

Chapter 5

Strategies for the removal of marine plastic pollution

5.1 This chapter examines the scope and effectiveness of current strategies to remove existing pollution from the marine environment. This includes community- and volunteer-based clean-up programs, and efforts to remove discarded, lost and abandoned fishing gear.

Clean-up programs

5.2 Since the 1980s and 1990s, clean-up programs involving the collection and removal of litter and debris from the marine environment have formed a key component in strategies designed to reduce the threat from marine plastic pollution. These programs are undertaken by both community and not-for-profit organisations, and Commonwealth, state and territory, and local governments. Clean-up and debris removal remains a key strategy of the Threat Abatement Plan.¹

Government funding for clean-up initiatives

5.3 The Australian Government funds a number of initiatives which focus on marine debris removal in conjunction with industry, community groups, and state, territory and local governments. These initiatives include beach and waterway clean-up projects, and the removal of debris from ecologically sensitive areas such as the Great Barrier Reef. In addition, a number of community and not-for-profit organisations are engaged in clean-up programs designed to remove plastic pollution from the marine environment.

5.4 The Australian Government currently provides funding for clean-up programs covering an area of 30–40 kilometres of beach in Queensland. These funds are provided through the Department of the Environment's Green Army Project.² The Australian Government has also provided \$700,000 through the Reef Trust to remove marine debris from the Great Barrier Reef Marine Park. The *Great Barrier Reef Marine Debris Clean-Up Project* is being delivered by the Great Barrier Marine Park Authority over two years until 30 June 2017. The project aims to reduce the sources and occurrence of marine debris, and its impact on protected species such as turtles and dugongs. It will involve coordinated on-ground clean-up activities and a public education campaign.³

1 Department of the Environment, *Threat Abatement Plan for the impacts of marine debris on vertebrate marine life*, May 2009, p. 6.

2 Department of the Environment, *Submission 18*, p. 4.

3 Department of the Environment, *Submission 18*, p. 4.

5.5 The Australian Government also funds community-based clean-up and marine debris monitoring program in the Gulf of Carpentaria and Arnhem Land, and on the Cape York Peninsula. This funding is provided through the Queensland Government for community-based programs on the east and west coast of Cape York Peninsula and the Torres Strait.⁴

5.6 The Australian Government also provides funding through the National Landcare Programme to organisations engaged in clean-up activity. Clean Up Australia currently receives \$300,000 over three years to assist in its campaigns.⁵

Effectiveness of clean-up programs

5.7 Organisations and individuals engaged in clean-up programs provided evidence of the large volumes of plastic pollution collected by volunteers, and the commitment of volunteers be it on one day or over large periods of time.

5.8 One of the largest clean-ups is organised by Clean Up Australia, a national non-profit organisation which was founded in 1989 in response to significant levels of plastic pollution in the marine environment. It coordinates community-based volunteer clean-up programs designed to collect debris from beaches, natural areas, parks and streets. Clean Up Australia submitted that over 25 years, some 28.75 million hours have been volunteered in Australia and over 302,213 tonnes of rubbish have been removed.⁶

5.9 Similarly, the Tangaroa Blue Foundation, a registered charity established in 2004 coordinates the Australian Marine Debris Initiative (AMDI). The AMDI is a 'national network of volunteers, communities, schools, Indigenous rangers, industry groups and government agencies working on both removal and mitigation of marine debris from marine, coastal and estuarine environments'.⁷ Ms Heidi Taylor, Managing Director, explained that:

To date, more than 5.4 million marine debris items have been entered into the AMDI database with the assistance of 902 partner organisations. This debris has been removed from 1,729 sites and the weight of the debris has been totalled at over 500 tonnes, with 152,693 volunteer hours being logged. If these hours were valued at \$30 an hour, that is a contribution of \$4.58 million for the removal of marine debris nationally.⁸

4 Department of the Environment, *Submission 18*, p. 5.

5 Minister for the Environment, the Hon Greg Hunt MP, 2 March 2016, <http://www.greghunt.com.au/Home/LatestNews/tabid/133/ID/3676/Tackling-waste-and-litter-to-keep-Australia-clean.aspx> (accessed 8 March 2016).

