocation and the ordering of tugs, linesmen, lines boats and pilots.
2. The master and owner of a vessel are responsible for complying with Harbour Master's Directions which are published with the Port Information Guide on the website.

Website:	www.vicports.vic.gov.au
Harbour Control Telephone:	+61 3 9644 9700

Port of Geelong

3. Ports Victoria operates a 24 hour marine control service at Geelong to ensure the safe and efficient movement of shipping in the port waters of VRCA.
4. The master and owner of a vessel are responsible for complying with instructions as published in the Port Waters of Geelong Operating Handbook. The publication is available by post on request, or can be viewed at the VRCA website.

Website:	www.regionalchannels.vic.gov.au
Harbour Control Telephone:	+61 3 5247 0300

11.8.4 MARITIME INFORMATION

1. Marine Safety Victoria publishes information, including Marine Notices for Victorian State waters, on their website.

Website:	www.marinesafety.vic.gov.au
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11.8.5 PORTS

Melbourne, VIC (37° 51'S, 144° 55'E) UN/LOCODE: AU MEL	
Paper charts:	Aus 143, 155
AusENC cells:	AU5MEL01, AU438144, AU438145
Security Regulated Port:	Yes
Port Authority:	Ports Victoria
Website:	www.vicports.vic.gov.au
Email:	NavigationServices@vicports.vic.gov.au
Telephone:	+61 3 9644 9758
Vessel Traffic Service	
Melbourne VTS call:	Melbourne VTS
Telephone:	+61 3 9644 9700
Email:	melbournevts@vicports.vic.gov.au
Lonsdale VTS call:	Lonsdale VTS
Telephone:	+61 3 5258 3500
Email:	lonsdalevts@vicports.vic.gov.au
Pilotage:	Compulsory
Pilot:	Port Phillip Sea Pilots
Telephone:	+61 3 5254 5500
Fax:	+61 3 5272 1560
Email:	operations@ppsp.com.au
Ordering:	24 hours
Pilot:	Auriga Pilots Melbourne
Telephone:	+61 436 033 763
Email:	dutypilot@apgpilots.com.au
Pilot:	Poseidon Sea Pilots
Telephone:	+61 499 890 710
Email:	PSP-Melbourne@poseidonpilots.com.au
Pilot Boarding Ground:	38° 21.20'S, 144° 32.60'E
Communication:	"Melbourne VTS" or "Lonsdale VTS"
Call up, emergencies:	VHF Ch 12
Port Operations:	VHF Ch 12
Pilots:	VHF Ch 09, 10, 13
Tugs:	VHF Ch 02, 06, 13, 19
Safety:	VHF Ch 67
Small craft:	VHF Ch 74
For more information:	www.vicports.vic.gov.au/publications/Pages/hmd-and-port-information-guide.aspx

Geelong, VIC (38° 06'S, 144° 22'E) UN/LOCODE: AU GEX	
Paper charts:	Aus 153, 157
AusENC cells:	AU5GEX01, AU439144
Security Regulated Port:	Yes
Port Authority:	Victorian Regional Channels Authority
Website:	www.regionalchannels.vic.gov.au
Email:	admin@vrca.vic.gov.au
Telephone:	+61 3 5225 3500
Fax:	+61 3 5225 3599
Vessel Traffic Service:	See Melbourne
Pilotage:	Compulsory >35 m LOA
Pilot:	See Melbourne
Pilot Boarding Ground:	38° 21.30'S, 144° 32.37'E
Communication:	"Port of Geelong"
Call up, emergencies:	VHF Ch 16
Port Operations:	VHF Ch 16, 12
Pilots and Tugs:	VHF Ch 08, 13
Notice of ETA:	48 hours
For more information:	www.regionalchannels.vic.gov.au/index.php/quick-links/harbour-master-directions www.geelongport.com.au

Portland, VIC (38° 21'S, 141° 36'E) UN/LOCODE: AU PTJ	
Paper chart:	Aus 140
AusENC cells:	AU5PTJ01, AU439141
Security Regulated Port:	Yes
Port Authority:	Port of Portland Pty Ltd
Website:	www.portofportland.com.au
Email:	shipping@portofportland.com.au
Telephone:	+61 3 5525 0900 0439 209 120 (after hours)
Pilotage:	Compulsory >35m LOA
Pilot	
Telephone:	+61 3 5525 0999 (24 hours)
Pilot Boarding Ground:	38° 20.00'S, 141° 40.00'E
Communication:	"Portland Port Control"
Call up, emergencies:	VHF Ch 16
Port Operations / Tugs:	VHF Ch 12
Notice of ETA:	48 hours
For more information:	www.portofportland.com.au/harbour-masters-directions.html

Western Port, VIC (38° 22'S, 145° 13'E)	
UN/LOCODE: AU WEP	
Paper charts:	Aus 150, 151, 152
AusENC cells:	AU5HAS01, AU439145
Security Regulated Port:	Yes
Operator:	Victorian Regional Channels Authority
Website:	www.regionalchannels.vic.gov.au
Email:	admin@regionalchannels.vic.gov.au
Harbour Control	
Mobile:	+61 428 549 235
Email:	dhmhastings@vrca.vic.gov.au
Fax:	+61 3 5983 8684
Pilotage:	Compulsory >35m LOA
Pilot:	Contact Harbour Control 24/7
Telephone:	+61 428 549 235
Pilot Boarding Ground:	38° 32.75'S, 145° 01.84'E
Communication:	"Hastings Harbour Control"
Call up, emergencies:	VHF Ch 16, 14
Harbour Control:	VHF Ch 14
Pilots and Tugs:	VHF Ch 06, 08
Notice of ETA:	48 hours
Notice of ETD:	24 hours
For more information:	www.regionalchannels.vic.gov.au

11.9 TASMANIA

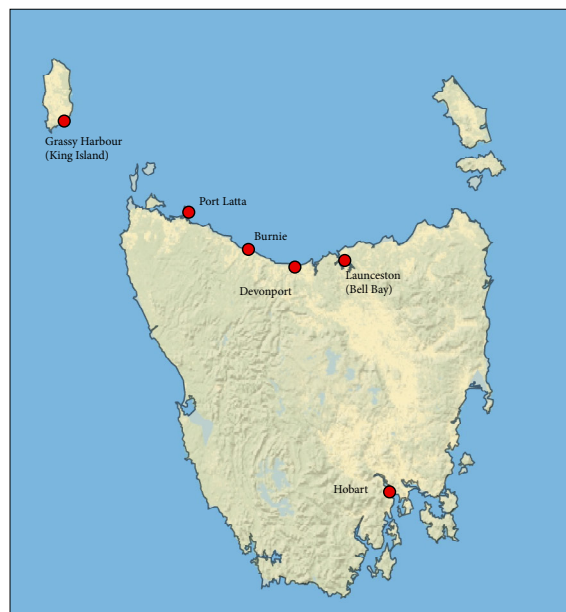
1. Tasmania (TAS) has four major trading ports and a number of regional and non-trading community ports. The major trading ports together with ports on King and Flinders Islands are administered by the Tasmanian Ports Corporation (Tasports). Tasports is a state owned corporation. Tasports administer a number of regional and community ports including Stanley, Strahan, Grassy, Curry, Naracoopa, Whitemark, Lady Barron, Port Arthur and Triabunna. Pilotage and Navigation services at small regional and community ports are administered by Marine and Safety Tasmania (MAST).

11.9.1 MARITIME INFORMATION

1. MAST publishes maritime information on their website.

Website:	www.mast.tas.gov.au
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11.9.2 PORTS



Burnie, TAS (41° 03'S, 145° 54'E)	
UN/LOCODE: AU BWT	
Paper chart:	Aus 163
AusENC cells:	AU5BWT01, AU442145
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Telephone:	1300 366 742 (AUST only)
Pilots and Port	
Telephone:	+61 3 6380 3075
Fax:	+61 3 6380 3043
Pilotage:	Compulsory >35m LOA
Pilot Boarding Ground:	41° 00.0'S, 145° 58.7'E
Communication:	"Burnie VTS"
Call up, emergencies:	VHF Channel 16
Port/ Pilot:	VHF Channel 14
Tugs:	VHF Channel 06
Notice of ETA:	24 hours
For more information:	www.tasports.com.au/port_services/port_information.html

Devonport, TAS (41° 11'S, 146° 22'E)	
UN/LOCODE: AU DPO	
Paper chart:	Aus 164
AusENC cells:	AU5DPO01, AU442146
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Telephone:	1300 366 742 (AUST only)
Pilots and Port	
Telephone:	+61 3 6380 3075
Fax:	+61 3 6380 3043
Pilotage:	Compulsory >35m LOA
Pilot Boarding Ground:	41° 07.02'S, 146° 23.55'E
Communication:	"Devonport VTS"
Call up, emergencies:	VHF Channel 16
Port/ Pilot:	VHF Channel 14
Tugs:	VHF Channel 06
Notice of ETA:	24 hours
For more information:	www.tasports.com.au/port_services/port_information.html

Hobart, TAS (42° 52'S, 147° 19'E)	
UN/LOCODE: AU HBA	
Paper chart:	Aus 172
AusENC cells:	AU5HBA01, AU443147
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Telephone:	1300 366 742 (AUST only)
Pilots and Port	
Telephone:	+61 3 6380 3075
Fax:	+61 3 6380 3043
Pilotage:	Compulsory >35m LOA
Pilot Boarding Grounds:	42° 55.5'S, 147° 23.4'E 43° 03.7'S, 147° 23.4'E 43° 26.3'S, 147° 03.8'E
Communication:	"Hobart VTS"
Call up, emergencies:	VHF Channel 16
Pilot:	VHF Channel 12
Port:	VHF Channel 08
Notice of ETA:	24 hours
For more information:	www.tasports.com.au/port_services/port_information.html

Grassy Harbour King Island, TAS (40° 04'S, 144° 03'E)	
UN/LOCODE: AU GRA	
Paper chart:	Aus 178
AusENC cells:	AU5GRA01, AU441144
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Pilots and Port	
Telephone:	1300 366 742 (AUST only)
Fax:	+61 3 6421 4988
Pilotage:	Compulsory >35m LOA
Communication:	"Grassy Port Control"
Call up, emergencies:	VHF Channel 16
Pilot/ Port:	VHF Channel 16, 14
Notice of ETA:	24 hours
For more information:	www.tasports.com.au/port_services/port_information.html

Launceston (Bell Bay), TAS (41° 08'S, 146° 52'E)	
UN/LOCODE: AU LST	
Paper chart:	Aus 167
AusENC cells:	AU5BEL01, AU442146
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Telephone:	1300 366 742 (AUST only)
Pilot:	Bell Bay Pilot
Port	
Telephone:	+61 3 6380 3075
Fax:	+61 3 6380 3043
Pilotage:	Compulsory >35m LOA
Pilot Boarding Ground:	40° 59.75'S, 146° 43.90'E
Communication:	"Bell Bay VTS"
Call up, emergencies:	VHF Channel 16,
Pilot / Port / Tug:	VHF Channel 06, 14
Notice of ETA:	24 hours
For more information:	www.tasports.com.au/port_services/port_information.html

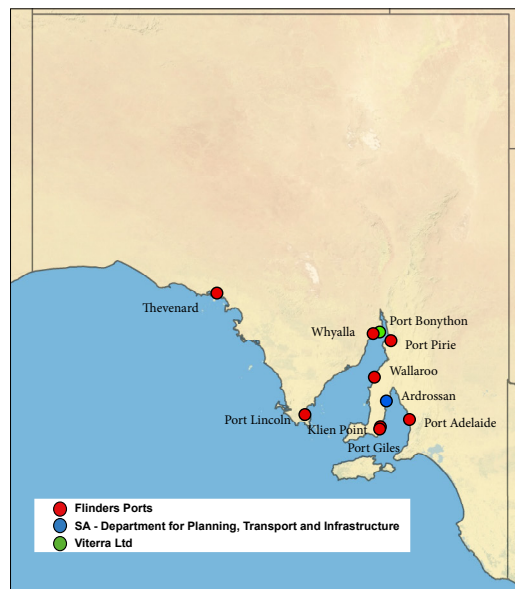
Port Latta, TAS (40° 46'S, 145° 18'E)	
UN/LOCODE: AU PLA	
Paper chart:	Aus 178
AusENC cells:	AU5PLA01, AU441145
Security Regulated Port:	Yes
Port Authority:	Tasmanian Ports Corporation
Website:	www.tasports.com.au
Email:	reception@tasports.com.au
Telephone:	1300 366 742 (AUST only)
Fax:	+61 3 6458 1442
Pilotage:	Compulsory >35m LOA
Pilot Boarding Ground:	40° 48.59'S, 145° 25.00'E
Communication:	"Port Latta Port Control"
Call up, emergencies:	VHF Channel 16
Pilot/ Port:	VHF Channel 14
Tug:	VHF Channel 06
Notice of ETA:	10 days

11.10 SOUTH AUSTRALIA

- South Australia (SA) has one major trading port, nine regional ports and a number of non-trading community ports. The trading ports have been privatised and are managed by private companies. The main ports of Port Adelaide, Port Lincoln, Port Pirie, Port Giles, Thevenard, Klein Point and Wallaroo are managed by Flinders Ports which has established operating guidelines for users of port facilities including; coordination of shipping services, pilotage, towage, mooring labour, water taxi services, fresh water supplies, power, waste disposal, handling of dangerous cargoes as wells as port charges.

11.10.1 MARITIME INFORMATION

- Maritime information including SA NtM is published by the Department for Planning, Transport and Infrastructure on the SA Government website.



Website:	www.sa.gov.au/topics/transport-travel-and-motoring/boating-and-marine
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11.10.2 PORTS

Ardrossan, SA (34° 26'S, 137° 55'E)	
UN/LOCODE: AU ARD	
Paper charts:	Aus 139, 781
AusENC cells:	AU5ARD01, AU435137
Security Regulated Port:	Yes
Port Authority and Pilot:	Viterria Ltd
Website:	www.viterria.com.au
Email:	viterria.aus@viterria.com
Telephone:	+61 8 8211 7199 / 1800 018 205
Pilotage:	Compulsory
Pilot Boarding Ground:	34° 27.40'S, 137° 56.80'E
Communication	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 06, 12,
Notice of ETA:	14 days
For more information:	www.viterria.com.au/index.php/ports-and-terminals/

Klein Point, SA (34° 58'S, 137° 46'E)	
UN/LOCODE: AU KLP	
Paper chart:	Aus 139, 781
AusENC cells:	AU5KLP01, AU435137
Security Regulated Port:	No
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Not Compulsory
Port Operations	
Telephone:	+61 8 8248 3505
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
For more information:	www.flindersports.com.au/ports-facilities/klein-point/

Port Adelaide, SA (34° 51'S, 138° 30'E)	
UN/LOCODE: AU ADL	
Paper charts:	Aus 130, 137, 138, 781
AusENC cells:	AU5ADL01, AU435138
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Port Operations	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	34° 49'S, 138° 20'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Port Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	24 hours
For more information:	www.flindersports.com.au/ports-facilities/port-adelaide/

Port Giles, SA (35° 01.5'S, 137° 46'E)	
UN/LOCODE: AU PGI	
Paper chart:	Aus 139, 781
AusENC cells:	AU5PGI01, AU436137
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Operations:	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	35° 01.40'S, 137° 49.1'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	24 hours
More information:	www.flindersports.com.au/ports-facilities/port-giles/

Port Bonython, SA (32° 59'S, 137° 45'E)	
UN/LOCODE: AU PBV	
Paper chart:	Aus 136, 135
AusENC cells:	AU5PBV01, AU433137, AU434137
Security Regulated Port:	Yes
Port Authority:	Department of Planning, Transport and Infrastructure
Website:	www.dpti.sa.gov.au
Email:	dpti.commercialmarineservices@sa.gov.au
Telephone:	+61 8 8343 2222
Pilotage:	Compulsory >35 m LOA
Port Operator:	Santos Pty Limited
Telephone:	+61 8 8649 0100
Fax:	+61 8 8649 0200
Pilots:	
Telephone:	+61 8 8632 1455
Fax:	+61 8 8632 5918
Pilot Boarding Grounds:	33° 10'S, 137° 39.2'E > 14m draught 33° 04.55'S, 137° 45.5'E < 14m draught 33° 03.8'S, 137° 38.8'E < 14m draught
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12
Pilots:	VHF Channel 16, 06, 08, 12
Notice of ETA:	48 hours

Port Lincoln, SA (34° 43'S, 135° 52'E)	
UN/LOCODE: AU PLO	
Paper charts:	Aus 134, 133
AusENC cells:	AU5PLO01, AU435135
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Operations:	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	34° 39.60'S, 135° 57.85'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	24 hours
More Information:	www.flindersports.com.au/ports-facilities/port-lincoln/

Port Pirie, SA (33° 10'S, 138° 01'E)	
UN/LOCODE: AU PPI	
Paper chart:	Aus 136
AusENC cells:	AU5PPI01, AU434138, AU434137
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Operations:	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	33° 04.55'S, 137° 45.50'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	24 hours
More information	www.flindersports.com.au/ports-facilities/port-pirie/

Thevenard, SA (32° 09'S, 133° 39'E)	
UN/LOCODE: AU THE	
Paper charts:	Aus 120
AusENC cells:	AU5THE01, AU433133
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Operations	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	32° 12.6'S, 133° 33.7'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	24 hours
More information:	www.flindersports.com.au/ports-facilities/thevenard/

Wallaroo, SA (33° 56'S, 137° 37'E)	
UN/LOCODE: AU WAL	
Paper chart:	Aus 133, 777
AusENC cells:	AU5WAL01, AU434137
Security Regulated Port:	Yes
Port Authority:	Flinders Ports
Website:	www.flindersports.com.au
Email:	flindersports@flindersports.com.au
Telephone:	+61 8 8447 0611
Pilotage:	Compulsory >35 m LOA
Operations:	
Telephone:	+61 8 8248 3505
Pilot Boarding Ground:	33° 54.5'S, 137° 31.6'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 16, 12, 13, 67
Tugs:	VHF Channel 06, 08
Notice of ETA:	72 hours
More information:	www.flindersports.com.au/ports-facilities/wallaroo/

Whyalla, SA (33° 01'S, 137° 35'E)	
UN/LOCODE: AU WYA	
Paper charts:	Aus 135, 136, 778
AusENC cells:	AU5WYA01, AU434137
Security Regulated Port:	Yes
Port Authority:	Department of Planning, Transport and Infrastructure
Website:	www.dpti.sa.gov.au
Email:	dpti.commercialmarineservices@sa.gov.au
Telephone:	+61 8 8343 2222
Operator:	OneSteel Manufacturing Pty Ltd (trading as SIMEC Mining)
Website:	www.simec.com/mining/
Telephone:	+61 8 8640 4444
Pilotage:	Compulsory >35 m LOA
Pilot	
Telephone:	+61 8 8447 0903
Pilot Boarding Ground:	33° 03.8'S, 137° 38.8'E
Communication:	"Adelaide VTS"
Call up, emergencies:	VHF Channel 16
Pilots:	VHF Channel 08
Notice of ETA:	48 hours

11.11 WESTERN AUSTRALIA

- Western Australia (WA) has five Port Authorities governing nine ports under the *Port Authorities Act 1991* (WA), and the Department of Transport (DoT) administers 10 ports under the *Shipping and Pilotage Act 1967* (WA). WA port authorities are governed under the *Port Authorities Act 1999* and operate as corporatised entities, each with a board of directors that reports to the WA Minister for Transport. WA has five port authorities responsible for nine ports.

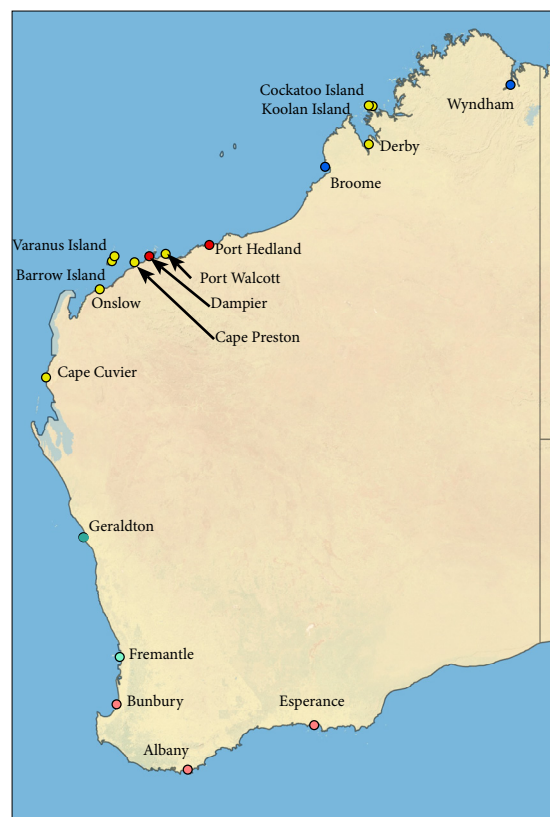
- The five Ports Authorities and the ports they govern are as follows:

Authority	Port
Kimberley Ports Authority:	Broome
Pilbara Ports Authority:	Port Hedland, Port of Dampier, Port of Ashburton
Mid-West Ports Authority:	Port of Geraldton
Fremantle Port Authority:	Port of Fremantle
Southern Ports Authority:	Port of Bunbury, Port of Albany, Port of Esperance

- The ten ports that the WA DoT administers are as follows:

- Barrow Island
- Derby
- Varanus Island
- Cape Preston
- Carnarvon (including the terminals at Cape Cuvier and Useless Loop)
- Onslow
- Port Walcott
- Yampi Sound (including the Terminals at Cockatoo Island and Koolan Island)
- Perth
- Wyndham Port

- The WA Government retains ownership of the Port Authorities and sets the overall strategic direction. Each port authority has a Board of Directors and operates as a commercial entity.



11.11.1 MARITIME INFORMATION

- The DoT publishes maritime information on their website. Each of the Port Authorities has their own websites detailed in the port details table.

