

Appendix: Comments and recommendations regarding the findings of the TAP review – with a restructuring of the actions to fit the framework for analysis recommended by NELA General – overarching measures for management and control of MPP

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>Action 2.1 DEWHA in collaboration with state and territory governments and other relevant stakeholders to support the development of nationally consistent, statistically rigorous data collection protocols and survey methods. DEWHA to support the development and management of national mapping of the spatial distribution and concentration of marine debris over time to assess the significance of marine debris and to reduce its occurrence.</p>	<p>CSIRO developed a large project to quantify the amount and distribution of debris in Australia’s coastal environment. The project included: development of a statistically robust sampling design at the continental scale; development of a simple, rapid, quantitative survey method; implementation of surveys every 100 km along the coastline following this design; development of a database for housing and handling this information; and development of robust statistical tools that could identify both terrestrial and marine sources of debris, and provide a standardized map of the distribution of debris at the national scale. The database developed for this project can accommodate both at sea and terrestrial sampling, along with volunteer clean up data. The survey methods are designed to be useable with a range of participants, including professional staff, primary and secondary schools, and volunteers. The survey methods have been optimized to deliver quantitative and repeatable data, along with all the supporting metadata, in a format that allows for rapid assessment (less than 2 hours per site). This project is currently in its final year and the materials developed are readily available on the internet. http://www.marine.csiro.au/apex/f?p=120:LOGIN:10919825050709 The TeachWild program uses CSIRO’s standardised survey method in beach cleanup activities conducted nationally by citizen science volunteers (primarily school groups). TeachWild data is entered online into the National Marine Debris Database (hosted by the Atlas of Living Australia). The database is intended to assist the formulation of waste management policies and practices by state governments and coastal councils, and to contribute to a global database of marine debris. Across northern Australia, Indigenous rangers groups collect data on marine debris observed during sea country patrols. The information is collected and stored using the I-Tracker Saltwater Country Patrol application, which can be downloaded to hand-held computers with GPS, camera and voice recording functions. The application was developed and is made available and supported by the North Australian Indigenous Land and Sea Management Alliance Ltd (NAILSMA). The application utilises freely available CyberTracker software and enables standardised data collection for both instances of marine debris (characteristics, location, retrieval information, time, photos) and wildlife impacted by marine debris (location, species, size, injuries or deaths, photo). NAILSMA provides on-ground training and follow-up technical support for Indigenous land and sea managers using this application. The data collected is held within communities except in certain circumstances (for example use of marine debris information on request by researchers, or for inclusion in datasets held by GhostNets Australia and Tangaroa Blue production of communications products through NAILSMA or other organisations). There may be value in collating this information, especially for monitoring long term trends in debris type and wildlife impacts. Tangaroa Blue have</p>	<p>Information collection: In NELA’s view this is the most important step to be taken and should be fast-tracked as more information is needed, particularly on the quantities and origins of MPP for the purpose of further policy-making. The impacts of MPP is something that may require longer term research. Action item 2.1 requires nationally consistent, statistically rigorous data collection protocols and survey methods to be developed in collaboration with state and territory governments. Whilst work has been done by the CSIRO it is not clear the extent of collaboration with state and territory governments even though it included implementation of surveys every 100 km. The link provided in TAP Review is to TeachWild. Questions that arise are:</p>

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	<p>developed resources to assist volunteer groups in standardised data collection. This group also provide a marine debris CyberTracker Sequence for download to handheld devices, as well as a data sheet to guide volunteers in recoding their activity and an Identification Manual to help in standardising descriptions of debris.</p>	<p>(a) To what extent is the TeachWild program using CSIRO standardised survey method in beach cleanup activities actually being used to assist in formulation of waste management policies and practices by state governments and coastal governments. (b) Is there more that the Commonwealth can do in this regard? Action item 2.1 also requires the development and management of national mapping of the spatial distribution and concentration of marine debris over time. Information regarding mapping has not been provided in the TAP Review.</p>
<p>Action 2.3 DEWHA in collaboration with state and territory governments to facilitate the establishment of a national network of a limited number of permanent marine debris monitoring sites (including within Commonwealth Marine Protected Areas) to promote consistent monitoring and information gathering and exchange, to enable understanding of long-term</p>	<p>A national network of permanent marine debris monitoring sites has not been established. However, there are a number of coastal sites that could be used as long term monitoring sites, some of which have existing historical data, including the Gulf of Carpentaria ranger groups mentioned elsewhere. South Australia NRM regional boards, combined with nongovernment organisations such as Tangaroa Blue, and TeachWild have also facilitated marine debris surveys at specific sites. For example, on the Eyre Peninsula, volunteers and Natural Resources staff have surveyed beaches from Fowlers Bay to Whyalla, recording the amounts and types of debris removed at over 20 coastal sites. For each visit, the collected debris has been sorted and recorded providing baseline information for different coastal environments in South Australia. Using the existing CSIRO national survey and statistical methods it would also be possible to identify a set of sites that would be useful for monitoring, in terms of providing a sensitive and cost effective set of sites that will give a</p>	<p>Unfortunately, this national network has not been established. This should be a priority for the Australian government. This action is one that should be taken early on and involves collaboration with state and territory governments. The sites that could be used that</p>

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<p>trends, and to inform adaptive and effective management responses.</p>	<p>national picture of the distribution of debris at sea, and the change in land based inputs. CSIRO have recommended that a more useful approach may be to combine direct monitoring at coastal sites with monitoring of seabirds as indicators for debris. There are existing programs in the European Union for use of seabirds as monitors for marine debris, including environmental targets for reporting on debris densities and changes in the North Sea (van Franeker 2011). CSIRO has developed a non-invasive method for measuring the amount of plastic in a seabird, based on plastic breakdown products found in oil secreted from seabird's preening gland (Hardesty et al. submitted). Additionally, Howell et al. (2012) used the X-ray fluorescent microprobe at the Australian Synchrotron to obtain high resolution elemental images of breast feathers collected from chicks of flesh-footed shearwater. This process is revealing how the birds absorb metals from pollutants such as micro-plastics. The advantage of using seabirds for monitoring is that particular species tend to forage in relatively consistent areas. Species like shearwaters tend to pick up relatively large amounts of debris, and thus could readily be used as biomonitors of debris in the ocean. This would be far less expensive than at sea surveys from vessels, and likely less expensive than coastal surveys of debris. It also has the advantage of sampling relatively large areas, which depending on the species chosen could range from hundreds to thousands of square kilometres. Targeting 3 to 5 seabird colonies around Australia, and choosing one or two representative species to work with, could provide relatively low cost and effective monitoring of marine debris. Where these species are located in Commonwealth Marine Reserves, linking this monitoring to other ecological features, such as ocean productivity, or threatening processes such as organic and inorganic pollution levels could provide a useful biomonitoring system for State of the Environment tracking and monitoring Commonwealth Marine Reserves.</p>	<p>have been identified in the TAP Review are an obvious starting point. A number of suggestions have been made in the TAP Review as to how to progress this action item and the Commonwealth should work closely with the CSIRO in this regard, including using sea birds for monitoring.</p>
<p>Action 2.4 DEWHA to support a study on the wind and sea circulation patterns in the Asia-Pacific region as a basis for better understanding the pathways and potential sources and sinks of harmful marine debris of foreign origins in Australian waters.</p>	<p>There are a number of analyses that can provide information on the sources of debris in Australia. CSIRO was funded by the Department to provide the report <i>Understanding the types, sources and at sea distribution of marine debris in Australian waters</i> (Hardesty and Wilcox 2011). This report details current modelling at sites distributed along Australia's Exclusive Economic Zone. Findings from this report suggest that most debris in the Australian marine zone is of Australian origin. More recently, CSIRO and University of Western Australia have collaborated to collect data on debris densities every 100 nautical miles around the entire Australian continent. A subset of these results have recently been published (Reisser et al. 2013), with analysis of the likely sources for debris observed at sea. In general, the west coast and very northeastern tip of the continent appear to receive material from international sources, while the east coast of the continent appears to primarily receive materials from domestic sources. CSIRO has collaborated with GhostNets Australia to evaluate the sources of derelict fishing gear along Australia's northern coast. Of over 13 000 nets recovered to date, it appears that the majority come from neighbouring</p>	<p>This action item requires 'a study' on wind and sea circulation patterns in the Asia-Pacific region and concerns marine debris of foreign origins. From the TAP Review, it seems that such a study has not been carried out. However, research done by CSIRO with University of WA and in collaboration with GhostNets Australia is</p>

