MANAGING AND CONTROLLING
THE RISK TO THE MARINE
ENVIRONMENT FROM BALLAST
WATER DISCHARGES:
NEW ZEALAND’S RESPONSE TO THE INTERNATIONAL
CONVENTION FOR THE CONTROL AND MANAGEMENT
OF SHIPS’ BALLAST WATER & SEDIMENTS

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Feedback

The Ministry of Agriculture and Forestry’s biosecurity agency, MAF Biosecurity New Zealand, seeks your views on the proposals in this discussion paper. Questions are placed throughout the paper to help focus your feedback on specific issues, but please feel free to comment on any other matters. Your views will assist with the development of advice to the Government on New Zealand’s response to the Ballast Water Management Convention.

You can post your submission to:
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Or email it to:
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The closing date for submissions is 21 December 2007.

When responding, please state whether you are responding as an individual or representing the views of an organisation. If responding on behalf of an organisation, please make it clear who the organisation represents and, where applicable, how the views of members were assembled.

Submissions or comments provided on this discussion document will be subject to the Official Information Act (OIA) 1982. The OIA requires information to be made available unless there is good reason, pursuant to the Act, to withhold the information, and that good reason outweighs the public interest in making the information available. If you want information that you provide to be treated as confidential, please clearly identify the material and why you wish the information to be withheld.

This publication is also available on the MAF Biosecurity New Zealand website at www.biosecurity.govt.nz/strategy-and-consultation/consultation/current

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Ministerial Foreword

The introduction to New Zealand of foreign (termed exotic) marine organisms can have potentially devastating impacts. Out of their natural habitat these organisms can quickly establish and become a nuisance, affecting marine biodiversity by altering marine habitats and displacing native plants and animals, and impacting on New Zealand’s burgeoning aquaculture industry. A range of economic, social, cultural, and environmental values that we associate with our marine environment can be threatened.

Once marine organisms establish here, they are extremely difficult and costly to control, particularly given the scale of the New Zealand coastline and the sheer number of vessel movements around it. The difficulties we have experienced in responding to introduced marine organisms underlines the priority that must be given to international efforts to prevent the global transportation of marine organisms. As well, it illustrates the importance of enhancing national measures to prevent the introduction of invasive marine organisms.

Ballast water discharges are one of the main pathways by which marine organisms could be introduced to New Zealand waters. Each year almost three million metric tonnes of ballast water sourced from outside our Exclusive Economic Zone is discharged into New Zealand ports.

We need, therefore, to maintain and improve our controls on ballast water discharges into our ports, as the first line of defence against marine pest introductions.

New Zealand is one of a handful of countries that have imposed mandatory controls on ballast water discharges in their ports. As shipping is an international industry, the most effective way to address shipping related issues is believed to be through a standardised international control regime. The International Convention for the Control and Management of Ships Ballast Water and Sediments 2004 developed by the International Maritime Organization provides such a regime.

This Discussion Paper canvasses whether it is in New Zealand’s best interests to maintain the existing ballast water management controls or to implement stricter controls (including whether New Zealand should become party to the Ballast Water Management Convention).

I encourage you to make a submission on this discussion paper and contribute to Government’s consideration of these important issues. Thank you.

Hon Jim Anderton
Minister for Biosecurity
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Executive Summary

The uncontrolled discharge of ballast water and sediments from ships threatens the conservation and sustainability of the world’s oceans.

Each year almost 3 million metric tonnes of ballast water sourced from outside our Exclusive Economic Zone are discharged into New Zealand ports. Ballast water sourced introductions of marine organisms to New Zealand have been frequent and on-going.

New Zealand was among the first countries to recognise the risks to the marine environment from ballast water discharges, and has played and continues to play an active role in the development of global ballast water controls through the United Nation’s International Maritime Organization (IMO).

Mandatory controls on ballast water discharges were introduced by New Zealand in May 1998, in the form of the Import Health Standard for Ships’ Ballast Water from All Countries, made pursuant to Section 22 of the Biosecurity Act 1993.

As shipping is an international industry, the most effective way to address shipping related issues is through a standardised international control regime, rather than unilateral controls. The International Convention for the Control and Management of Ships Ballast Water and Sediments was adopted by Diplomatic Conference in February 2004. To date 10 countries have become party; it will enter into force when 30 states have acceded to the Convention.

New Zealand’s existing ballast water management measures provide some protection against introductions of harmful aquatic organisms in ballast water discharges, but they have limitations. These are addressed by the Convention.

When the Convention comes into force, it will provide a binding set of international regulations to control discharges of ballast water by shipping. The critical elements of the Convention from a New Zealand perspective are: the phased introduction of a stringent performance standard for ballast water discharges, requiring the installation and use of on-board treatment systems; and a framework for Parties to the Convention to take enforcement action in response to violations of the regulations.

This Discussion Paper describes and analyses three options for New Zealand in response to the Convention. These are:

- to maintain the status quo, and not become party to the Convention;
- implement stricter controls without becoming party to the Convention;
- change domestic legislation so we can then become party to the Convention.

The main choices are therefore, to do nothing, or implement stricter controls on ballast water discharges.

A number of alternatives for implementing stricter controls on ballast water discharges are examined and a cross-government approach is proposed. The benefits and costs of stricter controls are canvassed, and options are presented for funding the cost of implementing new controls.

The feedback received on this Discussion Paper will be analysed by the Ministry of Agriculture and Forestry and incorporated into advice to the Government on whether New Zealand should accede to the Ballast Water Management Convention or otherwise implement stricter controls on ballast water discharges in New Zealand.
Introduction
The purpose of this paper is to provide stakeholders with information related to the management and control of risk to the marine environment from ballast water discharges, and seek your views on the future management and control options.

The paper discusses whether it is in New Zealand’s best interests to maintain the existing ballast water management measures or to implement stricter controls, including whether New Zealand should become ‘become party’ to the International Convention for the Control and Management of Ships Ballast Water & Sediments 2004, commonly referred to as the Ballast Water Management Convention (the Convention).

Your views are sought on three options for New Zealand in response to the Convention.

The Problem
The International Maritime Organization (IMO) has identified the introduction of invasive marine species into new environments as one of the four greatest threats to the world’s oceans.

The uncontrolled discharge of ballast water and sediments from ships has led to the transfer of invasive marine species to new environments, causing injury or damage to human health, property and resources.

WHAT IS BALLAST WATER?
Ballast is any material used to weight and/or balance an object.

Ships are designed to move through water carrying a certain amount of cargo. If a ship is transporting less than this amount, ballast must be taken on board to achieve the required safe operating conditions, including keeping the ship deep enough in the water to ensure efficient propeller and rudder operation, and to avoid the bow emerging from the water.

In the past, ships carried solid ballast, in the form of rocks, sand or metal. Water has been used as ballast since the 1880s. Globally, it is estimated that about 10 billion tonnes of ballast water are transferred each year.
When a ship that relies on ballast is empty of cargo, it fills purpose-built tanks in the hull with ballast water, which are discharged as additional cargo is loaded. This cycle is depicted below:

**Figure 1: Cross section of ships showing ballast tanks and ballast water cycle**

TRANSPORTATION OF MARINE LIFE IN SHIPS' BALLAST WATER

It has been estimated\(^1\) that ballast water may be transporting 3,000 species of marine organisms a day around the world.

Once established, new species introduced through ballast water can cause serious environmental and economic impacts. Directly and indirectly, invasive introduced species can damage:

- commercial fisheries and aquaculture;
- the tourism industry;
- the amenity and non-use value of the marine environment;
- human health through diseases like cholera;
- the commercial efficiency of ports through weed infestation;
- infrastructure such as port facilities, navigation aids, water intakes and outfalls.

There are numerous examples from around the world of ballast water-related introductions that have caused severe human health, economic and/or ecological impacts in their host environments. One example is the introduction of the European zebra mussel (*Dreissena*

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\(^1\) Alien invaders - putting a stop to the ballast water hitch-hikers, International Maritime Organization, August 1999
*polymorpha* in the North American Great Lakes, resulting in expenses of billions of dollars for pollution control and cleaning of fouled underwater structures and water pipes. Another example is the introduction of the American comb jelly (*Mnemiopsis leidyi*) to the Black and Azov Seas, which caused the near extinction of anchovy and sprat fisheries.