Website:	www.transport.wa.gov.au/imagine/marine-information.asp
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11.11.2 PORTS

Albany, WA (35° 02'S, 117° 53'E) UN/LOCODE: AU ALH	
Paper charts:	Aus 118
AusENC cells:	AU5ALH01, AU436118
Security Regulated Port:	Yes
Port Authority:	Southern Ports
Website:	www.albanyport.com.au
Email:	enquiries.albany@southernports.com.au
Telephone:	+61 8 9892 9000
Fax:	+61 8 9841 7566
Email:	albanyshipping@southernports.com.au
Shipping Emergencies	
Duty Pilot:	+61 488 929 095
Pilotage:	Compulsory > 150 GRT
Pilot Boarding Ground:	35° 04.00'S, 118° 00'E
Communication:	"Albany Port " VHF Channel 12 (08:30 to 1700hrs weekdays) Outside office hours contact agent. If scheduled to berth, Pilot will make contact 1 hour prior to allocated Pilot On Board time.
Emergencies:	VHF Channel 16 (Albany Sea Rescue)
Notice of ETA:	A minimum of 48 hours prior to the vessel's requirement to berth. Berthing application form to be filled up followed by a 48hrs notice form.
For more information:	www.albanyport.com.au

Port of Ashburton, WA (21° 41'S, 115° 01'E)	
Paper charts:	Aus 64
AusENC cells:	AU5ASB01, AU422115
Security Regulated Port:	Yes
Port Authority:	Pilbara Ports Authority
Website:	www.pilbaraports.com.au
Email:	info@pilbaraports.com.au
Telephone:	+61 8 9159 6555
Port contact:	Port of Ashburton VTS
Telephone:	+61 8 9159 6556
Email:	Dampier.vts@pilbaraports.com.au
Pilotage:	Compulsory for vessels > 35m LOA
Pilot Boarding Grounds:	PBG (A) 21° 26.2'S, 115° 07.0'E PBG (B) 21° 35.85'S, 115° 00.50'E
Communication:	Ashburton VTS
Call up, emergencies:	VHF Channel 16
Port:	VHF Channel 14
Pilots / Tugs:	VHF Channel 14, 68, 13
Notice of ETA:	7 days Notice of Arrival (NOA) for vessels > 35m LOA. Form available on website.
NOA Form:	https://www.pilbaraports.com.au/Port-of-Ashburton/Port-Operations/Permits,-Procedures-and-Port-Handbook
For more information:	https://www.pilbaraports.com.au/Port-of-Ashburton/Port-Operations/Permits,-Procedures-and-Port-Handbook

Barrow Island Port, WA (20° 48'S, 115° 29'E) UN/LOCODE: AU BWB	
Paper charts:	Aus 65, 327, 742
AusENC cells:	AU5BWB01, AU5BWB02, AU421115
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagine/marine-information.asp
Email:	marine.safety@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Port Captain:	+61 8 9184 3667
Facility Operator:	Chevron Australia Pty Ltd
Website:	https://australia.chevron.com/our-businesses/barrow-island/barrow-island-port
Email:	barrowislandport@chevron.com
Telephone:	+61 8 9184 3667 +61 8 9184 3666 (24 hours / emergency)
Marine Communications	
Telephone:	+61 8 9184 3666
Email:	bwimco@chevron.com
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	20° 47.60'S, 115° 38.00'E
Communication:	"Port of Barrow"
Call up, emergencies:	VHF Channel 10, 16
Port operations:	VHF Channel 10
Tugs:	VHF Channel 08, 09
Notice of ETA:	96 hours

Broome, WA (18° 00'S, 122° 13'E) UN/LOCODE: AU BME	
Paper charts:	Aus 50, 324
AusENC cells:	AU5BME01, AU418122, AU419122
Security Regulated Port:	Yes MSIC & Port Access Card required
Port Authority:	Kimberley Port Authority
Website:	www.kimberleyports.wa.gov.au
Email:	info@kimberleyports.wa.gov.au
Telephone:	+61 8 9194 3100
Pilot / Operations	
Telephone:	+61 8 9194 3100 +61 417 173 679
Email:	operations@kimberleyports.wa.gov.au
Pilotage:	Compulsory ≥ 35m LOA
Pilot Boarding Grounds:	Northern 17° 51.4'S, 122° 10.0'E > 7.5m Draft Western 17° 58.04'S, 122° 05.04'E < 7.5m Draft Inner 17° 59.25'S, 122° 09.9'E
Communication:	"Port of Broome"
Call up, emergencies:	VHF Channel 16 & 14
Port / Pilots / Tugs:	VHF Channel 14 / 12 & 06
Notice of ETA:	7 days
For more information:	www.kimberleyports.wa.gov.au

Bunbury, WA (33° 19'S, 115° 38'E) UN/LOCODE: AU BUY	
Paper charts:	Aus 115, 755
AusENC cells:	AU5BUY01, AU434115
Security Regulated Port:	Yes
Port Authority:	Southern Ports Authority
Website:	www.southernports.com.au
Email:	enquiries.bunbury@southernports.com.au
Telephone:	+61 8 9729 6500
Pilot	
Email:	pilot@southernports.com.au
Pilotage:	Compulsory > 150 GRT
Pilot Boarding Ground:	33° 15.85'S, 115° 37.40'E
Communication:	"Port of Bunbury"
Call up, emergencies:	VHF Channel 16
On arrival/ Pilots/ tugs:	VHF Channel 12
Notice of ETA:	48 hours
For more information:	www.southernports.com.au

Terminal of Cape Cuvier (Port of Carnarvon), WA (24° 13'S, 113° 24'E) UN/LOCODE: AU CCU	
Paper charts:	Aus 73, 331
AusENC cells:	AU5CCU01, AU425113
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagine/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Port Facility Operator:	Rio Tinto - Dampier Salt Pty Ltd
Website:	www.riotinto.com/australia/dampier-salt-4644.aspx
Telephone:	+61 8 9942 6003
Pilot:	
Telephone	+61 8 9956 3277
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	24° 12.47'S, 113° 23.45'E
Communication	"Cape Cuvier"
Call up, emergencies:	VHF Channel 16
Pilots:	VHF Channel 06, 08, 12, 67
Notice of ETA:	10 days
For more information:	www.riotinto.com/australia/dampier-salt-4644.aspx

Terminal of Useless Loop (Port of Carnarvon), WA (26° 05'S, 113° 25'E) UN/LOCODE: AU CCU	
Paper charts:	Aus 74, 331
AusENC cells:	AU5SLP01, AU425113
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagine/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Port Facility operator:	Shark Bay Resources
Email:	perthshipping@salt.com.au
Telephone:	+61 8 9948 0200
Pilot:	West Coast Pilots P/L
Website:	www.westcoastpilots.com.au
Email:	manager@westcoastpilots.com.au
Telephone:	+61 8 9336 1179
Mobile:	+61 419 195 592
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	25° 51.0 'S, 113° 15.0'E
Communication	
Call up, emergencies:	VHF Channel 16
Notice of ETA:	7, 5, 3 days ,48 and 24 hours
For more information:	www.salt.com.au

Cape Preston, WA (20° 50'S, 116° 12'E) UN/LOCODE: AU CPN	
Paper charts:	Aus 327
AusENC cells:	AU5CPN01, AU421116
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagine/marine-information.asp
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 6551 6942
Deputy Harbour Master:	+61 8 9435 7533
24 Hour Email:	Port.ops@transport.wa.gov.au
Port Facility Operator:	Cape Preston Port Company
Email:	port.ops@capepreston.com
Telephone:	+61 8 9178 3850
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	Anchorage CP 6 20° 41.84'S, 116° 09.21'E
Communication	
Call up, emergencies:	VHF Channel 16
Operations:	VHF Channel 15

Dampier, WA (20° 37'S, 116° 43'E)	
UN/LOCODE: AU DAM	
Paper charts:	Aus 57, 59, 60
AusENC cells:	AU5DAM01, AU5DAM02, AU5DAM03, AU421116
Security Regulated Port:	Yes
Port Authority	Pilbara Ports Authority
Website:	www.pilbaraports.com.au
Email:	dampier.vts@pilbaraports.com.au
Telephone:	+61 8 91596556
Pilots:	Dampier VTS
Telephone:	+61 8 9159 6556
Email:	dampier.vts@pilbaraports.com.au
Pilotage:	Compulsory > 35m LOA (For more information refer to Dampier Port Handbook)
Pilot Boarding Ground:	Will depend on type of vessel, pilot boarding method and pilotage company
Pilot Station A:	20° 21.0'S, 116° 44.0'E
Pilot Station B:	20° 23.7'S, 116° 42.0'E
Pilot Station C:	20° 23.7'S, 116° 43.7'E
Pilot Station D:	20° 28.6'S, 116° 44.3'E
Pilot Station E:	20° 38.5'S, 116° 39.0'E
Communication:	Dampier VTS
Call up, emergencies:	VHF Channel 16
Port:	VHF Channel 11
Pilots:	VHF Channel 11
Tugs:	VHF Channel 11
Ship to ship:	VHF Channel 11
Notice of ETA:	7 days, 72 hours and 4 hours from Port Limits
NOA Form:	NOA for vessels > 35m LOA. Form available on website. https://www.pilbaraports.com.au/Port-of-Dampier/Port-Operations/Permits,-procedures-and-handbook
For more information:	www.pilbaraports.com.au/Port-of-Dampier/Port-Operations

Derby, WA (17° 17'S, 123° 37'E)	
UN/LOCODE: AU DRB	
Paper chart:	Aus 45
AusENC cells:	AU418123, AU220120
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagine/marine-information.asp
Port Operator:	Shire of Derby
Website:	www.sdwk.wa.gov.au
Email:	emtds@sdwk.wa.gov.au
Telephone:	+61 8 9191 0999
Communication	
Call up, emergencies:	VHF Channel 16

Esperance, WA (33° 52'S, 121° 53'E)	
UN/LOCODE: AU EPR	
Paper chart:	Aus 119
AusENC cells:	AU5EPR01, AU434121, AU434122
Security Regulated Port:	Yes
Port Authority:	Southern Ports Authority
Website:	www.epsl.com.au
Email:	enquiries.esperance@southernports.com.au
Telephone:	+61 8 9072 3344
Fax:	+61 8 9071 1312
Pilot:	
Telephone:	+61 8 9072 3344
Fax:	+61 8 9071 1312
Email:	pilots@southernports.com.au
Pilotage:	Compulsory > 150 GRT
Pilot Boarding Ground:	33° 54.22'S, 121° 55.52'E
Communication:	"Esperance Harbour"
Call up, emergencies :	VHF Channel 16
Port:	VHF Channel 16, 12
Pilots:	VHF Channel 16, 12
Notice of ETA:	7 days
For more information:	www.epsl.com.au/Marine-Information.asp

Fremantle WA (32° 03'S, 115° 44'E)	
UN/LOCODE: AU FRE	
Paper charts:	Aus 112, 113, 117, 754
AusENC cells:	AU5FRE01, AU5CBS01, AU432115, AU433115
Security Regulated Port:	Yes
Port Authority:	Fremantle Ports
Website:	www.fremantleports.com.au
Email:	mail@fremantleports.com.au
Telephone	+61 8 9430 3555
Vessel Traffic Service	
Telephone:	+61 8 9430 3303
Email:	movements@fremantleports.com.au
Pilot	
Telephone:	+61 8 9433 6340
Fax:	+61 8 9335 7449
Email:	dutypilots@fremantlepilots.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	Outer Pilot Boarding Point 31° 55.50'S, 115° 36.00'E > 11m Draught Inner Pilot Boarding Point 32° 01.40'S, 115° 41.30'E < 11m Draught
Communication:	"Port of Fremantle"
Call up, emergencies:	VHF Channel 16
VTS / Port / Pilots:	VHF Channel 12
Tugs:	VHF Channel 06, (Alternate VHF Channel 08)
Outer Harbour Tug:	VHF Channel 13 (Alternate VHF Channel 68)
Notice of ETA:	Bookings 7 days Compulsory update 48 hours prior to ETA
For more information:	https://www.fremantleports.com.au/shipping

Geraldton, WA (28° 46'S, 114° 35'E)	
UN/LOCODE: AU GET	
Paper charts:	Aus 81, 332, 751
AusENC cells:	AU5GET01, AU429114
Security Regulated Port:	Yes
Port Authority:	Mid West Ports
Website:	www.midwestports.com.au/
Email:	harbourmaster@midwestports.com.au
Telephone:	+61 8 9964 0520
Fax:	+61 8 9964 0555
Pilot	
Telephone:	+61 8 9964 0505
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Grounds:	(A) 28° 46.50'S, 114° 30.50'E (B) 28° 41.80'S, 114° 30.50'E
Communication:	"Geraldton Harbour"
Call up, emergencies:	VHF Channel 16, 11
Port / Pilots:	VHF Channel 06, 08
Notice of ETA:	48hrs, 24hrs & 6hrs in advance
For more information:	www.midwestports.com.au/operations/shipping-information.aspx

Terminal of Koolan Island, (Port of Yampi Sound) WA (16° 07'S, 123° 44'E)	
UN/LOCODE: AU KOI	
Paper charts:	Aus 40, 41
AusENC cells:	AU5KOI01, AU417123
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagery/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Port Facility Operator:	Mount Gibson Iron Ltd
Website:	www.mtgibsoniron.com.au
Email:	ki.portcontrol@mtgibsoniron.com.au
Telephone:	+61 8 9423 0857
Mobile:	+61 434 738 012
Pilot:	West Coast Pilots P/L
Website:	www.westcoastpilots.com.au
email:	manager@westcoastpilots.com.au
Telephone:	+61 8 9336 1179
Mobile:	+61 419 195 592
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	16° 07.50'S, 123° 40.00'E
Anchorage KI 1:	16° 08.00'S, 123° 40.30'E
Anchorage KI 2:	16° 08.25'S, 123° 39.40'E
Communication	
Call up, emergencies:	VHF Channel 16
Terminal:	VHF Channel 06, 12

Onslow, WA (21° 38'S, 115° 06'E)	
UN/LOCODE: AU ONS	
Paper chart:	Aus 64, 69, 743
AusENC cells:	AU5ONS01, AU422115, AU422114
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagery/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Facility Operator:	Onslow Salt
Telephone:	+61 8 9184 9000
Email:	perthshipping@salt.com.au
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	21° 28.50'S, 115° 04.99'E
Communication	
Call up, emergencies:	VHF Channel 16
Notice of ETA:	7, 5, 3 days, 48 and 24 hours

Port Hedland, WA (20° 19'S, 118° 34'E)	
UN/LOCODE: AU PHE	
Paper charts:	Aus 53, 54
AusENC cells:	AU5PHE01, AU420118, AU421118
Security Regulated Port:	Yes
Port Authority:	Pilbara Ports Authority
Website:	www.pilbaraports.com.au
Email:	info@pilbaraports.com.au
Telephone:	+61 8 9173 9000
Fax:	+61 8 9173 9060
Pilot:	Port Hedland Pilots
Telephone:	+61 8 9173 9040
Pilotage:	Compulsory > 35m LOA or ≥ 150 GRT
Pilot Boarding Ground:	20° 09.92'S, 118° 33.08'E
Communication:	"Port Hedland VTS"
Call up, emergencies:	VHF Channel 16
Port / Pilots:	VHF Channel 16, 12, 08
Notice of ETA:	8 days
For more information:	www.pilbaraports.com.au/Port-of-Port-Hedland/Port-operations/Permits-and-procedures-PortHandbook

Port Walcott, WA (20° 35'S, 117° 11'E)	
UN/LOCODE: AU PWL	
Paper charts:	Aus 55, 56
AusENC cells:	AU5PWL01, AU421117
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagery/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Facility Operator:	Rio Tinto
Telephone:	+61 8 9186 1487
Fax:	+61 8 9143 5804
Email:	marine.operations@riotinto.com
Pilot:	MSWA Pilots
Telephone:	+61 8 9187 1329
Email:	pw@mswapilots.com.au
Pilotage:	Compulsory > 35 metres LOA
Pilot Boarding Ground:	Anchorage position No. 3 20° 32.4'S 117° 15.00' E
Communication	
Call up, emergencies:	VHF Channel 16
Port:	VHF Channel 14
Helicopter:	VHF Channel 09
Tugs:	VHF Channel 09, 10
Notice of ETA:	7 days

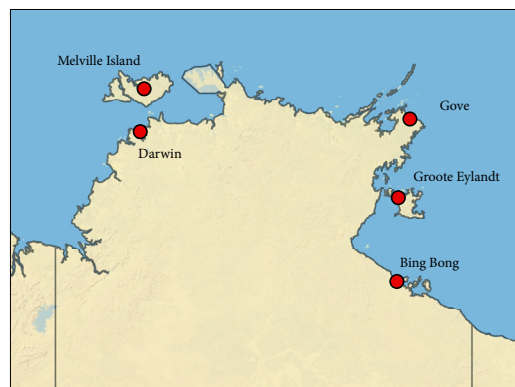
Varanus Island, WA (20° 39'S, 115° 34'E)	
UN/LOCODE: AU VAR	
Paper chart:	Aus 742, Aus 65
AusENC cells:	AU421115, AU230110
Security Regulated Port:	Yes
Port Authority:	Pilbara Ports Authority
Website:	www.pilbaraports.com.au
Email:	dampier.vts@pilbaraports.com.au
Harbour Master's office:	+61 8 9159 6508
Deputy Harbour Master:	+61 8 9159 6565
Deputy Harbour Master:	+61 8 9159 6546
Facility Operator:	Santos WA Energy Limited Pty Ltd
Website:	www.santos.com
Email:	varanus.fieldsup@santos.com
Telephone:	+61 8 6218 7600
Fax:	+61 8 6218 7618
Pilotage:	Compulsory 35m LOA
Pilot Boarding Ground:	20° 40.00'S, 115° 40.00'E
Communication	"Varanus Island Port Control"
Varanus Island Port Control (VHF)	VHF Channel 16/79
Telephone:	+61 8 91596556
Operator / Pilots:	VHF Channel 74
Notice of ETA:	96 hours

Wyndham, WA (15° 28'S, 128° 06'E)	
UN/LOCODE: AU WYN	
Paper chart:	Aus 32
AusENC cells:	AU5WYN01, AU416128
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagery/marine-information.asp
Port Operator:	Cambridge Gulf Limited
Website:	www.cgld.com.au
Harbour Master email:	brian@cgld.com.au
Port Manager email:	Steve@cgld.com.au
Telephone:	+61 8 9161 1203
Harbour Master Mobile:	+61 428 941 775
Fax:	+61 8 9161 1244
Pilotage:	Compulsory > 35 metres LOA
Pilot Boarding Grounds:	14° 58.15'S, 128° 10.37'E 15° 07.00'S, 128° 06.00'E (small vessels)
Communication	
Call up, emergencies:	VHF Channel 16
Port / Pilots:	VHF Channel 12
Notice of ETA:	7 days
For more information:	www.cgld.com.au/cgl-wyndham-port/forms-links

Terminal of Cockatoo Is (Port of Yampi Sound), WA (16° 06'S, 123° 37'E)	
UN/LOCODE: AU CTI	
Paper chart:	Aus 40, 41
AusENC cells:	AU5CTI01, AU417123
Security Regulated Port:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imagery/marine-information.asp
Email:	port.ops@transport.wa.gov.au
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Pilot:	West Coast Pilots P/L
Website:	www.westcoastpilots.com.au
email:	manager@westcoastpilots.com.au
Telephone:	+61 8 9336 1179
Mobile:	+61 419 195 592
Pilotage:	Compulsory 35m LOA
Pilot Boarding Ground:	16° 07.00'S, 123° 35.30'E
Communication:	"Cockatoo Island"
Call up, emergencies:	VHF Channel 16
Working:	VHF Channel 13
Notice of ETA:	7, 5, 3, 2, 1 days (broome@ISS-shipping.com)

11.12 NORTHERN TERRITORY

- The Northern Territory (NT) has one main trading port, and three regional trading ports. Darwin Port Operations Pty Ltd is the Port Operator, having leased the port from the NT Government in 2015. The regional harbourmaster is the pilotage authority and Darwin Port provides the pilotage service. The pilotage ports of Gove and Milner Bay (Groote Eylandt) are managed by publicly owned companies. Port operations at Bing Bong are managed by a private company.



11.12.1 MARITIME INFORMATION

- The Marine Safety Branch of the NT Department of Infrastructure, Planning & Logistics publishes maritime information on its website, including local and coastal notices to mariners. Darwin Port Operations publishes port notices describing port control measures.