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	<p>countries in the Arafura and Timor Seas, with a particular concentration along the international boundary and in the prawn trawling waters to the north of the Gulf (Wilcox et al. 2013, Wilcox et al. 2014, Gunn et al. Unpublished Data). CSIRO and GhostNets Australia cooperated to put satellite tracking devices on several drifting nets in the Gulf, validating that nets circulate in the Gulf clockwise, completing a circuit of the Gulf in less than a year.</p>	<p>helpful in identifying the sources of marine debris in Australia. The TAP Review refers to a number of existing analyses. These analyses should be reviewed to see what else is required, if anything. Notably, the study by Reisser et al. 2013, which analysed the likely sources for debris observed at sea found that, in general, the west coast and very north eastern tip of the continent appear to receive material from international sources, while the east coast of the continent appears to primarily receive materials from domestic sources. This indicates that at a national level, effort can be divided between different approaches geographically. The Commonwealth is in a key position to coordinate such an approach.</p>
<p>Action 3.1 State, territory and Australian governments to support expanded and consistent, long- term monitoring,</p>	<p>The Australian Marine Mammal Centre (Australian Antarctic Division - Department of the Environment) hosts the National Marine Mammal Data Portal, which gathers national data on entanglements, as well as sightings and strandings. This is data is helping to build an understanding of the impact that these events have on marine mammal populations. Across</p>	<p>NELA notes that most of the implementation of this item concerning support for expanded</p>

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<p>investigation, recording and management of data on vertebrate marine life harmed and killed by the physical and chemical impacts of marine debris. This information will assist the impacts of different types of marine debris on vertebrates to be quantified and characterised. For example: DEWHA to support monitoring of regurgitated marine debris at albatross and giant-petrel breeding colonies (linked with the Recovery plan for albatrosses and giant petrels</p>	<p>northern Australia, Indigenous rangers are using the I-Tracker Saltwater Country Patrol application to collect data on instances of wildlife impacted by marine debris (location, species, size, injuries or deaths, photo).The data collected is held within communities except in certain circumstances (for example use of marine debris information on request by researchers, or for inclusion in datasets held by GhostNets Australia and Tangaroa Blue). I-Tracker Saltwater Country Patrol data contributed to CSIRO’s 2013 research <i>Ghost net impacts on globally threatened turtles, a spatial risk analysis for northern Australia</i>. CSIRO research has focused on two different sets of impacts from marine debris, those resulting from entanglement and those resulting from ingestion. CSIRO entanglement research has been conducted primarily in collaboration with GhostNets Australia, focusing on derelict fishing gear in Northern Australia. To date CSIRO have been able to identify areas of likely high risk to marine turtles in the Gulf of Carpentaria and surrounding regions, along with estimating the likely sources and paths of drifting nets (Wilcox et al.2013). More recently CSIRO have analysed the characteristics of nets entangling animals in order to identify particular types of nets that are likely to entangle animals, identify the fisheries they come from, and estimate the total number of turtles killed (Wilcox et al. 2014). CSIRO have also worked with the Arafura and Timor Seas Ecosystem Action Program to run workshops in Indonesia estimating the distribution of fishing effort by type of fishing, the relative number of vessels, and the frequency with which they lose gear to allow connection of impacts in Australia to fisheries operating across the border. They plan to revisit the analysis of net impacts, to improve the estimate of the number of animals killed. CSIRO has recently evaluated the impact of ingestion on seabirds, including conducting a global analysis of the literature on ingestion rates, and using forecast distributions of debris fields and statistical modelling of species to predict ingestion rates for 188 seabird species at the global scale (Chris Wilcox et al. in preparation). These analyses identify three important patterns: 1) the frequency of ingestion by seabirds is increasing significantly, at about 1.5 per cent/year; 2) the discovery of new seabird species impacted by plastic ingestion is increasing at about 0.5 per cent/year; and 3) there is global hotspot for ingestion rates at the boundary between the southern hemisphere temperate oceans and the southern ocean, with the highest expected impact globally in the region south of the Tasman Sea.</p>	<p>and consistent, long-term monitoring, investigation, recording and management of data on vertebrate marine life harmed and killed by the physical and chemical impacts of marine debris has been carried out at the Commonwealth level. The TAP Review provided little evidence of collaboration between State, territory and Australian governments.</p>
<p>Action 3.2 DEWHA to coordinate abatement strategies identified in existing marine wildlife recovery plans. For example: DEWHA to support analysis of the impact of marine debris on the survival and behaviour of marine turtles</p>	<p>Relevant recovery plans activities for marine wildlife are shown at Appendix A. Note that this list shows all 27 EPBC Act listed species identified in the threat abatement plan as negatively impacted by ingestion of, or entanglement in, harmful marine debris. Not all of these species are covered by recovery plans. Two research projects involving CSIRO are relevant to this action. A project in collaboration with the University of Queensland is investigating ingestion of plastics by marine turtles. The second project, in collaboration with GhostNets Australia, is investigating entanglement in drifting gear. The ingestion work has identified types of plastics ingested, evaluated the role of selection by turtles in ingestion, and identified</p>	<p>NELA does not have any comment in relation to progress made in relation to Action 3.2. However, further explanation is needed as to why not all 27 EPBC Act listed species have</p>

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<p>(linked with the Recovery plan for marine turtles in Australia [Environment Australia, 2003]).</p>	<p>characteristics of debris which lead to higher ingestion rates (Schuyler et al. 2012, 2013, 2014). Based on that work ingestion rates by turtles are relatively high, and increasing over time (Schuyler et al. 2013). Turtles are selective of materials, and tend to prefer items that are flexible, and different in colour from the background debris in the ocean. These results suggest that changing the design of consumer items, which constitute the largest portion of debris, might reduce the ingestion rates of turtles. Recent results on entanglement include a rough estimate of the catch rates of turtles by ghost nets drifting ashore in northern Australia. Based on analysis of 8690 ghost net records in Northern Australia, Wilcox et al. (2014) give a preliminary estimate for the number of turtles captured by these nets (over an unknown period of time) of between approximately 5000 and 15 000 turtles. There are plans to refine this estimate and increase its accuracy.</p>	<p>been covered by a recovery plan such as Dugong and Pelicans. As the TAP Review shows, in some areas, we have the data.....The figures on the estimate of number of turtles captured by ghost nets is concerning and require ongoing efforts to reduce the number of 8690 ghost net records in Northern Australia. Collaboration with Indonesian government – quick win as compared to the longer term efforts that require more data. The TAP review has noted recommendations that flow from investigating ingestion of plastics by marine turtles and highlighted that this shows that changing the design of consumer items, which constitute the largest portion of debris, might reduce the ingestion rates of turtles. This should be taken up by the Commonwealth with a drive to change the design of relevant consumer items on a national basis.</p>