Once introduced species become established, they are typically impossible to eradicate. Unlike oil spills and other marine pollution caused by shipping, exotic organisms and marine species cannot be cleaned up or absorbed into the ocean, after which the environment will eventually recover. The impacts of invasive marine species are likely to be irreversible.

**SPECIES INTRODUCED BY BALLAST WATER**

In the New Zealand context, a 1998 report from National Institute of Water & Atmospheric Research Ltd (NIWA)\(^2\) investigated the marine species that have been introduced to New Zealand and estimated the means by which they arrived. Of the 148 introduced species identified, experts considered the probable means of arrival were: 69 percent in hull fouling, 21 percent in hull fouling or ballast water, 3 percent in ballast water, 3 percent in sand ballast, and 4 percent by other means. It can be difficult to associate introduced species with a single vector. For example, the invasive seaweed *Undaria pinnatifida* has been associated with both hull fouling and ballast water.

More recently, MAF Biosecurity New Zealand has been conducting a programme of surveys of ports and harbours to identify the species present, both native and introduced, and the extent to which introduced species have already established. A total of 23 species from 15 ports or harbours throughout New Zealand have been identified as probably arriving in ballast water, or probably arriving in hull fouling or ballast water. Table 1 lists the introduced species found by the survey programme that may have arrived in ballast water.

Moreover, the number of species introduced via ballast water has most probably been underestimated as planktonic organisms and, more generally, microscopic organisms, were not assessed in these surveys (with the exception of dinoflagellate cysts in harbour sediments).

Some species of toxic marine algae may have been introduced to New Zealand via ballast water, but attributing introduced status to microalgal species is difficult due to the lack of baseline data about native populations. Researchers\(^3\) have found strong genetic links between populations of these species in Australasian waters and Asian populations that indicate the organisms were introduced in the past 100 years, probably via ballast water from Japan or South East Asia.

The major toxic marine algal events that have occurred in New Zealand from 1992 onwards have had a major economic impact. Aquaculture farms have been closed for harvesting, resulting in financial loss and uncertainty for the industry and their associated communities.

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International Response to the Issue

Shipping is a crucial element in world trade, transporting more than 90 percent of goods and commodities around the world. Ballasting of ships is a necessary requirement for their safe operation. Thus the only practicable way to stop the spread of invasive marine species to foreign ports is to prevent them from being discharged or delivered alive with ballast water.

The United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 recognised the problem as a major international concern. UNCED urged states to assess “the adoption of appropriate rules on ballast water discharge to prevent the spread of non-indigenous organisms”.

In response to the Agenda 21 adopted by UNCED, the IMO, the United Nations agency responsible for the international regulation of ship safety and the prevention of marine pollution, adopted revised guidelines for managing and controlling ships’ ballast water discharges in 1993. It also initiated work to develop internationally applicable, legally-binding regulations for ballast water management.

More comprehensive guidelines were adopted by the IMO in 1997, while work to develop internationally applicable regulations continued. From 1999 onwards, this work focused on preparing a free-standing convention on control and management of ships’ ballast water and sediments.

In the meantime, many countries and sub-national jurisdictions unilaterally developed national or local legislation. These include Australia, Canada, Chile, Israel, New Zealand, the United States, various states within the United States, and a number of ports around the world.

The 2002 World Summit on Sustainable Development, held in Johannesburg, South Africa, re-affirmed its commitment to Agenda 21 and urged the IMO to finalise the Ballast Water Convention.

The International Convention for the Control and Management of Ships Ballast Water & Sediments was adopted by consensus at a Diplomatic Conference at the IMO in London on 13 February 2004.

THE INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS’ BALLAST WATER AND SEDIMENTS

Purpose and objective

The primary objective of the Convention is “to prevent, minimize and ultimately eliminate the risks to the environment, human health, property and resources arising from the transfer of harmful aquatic organisms and pathogens through the control and management of ships’ ballast water and sediments”. The Convention’s sole focus is on mitigating the risks arising from ships’ ballast water and sediments. It does not seek to address the introduction of invasive marine species into new environments by other means.
What ships does it apply to?
When it comes into force, the Convention will apply to ships entitled to fly the flag of a Party, and ships that operate under the authority of a Party.

It does **not** apply to:
- ships not designed or constructed to carry ballast water;
- ships of a Party that only operate in its waters (unless the Party determines that ballast water discharges from its ships would impair or damage its environment, human health, property or resources, or those of adjacent or other States);
- ships of a Party which only operate in waters of another Party (subject to the latter Party authorising such an exclusion);
- ships which only operate in waters of one Party and on the high seas (unless the Party determines that ballast water discharges from such ships would impair or damage its environment, human health, property or resources, or those of adjacent or other States);
- any warship, naval auxiliary or other ship owned or operated by a State and being used, only on government non-commercial service (however, Parties must ensure that such ships act in a manner consistent with the Convention as far as is reasonable and practicable);
- ballast water in permanently sealed tanks on ships, that is not discharged.

It is not the present intention that the Convention would apply to New Zealand flagged ships that only operate in our waters. This status would be kept under review and could be subject to change.

Parties must apply the requirements of the Convention so that ships of non-Parties are not given favourable treatment. In other words, ships of non-Parties will not be exempted from the requirements of the Convention when operating within the jurisdiction of a Party to the Convention.

Obligations and regulations
A summary of the Convention, the obligations it imposes on Parties, and technical standards and regulations for controlling and managing ships’ ballast water and sediment, is contained in Appendix One. The full Convention text can be found at [http://www.biosecurity.govt.nz/strategy-and-consultation/consultation/ballast-water-convention](http://www.biosecurity.govt.nz/strategy-and-consultation/consultation/ballast-water-convention)

Entry into force and amendments
The Convention will enter into force 12 months after 30 States, representing 35 percent of world merchant shipping tonnage, have become parties. As at 30 August 2007, 10 States, representing 3.42 percent of world merchant shipping tonnage, were party to the Convention.

The Convention may be amended, once it has entered into force, after consideration within the IMO or by a Conference of the Parties. A tacit amendment procedure operates for amendments to the Annex. This means that amendments to the Annex will be considered to be accepted by the Parties twelve months after their adoption unless more than one-third of the Parties to the Convention object. Such amendments will enter into force for all Parties except those that opt out during this time period.

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4 A ship is defined as any type of vessel operating in the aquatic environment, and includes submersibles, floating craft, floating platforms, floating storage units, and floating production storage and offloading units.
New Zealand’s Response to the Issue

Each year almost 3 million metric tonnes of ballast water sourced from outside our Exclusive Economic Zone (EEZ) is discharged into New Zealand ports.

New Zealand was among the first countries to recognise the risks to their marine environment from ballast water and take a lead role in developing national and international measures. Voluntary guidelines for ballast water discharges were introduced in New Zealand in 1992, and MAF commissioned some of the earliest research to determine the biosecurity risks from ballast water.

New Zealand became involved in the ballast water work of the IMO in 1993, and was part of a small group of IMO Member states that reviewed the extent to which the IMO’s initial ballast water management guidelines were being implemented. The critical outcome of this initiative was the initiation of work by the IMO to develop internationally applicable, legally-binding provisions for ballast water, which ultimately led to the development and adoption of the Ballast Water Management Convention.

Mandatory controls on ballast water discharges were introduced by New Zealand in May 1998, to give effect to a Government strategy\(^5\) for addressing marine introductions, and in response to the discovery of the highly invasive Northern Pacific seastar (*Asterias amurensis*) in Tasmanian waters. These controls were in the form of the *Import Health Standard for Ships’ Ballast Water from All Countries*,\(^6\) made pursuant to Section 22 of the Biosecurity Act 1993. The standard was updated in June 2005, and remains in force.

The Import Health Standard requires ballast water taken up in foreign ports to be discharged in mid-ocean and replaced with oceanic water (a process known as mid-ocean exchange). A summary of our existing control measures is contained in Appendix Two.

New Zealand is still one of a handful of countries that have imposed mandatory controls on ballast water discharges in their ports. The effectiveness of these measures relies on shipowners being aware of and properly carrying out New Zealand’s requirements. As shipping is an international industry, the most effective way to address shipping related issues is believed to be through a standardised international control regime.

