Chapter 8

Conclusion and recommendations

8.1 In 2011, the United Nations Environmental Programme described marine plastic pollution as a 'toxic time bomb'. Plastic pollution is both persistent and pervasive—it is estimated that 150 million tonnes of plastic are present in the global marine environment, and unless this plastic is identified, collected and removed, it continues to exist, albeit in increasingly smaller pieces. As rates of plastic production and consumption increase, it is expected that the rates of plastic entering the ocean will similarly increase. Marine plastic pollution has been identified as having wide-ranging impacts on marine fauna, ecosystems, human health and business.

8.2 This inquiry examined the sources and effects of marine plastic pollution, and sought to identify mitigation strategies which will deliver a reduction in the rate of marine plastic pollution in Australia and Australian waters. The inquiry also examined the feasibility and effectiveness of programs designed to collect and remove marine plastic pollution.

The plastic problem

8.3 Plastics are now a core element of modern life: they are used in all sectors from construction to medicine and packaging. The demand for plastics is growing steadily with the World Economic Forum forecasting that production of plastics is expected to double in the next 20 years and quadruple by 2050. The demand for consumer goods has contributed to the levels of plastics used in packaging—the World Economic Forum noted that 26 per cent of all plastics are used for packaging.

8.4 As plastics are durable, once their usefulness is at an end, the problem of disposal arises. From the evidence received, disposal is often neither efficient nor undertaken with the short- or long-term consequences to the environment in mind. The low cost of plastics contributes to low levels of recycling and the perception that plastic is 'disposable' means that it generally ends up in landfill or is dumped indiscriminately as litter.

8.5 As a consequence, plastics are entering the world's oceans at an alarming rate. The committee notes that, while there are some concerns about the lack of rigor of some of the estimates of the amount of plastic in the marine environment, they are still sobering: five trillion plastic pieces on the surface of the oceans; eight million tonnes

of plastics leaking into the ocean each year—that is the equivalent of one garbage truck of plastic every minute of every day of the year.[1]

8.6 In Australia, estimates of marine plastic pollution also point to the magnitude of the problem. While limited research has been undertaken to fully understand the extent of plastic debris, it is evident to the committee that there is extensive marine plastic pollution in Australian coastal areas and in our waters. This pollution is not limited to densely populated coastal areas; studies have found plastic debris in remote North West Australia and remote areas of Tasmania. The committee was also provided with graphic evidence of the magnitude of marine plastic pollution from organisations and individuals who undertake clean-up activities: the Tangaroa Blue database contains information on 5.4 million marine debris items (500 tonnes). Evidence from local government also pointed to the high volumes of urban litter, including plastics, which they have recovered.

8.7 Plastics enter the marine environment from both ocean- and land-based sources. In northern Australian waters, one of the most significant types of ocean-based debris is ghost nets with up to three tonnes of ghost nets per kilometre being found in the Gulf of Carpentaria. However, land-based sources account for the vast proportion of marine debris—80 per cent by many estimates. Much of the marine debris collected is packaging including beverage containers and food packaging.

8.8 Of significant concern to submitters and witnesses was the amount of microplastic debris (pieces less than five millimetres in size). Microplastics can be intentionally produced (microbeads used in personal care products); result from processes or use of products (fibres released with the washing of synthetic fabrics); or result from degradation of larger plastic items. Plastics are highly durable, and are now found throughout the marine environment, and of most concern is that microplastics are difficult, if not impossible, to remove.

8.9 The committee found that there were few estimates of costs of marine plastic pollution but the estimates available are staggering. The Asia-Pacific Economic Cooperation estimated that the cost of ocean plastics to the tourism, fishing and shipping industries was $1.3 billion in our region. In 2014, the United Nations Environment Program (UNEP) estimated that the annual damage of plastics to marine ecosystems is at least US$13 billion per year. The UNEP went on to estimate that the after-use externalities for plastic packaging, plus the cost associated with greenhouse

1 Associate Professor Mark Osborn, *Submission 16*, p. 1; World Economic Forum, *The New Plastics Economy*: *Rethinking the future of plastics*, January 2016, http://www3.weforum.org/docs/WEF_The_N Plastics ew__Economy.pdf, (accessed 23 February 2016), p. 14.

