

Marine biosecurity toolkit: Guidance on the International Convention for the control and management of ship's ballast water and sediments

Document B

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (Ballast Water Management Convention or BWM Convention) is an international maritime treaty that requires international vessels that fly flags of signatory countries, and carry ballast water, to conform to certain standards approved by the International Maritime Organization (IMO). The BWM Convention entered into force on 8 September 2017¹. By 8 September 2024 all vessels must comply with the D2 discharge standard, which means that they will have to have a system for treating ballast prior to discharge. The introduction of this requirement is phased and depends upon when the vessel last underwent a renewal survey. By September 2020, 79 countries had signed the convention.

Vessels that carry cargo pump seawater into ballast tanks on board the vessel to provide stability to the vessel and allow it to operate safely under different loading conditions. Many different types of marine plants and animals can be transported in ballast water. These include free-swimming species and their juvenile, planktonic life stages, biofouling organisms that grow inside the ballast tanks and organisms from the seafloor that can be sucked into the tanks during loading of the ballast. If ballast water loaded in a port is discharged at a different location it may release marine organisms in the ballast water, including some pests and diseases.

Under the BWM Convention, new ships must use an approved ballast water treatment system which ensures that only small levels of viable organisms are left in the ballast water. However, older vessels have until September 2024 to adhere to this standard. Currently, older vessels are required to do a ballast water exchange, where water taken in from the last port is discharged and replaced with new sea water at a location over 200 nautical miles from shore.

The United States of America regulates ballast water management separately through the Coast Guard (USCG) under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 and through the Environmental Protection Agency's (EPA) Vessel General Permit program. They also require ballast water exchange or the need to have a ballast water management system in place, the system chosen depends on age and size of vessel.

Several Pacific island countries have ratified the BWM Convention, and national ballast water management strategies are available for the Cook Islands, Samoa, Tonga Fiji, and Tuvalu. The Republic of the Marshall Islands also has guidelines in place that recognise both USCG and the BWM Convention (Table 1.).

¹ <https://www.imo.org/en/MediaCentre/PressBriefings/Pages/21-BWM-EIF.aspx>

Table 1. Pacific island countries and territories which have ratified or acceded to the BWM Convention

Pacific country or territory	Ratified
American Samoa	*USCG regulations
Cook Islands	✓
Federated States of Micronesia	
Fiji	✓
French Polynesia	
Guam	*USCG regulations
Republic of Kiribati	✓
Republic of the Marshall Islands	✓
New Caledonia	
Republic of Nauru	
Niue	✓
Commonwealth of the Northern Mariana Islands	*USCG regulations
Republic of Palau	✓
Papua New Guinea	
Samoa	✓
Solomon Islands	
Tokelau	
Tonga	✓
Tuvalu	✓
Vanuatu	
Wallis and Futuna	

Ships subject to the BWM Convention requirements will be obliged to manage their ballast water and entrained sediments to a certain standard, in accordance with the provisions within the BWM Convention, as outlined below.

Ballast Water Management Plan

Ships are required to have onboard, and implement, a Ballast Water Management Plan that has been approved by the relevant administration. The Ballast Water Management Plan is specific to each ship and must include details of the safety procedures for the ship and crew and provide a detailed description of the actions to be taken to implement the ballast water management requirements.

The BWM Convention does not apply to:

- ships that operate exclusively in the waters of only one exclusive economic zone (EEZ) or territorial waters.
- ships that operate exclusively in the waters of only one territorial waters or in the open ocean, not part of an EEZ.
- ships not constructed/designed to carry ballast water.
- permanent ballast water in sealed tanks on ships that is not subject to discharge.

Ballast Water Record Books

Ships must have a Ballast Water Record Book that must be completed after each ballast water operation. It should record when ballast water is taken onboard, circulated, or treated for ballast water management purposes and discharged into the sea. It should also record when ballast water is discharged to a reception facility and accidental or other exceptional discharges of ballast water. An example Ballast Water Record Book is provided in Appendix A.