Australian sources of MPP - vessel-sourced waste from Australian waters

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<p>Action 1.1 Australian Government in consultation with the states and territories to facilitate the review of existing arrangements relevant to the control of marine debris on vessels smaller than 400 gross tonnes (including fishing vessels).</p>	<p>Amendments to the International Maritime Organisation’s International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V which came into force on 1 January 2013 prohibit the discharge of all garbage, from all ships, into the sea (except as provided otherwise, under specific circumstances). Fishing gear is included in the definition of ‘garbage’ for the Convention (an overview of the discharge provisions of the revised MARPOL Annex V are at Appendix B). All ships of 100 gross tonnage and above, every ship certified to carry 15 persons or more, and every fixed or floating platform must carry a garbage management plan, which includes written procedures for minimizing, collecting, storing, processing and disposing of garbage, including the use of the equipment on board. All ships of 400 gross tonnage and above, every ship which is certified to carry 15 persons or more and engaged in voyages to ports and offshore terminals under the jurisdiction of another Party to the MARPOL Convention, as well as every fixed or floating platform, must provide a Garbage Record Book and record all disposal and incineration operations. The date, time, position of the ship, description of the garbage and the estimated amount incinerated or discharged must be logged and signed. The Garbage Record Book must be kept for a period of two years after the date of the last entry. This regulation does not in itself impose stricter requirements - but it makes it easier to check that the regulations on garbage are being adhered to, as ship personnel must keep track of the garbage and what happens to it. It may also prove an advantage to a ship when local officials are checking the origin of discharged garbage - if ship personnel can adequately account for all their garbage, they are unlikely to be wrongly penalised for discharging garbage when they have not done so. The appendix to MARPOL Annex V provides a standard form for a Garbage Record Book. The Australian Government, through the Australian Maritime Safety Authority (AMSA), has developed communication material relating to the changes to MARPOL Annex V and is liaising with the maritime industry and relevant agencies. AMSA’s ongoing <i>Stow it don’t throw it</i> vessel waste management campaign has been updated to reflect the MARPOL V amendments:</p>	<p>The findings list changes brought by amendments to MARPOL and do not directly relate to the Action. Production of communication material by AMSA is not the same as conducting a review of existing arrangements required under the TAP. The review of existing arrangements relevant to the control of marine debris on vessels smaller than 400 gross tonnes (including fishing vessels) still needs to be carried out in consultation with the states and territories.</p>
<p>Action 1.2 State, territory and Australian governments and appropriate local bodies to facilitate studies of port facilities and boating hubs for the disposal of</p>	<p>The International Maritime Organisation (IMO) requires that Australia, as a party to the 2013 MARPOL Annex V amendments, provides adequate waste reception facilities. Ships are encouraged to report ports that do not provide an adequate service, which are then investigated and reported to the IMO. AMSA conducts voluntary waste reception facilities gap analyses for Australian ports and, at the request of a port, will work with it to assess the need for waste reception facilities and to communicate the MARPOL Annex V amendments. From AMSA’s analyses it appears that a high percentage of waste reception and</p>	<p>The review has only been facilitated by AMSA and not the states and territories or appropriate local bodies. The studies carried out by AMSA are in the form of a gap analysis of voluntary waste reception</p>

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fishing gear, including assessment of availability, use, capacity and cost.	<p>management is outsourced, with most port owners and authorities acting as facilitators for waste management companies and enabling waste generated on ships at sea to be removed to appropriate landfill. AMSA has surveyed 9 ports - Dampier, Port Hedland, Fremantle, Esperance, Sydney, Port Kembla, Melbourne and Brisbane, Queensland Bulk Ports (including Mackay, Hay Point, Abbot Point, Weipa) during the life of the plan. AMSA maintains information on waste reception facilities in Australian ports in the IMO Global Integrated Shipping Information System which can be accessed via the AMSA website. Information on ship sourced garbage pollution prosecutions is provided on the AMSA website. There have been four prosecutions during the life of the plan.</p>	<p>facilities but it is not clear what this means. More information should be made available about the four prosecutions referred to.</p>						
Action 1.3 State and territory governments to consider reviewing legislation to ensure that details of waste reception facilities for ships are included in port environment plans.	<p>A review of state and territory legislation to ensure that details of waste reception facilities for ships are included in port environment plans has not occurred during the life of the plan. AMSA, through their Waste Reception Facilities Gap Analyses, encourages ports to include the details of waste reception facilities at their ports in individual port environment plans; however as the analysis is a voluntary process this is not a legislative requirement.</p>	<p>This wording of action makes it uncertain - state and territory governments only need to <i>consider</i> reviewing legislation. In any event, it has not occurred. The AMSA voluntary gap analysis is not the same as a review of legislation.</p>						
Action 1.4 State and territory governments to investigate how Australia's obligations under MARPOL (i.e. to provide adequate waste reception facilities for ship waste) is encompassed in domestic legislation and policies.	<p>The AMSA website details State and Northern Territory legislation giving effect to MARPOL. All States and the Northern Territory have implemented legislation complementary to MARPOL V, except for Western Australia</p> <table border="1" data-bbox="669 987 1373 1390"> <tbody> <tr> <td data-bbox="669 987 972 1149">New South Wales</td> <td data-bbox="972 987 1373 1149"><i>Marine Pollution Act 2012</i> Part 14 Reception facilities for collecting waste</td> </tr> <tr> <td data-bbox="669 1149 972 1312">South Australia</td> <td data-bbox="972 1149 1373 1312"><i>Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987</i></td> </tr> <tr> <td data-bbox="669 1312 972 1390">Western Australia</td> <td data-bbox="972 1312 1373 1390"><i>Pollution of Waters by Oil and</i></td> </tr> </tbody> </table>	New South Wales	<i>Marine Pollution Act 2012</i> Part 14 Reception facilities for collecting waste	South Australia	<i>Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987</i>	Western Australia	<i>Pollution of Waters by Oil and</i>	<p>Do we need to review each of these... What are the differences... why should there be any differences... move towards national consistency? How many meet the best practice guidelines?</p>
New South Wales	<i>Marine Pollution Act 2012</i> Part 14 Reception facilities for collecting waste							
South Australia	<i>Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987</i>							
Western Australia	<i>Pollution of Waters by Oil and</i>							

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<p>Action 1.6 DEWHA, in collaboration with DFAT and AMSA, to facilitate through domestic and international fora, taking into account policies and programs of IMO, studies of the barriers and incentives to the use of existing port waste reception infrastructure</p>	<p>Regional best practice guidelines for waste reception facilities at ports are set out in the in the Best Practice Guidelines for the Provision of Waste Reception Facilities at Ports, Marinas, and Boat harbours in Australia and New Zealand (Australian and New Zealand Environment and Conservation Council, 2003).</p> <p>Since 2006, AMSA has conducted a series of gap analyses where Australian port authorities have volunteered to have AMSA use IMO guidelines to assess the adequacy of waste reception facilities in a particular port. This has occurred at Dampier, Port Hedland, Fremantle, Esperance, Sydney, Port Kembla, Melbourne and Brisbane, and is in progress at Queensland Bulk Ports (Mackay, Hay Point, Abbot Point and Weipa). Use of existing port waste reception infrastructure comes down to cost. For some ports remoteness and high labour costs (particularly in mining towns) contribute to high overall cost compared to other countries in the region. Australia's high standards for handling and disposal of waste, particularly quarantine waste, oily waste and chemical/hazardous waste, as well as a user pays approach, contribute to the high relative cost. In contrast, some countries provide waste collection free of charge, or even for reward. At remote ports, with fewer service</p>		<p>This action item concerns barriers and incentives to the use of existing port waste reception infrastructure in Australia <u>and</u> the Asia-Pacific region. It tackles both the problems of vessel-sourced waste from Australian and foreign waters and provides an example of how understanding implementation can be hindered</p>										

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<p>in Australia and the Asia-Pacific region.</p>	<p>providers and with less equipment, it may not be convenient or possible to arrange for waste collection during a ship's visit. It is recognised internationally that having a flat, fixed, mandatory fee, preferably integrated into other port fees, is one way to reduce the disincentive to use facilities. AMSA have not conducted any detailed investigation of flat fees, but note that it has to be supported by a reliable service and exists in only a few Australian ports (for example, Geelong). In most Australian ports there is no service dedicated to ships' waste – the ship's agent directly engages a waste service provider for a particular ship on an ad hoc basis. Some shipping lines may have contracts in place for particular ports, but there is no involvement by the port authority in this. AMSA's gap analysis reports regularly recommend that a port authority consider the feasibility of engaging a contractor to service ships for a fixed fee or a per volume fee, but AMSA does not have power to compel the port authorities to do this. Access to wharves can be a barrier, particularly in bulk ports. Loading infrastructure on the wharf can make it impractical or dangerous to move waste around or drive a truck to and from the ship and wharf design can make it dangerous to have crews on the wharf. Sometimes the ship doesn't come alongside the wharf and waste transfer would need to occur by boat. AMSA has been assisting SPREP with a series of waste reception facilities gap analyses in Pacific ports i.e. Noumea, Port Moresby, Suva, Papeete and Apia using a similar methodology to their Australian analysis. Apia is complete but the others are still in progress. At this stage cost may also be a disincentive in Pacific ports. The lack of appropriate treatment/disposal is in some cases a disincentive for more environmentally focussed operators e.g. major cruise lines will avoid discharging waste at island ports if possible in preference for treatment at sea or discharge in home ports (e.g. in NZ or Australia). In some cases regulations prohibit the discharge of certain wastes because there is no means of disposal e.g. ship's oily waste is not accepted in Samoa. It is also apparent that a lack of regulation or - if regulation exists - lack of enforcement, means that use of port reception facilities are bypassed.</p>	<p>by combining two forms of implementation under one action item. Studies of the barriers and incentives to the use of port waste reception infrastructure in Australia are complete and, according to the TAP Review, it comes down to cost. AMSA's gap analysis reports have regularly recommended that a port authority consider the feasibility of engaging a contractor to service ships for a fixed fee or a per volume fee but, as stated in the TAP Review, they do not have authority to compel port authorities to do this. Australian and state/territory governments should collaborate to determine who is best to be granted authority to require port authorities to consider the feasibility of engaging a contractor to service ships for a fixed fee or a per volume fee. The Commonwealth should take the lead as to how it can be implemented around Australia in the interest of consistency. Only when Australia has made progress in this regard, will we be able to exercise leadership in the Asia-Pacific region. However, in addition, Australia could assist by supporting a review of options for appropriate treatment/disposal of vessel-based waste in Pacific</p>