6 Clean Up Australia Inc. *Submission 9*, p. 2.

7 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

8 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

5.10 Other organisations provided evidence of their clean-up efforts including Eco Barge Clean Seas, a not-for profit organisation established in Airlie Beach, Queensland. Since the inception of the Whitsunday Marine Debris Removal Program in 2009, over 130,000 kilograms of marine debris have been removed from the Whitsunday Region.⁹

5.11 The committee also received a number of submissions from individuals who engage in clean-up activity on an ad hoc basis as part of their engagement in leisure activities in the marine environment.¹⁰

5.12 Despite the large volumes of debris removed from the environment during clean-ups, it is evident that the amount of marine plastic pollution continues to grow. Ms Terrie-Ann Johnson, Managing Director, Clean-Up Australia, commented that over the years in which Clean-Up Australia has been engaged in litter collection activities, the amount of plastic pollution collected has not reduced. Ms Johnson stated that 'individual beaches might be doing better, but as a whole, the sector of beaches is not doing better'.¹¹ Similarly, Eco Barge Clean Seas noted that marine pollution continues to arrive at rates in excess of two kilograms per day at some locations in the Whitsunday Region. As a result, approximately 40 maintenance clean-up trips are required per year to prevent significant accumulation from occurring.¹²

5.13 Notwithstanding the considerable efforts of volunteers, submitters stated that clean-up programs are insufficient to reduce the ever-increasing volume of plastic pollution, particularly in the marine environment. For example, Wide Bay Burnett Environment Council commented:

NRM groups and members of the public with the Wide Bay Burnett region spend many thousands of dollars from government funding initiatives and countless man hours conducting clean ups on beaches and islands within our local area and the issue is not improving over time.¹³

5.14 Similarly, Mr Brendan Donohoe, President of the Northern Beaches Branch, Surfrider Foundation Australia, told the committee:

Our hundreds of volunteers are involved in many beach clean-ups around the country each year and it is essentially a simple fact that where we feel as though we are standing on the porch and mopping it while there is a fire hydrant of plastic just gushing out behind us.¹⁴

9 Eco Barge Clean Seas Inc., *Submission 13*, p. 1.

10 For example Dr Fiona Whitelaw, *Submission 62*, p. 1; Ms Cheryl Cooper, *Submission 82*, p. 1; Mr Scott Bell-Ellercamp, *Submission 84*, p. 1.

11 Ms Terrie-Ann Johnson, Clean Up Australia, *Committee Hansard*, 18 February 2016, p. 38

12 Eco Barge Clean Seas Inc., *Submission 13*, p. 1.

13 Wide Bay Burnett Environment Council, *Submission 34*, p. 3.

14 Mr Brendan Donohoe, Surfrider Foundation Australia, *Committee Hansard*, 18 February 2016, p. 58.

5.15 Clean-up activities in remote areas of Australia are a particular challenge. Ms Taylor noted that in Cape York there is a high level of debris coming from other places and up to one tonne per kilometre is being removed annually. However, there is no recycling and limited waste management infrastructure in the region. This results in debris being burned causing an additional environmental issues.¹⁵

5.16 It was also argued that the general community should not rely on the small number of dedicated volunteers 'to bear the responsibility for cleaning up after everybody'.¹⁶ Mr Dave West, environmental economist advising Clean Up Australia, added that:

The community's effort and the support of local government, individual members of parliament, community leaders and those sorts of things on litter are something that we should not diminish or at any point not congratulate, because we do not want to disincentivise that. The point is probably that you just cannot rely on volunteers trying to deal with that if you want to fix the problem rather than hide the problem.¹⁷

5.17 Other witnesses also challenged the value of singular clean-up events. While commenting that clean-ups are vital, the Tangaroa Blue Foundation stated that 'one-off clean-ups are a waste of money and investment'.¹⁸ Similarly, Mr Jeff Angel, Executive Director of the Total Environment Centre, told the committee that the core problem with clean-up programs is:

...the irregularity of the clean-ups. Clean Up Australia does an enormous job, but it is once a year, mainly. Sorry, but the other 11 months there is stuff progressively building up in the environment.¹⁹