Websites:	https://nt.gov.au/marine www.darwinport.com.au www.goveoperations.com www.south32.net/what-we-do/places-we-work/gemco
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11.12.2 PORTS

Bing Bong, NT (15° 38'S, 136° 23'E)	
UN/LOCODE: AU BBG	
Paper charts:	Aus 13, 305, 710
AusENC cells:	AU5BBG01, AU416136
Security Regulated Port:	Yes
Port Authority:	MacArthur River Mines
Website:	www.mcarthurrivermine.com.au
Email:	mrmprojenq@glencore.com.au
Telephone:	1800 211 573
Operator / Pilots:	Carpentaria Shipping Services
Telephone:	+61 8 8975 9850
Fax:	+61 8 8975 9824
Email:	cssbingbong@bigpond.com
Pilotage:	Not compulsory but recommended
Communication:	"Bing Bong Harbour Control"
Call up, emergencies:	VHF Channel 16
Harbour Control:	VHF Channel 10, 12 (Note: Ch 10 used for communications between stations onboard Aburri and Ch 12 used between Aburri and OGV's)

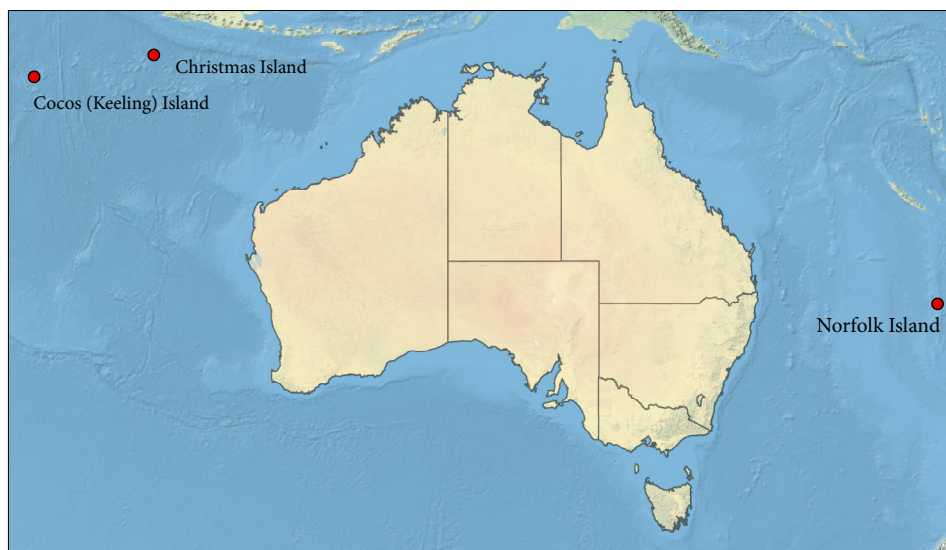
Darwin, NT (12° 28'S, 130° 50'E)	
UN/LOCODE: AU DRW	
Paper charts:	Aus 24, 25, 26, 27, 28
AusENC cells:	AU5DRW01, AU413130
Security Regulated Port:	Yes
Port Operator:	Darwin Port Operations
Website:	www.darwinport.com.au
Email:	darwinport@darwinport.com.au
Telephone:	+61 1300 327 946
Port/Pilotage Authority:	Regional Harbourmaster
Website:	www.transport.nt.gov.au
Email:	RHM@nt.gov.au
Telephone:	+61 8 8999 3867
Control Tower/ Shipping	
Control Tower telephone:	+61 8 8919 0821
Shipping Scheduler telephone (Monday to Friday 0700 to 1500):	+61 8 8919 0870
Email:	shipping@darwinport.com.au
Pilotage:	Compulsory >200m LOA or 10.7m draft north of 12°25'S Compulsory >35m LOA south of 12°25'S
Pilot Boarding Grounds:	12° 24.50'S, 130° 46.00'E (Inner) 12° 19.05'S, 130° 41.75'E (Outer)
Communication:	"Darwin Harbour"
Call up, emergencies:	VHF Channel 16
Harbour control:	VHF Channel 10
Tugs:	VHF Channel 12, 13
Ship to ship:	VHF Channel 72
Notice of ETA:	48 hours and 2 hours on VHF Channel 10 (Reporting Point Alpha)
More information:	www.darwinport.com.au

Gove, NT (12° 12'S, 136° 40'E)	
UN/LOCODE: AU GOV	
Paper chart:	Aus 15
AusENC cells:	AU5GOH01, AU413136
Security Regulated Port:	Yes
Port Authority:	Rio Tinto Alcan Gove Pty Ltd
Website:	www.riotintoalcan.com
Email:	goveshippingdg@riotinto.com
Telephone:	+61 8 8987 5633
Port / Pilots	
Telephone:	+61 8 8987 5409
Fax:	+61 8 8987 5410
Email:	goveshippingdg@riotinto.com
Pilotage:	Compulsory for all: Rio Tinto berths Non Rio Tinto berths > 50m LOA
Pilot Boarding Ground:	12° 10.21'S, 136° 38.65'E
Communication:	"Gove Harbour"
Call up, emergencies:	VHF Channel 16
Port / Pilots:	VHF Channel 06, 12
Notice of ETA:	7 days

Groote Eylandt, NT (13° 52'S, 136° 25'E)	
UN/LOCODE: AU GTE	
Paper charts:	Aus 14, 305
AusENC cells:	AU5GTE01, AU414136
Security Regulated Port:	Yes
Port Authority:	Groote Eylandt Mining Company Pty Ltd
Website:	www.bhpbilliton.com
Email:	gemco.reliefpilotsr@south32.net
Telephone:	+61 8 8987 4284
Fax:	+61 8 8987 4289
Pilotage:	Compulsory for Ore Berth
Pilot Boarding Ground:	13° 51.66'S, 136° 23.50'E
Communication:	"Milner Bay"
Call up, emergencies:	VHF Channel 16
Port:	VHF Channel 06, 16
Pilots:	VHF Channel 06
Tugs:	VHF Channel 06
Notice of ETA:	7, 5, 3, 2, 1 days

Melville Island, NT (11° 33'S, 130° 56'E)	
UN/LOCODE: AU MLI	
Paper chart:	Aus 22
AusENC cells:	AU5MLI01, AU412130
Security Regulated Port:	Yes
Port Authority:	Port Melville Port Corp
Website:	(Under development)
Email:	admin@ntportandmarine.com
Telephone:	+61 8 8984 3081
Port / Pilots:	Port Melville/Argonaut Marine Services
Telephone:	+61 8 8984 3081
Fax:	+61 8 9320 7011
Email:	admin@ntportandmarine.com
Pilotage:	Compulsory vessels > 50m LOA
Pilot Boarding Ground:	11°17'32.00"S 130°03'58.00"E
Communication:	"Port Melville Port Corp"
Call up, emergencies:	VHF Channel 16
Port / Pilots:	VHF Channel 16
Notice of ETA:	7 days

11.13 EXTERNAL TERRITORIES



11.13.1 PORTS

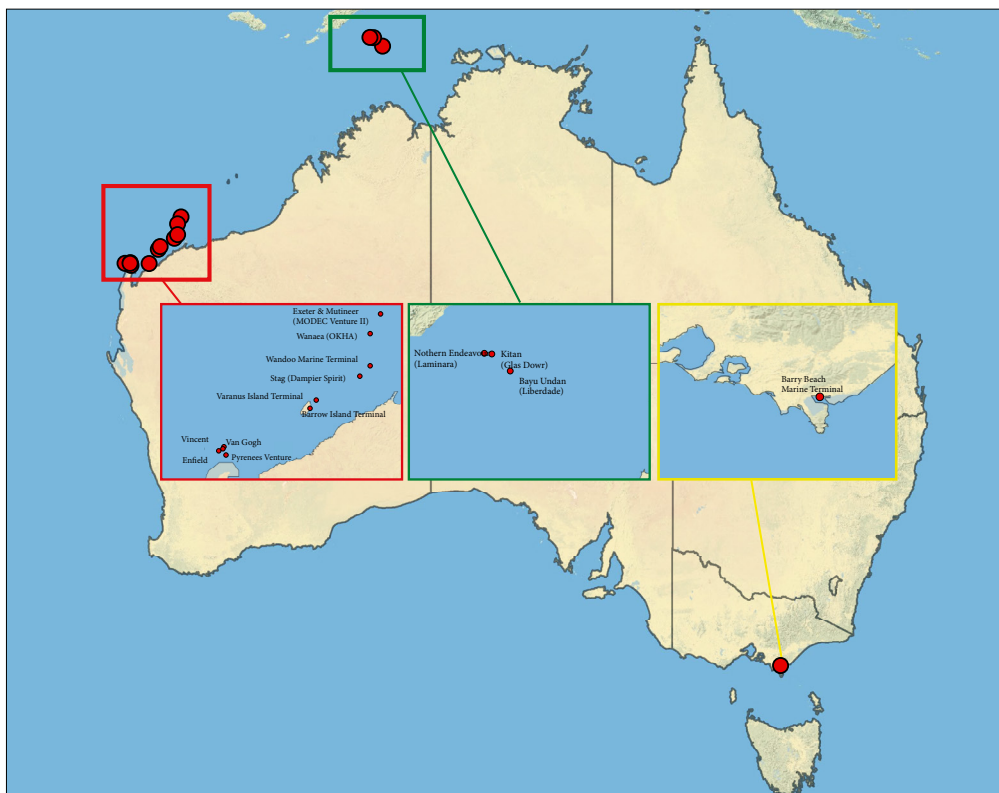
Christmas Island, External Territory (10° 25'S, 105° 40'E)	
UN/LOCODE: CX XCH	
Paper charts:	Aus 608, 400, 920
AusENC cells:	AU5GTE01, AU5NOR01, AU411105
Security Regulated Port:	Yes
Port Authority:	Linx Port Services - Christmas Island Port
Telephone:	+61 8 9164 8434
Fax:	+61 8 9164 8435
Mobile:	+61 439 215 225
Email:	westernci@pulaui.cx
Pilotage:	Compulsory > 150 GRT
Pilot Boarding Ground	10° 25.67'S, 105° 38.72'E
Pilot:	Indian Ocean Stevedores
Telephone:	+61 8 9164 7770
Fax:	+61 8 9164 7772
Email:	iosoperations@cirp.com
Captain Mike Fawke (Principal Marine Pilot)	
Mobile:	+61 409 616 732
Email:	iospilot@cirp.com
Captain Craig Seeley (Marine Pilot)	
Mobile:	+61 488 297 618
Email:	iospilot@cirp.com
Communication	
Marine Pilots:	"Christmas Island Pilot"
Harbourmaster/Port Manager:	"Christmas Island Port Control"
Call up, emergencies:	VHF Channel 16
Marine Pilots:	VHF Channel 10
Harbourmaster/Port Manager:	VHF Channel 12
Notice of ETA:	48 hours
For more information:	www.christmas.net.au

Cocos (Keeling) Islands, External Territory (12° 08'S, 96° 49'E)	
UN/LOCODE: CC CCK	
Paper chart:	Aus 607
AusENC cells:	AU5607P1, AU5607P2, AU4606P0
Security Regulated Port:	Yes
Port Authority:	Linx Port Services - Cocos (Keeling) Islands Port
Telephone:	+61 8 9162 6501
Fax:	+61 8 9162 6503
Mobile:	+61 406 329 055
Email:	ckiport@kampong.cc
Pilotage:	Compulsory for all vessels > 150 GRT through the channel, otherwise not required.
Pilot:	West Coast Pilots - not on Cocos (Keeling) Islands. Pilot is FIFO to meet requirements.
Telephone:	+61 8 9336 1179
Fax:	+61 8 9335 7449
Email:	manager@westcoastpilots.com.au
Captain Carol Dooley mobile:	+61 419 660 873
Email:	caroldooleywebmail@gmail.com
Captain Elspeth Diack mobile:	+61 431 747 867
Email:	allan.elspeth@bigpond.com
Communication:	"CKI Pilot"
Call up, emergencies:	VHF Channel 20 (Channel 16 not monitored)



Norfolk Island, External Territory (29° 03'S, 167° 57'E)	
UN/LOCODE: NF NLK	
Paper chart:	Aus 609
AusENC cell:	AU5609P0, AU430167
Security Regulated Port:	Yes
Shipping Agent:	Transam Argosy
Website:	www.argosy.nf
Email:	shipping@transam.nf
Telephone:	+67 23 22836
Australian Border Force Norfolk Island	
Telephone:	+67 23 22900
Mobile (on call)	+67 23 51881
Email:	norfolkislandabf@abf.gov.au
Website:	www.homeaffairs.gov.au
Pilotage:	Not available
Communication:	VHF Channel 16 with mountain top repeater operating Channel 28 for extended range monitored by ABF Customs office hours 2115 to 0530 zulu weekdays and other individuals H24. HF frequencies now limited to emergencies only and not monitored.
For more information:	www.norfolkisland.gov.nf/ https://regional.gov.au/territories/norfolk_island/index.aspx

11.14 OIL AND GAS TERMINALS



Barrow Island Terminal, WA (20° 47'S, 115° 28'E) UN/LOCODE: AU BWB	
Paper charts:	Aus 65, 327, 742
AusENC cells:	AU5BWB01, AU5BWB02, AU421115
Security Regulated Offshore Facility:	Yes
Port Authority:	WA DoT
Website:	www.transport.wa.gov.au/imate/marine-information.asp
Email:	bwipor@chevron.com
Harbour Master's office:	+61 8 9435 7692
Fax:	+61 8 9435 7807
Deputy Harbour Master:	+61 8 9435 7533
Port Captain:	+61 8 9184 3667
Operator:	Chevron Australia Pty Ltd
Website:	https://australia.chevron.com/our-businesses/barrow-island/barrow-island-port
Email:	barrowislandport@chevron.com
Telephone:	+61 8 9184 3667 +61 8 9184 3666 (24 hours / emergency)
Marine Communications	
Telephone:	+61 8 9184 3666
Email:	bwimco@chevron.com
Pilotage:	Compulsory > 35m LOA
Pilot Boarding Ground:	20° 47.60'S, 115° 38.00'E
Communication:	"Barrow Island Terminal"
Call up, emergencies:	VHF Channel 10, 16
Port operations:	VHF Channel 10
Tugs:	VHF Channel 08, 09
Notice of ETA:	96 hours

Barry Beach Marine Terminal, VIC (38° 42' 42S, 146° 23 3'E) UN/LOCODE: AU BAR	
Paper charts:	Aus 181, 182
AusENC cells:	AU5BAR01, AU439146
Security Regulated Facility:	Yes
Operator:	Esso Australia Pty Ltd
Website:	www.exxonmobil.com.au/en-au/energy/oil/oil-operations/barry-beach-marine-terminal
Email:	bee.appleyard@exxonmobil.com
Telephone:	+61 3 5688 0222
Superintendent	
Telephone:	+61 3 5688 0225
Fax:	+61 3 5688 1555
Local Knowledge Advisory Service:	Gippsland Ports
Telephone:	+61 3 56 881303
Fax:	+61 3 56 881658
Communication:	VHF Channel 16 VHF Channel 71
More information:	www.exxonmobil.com.au/en-au/energy/oil/oil-operations/barry-beach-marine-terminal

Bayu Undan (Liberdade) Timor Sea (11° 02' 58S, 126 °37 6'E)	
Paper chart:	Aus 312
AusENC cells:	AU311126, AU312126, AU220120
Security Regulated Offshore Facility:	Yes
Operator:	Santos Limited
Website:	www.santos.com.au
Telephone:	+61 8 6363 2115
FPSO:	Liberdade
Call:	VKD935
Telephone:	+61 8 6363 1001
Email:	bufsooim@santos.com
Pilot Boarding Ground:	Pilot will embark 2 miles NW of the FPSO
Pilotage:	Compulsory
Communication	
Call up, emergencies:	VHF Channel 16
Pilots / Operator:	VHF Channel 15
Notice of ETA:	72 hours with confirmation at 48, 24 and 12 hours before arrival

Enfield (Nganhurra) WA (21° 28' 51S, 114° 00' 25E) UN/LOCODE: AU NGH	
Paper charts:	Aus 328, 744
AusENC cells:	AU422114, AU322113
Security Regulated Offshore Facility:	Yes
Operator:	Woodside
Website:	www.woodside.com.au
Email:	NGIOM@woodside.com.au
Telephone:	+61 8 9348 1600
Fax:	+61 8 9348 1604
Pilots:	
Telephone:	+61 8 9158 7076
Email:	pilotloadingmaster@woodside.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	21° 37.8'S, 114° 15.0'E
Communication:	"Nganhurra Control"
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 08
Notice of ETA:	72 hours
More information:	Nganhurra Terminal Handbook and Terminal Conditions (contact Woodside)

Exeter and Mutineer WA (19° 16' 33S, 116° 36' 46E) UN/LOCODE: AU MOD	
Paper chart:	Aus 741
AusENC cells:	AU320116, AU220110
Security Regulated Offshore Facility:	Yes
Operator:	Santos
Website:	www.santos.com
Telephone:	+61 8 918 7100
Pilots:	West Coast Pilots
Telephone:	+61 8 9336 1179
Email:	manager@westcoastpilots.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	2.5nm radius centred around the FPSO
Communication	
Call up, emergencies:	VHF Channel 16 & 72 (listening)
Operator / Pilots:	VHF Channel 72 (working)
Notice of ETA:	5 days then 72, 48, 12 hours before arrival

Northern Endeavour (Laminara) Timor Sea (10° 36' 55S, 125° 59' 8E) UN/LOCODE: AU NTE	
Paper chart:	Aus 312
AusENC cells:	AU311125, AU311126
Security Regulated Offshore Facility:	Yes
Operator:	Upstream Production Solutions
Website:	www.upstreamps.com
Email:	ne.oim@upstreamps.com
Telephone:	+61 8 6109 4101
Pilots:	West Coast Pilots
Telephone:	+61 8 9336 1179
Email:	manager@westcoastpilots.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	10° 34.00'S, 125° 59.00'E
Communication:	"Northern Endeavour" (VNCO)
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 12
Notice of ETA:	72 hours
More Information	Northern Endeavour Terminal Handbook

Pyrenees Venture WA (21° 32' 30S, 114° 07' 00E) UN/LOCODE: AU PYE	
Paper charts:	Aus 328, 744
AusENC cells:	AU422114, AU322113, AU230110
Security Regulated Offshore Facility:	Yes
Operator:	BHP Billiton
Website:	www.bhpbilliton.com
Email:	PETPYROIM2@bhpbilliton.com
Telephone:	+61 8 9485 6600
Pilotage:	Compulsory
Pilot Boarding Ground:	21°37.8'S, 114°15.00'E
Communication	
Call up, emergencies:	VHF Channel 16, 72
Operator / Pilots:	VHF Channel 72 (primary working channel)
Notice of ETA:	96, 72, 48, 24 and 12 Hours before intended arrival
More Information:	Pyrenees Terminal Handbook (contact BHP Billiton)

Stag (Dampier Spirit) WA (20° 16' 18S, 116° 16' 34E) UN/LOCODE: AU STG	
Paper chart:	Aus 742
AusENC cells:	AU421116, AU230110
Security Regulated Offshore Facility:	Yes
Operator:	Jadestone Energy Pty Ltd
Website:	www.jadestone-energy.com.au
Telephone:	+ 61 8 9486 6600
Control:	Jadestone Energy
Telephone:	+ 61 8 9486 6611
Email:	Stag-OIM@jadestone-energy.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	20° 15.00'S, 116° 15.00'E
Communication	
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 10
Notice of ETA:	24, 48, 72, 96 hours

Van Gogh (Ningaloo Vision) WA (21° 24' 12S, 114° 5' 18E) UN/LOCODE: AU VGH	
Paper charts:	Aus 328, 744
AusENC cells:	AU422114, AU322113, AU230110
Security Regulated Offshore Facility:	Yes
Operator:	Santos
Website:	www.santos.com
Telephone:	+61 8 6218 7138
Email:	offshore.vangogh.coordinator@santos.com
Pilots:	Supplied by Santos (above)
FPSO Marine & Safety Supervisor email:	Offshore.ningaloovision.marinesup@santos.com
Pilotage:	Compulsory
Pilot Boarding Ground:	21° 38'S 114°15'E unless otherwise advised if operational conditions require
Communication	
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 67
Notice of ETA:	Refer 72, 48, 24 and 12 hours prior to arrival. Email Van Gogh Coordinator
More information:	Terminal Handbook

Varanus Island, WA (20° 39' 01S, 115° 34' 55E) UN/LOCODE: AU VAR	
Paper chart:	Aus 62
AusENC cells:	AU421115, AU230110
Security Regulated Port:	Yes
Operator:	Santos
Website:	www.santos.com
Email:	Offshore.varanus.fieldsup@santos.com
Telephone:	+61 8 6218 7600
Fax:	+61 8 6218 7618
Pilotage:	Compulsory
Pilot Boarding Ground:	20° 40.00'S, 115° 40.00'E
Communication	
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 74
Notice of ETA:	96 hours

Vincent (Ngujima-Yin) WA (21° 26' 2S, 114° 04' 2E)	
Paper charts:	Aus 328, 744
AusENC cells:	AU422114, AU322113, AU230110
Security Regulated Offshore Facility:	Yes
Operator:	Woodside
Website:	www.woodside.com.au
Email:	NYOIM@woodside.com.au
Telephone:	+61 8 9348 3380
Pilots	
Telephone:	+61 8 9158 7076
Email:	pilotloadingmaster@woodside.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	21° 37.78'S, 114° 15.00'E
Communication:	"Ngujima-Yin"
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 68
Notice of ETA:	72 hours

Wanaea (Okha) WA (19° 35' 21S, 116° 26' 49E) UN/LOCODE: AU OKH	
Paper charts:	Aus 741, 327
AusENC cells:	AU320116, AU220110
Security Regulated Offshore Facility:	Yes
Operator:	Woodside
Website:	www.woodside.com.au
Email:	OKHAOIM@woodside.com.au
Telephone:	+61 8 9348 3270
Fax:	+61 8 9348 3283
Pilots	
Telephone:	+61 8 9158 7076
email:	pilotloadingmaster@woodside.com.au
Pilotage:	Compulsory
Pilot Boarding Ground:	20° 23'.6 S 116° 43'.7E
Communication:	"Okha" (VHME)
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 17, 82
Notice of ETA:	72 hours

Wandoo Marine Terminal, WA (20° 06' 55S, 116° 26' 06E) UN/LOCODE: AU WNT	
Paper charts:	Aus 741, 327
AusENC cells:	AU421116, AU320116
Security Regulated Offshore Facility:	Yes
Operator:	Vermilion Oil and Gas Australia Pty Ltd
Website:	www.vermilionenergy.com
Email:	bsutherland@vermilionenergy.com caroldooley@bigpond.com
Telephone:	+61 8 9215 0300
Fax:	+61 8 9215 0333
Pilotage:	Compulsory
Pilot Boarding Ground:	20° 05.00'S, 116° 23.80'E
Communication	
Call up, emergencies:	VHF Channel 16
Operator / Pilots:	VHF Channel 71, 79
Notice of ETA:	72 hours

Notes:

Notes:

CHAPTER 12 CHARTS AND PUBLICATIONS

12.1 CHARTS AND PUBLICATIONS CARRIAGE REQUIREMENTS

12.1.1 SOLAS VESSELS

1. The International Convention for the Safety of Life at Sea (SOLAS) 1974 - Chapter V requires that vessels (other than fishing vessels) greater than 500 gross tonnes (GT) engaged on any voyage, or vessels greater than 150 GT when engaged on international voyages, carry up-to-date official charts, Sailing Directions, List of Lights, Notices to Mariners (NtM), Tide Tables and all other nautical publications necessary for the intended voyage. The International Maritime Organization (IMO) also requires that the master or officer in charge of navigation use the largest scale charts for the intended route, corrected with the latest available information.
2. **Note:** The IMO has declared carriage of Electronic Chart Display Information Systems (ECDIS) to be compulsory for a wide range of vessels.

Australian Maritime Safety Authority Marine Orders and Notices

3. The *Navigation Act 2012 (Cth)* gives effect to these requirements, as well as to all other international maritime conventions to which Australia is a signatory. The Australian Maritime Safety Authority (AMSA) has authority and responsibility for operational activities of the *Navigation Act 2012 (Cth)*. This includes issuing appropriate Marine Orders and Marine Notices. Those particularly focused on charts and navigation include:
 - Marine Order 27 (*Safety of Navigation and Radio Equipment*)
 - Marine Notice 07/2017 (*Guidance on ECDIS for ships calling at Australian Ports*)
 - Marine Notice (*Responsible Navigational Practices*) provides a detailed description of the charts and publications required to be carried within Australian waters

12.1.2 OTHER COMMERCIAL VESSELS OPERATING IN AUSTRALIA WATERS

1. Non-SOLAS class commercial vessels are required to comply with the *Marine Safety (Domestic Commercial Vessels) National Law Act 2012 (Cth)* and the *National Standard for Commercial Vessels (NSCV)*. The following tables and notes summarise the carriage requirement for nautical charts and publications. For more information refer to Parts B and C of the NSCV which can be found at the following website.