gas emissions from its production, was US$40 billion. This estimate was seen as 'conservative' and exceeded the plastic packaging industry's profit pool.[2]

8.10 It is clear to the committee that, while there is limited quantitative evidence of the magnitude of marine plastic pollution in Australia and Australian waters, it is a problem that cannot be ignored and one that is growing year-on-year. The economic costs of marine plastic pollution are immense and are being borne by all levels of government through clean-up and infrastructure costs. Businesses also face costs through damage to fisheries and marine infrastructure and the costs to individuals and organisations in time and resources are also considerable. While environmental damage is difficult to evaluate at present, the committee considers that it is wide-ranging and a significant externality of the ubiquitous use of plastics.

The effects of marine plastic pollution

8.11 The committee was provided with a range of evidence on the effects of plastic pollution on marine fauna. Many of the submitters and witnesses pointed to research being undertaken in Australia on the effects of marine plastic ingestion and entanglement on marine fauna species.

8.12 Macroplastics, including lost fishing gear, are the main contributors to entanglements. Individuals and organisations provided the committee with graphic details of the injuries suffered by marine fauna through entanglement—loss of limbs, scoliosis and infection. Many marine animals die from being entangled in marine debris particularly turtles encountering ghost nets in Australia's northern waters. However, the committee recognises that much remains unknown about the extent of entanglements as most reports are either restricted to opportunistic observations of animals or are from heavily visited coastal regions.

8.13 Ingestion of both macro- and microplastic marine debris by some marine animals now appears to be more usual than not: over 50 per cent of turtles worldwide have ingested marine debris and over 60 per cent of some species of seabirds have been found with plastic in their gut and it is estimated that 99 per cent of seabirds will have ingested plastic by 2050. Ingestion of marine debris can cause significant problems for marine animals, for example, decomposing plastics ingested by turtles produces gas which remains trapped inside the animal and causes it to float. The turtle may then starve to death or be the target of predators.

8.14 The committee was provided with disturbing evidence of the quantities of plastic that can be ingested by seabirds. At both its Sydney and Brisbane hearings, researchers showed the committee samples of material taken from seabirds. Mr Ian Hutton presented a bag of 274 pieces of plastic ingested by a single shearwater from Lord Howe Island—this represented 14 per cent of the bird's body weight. There is

2 World Economic Forum, *The New Plastics Economy*: *Rethinking the future of plastics*, January 2016, http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf, (accessed 23 February 2016), p. 10.

also evidence that chicks are being fed plastic in the nest. While there has been much research on the effects of plastic ingestion on individual species of seabirds, the committee was informed that a significant gap in relation to population level research exists.

8.15 The committee also received evidence that other marine creatures—cetaceans, corals and zooplankton—have been found to ingest plastic. However, the impact of ingestion on these species is less clear, though it is suspected that negative health effects are occurring.

8.16 The evidence provided to the committee outlined the effects of marine plastic pollution on fisheries and ecosystems. Fisheries are particularly at threat from lost fishing gear while many of Australia's unique ecosystems are fragile, and are already under threat from climate change, exploration and development.

8.17 Two issues of particular concern raised with the committee were the possible effects of chemical bioaccumulation from plastic ingestion particularly microplastics ingestion. Plastics contain many chemicals, some of which are toxic. These can leach out of plastic debris, affecting marine animals which have ingested the plastic and contaminating the marine environment where it has lodged as litter.

8.18 Microplastics are also known to accumulate and carry toxic chemicals present in seawater, and these chemicals are known to have negative effects on the health of marine fauna. There is also concern that microplastics may bioaccumulate, and that trophic transfer may occur.

8.19 Emerging research points to the significant threat of microplastic to the marine environment. The committee was considerably alarmed to hear that the potential effect on human health from the ingestion of microplastics in the food chain is only now emerging as an area of research interest. The committee is concerned that there may be a looming health crisis associated with seafood consumption, and urges the prioritisation of research on this issue, and appropriate investment from both government and industry. The committee also considers that microplastics warrant specific focus in strategies aimed a mitigating the effects of marine plastic pollution.