5.18 The scale and cost of collection of marine debris in Australia was also recognised by the Department of the Environment which stated:

...you are talking about a pollution load, a marine debris load, that is spread across a huge coastal area and a huge marine environment, and there is not going to be an economic or efficient way to capture and collect all of that material.²⁰

5.19 The cost effectiveness of clean-up activities was also discussed in the context of at-sea collection initiatives. In particular, the committee noted public discussion of

15 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

16 Ms Terrie-Ann Johnson, Clean Up Australia, *Committee Hansard*, 18 February 2016, pp. 38–39.

17 Mr Dave West, Environmental Economist advising Clean Up Australia, *Committee Hansard*, 18 February 2016, p. 38.

18 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

19 Mr Jeff Angel, Total Environment Centre, *Committee Hansard*, 18 February 2016, p. 50.

20 Mr Stephen Oxley, Department of the Environment, *Committee Hansard*, 26 February 2016, p. 18.

the Ocean Cleanup Project which proposes removing marine pollution using surface nets.²¹ However, Dr Britta Denise Hardesty from the CSIRO told the committee that despite there being public discussion around 'going out and cleaning up the garbage patches' in the open ocean, 'scientists around the world...are pretty much in agreement that that is not really a practical or viable solution'.²² Dr Hardesty explained that not all the pollution floats on top of the water—plastic moves throughout the water column—and it would be economically expensive to remove the plastic in these locations.²³

5.20 Despite concerns with the reliance on volunteers and effectiveness, clean-ups were still seen as having a place in marine plastic pollution mitigation efforts but it was argued that long-term strategic clean-up effort is needed and funding should be secured for these.²⁴

5.21 However, submitters commented that the major thrust of any policies to address marine plastic pollution must be source reduction. For example, Ms Taylor, Tangaroa Blue Foundation, stated that:

...if all we do is clean up, that is all we will ever do. Debris needs to be tracked to the source and practical, cost-effective source-reduction plans implemented to stop at the source.²⁵

5.22 Similarly, Clean Up Australia told the committee that:

...while volunteer and infrastructure efforts are commendable and are having an effect on the problem...addressing the problems of rubbish at the point of consumption is a far more cost effective approach than trying to recover packaging and products one they have entered our environment.²⁶

5.23 Source reduction is further discussed in Chapters 6 and 7.

Value of clean-up programs in raising awareness

5.24 Despite evidence indicating that clean-up programs cannot effectively mitigate the threat of marine plastic pollution, the committee also heard that participation in clean-up programs can provide valuable public education.

5.25 Clean Up Australia stated that those who participate in events such as Clean Up Australia Day 'will probably go home and have changed their attitudes to what

21 For more information see The Ocean Cleanup Project, <http://www.theoceancleanup.com/>.

22 Dr Britta Denise Hardesty, CSIRO, *Committee Hansard*, 26 February 2016, p. 5.

23 Dr Britta Denise Hardesty, CSIRO, *Committee Hansard*, 26 February 2016, p. 5.

24 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

25 Ms Heidi Taylor, Tangaroa Blue Foundation, *Committee Hansard*, 10 March 2016, p. 28.

26 Clean Up Australia, *Submission 9*, p. 2.

they are finding'.²⁷ This was also supported by evidence given by Mr Donohoe from the Surfrider Foundation who stated:

The great feature of getting the public involved in a beach clean is that once you have done one of our beach cleans properly, and you weigh it and you look at it, you could never ever just drop something anywhere again.²⁸

5.26 The value of awareness raising activities and education campaigns is further discussed in Chapter 6.

Research developments

5.27 The committee notes that research into clean-up strategies, and technological solutions to reduce the amount of plastic in the environment is ongoing. For example, during the conduct of this inquiry, the committee noted an announcement from research scientists in Japan who discovered a species of bacteria capable of degrading PET plastic, and utilising the plastic as a food source.²⁹

5.28 The researchers, in an article published in the journal *Science*, described the bacteria *Ideonella sakaiensis* 201-F6 as having evolved enzymes specifically capable of breaking down PET in response to the accumulation of plastic in the environment. The bacteria were capable of rapidly hydrolysing plastics, with tests revealing that almost complete degradation of low-quality plastic occurred within six weeks.³⁰