International Ballast Water Management Certificate

The BWM Convention requires that **all ships of 400 gross tonnage and above** be surveyed and have onboard an International Ballast Water Management Certificate (or a Statement of Compliance if the vessel's flag State has not ratified the BWM Convention). This certifies that the ship carries out ballast water management in accordance with the BWM Convention. The BWM Convention requires that administrations establish appropriate measures to ensure compliance for those ships that are under 400 gross tonnage, but which are still required to hold an approved Ballast Water Management Plan.

Ballast water management standards

The BWM Convention introduces the phased implementation of two ballast water standards:

- D-1 Ballast Water Exchange Standard; and
- D-2 Ballast Water Performance Standard.

Any ballast water discharged from a ship shall be required to meet either the D-1 or D-2 standard until September 2024 when all ships are required to implement the D-2 standard.

Sediment management for ships

All ships shall remove and dispose of sediments from spaces designed to carry ballast water in accordance with the ship's Ballast Water Management Plan.

Exemptions

The requirement to meet the ballast water management standards will not apply to:

- The uptake and discharge of ballast water necessary for ensuring the safety of the ship in emergency situations.
- The accidental discharge or uptake of ballast water as a result of damage to the ship or its equipment.
- The uptake or discharge of ballast water for the purpose of avoiding or minimising pollution incidents from the ship.
- The uptake and subsequent discharge on the high seas.

- The discharge of ballast water from a ship at the same location where the whole of the ballast water originated, provided no mixing of unmanaged ballast water from other areas has occurred.

Equivalent compliance

Vessels that are used solely for recreation or competition or that are used primarily for search and rescue, that are less than 50 m in overall length and have a maximum ballast capacity of 8 m³ may apply to their administration for equivalent compliance.

Article 13 of the BWM Convention states that Parties with common interests to protect the environment, human health, property and resources in a given geographical area, particularly areas that border enclosed and semi-enclosed seas, shall try to improve regional cooperation, through the development of regional agreements consistent with the BWM Convention.

Ballast water management standards

As the BWM Convention has been in force since 2017, all ships must conform to at least the D-1 standard; and all new ships, to the D-2 standard. From September 2024 all ships will have to conform to the D-2 standard.

D-1 Ballast water exchange

The D-1 standard requires ships to exchange ballast water in the open ocean away from coastal areas. It specifies that ships performing ballast water exchange should undertake **at least 95% volumetric exchange** of ballast water. Ships undertaking ballast water exchange should conduct the operation **at least 200 nautical miles** from the nearest land and in water **at least 200 metres deep**; or in cases where the ship is unable to conduct ballast water exchange in accordance with the above, as far from the nearest land as possible, and in all cases **at least 50 nautical miles** from the nearest land and in water **at least 200 metres deep**. By doing this, fewer organisms will survive, and ships will be less likely to introduce marine NIS when they release the ballast water in port.

In sea areas where the minimum distance and depth criteria cannot be met, the Parties to the Convention have the ability to designate ballast water exchange areas within their waters.

D-2 Ballast water performance standard

The D-2 standard specifies the amount of viable organisms allowed to be discharged, including specified indicator microbes harmful to human health. Achieving the D-2 standard usually requires installation and use of a ballast water management system. Treatment of ballast water with onboard systems is considered to be the best management technique. Treatment can be carried out using mechanical, physical, chemical, or biological processes. In practice, most ballast water management systems use a combination of methods because no single technology is effective at eliminating the range of organisms present in the ballast. To date, more than 60 ballast water treatment systems have been given type approval by the IMO.

Risk assessment tool

A ballast water risk assessment tool designed for the United Kingdom Overseas Territories has been adapted for use by the Pacific island countries and territories. It can be used to help determine the potential hazard from marine non-indigenous species (NIS) that the ballast water of different vessels may pose. It aims to gather data about the vessels voyage history and systems to build up a database on the vessels that visit local waters. The questions asked within the risk assessment help to determine how likely the risk is that the ballast water contains a potential marine NIS.