8.20 The committee acknowledges the range of research provided by witnesses. However, it is clear from evidence received by the committee that there are significant gaps in the understanding of the threat of marine plastic pollution. For example, the extent of marine plastic pollution, particularly microplastics, effects of marine plastic pollution; the impacts at the population level; and the effects on ecosystems. As noted above, it appears that more research is required in relation to microplastic pollution and possible effects on human health.

8.21 The committee considers that until these gaps are addressed, it will be difficult to better understand the effects of marine plastic pollution and to identify and implement mitigation strategies.

The role of the Australian Government

8.22 As outlined in the report, the Australian Government manages the threat of marine plastic pollution through a variety of ways including the protection of threatened and endangered species and ecosystems, the implementation of international conventions, and the development and implementation of waste management policies.

8.23 The Threat Abatement Plan, established under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is designed to establish mitigation strategies and research priorities for the federal and state and territory governments. The 2014 Review of the Threat Abatement Plan identified that the threat to marine fauna from plastic pollution had not been abated. The committee has grave concerns that this finding points to a lack of action on the part of the Australian Government, particularly in light of growing evidence on both the scale, and the effects, of marine plastic pollution.

8.24 The Department of the Environment is currently revising the Threat Abatement Plan and the committee notes the department's evidence that plastic will be a focus of the revised plan. However, the committee is concerned that there appears to have been a lack of consultation with leading Australian researchers who could have provided a valuable contribution to the review. In addition, while welcoming the emphasis on plastic in the revised plan, the committee is concerned that, given the complexity of the task of addressing marine plastic pollution, effective mechanisms must not only be identified but also implemented. The committee considers that without the implementation of measures contained in the revised plan and a commitment to achieve this by all stakeholders, including industry, little abatement will occur. This would not be an acceptable outcome.

8.25 While the EPBC Act and the Threat Abatement Plan are the primary means for the Australian Government to address marine plastic pollution, the committee received evidence that suggested that these were inadequate tools to effectively mitigate the threat from marine plastic. Given the complexity of issues related to marine plastic pollution, particularly microplastic pollution and the lack of abatement under the Threat Abatement Plan, there were calls for the establishment of a national body to directly address marine plastic pollution.

8.26 The committee has considered this suggestion. While acknowledging that there has been little evidence of effective abatement under the Threat Abatement Plan, the committee does not believe that, at the present time, there is a need to establish a new dedicated marine plastic body.

8.27 Rather, the committee considers that the Australian Government should develop policies in relation to marine plastic pollution that are research-based so that the most efficient and effective mitigation strategies can be established, and pursue issues through the Council of Australian Governments and the meeting of environment ministers.

8.28 In relation to research, the committee notes the extremely small number of research projects into marine debris that the Department of the Environment has directly funded—five between 2003 and 2016. While there is research being undertaken by CSIRO and numerous universities and institutes, the committee considers that the support for research provided by the department in relation to marine plastic pollution falls far short of what is required. The committee considers that the problem of marine plastic pollution is too complex and threatening for the Australian Government to rely on research conducted overseas or research undertaken in Australia with cobbled together funds.

Recommendation 1

8.29 The committee recommends that any future Australian Government policies on mitigating the threat from marine plastic be underpinned by sound, peer-reviewed research.

Recommendation 2

8.30 The committee recommends that the Australian Government actively support research into the effects of marine plastic pollution in Australian waters ,including research to more fully evaluate:

- **the extent of marine plastic pollution;**
- **the sources of marine plastic pollution;**
- **the effects at the population level; and**
- **the effects on ecosystems particularly in the Great Barrier Reef.**

Recommendation 3

8.31 The committee recommends that the Australian Government actively support research into the threat posed by microplastic pollution, including research to:

- **identify the extent of microplastic pollution;**
- **evaluate the effects of microplastic pollution on marine fauna;**
- **evaluate the effects of microplastic pollution on ecosytems; and**
- **identify mitigation measures.**

Recommendation 4

8.32 The committee recommends that the Australian Government actively support research into the threat posed by marine plastic pollution, particularly microplastic, on human health.