5.29 The research team noted however that though these bacteria could prove useful in industrial recycling or pollution clean-up efforts, there remains significant research to be conducted. Similarly, the plastics industry is reported as having stated that the potential for biological processes to replace current mechanical recycling processes is small.³¹

5.30 The committee also notes that Dr Hardesty cautioned against trying to develop bacterial species to break down plastic as 'the issue is so ubiquitous and pervasive that it is sure to be compounded by some other significant challenges should such an approach be taken'.³²

27 Ms Terrie-Ann Johnson, Clean Up Australia, *Committee Hansard*, 18 February 2016, p. 38.

28 Mr Brendan Donohoe, Surfrider Foundation, *Committee Hansard*, 18 February 2016, p. 60.

29 Yoshida S., Hiraga K., Takehana T., Taniguchi I., Yamaji H., Maeda Y., Toyohara K., Miyamoto K., Kimura Y., Oda K., 'A bacterium that degrades and assimilates poly(ethylene terephthalate)', *Science*, Vol 351 Issue 6278, 11 March 2016, pp. 1196–1199.

30 Karl Mathiesen, 'Could a new plastic-eating bacteria help combat this pollution scourge?', *The Guardian*, 11 March 2016, <http://www.theguardian.com/environment/2016/mar/10/could-a-new-plastic-eating-bacteria-help-combat-this-pollution-scourge>, (accessed 18 April 2016).

31 Karl Mathiesen, 'Could a new plastic-eating bacteria help combat this pollution scourge?', *The Guardian*, 11 March 2016, <http://www.theguardian.com/environment/2016/mar/10/could-a-new-plastic-eating-bacteria-help-combat-this-pollution-scourge>, (accessed 18 April 2016).

32 Dr Britta Denise Hardesty, CSIRO, *Committee Hansard*, 26 February 2016, p. 4.

Reporting and collection of abandoned, lost and discarded fishing gear

5.31 As previously discussed, ALDFG poses particular risk to marine fauna through entanglement, and it can also pose risks to fisheries and shipping. As a result, the importance of reporting and collection has been given recognition under both international and domestic regulatory frameworks.

Regulation and government coordinated collection

5.32 Fishing gear, when lost, abandoned or discarded at sea is classified as garbage and there is a requirement under MARPOL Annex V, and associated domestic legislation, to report its loss. Fishing vessels are required to retrieve, where practicable, fishing gear which has been lost or damaged. In addition, ships' masters are required to record the loss of fishing gear in the Garbage Record Book or ship's log.³³

5.33 In addition to Commonwealth legislation, the National Environmental Law Association (NELA) noted that there are also legislative provisions for the reporting of lost fishing gear in New South Wales, Victoria, and the Northern Territory.³⁴

5.34 Along with reporting requirements when fishing gear is lost, there are legislative provisions for the collection and destruction of lost and abandoned fishing nets. At the Commonwealth level, the Department of the Environment has legislative oversight for managing harmful marine debris. The Threat Abatement Plan states that 'Australian Government agencies in collaboration with state and territory governments [are] to identify appropriate responses and responsibilities for recovery of hazardous debris at sea, notably large derelict fishing nets'.³⁵ These government agencies include:

- Australian Fisheries Management Authority;
- Australian Maritime Safety Authority;
- Border Protection Command;
- Department of Agriculture;
- Great Barrier Reef Marine Park Authority; and
- Department of the Environment.³⁶

33 Australian Maritime Safety Authority, *Pollution from Fishing Vessels*, <https://www.amsa.gov.au/environment/legislation-and-prevention/pollution-fishing-vessels/index.asp#pollution>, (accessed 8 March 2016).

34 National Environmental Law Association, *Submission 132*, p. 12.

35 CSIRO, *Submission 7*, Appendix 3, 'Input to Department of Environment Threat Abatement Plan', p. 14.

36 Department of the Environment, *Threat abatement plan for the impacts of marine debris on vertebrate marine life – Review 2009–2014*, p. 11.