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		Island Countries.
<p>Action 1.8 State, territory and Australian governments, in collaboration with industry, to identify and implement appropriate measures for incorporating waste reporting and management requirements (reporting and return of rubbish, damaged gear, etc. to port for disposal) into fishery management arrangements as appropriate.</p>	<p>As was the case in 2009, Australian commercial fishers are encouraged to record loss of gear in vessel logbooks. AMSA have received information from all States and the Northern Territory on their current arrangements regarding lost fishing gear as required under MARPOL Annex V. Only the Commonwealth (Southern Ocean and the South East Marine Reserve), New South Wales, Victoria and the Northern Territory have provisions for reporting of lost fishing gear. AMSA report that it is difficult to identify ocean-based sources of illegally disposed fishing gear and that this limits the potential for enforcement related to this action. Additionally, assertions that ships less than 400 gross tonnage (not required to have a Garbage Record Book) have disposed of their waste at port reception facilities may not be verifiable. Commercial fishing vessels operating under class approval in Habitat Protection and Multiple Use Zones in the South-east Commonwealth Marine Reserves Network are required to report all gear or equipment that is lost at sea and which is likely to cause environmental harm, within 24 hours. The report must include a description of what was lost and the approximate location and time of the loss. This approval came into effect on 1 July 2013 and remains in effect for the term of the <i>South-east Commonwealth Marine Reserves Network Management Plan 2013-23</i>, unless it is suspended, cancelled, varied or revoked sooner by the Director of National Parks. Commercial fishers in the Southern Ocean, under the management of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) are required to report gear loss. This mandatory reporting allows an evaluation of how well CCAMLR meets its management objectives relating to human impacts on the Antarctic environment. Estimates from Webber and Parker (2012) suggest that due to loss of sections of bottom longline gear in the Ross and Amundsen Sea region an average 208 tonnes of Antarctic toothfish mortality may be unaccounted for annually. Estimates such as this can be incorporated into fisheries stock assessments to improve their accuracy. In 2011, the CCAMLR Scientific Committee agreed that estimation of fishing mortality due to lost gear was a useful development and should be estimated for other fishery regions and considered for use in other assessment models.</p>	<p>The key regarding rubbish and damaged gear is that it is brought back to port for disposal. This needs to be incorporated into fishery management arrangements. The review of the TAP does not focus on the issues. The question is how can this be done and what is an appropriate measure. It is not sufficient that the Commonwealth (Southern Ocean and the South East Marine Reserve), New South Wales, Victoria and the Northern Territory have provisions that require reporting of lost fishing gear. The Commonwealth provisions that apply to the South-east Commonwealth Marine Reserves Network are only in place if the <i>South-east Commonwealth Marine Reserves Network Management Plan 2013-23</i>, is not suspended, cancelled, varied or revoked. Garbage record books are for ships more than 400 gross tonnage. Further thought needs to be given for measures that apply to vessels less than 400 gross tonnage given that the TAP Review states that assertions that ships less than</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
		400 gross tonnage have disposed of their waste at port reception facilities may not be verifiable. More needs to be done to support CCAMLR's proposal that estimation of fishing mortality due to lost gear should be estimated for other fishery regions in addition to Antarctic toothfish and considered for use in other assessment models.
<p>Action 1.9 State, territory and Australian governments, in collaboration with the fishing industry, to promote best practice waste management strategies on board fisheries vessels, including the uptake of existing codes of conduct, and identify any need for the development of new codes of conduct.</p>	<p>In 2011 the Western Australia government, following significant consultation with the commercial and recreational fishing bodies introduced regulations to prohibit the 'at sea' possession (in State waters) of the plastic bait bands used to secure cartons of bulk bait on fishing vessels. The plastic bands pose a significant risk to a range of marine life with sea lions, seals and sharks particularly susceptible to injury or death through entanglement in uncut plastic straps. The <i>Issues Paper for the Australian Sea Lion</i> (Commonwealth of Australia 2013a) developed to support the <i>Recovery Plan for the Australian Sea Lion</i> (Commonwealth of Australia 2013b) highlights the importance of the introduction of these new regulations for the conservation of this EPBC listed vulnerable species. The Tangaroa Blue Foundation is continuing to monitor plastic bait bands numbers in beach cleanup activities. Data from certain locations suggests that, at some regularly cleaned coastal sites, bait band numbers are trending downward, possibly suggesting a reduction in the at sea disposal of bait bands in adjacent offshore fishing grounds, in line with the aims of the legislation. However, this group have also indicated anecdotal evidence of new strapping bands being found on beaches in close proximity to commercial fishing vessel moorings. They suggest that this highlights a problem with the new legislation, as plastic bait bands are allowed to be taken on board vessels whilst moored, and can then be potentially lost over the side when removed before the vessel goes to sea (Smith et al. 2013).</p>	<p>Further attention needs to be given to best practice waste management strategies on board fisheries vessels – particularly to avoid plastic straps or bait bands and other waste being taken on board at all even whilst being moored. All waste that could be potentially lost at sea should be removed before departure. Whilst WA has made some progress, this should involve all states/territories and the C'th.</p>
<p>Action 1.11 DEWHA to support feasibility studies of market/consumer/peer-based incentives to</p>	<p>No activity has occurred under this action.</p>	<p>Notably, no activity has occurred to implement this action. This needs further attention</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>encourage responsible handling and disposal of waste fishing gear, for example: • accreditation of sustainable practice in fisheries with specific reference to gear manufacture, use and handling • 'stewardship' arrangements for manufacturers and users of fishing gear.</p>		
<p>Action 2.5 Australian Government to facilitate a feasibility study on introducing marking of fishing gear so that it may be identified as originating from a specific fishery. The feasibility study will also consider the practical implications of marking fishing gear and the implications of derelict gear being traced back to fisheries operations.</p>	<p>The CSIRO has investigated the potential for marking of fishing gear using a number of technologies. Two of the most promising are microdots, which encode information on a small dot that is then incorporated into the gear itself, and chemical marking of the rope used in making the net. Chemical marking of plastics could be widely applicable, in essence providing a bar code that is incorporated into the material itself and is thus readable, even in small fragments of net. Both of these technological approaches are feasible, and exist widely in other applications, but have not been used for tracking marine debris. Given that derelict net material in particular, is sourced from all over the world, there are concerns that marking of Australian fishing gear is not an efficient means to identify the origins of derelict fishing gear. GhostNets Australia are reviewing their net identification kit and are attempting to develop a different system, based on the ways in which net material is used, rather than the net structure (Riki Gunn, personal communication, 2014).</p>	<p>NELA notes the finding of the TAP Review that making of fishing gear may not be an efficient means to identify the origins of derelict fishing gear given that derelict net material in particular is sourced from all over the world and that new methodology is being investigated.</p>