Accordingly, New Zealand has played and continues to play an active role in the development of global ballast water controls. Indeed, one of MAF Biosecurity New Zealand’s priorities over the next five years (2007-2012) is to: Lead and seek international support for the management of ballast water and biofouling, as part of a broader goal of having more effective biosecurity interventions at the border.

THE EFFECTIVENESS OF EXISTING BALLAST WATER MEASURES

New Zealand’s existing ballast water management measures provide some protection against the risk of harmful aquatic organisms being introduced in ballast water discharged in New Zealand waters.


**Mid-ocean ballast water exchange**

The use of mid-ocean exchange as a control measure assumes that coastal species will be replaced by oceanic species ill-suited to, and unlikely to be invasive in coastal environments. Consequently, exchange must be carried out as far from shore as possible, preferably 200nm offshore and in water depths exceeding 200 metres. In practice, ship safety or operational constraints may prevent this.

Ballast water exchange has been found to be efficient in diluting water taken up in port but this does not equate to efficacy in completely removing coastal organisms. This is because:

a) many species in the tanks are mobile and migrate away from discharge points during an exchange;

b) “empty” ballast water tanks can still contain as much as 5 percent volume of unpumpable ballast water; and

c) sediments in ballast tanks can contain many species including benthic molluscs, the resting stages of invertebrates, and the cysts of toxic dinoflagellates that may not be removed by exchanging water.

Ballast water exchange at sea also creates some risks to the safety of ships and their crew. Ships are not designed to accommodate the flow through method of ballast exchange, which involves the simultaneous pumping in and out of water through the ballast tank. In these cases the outflow of ballast water overflows from hatches and across the deck before going over the side of the ship. Given the volumes of water that can be involved, this method poses a risk to any crew on deck. Ship strength and stability can also be put at risk using the sequential method of exchange when tanks are emptied and then refilled.

The opportunity to use the offence and penalty provisions within the Biosecurity Act 1993 in response to a violation of the ballast water Import Health Standard is limited once a foreign flagged ship has left New Zealand. Ships trading to New Zealand are typically only in our ports long enough to discharge and/or load cargo, which may only take hours rather than days. If information on non-compliance were to become available when a ship has left port, there is no provision within the Biosecurity Act to take any action beyond New Zealand’s jurisdiction. Any enforcement action that is warranted would have to await the return of the ship to New Zealand.
How the Convention Addresses the Issue

The Convention will provide a binding set of international regulations to control discharges of ballast water by shipping. The key regulations under the Ballast Water Management Convention are:

- A requirement for all ships to which the Convention applies to implement a ballast water management plan and maintain records of their ballast management actions.
- The phased introduction of a stringent performance standard for ballast water discharges, requiring the installation and use of on-board treatment systems. (Ballast water exchange is to be used as an interim treatment measure until compliance with more stringent standards for ballast water discharges becomes mandatory.)

To enforce the international regulatory regime, the Convention provides a framework for Parties to take enforcement action in response to violations of the regulations, including taking such action after a ship has left a Party’s jurisdiction.

It encourages Parties to work collaboratively to detect violations and undertake enforcement actions. For example, ship inspection agencies could use existing bilateral and regional arrangements to share information on deficiencies found in inspections (to assist with targeting of vessel inspections), and request detailed inspections to occur at a ship’s next port of call.

THE EFFECTIVENESS OF MEASURES CONTAINED IN THE CONVENTION

There are several benefits to using a performance standard instead of the current exchange standard. Firstly, it allows both the vessel and ship inspection agencies to monitor compliance. Secondly, by phasing in the requirement for ballast water treatment systems in place of mid-ocean exchange it reduces the risk associated with the assumption that organisms in mid-oceanic water will be “unfit” for establishment in coastal port waters. Thirdly, it reduces the risk associated with the assumption that mid-ocean exchange effectively reduces the concentration of organisms in ballast tanks below the level required for establishing a viable population in a new environment. Fourthly, it will require the use of treatment options which are likely to deal with organisms in biofilm and sediments that are currently unmanaged by mid-ocean exchange.

The Convention was adopted in advance of technologies for treating ballast water on ships being developed and made commercially available. The technologies being developed to treat ballast water are commonly in use in municipal and industrial water treatment applications. Two generic types of process technology are being used: solid-liquid separation, and disinfection. Solid-liquid separation removes suspended solid material (including larger micro-organisms) by sedimentation or filtration, while disinfection removes and/or kills micro-organisms. Most commercial systems under development comprise two stages of treatment with a solid-liquid separation stage followed by disinfection.

The Convention requires treatment systems to be type-approved, after successfully demonstrating effectiveness in reducing organisms in discharges to levels allowed in the D-2 standard and environmental safety. Type-approved treatment systems are likely to become commercially available during 2008.

As yet, little independent research has been conducted into the performance of the technologies under development to treat ballast water. The effectiveness of ozone disinfection
has been investigated in some US research studies\textsuperscript{7}. This research reports that ozone (by converting bromide to bromines) acts as effective disinfectant to remove, for example, 99.99 percent of bacteria, over 99 percent of phytoplankton, 96 percent of zooplankton and 90-99 percent of meso-zooplankton. The persistence of bromine in ballast tanks also reduced the re-establishment of organism populations in sediments.

This example highlights that the use of treatment systems to conform to the performance standard in Regulation D-2 of the Convention will be more effective than ballast water exchange in reducing the risk of introductions of organisms in ballast water. But conformity with the D-2 standard for ballast water will not totally eliminate the release of organisms in ballast water discharges.

Options for New Zealand

This discussion paper presents three separate options for New Zealand in response to the Convention. These are to:
1. maintain the status quo, and not become party to the Convention;
2. make legislative amendments without becoming party to the Convention;
3. become party to the Convention.

These options provide a progression from the status quo to giving complete effect to the obligations contained in the Convention.

DESCRIPTION OF OPTIONS

Option 1: Maintain the status quo, and not become party to the Convention

This option assumes no change to existing ballast water management measures contained in the Import Health Standard for Ships’ Ballast Water from All Countries.

Existing measures would not be sufficient to meet the obligations imposed by the Convention; hence becoming party to the Convention would not be possible under this option.

New Zealand would not be precluded from becoming party to the Convention at any later stage if it amended its domestic legislation to be fully consistent with the obligations under the Convention.

Option 2: Make legislative amendments without becoming party to the Convention

This option would entail making changes to existing ballast water management measures to give effect to some or all of the requirements of the Convention. Legislative amendments would be made to give effect to those obligations under the Convention that may be appropriate to our circumstances.

This option would be appropriate where reservations are held about giving effect to a particular requirement or requirements of the Convention, but it is considered desirable to give effect to the other requirements.

Domestic legislation changes under this option would not necessarily be consistent with or sufficient to meet our obligations under the Convention. Accordingly, New Zealand would not be able to become party to the Convention unless all of the provisions were fulfilled.

New Zealand would not be precluded from becoming party at any later stage if it amended its domestic legislation to be fully consistent with the obligations under the Convention.

Option 3: Become party to the Convention

This option would entail making legislative amendments to meet all obligations under the Convention, followed by accession (i.e. becoming party) to the Convention.

The legislative amendments would have to be fully consistent with, and meet all the obligations under the Convention. Accession to the Convention could take place when the amending legislation has been enacted.
The amending legislation could be drafted to provide some flexibility about when new ballast water management measures would come into force – ranging from anytime prior to the Convention entering into force; when the Convention enters into force; or such later date as stipulated in the Convention for any specific obligation.

ADVANTAGES AND DISADVANTAGES OF THE OPTIONS FOR NEW ZEALAND

The advantages and disadvantages of the three options for New Zealand in response to the Convention have been analysed using the following criteria:

- effectiveness – biological and regulatory;
- consistency with Government strategy/policy & international obligations;
- trade implications;
- cost;
- safety.

Discussion of Option 1 – Maintain the status quo

New Zealand’s existing ballast water management measures provide some protection against the risk of harmful aquatic organisms being introduced in ballast water discharged in New Zealand waters. The treatment of ballast water by way of mid-ocean exchange is more effective than no control measures. Other means of treating ballast water can be used, and could become mandatory.

The existing measures are sufficient for New Zealand to meet its current international obligations (such as under the United Nations Law of the Sea, and the Convention for Biological Diversity) generally relating to protecting and preserving the marine environment, or more specifically to preventing, reducing and controlling pollution of the marine environment resulting from the accidental introduction of alien or new species. These control measures are also consistent with existing government strategies relating to biodiversity and biosecurity.