Website:	www.amsa.gov.au/about/regulations-and-standards/national-standard-commercial-vessels-nscv
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Carriage Requirements - NSCV Part C, Section 7C						
Operational Area and vessel length (Note 1)	All areas vessels 35 metres and over	Area A vessels 24 metres and over	Area A vessels under 24 metres	Area B vessels under 35 metres	Area C vessels under 35 metres	Areas D and E vessels under 35 metres
Electronic Chart Display and Information System (ECDIS) or Electronic Chart System (ECS) (using official ENC) or Paper Nautical Chart (PNC) (Note 2, 3)	Comply with AMSA Marine Orders Part 27	Comply with AMSA Marine Orders Part 27	ECDIS or ECS or PNC required in accordance with (iaw) NSCV	ECDIS or ECS or PNC required iaw NSCV	ECDIS or ECS or PNC required iaw NSCV	ECDIS or ECS or PNC required for vessels 12 metres and over (Note 3)
Nautical Publications (NP)	Comply with AMSA Marine Orders Part 27	Comply with AMSA Marine Orders Part 27	NPs required iaw NSCV	NPs required iaw NSCV	NPs required iaw NSCV	NPs required iaw NSCV

Definitions of Operational Areas - NSCV Part B	
Area A	Unlimited domestic operations, including operations greater than 200 nautical miles (nm) to seaward of the coast.
Area B	Operations within a limit of 200nm to seaward of the coast; or within such lesser limits as may be specified.
Area C	Operations within: a) 30nm from the seaward limit of a safe haven, including designated smooth or partially smooth waters (i.e. sheltered waters), or within such lesser limits as may be specified; or b) specified waters designated by the Authority as "restricted offshore".
Area D	Operations within specified geographical limits in waters designated by the Authority as partially smooth waters.
Area E	Operations within specified geographical limits in waters designated by the Authority as smooth waters (see also Clause 1.8 - definition of smooth waters).

Notes:

1. Nautical charts and publications, including PNC, manuscript publications, digital publications, official Electronic Navigational Charts (ENC) and official Raster Navigational Chart (RNC), shall be those originated by a relevant government authority or an authorised national hydrographic office (Annex B to NSCV Part C, Section 7C).
 2. Using the ECDIS or ECS options includes the requirement for backup (Table 2 and Annex C to NSCV Part C, Section 7C).
 3. It is good operational practice to carry appropriate PNC on vessels less than 12 metres in length operating outside port or harbour limits (Table 2 of NSCV Part C, Section 7C).
2. State or territory authorities can be contacted regarding areas nominated as smooth and partially smooth waters within their respective jurisdictions.

12.2 OFFICIAL CHARTS AND PUBLICATIONS

1. Official nautical charts and publications are those originated by a relevant government authority or an authorised national hydrographic office designed to meet the requirements of marine navigation. In Australia, the relevant hydrographic authority is the Australian Hydrographic Office (AHO) (see *Navigation Act 2012* (Cth) *Chapter 6 Part 6 Division 5*).
2. Official nautical products published by the AHO include:
 - ENC - An ENC is an official vector electronic chart. These are available via the AusENC service and the various distributors aligned to the International Centre for ENC (IC-ENC) and updates available at www.hydro.gov.au
 - PNC - Paper Nautical Chart
 - *Notices to Mariners* (NtM)
 - *Australian National Tide Tables* (ANTT) (Australian Hydrographic Publications (AHP)11) (manuscript)
 - AusTides (digital)
 - *Australian Chart and Publications Maintenance Handbook* (AHP24)
 - *Mariner's Handbook for Australian Waters* (AHP20) (formerly *Seafarers Handbook for Australian Waters*)
3. More information on these products can be found at the AHO website.
4. The AHO contact details are:

Postal address:	8 Station Street Wollongong, NSW, 2500
Telephone:	+61 2 4223 6500
Fax:	+61 2 4223 6599
Email	
New or revised information affecting charts:	datacentre@hydro.gov.au
Products - wholesale orders and enquiries:	hydro.sales@defence.gov.au
Website:	www.hydro.gov.au

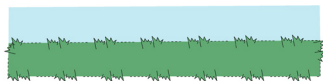
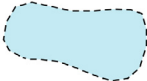
12.3 IMPORTANT INFORMATION FOR CHART USERS

1. It is important for charts and publications to be the current edition and kept up-to-date via NtM or ENC updates, particularly when navigating within constrained or environmentally sensitive areas, as changes have the potential to affect navigation safety. Use of superseded or withdrawn charts does not meet the legal requirements for carriage and use of up-to-date charts.
2. ENC updates and NtM are only relevant to the chart edition that they are issued for. As each new edition of an ENC or PNC or publication is published, it is likely to include significantly enhanced base information and detail that has not been previously published. ENC updates can only be applied in the correct sequence to the correct edition, while details in a NtM applicable to the current edition of a PNC or publication may not merge with the details in the superseded edition. ENC updates and NtM are never issued for withdrawn or superseded editions.
3. Charts can contain a wide variety of individual hydrographic surveys, even within the limits of a single chart. The quality of individual surveys may vary due to the age of the survey and the technology used. The AHO makes all reasonable efforts to ensure the accuracy and completeness of all information, including third party information, which it uses in charts and nautical publications. Assessments of bathymetric quality are indicated on both ENC and PNC via the Zone of Confidence (ZOC) system (see Section 13.2).
4. Information regarding unofficial charts may be found at Section 12.5.5.

12.3.1 NATIONAL CHART SYMBOLS AND ABBREVIATIONS

1. The guidance documents to be used for symbols and abbreviations on Australian charts are:
 - ENC – *UK ADMIRALTY Guide to ENC symbols used in ECDIS (NP5012)*
 - ENC – *AHO Fact Sheet – Quick Guide to ENC Symbols*
 - PNC – *UK Symbols and Abbreviations used on ADMIRALTY charts (NP5011)*
 - PNC – *International Hydrographic Organization's (IHO's) English version of INT1 – Symbols, Abbreviations and Terms Used on Charts*
 - PNC – *AHO Fact Sheet – Understanding Chart Symbolology*
2. Due to national specific requirements and some legacy issues on older PNC, some additional symbols and abbreviations remain in use. The following tables list all the national symbols and abbreviations not included in the IHO's INT1 publication:

Symbology

INT1 Reference	Description	Symbol
J21	Approximate rock reef	
J21	Rock symbol	
J22	Approximate coral reef	
J22	Areas considered to be coral reef	
J22	Areas of possible shoaling	

J22	Coral pinnacle	
M	Preferred route	
M 28.2	Two-way route direction arrow	
U3	Visitors mooring	
N	Ship reporting system	

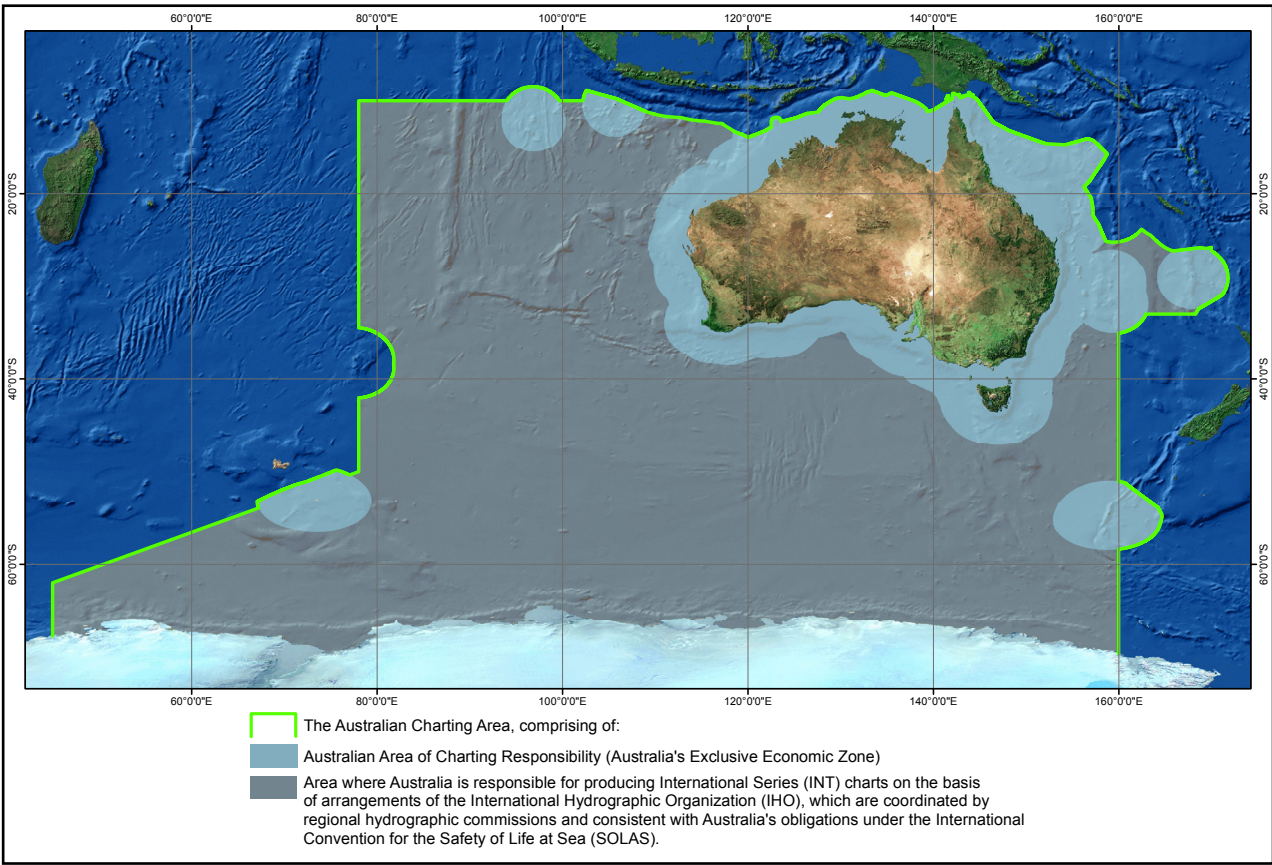
Abbreviations

Description	Abbreviation
Building, Buildings	bldg., bldgs

12.4 CHARTS PUBLISHED BY THE AUSTRALIAN HYDROGRAPHIC OFFICE

1. The AHO publishes around 1400 types of electronic (ENC) and paper nautical charts (PNC). For ENC, the chart naming prefix AU covers Australia, Australian Antarctic Territory, PG for Papua New Guinea (PNG). SB covers Solomon Islands. For PNC, the prefix Aus covers Australia, Timor Leste and the Australian Antarctic Territory. The prefix PNG covers PNG, and SLB covers Solomon Islands.

Australian Charting Area



2. In addition to the Australian Charting Area depicted above, the AHO also produces and updates charts and tide tables for PNG and Solomon Islands (SI) on behalf of their respective governments.

3. The Australian Chart Index (ACI) provides an online catalogue of ENC and PNC published by the AHO. The ACI can be found on the AHO website:

Website:	www.hydro.gov.au/prodserv/paper/standard-aci.htm
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4. The ACI is available in two versions:

- Standard ACI - This provides a fast reference tool when the full ENC or PNC number is known. The Standard ACI lists all ENC cells and their update status; and all PNC with links to the applicable NtM.
- GoogleEarth™ ACI - This provides a graphical representation of chart coverage when the ENC or PNC numbers for an area of interest are not known. It displays ENC cell boundaries and identities, and low resolution images of PNC, that can be overlaid on satellite maps using selectable information layers.

12.5 AUSTRALIAN HYDROGRAPHIC OFFICE ELECTRONIC NAVIGATIONAL CHARTS AND UPDATE SERVICES

12.5.1 ELECTRONIC NAVIGATIONAL CHARTS

1. ENC published and updated by the AHO are official vector electronic charts produced in IHO S57 Edition 3.1 format and protected using the IHO S63 Data Protection standard. They are authorised for use in IMO compliant ECDIS and can also be used in compatible ECS, including Portable Pilotage Units. When kept up-to-date and used in an IMO compliant ECDIS, ENC allow vessels navigating in Australia waters to meet SOLAS V regulations covering the carriage of electronic charts and ECDIS. They also allow commercial vessels, 12 metres or more in length and engaged in Australian domestic operations, to meet the NSCV when used in IMO compliant ECDIS or NSCV compliant ECS.

12.5.2 PURCHASING ELECTRONIC NAVIGATIONAL CHARTS

1. ENC published and updated by the AHO include those prefixed by:
- AU - Australia and its territories, Papua New Guinea, Australian Antarctic Territory and
 - PG - Papua New Guinea
 - SB - Solomon Islands
2. All ENC are available via two services:
- International shipping - IC-ENC and their associated distributors
 - This is a centralised electronic warehouse holding updated ENC from many nations.
 - A number of large commercial distributors affiliated with IC-ENC then package the ENC from multiple nations into a single service for individual users.
 - Vessels operating within the limits of the Australian Charting Area - AHO and associated Australian distributors as listed on the AHO website
 - The AusENC service is a low cost local service containing only ENC published by the AHO.
 - The AusENC service is suitable for vessels and users operating solely within Australian, Papua New Guinean, Solomon Islands and Australian Antarctic Territory waters.
 - It is up to individual users to merge The AusENC service with ENC from other nations if greater coverage is required.

IC-ENC distributors:	www.ic-enc.org/Distribution.html
AusENC distributors:	www.hydro.gov.au/webapps/jsp/agents/agents-list.jsp

3. Editions and updates provided via both international and local services are identical. Updates include all permanent, temporary and preliminary NtM. Updates are issued fortnightly and are included in the services from every authorised ENC supplier.

4. Both services offer a range of pack sizes, areas and subscription durations. Details can be found on the AHO website.
5. The AusENC service (and some IC-ENC services) include Chart Service Certificates. These certificates provide evidence that the ENC packs in use meet chart carriage requirements as specified in SOLAS Chapter V and the *Navigation Act 2012* (Cth) up to the specified date, provided the ENC are maintained for updates. These certificates can be presented to AMSA Port State Controllers for local inspection.

12.5.3 ELECTRONIC NAVIGATIONAL CHARTS UPDATES

1. ENC updates are published fortnightly by the AHO. These updates contain information including all permanent, temporary and preliminary NtM as well as PNC block corrections.
2. ENC updates for the AusENC service are published on the AHO website and are related to the most recent AusENC Base Disk (January or July). ENC updates are available as follows:
 - AHO website as cumulative downloads (only the latest download needs to be loaded into ECDIS as it contains all previous fortnightly updates already in the correct order)
 - AHO website as individual fortnightly downloads (each download must be loaded into ECDIS in the correct order)
3. Further information on updating using the AusENC service can be found in the 'Guide to AusENC Update and Subscription Renewals Services' fact sheet on AHO website.
4. Most ENC updates result in a direct change to content within the existing ENC (such as a light being relocated or its characteristics altered). Where a change results in a new edition of the ENC, a new permit will be issued automatically and without charge for that ENC to cover the remainder of the subscription period.

12.5.4 RASTER NAVIGATIONAL CHARTS

1. Selected charts of Australian, Papua New Guinean and Solomon Islands waters remain available as RNC via the Admiralty Raster Chart Service (ARCS). These are derived from United Kingdom Hydrographic Office (UKHO) copies of selected Aus, PNG and SLB charts. ARCS is not supported by the AHO. In the event that differences are noted between an Australian PNC and a UK produced RNC, the Australian published ENC must be considered the authoritative chart. Updates to ARCS charts lag behind AHO updates by approximately six weeks.

12.5.5 UNOFFICIAL ELECTRONIC CHARTS

1. A number of commercial companies are licensed to copy paper charts or ENC into their own proprietary electronic format. These are for use in small chart plotters by recreational vessel operators only. The quality of copying is variable and the update services are generally very delayed, even though they may appear relatively frequent. These charts are not warranted for navigational use by either the AHO or their manufacturer and all are marked 'not for navigation'. Instances include reefs and islands missing from charts (particularly when zooming in) and a major land reclamation area remaining missing for two years after completion of works, both despite being included on the official charts. These unofficial charts do not meet carriage requirements for any commercial vessel of 12 metres or more in length.

12.6 AUSTRALIAN PAPER NAUTICAL CHARTS AND NOTICES TO MARINERS

12.6.1 AUSTRALIAN PAPER NAUTICAL CHARTS INDEXES

1. The location and extent of all Australian PNC is shown in the AHO Index of Nautical Charts. These are published in paper form and PDF download annually. The Index is published as two sheets as follows:
 - Aus 5000 - AHO Index of Nautical Charts - Northern Portion
 - Aus 5001 - AHO Index of Nautical Charts - Southern Portion
2. Mariners should note that the UKHO *Admiralty Chart Catalogue* does not include all charts within the Australian PNC series.

12.6.2 PURCHASING AUSTRALIAN PAPER NAUTICAL CHARTS AND PUBLICATIONS

1. Australian PNC and publications are available via a network of distribution agents located in Australia and throughout the world. This network includes:
 - Correcting agents - these update their in-store holdings of paper charts, so always supply charts that have been corrected to the latest NtM. Some offer ongoing correction services.
 - Non-correcting agents - these do not update their in-store stocks of paper charts, so charts supplied by these agents may have accumulated a small number of outstanding NtM since being printed.
 - Publications - both types of these distribution agents sell *ANTT*, *AusTides*, and the *Mariner's Handbook for Australian Waters*. Some of these agents also provide a 'Paper NtM' service where paper copies of Australian NtM can be purchased.

Website:	www.hydro.gov.au/webapps/jsp/agents/agents-list.jsp
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12.6.3 NEW CHARTS AND NEW EDITIONS

1. A new edition of a chart is produced when substantial new survey or other information is received of a size too large to promulgate via permanent NtM or a block amendment, but the remainder of the chart is largely unchanged. A new chart will contain a full revision of all available information for the depicted area. New charts and new editions will always include all changes previously promulgated by NtM, but may include substantial additional information as well.

12.6.4 REPRODUCTIONS AND COPIES OF PAPER NAUTICAL CHARTS IN AUSTRALIAN WATERS

1. The UKHO is authorised to reproduce selected Australian PNC under licence in paper and raster formats. These may be used by commercial vessels of all sizes, subject to IMO requirements for ECDIS and ENC. They still carry an Aus, PNG or SLB number. Reproduced charts are listed in the UKHO *Admiralty Chart Catalogue* and can be identified by the publication details in the lower margin of each chart.
2. However not all Aus charts are reproduced by the UKHO, and those not reproduced are not listed in the UKHO *Admiralty Chart Catalogue*.
3. Masters should be aware that a more appropriate Australian PNC at a larger scale may be available than what is listed in the UKHO *Admiralty Chart Catalogue*, or shown as an adjoining chart on the UKHO reproduction.
4. Some state marine and maritime safety organisations also produce boating maps, though these are suitable for recreational use only.
5. A small number of commercial organisations sell reduced scale versions of very old United States (US) copies of Australian charts. However, as US authorities ceased copying Australian charts in the early 2000's, these 'copies of copies' are now very out of date and should not be relied upon. They are not authorised for use by commercial vessels of any size.

12.6.5 AUSTRALIAN NOTICES TO MARINERS SERVICES

1. Australian NtM are published in 25 fortnightly editions. Any items which cannot wait for the next fortnightly edition are passed to and promulgated by the Australian Joint Rescue Coordination Centre (JRCC) as a NAVAREA or AUSCOAST Warning. These warnings, if still in force, are then subsequently included in the next NtM fortnightly edition, along with all other information which cannot be deferred until the next edition of an affected chart.
2. Australian NtM are available as follows:
 - Download by fortnightly edition - AHO website as individual fortnightly PDF downloads, available as full editions or as component parts for those seeking to separate text, block corrections, and supplements.
 - Download for a specific chart(s) - AHO website via the ACI, by selecting 'Paper Chart List', identifying the chart of interest, then 'Details' → 'View'.
 - By email from the AHO - to receive eNotices, users need to register with the AHO and specify which charts and publications for which they wish to receive notices.

- Printed paper copies are available on a cost recovery basis from those AHO chart agents that provide a paper NtM service - see the AHO website for a list of chart agents.

Website:	www.hydro.gov.au/webapps/jsp/agents/agents-list.jsp
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- As part of worldwide services from commercial distribution agents catering to vessels at sea, including:

Chartco website link:	www.chartco.com
Digitrace website link:	www.marinepress.com
Global Navigation Solutions website link:	www.gnsworldwide.com

- Reproduced by the UKHO in Admiralty Notices to Mariners (NM) for those Australian charts reproduced in the Admiralty chart series (does not include all Australian published charts). When the UKHO issues NMs affecting an Australian produced chart, it will allocate a new NM number to align with the Admiralty NM series. The original Australian NtM is referenced as the source in each case. Delays of up to five weeks have been noted between Australian NtM and the equivalent Admiralty NM.

- Australian NtM are issued to correct and maintain the following:
 - PNC
 - ANTT
 - Mariner's Handbook for Australian Waters* (this publication)
- Additionally, Australian NtM are used to notify mariners of the release or withdrawal of all charts and nautical publications published by the AHO in both manuscript and digital form.
- Further information on the content of Australian NtM and how to apply an NtM to a chart can be found in *The Australian Chart and Publication Maintenance Handbook* (AHP24). This is a free download from the AHO website, via 'Products and Services' → 'Publications'.

Website:	www.hydro.gov.au/prodserv/publications/cpmh.htm
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12.7 TIDE TABLES

12.7.1 AUSTRALIAN NATIONAL TIDE TABLES

- The ANTT contains information for over 500 primary and secondary ports in Australia, PNG, Solomon Islands, Antarctica and Timor Leste. The ANTT is an official nautical publication which meets carriage requirements under SOLAS *Chapter V* and the NSCV. The ANTT is released annually in October and provides tidal predictions for the following calendar year.
- ANTT are maintained by Australian NtM, including eNotices.
- Predictions for times and heights for high and low water are referenced to Lowest Astronomical Tide (LAT), which is the chart datum for most large scale charts covering ports. However, the chart datum for some ports differs from LAT; (for more information on vertical datums refer to Section 12.9). While short term predictions for Australian Standard Ports are also available from the Australian Bureau of Meteorology (BOM), it should be noted that BOM predictions do not take into account differences between chart and tidal datums. Secondary port predictions available through the BOM website are not for navigation.

12.7.2 AUSTRALIAN ELECTRONIC TIDE TABLES

- AusTides is the electronic equivalent to the ANTT and meets the same carriage requirements. It provides a graphical representation of the tidal curves and predictions at 10, 20, 30 and 60 minute intervals for each Standard and Secondary Port in ANTT. AusTides are released annually in October and provides tidal predictions for the following calendar year.
- AusTides updates are promulgated by Australian NtM, including eNotices. Cumulative updates are available for download from the AHO website and are applicable to the current edition. If, for example, three updates for the current edition have been promulgated but not already downloaded, only the third of the three updates should be downloaded and applied.