It is suggested that the database from any completed risk assessments is reviewed every 6 months at a minimum to assess the number of very high / high risk vessels that are visiting local waters. If there is a high percentage of high-risk vessels, then if a legislative framework isn't already in place, one may have to be drafted.

The risk assessment tool provided is in the form of an Excel spreadsheet which is completed using the drop-down selection boxes. Once the responses are selected, the level of potential risk is automatically displayed. If the vessel has a working ballast water management system onboard, then the risk level would be assessed as minimal. In this case, the rest of the risk assessment does not need to be completed.

Answers to the risk assessment questions can be requested as part of the documentation that vessels are required to submit before arriving into port. Alternatively, the questions could be asked quickly during a radio call with the vessel before permission is given to dock. Once the relevant questions have been answered, a risk score is generated.

The following are the recommended actions that the port should take depending upon the risk score (column N):

- Very High and High-risk vessels: If legislation is already in place (Table 2) perform a Ballast Water Record Book check, (if not then port officials could ask for a voluntary check) and recommend that the vessel does not release any ballast water within the port area. If legislation allows and there is a very high risk, vessels could be fined if discharging ballast.
- Medium risk vessels: Raise awareness of potential hazards of ballast water, encouraging the vessels to undertake ballast water exchange at least 200 nautical miles from land and in water at least 200 metres deep.
- Low or Minimal risk vessels: No action required / continue to raise awareness and best practice

If the risk assessment indicates that a vessel is potentially a high or very high biosecurity risk, then actions will depend on the country in question. In locations where the BWM convention has been ratified and necessary legislation is in place, enforcement can take place according to the relevant Act or Rule (Table 2). In locations where legislation has not yet been enacted, **no legal authority** exists to undertake any inspections of ballast water record books. A voluntary check on the ballast water record book can be requested by Port officers if the vessel captain/owner agrees.

If the captain/owner of the ship agrees to a voluntary Ballast Water Record Book check, then this could involve checking:

- the details of any ballast water operations carried out are recorded
- any exemptions granted are recorded
- any accidental or exceptional discharges and instances where ballast water was not exchanged in accordance with the BWM Convention are recorded.

Inspection of the Ballast Water Record Book should be carried out as quickly as possible to avoid causing the vessel to be unreasonably delayed.

Regulation B-2 of the BWM Convention states that the Ballast Water Record Book should be in an approved format. This may be an electronic record system, which may be integrated into another record book or system. The Ballast Water Record Book should be kept onboard the ship for a minimum of two years after the last entry. Each operation concerning ballast water must be fully recorded without delay in the Ballast Water Record Book. Each entry must be signed by the officer in charge of the operation concerned and each completed page must be signed by the ship's master. Further details about the Ballast Water Record Book are provided in Appendix 1.

As many of the large international vessels already transit through countries that have ratified the convention (e.g., New Zealand, Australia, Republic of Korea (South Korea), China) or are governed by the United States regulations (Hawaii, Guam, USA), ballast water management certificates and records should already be kept as part of the working documentation on the ship.

For Pacific island countries and territories, The Secretariat of the Pacific Regional Environment Programme (SPREP) have provided [draft model law](#) to make provision for implementation of the Ballast Water Management Convention. The model law has been drafted specifically for countries which have already enacted comprehensive marine pollution legislation, and in particular the model Marine Pollution Act prepared by SPC and SPREP, last revised in 2002. For those countries that have not enacted such legislation, it is suggested to first consider drafting marine pollution legislation based on the revised Act.

However, although several countries have not ratified the BWM Convention they do have legislation in place which makes the discharge of ballast water in their territorial waters unlawful and several enforcement options are in place that can be adopted if required (Table 2).