This option imposes no additional measures on New Zealand ships and foreign ships visiting New Zealand and no new compliance costs for shipping (including levies to recover management costs), although this may not always be the case.

When the Ballast Water Management Convention enters into force, its requirements for managing ballast water will apply to the ships of Parties to the Convention, and ships trading in the waters of Parties to the Convention. These ships may apply the Convention’s requirements when trading to New Zealand without New Zealand being party to the Convention.

The ballast water exchange process creates some risks to the safety of ships and their crew. Additionally, the treatment of ballast water by way of mid-ocean exchange is not considered sufficiently effective to fully mitigate the risk of introduction of harmful organisms in ballast water discharges. It doesn’t lower the probability of introduction to an acceptable level over a long term, especially in comparison with the standard for treated ballast water contained in the Convention.

Until the Convention enters into force, international shipping will be faced with differing national rules for managing ballast water discharges. Inconsistency between national rules, and confusion around their application creates compliance costs for international shipping,
including ships trading to New Zealand. Inconsistencies also increase the likelihood of non-compliance.

The opportunity to take enforcement action in response to a violation of this country’s ballast water management requirements by a foreign flagged ship is more limited once it has left New Zealand. Any enforcement action that is warranted would have to await the return of the ship to New Zealand.

**Question:**
Are there any other advantages or disadvantages of the existing ballast water management measures?

Are existing measures sufficient to protect against the introduction of harmful aquatic organisms in ballast water being discharged in New Zealand waters?

Do you support this option? If so, please provide your reasons and what you see as the key advantages/disadvantages.

**Discussion of Option 2 – Make legislative amendments without becoming party to the Convention**

Stricter requirements for managing ballast water could be introduced progressively, gradually building protection against the risk of harmful aquatic organisms being introduced in ballast water discharged in New Zealand waters. But only marginal gains in protection could be expected until ballast water treatment systems are in use. Similarly, the risks to the safety of ships and their crew associated with ballast water exchange will only be mitigated when treatment systems are widely in use.

Any requirements of the Convention that could not be met by New Zealand, or that it had reservations about meeting, would not need to be implemented, or could be implemented at a later time when any reservations have been resolved. At the present time, MAF holds no reservations about any of the obligations under the Convention.

Stricter requirements for managing ballast water could be expected to more effectively meet New Zealand’s current international obligations, and more effectively give effect to Government strategies relating to biodiversity and biosecurity. However, tougher requirements for managing ballast water could deter some ships from trading to New Zealand.

Accession to the Convention would not necessarily need to be attained, especially if the cost of compliance with the obligations under the Convention is excessive.

By domestically giving effect to some or most of the Convention (without becoming party to the Convention), New Zealand would be incurring the costs of meeting the Convention’s requirements but missing out on some of the international benefits of being a party.

By not becoming party to the Convention, New Zealand would miss an opportunity to express in a practical way its support for the benefits the Convention offers in terms of stronger protection for the marine environment.
**Question:**
Do you hold any reservations about any specific requirement(s) of the Convention? If so, identify the specific requirement and describe the substance of your reservations about it.

Are there any other advantages or disadvantages of this option?

Are the risks to New Zealand’s marine environment from ballast water discharges sufficient to warrant New Zealand introducing stricter control measures?

Do you support this option? If so, please provide your reasons and what you see as the key advantages/disadvantages.

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**Discussion of Option 3 – Become party to the Convention**

This option would overtly signal New Zealand’s support for global rules for ballast water management and is likely to contribute to the Convention entering into force. Such a stance would be entirely consistent with our advocacy for international rules for ballast water management.

Becoming party to the Convention would more effectively meet New Zealand’s international obligations to prevent, reduce and control pollution of the marine environment, and give effect to Government’s Biodiversity and Biosecurity Strategies than the other options.

Global rules for ballast water management would benefit New Zealand by reducing the risk of introductions of harmful aquatic organisms. This outcome would be achieved through the application of a higher standard for discharges of treated ballast water, the mandatory use of treatment systems on ships (including retrofitting of existing shipping with ballast water treatment systems), and changes to new ship building design and uniform procedures for managing ballast water.

The Convention contains obligations on Parties to cooperate in enforcing the rules for managing ballast water, and includes a framework that would permit New Zealand to take compliance action against the vessels of other parties even after they have left New Zealand.

The risks to the safety of ships and their crew associated with ballast water exchange will be mitigated when treatment systems are widely in use, driven by the entry into force of the Convention.

Enforcement and administration of the new obligations contained in the Convention would impose some additional cost on government.

This option would impose additional measures on New Zealand ships and foreign ships visiting New Zealand, which would translate into new compliance costs for shipping (including levies to recover management costs). The ships flagged to non-parties may choose not to trade to New Zealand to avoid complying with the requirements of the Convention.

The standards and procedures for managing ballast water may still not be rigorous enough to completely prevent harmful invasive aquatic organisms being introduced to New Zealand. Becoming party to the Convention would not, however, prevent New Zealand from adopting even stricter standards if it saw fit.
| Questions:                                                                                                                                   |
|---|---|
| Are there any other advantages or disadvantages of becoming party to the Convention?                                                       |
| Are the risks to New Zealand’s marine environment from ballast water discharges sufficient to warrant New Zealand introducing stricter control measures? |
| Are the measures contained in the Convention sufficient protection against the introduction of harmful aquatic organisms in ballast water being discharged in New Zealand waters, or should New Zealand impose additional stricter measures? |
| Do you support this option? If so, please provide your reasons and what you see as the key advantages/disadvantages.                        |

**The Best Option for New Zealand**

<table>
<thead>
<tr>
<th>Question:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your preferred option for New Zealand in response to the Convention?</td>
<td></td>
</tr>
<tr>
<td>1. Maintain the status quo, and not become party to the Convention</td>
<td></td>
</tr>
<tr>
<td>2. Make legislative amendments without becoming party to the Convention</td>
<td></td>
</tr>
<tr>
<td>3. Become party to the Convention</td>
<td></td>
</tr>
<tr>
<td>Please provide the reasons for your preference.</td>
<td></td>
</tr>
</tbody>
</table>
Implementation of Stricter Control Measures for Ballast Water Discharges

If Government agrees to either Option 2 or 3, the stricter control measures on ballast water discharges could be given effect in a number of ways. These are:

**THE BIOSECURITY ACT 1993**

New measures could be implemented entirely through the Biosecurity Act and regulations made under that Act.

Amendments would be needed to the principal legislation, for example, to clarify the application of the Act to New Zealand ships outside of the Territorial Sea, and to extend or clarify the application of regulation-making powers to New Zealand flagged and foreign-flagged ships. New regulations would then be put in place to impose the new measures on New Zealand-flagged and foreign-flagged ships, including those related to surveys and certification.

MAF Biosecurity New Zealand would have sole responsibility for implementation, and on-going administration and enforcement of the requirements of the new measures.

**THE MARITIME TRANSPORT ACT 1994**

New measures could be implemented entirely through the Maritime Transport Act and regulations and rules made under the Act.

Amendments would be needed to the principal legislation to create provisions to regulate facilities at ports and designate areas for ballast water exchange, extend the application of rule-making powers to the management of ballast water, and insert new offence provisions.

Maritime New Zealand would have sole responsibility for implementation, and on-going administration and enforcement of the requirements of the new measures.

**A MIX OF THE ABOVE LEGISLATION**

New measures could be implemented through a combination of the Maritime Transport Act and the Biosecurity Act and subsidiary legislation under those Acts.

MAF Biosecurity New Zealand and Maritime New Zealand would have shared responsibility for implementation, and on-going administration and enforcement of the new measures. The new measures would be given legislative effect to reflect the allocation of responsibilities between the two agencies and amendments would be needed to both Acts.

**NEW LEGISLATION**

New legislation could be developed specifically to implement stricter control measures on ballast water discharges.

MAF Biosecurity New Zealand and Maritime New Zealand would have shared responsibility for implementation, and on-going administration and enforcement of the new measures.
PROPOSED APPROACH TO IMPLEMENTING STRICTER CONTROL MEASURES FOR BALLAST WATER DISCHARGES

There are strengths and weaknesses in using either the Biosecurity Act or the Maritime Transport Act exclusively to implement the stricter control measures on ballast water discharges.