5.35 Ms Kerry Smith, Senior Manager, Foreign Compliance Policy from AFMA told the committee that the 'management of ghost nets is a complex issue'. In addition, the arrangements for reporting and collection are dependent on the origins of the net, and where it is encountered, that is in the Australian Fishing Zone (AFZ) or coastal waters.³⁷

5.36 The AFZ was established under the *Fisheries Management Act 1991* (Cth) and relates to the management of Commonwealth waters which extend from three nautical miles from the coastline out to 200 nautical miles. Australian states and territories are responsible for management of coastal waters, that is, up to three nautical miles from the coastline.³⁸

5.37 Ghost nets which are found within three nautical miles of the coast are the responsibility of state and territory governments, while those found in the AFZ fall within the Commonwealth's jurisdiction.³⁹ Ms Smith explained that the Australian Border Force, within the Department of Immigration and Border Protection, is responsible for the management of eight key maritime threats within the AFZ. These threats include marine pollution, and the illegal exploitation of natural resources.⁴⁰

5.38 Ms Smith commented that under existing arrangements, reports on ghost net sightings within the AFZ are made initially to the Australian Border Force Maritime Border Command, and then information is disseminated to other government agencies if required.⁴¹ The Australian Maritime Safety Authority (AMSA) also told the committee that its 24-hour Rescue Coordination Centre can receive notifications of ghost net sightings—particularly if the net is large and poses a danger to the navigation of vessels.⁴² Under the Safety of Life at Sea (SOLAS) Convention, ships' masters are obliged to report dangers to navigation.⁴³

5.39 AFMA and the Department of the Environment have utilised a Memorandum of Understanding (MOU) for ghost net retrieval in Commonwealth Marine Reserves and adjacent Commonwealth waters. A civil contractor or Australian Border Force

37 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 27.

38 Department of Agriculture and Water Resources, *The Australian Fishing Zone*, <http://www.agriculture.gov.au/fisheries/domestic/zone>, (accessed 8 March 2016).

39 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 29.

40 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 27.

41 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 27.

42 Mr Toby Stone, Australian Maritime Safety Authority, *Committee Hansard*, 26 February 2016, p. 26.

43 Mr Toby Stone, Australian Maritime Safety Authority, *Committee Hansard*, 26 February 2016, p. 14.

assets are required to collect ghost nets.⁴⁴ Under the terms of the MOU, the cost of ghost net recovery is split equally between AFMA and the Department of the Environment. The average cost of ghost net recovery operations is \$30,000; however this does not include the cost of Australian Border Force surveillance activity or the costs associated with the destruction of the ghost net.⁴⁵

5.40 The committee received evidence that non-government organisations are also engaged in ghost net identification and retrieval programs. In particular, the GhostNets Australia program which initially commenced in 2004 with funding from the National Heritage Trust. GhostNets Australia is an alliance of Indigenous communities from coastal northern Australia who work with researchers to identify and remove derelict fishing nets from the coastal environment. It has also undertaken engagement with Indonesian communities to better understand the regional origins of ghost nets.⁴⁶

5.41 Though GhostNets Australia no longer receives funding from the Department of the Environment,⁴⁷ it continues to operate in conjunction with both public and private support. The federally-funded Working on Country program provides funding and support for the training and employment of Indigenous rangers who contribute to the work undertaken by GhostNets Australia.⁴⁸

5.42 The committee also received evidence that Australian industry bodies are actively participating in the identification and removal of ghost nets. AMSA informed the committee that the Northern Prawn Fishery Industry Association has developed a partnership with World Animal Protection, to monitor and where possible, retrieve nets in the Gulf of Carpentaria.⁴⁹

Difficulties in detection and disposal

5.43 A number of submitters highlighted the difficulties associated with the reporting and collection of ghost nets. These include difficulties in detection due to the nets being situated below the surface of the water, the remoteness of sighting

44 Australian Fisheries Management Authority, *Submission 33*, p. 2.

45 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 28.

46 Department of the Environment, *Threat Abatement Plan for the impacts of marine debris on vertebrate marine life Review 2009-2014*, p. 2.

47 Mr Stephen Oxley, Department of the Environment, *Committee Hansard*, 26 February 2016, p. 14.

48 Department of the Prime Minister and Cabinet, *Indigenous Rangers – Working on Country*, <http://www.dpmpc.gov.au/indigenous-affairs/about/jobs-land-and-economy-programme/indigenous-environment-branch/indigenous-rangers-working-country>, (accessed 8 March 2016).