12.8 HORIZONTAL DATUMS

- The latitude and longitude of features on charts depends on the mathematical surface used to represent the Earth. Different surfaces have been used for mapping different areas of the world, however all latitudes and longitudes in both the chart and the ship's navigation system must relate to the same datum. While a ship's position determined using ranges and bearing will always relate directly to the chart, a position determined using a Global Navigation Satellite System (GNSS) such as GPS or GLONASS may require correction to ensure the ship is correctly positioned in relation to hazards and safe water.

12.8.1 AUSTRALIAN ELECTRONIC NAVIGATIONAL CHART / AUSTRALIAN PAPER NAUTICAL CHART DATUMS

- All ENC and PNC published by the AHO are referenced to WGS84. No corrections are necessary for navigation using GNSS. When using ENC, this may be confirmed by looking at the Chart Information Panel.

ENC Chart Information Panel

Display Chart Information Panel

Chart: AU413130.000

Scale: 1:90000

Navigational Purpose: Approach

Product Specification: ENC

Permit: Not required

Edition Number: 20

Issue Date: 25 Oct 2017

Base Cell Update Number: 0

Base Cell Update Date: 25 Oct 2017

Current to Update Number: 9

Update Issue Date: 27 Sep 2018

SENC Generated on: 2018 Dec 12 00:23 UTC

Depth Units: Metres

Height Units: Metres

Horizontal Datum: WGS84

Vertical Datum: Mean high water springs

Sounding Datum: Lowest astronomical tide

Producer: Australia, Australian Hydrographic Service

Comment: Australia - Northern Territory - North Coast - Approaches to Darwin

Comment: This is an official ENC produced by the Australian Hydrographic Service. Refer to Copyright and Important Notice information in README file.

Update History:

Date Applied	Action
2018 Dec 12 00:22 UTC	INSTALLED
2018 Dec 12 00:23 UTC	UPDATED to Update:009 (2018 Sep 27)

OK

12.9 VERTICAL DATUMS

12.9.1 VERTICAL DATUMS ON CHARTS

- The datum for tidal predictions should be the same as the datum for depths shown on charts since the sum of the two is the total depth of water. The vertical chart datum is the plane of reference to which all charted depths and drying heights are related (but not heights and elevations related to land based features). It is a level so low that the tide will rarely fall below it. The vertical datum of a chart is indicated in the Chart Information Panel (see Section 12.8.1) or the notes panel of a PNC. See PNC example to the right.

Depths are in metres and are reduced to Chart Datum, which is approximately the level of Lowest Astronomical Tide. Depths shown in upright figures are from old or inadequate surveys.

Heights are in metres. Underlined figures are drying heights in metres and decimetres above Chart Datum; all other heights are above Mean Higher High Water.

Positions are related to the World Geodetic System 1984 Datum; (see SATELLITE DERIVED POSITIONS Note).

Navigational marks: IALA Maritime Buoyage System - Region A (Red to port).

Projection: Mercator.

Acknowledgements: Queensland Transport (Maritime Division).

2. Nearly all Australian charts are referred to LAT. LAT is the lowest tide level which can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions.
3. However, there are some areas where tidal influences are small, while the effects of wind and atmospheric pressure can be large. Some charts therefore have notes that indicate where tidal levels are strongly influenced by meteorological conditions.
4. Examples include:
 - Wind: Strong onshore winds can cause tidal heights to be higher than predicted, while strong offshore winds can create tidal heights lower than predicted. Fremantle in Western Australia (WA) is a good example.
 - Significantly wind affected ports are:
 - Port Augusta, South Australia (SA) (61830): In Port Augusta, wind effect is considerable. With prolonged strong south wind, water level may be raised by up to 1.2 metres. With a strong north wind, water level may be lowered by up to 0.5m.
 - Fremantle, WA (62230): At Fremantle the water level is erratic, being almost entirely governed by the weather. During and after westerly gales, a high of up to about 1.2 metres is maintained for several days (possibly up to six). In easterly weather, a very low level may be experienced for a similar period of time.
 - Atmospheric pressure: A lower atmospheric pressure allows the sea level to rise above predicted levels. This is most commonly encountered during storms and cyclones. Conversely, an area of strong high pressure can prevent the sea level rising to predicted levels.
5. Further information on meteorological effects is contained in Chapter 4.

NON-TIDAL CHANGES IN SEA LEVEL
Meteorological effects are significant in the area covered by this chart. For details see Australian National Tide Tables and the Mariner's Handbook for Australian Waters AHP20

12.9.2 VERTICAL DATUMS IN AUSTRALIAN NATIONAL TIDE TABLES AND AUSTIDES

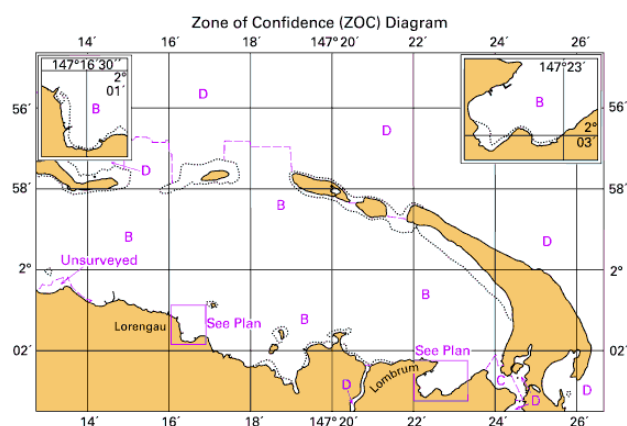
1. All tidal height predictions for standard and secondary ports contained within ANTT and AusTides are given in metres above LAT. If LAT is not the vertical datum for the largest scale chart in that area then the correction listed in Table 1 of ANTT and within the help menu for AusTides should be applied. The following standard ports require a correction to be applied to predicted tides to align with the chart datum of the largest scale chart:

Anewa Bay, PNG	Bunbury, WA	Burnie, Tasmania (TAS)	Cape Voltaire, WA
Honiara, Solomon Islands (SI)	Karumba, Queensland (QLD)	Lakes Entrance, Victoria (VIC)	Mourilyan Harbour, QLD
Norfolk Island	Port Moresby, PNG	Rabaul, PNG	Tarekukure Wharf, SI
Townsville, QLD			

12.10 ZONES OF CONFIDENCE ON PAPER NAUTICAL CHARTS

1. All PNC published by the AHO use the ZOC system. On PNC the ZOC are denoted by a system of letters that correspond to equivalent levels in ENC. Both follow international standards, though only Australia has applied them to their PNC. In contrast, most other nations only use a source diagram on their PNC. A source diagram only shows who supplied a survey, and possibly how old that survey is, but not how good it is.
2. On all medium and large scale PNC the various zones are displayed in a small ZOC diagram located somewhere near the edge of the chart. On PNC, the international ZOC system uses letters to denote quality - A1 being the best, and D the worst, plus U for areas which are unassessed.

ZOC diagram and table shown on PNC



ZOC CATEGORIES
(For details see Australian Seafarers Handbook, AHP20)

ZOC	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	± 5m	=0.50m + 1%d	Significant seafloor features detected
A2	± 20m	=1.00m + 2%d	Significant seafloor features detected
B	± 50m	=1.00m + 2%d	Uncharted features hazardous to surface navigation are not expected but may exist
C	± 500m	=2.00m + 5%d	Depth anomalies may be expected
D	Worse than ZOC C	Worse than ZOC C	Large depth anomalies may be expected
U	Unassessed – The quality of the bathymetric data has yet to be assessed		

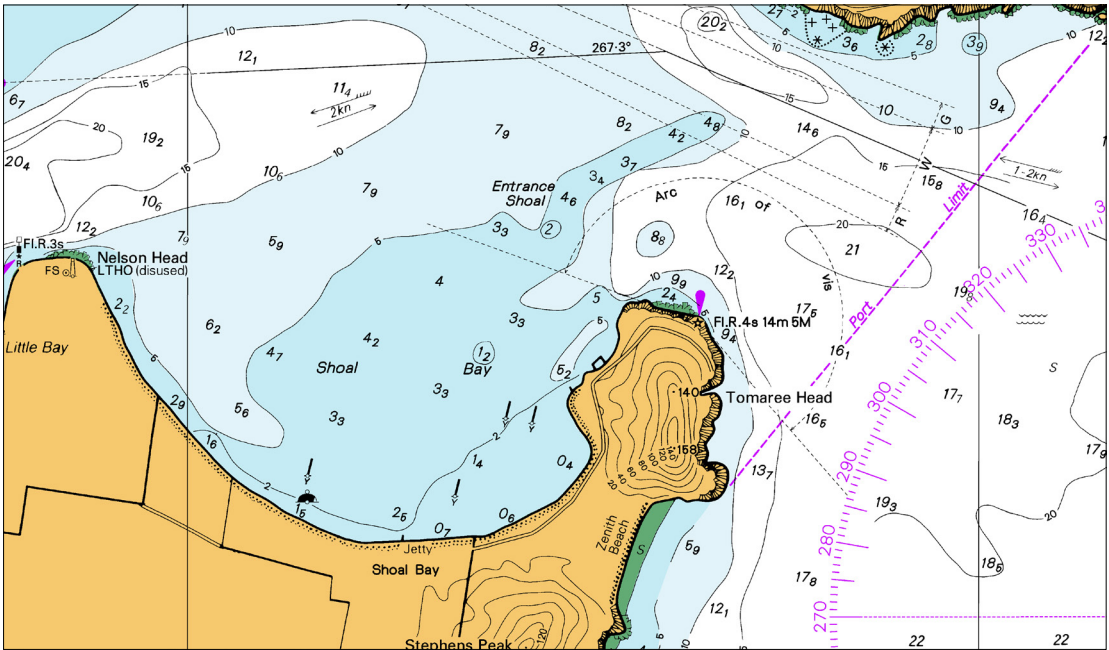
3. Further information on the various ZOC categories, and the potential risks mariners face when in each area, is contained in Chapter 13.



12.10.1 ADDITIONAL QUALITY INDICATORS ON PAPER NAUTICAL CHARTS

1. In addition to the ZOC assessments and ZOC diagrams (see Chapter 13), the manner in which depths and depth contours are depicted on the PNC may alert mariners to review the ZOC category of an area more closely. Examples on a PNC include:

Normal depth sounding symbology ZOC A1, A2, B, good ZOC C	Approximate depth sounding symbology Poor ZOC C, all ZOC D		
3 ₇	3 ₇	3 ₇	
Continuous depth contours ZOC A1, A2, B, good ZOC C	Dashed depth contours Poor ZOC C	Broken and discontinuous depth contours ZOC D	Unsurveyed area ZOC D



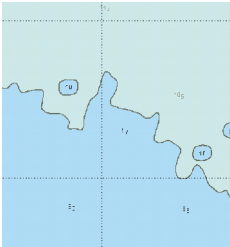
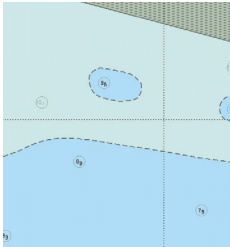
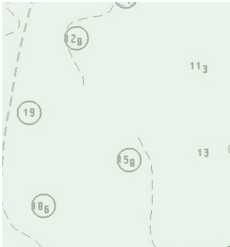
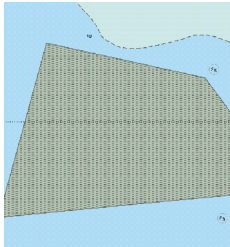
Extract - Aus 209, showing ZOC B throughout the majority of the area (depicted by well spaced italic depths and continuous depth contours), but with one isolated lower quality ZOC C depth of 3.4 metres on Entrance Shoal (upright, hairline depth).

12.10.2 ZONES OF CONFIDENCE IN ELECTRONIC NAVIGATIONAL CHARTS

1. For ZOC in ENC see Chapter 13.

12.10.3 ADDITIONAL QUALITY INDICATORS ON ELECTRONIC NAVIGATIONAL CHARTS

- In addition to the ZOC assessments and ZOC diagrams (see Chapter 13), the manner in which depths and depth contours are displayed in the ENC may alert mariners to review the ZOC category of an area more closely. Examples in ENC include:

Normal depth sounding symbology ZOC A1, A2, B, good ZOC C	Approximate depth sounding symbology Poor ZOC C, all ZOC D (full display)		
			
Continuous depth contours ZOC A1, A2, B, good ZOC C	Dashed depth contours Poor ZOC C	Broken and discontinuous depth contours ZOC D - (no selected safety depth contour)	Unsurveyed area ZOC D
			

12.11 REPORTING DISCREPANCIES ON CHARTS AND NAUTICAL PUBLICATIONS

- Mariners are encouraged to report on any changes, discrepancies or omissions from charts and publications. The information will be used to improve safety of navigation by updating existing charts, sailing directions and other nautical products in both the Australian Charting Area and worldwide. Reporting may include:
 - changes to lights, buoys and beacons
 - new and newly discovered obstructions
 - safe routes through poorly charted waters and safe anchorages not charted
 - any errors or omissions in navigation products
- Reports are acceptable in any style or form that best suits the writer. Legible handwritten reports and emails are acceptable. The AHO contact details are at the start of this chapter.

3. Information of particular use includes:

Sender details	
Name of ship / vessel:	
Name of sender:	
Sender's address (email or correspondence):	
Sender's telephone number:	
Date:	
Report details	
Subject / feature:	
General locality:	
Position – Latitude, Longitude, Datum (if fixing directly by GPS) plus:	
Position – description (if fixing by other means):	
ENC, PNC, or Publication affected:	
Date of latest correction / update applied to affected ENC, PNC or Publication (if known):	
Observation details	
Reports which are incomplete or lacking detail should still be submitted – some information is far better than no information, and may contribute to preventing a significant accident.	

4. When submitting a report it may be worth noting:

- Photographs, diagrams, screen captures or marked copies of charts and publications are the most effective means of reporting which are incomplete or lacking detail should still be submitted. Some information is far better than no information, and may contribute to preventing a significant accident.
- If submitting an echo sounder trace or quoting an observed depth measured by an echo sounder, advice should include whether the echo sounder on the vessel is set to read from the keel or waterline. If reading from the keel, the vessel's draught is helpful in calculating the true depth.
- It is possible that in deeper water an echo sounder can go 'around-the-clock' and show a shallow false return, or receive strong returns from fish or abnormal water layers. If possible, depths should continue to be recorded until general agreement with surrounding charted depths is restored.
- Reports of uncharted shoal depths, as well as navigation aids out of order should, at the mariner's discretion, also be made by radio to the nearest coast radio station or the relevant port authority. The draft of modern tankers and bulk cargo vessels is such that any observed shoal depths in general depths of 30 metres or less may be significant, particularly as the observed depth may be at the edge of a much shallower feature.

5. A blank Hydrographic Note (Form AH102) can be completed online or downloaded as a PDF from the AHO website. It can also be photocopied from the last few pages of this publication. This can also be used as a guide regarding the content of a report submitted in another form which better suits the mariner.

Website link:	www.hydro.gov.au/feedback/feedback-hydronote.htm
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Notes:

Notes:

CHAPTER 13 ACCURACY OF DEPTH INFORMATION

13.1 ACCURACY OF CHARTS

1. All charts contain bathymetric data which varies in quality due to the age, accuracy and completeness of the individual surveys that were used to develop the charted depths. A chart can be considered as a jigsaw of individual surveys pieced together to form a single image. Most charts contain a mixture of surveys of differing quality.
2. In general, remote areas away from shipping routes tend to be surveyed less frequently, less accurately, and with lower confidence that all features have been detected. Areas of high commercial traffic are re-surveyed frequently to maintain high levels of accuracy and completeness, particularly where under-keel clearances are small. However, the vast majority of coastal and international shipping routes fall somewhere between these two examples, where risks from charted and uncharted dangers to navigation are less clearly defined.
3. To assess these risks, mariners have traditionally relied upon familiar, but often ambiguous, indicators used on Paper Nautical Charts (PNC), usually in a source diagram. The details and interpretations often varied widely between nations, though most nations simply showed how old a survey was, rather than how good. The variations in method, detail and interpretation render this type of quality information unsuitable for use in an electronic system such as Electronic Chart Display and Information System (ECDIS), as it prevents the use of automated routines to check a planned route to confirm suitability.
4. To address this, the International Hydrographic Organization (IHO) developed and published a new international system to be used by all nations within their S-57 Electronic Navigational Charts (ENC). This is the 'Zones Of Confidence system', often referred to as 'ZOC'. The degree of reliance which can be placed in the depth information within an ENC can be consistently determined by understanding the ZOC assessment for an area, then applying a common-sense approach.

13.2 ZONES OF CONFIDENCE

1. All S-57 ENC use the ZOC system. There may be several different ZOC areas within each individual ENC. These assessments enable mariners to consider the limitation of the bathymetric data from which the ENC was compiled, and to assess the associated level of risk to navigate in a particular area.
2. The ZOC system only applies to the bathymetry (depths, contours, submerged rocks and reefs, etc) – it does not apply to the accuracy of charting the high water line, wharves, navigation aids, pipelines, etc. There are five basic levels within the ZOC system. Each differing level of quality is referred to as a 'category' within the overall ZOC system. Each category is therefore labeled as 'CATZOC' when queried within the ENC. The categories range from 'very high confidence' to 'very low confidence'. There is an additional category for 'unassessed'. The impact upon mariners of the various categories is discussed in Section 13.5.
3. The ZOC categories are:

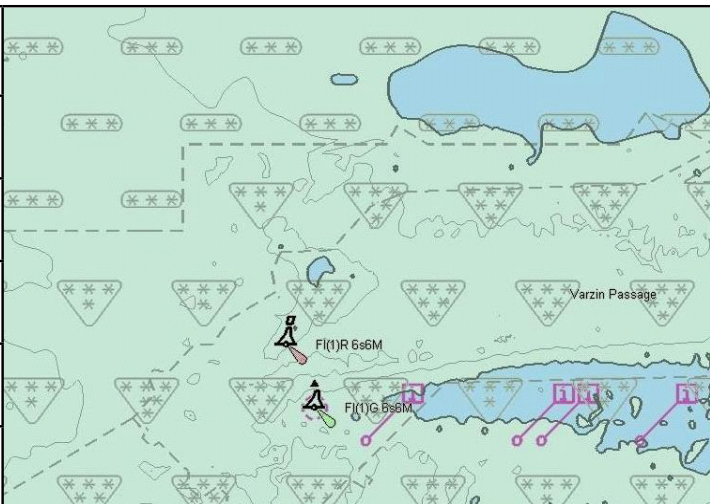
Category	Confidence level	General description - survey characteristics
A1	Significant seafloor features detected and depths measured.	High position and depth accuracy achieved using Differential Global Positioning System (DGPS) and a multi-beam, channel or mechanical sweep system.
A2	Significant seafloor features detected and depths measured.	Position and depth accuracy less than ZOC A1, achieved using a modern survey echo-sounder and a sonar or mechanical sweep system.
B	Uncharted features, hazardous to surface navigation are not expected but may exist.	Similar depth accuracy as ZOC A2 but lesser position accuracy than ZOC A2 (generally pre-dating DGPS), using a modern survey echo-sounder, but no sonar or mechanical sweep system.
C	Depth anomalies may be expected.	Low accuracy survey, data collected on an opportunity basis such as soundings on passage or low accuracy given due the passage of time.
D	Large depth anomalies may be expected.	Poor quality data or unsurveyed.
U	Unassessed.	The quality of the bathymetric data has yet to be assessed. (Mariners should assume poor data quality until the area has been assessed).

4. The full version of this Table may be found in chapter Section 13.7.

13.3 ELECTRONIC NAVIGATIONAL CHARTS ZONES OF CONFIDENCE SYMBOLS

1. In ENC, the different ZOC quality levels are denoted by a series of symbols containing a varying number of stars, enclosed within a triangle or ellipse. This symbol is repeated throughout each area of equal quality. The symbols can be made visible or be hidden on the ECDIS screen depending upon the mariner's needs at any particular time. The ZOC categories range from six stars down to two stars. There is an additional category for areas which are 'Unassessed'.

Zones Of Confidence symbols, categories and depiction on an ENC

ENC ZOC symbols	6 Stars = A1	
	5 Stars = A2	
	4 Stars = B	
	3 Stars = C	
	2 Stars = D	
	U	

13.4 ZONES OF CONFIDENCE ASSESSMENT

13.4.1 THE COMPONENTS OF AN ASSESSMENT

1. Assessments are based upon four separate criteria, following which a single ZOC rating is derived for each area of differing quality. The lowest rating for any individual component within that area determines which ZOC category is assigned.
2. In sequential order, individual assessment criteria are:
 - typical survey characteristics
 - seafloor coverage (this relates to the possibility that something may have been missed and is therefore not on the chart)
 - position accuracy
 - depth accuracy (this relates only to what has been detected and is therefore charted, not what might remain undetected)
3. The first factor considered is the typical survey characteristics. The planning of the survey, the techniques used and the datum used are considered initially when assigning ZOC. A well planned and conducted survey has much greater potential than a poor one.
4. The most important factor for mariners is seafloor coverage. For over 95% of the world's coastal waters this determines the sensible clearance that should be maintained between a ship's keel and the seabed and where any additional precautions may be needed. In the majority of coastal waters, and many oceanic areas, the potential size of an undetected seabed anomaly lying between the charted depths may be equal to, or larger than, any uncertainty about how good the charted depths may be.
5. The next most important factor is position accuracy. As there will always be shoals and other features either too shallow or too risky to steam over, the sensible approach is to avoid them. The position accuracy for

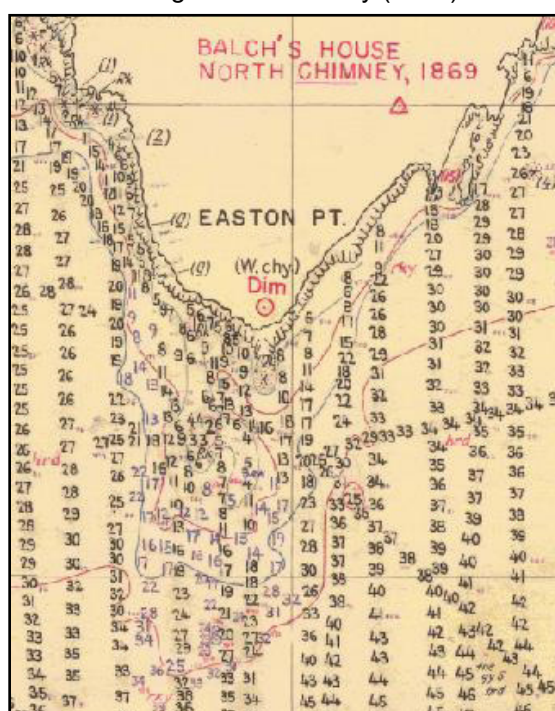
each category gives some idea of how far away from a hazard a ship should remain.