The alternative approach is to work out how best to implement the new measures, before deciding on the legislative vehicle to be used. By using this approach, the implementation of new measures could be integrated neatly with the existing functions of MAF Biosecurity New Zealand and Maritime New Zealand.

Such a cross-government approach would see Maritime New Zealand accountable for the requirements relating to ships. Port inspections, investigation of violations, and prosecutions would be undertaken through the Maritime Transport Act. Managing any survey and certification requirements would also be carried out by Maritime New Zealand, within the framework of the Maritime Transport Act.

MAF Biosecurity New Zealand would be accountable for requirements relating to the onshore handling and disposal of sediments, and it would continue to lead the development of policies, strategies or programmes for ballast water management.

Implementing research and providing technical assistance to other countries would also be led by MAF Biosecurity New Zealand, but Maritime New Zealand would be responsible for any training assistance to other port State control agencies.

Maritime New Zealand would be fully accountable for its ballast water roles, while operating within the national biosecurity system for which MAF Biosecurity New Zealand has overall leadership.

Question:
Do you have views or preferences on how stricter control measures on ballast water discharges could be implemented?

EFFECTS AND COSTS OF STRICTER CONTROL MEASURES ON BALLAST WATER DISCHARGES

Economic, social, cultural and environmental effects

New Zealand has the world’s fifth largest Exclusive Economic Zone (EEZ), covering approximately 430 million hectares of ocean, ranging over 30 degrees of latitude – from the subtropical Kermadec Islands to the sub-Antarctic Auckland and Campbell Islands.

New Zealand’s marine ecosystems and species are highly diverse. Marine scientists estimate that perhaps as much as 80 percent of New Zealand’s indigenous biodiversity is found in the sea. Many marine species are endemic to New Zealand, due to our isolation from other landmasses for over 120 million years. Such species are especially vulnerable to introduced organisms.

The commercial value of New Zealand’s wild and farmed fisheries is around $1.5 billion annually, while marine-related tourism also makes a significant contribution to New Zealand’s Gross Domestic Product.
New Zealanders have a strong connection with the marine environment. The majority of New Zealanders live within 50 kilometres of the coastline and many people swim, fish, and gather seafood from the coast. Maori have a close cultural relationship with the ocean. It is regarded as a tāonga that is integral to their culture and identity. The sea is important to tangata whenua as a source of food, and the mana of hapu and iwi is still closely linked to their ability to provide hospitality to visitors through plentiful kaimoana. The sea is also an important part of Maori spirituality and mythology.

An introduction of an invasive species into New Zealand’s marine environment could have significant impacts on these economic, social, cultural and environmental values.

Ballast water discharges are one of the main pathways by which an invasive species could be introduced to New Zealand waters. Controls on ballast water discharges need to be maintained and improved, as the first line of defence against introductions of invasive aquatic organisms.

The difficulties we have experienced in responding to introduced aquatic organisms underlines the priority that must be given to international efforts to prevent the global transportation of marine organisms, and enhancing national measures to prevent the introduction of invasive marine organisms. Early detection of arrivals of invasive organisms is difficult to achieve in the marine environment; determining whether a species is native/non-native can be problematic; and the options for responding to marine organisms once they are established are very limited.

Full implementation of the requirements of the Convention could be expected to substantially mitigate the risk of harmful aquatic organisms and pathogens being transferred into New Zealand waters through ballast water discharges. Avoidance of the impacts of invasive marine organisms witnessed overseas would be a positive effect on economic, social, cultural and environmental values associated with the marine environment.

Questions:
Do the beneficial effects for New Zealand from becoming party to the Ballast Water Management Convention outweigh the costs?

COSTS TO SHIPPING

Cost of existing ballast water measures
New Zealand’s existing ballast water management controls impose costs on ships discharging ballast in New Zealand waters, through undertaking mid-ocean exchange; and refusal of permission to discharge ballast water.

Exchanging ballast water can have two primary cost components:
- **pumping costs**, which includes the additional fuel, energy and labour requirements and machine maintenance costs associated with running ballast water pumps;
- **delay costs**, which includes the costs associated with slowing down ship speed or extending a voyage while pumping is conducted.
A report \(^8\) commissioned by the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) estimates average pumping costs at A$688 per voyage. This estimate assumes a 50/50 percent split between the use of the sequential method and the use of the flow-through method.

Delay cost will vary according to the journey length and a ship’s ballast water capacity. For short journeys or for very large ships, the time required to complete exchange may exceed the normal voyage duration, in which case a ship’s journey will be extended to allow exchange to be completed. This extra duration represents the delay cost.

New Zealand’s distance from overseas ports means that delay costs are not a major consideration, except for a few very large vessels. Information supplied to MAF by ships exchanging ballast water enroute to New Zealand indicates that ships with a ballast water capacity of 20,000 tonnes or larger may have difficulty completing exchange during a voyage from Australia. In 2005, two ships of this size undertook ballast exchange on trans-Tasman voyages.

Ships may be refused permission to discharge ballast water if they arrive in a New Zealand port without an authorisation to discharge ballast water and without ballast water that has been exchanged in mid-ocean. Such ships may need to leave port and exchange ballast water at least 200 nm offshore before returning to discharge ballast water in port. The alternative is to forego the opportunity to load cargo.

The extent of this cost will include the marginal cost of the voyage offshore (estimated at A$48,500), as well as the delay cost for the voyage (approx. 12 hours) and to exchange sufficient ballast water.

**Cost of compliance with the requirements of the Convention**

As well as requiring ballast exchange as an interim management measure, the Convention will impose additional management measures. The following additional measures could be expected to impose costs on ships visiting New Zealand:

- maintaining a Ballast Water Record Book on board the vessel;
- developing and maintaining an approved Ballast Water Management Plan;
- regular surveying and certification of ballast water equipment;
- installing and operating ballast water treatment systems.

Ships will be required to maintain a separate record book for ballast water. Record keeping (and reporting) arrangements are a requirement of existing national measures imposed by Australia, New Zealand, the United States and other countries. The cost of purchasing and maintaining a ballast water record book is unlikely to be significant or materially different from the cost of existing requirements.

Ships must have a Ballast Water Management Plan that includes detailed descriptions of the ship’s ballast water management actions and practices. In addition, ships must be surveyed to verify that the plan and any associated structure, equipment, systems, fittings, arrangements and material or processes comply fully with the requirements of the Convention. Ships are to be certified after the successful completion of a survey. The report commissioned by DAFF estimates the cost of developing a Ballast Water Management Plan will be approximately A$5,000, and the plan will need to be updated once every five years. It is assumed that ballast water surveying and certification will be conducted with general maintenance and structural

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integrity surveys conducted every two to four years (depending on ship type). The report considers a ballast water survey is likely to cost between $2,000 and $3,000. In total, the annual cost for management plans and surveying over a 5-year period could average around A$1,800 per vessel.

In the New Zealand context, classification societies are likely to be engaged to develop ballast water management plans and verify compliance with the requirements of the Convention. An approximate cost for initial plan development and survey of $5,000 has been provided to MAF, with $2,000 per annum likely to be charged for ongoing compliance assurance.

To meet the ballast water performance standard (when applicable) ships will need to install equipment to treat ballast water prior to discharge.

Currently no treatment systems have been type approved for use in compliance with the Convention, and few systems are available commercially. Thus it is difficult to know exactly the running costs of the alternative options. The report commissioned by DAFF estimates the marginal costs associated with on-board treatment systems as likely to be between 0.06 cents and 4.66 cents per tonne of ballast water treated. Applying these costs on an annual basis, on-board treatment could cost approximately A$140 per voyage.

There is limited information on the likely capital cost of installing on-board treatment systems. The alternative options will vary in capital cost according to the manufacturer and the technology used to treat ballast water. Vessel size (and the amount of ballast to be treated) will also be a major factor in determining capital cost. A Lloyds Register report 9 on ballast water treatment technologies provides installed costs for two treatment systems currently available. The figures in the following table are in US dollars:

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Treated ballast capacity 200 m3/hr</th>
<th>Treated ballast capacity 2000 m3/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecochlor Inc</td>
<td>$260,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>NEI Treatment Systems</td>
<td>$150,000</td>
<td>$400,000</td>
</tr>
</tbody>
</table>

The annual cost of depreciation for these units would be in the range of NZ$13,650 to $36,500, applying current IRD depreciation rates for ships (using the straight depreciation method). To put this depreciation cost in context, the cost of chartering a cargo vessel is of the order of NZ$57,500 per day.

