Regulations for the Prevention of Pollution by Sewage from Ships – Annex IV of the International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78)

Regulatory Impact Statement

1. Problem

1.1. The discharge of sewage from commercial vessels is one of the few areas related to shipping where there are currently no enforceable international standards. The discharge of raw or poorly treated sewage contributes to the overall pollution of the seas. The volume of sewage discharged from a vessel can vary depending on the number of persons carried, the duration of the trip and frequency of use. The rapid increase in the size and number of cruise ships in recent years has resulted in a renewed focus on this issue. Today's cruise ships, the largest of which can carry more than 5,000 passengers and crew, are floating cities that generate significant volumes of waste. An average sized cruise liner discharges approximately 100,000 litres of sewage per day, while an average sized bulk carrier with a crew of 25 discharges approximately 300 litres per day.

1.2. In 1999-2000, 3,254 international trading ships visited Australian ports. Sewage from ships can contain high levels of nutrients and disease carrying micro organisms, and differs from other types of sewage as it is often released directly into the sea and can contain treatment chemicals not found in other sewage, such as chlorine and formaldehyde. The United States' Environment Protection Agency estimates that the amount of bacterial pollution (fecal coliforms) from one weekend boater's discharge of untreated sewage is equal to the amount from the treated sewage of 10,000 people during the same time period. In the United States, the harvest of shellfish is restricted or prohibited in approximately 30 percent of all shellfish growing waters because of poor water quality. Untreated sewage discharge from boats accounts for about 13 percent of these restrictions.

1.3. Sewage includes drainage from spaces containing live animals. Australia has a growing livestock export industry, primarily to the Middle East and South East Asia. In 2001, Australia exported 826,000 head of cattle valued at $545million.

1.4. Environmental problems associated with marine sewage (ie sewage from ships and outfalls) include the introduction of nutrients such as nitrogen and phosphorus in the marine environment. Excess nutrients cause algal blooms that block light from the ocean floor affecting the growth of seagrass. Seagrasses are crucial to the marine ecosystem as they are important breeding grounds and nurseries for fish and other marine organisms. Once nutrients that feed the algal bloom are used up the algal bloom begins to decay, using up oxygen. Oxygen depletion from sewage breakdown removes the oxygen required by fish and other marine life to breathe. This damage to the marine environment not only affects coastal waters but all ocean waters.

1.5. Elevated nitrogen concentrations in estuaries and coastal waters, through sewage and agricultural run-off, has been the subject of increasing concern in recent years. Steps have been taken in some countries to reduce key nitrogenous pollutants, such as nitrate, through better land management practices. Similarly, efficient sewage treatment has also led to reductions in levels of coastal eutrophication in some areas. However, in many parts of the world such coastal nitrogen pollution continues to increase in line with a growing human population and the need for ever more intensive agriculture.

1.6. In Australia, the 1996 State of the Environment Report notes that the input of nutrients from effluents such as sewage is one of the most serious large-scale threats to Australia's near-shore marine environment.

1.7. Marine sewage also impacts on human health. A recent World Health Organisation (WHO) report estimates that one in every 20 bathers in "acceptable waters" will become ill after venturing just once into the sea. The WHO study estimates that bathing in polluted seas causes some 250 million cases of gastroenteritis and upper respiratory disease every year. Some of these people will be disabled over the longer term. It is estimated to cost society, worldwide, about US $1.6 billion a year. The toll from consuming contaminated shellfish is even greater. One study suggests that seafood is involved in 11 per cent of all the outbreaks of disease carried in food in the United States, 20 per cent of them in Australia, and over 70 per cent in Japan, which has a particularly strong tradition of eating raw fish and shellfish. Pathogenic bacteria can survive in the sea for days and weeks; viruses can survive in the water - or in fish and shellfish - for months.