Recommendation 5

8.33 The committee recommends that the Australian Government undertake work to identify and establish the costs of the externalities associated with marine plastic pollution.

8.34 Substantial funding will be required to undertake the research needs identified during the inquiry and recommended by the committee. The committee acknowledges that government funding is limited.

8.35 The committee notes that funding for projects which contribute towards the Australian Packaging Covenant's goals is provided by industry. In 2015, APC signatories contributed $1.5 million to fund projects focusing on litter reduction and delivering sustainable waste management solutions.[3] This is a considerable contribution to these projects. However, understanding and addressing the threat of marine plastic pollution is complex, and there is an urgent need to address identified knowledge gaps. As such, the committee considers that it is appropriate that industry provides further support for scientific research into the effects of marine plastic pollution, as well as possible mitigation strategies. The committee is of the firm view that support for scientific research is part of industry's product stewardship responsibility and that this support should be in the form of funding.

Recommendation 6

8.36 The committee recommends that industry contributes further funding of scientific research through the Australian Packaging Covenant.

8.37 The committee recommends that this funding be provided for research which particularly addresses the effect of marine plastic pollution on marine fauna, and human health from ingestion as well as research to identify mitigation strategies.

8.38 The need for a national database containing information on the types and sources of marine plastic pollution in Australia was identified as being critical to developing sound mitigation strategies. The committee received evidence on the Tangaroa Blue Foundation's Australian Marine Debris Initiative and CSIRO's marine debris survey. The committee also notes that there are a number of other state- and organisation-based marine debris databases.

8.39 The committee supports the establishment of a national database for marine plastic debris. Such a database would assist in ensuring consistent data collection and recording and thereby provide a powerful tool to underpin ongoing research. The committee notes that the CSIRO and Australian Marine Debris Initiative have different uses. However, the committee considers that there are mechanisms available to ensure that a national dataset would be suitable for various applications. The committee considers that support should be given to the establishment of the

3 http://www.packagingcovenant.org.au/pages/2015-projects.html

Australian Marine Debris Initiative as the national database. In doing so, the committee recognises the extent of the database, and the support provided by government and researchers to the database.

Recommendation 7

8.40 The committee recommends that the Australian Government consult with stakeholders, including the Tangaroa Blue Foundation, CSIRO and relevant scientists, to explore mechanisms to establish a national marine pollution database.

8.41 The committee further considers that there are means to achieving threat mitigation through the utilisation of alternative legislative and already existing regulatory mechanisms such as the National Environment Protection Measures. The committee considers that the Australian Government should pursue the mitigation of marine plastic pollution through these measures.

8.42 The committee also received considerable evidence encouraging the Australian Government to provide national leadership in addressing the threat of marine plastic pollution. The committee recognises the effect of geographic and demographic influences on both the causes of marine plastic pollution, and in mitigating the threat. Reducing marine plastic pollution requires a multi-layered approach utilising whole-of-government initiatives, and cooperation with state, territory and local governments. It also requires partnership with not-for-profit organisations and industry, and community participation. Given these many difficult factors, the committee considers that leadership by the Australian Government is fundamental to finding effective solutions to marine plastic pollution.

8.43 One mechanism available to the Australian Government is to support the inclusion of marine plastic pollution on the Council of Australian Governments (COAG) agenda. The committee notes that in the most recent COAG communique coastal and marine issues were not mentioned in relation to water, climate change and environmental matters. In light of the evidence provided during the committee's inquiry, the committee considers this to be a significant oversight. The committee believes that marine pollution matters should be considered by COAG.

8.44 In addition, the committee considers that meetings of the environment ministers, in the absence of a standing council of COAG for environmental matters, provide an opportunity to coordinate measures to prevent further plastic entering the marine environment. These meetings also offer an opportunity to coordinate strategies to mitigate the effects of existing marine plastic pollution.

Recommendation 8

8.45 The committee recommends that the Australian Government place marine plastic pollution on the Council of Australian Governments' agenda for urgent consideration.

8.46 In recognition of the level of threat associated with plastic pollution in Australia's marine environment, and the need for a comprehensive and coordinated response, the committee recommends that the Australian Government pursue the establishment of a working group, under the auspices of the meeting of environment ministers, to address specific matters related to marine plastic pollution.