Land-based sources - domestic

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>Action 1.12 State,</p>	<p>Some relevant actions have occurred in relation to improved solid pollutant control</p>	<p>NELA notes the finding of the TAP</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>territory and local governments and other relevant bodies to consider providing increased funding for the introduction of improved solid pollutant (particularly litter) control strategies in waterways.</p>	<p>strategies. For example, in October 2012, the Victorian Government published <i>A Cleaner Yarra River and Port Phillip Bay</i>, an action plan detailing \$1 billion in funding for programs and initiatives that contribute to protecting and improving the Yarra River and Port Phillip Bay environments over a 5 year period. Preventing pollution and reducing litter is one of four key priorities. Australian Government funding for relevant state and territory projects is shown in Appendix C. These projects include an additional \$1 million committed in 2013 to installation of floating litter traps in strategic 'hotspots' on the lower Yarra River and raising awareness of practical actions Melbourne residents can take to prevent waterway and stormwater pollution. Under the <i>Water for the Future</i> initiative, \$6 million was committed from 2008 to 2014 for installation of gross pollutant traps, biofiltration systems and constructed wetlands in Sydney and Perth. Recent work by CSIRO examined the connection between State, regional and local council infrastructure, policy and expenditure on waste management and the density of debris present in the near shore environment in the council area. Results suggest that council level actions can have a significant influence on the amount of debris accumulating in coastal areas. The study results suggest that outreach programs had a much higher impact than the provision of infrastructure in terms of reducing waste washing up on council coastlines. In particular, education programs and anti illegal dumping campaigns appeared to have major benefits. CSIRO have proposed, that based on these results it would be possible to evaluate the cost effectiveness of local, regional and state initiatives to design an effective and low cost model policy that could be adopted by local and regional government. CSIRO also conducted a national survey of marine debris along the coast of the Australian continent. Analysis of this survey data suggests that most marine debris in the Australian region is domestic. Furthermore, debris in the marine environment appears to increase with the local population, suggesting local sources outweigh input from the high seas. Analysis of the data also suggests that areas that have a high population in the region, but relatively isolated coast tend to have high amounts of debris, consistent with illegal dumping being a significant driver of plastic inputs to Australian waters.</p>	<p>Review that the CSIRO has conducted a national survey of marine debris along the coast of the Australian continent and found that most marine debris in the Australian region is domestic. Furthermore, debris in the marine environment appears to increase with the local population, suggesting local sources outweigh input from the high seas. Therefore, more consideration needs to be given to domestic land-based sources of MPP and the collaboration required between State, territory and local governments and other relevant bodies. NELA notes that illegal dumping is likely to be a significant driver of plastic inputs to Australian waters from the analysis that suggests that areas that have a high population in the region, but relatively isolated coast tend to have high amounts of debris. Hence, more needs to be done to overcome the problem of illegal dumping. Whilst progress is being made in Victoria with the action plan <i>A Cleaner Yarra River and Port Phillip Bay</i> more needs to be done around the national coastline. Whilst the need for increased funding for improved solid pollutant (particularly litter) control strategies in waterways has been identified, the Commonwealth government could take a stronger lead in focusing attention on the issue as part of community education. NELA notes that the CSIRO has found that outreach programs had a much higher impact than the provision of infrastructure in terms of</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
		<p>reducing waste washing up on council coastlines and that, in particular major benefits were gained from: - education programs and - anti illegal dumping campaigns NELA notes that CSIRO have proposed, that based on these results it would be possible to (a) evaluate the cost effectiveness of local, regional and state initiatives to improve solid pollutant (particularly litter) control strategies in waterways (b) design an effective and low cost model policy that could be adopted by local and regional government. NELA recommends that the Commonwealth facilitate an evaluation of the cost effectiveness of local, regional and state initiatives and assist with drafting a low cost model policy that could be adopted at the local level.</p>
<p>Action 1.13 State and territory governments to facilitate an analysis of the effectiveness of current litter public awareness and education campaigns to identify gaps and areas for improvement.</p>	<p>Since 2005/2006, Keep Australia Beautiful, a not-for-profit environmental organisation, has facilitated Australia's current national litter research methodology, the annual National Litter Index Report. This provides a national, annual, quantitative measure of what litter occurs where and in what volume. Litter counts are done twice annually across 983 sites nationally to create an annual report on litter in each state and territory that can be compared against the national average. The National Litter Index is 50 per cent funded by all state and territory governments and 50 per cent by the National Packaging Covenant Industry Association. This year on year research allows the Keep Australia Beautiful organisation to gauge the effectiveness of litter campaigns, as well as identifying how to develop better partnerships with the community, government and industry to further tackle the litter issue. Information on the National Litter Index is available at http://kab.org.au/litter-research/national-litter-index-2/ CSIRO's analysis of local policies suggests that clean up campaigns are not as effective as education campaigns, and in particular campaigns against illegal dumping Given analysis suggesting the effectiveness of various measures, recently completed by CSIRO, a reasonable next step would be to evaluate the cost of various actions at the state, regional and council level to identify the most cost effective responses to reduce inputs of litter to the marine environment.</p>	<p>NELA notes this recommendation relates to facilitation by state and territory governments of an analysis of the effectiveness of current public awareness and education campaigns about litter. There is a role for the Commonwealth in helping to initiate this analysis. Keep Australia Beautiful has gauged the effectiveness of current litter campaigns and how to develop better partnerships. CSIRO's analysis suggests that the focus should be on education campaigns, and in particular campaigns against illegal dumping rather than on cleanup campaigns. All levels of government could work closely on such campaigns. NELA</p>

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	<p>Relevant recent litter education initiatives include: Victoria Victorian litter strategy (2012-2014). Victorian 'dob in a litterer' campaign (http://www.epa.vic.gov.au/get-involved/report-litter). NSW NSW general waste strategy including a range of grants programs, for example a community litter grants program targeting the most littered items and litter hot spots. (http://www.epa.nsw.gov.au/waste/grants.htm). Queensland Small grants program for litter prevention activities, with grants ranging from \$50 000 to \$100 000 (http://www.ehp.qld.gov.au/waste/litter-illegal-dumping-partnerships.html). Also a 'dob in a litterer' campaign, involvement with the beverage industry and the role out of the National Bin Network (an initiative on installation of new recycling bins) in public spaces throughout Queensland. Western Australia The WA litter strategy (2009-2014) (http://www.kabc.wa.gov.au/litter-information/litter-prevention-strategy.html). It is worth noting that the strategy expires this year, and a new document may be released this year. WA also has a 'dob a litterer' system under the WA litter strategy - citizens who witness littering are able to phone a hotline and report the details of the litterer. (http://www.kabc.wa.gov.au/litter-information.html). South Australia South Australia uses a Container Deposit Scheme as their main policy to combat litter. South Australia also has a reporting system where citizens can report illegal dumping, however, this is limited to larger items such as construction and demolition waste. Northern Territory The Northern Territory implemented their Container Deposit Scheme at the beginning of 2012. While this is the primary strategy to target litter, there has been some industry investment in the Northern Territory to roll-out the National Bin Network (an initiative on installation of new recycling bins).</p>	<p>suggests that the overriding goal should be on effectiveness, particularly in relation to MPP. State and territory recent litter education initiatives and programs listed in the review should be considered closely for their applicability for MPP and education and awareness regarding MPP.</p>
<p>Action 1.14 State, territory and Australian governments, in collaboration with appropriate non-government organisations, to develop options for establishing a more consistent and long-term national approach to litter abatement education, particularly for marine based activities.</p>	<p><u>TeachWild</u> is a three year (2012-2015) national partnership involving Earthwatch, CSIRO and Shell Australia. TeachWild offers an online education kit on marine debris for years 6-11 of the Australian curriculum. The program engages students in citizen science, including scientific methodology, data collection and analysis of marine debris. The data collected by students is being uploaded onto the TeachWild website to become part of the Australian National Marine Debris database (which is hosted by the Atlas of Living Australia). Over 5000 students had participated in Teachwild to the end of 2013. TeachWild schools have implemented a range of waste minimisation programs. These have included implementation of school recycling programs; rubbish free lunches; school based container deposit schemes; marine debris surveys with beach clean-up programs; marine debris art; canteen programs with no bottled water and 'plastic free July'. Although a three year investment from Shell has concluded, the TeachWild program is expected to continue beyond 2015, with an expanded curriculum focused on marine debris, as well as broader ocean health issues. Corporate or philanthropic sponsorship options are being investigated. In Queensland, the Great Barrier Reef Marine Park</p>	<p>This action overlaps with NELA's recommendations regarding 1.13. As drafted, it concerns both land-based and marine-based sources, with an emphasis on marine based activities. However, the TAP Review information seems to relate more closely with land-based sources. NELA maintains that these different sources of MPP should be regarded separately. The goal of the action was to develop options for establishing a more consistent and long-term national approach to litter abatement education. The TeachWild program has made some gains and</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
	<p>Authority's Reef Guardian Schools program has the key objective of creating awareness, understanding and appreciation for the Reef and its connected ecosystems. Schools and teachers involved in the program have access to annual activities and education resources to assist with delivering curriculum on the Great Barrier Reef. The Reef Guardian Schools program operates within schools in the Great Barrier Reef catchment that complete an environmental action plan for the year ahead. Over 300 schools and more than 120 000 students are involved. Over the life of the plan, GhostNets Australia continued to develop their Ghost Net Art Project, using nets retrieved along Australia's northern coastline as craft and art material. The artworks have provided an important educational tool, informing the general public and raising the profile of the ghost net issue. Highlights have included a Ghost Net Crocodile installed as part of the 2012 Sculpture by the Sea outdoor exhibition along the Bondi to Bronte coastal walk in Sydney. CSIRO analysis of coastal debris in the Australian marine zone suggests that most debris is from land based activities, not marine activities. This is particularly true near populated centres. Targeted education campaigns appeared to be one of the most important correlates of reduced debris densities in the CSIRO analysis of coastal debris patterns.</p>	<p>needs to be further expanded. It is hoped that the recent cuts to the CSIRO have not impacted on its implementation. Whilst schools-based programs are important for the long-term, more needs to be done to educate adults about the connection between littering on land and MPP.</p>
<p>Action 2.2 State, territory and Australian governments to continue to provide support for community-based coastal and waterway clean-up and monitoring activities.</p>	<p>Government has demonstrated a significant commitment to community based activity on marine debris. Australian Government expenditure on marine debris for the period 2009/10-2013/14 is shown at Appendix C. This includes recent election commitment funds of \$700 000 directed to protecting populations of dugong and turtle in Far North Queensland and the Torres Strait from the impacts of marine debris. Additional Australian Government funds have been allocated from the Working on Country program to support GhostNets Australia in their work removing derelict fishing gear from beaches in northern Australia. A large dataset on Biologically Important Areas (for example locations of bird and turtle nesting sites) has been developed as part of the Marine Bioregional Planning process and will assist with future strategic investment in marine debris. In future, marine debris and Biologically Important Area data will be incorporated into environmental information profiles being created for coastal Conservation Management Zones identified by the Department of the Environment as part of a process to make national environmental information more accessible and improve natural resource management planning capacity. Targeting marine debris investment based on the Biologically Important Area data may limit the impact marine debris has on native species. Removal of debris is an eligible activity under the Green Army programme. There is potential for the Green Army to bolster the efforts of current community groups in removing debris from coastal areas. The recent CSIRO marine debris project involved a significant amount of citizen scientist participation, with a number of potentially useful materials developed, including volunteer friendly survey protocols, and a user friendly database. These</p>	<p>This action relate to management as well as monitoring. Notably, the review focuses on what the Commonwealth is doing and does not indicate awareness of, or collaboration with, actions being taken at the state and territory level. The activities of GhostNet are again mentioned in relation to this action. Much of the review material concerns monitoring (which is more aligned to information collection) rather than actual management, i.e., the dataset on Biologically Important Areas (developed as part of the Marine Bioregional Planning process) and the CSIRO marine debris project that involved citizen scientist participation, volunteer friendly survey protocols, and a user friendly database In relation to clean-up activities, there is reference to</p>