1.8. International concern about various types of pollution has led to the development of the Precautionary Principle as set out in the United Nations Conference on Environment and Development, Agenda 21, Principle 15. The Precautionary Principle states that Governments should take action to prevent pollution whenever there are reasonable grounds for concern that such pollution may occur, and that lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

2. Objectives

2.1. The objective of the proposed amendments is to prevent pollution by the discharge of sewage from ships by providing a basis for Australia's accession to, and implementation of, Annex IV of the International Convention for the Prevention of Pollution from Ships, known as MARPOL 73/78. The Amendments would be made to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* and the *Navigation Act 1912.*

2.2. Australia is a signatory to the MARPOL 73/78 Convention, which is administered by the International Maritime Organization (IMO), and is currently in force in 103 countries. Australia has implemented other annexes of the Convention dealing with the prevention of pollution by the discharge of oil, chemicals, harmful packaged substances, and garbage.

2.3. Annex IV of MARPOL, entitled *Regulations for the Prevention of Pollution by Sewage from Ships*, is the only Annex of the original Convention that has not yet entered into force internationally. The Commonwealth prepared the *Protection of the Sea Legislation Amendment Act 1986* in anticipation of Annex IV's entry into force. This legislation was not proclaimed as the entry into force provisions of ratification by countries with a total of 50% of world merchant shipping tonnage had not been achieved. In March 2000, the IMO adopted a number of amendments to Annex IV that addressed several outstanding issues which had delayed international acceptance. Now that Annex IV has been accepted by 51.14% of world shipping tonnage (89 countries) it is proposed that the existing unproclaimed Commonwealth legislation be amended to reflect the changes adopted by IMO.

2.4. The 15th meeting of the Australian Transport Council (25 May 2001) recommended that Australia adopt Annex IV.

3. Options

(i) Not adopt Annex IV of MARPOL 73/78.

(ii) Amend legislation as necessary and accede to Annex IV of MARPOL 73/78.

4. Impact Analysis

4.1. Option (i) would mean no change to the current arrangements. While most ships already comply with Convention requirements in respect of available shipboard equipment and arrangements, this option would leave Australian waters potentially vulnerable to unacceptable levels of pollution in that the use of this shipboard equipment and arrangements would not be mandatory, and shipboard operations and equipment would not be subject to regular inspection by both flag and port States to ensure continued effectiveness. More importantly, Australia would not be in a position to take advantage of and enforce the full range of sewage pollution prevention measures against foreign flag vessels.

4.2. The lack of a national approach to the issue could result in States/NT implementing their own requirements, potentially resulting in different requirements around the Australian coast and applicable only to State waters. Waters in the Commonwealth control beyond 3 nautical miles and up to 200 nautical miles would not be covered, resulting in inadequate protection from this type of pollution. During the consultation process, Australian shipping industry representatives raised this as a particular concern.

4.3. This option would not be in accordance with the general obligation in the United Nations Convention on the Law of the Sea 1982 for nations to adopt generally accepted international rules and standards when implementing laws and regulations to prevent, reduce and control pollution of the marine environment from vessels.

4.4. Option (i) would result in additional costs to the community in that the level of environmental protection would be lower than internationally adopted standards. This is particularly important in respect of the Great Barrier Reef which is particularly sensitive to marine sewage. The regulations of Annex IV include special protection measures for the Great Barrier Reef that prohibit any operational discharges in the Reef area, the only sea area in the world to have such protection. It is expected that costs to the shipping industry in Australia would include potentially increased complexity of regulations as States/NT may choose to implement their own requirements. Australian ships trading to overseas ports would incur additional costs as a result of the need to have proper documentation confirming compliance with Annex IV, documentation that may only be issued by Administrations that have adopted the Annex.

4.5. As MARPOL 73/78 is a widely accepted international Convention, and Annex IV applies only to international trading vessels, it is likely that, whether or not Australia gives effect to Annex IV, Australian ships would be required to meet the Annex IV regulations in order to trade overseas. The international shipping industry has been aware since 1973 that international sewage discharge standards would ultimately be put in place by the IMO. Ships built since that time have accordingly taken this into account. The regulations require ships to have either an approved sewage treatment plant, a sewage comminuting and disinfecting system or a holding tank for the retention of sewage on board.