Other considerations

The costs of compliance with the requirements of the Convention are costs that ships trading to and from New Zealand are likely to bear once the Convention enters into force, regardless of New Zealand’s decision to implement the Convention. New Zealand flagged ships to which the Convention applies will need to comply with the requirements of the Convention when making international journeys to countries that are party to the Convention.

Also, a significant number of ships trading to New Zealand are trading to and from Australia. Should Australia become party to the Convention (Australia has signed the treaty, subject to ratification), then ships trading to Australia would need to be compliant with the Convention once it enters into force.

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9 Ballast Water Treatment Technology – Current status (June 2007). Lloyds Register.
COSTS TO GOVERNMENT

Implementing stricter controls on ballast water discharges will cause the Government to incur one-off and ongoing costs.

A large part of the one-off costs would be related to providing advice to the Government on New Zealand’s response to the Convention, and any subsequent development of new legislation, regulations or rules to implement its decisions. These activities would be undertaken using existing resources of the agencies involved (in this case, the Ministry of Transport, Maritime New Zealand, Ministry of Agriculture and Forestry, and Parliamentary Counsel Office).

Government agencies could also incur one-off and ongoing costs in implementing new management and control requirements. The most significant new activity to be implemented is the port inspection roles proposed to be undertaken by Maritime New Zealand. The cost of this is estimated at some $350,000 per annum.

Other new roles, such as managing any survey and certification requirements and controlling onshore disposal of sediments, are not expected to require a material amount of resources. These roles are expected to be undertaken with existing resources.

FUNDING OF COSTS TO GOVERNMENT

The cost of the new port inspection roles to be undertaken by Maritime New Zealand could be funded in a variety of ways.

Crown funding

The broad purpose of implementing stricter controls on ballast water discharges in New Zealand would be to protect a range of values associated with the marine environment against the introduction of invasive aquatic organisms. The beneficiaries of this protection are many and varied, including the general public. Given the breadth of interests that may benefit, it could be argued that implementing more stringent management should be entirely funded by the Crown.

Recovery of Government Costs

Alternatively, the new ongoing costs could be attributed to the sector that brings about the need for Government intervention. In which case, the Government will determine a method(s) for recovering cost from the shipping industry.

Cost recovery generally takes the form of user charges or user levies, which may be broadly targeted or more narrowly focused, depending on the nature of the service or activity to be funded. In addition to targeting, an important consideration is the cost effectiveness of the charging mechanism (i.e. it needs to be relatively easy to administer, at a low cost).
In this case, the costs to be recovered relate to ship inspections. The established international practice is to charge (by way of a user-charge) for re-inspections where a non-compliance has been identified, but not for first inspections.

The rationale for not using user-charges for first inspections includes: reducing the scope for bribery and corruption, and unnecessary inspections to generate revenue; not every ship is inspected, so there is an equity issue if a charge applies; inspection fees are something of a barrier to cooperation – and this is compounded when a ship can potentially be inspected in each port that it visits, even with a targeted regime.

User-charging for second-inspections is a different matter because the inspection has been necessitated by a ship’s non-compliance, and liability to a fee in these circumstances is intended to have at least a minor deterrent aspect.

Thus, the cost of ballast water ship inspections could be recovered by way of user charges (for second-inspections) and a user pays levy (for first-inspections); or entirely by way of a user pays levy.

Two options are presented below for collecting ship inspection costs via a user pays levy:

**Funding Option One – Marine Safety Charge to include new environmental levy component**
A number of Maritime New Zealand services are funded through a Marine Safety Charge. As all maritime users are considered to benefit from the services funded by the Marine Safety Charge, the Charge is applicable broadly across maritime users.

This option proposes that a new component be added to the Marine Safety Charge for the recovery of costs related to environmental protection services. Under this proposal the Marine Safety Charge would be increased by way of an identifiable environmental levy sub-component.

**Funding Option Two – Separate stand-alone environmental levy**
A second option is to create a new stand-alone environmental levy, along similar lines as the Oil Pollution Levy.

This new ‘environmental levy’ would be specifically for gathering revenue to fund the implementation of maritime environmental conventions, such as the Ballast Water Management Convention. A separate administrative mechanism would be established for planning, oversight, targeting, collection and reporting on the levy, modelled on that in place for the Oil Pollution levy.

**Questions:**
Which of the means of funding stricter control measures on ballast water discharges do you support, and why? Direct Government funding, or cost recovery from the shipping industry?

Of the cost recovery mechanisms described, which would you support and why?
Where to From Here?

THE PROCESS FOR BECOMING PARTY TO AN INTERNATIONAL TREATY

Once the submission process has been completed, the feedback received will be analysed by the Ministry of Agriculture and Forestry and incorporated into advice to the Government on whether New Zealand should accede to the Ballast Water Management Convention or otherwise increase the standards for ballast water control in New Zealand. This advice will take the form of a National Interest Analysis.

If the decision is to proceed with accession to the Convention, then the National Interest Analysis and the text of the Convention will be tabled in the House of Representatives.

Once a treaty has been presented to the House, it is referred to the Foreign Affairs, Defence and Trade Select Committee. This committee may inquire into the treaty, or may refer the treaty to another more appropriate committee. The select committee may seek public submissions.

Once the relevant committee has reported back, the legislation necessary to bring domestic law into compliance with the Convention could be introduced into the House.

Accession to the Ballast Water Management Convention would require amendments to the Maritime Transport Act 1994 and/or the Biosecurity Act 1993. A Bill to implement the provisions of the Convention would then undergo Parliament’s normal processes for scrutinising new legislation. Once the implementing legislation has been enacted, New Zealand would be able to formally lodge an instrument of accession with the International Maritime Organization and become party to the Convention.
Appendix One: Summary of the Convention

The body of the Convention establishes a set of primary obligations on Parties to the Convention, while the Annex to the Convention sets out technical standards and regulations for the control and management of ships’ ballast water and sediment. The primary obligations imposed on Parties to the Convention may be characterised as: general obligations; flag state obligations; and port and coastal state obligations.

THE OBLIGATIONS THAT IT IMPOSES

General Obligations (Article 2)
Parties to the Convention must give full and complete effect to the provisions of the Convention and its Annex. Parties reserve the right, however, to take more stringent measures than those contained in the Convention to prevent, reduce or eliminate the transfer of harmful aquatic organisms and pathogens, provided these are consistent with international law.

Parties must ensure that ballast water management practices do not cause greater harm than they prevent to their environment, human health, property or resources, or those of other States. Parties should seek to co-operate for the purpose of effective implementation, compliance and enforcement of the Convention.

Flag State Obligations (Articles 4, 7 and 8)
Parties must require ships to which the Convention applies to comply with the requirements of the Convention, including the applicable standards and requirements in the Annex. Compliance by ships with the requirements of the Convention should be achieved by, amongst other things, the certification and surveying of ships and by establishing sanctions under domestic law for any violation of the Convention.

Where a Party is informed of a violation by one of its ships, it must investigate the matter. If sufficient evidence is available to enable proceedings to be brought, the Party must commence proceedings as soon as possible, in accordance with its law.

Port State Obligations (Articles 4, 5, 8, 9, 10, 11 and 12)
Parties must develop national policies, strategies and programmes for ballast water management in ports and waters under their jurisdiction that accord with and promote the objectives of the Convention. In particular, port States must ensure that designated ports and terminals provide adequate sediment reception facilities.

Coastal and port States should establish sanctions for any violation of the Convention that occurs within their jurisdiction. Where a violation occurs within its jurisdiction, a Party has the option to either: take proceedings in accordance with its law; or provide information and evidence relating to the violation to the State under whose authority the ship is operating.

Ships to which the Convention applies may be inspected by port State control officers, who will be authorised to: verify that the ship has a valid certificate; inspect the Ballast Water Record Book; and/or sample the ballast water. If there are concerns, then a detailed inspection may be carried out. Where there is a detailed inspection, the ship must not discharge ballast water until it can do so without presenting a threat of harm to the environment, human health, property or resources. Inspections may also be undertaken at the request of another Party with
sufficient evidence regarding the past or present operation of the ship in breach of the Convention.