6. The least important factor is depth accuracy. This is the controlling factor in only a small proportion of the world's coastal waters. Depth accuracy only assumes greater relevance where full seabed coverage has been achieved, such as within or near ports, or in certain channels. In areas where full seabed coverage has not been achieved, the safety margin allowing for the possibility of uncharted hazards is much larger than the allowance for the accuracy of charted depths.
7. Mariners should not require a detailed understanding of survey characteristics, as long as they understand the implications for shipping explained within each different ZOC category. These four major contributing factors are discussed further in the following paragraphs, with the implications for shipping in each ZOC area discussed in Section 13.5.
8. One limitation of the ZOC system is that it provides little information about when a survey was conducted, or whether the seabed is stable. While the date can be provided in an additional data field within an ENC, this is rarely done, doesn't form part of the chart 'image', and may be difficult to find. In areas where the seabed is subject to change, national hydrographic offices should be downgrading the assigned ZOC category, restoring it only once a replacement survey is incorporated. However, this isn't always done, so mariners should note areas of sand-waves, dates within dredged channels, and any other notes advising that channels may have changed.

13.4.2 TYPICAL SURVEY CHARACTERISTICS

1. Typical survey characteristics are the first considerations and generally overlap with the other three assessment criteria. The completeness of the survey with regard to the known nature of the seafloor is the first factor for assessment. Are there any holes in the survey coverage big enough for a potential hazard to remain undetected? Are the techniques used for positioning and depth measurement modern? Finally the systematic nature of the survey; does the survey comprise planned survey lines on a known geodetic datum that can be transformed to WGS84?
2. In the image below, this single beam survey conducted in 1963 is considered complete. More survey lines were run in the shoal areas to minimize the possibility of undetected hazards between the regular survey lines, while cross-lines were conducted to confirm the consistency of results found on those regular survey lines. Due to the completeness of this survey no uncharted features hazardous to surface navigation are expected. The resulting charted depth data would be given a CATZOC of B. The area could not be given a CATZOC of A1 or A2 because full seafloor coverage was not achieved.

Single Beam Survey (1963)



13.4.3 SEAFLOOR COVERAGE

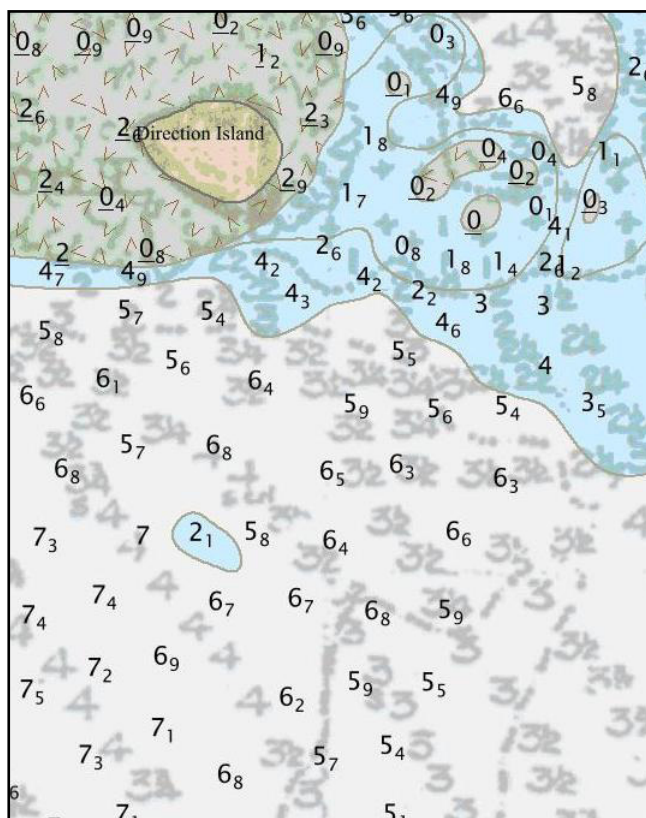
1. Seafloor coverage is the most important factor in assessing and categorising a survey. What is in the gaps between charted depths? Did the surveyor miss anything? Was it potentially small or very large? The possibility of any dangers remaining undetected in an area affects the majority of the world's coastal and oceanic waters – it is only once there is confidence that nothing significant has been missed (and therefore nothing left off the chart) that the questions of how close a ship can pass to a charted seabed feature, or how little under-keel clearance is required, become relevant.
2. The possibility of dangers being missed typically arises from older surveys which were not as effective as modern systems.

Survey Comparison Example

In the example to the right, the older handwritten survey was completed in 1899. It was surveyed using leadline measurements (recorded in fathoms)*. These measurements are actually quite accurate. However, they are only isolated measurements with no guarantee of finding any hazard between one leadline depth and the next. This old survey only includes hazards seen by the surveyors at or above the sea surface. It was assessed as ZOC C – depth anomalies may be expected.

In contrast, the depths taken from the modern metric survey shows a significant 2.1 metre shoal that was not found during the original survey. It proves that the 1899 survey, if it was the only survey in this area, could not be trusted, and that precautions should be taken.

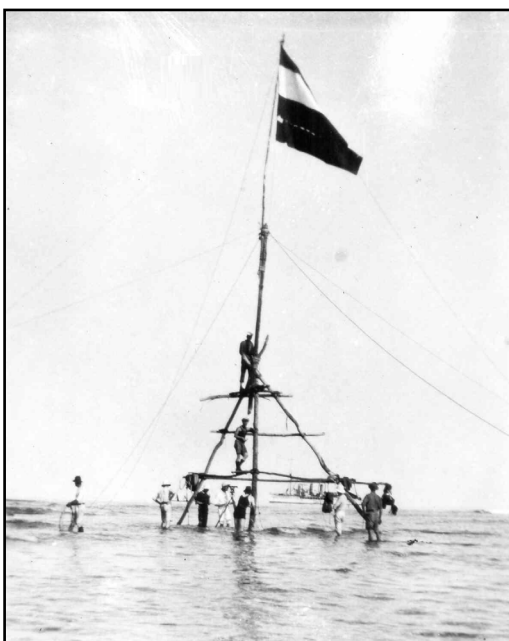
(* 1 fathom equals 1.8 metres.)



13.4.4 POSITION ACCURACY

1. The next important factor in most circumstances is accuracy of position of the bathymetry. This includes depth contours, charted depths, reef edges and other charted seabed features. Position accuracy is typically determined by the positioning systems used during the hydrographic survey, as well as any loss of accuracy when transferring older data from the survey to the chart, or between older datums and WGS84.
2. Most ships using modern satellite based navigation systems can be navigated with much greater accuracy than most of the surveys still used in charts. While some parts of a chart will be based upon modern surveys, away from the most critical areas most charts still rely upon surveys done with progressively older survey systems. While they were on the forefront of technology and science for their time, few of these systems were as good as Global Navigation Satellite System (GNSS) of today.
3. It is only since the 1990s that satellite based navigation systems for survey ships have been widely available. These give a position accuracy of seabed features somewhere in the range of 2 to 20 metres. (Determining the position of a feature on the seabed can be much harder than just positioning the survey ship itself).
4. From the late 1940s to the 1990s survey ships depended upon shore-based electronic positioning systems transmitting their signal over short or medium ranges, giving accuracy of around 20 to 100 metres. In coastal areas, this means that anything the ship found could be up to 100 metres from where it was thought to be. Much of this depended upon how accurately the transmitter ashore was positioned, as well as the accuracy of the transmitted ranges to generate the 'fix'.
5. Prior to the 1940s, survey ships used sextants to measure angles between a system of prominent marks, or flag poles built on towers established ashore, with surveyors 'angling' for hours at a time. A second row of towers could be built in shallow water or on reefs to extend the network further offshore, but with a further reduction in accuracy. Depending upon how accurately the towers were placed, an accuracy of 50 to 500 metres was possible for the survey ship. So again, when something was found, particularly offshore, the true position could quite easily be up to 500 metres from where it was surveyed to be.

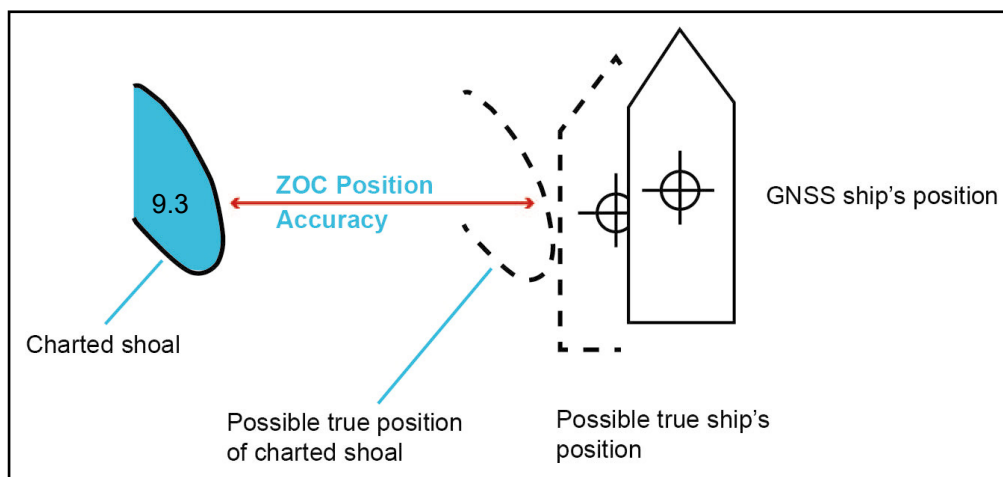
Up to early 1940s: Survey flag on an offshore reef to extend horizontal sextant control further offshore could achieve accuracy typically between 50 to 500 metres compared to GNSS



Late 1940s to mid 1990s: Shore based electronic position fixing systems could achieve accuracy typically between 20 to 100 metres compared to GNSS



6. Further offshore, where information was collected by ships relying entirely upon celestial navigation, positions could be considerably less accurate, typically no better than 1 to 2nm, and frequently worse.
7. While modern satellite imagery can be used to correct the position of many isolated visible offshore features, such as islands, reefs or perhaps shoals breaking in rough weather, anything more than a few metres below the surface is likely to remain unseen, and therefore possibly well out of its true position.
8. However, the quoted positional accuracy of a charted feature is only part of assessing how far to stay clear of a potential danger.



9. A planned route should allow for both chart accuracy and ship's positioning accuracy, as well as other factors.
10. Using the example of a shoal surveyed to a 50 metres position accuracy in a coastal area, the ship's master needs to consider the size of their vessel, the accuracy of their ship's navigation system and possibly other vessel parameters. The more correct safe distance in this example is likely to be over 80 metres:

50 metres	Positional accuracy of charted seabed feature, plus
15 metres	GNSS accuracy, plus
15 metres	Half ship's beam, plus
5 metres	Ship orientation / motion
85 metres	Total safe distance to clear hazard

13.4.5 DEPTH ACCURACY

1. Depth accuracy refers to how well the depth of a known feature has been measured below chart datum – it does not refer to the accuracy of something which remains undetected. The margin allowed by a ship's master for the possibility that something remains undetected within an area is a separate concern already governed by the seafloor coverage.
2. Within this assessment criterion, the three biggest factors affecting depth accuracy in relatively shallow coastal waters are the:
 - accuracy of the tidal observations
 - motion of the survey ship and
 - setup of the echo sounder
3. Old leadline surveys contain accurately measured depths, however they have a high risk of not detecting shoaler depths and submerged pinnacles nearby. In contrast, a modern multibeam echo sounder misses very little, but requires careful setup and use to deliver accurate results.

13.5 IMPACT OF ZONES OF CONFIDENCE CATEGORIES UPON MARINERS

13.5.1 ZONE OF CONFIDENCE CATEGORIES IN THE WORLD'S COASTAL WATERS

- Put in simple terms:
 - ZOC A1 and A2 areas - mariners should be able to navigate with confidence
 - ZOC B areas - it is also unlikely that an uncharted danger affecting surface navigation exists
 - ZOC C areas - mariners should exercise caution since hazardous uncharted features may be expected, particularly in or near reef and rocky areas
 - ZOC D areas - a very high degree of caution is required as these areas contain either very sparse data or may not have been surveyed at all
 - ZOC U areas - it is good practice to treat ZOC U areas with the same degree of caution as ZOC D areas
- To put this in perspective, the following table is an overall analysis of over 14 million square kilometres of coastal ENC from 32 nations:

Category	% area of English Channel	% area of Singapore & Malacca Straits	% area of world's coastal ENC (32 nations)	Confidence
A1 (6 stars)	3.6%	1.4%	0.7%	Very Good
A2 (5 stars)	9.4%	0.2%	1.0%	Very Good
B (4 stars)	62.9%	2.5%	30.5%	Good
C (3 stars)	21.3%	76.2%	21.8%	Fair
D (2 stars)	2.8%	1.1%	20.5%	Low
Unassessed (U)	0.0%	18.5	25.4%	Low

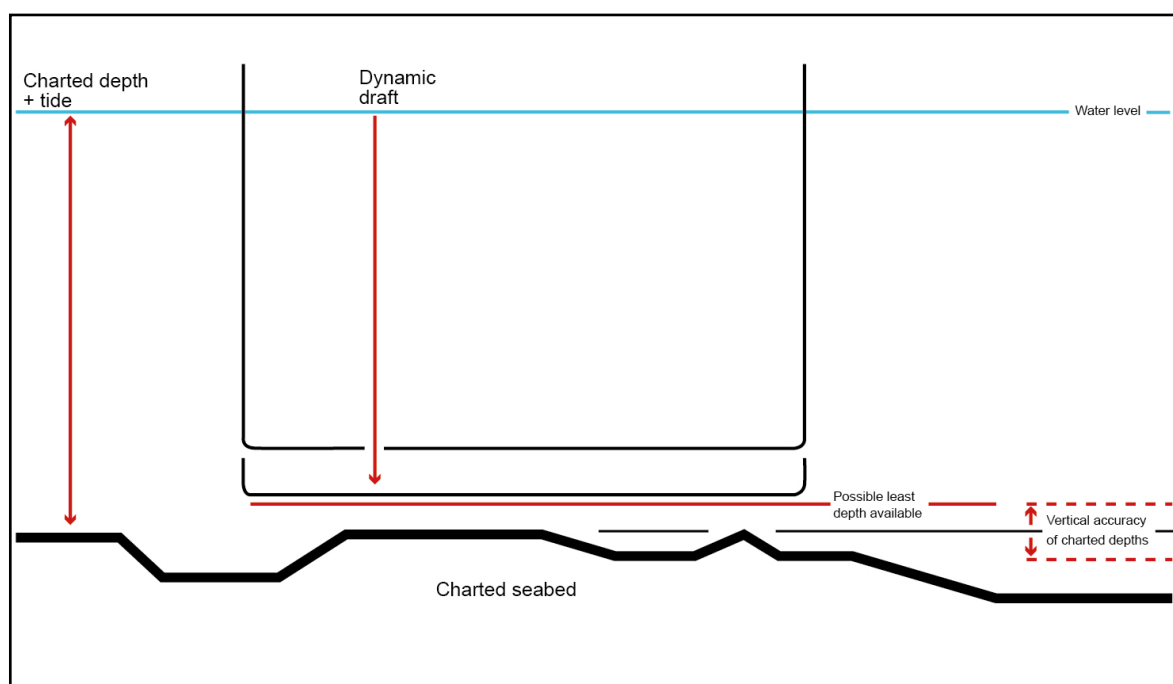
From Navigation Purpose 3 and 4 ENC in 2015, covering 14,218,244 SQ KM. The analysis did not include ports

13.5.2 AN ALTERNATIVE WAY TO UNDERSTAND ZONES OF CONFIDENCE (USING THE STAR SYMBOLS)

- An alternative way to understand the basic concept of confidence levels might be to think about the number of stars symbolising each area. Even if the specifics are not considered, most people understand that if something is given more stars in an assessment than another, the one with more stars is considered to be 'better'.
- A good example that works similarly to ZOCs might be choosing a hotel from listings on a website. Everyone knows that a six star hotel is better than a three star hotel. Equally, when a listed hotel hasn't been assessed, most people are unsure so tend to assume it isn't very good.
- The star symbols used to depict ZOCs work exactly the same way. Wherever possible ships should be kept in those areas rated with a higher number of stars (preferably four or more, and three stars only with caution). Those areas shown with only two stars, or the unassessed symbol, should be considered very carefully and avoided if circumstances permit.

13.5.3 ZONES OF CONFIDENCE A1 (6 STARS)

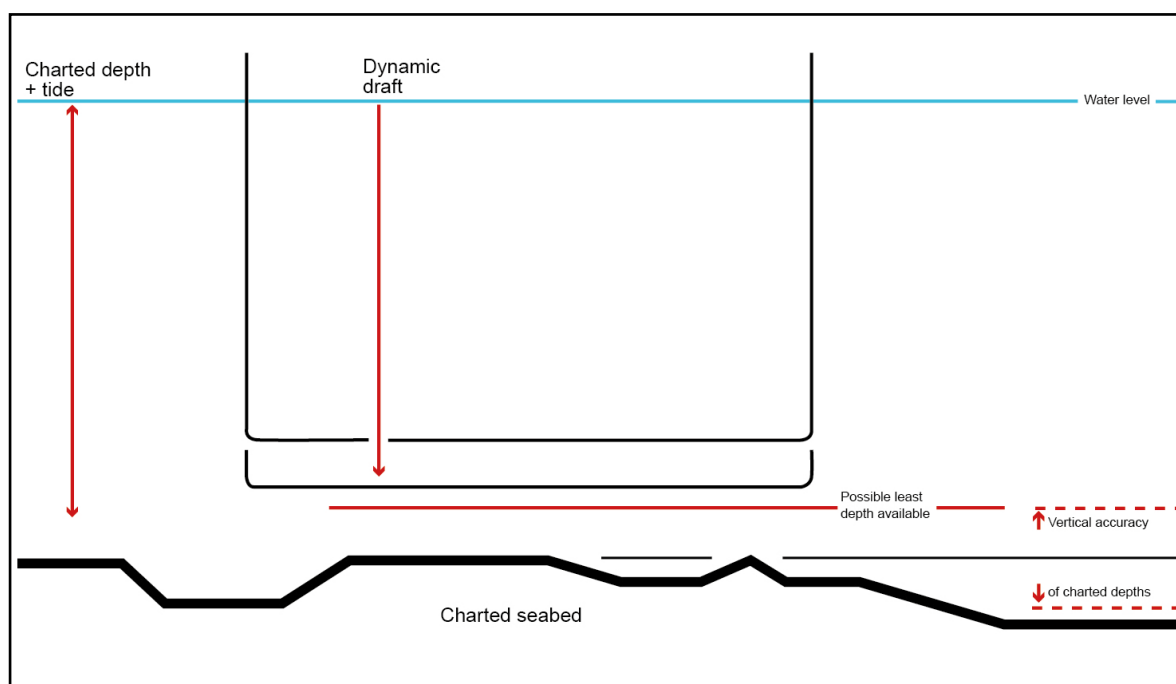
1. Surveys within this category have met the requirements for full seabed search. ZOC A1 is only achievable with recent technology.
2. ZOC A1 surveys generally only cover those areas of minimal under-keel clearance in harbours and shallow channels. The likelihood of any remaining undetected features is extremely low, and is most likely to be the result of undetected silting, or a channel which moves as a result of storms or seasonal changes. A very high degree of confidence can be had that there are no uncharted features between the charted depths or other features already shown on the chart.
3. The positions of charted seabed features should be better than five metres.
4. In practical terms, mariners should only require a relatively small allowance for an under-keel clearance in a ZOC A1 area. For a ship with a draft of 10-20 metres this would be an allowance of at least 0.6 to 0.8 metres for the accuracy of charted depths, plus allowances for squat, settlement, ship motion and the accuracy of tidal predictions (if real-time tides are unavailable).



- ZOC A1 – Full area search undertaken. Significant seafloor features detected (Section 13.7, Table - note 4) and depths measured
 - position accuracy (uncertainty) better than five metres
 - depth accuracy (uncertainty) approximately 0.6 to 0.8 metres (Section 13.7, Table)
5. If the ship's master considers that there is the possibility of undetected features, such as in an area where depths may have recently changed, it may be wise to allow another two metres safety margin.
 6. Conversely, the harbour master or pilot may advise that a smaller under-keel margin is possible. This will be the result of what is known as a 'Special Order' survey. While still within the overall ZOC A1 category, these surveys have achieved vertical accuracy better than ± 0.25 metres. Under-keel margins this small should only be considered on the specific advice of the harbour master or pilot, supported by real-time tidal observations, or with the benefit of excellent, and very recent, local knowledge. Without this knowledge or advice, under-keel margins as small as these should not be considered.