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	<p>volunteer oriented materials are designed to mesh directly with the full CSIRO marine debris database, which can incorporate both survey and cleanup data. The survey methods have been optimized to deliver quantitative and repeatable data, along with all the supporting metadata, in a format that allows for rapid assessment (less than 2 hours per site). These materials are readily available on the internet.</p>	<p>a funding commitment but of \$700,000 directed to protecting populations of dugong and turtle in Far North Queensland and the Torres Strait from the impacts of marine debris but no detail on what has been actually achieved. Actual activities undertaken by the Green Army programme have not been listed. NELA recommends that action items regarding clean-up be kept separate from action items regarding monitoring and information. Greater collaboration between the Commonwealth and state and territory governments is required in relation to both.</p>
<p>Action 3.4 DEWHA to identify measures to promote the uptake and application of biodegradable and oxodegradable plastic in marine-based industries and environments where it is found to be effective.</p>	<p>The need for Australian Standards related to biodegradable plastic was clearly articulated in the recommendations of two consultancy reports delivered in 2002: <i>Biodegradable Plastics—Developments and Environmental Impacts</i>, and <i>The Impact of Degradable Plastics Bags in Australia</i> (both available on the Department of the Environment website). The Environment Protection and Heritage Council (under the Council of Australian Governments) agreed to initiate the development of Australian Standards for Degradable Plastics with Standards Australia in October 2003. The Australian Standard AS4736 for biodegradable plastics suitable for composting and other microbial treatment (in commercial systems) was released in 2006. The draft Australian Standard AS5810 for biodegradable plastics suitable for home composting was released for public comment in February 2010, and the final standard was released in July 2010. Both standards give consumers and businesses confidence that biodegradable plastics will perform as claimed. They also provide support for state and territory and local governments to pursue regulatory action to ban non-biodegradable, single-use plastic bags. This has occurred in South Australia, the Northern Territory, the Australian Capital Territory and Tasmania. At the local government level, the City of Fremantle has resubmitted the innovative <i>City of Fremantle Plastic Bag Local Law</i> to the state government for approval. Under this proposed new law, only compostable bags that comply with Australian Standard AS4736–2006 will be permitted. The law will prohibit retailers from selling or giving away plastic bags made of polyethylene polymer less than 60 microns thick and it will apply all retailers operating in Fremantle and its suburbs regardless of the size or nature of the business.</p>	<p>NELA observes that this recommended action regarding identify measures to promote the uptake and application of biodegradable and oxodegradable plastic is limited to marine-based industries and environments where it is found to be effective. However, the TAP Review has gone further to consider plastic used beyond marine-based industries such as plastic bags. NELA urges that a national approach is needed that covers plastics wherever they are used. The Commonwealth needs to encourage measures to promote the uptake and application of biodegradable and oxodegradable plastic. The Review notes that the relevant Australia Standards are now in place and that they give support for state and territory and local governments to pursue regulatory</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
		<p>action to ban non-biodegradable, single-use plastic bags. Whilst this has occurred in South Australia, the Northern Territory, the Australian Capital Territory and Tasmania it is yet to occur in other states. The Commonwealth should be instrumental in securing national implementation. The initiative of the City of Fremantle referred to in the TAP Review provides a working model of how this can be done and the fate of the Local Law is reportedly being monitored by other local and state governments. Unfortunately, at the time of writing, it appeared likely that the WA government will disallow the law contrary to its own advice and for no easily discernible reason: http://www.fremantle.wa.gov.au/news-and-media/city-disappointed-moves-disallow-plastic-bag-law In this situation, there is a clear role for the Commonwealth government to take the lead.</p>

Foreign sources of MPP - vessel-sourced waste from foreign waters

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>Action 1.5 DEWHA, in collaboration with the Department of Foreign Affairs and Trade (DFAT) and AMSA, to facilitate through international fora, taking into account</p>	<p>AMSA is working with South Pacific Regional Environment Program (SPREP) participating countries on implementation of the MARPOL Convention. A workshop was held in Brisbane in 2013, with a major objective of increasing the capacity of SPREP participating countries to implement MARPOL Annex V. AMSA has been assisting SPREP with a series of waste reception facilities gap analyses using IMO guidelines to assess the adequacy of waste reception facilities at particular ports in the Pacific. These include Noumea, Port Moresby, Suva, Papeete and Apia. Apia is complete but the others are still</p>	<p>Whilst AMSA is working with South Pacific Regional Environment Program (SPREP) participating countries on implementation of the MARPOL Convention attention needs to be given to the source of marine debris. It is likely that the sources in northern</p>