Where a breach of the Convention is detected, the ship may be warned, detained, or excluded from entering a port. A ship will be prohibited from discharging ballast water where the results of sampling of the ships ballast water indicates that it poses a threat to the environment, human health, property or resources. Enforcement measures should be undertaken in a way that avoids a ship being unduly detained or delayed. Compensation should be available where there is undue detention or delay.

**ANNEX – REGULATIONS FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS**

The Annex to the Convention establishes regulations relating to the management of ships’ ballast water activities. Central to these regulations are ballast water management plans and ballast water standards. Also included in the Annex are survey and certification requirements, and provisions that allow Parties to take additional measures and exempt certain ships.

**Management and control requirements (Section B and Section D)**

Ships to which the Convention applies must have on board and implement a ballast water management plan approved by the flag state. The ballast water management plan is specific to each ship and includes a detailed description of the actions to be taken to implement the ballast water management requirements specified in the regulations.

Ships must have a ballast water record book that records when ballast water is: taken on board; circulated or treated for ballast water management purposes; or discharged. This book must be available for inspection by port State control officers.

Two ballast water standards are established: the first is a ballast water exchange standard; and the second is a ballast water performance standard.

The ballast water exchange standard is contained in Regulation D-1. It requires ships performing ballast water exchange to do so with an efficiency of 95 percent volumetric exchange of ballast water. For ships that exchange ballast water by the pumping-through method, pumping through three times the volume of each ballast water tank is considered to meet the standard described. Pumping through less than three times the volume may be accepted provided the ship can demonstrate that at least 95 percent volumetric exchange is met.

Ships using ballast water exchange to meet the Regulation D-1 standard should (subject to concerns about the safety or stability of a ship):

- whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth;
- in cases where this is not possible, conduct ballast water exchange 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 in depth.

The ballast water performance standard is contained in Regulation D-2. It is set in terms of volumetric concentration of viable organisms and the maximum concentration for harmful microbes in the ballast water discharged. Specifically, in relation to organisms with a minimum dimension greater than or equal to 50 micrometres, 10 such organisms for each
cubic metre of discharge are permissible. In relation to organisms below 50 micrometres but above 10 micrometres, 10 such organisms per millilitre are permissible. In addition, the discharge of indicator microbes shall not exceed specified concentrations.

It is intended that the ballast water performance standard contained in Regulation D-2 will be phased-in over time to replace the ballast water exchange standard contained in Regulation D-1. The phase-in for any particular ship will be determined on the basis of: the ship's date of construction; and the ship's ballast water capacity. Details of the specific timing are set out in the table below.

<table>
<thead>
<tr>
<th>Date of construction</th>
<th>Ballast water capacity (cubic metres)</th>
<th>Regulation D-1 standard</th>
<th>Regulation D-2 standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 2009</td>
<td>1500 - 5000</td>
<td>Applicable until 2014</td>
<td>Applicable from 2014</td>
</tr>
<tr>
<td>Prior to 2009</td>
<td>Less than 1500, or greater than 5000</td>
<td>Applicable until 2016</td>
<td>Applicable from 2016</td>
</tr>
<tr>
<td>In or after 2009</td>
<td>Less than 5000</td>
<td>Not applicable</td>
<td>Applicable from construction</td>
</tr>
<tr>
<td>In or after 2009 but prior to 2012</td>
<td>5000 or greater</td>
<td>Not applicable</td>
<td>Applicable from construction</td>
</tr>
<tr>
<td>In or after 2012</td>
<td>5000 or greater</td>
<td>Not applicable</td>
<td>Applicable from construction</td>
</tr>
</tbody>
</table>

There are ongoing discussions at the IMO around the feasibility of the first application date for the Regulation D-2 standard (1 January 2009 for ships constructed in or after 2009) due to concerns around the availability of appropriate ballast water technology. While a limited number of technologies will be available to meet the first application date for the Regulation D-2 standard, procedural and logistical problems could prevent some ships from meeting the D-2 standard in 2009. It is now considered that all ships would be able to meet the D-2 standard by 2010 or 2011, and accordingly the IMO is considering options to defer the first application date.

Exemptions may be granted from applying any of the ballast water management requirements for ships, for voyages between specified ports or locations; or where a ship which operates exclusively between specified ports or locations.

As a general requirement, ships must remove and dispose of sediments from spaces designated to carry ballast water in accordance with the provisions of the ships’ ballast water management plan. Ships constructed after 2009 should be designed to minimise the amount of sediment taken into ballast tanks and to provide for easy access for sampling and removal of sediments.

Systems for treating ballast water must be approved by the flag State, taking into account guidelines adopted by the IMO. Such systems must be safe in terms of the ship, its equipment and the crew. The IMO must first approve any systems that: make use of chemicals or biocides or of organisms or biological mechanisms; or which alter the chemical or physical characteristics of the ballast water.

Survey and certification requirements (Section E)

Ships to which the Convention applies must be surveyed to verify that their ballast water management plan and any associated structure, equipment, systems, fitting, arrangements and material or processes comply fully with the requirements of the Convention. The survey requirements consist of initial, renewal, annual, intermediate and additional surveys. All ships
subject to the Convention, and of 400 gross tonnage or larger will be issued with a certificate after successful completion of a survey.

Additional measures and exceptions (Section C and Section A)
The measures described above are considered to be the minimum required. The Convention allows for additional measures to be imposed by one or more Parties to meet the Convention’s objective. Parties should consult affected States before imposing such measures, which must be consistent with international law.

The Annex describes five situations in which the requirements for ballast water management described above will not be applicable. Briefly, these exceptions cover situations:
• where the uptake or discharge of ballast water is necessary for the purpose of saving the ship or saving life at sea;
• where accidental uptake or discharge of ballast water results from damage to a ship or its equipment;
• where the uptake or discharge of ballast water is used for the purpose of pollution prevention or minimisation;
• where high seas water is taken as ballast and then discharged again on the high seas; or
• where ballast water is taken from and returned to the same location, provided there has been no mixing with unmanaged ballast water.

Guidelines to ensure global and uniform application of the relevant requirements of the Convention
The IMO has adopted or is developing of the following guidelines to assist with implementation of the Convention:
1. Guidelines for sediment reception facilities under Article 5 and regulation B-5;
2. Guidelines for Guidelines for Ballast Water Sampling under Article 9;
3. Guidelines for ballast water management equivalent compliance under regulation A-5;
5. Guidelines for ballast water reception facilities under regulation B-3;
6. Guidelines for ballast water exchange under regulation B-4;
7. Guidelines for risk assessment under regulation A-4;
8. Guidelines for approval of ballast water management systems under regulation D-3.1;
9. Procedure for Approval of Ballast Water Management Systems that make use of active substances under regulation D-3.2;
10. Guidelines for approval and oversight of prototype ballast water treatment technology Programmes under regulation D-4;
11. Guidelines for Ballast Water Exchange Design and Construction Standards under regulation B-5.2
12. Guidelines for sediment control on ships under regulation B-5
13. Guidelines for additional measures including emergency situations under regulation C-1; and
Appendix Two: Summary of Existing Ballast Water Management Measures

The *Import Health Standard for Ships’ Ballast Water from All Countries* applies to ballast water loaded within the territorial waters of a country other than New Zealand and intended for discharge in New Zealand waters. The Standard does not apply to: ballast water that will not be discharged in New Zealand waters; ballast water loaded in New Zealand waters; or an emergency discharge of ballast water.

Ballast water that does not comply with the conditions must not be discharged in New Zealand waters.

Ballast water can only be discharged into New Zealand waters with the permission of an inspector. An inspector will only give such permission where the Master has:
- demonstrated that the ballast water has been exchanged en route to New Zealand in areas free from coastal influences, preferably 200 nautical miles from the nearest land and in water over 200m in depth; or
- demonstrated that the ballast water is fresh water.

Ballast water may be exchanged by either emptying and refilling ballast tanks/holds to an efficiency of 95 percent volumetric exchange, or by pumping through the tanks a water volume equal to at least three times the tank capacity.

Sediment which has settled in ballast tanks, ballasted cargo holds, sea-chests, anchor lockers or other equipment must not be discharged into New Zealand waters.