13.5.4 ZONES OF CONFIDENCE A2 (5 STARS)

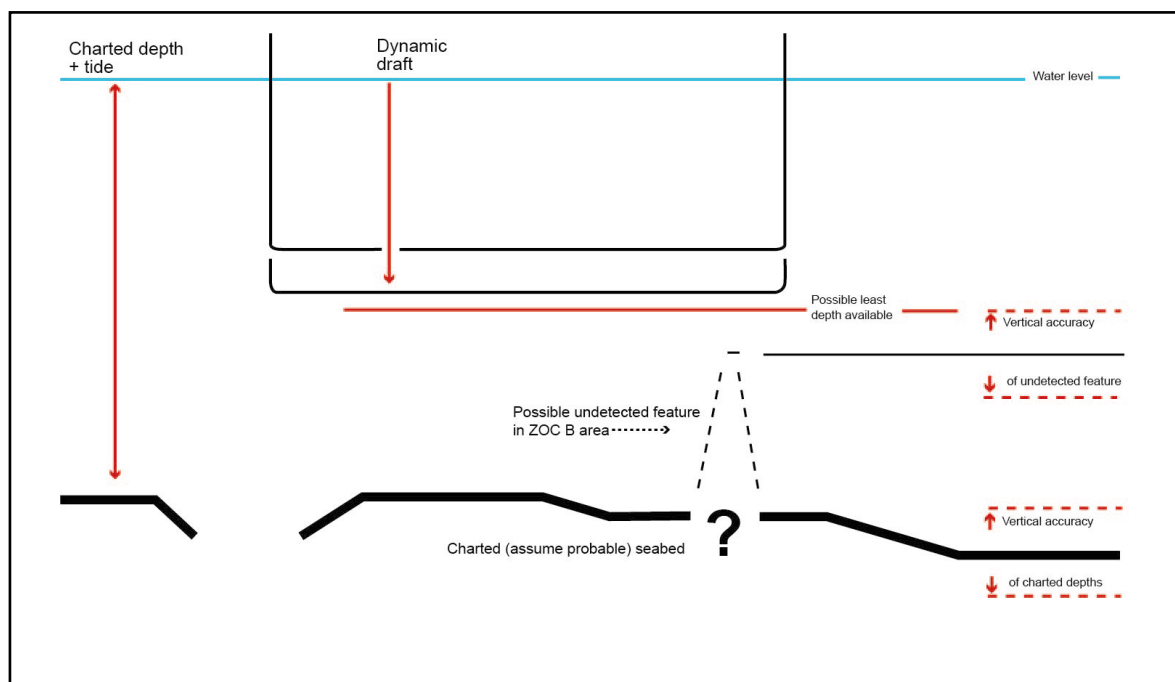
1. Surveys within this category have also met the requirements for full seabed search. They have the same level of confidence as ZOC A1 that there are no uncharted features lying between the charted depths or other features already shown on the chart. However, the safety margins the ship's master should allow in a ZOC A2 area are larger than those in a ZOC A1 area.
2. Surveys meeting ZOC A2 requirements are generally undertaken in those port areas used by smaller vessels (such as outside the dredged channel), as well as port approach areas and coastal shipping routes. ZOC A2 areas may be subject to a program of periodic re-survey but this is likely to be less frequent.
3. The positions of charted seabed features should be better than 20 metres.
4. In practical terms, mariners should only require a relatively small allowance for an under-keel clearance in a ZOC A2 area, approximately twice as much as for ZOC A1. For a 10 to 20 metres draft ship this would be an allowance of at least 1.2 to 1.4 metres in a ZOC A2 area, plus allowances for squat, settlement, ship motion and the accuracy of tidal predictions (if real-time tides are unavailable).



- ZOC A2 – Full area search undertaken. Significant seafloor features detected (Section 13.7, Table - note 4) and depths measured
 - position accuracy (uncertainty) better than 20 metres
 - depth accuracy (uncertainty) approximately 1.2 to 1.4 metres (Section 13.7, Table)
5. If the master considers that there is the possibility of undetected features, such as in an area where depths may change due to silting, it may be wise to allow an additional two metres safety margin.

13.5.5 ZONES OF CONFIDENCE B (4 STARS)

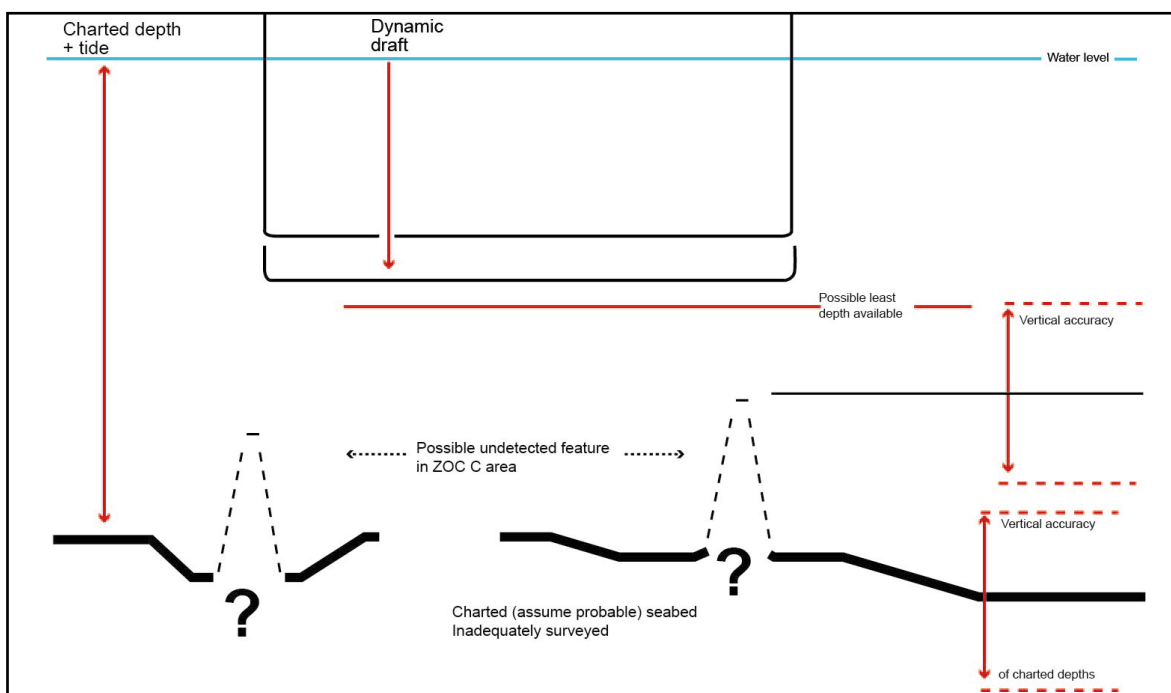
1. Surveys categorized as ZOC B typically include well conducted coastal surveys prior to the late 1990s. Many sea lanes regarded as adequately surveyed carry a ZOC B classification, and have proven entirely suitable over time. Some surveys are still conducted to this standard away from shipping routes.
2. While the vertical accuracy of charted depths (the 'known' depths) is the same as for ZOC A2, the difference is in the size of seabed objects which may not have been detected and therefore are not charted. The size of possible undetected features is not specified.
3. However, in assigning ZOC B to an area, the national hydrographic office responsible for the ENC has assessed that 'undetected features hazardous to surface navigation are unlikely but may exist'. In making that assessment, they are likely to have considered 'surface navigation' as shipping that draws no more than 15 metres when underway (even though vessels with greater draft now exist). This draft estimate is likely to vary from one hydrographic office to another.
4. The positions of charted seabed features should be better than 50 metres.
5. As a general recommendation, it would be prudent to allow at least an additional five metres under-keel margin in ZOC B areas covering well used shipping routes, and more in other ZOC B areas. These margins should be increased in or near reef or rocky areas or in areas subject to change (such as a sand-wave area).



- ZOC B – Full area search not achieved; uncharted features, hazardous to surface navigation are not expected but may exist
- position accuracy (uncertainty) better than 50 metres
- depth accuracy (uncertainty) of surveyed features approximately one metre (Section 13.7, Table). However, the potential size of undetected features is not specified

13.5.6 ZONES OF CONFIDENCE C (3 STARS)

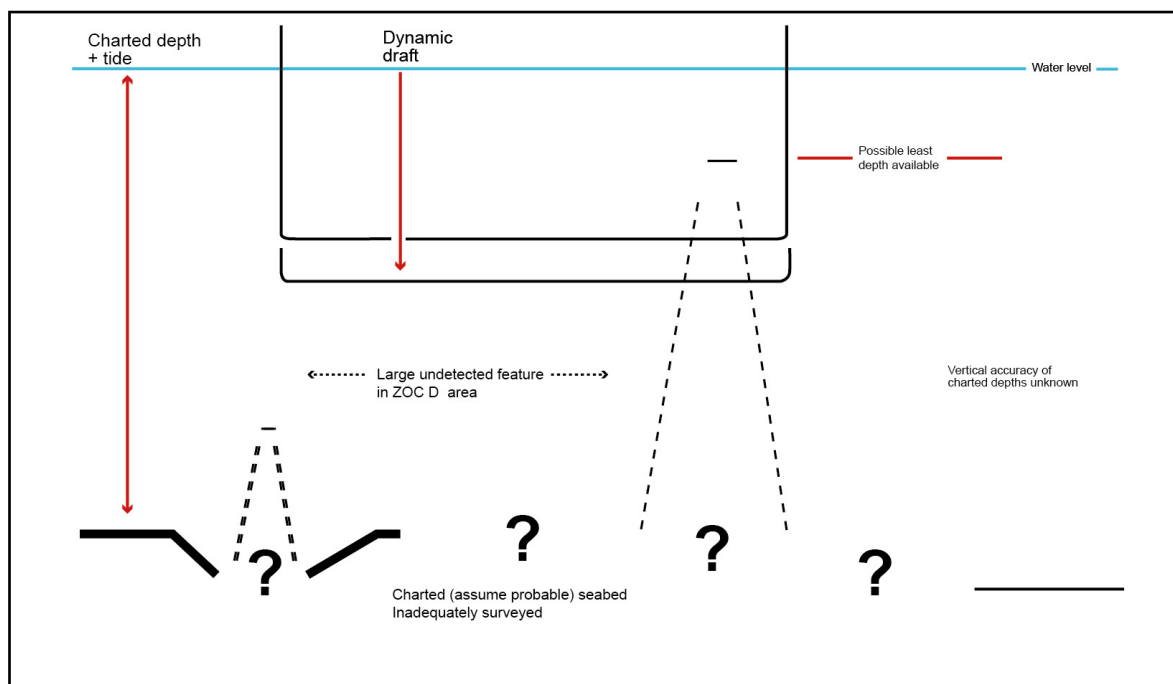
1. It is the expectation that uncharted features hazardous to surface navigation are likely to exist that is the key difference between this category and ZOC B. ZOC C covers a broad range of surveys, including:
 - relatively modern surveys which may be very thorough but just fail to meet the higher position accuracy ZOC B standard
 - older systematic surveys best described as 'historic' and likely to have either missed shoals, or did not fully investigate shoals that have become significant over time as the size of ships has increased
 - passage sounding (as long as they are not just isolated tracks)
2. The positions of charted seabed features should be better than 500 metres.
3. A typical ZOC C area is unlikely to have included a comprehensive sonar sweep to cover the gap between adjacent survey lines. As the distance between survey lines may be from 250 metres to as much as a kilometre (0.6nm), it is highly likely that seabed features may remain undetected between those lines. A ZOC C survey may be considered 'inadequately surveyed', particularly for depths of 30 to 40 metres or less.
4. Caution is therefore advised when navigating close to shore or adjacent reefs or rocky areas, where depths may rise rapidly from the sea floor, or where the seabed appears subject to change.



- ZOC C – Full area search not achieved, depth anomalies may be expected
- position accuracy (uncertainty) better than 500 metres
- depth accuracy (uncertainty) of surveyed features approximately two metres (Section 13.7, Table). However, the potential size of undetected features is not specified and may be significantly larger than the accuracy of known features

13.5.7 ZONES OF CONFIDENCE D (2 STARS)

1. Soundings in ZOC D areas are similarly sourced from historic surveys, but in this case those conducted with large distances between adjacent survey lines, or simply soundings collected on an opportunity basis by ships undertaking routine passage.
2. Large depth anomalies may include:
 - uncharted features rising from the seafloor to the surface in coastal areas – 20 to 50 metres high pillars rising to less than one metre below chart datum have been found in former ZOC D coastal areas
 - uncharted or very poorly positioned coral atolls in both coastal and oceanic areas
 - uncharted shoals rising several hundred metres from the seafloor in oceanic areas, with gradients too steep for a vessel at sea speed to stop or turn away in time
3. The positions of charted seabed features are likely to be worse than 500 metres.
4. Although many ZOC D areas will appear blank (unsurveyed), some may show a few broken depth contours or isolated depths. These should not be considered an invitation to disregard the ZOC D assessment.
5. In attempting to navigate a ZOC D area, while following a line of depths on the chart may be better than navigating the white space between, it remains a very poor precaution. Passage soundings typically come from low accuracy and often very old sources – the earlier ship may have passed close to, but not detected, a significant shoal. Equally, the true track followed by the original ship may be well over 500 metres from where they reported it to be.



- ZOC D – Full area search not achieved, large depth anomalies may be expected
- position accuracy (uncertainty) worse than 500 metres
- no quoted depth accuracy (uncertainty). Undetected features may potentially rise to or near the sea surface

13.5.8 ZONES OF CONFIDENCE UNASSESSED (U)

1. This category is used to indicate areas where survey information included has not been assessed for accuracy. This may occur when:
 - newly received information has been included, as an urgent precaution, prior to the data being fully assessed
 - the national hydrographic office has only limited resources, so has initially published a large number of their first-generation ENC faster than their survey assessment teams can complete assessments
 - the area depicted is on a small scale ENC (smaller than 1:500,000 – a carry-over from some nations' paper charts), though the same area may be covered by one of the other categories within an overlapping larger scale ENC. In these cases mariners should refer to the larger scale ENC for precise detail

13.6 ZONES OF CONFIDENCE SUMMARY

1. Put in simple terms, in:
 - ZOC A1 and A2 areas mariners should be able to navigate with confidence
 - ZOC B areas it is unlikely that an uncharted danger affecting surface navigation exists
 - ZOC C areas mariners should exercise caution since hazardous uncharted features may be expected, particularly in or near reef and rocky areas, or areas of mobile seabed
 - ZOC D areas a very high degree of caution is required, as these areas contain either very sparse data or may not have been surveyed at all
 - ZOC U areas it is good practice for mariners to use the same degree of caution as ZOC D areas
2. Within ports, the pilot or harbour master may advise that higher accuracy surveys have been conducted that allow for smaller under-keel clearances (subject to tides, weather, speed, and manoeuvring margins). In the absence of this advice, smaller under-keel safety margins should not be assumed.
3. In coastal shipping areas the most common assessments likely to be encountered are:
 - ZOC B – around 30% of the world's coastal waters
 - ZOC C – around 20% of the world's coastal waters
 - ZOC D – around 20% of the world's coastal waters
 - ZOC U – around 25% of the world's coastal waters
4. While these percentages may vary from place to place, the key point to note is that the standards of surveying in a port are only very rarely encountered outside those ports. Ships are therefore at greatest risk away from ports, even though depths may be deeper. An understanding of how much confidence can be placed in the data within an ENC is therefore most important.

13.7 IHO ZONES OF CONFIDENCE CATEGORIES

ZOC Category (note 1)	Position Accuracy (note 2)		Depth Accuracy (note 3)		Seafloor Coverage	Typical Survey Characteristics (note 5)
A1	± 5 m + 5% depth		=0.50 + 1%d		Full area search undertaken. Significant seafloor features detected (note 4) and depths measured.	Controlled, systematic survey (note 6) high position and depth accuracy achieved using DGPS and a multi-beam, channel or mechanical sweep system.
			Depth (m)	Accuracy (m)		
			10	± 0.6		
			30	± 0.8		
			100	± 1.5		
			1000	± 10.5		
A2	± 20 m		= 1.00 + 2%d		Full area search undertaken. Significant seafloor features detected (note 4) and depths measured.	Controlled, systematic survey (note 6) achieving position and depth accuracy less than ZOC A1 and using a modern survey echo-sounder (note 7) and a sonar or mechanical sweep system.
			Depth (m)	Accuracy (m)		
			10	± 1.2		
			30	± 1.6		
			100	± 3.0		
			1000	± 21.0		
B	± 50 m		= 1.00 + 2%d		Full area search not achieved; uncharted features, hazardous to surface navigation are not expected but may exist.	Controlled, systematic survey (note 6) achieving similar depth but lesser position accuracies than ZOC A2, using a modern survey echo-sounder (note 5), but no sonar or mechanical sweep system.
			Depth (m)	Accuracy (m)		
			10	± 1.2		
			30	± 1.6		
			100	± 3.0		
			1000	± 21.0		
C	± 500 m		= 2.00 + 5%d		Full area search not achieved, depth anomalies may be expected.	Poor quality data or data that cannot be quality assessed due to lack of information.
			Depth (m)	Accuracy (m)		
			10	± 2.5		
			30	± 3.5		
			100	± 7.0		
			1000	± 52.0		
D	Worse than ZOC C	Worse than ZOC C		Full area search not achieved, large depth anomalies may be expected	Poor quality data or data that cannot be quality assessed due to lack of information	
U	Unassessed - The quality of the bathymetric data has yet to be assessed					
Column: 1	2	3		4	5	
Source: IHO S-57 Ed3.1 Supp 3 (Jun 2014), pp 13-14						

Source: IHO S-57 Ed3.1 Supp 3 (Jun 2014), pp 13-14

Remarks (from IHO S-57 standard):

To decide on a ZOC Category, all conditions outlined in columns 2 to 4 of the table must be met.

Explanatory notes quoted in the table (from IHO S-57 standard):

Note 1. The allocation of a ZOC indicates that particular data meets minimum criteria for position and depth accuracy and seafloor coverage defined in this Table. ZOC categories reflect a charting standard and not just a hydrographic survey standard. Depth and position accuracies specified for each ZOC category refer to the errors of the final depicted soundings and include not only survey errors but also other errors introduced in the chart production process.

Note 2. Position accuracy of depicted soundings at 95% CI (2.45 sigma) with respect to the given datum. It is the cumulative error and includes survey, transformation and digitizing errors etc. Position accuracy need not be rigorously computed for ZOCs B, C and D but may be estimated based on type of equipment, calibration regime, historical accuracy etc.

Note 3. Depth accuracy of depicted soundings = $a + (b \cdot d)/100$ at 95% CI (2.00 sigma), where d = depth in metres at the critical depth. Depth accuracy need not be rigorously computed for ZOCs B, C and D but may be estimated based on type of equipment, calibration regime, historical accuracy etc.

Note 4. Significant seafloor features are defined as those rising above depicted depths by more than:

Depth Significant Feature	
a	<40m: 2m
b	>40m: 10% depth

A full seafloor search indicates that a systematic survey was conducted using detection systems, depth measurement systems, procedures, and trained personnel designed to detect and measure depths on significant seafloor features. Significant features are included on the chart as scale allows. It is impossible to guarantee that no significant feature could remain undetected, and significant features may have become present in the area since the time of the survey.

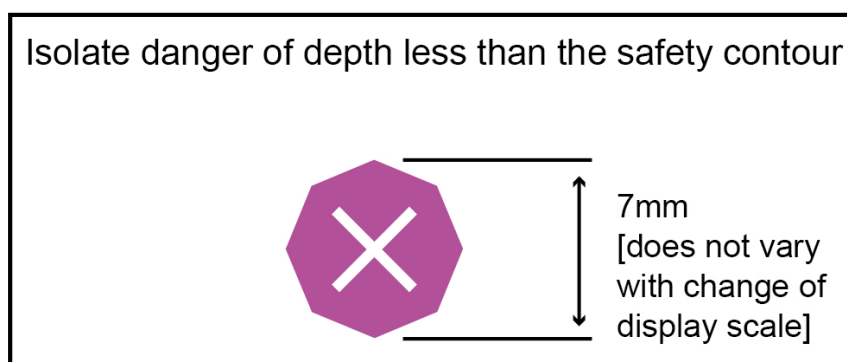
Note 5. Typical Survey Characteristics - These descriptions should be seen as indicative examples only.

Note 6. Controlled, systematic surveys (ZOC A1, A2 and B) - surveys comprising planned survey lines, on a geodetic datum that can be transformed to WGS84.

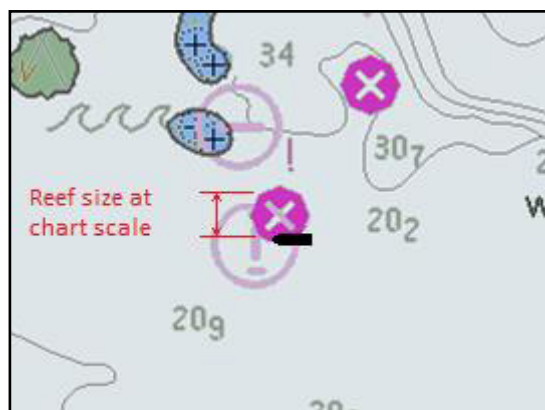
Note 7. Modern survey echo-sounder - a high precision single beam depth measuring equipment, generally including all survey echo-sounders designed post 1970.

13.8 DANGEROUS EFFECTS OF OVER-SCALE ECDIS DISPLAY NEAR 'ISOLATED DANGERS'

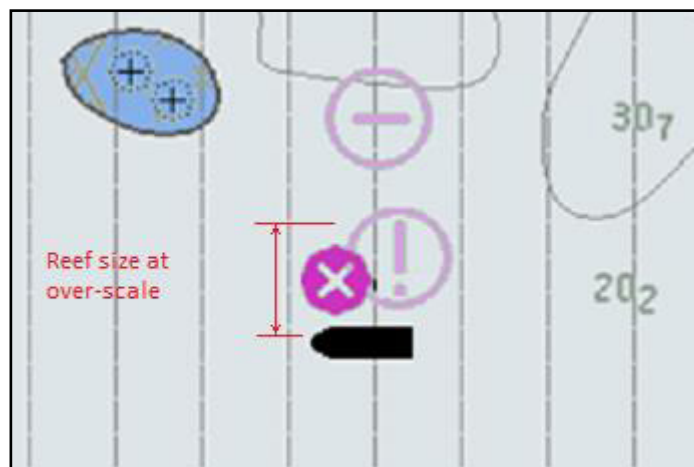
1. Use of over-scale display of an ENC may be dangerous in certain circumstances. There is a mistaken belief that zooming in allows for greater accuracy – however, this is not the case. In reality, zooming in beyond the intended maximum display scale may be misleading and dangerous, particularly for 'Isolated dangers of depth less than the safety depth'.
2. Every ENC is compiled at an intended maximum scale. At this scale the maximum level of detail is revealed, while zooming out will progressively reduce the level of detail. None of this affects the accuracy of the chart. Zooming in may reveal a new, larger scale ENC, but this too has limits, and a point will be reached where there is no point zooming in further.
3. At the intended maximum compilation scale, details which are too small to chart, but which still present a hazard to navigation, are typically replaced by a symbol larger than the charted size of the feature (such as a very small reef). Zooming in to over-scale destroys the relationship between the size of the (now larger) hazard and the size of the symbol.



4. When the ENC is displayed correctly, the danger to a ship close to an isolated danger is clear.



5. However, when displayed at over-scale, a ship the same unsafe distance from the isolated danger incorrectly appears to be safe because the isolated danger symbol is still the same size.



6. This is not more accurate, and is definitely not safe.
7. Remember, the positioning accuracy of the isolated danger may be worse than 500 metres. Routes should be planned to clear these dangers by at least as far as the ZOC category immediately around the danger dictates.