4.6. Option (ii) would provide consistent national standards for commercial vessels trading internationally, and would enable Australia to implement the full range of enforcement measures available under MARPOL 73/78, including regular inspections to ensure compliance (known as port State control - PSC) and boarding a suspect vessel to obtain evidence of possible violations. Australia would be in a position to take advantage of the IMO's administration of the MARPOL Convention, for example, the development of standards for the testing of shipboard equipment and issuing of details of equipment that meets such standards.

4.7. Option (ii) would also be consistent with Australia's obligations to protect the marine environment as a signatory to the United Nations Convention on the Law of the Sea 1982. To the extent that the discharge of sewage from ships contributes to environmental problems, community benefits of option (ii) are far reaching, from human health benefits of de-contamination of seafood to financial gains due to increased quality and production for the mariculture and fisheries industries. Ecosystem health will increase benefiting all stakeholders, especially in sensitive marine areas such as the Great Barrier Reef. Benefits accruing to Commonwealth and State/NT governments in adopting international standards include streamlined regulatory processes, reduced monitoring and enforcement costs, and higher levels of compliance.

4.8. The implementation of Annex IV of MARPOL 73/78 as proposed in option (ii) will result in some additional costs for the Australian shipping industry, however these are expected to be minimal. The commercial shipping industry has been aware for some time that the Annex IV regulations would eventually enter into force, and ships have been designed accordingly. Costs relating to the carriage of additional certification and survey requirements will become part of standard MARPOL 73/78 compliance.

4.9. Under Annex IV, discharges of sewage from ships on international voyages will be restricted as follows:

- untreated sewage may only be discharged at a distance of more than 12 nautical miles from the nearest land, provided that sewage held in holding tanks is not discharged instantaneously, but at a moderate rate when the ship is proceeded at a speed of not less than 4 knots;
- comminuted and disinfected sewage may only be discharged at a distance of more than 3 nautical miles from the nearest land, providing the system meets technical standards set by IMO; and
- effluent from an IMO-approved sewage treatment plant may be discharged at any location providing the effluent does not produce visible floating solids nor cause discolouration of the surrounding water.

4.10. These discharge standards are based on those included in the original 1973 Convention. The distances mentioned above reflect the internationally agreed maritime boundaries of 3 nautical miles for a flag State's coastal waters and 12 nautical miles for a flag State's territorial sea. The restrictions recognise the importance of coastal waters as host to the majority of recreational and mariculture activities by prohibiting all forms of sewage discharge from ships. Beyond a distance of 12 nautical miles from the nearest land, the oceans assimilative and dispersal capacity is sufficiently high to disperse untreated sewage discharges. The discharge provisions also recognise the need for increased protection for the Great Barrier Reef, prohibiting discharge of any sewage in the Reef area. While the discharge standards currently represent an appropriate balance between the operational needs of ships and environmental protection, it is likely that permitted discharge rates will be reduced over time as the Convention is amended to take into account developments in waste disposal technology and ship construction.

4.11. The Annex places an obligation on ports to provide facilities adequate to meet the demand for the reception of sewage from international trading vessels. In almost all Australian ports where there is a demand for such facilities, this obligation is met through the use of private contractors dealing direct with ships through shipping agents. These private contractors directly invoice the shipping agents, and the port authority has no financial involvement. Should any port authority determine that specific action by the authority is required, such as at berths used for cruise ships where road tankers are not appropriate, costs are normally directly recovered from the vessel operator. For example, at cruise ship berths in Sydney, cruise ship operators pay a fee of approximately $700 to Sydney Ports Corporation to cover the costs of direct connection to Sydney's sewage system, and are then charged around $1.70 per litre by Sydney Water. In Melbourne, cruise ships are charge half a cent per litre with no connection fee. Typical charges for removal by private contractors using road

tankers are 8 cents per litre plus $90 per hour waiting time (Melbourne) and 8 cents per litre plus $110 truck hire (Townsville). Such costs are in general already being met by ships visiting Australian ports and in any event are a very small component of the overall running costs of large commercial vessels. Consequently, there will be little if any discernible impact on the costs of shipping to Australia.