Exemptions from the conditions of the Standard may be granted to allow discharge of ballast water when it can be demonstrated that the weather conditions on the voyage in combination with the construction of the vessel have precluded safe ballast water exchange.

Where weather conditions or vessel construction have precluded the safe exchange of ballast water from areas considered a particularly high risk (currently Port Phillip Bay and Tasmania), the vessel must either redistribute the ballast water around the ship’s ballasting spaces in order to load cargo or, if this is not possible to accomplish with a suitable margin of safety, the ship must leave New Zealand without loading some, or all, intended cargo.

A Vessel Ballast Water Declaration must be completed by all ships intending to discharge ballast water, before arrival in New Zealand.

Offences and penalties for non-compliance are provided under the *Biosecurity Act 1993*. Providing incorrect information to an inspector is an offence under section 154(b) of the Act, and carries a penalty for individuals of up to 12 months imprisonment and/or a fine not exceeding NZ$50,000; and for corporations a fine not exceeding NZ$100,000.

Failure to obey the directions of an inspector is an offence under section 154(o) of the Act. It carries a penalty for individuals of a fine not exceeding NZ$5,000, and for corporations a fine not exceeding NZ$15,000.

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10 New Zealand waters are defined as the internal waters of New Zealand; and the territorial sea of New Zealand.
MAF Biosecurity New Zealand is the division of the Ministry of Agriculture and Forestry charged with leadership of the New Zealand biosecurity system. It is responsible for administration of the Biosecurity Act 1993, and Import Health Standards made under it.

MAF Biosecurity New Zealand is responsible for the delivery of quarantine inspection services. In relation to ballast water, this role includes granting permissions and exemptions for ballast water discharges (prior to ship arrivals), and inspection of every ship intending to discharge ballast water upon arrival. The latter entails verifying the details provided in the Master’s Ballast Water Declaration by checking the ship’s logs and charts.
Table 1. Non-indigenous species found in the Biosecurity New Zealand port and harbour baseline surveys which may have been introduced via ballast water.

<table>
<thead>
<tr>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
<th>Genus &amp; Species</th>
<th>Vector</th>
<th>Date</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Sabellida</td>
<td>Serpulida</td>
<td><em>Hydroides elegans</em></td>
<td>H/B</td>
<td>pre 1952</td>
<td>Auckland, Nelson resurvey, Gulf Harbour</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Scolecida</td>
<td>Capitellida</td>
<td><em>Barotintella lepte</em></td>
<td>H/B</td>
<td>pre2005</td>
<td>Napier, Taranaki, Timaru</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Sabellida</td>
<td>Sabellida</td>
<td><em>Euchone limncola</em></td>
<td>H/B</td>
<td>pre2005</td>
<td>Taranaki, Timaru</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Spionida</td>
<td>Spionida</td>
<td><em>Dipolydora flava</em></td>
<td>H/B</td>
<td>pre2005</td>
<td>Picton, Tauranga</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Spionida</td>
<td>Spionida</td>
<td><em>Pseudopolydora paucibrachiata</em></td>
<td>H/B</td>
<td>pre 1975</td>
<td>Gisborne, Whangarei (port)</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Spionida</td>
<td>Spionida</td>
<td><em>Pseudopolydora kempi</em></td>
<td>H/B</td>
<td>pre2005</td>
<td>Whangarei (port)</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Sabellida</td>
<td>Sabellida</td>
<td><em>Ficopomatus enigmaticus</em></td>
<td>H/B</td>
<td>1967</td>
<td>Whangarei (port and marina)</td>
</tr>
<tr>
<td>Annelida</td>
<td>Polychaete</td>
<td>Spionida</td>
<td>Spionida</td>
<td><em>Polydora cornuta</em></td>
<td>H/B</td>
<td>pre 1972</td>
<td>Whangarei (marina), Opua</td>
</tr>
<tr>
<td>Bryozoa</td>
<td>Gymnolaemata</td>
<td>Ctenostomata</td>
<td>Vesiiculriidae</td>
<td><em>Zoobotryon verticillatum</em></td>
<td>H/B</td>
<td>pre 1960</td>
<td>Gulf Harbour, Tauranga</td>
</tr>
<tr>
<td>Bryozoa</td>
<td>Gymnolaemata</td>
<td>Ctenostomata</td>
<td>Vesiiculriidae</td>
<td><em>Amathia distans</em></td>
<td>H/B</td>
<td>pre 1980</td>
<td>Tauranga</td>
</tr>
<tr>
<td>Cnidaria</td>
<td>Hydrozoa</td>
<td>Hydroidea</td>
<td>Campanuliniidae</td>
<td><em>Lafoeina amirantensis</em></td>
<td>H/B</td>
<td>2002</td>
<td>Lyttelton</td>
</tr>
<tr>
<td>Crustacea</td>
<td>Malacostraca</td>
<td>Brachyura</td>
<td>Cancridae</td>
<td><em>Cancer gibbosulus</em></td>
<td>H/B</td>
<td>2001</td>
<td>Lyttelton, Timaru, Wellington</td>
</tr>
<tr>
<td>Crustacea</td>
<td>Malacostraca</td>
<td>Brachyura</td>
<td>Cancridae</td>
<td><em>Cancer amphoetus</em></td>
<td>H/B</td>
<td>2003</td>
<td>Bluff, Gisborne</td>
</tr>
<tr>
<td>Crustacea</td>
<td>Malacostraca</td>
<td>Brachyura</td>
<td>Portunidiae</td>
<td><em>Charybdis japonica</em></td>
<td>H/B</td>
<td>2000</td>
<td>Auckland</td>
</tr>
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<td>Mollusca</td>
<td>Bivalvia</td>
<td>Pterioida</td>
<td>Limidae</td>
<td><em>Limaria orientalis</em></td>
<td>H/B</td>
<td>pre 1972</td>
<td>Gulf Harbour</td>
</tr>
<tr>
<td>Mollusca</td>
<td>Bivalvia</td>
<td>Mytiloida</td>
<td>Mytilida</td>
<td><em>Musculista senhosia</em></td>
<td>H/B</td>
<td>1978</td>
<td>Opua, Whangarei (marina)</td>
</tr>
<tr>
<td>Phycophyta</td>
<td>Florideophyceae</td>
<td>Ceramiacles</td>
<td>Rhodomelaceae</td>
<td><em>Polysiphonia senticulosa</em></td>
<td>H/B</td>
<td>1993</td>
<td>Lyttelton resurvey</td>
</tr>
<tr>
<td>Phycophyta</td>
<td>Phaeophyceae</td>
<td>Laminariae</td>
<td>Alariaceae</td>
<td><em>Undaria pinnatifida</em></td>
<td>H/B</td>
<td>1987</td>
<td>Taranaki, Lyttelton, Nelson, Picton, Timaru, Wellington, Dunedin, Gisborne, Napier</td>
</tr>
<tr>
<td>Porifera</td>
<td>Demospongiae</td>
<td>Hadromerida</td>
<td>Cloniaidae</td>
<td><em>Cliona celata</em></td>
<td>H/B</td>
<td>pre 2005</td>
<td>Tauranga, Whangarei (port)</td>
</tr>
<tr>
<td>Porifera</td>
<td>Demospongiae</td>
<td>Halisarida</td>
<td>Halisaridiae</td>
<td><em>Halisarca dujardini</em></td>
<td>H/B</td>
<td>pre 1973</td>
<td>Taranaki, Lyttelton, Picton, Bluff, Auckland, Wellington resurvey, Dunedin,</td>
</tr>
<tr>
<td>Vertebbrata</td>
<td>Actinopterygii</td>
<td></td>
<td></td>
<td><em>Arenigobius bifrenatus</em></td>
<td>B</td>
<td>1998</td>
<td>Auckland</td>
</tr>
</tbody>
</table>

Vector type was established by NIWA contractors based primarily upon the descriptions of Cranfield et al. 1998. Vectors are either B = ballast water, or H/B = hull fouling or ballast water. Date refers to the date a species was first identified in New Zealand. ‘pre’ is used where a species has been known of but not formally reported/identified. References relate to the Biosecurity New Zealand Port Survey reports published as Biosecurity Technical Papers available on the Biosecurity New Zealand website (http://www.biosecurity.govt.nz).