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<p>policies and programs of the International Maritime Organization (IMO), studies of the ability of international ports in the Asia-Pacific region to handle vessel-sourced waste, particularly derelict fishing gear, including assessment of availability, capacity and cost.</p>	<p>in progress.</p>	<p>Australia are in Southeast Asia. The problem of MPP would be suitable to be raised in other regional forums and international aid provided to Indonesia and neighbouring countries.</p>
<p>Action 1.7 Australian Government agencies in collaboration with state and territory governments to identify appropriate responses and responsibilities for recovery of hazardous debris at sea, notably large derelict fishing nets.</p>	<p>Northern Australia is especially vulnerable to marine debris given the proximity of intensive fishing operations, difficulties in surveillance and enforcement of existing management arrangements, and ocean circulation patterns that are likely to concentrate floating debris before dumping it on coastlines and beaches. Northern Australia's coastal environment also supports some of the last remaining global strongholds of species of special interest and concern, such as marine turtles, that are especially prone to entanglement in, or ingestion of, debris (Kiesling 2003). CSIRO and GhostNets Australia published a study which included modelled net pathways, validated against independent data for the Gulf of Carpentaria and surrounding regions (Wilcox et al. 2012). This study illustrated the vast majority of nets that are found in the Gulf and surrounding regions pass relatively close to the port of Weipa. This work points to a potential significant cost saving in recovery efforts, if nets can be identified at sea to the northwest of Weipa and then retrieved as they pass close to the port. CSIRO suggest that, as existing Customs and Border Protection surveillance flights pass through this region, targeted surveillance and reporting could be possible. This would reduce both the impacts and the cost of retrieval for nets, as they could be retrieved at sea prior to entering the Gulf and passing through areas with high densities of turtles and dugong. CSIRO and GhostNets Australia collaborated to track several drifting nets in the Gulf using satellite tracking devices. Together with existing modelling work in the region (Wilcox et al. 2013) this information would allow identification of a most cost effective surveillance location for identifying large drifting nets, and prediction of the timing of arrival of the drifting gear in the region around Weipa to allow the most cost effective deployment of recovery vessels. CSIRO, GhostNets Australia, and the Arafura and Timor Sea Ecosystem Action Program recently held a series of workshops with fishermen in both Australia and Indonesia, with the goal of identifying the sources of derelict nets in northern Australia waters. Unpublished data from Ghostnets Australia indicates that at the present time the</p>	<p>Large derelict fishing nets can be sourced to foreign fishing vessels and requires identification followed by recovery efforts. The TAP Review has highlighted deficiencies in coordination at the Australian Government level. No mention has been made of steps taken to coordinate between Australian Government agencies and state and territory governments. CSIRO and GhostNets Australia have found that given that the vast majority of ghost nets pass relatively close to the port of Weipa, there are potential significant cost savings in recovery efforts, if nets can be identified at sea to the northwest of Weipa and then retrieved as they pass close to the port. The TAP Review has highlighted major difficulties in coordinating the relevant Commonwealth government agencies in the retrieval of these large derelict fishing nets (ghost nets), namely: the Australian Fisheries Management Authority, the Australian</p>

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	<p>majority of these nets appear to come from Indonesian waters to the northwest of the Gulf of Carpentaria. Discussions with Indonesian fisheries ministry and industry representatives suggest that there are a number of potential actions that could reduce the number of lost nets reaching Australia, including development of a voluntary logging program for lost net, financial incentives for net recovery, technical support for better identification of nets and recovery of lost gear, and increased training for fisheries workers. Within Australia's Commonwealth waters a number of agencies are involved in the various stages of ghost net reporting and recovery. These include the Australian Fisheries Management Authority, the Australian Maritime Safety Authority, Border Protection Command, the Department of Agriculture, the Great Barrier Reef Marine Park Authority (GBRMPA) and the Department of the Environment. In 2008, the Department of the Environment tasked Border Protection Command to: <i>Detect, identify location and report all large marine debris, particularly derelict fishing nets (ghost nets), in all Australian waters including coastal waters out to the limit of the Exclusive Economic Zone. If possible, retrieve and remove derelict fishing nets. Should operational limitations prevent the removal from the water of derelict nets, please attach a radar reflector to enable their subsequent location.</i> This tasking has resulted in 26 ghost nets being reported to the Department of the Environment since 2009, with 16 of these removed from the ocean. The tasking has recently become invalid, as Border Protection Command now only accept tasking for specific areas over specific timeframes. Case by case, specific tasking must now be undertaken for each ghost net observed, and Border Protection Command will respond if possible. In June 2014, Parks Australia Division signed an MOU with the Australian Fisheries Management Authority for ghost net retrieval in Commonwealth Marine Reserves and adjacent Commonwealth waters (<i>adjacent waters</i> is not defined). Under the MOU, the Australian Fisheries Management Authority will facilitate the identification, recovery, transportation and disposal of nets in these areas. The total funding available under the MOU for the current financial year is \$94 000 on a 50/50 cost sharing basis between the two agencies. The MOU will be renewed annually. In December 2012 the Joint Agencies Maritime Advisory Group (JAMAG), considered a paper regarding the coordination of the role of agencies and operational matters associated with the recovery of ghost nets from Commonwealth waters. A working group focusing on ghost nets was established and charged with scoping the issues around ghost net recovery and response options to improve Commonwealth agency coordination. The group is comprised of representatives from AMSA, Australian Fisheries Management Authority, Department of Agriculture, GBRMPA, BPC, Headquarters Joint Operations Command and the Department of the Environment. Parks Australia (Department of the Environment) presented a paper on agency coordination of ghost net recovery in Commonwealth waters to the August 2013 JAMAG meeting. Recommendations have been agreed and various parties have indicated a preference for the recommendations they will take responsibility for implementing,</p>	<p>Maritime Safety Authority, Border Protection Command, the Department of Agriculture, the Great Barrier Reef Marine Park Authority (GBRMPA) and the Department of the Environment. As far back as 2008, the Department of the Environment tasked Border Protection Command to assist with the retrieval of ghost nets. In 2009, 16 of 26 ghost nets were removed but the task has recently become invalid. AFMA now plays the major role but funding is limited. The Joint Agencies Maritime Advisory Group (JAMAG) currently has had a paper before it on coordination of the role of relevant agencies but at the time of writing the TAP Review, JAMAG had yet to finalise arrangements. As stated in the TAP Review in relation to Action item 3.2, recent results on entanglement include a rough estimate of the catch rates of turtles by ghost nets drifting ashore in northern Australia. Based on analysis of 8690 ghost net records in Northern Australia, Wilcox et al. (2014) give a preliminary estimate for the number of turtles captured by these nets (over an unknown period of time) of between approximately 5000 and 15 000 turtles. NELA considers that ineffective coordination of the relevant national agencies is a matter to be resolved as a matter of urgency. In addition, coordination between national level agencies and relevant state government needs to be developed, particularly in the Weipa Port area.</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
	however JAMAG are yet to finalise these arrangements.	
<p>Action 1.10 DEWHA to support an analysis of financial incentives to encourage return of waste generated at sea to land for appropriate disposal, for example: • fishing gear inventories by port and vessel supported by deposits and bounty initiatives • introduction of regulations relevant to insurance on lost gear and/or insurance levies to support removal of derelict gear • repair, re-use and recycling initiatives.</p>	<p>CSIRO's preliminary results from workshops held in Indonesia with fishermen and fisheries ministry officials suggest that nets have an economic value and are worth recovering if possible. The workshops identified that a valuable contribution could be provision of technical support to help Indonesia fishermen aggregate location data on the derelict nets they observe. This location information would assist in identifying high risk areas for snagging and assist vessels in avoiding the hazard posed by derelict nets. It could also facilitate possible profitable salvage operations. Fishing gear labelling and inventory was suggested by operators as being a potential solution, supporting a reporting system. Other possible incentives discussed included low interest loan programs for gear, conditional on return of damaged or worn gear. Given that large nets can cost between \$5000 and \$30 000, low interest loan programs could provide significant leverage to implement net marking, reduce disposal or repairs at sea, and enhance recovery efforts for lost gear, without requiring extensive fisheries management regulation.</p>	<p>Analysis of financial incentives for the recovery of waste from foreign vessels is likely to be important. As the TAP Review stated, CSIRO has preliminary results suggesting that nets have an economic value and are worth recovering. There is a need for technical support to help Indonesian fishermen aggregate location data on the derelict nets. This should be followed up by the Australian government along with other suggestions such as fishing gear labelling and an inventory to support a reporting system and a low interest loan program.</p>
<p>Action 1.18 Australian Government to encourage and assist relevant nations to sign, ratify and enforce Annex V of MARPOL.</p>	<p>In August 2013, AMSA hosted an IMO funded workshop aimed at increasing the capacity of countries participating in the Secretariat of the Pacific Regional Environment Programme to implement Annex V of the MARPOL Convention. Some of these participant countries are not states contracted to the MARPOL convention. Agencies from the Cook Islands, Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Marshall Islands, Vanuatu, New Caledonia and Australia participated in the AMSA workshop. Carnival Australia, as a major cruise ship operator in the Pacific region, was also involved. AMSA has been continuing to assist SPREP countries on issues related to</p>	<p>Whilst the activities listed as being undertaken through SPREP are important, efforts also need to focus on MPP source countries from Southeast Asia. This may require working with Indonesia on steps to be taken to improve implementation of Annex V of MARPOL. Notably,</p>

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	Annex V of the MARPOL Convention, including through a recent series of waste reception facilities gap analyses for ports in Noumea, Port Moresby, Suva, Papeete and Apia.	Indonesia is a member of the International Maritime Organisation Council.