8.47 The specific matters which the committee considers should be addressed by the working group established by the meeting of environment ministers include mitigation strategies such as clean-up campaigns. These are discussed in detail in the relevant sections of this chapter.

8.48 The committee considers that marine plastic pollution cannot be addressed by Australia in isolation. Given Australia's proximity to heavily populated areas to our north, the extensive fishing activities adjacent to Australian waters, the large amount of sea traffic in the Pacific and Indian Oceans and the complexity and increasing scale of marine plastic pollution, regional cooperation will be vital.

8.49 The committee notes the work already being undertaken to provide support for education and mitigation measures in Indonesia in relation to ghost nets. However, the committee considers that the Australian Government should explore further avenues to increase regional awareness of the threat of marine plastic pollution and to provide support to our neighbouring countries through both technical aid and financial assistance with mitigation measures. The committee is particularly concerned that the Pacific island states have recognised the threat of marine plastic pollution but may lack the resources to implement effective strategies.

Recommendation 9

8.50 The committee recommends that the Australian Government explore opportunities for increased regional leadership and direct support on the issue of marine plastic pollution, including projects focused on ghost net recovery.

Collecting and removing marine plastic pollution

8.51 Since the 1980s, clean-up campaigns have formed an integral part of marine plastic pollution mitigation strategies. The committee received evidence on the significant, and in some cases startling, volumes, collected and removed from the marine environment across Australia. In Cape York for example, up to one tonne of debris per kilometre is being removed annually.

8.52 The Australian Government supports clean-ups through the Australian Government's Green Army Programme and ghost net retrieval programs. Support is also provided by state and territory governments and local governments. Nonetheless, the vast majority of clean-ups are undertaken by volunteers. The committee acknowledges the enormous contribution made by volunteers and the organisations that support them; without their efforts marine plastic pollution would accumulate in coastal areas unchecked.

8.53 While the committee received evidence questioning the effectiveness of clean-up efforts, it considers that clean-ups still play a vital role in addressing marine plastic pollution. In addition, the committee recognises the valuable role that clean-ups play in raising public awareness and providing education on the sources and impacts of marine pollution. However, the committee considers that there is a need for greater coordination of clean-up efforts as well as a strategic approach.

Recommendation 10

8.54 The committee recommends that the Australian Government pursue mechanisms to improve support and coordination of clean-up activities through the meeting of environment ministers working group to ensure that the most effective outcomes of these activities are achieved.

8.55 An area in which Australian Government agencies play a significant role is the identification, collection and removal of abandoned, lost or otherwise discarded fishing gear. In particular, Australian Government agencies respond to ghost nets originating from fishing operations in neighbouring countries, which commonly drift into northern Australian waters. Evidence indicated that it is a complex issue which requires significant coordination and cooperation, and that there are a number of areas where improvements could be made.

8.56 First, it was noted that the responsibility for ghost nets rests with six Australian Government agencies (for nets in the Australian Fishing Zone) as well state and Northern Territory counterparts (for nets in coastal waters), and regional neighbours. Secondly, there is a lack of funding for retrieval of ghost nets. The committee notes that the GhostNets Australia program, originally funded from the National Heritage Trust, no longer receives direct funding from the Department of the Environment. GhostNets Australia plays an important role in ghost net retrieval as an alliance of Indigenous communities from coastal northern Australia who work with researchers.

8.57 The lack of funding and coordination were identified as contributing to delays in the identification and removal of ghost nets, and the subsequent entanglement of significant numbers of marine fauna. It was also identified that increased cooperation and regional leadership may result in a reduction in ghost nets in Australian waters.

8.58 The difficulties associated with the collection and disposal of ghost nets in remote areas were also raised with the committee. It was noted that opportunities exist for innovative strategies to be developed and implemented which would reduce the

impact of burning large ghost nets in situ — including the implementation of waste-to-energy systems in remote communities. The CSIRO also told the committee that research into innovative strategies to tag fishing gear may allow for the identification of net origin, and allow for greater user responsibility.