4.12. The Commonwealth will incur some minor additional costs as ship inspections under port State control (PSC) will be extended to include sewage discharge requirements. This will primarily involve inspection of an additional certificate carried on board the ship. The survey and certification requirements in Annex IV will not result in additional costs for the Commonwealth, as these functions are normally delegated to classification societies.

4.13. The Annex places an obligation on ports to provide facilities adequate to meet the demand for the reception of sewage from international trading vessels. In almost all Australian ports where there is a demand for such facilities, this obligation is met through the use of private contractors dealing direct with ships through shipping agents. These private contractors directly invoice the shipping agents, and the port authority has no financial involvement. Should any port authority determine that specific action by the authority is required, such as at berths used for cruise ships where road tankers are not appropriate, costs are normally directly recovered from the vessel operator. For example, at cruise ship berths in Sydney, cruise ship operators pay a fee to Sydney Ports Corporation for direct connection to Sydney's sewage system, and then are charged on a per litre basis by Sydney Water.

4.14. A survey of available waste reception facilities for sewage in Australian ports was completed during December 2001 as part of an international survey being carried out by IMO. The information provided indicates that sewage discharge facilities are available at most major trading ports and many smaller ports. Geelong, Westernport and Port Hedland are the only major ports that have indicated that demand for sewage reception facilities is low and there are no immediate plans to install such facilities. In 1999-2000, these ports accounted for 2.4%, 0.9% and 2.7% respectively of ship visits to Australian ports. These ports handle only bulk carriers and/or oil tankers, and the relatively small crews on these large vessels mean that ships have ample opportunity to discharge waste at sea in compliance with the MARPOL regulations while en route to or from their Australian destinations. The lack of facilities in these ports does not therefore significantly impact either the environment or Australia's overall compliance with the Annex IV obligations. Additionally, as ships are given the opportunity to discharge waste at sea in compliance with the MARPOL regulations, the lack of reception facilities in Geelong, Westernport and Port Hedland does not discourage activity or divert ships to larger ports.

4.15. The Australian Transport Council has agreed that the amended Commonwealth legislation should be expressed to apply to all jurisdictions, with a savings clause to preserve the operation of any existing or future complementary State/NT legislation. This approach has been applied in respect of the other four Annexes to the MARPOL 73/78 Convention that are currently in force internationally. Several Australian States have indicated that they propose to introduce legislation to control sewage from ships however they have been awaiting Commonwealth action with respect of Annex IV before introducing complementary legislation.

5. Consultation

5.1. The main parties affected by the proposed legislation will be the shipping industry. The Australian Shipowners Association (ASA) and Shipping Australia Limited (SAL), which represent both Australian and foreign shippers (including cruise ships), support Australian adoption of Annex IV. The shipping industry has been consulted at all stages in the development of Annex IV, which dates back to the 1970's. In more recent times, a number of significant amendments to Annex IV were adopted by the IMO. ASA and SAL provided input and briefing to the various IMO Committee meetings. In addition, the international shipping industry has consultative status at IMO and participates actively in deliberations.

5.2. Ports will also be affected by the proposed legislation, primarily in respect of the requirement to provide facilities to receive sewage from ships. Consultation with the Association of Australian Ports and Marine Authorities (AAPMA) also dates back to the 1970's, and AAPMA has participated in briefing for IMO Committee meetings. Internationally, the International Association of Ports and Harbours has consultative status at IMO.