Notes:

Notes:

Abbreviations

AA	Anti-aircraft
AAD	Australian Antarctic Division
AAT	Australian Antarctic Territory
ABF	Australian Border Force
ABS	Australian Bureau of Statistics
ACC	Antarctic Circumpolar Current
ACCC	Australian Competition and Consumer Commission
ACDT	Australian Central Daylight Time
ACI	Australian Chart Index
ACMA	Australian Communications Media Authority
ACT	Australian Capital Territory
ACZ	Antarctic Convergence Zone
ADF	Australian Defence Force
AEDT	Australian Eastern Daylight Time
AFMA	Australian Fisheries Management Authority
AFS	<i>International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001</i>
AFP	Australian Federal Police
AFZ	Australian Fishing Zone
AHO	Australian Hydrographic Office
AHP	Australian Hydrographic Publications
AHS	Australian Hydrographic Service
AHSCP	Australasian Hydrographic Surveyors Certification Panel
AIS	Automatic Identification System
AISR	Australian International Shipping Register
ALRS	Admiralty List of Radio Signals
AMB	Australian Maritime Boundaries
AMD	Australian Maritime Domain
AMPs	Australian Marine Parks
AMS	Aviation and Maritime Security
AMSA	Australian Maritime Safety Authority
AMVER	Automated Mutual Assistance Vessel Rescue System
ANARE	Australian National Antarctic Research Expeditions
ANSDB	Australian National Shipwreck database
ANTT	Australian National Tide Tables
APP	Advance Passenger Processing
AQIS	Australian Quarantine Inspection Service
ARCS	Admiralty Raster Chart Service
ARP	Australian Reef Pilots
ASCII	American Standard Code for Information Interchange
ASMA	Antarctic Specially Managed Areas
ASPA	Antarctic Specially Protected Areas
ATBA	Area to be Avoided
ATEP	<i>Antarctic Treaty (Environment Protection), 1980</i>
ATSB	Australian Transport Safety Bureau
ATSIC	Aboriginal and Torres Strait Islander Commission
AVOF	Australian Voluntary Observing Fleet
BC Code	Code of Practice for Solid Bulk Cargos
BOM	Bureau of Meteorology
BRM	Bridge Resource Management
BSD	Biosecurity Status Document
BV	Bureau Veritas
BWM	<i>International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004</i>

BWMS	Ballast Water Management System
BWR	Ballast Water Report
CATZOC	Category Zones of Confidence
CCAMLR	<i>Convention for the Conservation of Antarctic Marine Living Resources, 1982</i>
CITES	<i>Convention on International Trade in Endangered Species of Wild Fauna and Flora</i>
ClassNK	Nippon Kaiji Kyokai
CLC 92	<i>International Convention on Civil Liability for Oil Pollution Damage, 1992</i>
CLCS	Commission on the Limits of the Continental Shelf
COLREGS	Collision Regulations
CRF	Consolidated Revenue Fund
CS	Continental Shelf
CSR	Continuous Synopsis Record
CST	Central Standard Time
Cth	Commonwealth
CT(RAS)	<i>Coastal Trading (Revitalising Australian Shipping) Act 2012 (Cth)</i>
CW	Coastal Waters
CWA	Chemical Warfare Agents
CZ	Contiguous Zone
DAWR	Department of Agriculture and Water Resources
DBCP	Data Buoy Cooperation Panel
DBCT	Dalrymple Bay Coal Terminal
DEE	Department of Environment and Energy
DEWNR	Department of Environment, Water and Natural Resources
DF	Direction Finding
DFAT	Department of Foreign Affairs and Trade
DG	Dangerous Goods
DGPS	Differential Global Positioning System
DHA	Department of Home Affairs
DIBP	Department of Immigration and Border Protection
DITCRD	The Department of Infrastructure, Transport, Cities and Regional Development
DoD	Department of Defence
DoT	Department of Transport (Western Australia)
DPIRD	Department of Primary Industries and Regional Development (Western Australia)
DPTI	Department of Planning, Transport and Infrastructure (South Australia)
DR	Deviation Reports
DSA	Designated Shipping Area
DSC	Digital Selective Calling
DST	Daylight Saving Time
DVN GL	Det Norske Veritas - Germanischer Lloyd
EAC	East Australian Current
ECA	Emission Control Area
ECDIS	Electronic Chart Display and Information System
ECS	Electronic Chart System
EEDI	Energy Efficiency Design Index
EEOI	Energy Efficiency Operational Index
EEZ	Exclusive Economic Zone
EFT	Electronic Funds Transfer
EGC	Enhanced Group Calling
EIA	Environmental Impact Assessment
ENC	Electronic Navigational Charts
ENSO	El Nino/La Nina Southern Oscillation
EPBC	<i>Environment Protection and Biodiversity Conservation Act, 1999 (Cth)</i>
EPIRB	Emergency Position Indicating Radio Beacon
EPR	Environmental Permitting Regime
eQPAR	Electronic Quarantine Pre-Arrival Report

ESSA	Environmentally Sensitive Sea Area
EST	Eastern Standard Time
ETA	Estimated Time of Arrival
ETC	Emergency Towage Capability
ETD	Estimated Time of Departure
ETV	Emergency Towage Vessel
EWD	East Wind Drift
FR	Final Reports
FPSO	Floating Production, Storage and Offtake
GA	Geoscience Australia
GBR	Great Barrier Reef
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GEBCO	General Bathymetric Charts of the Ocean
GISIS	Global Integrated Shipping Information System
GMDSS	Global Maritime Distress and Safety System
GNEC	Great North East Channel
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GRT	Gross Registered Tonnage
GST	Goods and Services Tax
GT	Gross Tonnage
GUZ	General Use Zone
HF	High Frequency
HMAS	Her Majesty's Australian Ship
HMCS	Her Majesty's Canadian Ship
HMS	Her Majesty's Ship
HNS	Hazardous and Noxious Substance
hPa	Hectopascal
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IAMSAR	International Aeronautical and Maritime Search and Rescue Manual
IC-ENC	International Centre for ENC
ICAO	International Civil Aviation Organization
ICSM	Interdepartmental Committee of Surveying and Mapping
IEE	International Energy Efficiency
IHO	International Hydrographic Organization
IHR	International Health Regulations
IMB	International Maritime Bureau
IMDG	International Maritime Dangerous Goods Code
IMN	Inmarsat Mobile Number
IMO	International Maritime Organization
IMOS	Integrated Marine Observing System
IMSBC	International Maritime Solid Bulk Cargoes Code
INF	Irradiated Nuclear Fuel
INT	International Series of Charts
IOMOU	Indian Ocean Memorandum of Understanding
IOPC	The International Oil Pollution Compensation Fund
IOR	Indian Ocean Region
IOTWMS	Ocean Tsunami Warning & Mitigation System
IP	Intermediate Position Reports
IPC	Incoming Passenger Card
IR	Defect Reports
ISPP	International Sewage Pollution Prevention
ISPS	International Ship and Port Facility Security
ISR	International Shipping Register

ISSC	International Ship Security Certificate
ITCZ	Inter-Tropical Convergence Zone
ITU	International Telecommunications Union
IUCN	International Union for Conservation of Nature
JAMAG	Joint Agencies Maritime Advisory Group
JATWC	Joint Australian Tsunami Warning Centre
JCOMM	Joint Commission for Oceanography and Marine Meteorology
JRCC	Joint Rescue Coordination Centre
kg	Kilogram
LAT	Lowest Astronomical Tide
LES	Land Earth Station
LNG	Liquefied Natural Gas
LOA	Length Overall
LR	Lloyd's Register
LRIT	Long Range Identification and Tracking
m	Metre
MARSEC	Maritime Security Levels
MARPOL	<i>The International Convention for the Prevention of Pollution from Ships</i>
MARS	Maritime Arrivals Reporting System
MAST	Marine and Safety Tasmania
MASTREP	Modernised Australian Ship Tracking and Reporting System
MBC	Maritime Border Command
MCO	Maritime Casualty Officer
MCV	Maritime Crew Visa
MEDEVAC	Medical Evacuation
MEPC	Marine Environment Protection Committee
MERCOM	Maritime Emergency Response Commander
METAREA	Meteorological Area
MF	Medium Frequency
MMSI	Maritime Mobile Service Identity
MNCC	Maritime National Coordination Centre
MNL	Marine Navigation Levy
MOU	Memorandum of Understanding
MP	Marine Pollution
MPA	Marine Protected Area
MPX	Master-Pilot Exchange
MSC	Maritime Safety Committee
MSI	Maritime Safety Information
MSIC	Maritime Security Identification Card
MSL	Mean Sea Level
MSQ	Maritime Safety Queensland
MSV	Maritime Safety Victoria
MSZ	Maritime Security Zone
MTO	Maritime Trade Operations
MTOFSA	<i>Maritime Transport and Offshore Facilities Security Act, 2003</i> (Cth)
MTPC	Maritime Travellers Processing Committee
NATO	North Atlantic Treaty Organisation
NAVAREA	Navigation Area
NAVTEXT	Navigational Telex
NBDP	Narrow Band Direct Printing
NCAGS	Naval Cooperation and Guidance for Shipping
nm	Nautical Mile
NMERA	National Maritime Emergency Response Arrangements
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOTAM	Notice to Airmen

NOx	Nitrogen Oxides
NP	Nautical Publication
NSCV	National Standard for Commercial Vessels
NSW	New South Wales
NT	Northern Territory
NM	Admiralty Notices to Mariners
NtM	Australian Notices to Mariners
OCS	Offshore Constitutional Settlement
ODAS	Oceanographic Data Acquisition System
OHS (MI)	Occupational Health and Safety (Maritime Industry)
OPGGSA	<i>Offshore Petroleum and Greenhouse Gas Storage Act, 2006 (Cth)</i>
OPRC	<i>International Convention on Oil Pollution, Preparedness Response and Cooperation 1990</i>
OSZ	Offshore Security Zone
OTS	Office of Transport Safety
P	Preliminary notice
PAR	Pre-Arrival Report
PBG	Pilot Boarding Ground
PDC	Pratique Documentary Clearance
PDF	Portable Document Format
PER	Pre-Entry Report
PGB	Pilot Boarding Ground
P&I club	Protection and Indemnity club
PM	Particulate Matter
PNC	Paper Nautical Chart
PNG	Papua New Guinea
POLREP	Marine Pollution Report
POR	Pacific Ocean Region
POWC	Prince of Wales Channel
PPP	Pilotage Passage Plan
PSC	Port State Control
PSL	Protection of the Sea Levy
PSSA	Particularly Sensitive Sea Area
PZJA	Protected Zone Joint Authority
QCPP	Queensland Coastal Passage Plan
QLD	Queensland
QPAR	Quarantine Pre-arrival Report
RAAF	Royal Australian Air Force
RACON	RAadar BeaCON
RAN	Royal Australian Navy
REEFREP	The Mandatory Torres Strait and Great Barrier Reef Ship Reporting System
Reef VTS	The Great Barrier Reef and Torres Strait Vessel Traffic Services
REPCON	Marine Confidential Reporting Scheme
RFL	Regulatory Functions Levy
RMS	Roads and Maritime Service (NSW)
RNC	Raster Navigational Chart
RTCM	Radio Technical Commission for Maritime Services
RTO	Registered Training Organisation
SA	South Australia
SAC	Special Access Code
SAR	Search and Rescue
SCV	Special Category Visa
SEEMP	Ship Energy Efficiency Management Plan
SEI	Ship Encounter Information
SERB	Submarine Emergency Radio Beacon
SI	<i>Sea Installations Act, 1987</i>

SID	Submarine Identification
SMC	Safe Manning Certificate
SOLAS	Safety of Life at Sea
SOx	Sulphur Oxide
SP	Sail Plans
S-23	Special Publication Number 23 - Names and Limits of Ocean and Seas
SRA	<i>Shipping Registration Act</i>
SRO	Shipping Registration Office
SRR	Australian Search and Rescue Region
SRS	Ship Reporting System
SRU	Search and Rescue Units
SS	Steam Ship
SSB	Single Side Band
SSC	Ship Sanitation Certificate
SSLA	<i>Sea and Submerged Lands Act, 1973</i>
SSP	Ship Security Plans
SSZ	Ship Security Zones
STCW	Standards of Training, Certification and Watchkeeping for Seafarers Code
STI	Ship Traffic Information
T	Temporary notice
TAS	Tasmania
TBT	Tributyltin
TMAC	Telemedical Advice Centre
TMAS	Australian Telemedical Assistance Service
TMOU	Tokyo Memorandum of Understanding
TP	Torres Pilots
TS	Territorial Sea
TSB	Territorial Sea Baseline
TSI	<i>Transport Safety Investigation Act, 2003</i>
TSP	Tsunami Service Providers
TSS	Traffic Separation Scheme
TSV	Transport Safety Victoria
UIN	Unique Identification Number
UKC	Under Keel Clearance
UKCM	Under Keel Clearance Management
UKHO	United Kingdom Hydrographic Office
UN	United Nations
UNCLOS	<i>United Nations Convention on the Law of the Sea</i>
UNESCO	United Nations Educational, Scientific and Cultural Organization
USL	Uniform Shipping Laws
UTC	Coordinated Universal Time
VCS	Vessel Compliance Scheme
VHF	Very High Frequency
VIC	Victoria
VMC	Voice Marine Charleville
VMS	Vessel Management System
VMW	Voice Marine Wiluna
VOS	Voluntary Observing Ship Scheme
VPCM	Victorian Ports Corporation Melbourne
VRCA	Victorian Regional Channels Authority
VTIC	Vessel Traffic Information Centre
VTs	Vessel Traffic Service
WA	Western Australia
WAC	West Australian Current

WGS	World Geodetic System
WMO	World Meteorological Organization
WST	Western Standard Time
WWNWS	World Wide Navigational Warning Service
ZOC	Zones of Confidence



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Reporting Discrepancies on Nautical Charts and Publications

(Hydrographic Note)

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Observation Details	
Reports which are incomplete or lacking detail should still be submitted – some information is far better than no information, and may contribute to preventing a significant accident.	

INSTRUCTIONS:

Mariners are requested to notify the Australian Hydrographic Office (AHO) when new or suspected dangers to navigation are discovered, changes are observed in aids to navigation, port infrastructure, or corrections to publications are seen to be necessary. The mariner can also report any ENC display issues experienced. The Mariner's Handbook for Australian Waters (AHP20) and the Mariner's Handbook (NP 100) give general instructions. The provisions of international and national laws should be complied with when forwarding such reports. The Hydrographic Note may be forwarded to:

Postal: Hydrographer of Australia Locked Bag 8801 Wollongong NSW 2500 Australia	E-mail: datacentre@hydro.gov.au
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When submitting a report it may be worth noting:

- Reports which are incomplete or lacking detail should still be submitted - some information is far better than no information, and may contribute to preventing a significant accident.
- Photographs of the observed feature in support of brief written notes are a most effective means of providing detailed information quickly and simply. Similarly, a screen capture or photograph of the navigation screen may be equally effective if accompanied by an explanation. Simply attach an image to the email generated by the submit button.
- Marked copies of charts and publications may also be a convenient way of passing information. All still need to be supplemented by location and sender details. Any marked-up original paper charts used for this purpose will be replaced upon request.
- If submitting an echo sounder trace, an output file from the echo sounder, or quoting an observed depth measured by an echo sounder, the notes should include the date and time of observation, and whether the echo sounder on the vessel is set to read from the keel or waterline. If reading from the keel, the vessel's draft is helpful in calculating the true depth. Date and time of observation are useful in adjusting the measured depth for tide, while the speed of sound is also useful if known (a default value of 1500 metres/ sec is common) to refine the measurement further. Modern echo sounders frequently have the ability to record the passage to hard disk. If the electronic data is available for submission, then the sounding files will typically have each depth tagged with date, time and position (in any order). Typically these can be exported as an ASCII (plain text) file and supplied via digital media or emailed with the report.
- It is possible that in deeper water an echo sounder can go 'around-the-clock' and show a shallow false return, or receive strong returns from fish or abnormal water layers. If possible, depths should continue to be recorded until general agreement with surrounding charted depths is restored. If unsure, please send the information anyway.
- Latitude and longitude should preferably only be quoted for the position of a feature if the position was determined using a Global Navigational Satellite System (GPS, GLONAS). If the position was determined by a combination of ranges and bearings (true or magnetic being specified) from observed features please include the ranges, bearings and features as part of the notes.
- Reports of uncharted shoal depths, as well as navigation aids out of order should, at the mariner's discretion, also be made by radio to the nearest coast radio station or the relevant port authority. The draft of modern tankers and bulk cargo vessels is such any observed shoal depths in general depths of 30 metres or less may be significant, particularly as the observed depth may be at the edge of a much shallower feature.

Note: An acknowledgment of receipt will be published and the information then used to the best advantage which may mean immediate action or inclusion in a revision in due course. When a Notice to Mariners is issued the sender's ship or name is quoted as the authority.

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Report a **DISCREPANCY**

Report to the Australian Hydrographic Office any changes, discrepancies or omissions from paper charts, Electronic Navigational Charts (ENC) and nautical publications and we will update our products to keep everyone safe.

We encourage you to report on:

- new and newly discovered obstructions and dangers
- changes to lights buoys and beacons
- any errors or omissions in navigational products
- ENC display issues experienced
- observations that may improve safety in poorly charted waters
- safe anchorages not charted



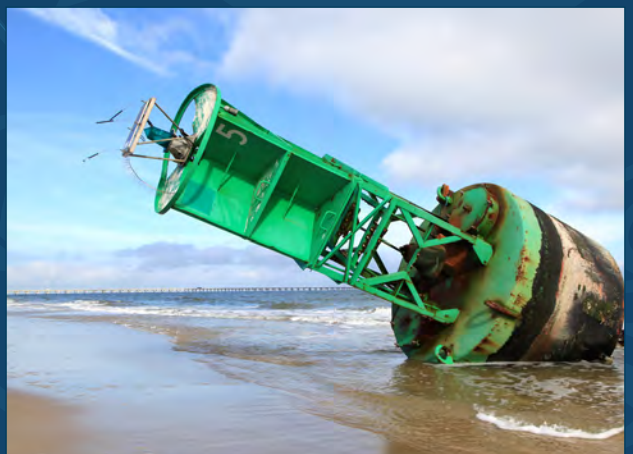
How to submit a report:

- email: datacentre@hydro.gov.au
- online: <http://www.hydro.gov.au/feedback/AA217160-hydro-note.pdf>

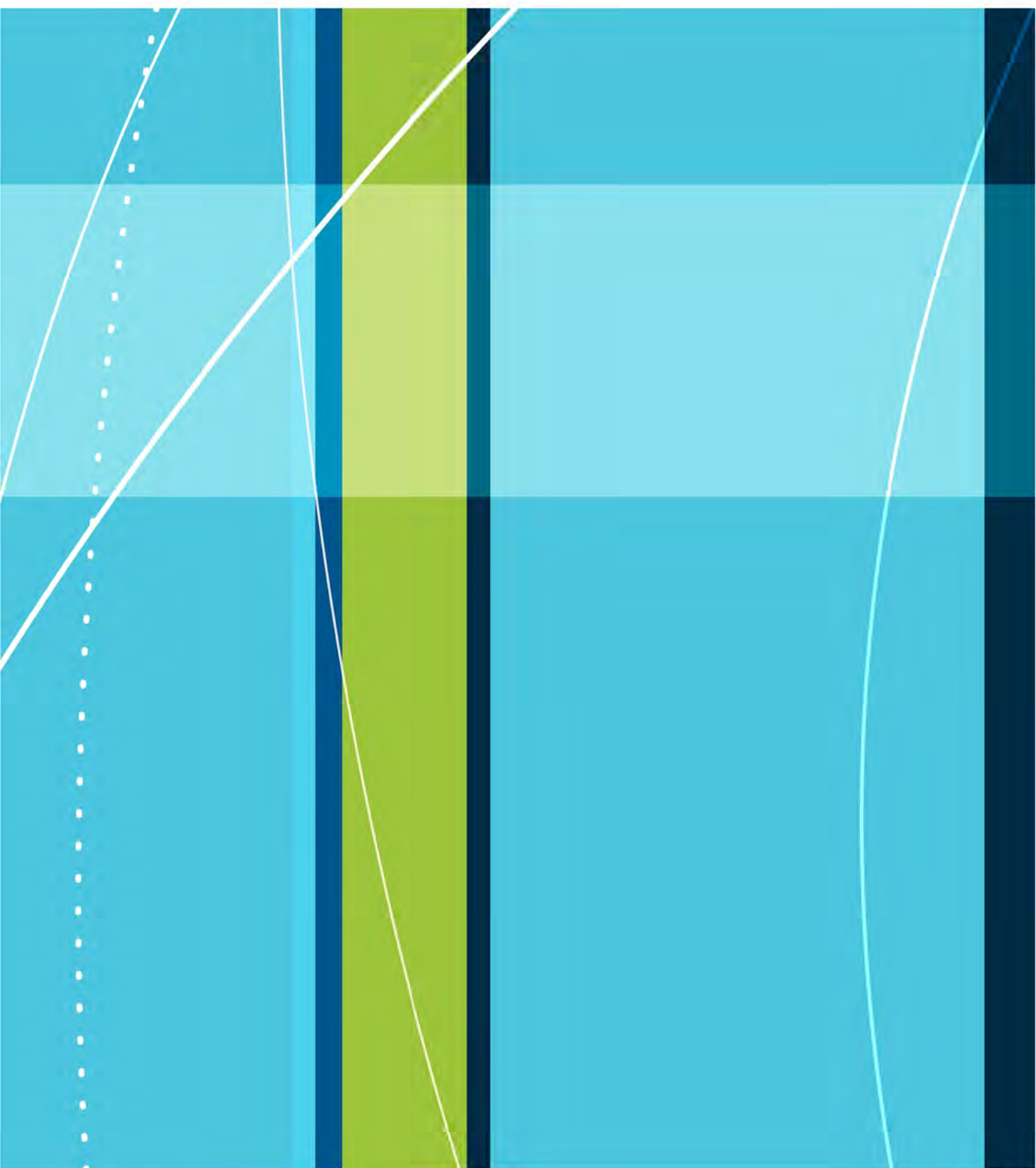
Photographs of real-world features, or screen-shots of your navigation display, can provide useful additional detail.

If you become aware of an immediate threat to navigational safety while navigating in Australian waters, please report it to:

- **AMSA Joint Rescue Coordination Centre**
(see AHP20, Chapter 9.1.4 for more information)
- **the nearest port authority**
(see AHP20, Chapter 11 for more information)
- **and, if applicable, to the nearest Vessel Traffic Services Operator**
(see AHP20, Chapter 11 for more information)



This will enable the appropriate navigational warnings to be broadcast promptly.



AUSTRALIAN HYDROGRAPHIC OFFICE

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