8.59 The committee acknowledges that the coordination of retrieval of ghost nets is an action under the Threat Abatement Plan. However, the committee considers that ghost nets continue to pose a serious threat to marine fauna in Australian waters, and Australian fisheries. The evidence points to a need to improve coordination of agencies that identify and remove ghost nets. While this matter will be addressed in the revised Threat Abatement Plan, the committee considers that there is an urgent need to address coordination problems. As such, it believes that the Department of the Environment should undertake a review of current arrangements for the detection and removal of ghost nets. The committee recommends that a nationally consistent strategy be developed to ensure that ghost nets are detected and removed from both the Australian Fishing Zone and coastal waters.

8.60 Further, the committee considers that continued engagement with the governments and coastal communities of our near neighbours is critical to addressing concerns with abandoned fishing gear.

Recommendation 11

8.61 The committee recommends that the Australian Government:

- **support CSIRO research to identify the extent of ghost nets in Australian waters, and to identify means to prevent the loss of fishing gear;**
- **support the development of innovative technologies for the tagging of fishing gear and support the introduction of these technologies by the Australian-based fishing industry, and by fishing industries in regional countries;**
- **undertake a review of current Commonwealth arrangements to detect and remove ghost nets; and**
- **develop a nationally consistent strategy through the meeting of environment ministers working group to ensure that ghost nets are collected in a timely manner in the Australian Fishing Zone, and coastal waters.**

Recommendation 12

8.62 The committee recommends that the Australian Government reinstate funding for GhostNets Australia to allow it to continue its work to identify and retrieve ghost nets.

Source reduction – consumer behaviour and infrastructure

8.63 The importance of changing consumer behaviour, particularly in relation to waste disposal was highlighted throughout the inquiry. The committee received evidence that education campaigns, particularly those targeted at specific user groups such as fishers and boat owners, can result in significant reductions of marine debris. The committee recognises the value of community education in preventing marine plastic pollution, and commends organisations and government bodies undertaking this work.

8.64 The committee also notes that there is some community confusion regarding the differences between biodegradable, degradable plastic, compostable and traditional plastic. Of particular concern is the lack of understanding about the ways in which these items should be disposed of, and the end product. While consumers might feel they are 'doing the right thing' by choosing biodegradable or degradable plastic, these products simply disintegrate into smaller and smaller pieces to become microplastic. The committee strongly considers that education campaigns are required to ensure consumers make informed choices about the alternatives to traditional plastics being offered.

Recommendation 13

8.65 The committee recommends that the Australian Government, through the meeting of environment ministers working group, encourage all jurisdictions to support the implementation of targeted education campaigns which aim to change consumer behaviour in relation to the use of plastics, and to provide consumers with information regarding alternatives to traditional plastic.

8.66 The implementation and maintenance of infrastructure such as public rubbish bins has also been identified as being critical in promoting the responsible disposal of plastic items by the public.

8.67 The committee received evidence about the amount of debris being transported in the marine environment through the stormwater system. Local governments install gross pollutant traps to lessen the amount of debris entering stormwater systems but the committee heard that these were expensive to install and maintain. The committee also received evidence that new technologies are also available but similarly, the costs of retrofitting existing systems with new technology is expensive and therefore less common than it should be.

8.68 The committee's 2015 report on the management of stormwater resources in Australia examined the critical role infrastructure plays in preventing the movement of urban litter into the marine environment. In that report, the committee recommended that the Australian Government work with the state and territory governments to develop and implement a national policy framework for stormwater management (a National Stormwater Initiative) (Recommendation 1) and that new funding models and financial incentives be considered as a way of facilitating improved stormwater management outcomes in an economically efficient way (Recommendation 4).

8.69 The committee considers that implementation of these two recommendations would greatly assist with the prevention of plastic debris entering the marine environment.