5.3. The proposed legislation will have only minor impact on the livestock export industry, as compliance will largely be the responsibility of the foreign registered vessels involved in this trade. Nevertheless, the Australian Livestock Export Corporation has been fully consulted and has no concerns with the proposal. The only potential impact will be that, as for any other type of vessel, a ship will be subject to detention if serious breaches of the Annex IV regulation are discovered during a PSC inspection.

5.4. As Annex IV applies only to vessels on international voyages, the local fishing industry will not be impacted by this proposal and consultations were not required. Similarly, consultation with the local tourism sector was not required, as only cruise ships on international voyages will be impacted, and these are represented through the shipowners associations mentioned above. The development of national sewage discharge standards for ships to which Annex IV does not apply (for example, recreation, fishing and tourist vessels) is currently the subject of consideration by the Australian Maritime Group, an advisory committee of the Australian Transport Council.

5.5. In respect of consultation with the States/NT, at its 69th session in June 1985, the then Australian Transport Advisory Council (ATAC) recommended that Annex IV be accepted by Australia and that its adoption be based on the same division of responsibility between the States and the Commonwealth as the other Annexes of the Convention. Following this agreement, the Protection of the Sea Legislation Amendment Act 1986 was passed to give effect to Annex IV (see sections 11 and 28). However, this legislation has never been proclaimed.

5.6. The reason for this is that the 76th ATAC in 1988 "...noted that there is no urgency in progressing...the implementation of Annex IV (sewage) at this time as it appears unlikely to enter into force internationally for some years."

5.7. During 1998 the views of States/NT were sought on how to progress this issue in Australia. All jurisdictions supported action to implement Annex IV and proclaim the existing Commonwealth legislation, with some modifications, to ensure national uniform sewage discharge standards in advance of the international entry into force of Annex IV. These discussions were based largely on an expectation that the IMO Marine Environment Protection Committee (MEPC) would take some time to reach agreement on the revision of Annex IV. However, the 44th session of MEPC in March 2000 was able to promptly resolve the outstanding issues and adopt a revised text of Annex IV. Consequently, in May 2001 the Australian Transport Council recommended that Australia adopt Annex IV.

6. Conclusion and recommended option

6.1. Option (i) is that Australia not adopt Annex IV of MARPOL 73/78. This would leave Australian waters potentially vulnerable to unacceptable levels of pollution by sewage from ships. It would also result in enforcement difficulties with respect to foreign ships in Australian waters, disadvantage Australian ships when visiting overseas ports and may result in additional costs to shipping if States/NT implement inconsistent standards in the future.

6.2. Option (ii) is that Australia amend existing legislation as necessary and to accede to Annex IV. This is the preferred option, and would provide Australia with consistent national standards that can effectively be applied to any foreign ships visiting Australian waters. This option will ensure that Australia's marine environment is protected by applying the most up-to-date international environmental standards.

7. Implementation and review

7.1. As part of MARPOL 73/78, administration and enforcement of Annex IV will be by way of established procedures applied to other MARPOL 73/78 regulations. Procedures include:

- port State control inspections;
- Coastwatch surveillance;
- reports of oil pollution at sea observed by vessels or overflying commercial aircraft; and
- reports from shore-based personnel, such as port authority workers.

7.2. Consultation with the shipping industry is on-going in respect of any proposed changes to MARPOL 73/78 or problems being experienced by industry that might need to be raised at IMO meetings. The Australian Maritime Safety Authority (AMSA) reports illegal discharges on an annual basis to the IMO. AMSA also produces reports setting out details of deficiencies found during PSC inspections. MARPOL 73/78 includes provisions to waive the regulation in special circumstances, such as accidental discharges and discharges that might be necessary to preserve the safety of a ship in an emergency. These provisions will be reflected in Australian legislation, although penalties will be applied where a person is reckless or negligent. It is proposed that penalties for non-compliance will be consistent with other Annexes of MARPOL 73/78, ie up to 2,000 penalty units for an individual and 10,000 penalty units for a corporation. Protocol II of MARPOL 73/78 sets out arbitration procedures in the event of a dispute between parties.