Table 2. Legislation relevant to the discharge of ballast water in Pacific island countries and territories.

Country	Act	Relevant article	Link
Cook Islands	Maritime Rules (offences) regulations 2014	Schedule 1. Part 2	http://www.paclii.org/cgi-bin/sinodisp/ck/legis/sub_leg/mta2008mrr2014578/index.html?stem=&synonyms=&query=ballast%20water
Fiji	Marine (Ballast Water Management) Regulations 2014	Full document	https://www.msaf.com.fj/wp-content/uploads/2020/12/31.-Marine_Ballast_Water_Management_Regulations_2014_1-min.pdf
Palau	Biosecurity Act of 2014 (P.L. No. 9-58).	Section 17.2	http://extwprlegs1.fao.org/docs/pdf/pau155748.pdf
Papua New Guinea	Marine Pollution (Ballast water control) Act 2013	Full document	http://www.paclii.org/cgi-bin/sinodisp/pg/legis/num_act/mpwca2013412/mpwca2013412.html?stem=&synonyms=&query=ballast%20water
Republic of Kiribati	Biosecurity Act 2011	Part 3. Section 21	http://www.paclii.org/cgi-bin/sinodisp/ki/legis/num_act/ba2011156/ba2011156.html?stem=&synonyms=&query=ballast%20water
Republic of Marshall Islands	Ballast Water Management amended to Maritime Regulations 2021	Full document	https://www.register-iri.com/wp-content/uploads/MN-2-014-1.pdf
Republic of Nauru	Ports and Navigation Act 2019	Part 5 Division 2.	http://www.paclii.org/cgi-bin/sinodisp/nr/legis/num_act/pana2019222/pana2019222.html?stem=&synonyms=&query=ballast%20water
Samoa	Marine Pollution Prevention Act 2008	Part II, Section 10	https://www.mnre.gov.ws/mnre-redesign/wp-content/uploads/2017/08/Marine-Pollution-Prevention-Act-2008.pdf
Solomon Islands	Shipping (Marine Pollution) Regulations 2011	Part 2. 10	http://www.paclii.org/cgi-bin/sinodisp/sb/legis/sub_leg/sa1998spr2011510/index.html?stem=&synonyms=&query=ballast%20water
Tokelau	Biosecurity Rules 2003	Section 7. 1 (vi)	http://www.paclii.org/cgi-bin/sinodisp/tk/legis/consol_act_2005/br2003205/br2003205.html?stem=&synonyms=&query=ballast%20water

Country	Act	Relevant article	Link
Tonga	Marine Pollution Prevention Act	Section 6 CAP. 48.12	https://ago.gov.to/cms/images/LEGISLATION/PRINCIPAL/2002/2002-0008/MarinePollutionPreventionAct_2.pdf
Tuvalu	Marine Pollution (Amendment) Act 2017	Section 5D	https://tuvalu.tradeportal.org/media/Marine%20Pollution%20Act%202017.pdf
Vanuatu	Maritime Sector Regulatory Act 2016	Section 57. e	http://www.paclii.org/cgi-bin/sinodisp/vu/legis/num_act/msra2016307/msra2016307.html?stem=&synonyms=&query=ballast%20water

Appendix A Example Ballast Water Record Book

Entries in the Ballast Water Record Book should be made on each of the following occasions:

When ballast water is taken onboard:

1. date, time and location, port, or facility of uptake (name of port or latitude/longitude), depth if outside of port
2. estimated volume of ballast water uptake in cubic metres
3. signature of the officer in charge of the operation

Whenever ballast water is circulated or treated for ballast water management purposes:

1. date and time of operation
2. estimated volume circulated or treated (in cubic metres)
3. whether conducted in accordance with the ballast water management plan
4. signature of the officer in charge of the operation

When ballast water is discharged into the sea:

1. date, time and location, port, or facility of discharge (port name or latitude/longitude)
2. estimated volume discharged in cubic metres plus remaining volume in cubic metres
3. whether approved ballast water management plan had been implemented prior to discharge
4. signature of the officer in charge of the operation

When ballast water is discharged to a reception facility:

1. date, time, and location of uptake
2. date, time, and location of discharge
3. port or facility
4. estimated volume discharged or taken up in cubic metres
5. whether approved ballast water management plan had been implemented prior to discharge
6. signature of officer in charge of the operation

Accidental or other exceptional uptake or discharges of ballast water:

1. date and time of occurrence
2. port or position of the ship at time of occurrence
3. estimated volume of ballast water discharged
4. circumstances of uptake, discharge, escape or loss, the reason therefore and general remarks
5. whether approved ballast water management plan had been implemented prior to discharge
6. signature of the officer in charge of the operation

Additional operational procedure and general remarks.

Name of ship: The name of the ship should have been filled in here

IMO ship identification number: This should show the correct IMO number – this consists of the three letters "IMO" followed by a seven-digit number and will be marked on the ship's hull

Gross tonnage of ship: This should have been completed to show the ship's overall internal volume (GT)

Flag: This should have been completed to show the country under which the ship normally operates

Total ballast water capacity (m³): This should have been completed to show the total volume of all ballast tanks or holds in m³

This ship is provided with a ballast water management plan: This should have been ticked if the ship has a ballast water management plan

Period from: to: This should have been completed to show the start and end dates for the Ballast Water Record Book

Name of Ship: The name of the ship should have been filled in here

Distinctive number or letters: This should have been completed to show the distinctive number or letters displayed on the ship's hull – this could be the IMO or ship registration number

Date	Item (number)	Record of operations/signature of officers in charge
25/12/2020	3.1	Ballast water uptake
	3.1.1	25 December, 1000hrs, Auckland, New Zealand
	3.1.2	3813 m ³
		<i>Joebbogge</i>
06/01/2021	3.2	Ballast water exchange
	3.2.	6 January 2021 1500 hrs
	3.2.	3813 m ³
	3.2.	Exchange done in compliance with the plan
	3.2.	<i>Joebbogge</i>

This column should have been completed to show the date the ballast water operation took place

This column should reflect the numbering used in the BWM Convention as shown above

This should have been completed to show the date, time and location of ballast water uptake. It should provide the full name of the port or the longitude/latitude and depth if outside of a port

This should have been completed to show the estimated volume of ballast water uptake in m³

This should have been completed to show the date and time of any ballast water treatment or circulation

This should have been completed to note whether the treatment / circulation was conducted in accordance with the ballast water management plan

This should have been signed by the officer in charge of the operation

This should have been completed to show the estimated volume circulated / treated in m³

This should have been signed by the officer in charge of the operation

Date	Item (number)	Record of operations/signature of officers in charge
30/01/2021	3.3	Discharge of ballast water
	This should have been completed to show the estimated volume discharged plus the remaining volume in m ³	30 January 2021 , 0815 hrs, Brisbane, Australia
	3.3.3	4383 m ³ , 216 m ³
	3.3.4	Discharge done in compliance with the plan
	This should have been signed by the officer in charge of the operation	<i>Joe Boggs</i>
		This should have been completed to note whether the treatment / circulation was conducted in accordance with the ballast water management plan
		If any ballast water has been discharged to a reception facility, the details should have been recorded in the table as per item 3.4 above

This should have been completed to show the date, time and location of ballast water uptake. It should provide the full name of the port or the longitude/latitude and depth if outside of a port

This should have been signed by the officer in charge of the operation

This should have been completed to note whether the treatment / circulation was conducted in accordance with the ballast water management plan

If any ballast water has been discharged to a reception facility, the details should have been recorded in the table as per item 3.4 above

If there have been any accidental or other exceptional uptakes or discharges of ballast water, the details should have been recorded in the table as per item 3.5 above

Signature of master

Each completed page should have been signed by the ship's master