Recommendation 14

8.70 The committee recommends that the Australian Government implement the recommendations from the Senate Environment and Communications References Committee inquiry into stormwater management in Australia, in particular:

- **Recommendation 1—the development and implementation of a national policy framework for stormwater management (a National Stormwater Initiative); and**
- **Recommendation 4—the consideration of new funding models and financial incentives that would facilitate improved stormwater management outcomes in an economically efficient way.**

Container deposit schemes

8.71 Container deposit schemes were seen as a simple and cost effective way to change consumer behaviour, and to reduce the number of beverage containers found in the marine environment. There is strong community support for container deposit schemes, evidenced by the number of submissions and form letters received by the committee during the inquiry. The committee also notes the compelling argument that container deposit schemes encourage widespread participation in recycling through the provision of a financial incentive.

8.72 While container deposit schemes have been established in over forty jurisdictions worldwide, only South Australia and the Northern Territory have established container deposit schemes in Australia. The South Australian scheme was established in 1977 and many submitters pointed to the benefits accruing from this scheme. In particular, CSIRO research indicates that there has been a reduction—by a factor of three—of beverage containers in the marine environment. The high level of recycling in South Australia was also put forward by supporters of container deposit schemes.

8.73 The committee supports the introduction of container deposit schemes in all Australian jurisdictions. The committee believes that there are proven benefits of such schemes, for example, the ability to remove an additional 35,000 tonnes from the waste stream. The committee considers that the responsibility for implementation rests with each state and territory. However, if container deposit schemes have not been introduced by 2020, the committee believes that this matter should be revisited.

8.74 The committee recognises that the implementation of container deposit schemes is a polarising issue with beverage industry representatives being concerned about possible associated costs to consumers, industry and government. While acknowledging these concerns, the committee is somewhat sceptical of many of the

arguments put forward by industry. In relation to concerns about the costs that will be borne by the community, the committee notes that there will be benefits to both the community and government in reduced costs of litter collection and disposal, less landfill and the reduction of environmental impacts.

8.75 The industry also pointed to concerns that container deposit schemes will reduce demand for beverages and thereby affect investment and employment in the sector. The committee notes that there are currently other matters affecting the beverage sector including concerns with the amount of sugar in beverages which is leading to consumers reassessing their consumption habits.

8.76 Another concern put forward by the industry is the impact on kerbside recycling. The committee notes that in jurisdictions in which kerbside recycling exists without container deposit schemes, recycling rates remain alarmingly low. In addition, research from PricewaterhouseCoopers presented to the committee does not support the contention that kerbside recycling and container deposit schemes cannot co-exist.

8.77 The committee notes that the industry opposes the introduction of a refund-based container deposit scheme in New South Wales and has proposed an alternative—*Thirst for Good*. This is a suite of initiatives including litter collection, funding of bin infrastructure and reverse vending machines which do not offer financial incentives. This alternative was criticised in evidence as overseas experience demonstrates that non-refund programs fail. In addition, it was argued that it is not effective in increasing recycling rates where consumption takes place away from home.

Recommendation 15

8.78 The committee recommends that the Australian Government, through the meeting of environment ministers working group, actively encourage the states and territories, which have not already done so, to consider the most effective methods to address marine plastic pollution in their jurisdictions. These should include implementation of container deposit schemes and other anti-littering mitigation strategies.

Recommendation 16

8.79 The committee recommends that, if all states and territories have not introduced container deposit scheme legislation by 2020, the Australian Government revisit the issue with the view to developing legislation for those jurisdictions which are yet to implement container deposit schemes.

Source reduction – product stewardship and regulatory frameworks

8.80 Source reduction strategies must also include changes in production and manufacturing practices, and regulatory frameworks. The committee explored the value of increased product stewardship, and the need for increased regulation to prohibit the sale and use of certain products such as single-use lightweight plastic bags and microbeads in personal care products.

8.81 Producers and manufacturers play a crucial role in reducing marine plastic pollution, particularly through packaging design choices. The committee received evidence on voluntary schemes such as the Australian Packaging Covenant (APC), and the ways in which these schemes can be improved.

8.82 Insufficient reporting and the voluntary nature of the APC was particularly criticised, as was the lack of enforcement and compliance activities undertaken by government authorities. The committee notes that the APC is currently under review and renegotiation and is of the view that this review should recognise the magnitude of the environmental threat posed by single-use packaging and consumer items. In addition, the committee considers that the APC would benefit from improved reporting and compliance. Enforcement activities under the APC should also be undertaken by relevant state and territory agencies.