Land-based sources of waste

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>Action 1.15 DEWHA and relevant agencies to examine introducing awareness-raising and outreach programs aimed at relevant groups contributing to marine debris in the Asia-Pacific region.</p>		<p>NELA notes that the lack of an entry in relation to this action item appears to show that there has been no implementation activity. The Australian government through DFAT should do more to raise awareness within the Asia-Pacific region on MPP and to design outreach programs on the prevention and control of MPP amongst our neighbours.</p>
<p>Action 1.16 DEWHA, in collaboration with DFAT, to identify opportunities for exchange visits between coastal (especially Indigenous) communities experiencing the impacts of marine debris and groups in other nations where large proportions</p>		<p>NELA notes that the TAP Review did not provide information as to the implementation of this action item and recommends that further consideration be given to implementation.</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>of harmful marine debris originates.</p>		
<p>Action 1.17 DEWHA, in collaboration with DFAT, to strengthen relations with regional neighbours on marine debris through relevant fora, and develop collaborative project proposals to address the sources and impacts of harmful marine debris. (Note text below relates to Actions 1.15 and 1.16)</p>	<p>A significant portion of <u>fishing related debris</u> in the Gulf of Carpentaria and surrounding regions comes from overseas, in particular from the coastal and offshore regions of Indonesia that border Australia’s northern Exclusive Economic Zone boundary. The Department of the Environment is supporting work involving GhostNets Australia, CSIRO, the United States National Oceanic and Atmospheric Administration and the Indonesian Ministry for Marine Affairs and Fisheries to reduce the incidence of <u>derelict fishing gear</u> in the Arafura Sea. Work done to date has engaged fishers, port authorities, local communities and stakeholders within key fishing communities in eastern Indonesia to identify the reasons for fishing gear loss and to identify potential solutions. This work has fed into the development of an Indonesian Government Arafura Sea Fisheries Management Plan, with implementation of identified solutions to be taken forward in that context. This may include an extension program modelled on <u>Australia’s SeaNet program</u>. SeaNet is a professional extension program operating within the Australian seafood industry, with the objective of introducing conservation behaviours and new technologies. Establishment of this type of program in Indonesia would be subject to further scoping and securing adequate funding. This international engagement is occurring in the context of the <u>Arafura and Timor Seas Ecosystem Action Program—a Global Environment Facility project involving collaboration between Australia, Indonesia and East Timor on the conservation and sustainable management of the coastal and marine resources of the Arafura and Timor Seas</u>. Through the Arafura and Timor Seas Ecosystem Action Program, the Department of the Environment has organised exchange visits and study tours on <u>community based marine planning and management</u>, involving community leaders from East Timor, the island of Rote in eastern Indonesia and Indigenous communities in Australia’s north. The Department of the Environment is supporting work involving GhostNets Australia, CSIRO, United States National Oceanic and Atmospheric Administration and the Indonesian Ministry for Marine Affairs and Fisheries to reduce the incidence of <u>derelict fishing gear</u> in the Arafura Sea. Work done to</p>	<p>More national effort is needed to study the sources and quantities of foreign land-based MPP found in our northern waters and along our coastline (see NELA response to Action 2.4). Whilst Action 1.17 does not specify the form of marine debris, implementation to date has focused on the particular issue of derelict fishing gear from Indonesia. The Arafura and Timor Seas Ecosystem Action Program and the Department of the Environment’s exchange visits and study tours on community-based marine planning and management in East Timor, Rote Island in eastern Indonesia and Indigenous communities in Australia’s north is commendable. However, more is required to promote the benefits of community-based marine planning and management and also to link it to control of marine pollution from land-based sources</p>

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	<p>date has engaged fishers, port authorities, local communities and stakeholders within key fishing communities in eastern Indonesia to identify the reasons for fishing gear loss and the identify potential solutions. This work has fed into the development of an Indonesian Government Arafura Sea Fisheries Management Plan, with implementation of identified solutions to be taken forward in that context. This may include an extension program modelled on Australia’s SeaNet program, subject to further scoping and securing adequate funding. Supporting these efforts, the CSIRO and others used the Arafura Sea as a case study to examine the complex value chain, stakeholders, costs and benefits inherent in the ghost net issue (Butler et al. 2013). This work will contribute to strategies for adaptive co-management of ghost nets and other marine debris in the region.</p>	<p>including MPP.</p>

Microplastics

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>Action 3.3 DEWHA to support research on the nature of degradation pathways of synthetic debris in the marine environment (including biodegradable and oxodegradable plastics), the extent that degradation products are contaminated by other potentially toxic compounds, and the potential toxicity of debris types on marine species. For example: DEWHA to support monitoring of the incidence of hatching failure due to eggshell thinning (linked with the Recovery plan for</p>	<p>The Department of the Environment has not supported specific research on the nature of degradation pathways of synthetic debris in the marine environment. However internationally, over the life of the plan, a better understanding of this issue has been developed. International Pellet Watch is a volunteer-based global monitoring program designed to monitor the pollution status of the oceans through analysis of plastic resin pellets discarded in the ocean. In water, these pellets sorb hydrophobic organic compounds, including persistent organic pollutants such as polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT). The pellets are ubiquitous on beaches around the world and are easy for volunteers to collect and ship for analysis. As such, they act as convenient passive samplers in understanding the risks associated with chemicals in marine plastics. International Pellet Watch has prepared global pollution maps of persistent organic pollutants and identified hot spots (http://www.pelletwatch.org/maps/). Wright et al. (2013) showed that deposit-feeding marine worms maintained in sediments spiked with microscopic unplastified polyvinylchloride had significantly depleted energy reserves by up to 50 per cent. They suggest that depleted energy reserves arise from a combination of reduced feeding activity, longer gut residence times of ingested material and inflammation. Browne et al. (2013) found, in a controlled experiment, that microplastic transferred pollutants and additive chemicals into gut tissues of lugworms <i>Arenicola marina</i>, causing some biological effects. Research underway at the University of New South Wales aims to investigate the threats posed by the presence of microplastics ranging from 1mm to 360µm in Sydney Harbour. This study is the first of its kind in the Sydney region and is expected to lay the</p>	<p>This action is relevant to microplastic MPP. The TAP Review states that the Department of the Environment has not provided specific research support on these issues. The threat of extensive harm posed by this type of pollution, justifies further investigation into the problem and appropriate action to address it. The Australian Government should undertake (or coordinate the undertaking of) a comprehensive review of existing knowledge in relation to the sources, location, density and likely harm caused by microplastics, the identification of gaps in this knowledge, and the co-ordination of a national, or even</p>

Action as identified in TAP	Result as summarised in TAP review	Comment by NELA
<p>albatrosses and giant petrels [Environment Australia, 2001b]).</p>	<p>foundation for future studies. Although specifically raised as an issue in the plan and the <i>Recovery plan for albatrosses and giant petrels</i>, researchers surveying albatross and giant petrel species for the Tasmanian Department of Primary Industries, Parks, Water and Environment do not consider monitoring of eggshell thinning to be a priority, and this has not occurred over the life of the plan. The researchers report a low rate of plastic ingestion in populations of Australian albatross (Rachael Alderman, personal communication, 26 February 2014).</p>	<p>international, effort across government bodies, non-government organisations and other researchers to fill those gaps. Given that it is known that certain products, such as cosmetics, contain plastic beads that will possibly find their way into the marine and coastal environment, the Australian government should investigate public policy measures such as awareness campaigns, compulsory content for product labelling, legislatively providing for the substitution and phasing out of this microbeads where manufactured locally and restrictions on the import of products containing such content. In relation to microfibers, other measures may be required in addition to labelling requirements such as standardised filters to catch microfibers from entering wastewater streams and the marine environment.</p>