8.83 The committee notes that the role of the plastic packaging industry in reducing marine plastic pollution is not included under the current Threat Abatement Plan. However, the committee is of the view that improved product stewardship is critical to achieving a reduction in the volume of plastic entering the marine environment.

Recommendation 17

8.84 The committee recommends that the revised Australian Packaging Covenant include improved reporting and compliance by industry.

Recommendation 18

8.85 The committee recommends that the Australian Government, through the meeting of environment ministers working group, engage with states and territories to improve enforcement of the Australian Packaging Covenant.

Recommendation 19

8.86 The committee recommends that the Department of the Environment give consideration to recognising the role of product stewardship in the Threat Abatement Plan by including reference to the Australian Packaging Covenant

8.87 Evidence was received which showed the gains to be made in reducing plastic pollution through innovation and design. In this regard, the committee notes the efforts of the beverage industry in redesigning containers to reduce the amount of plastic used. Other examples include the substitution of bamboo utensils for use with takeaway food and starch 'peanuts' in packaging. These are encouraging developments but the committee recognises that there are many more areas where gains could be made through innovation and design.

Recommendation 20

8.88 The committee recommends that the review of the Australian Packaging Covenant include support for the development innovative packing solutions that offer alternatives to plastics.

8.89 During the course of the inquiry, a considerable amount of evidence was received supporting the introduction of legislative bans of lightweight, single-use plastic bags due to the volume of such items found in the marine environment. The committee is aware that such bans have been implemented in a number of jurisdictions in Australia and is of the view that such bans should be considered in remaining states and territories.

8.90 The committee is concerned that existing bans have seen the widespread replacement of single-use lightweight plastic bags with degradable plastic bags. The committee received evidence that such items are in fact just as harmful, and could pose a greater risk to marine fauna due to their increased rate of degradation. The committee is of the view that such a replacement should not be supported by government policy without further research.

Recommendation 21

8.91 The committee recommends that the Australian Government support states and territories in banning the use of single-use lightweight plastic bags. In doing so, the Australia Government should ensure that alternatives do not result in other pollutants entering the environment.

8.92 Evidence was also received supporting a legislative ban on the importation and production of personal care products containing microbeads. At present, a number of manufacturers and retailers have announced a commitment to phasing out such products. The committee notes that on 29 February 2016, Minister for the Environment, the Hon Greg Hunt MP, announced that the Australian Government will continue to support the voluntary phase out of microbeads, however if this does not achieve what is in effect a ban by 1 July 2017, then the Australian Government will implement a ban legislatively.

8.93 The committee is supportive of any moves to remove microbeads from consumer products. However, it considers that the evidence of the level of damage to the environment from microbeads is such that an immediate ban should occur. The committee notes that microbeads have been banned in other jurisdiction, for example, Canada where the House of Commons voted unanimously to pass the relevant legislation.

8.94 The committee understands that there are avenues already available to the Australian Government: banning importation through the listing products containing microbeads as a prohibited import; and banning production of personal care products containing microbeads under the Cosmetics Standard. While such bans do not comprehensively address all sources of microplastics, it is an important first step.

Recommendation 22

8.95 The committee recommends that the Australian Government move to immediately ban the importation and production of personal care products containing microbeads.

8.96 The committee also notes that there are other legislative mechanisms which could be used to decrease the amount of plastics entering the environment. This includes state and territory environmental protection legislation and the MARPOL Annex V convention. Evidence received argued that greater enforcement of these measures is required. The committee supports the use of existing environmental protection legislation particularly in relation to controlling the release into waste management systems of pre-production plastic pellets (nurdles) from factories. The committee considers this would be an easy and effective means of addressing pollution from nurdles.

Recommendation 23

8.97 The committee recommends that the Australian Government, through the meeting of environment ministers working group, identify measures, including regulatory measures, already available to prevent plastics entering the marine environment and ensure that they are being implemented effectively in all jurisdictions. In particular, the committee recommends that more effective enforcement of environmental laws in relation to preventing nurdles entering the waste management system be pursued.

Senator Anne Urquhart

Chair