49 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 29.

locations, and the size of ghost nets. In addition, the disposal of ghost nets can create environmentally harmful by-products.

5.44 Ms Smith commented that nets that travel below the surface can be difficult to detect by Australian Border Force air surveillance programs, though occasionally surface disturbances can allow for identification.⁵⁰

5.45 Work is being undertaken by the CSIRO to identifying the pathways travelled by ghost nets in the Gulf of Carpentaria. This research identified points where interdiction can occur before nets travel into areas of high biodiversity.⁵¹ The study found that the majority of nets found in the Gulf of Carpentaria travel close to the Port of Weipa, where they could be intercepted and removed. This could potentially provide a significant cost saving in recovery efforts; in addition, existing surveillance efforts currently service this area and would provide necessary reporting.⁵²

5.46 The Department of the Environment submitted that large fishing nets collected in remote locations are often too difficult to transport to waste facilities, and are burnt on-site to prevent them from re-entering the marine environment. However, this form of waste disposal results in 'significant clumps of cement-like burnt plastic' left on the beach.⁵³ This residue can prevent turtles from nesting in these locations.⁵⁴

5.47 In addition, though most nets are often recovered in fragments,⁵⁵ these fragments can still be of considerable size.⁵⁶ For example, in 2012, an 11 tonne ghost net was detected in coastal waters in the Northern Territory. The net was so large that it had to be cut it into pieces which were lifted from the site by helicopter, for destruction.⁵⁷

5.48 Mr Stephen Oxley, Department of the Environment, noted that seeking alternative methods of disposing ghost nets in remote areas was identified as a priority at the expert workshop held in August 2015 to discuss the development of the revised

50 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 29 and p.31.

51 Dr Britta Denise Hardesty, CSIRO, *Committee Hansard*, 26 February 2016, p. 9. See also CSIRO, *Submission 7*, Appendix 3, 'Input to Department of Environment Threat Abatement Plan', p. 14.

52 CSIRO, *Submission 7*, Appendix 3, 'Input to Department of Environment Threat Abatement Plan', p. 14.

53 Department of the Environment, *Submission 18*, p. 4.

54 Mr Stephen Oxley, Department of the Environment, *Committee Hansard*, 26 February 2016, p. 12.

55 Ms Kerry Smith, Australian Fisheries Management Authority, *Committee Hansard*, 26 February 2016, p. 28.

56 Department of the Environment, *Submission 18*, p. 4.

57 Northern Territory Seafood Council, *Submission 63*, p. 4.

Threat Abatement Plan. The workshop also advised that new technologies such as waste-to-energy systems should be explored,⁵⁸ and this was acknowledged in the Department of the Environment's submission. It noted that such systems could improve waste management in remote communities.⁵⁹

5.49 The committee received evidence that the aquaculture and fisheries industries are also engaged in developing innovative strategies to ensure that the owners of lost fishing gear can remain responsible for collection and removal. Dr Jennifer Lavers told the committee that in Tasmania, following complaints from local communities regarding lost items being washed ashore, a number of aquaculture companies developed a system to tag their equipment. Dr Lavers stated that local communities can now contact the responsible company to collect their nets.⁶⁰

5.50 The CSIRO indicated that it is exploring innovative technologies which will allow for fishing gear to be marked so that it can be identified as originating from a particular fishery. The CSIRO stated that microdots encoding information on small dots could be incorporated into fishing gear. In addition, chemical marking of the ropes used to make fishing nets would enable ownership identification even in small fragments. The CSIRO stated that both microdot technology and chemical marking are widely used in other industries, but have not been previously used in the fishing industry.⁶¹

Need for national coordination

5.51 The committee received evidence from submitters who were concerned that there is an apparent lack of coordination in the reporting and collection of ghost nets.

5.52 The Northern Territory Seafood Council stated that nets are currently removed on an 'ad hoc basis' by a range of government departments at both the Commonwealth and the state and territory level. The Northern Territory Seafood Council also expressed frustration that there appears to be a 'lack of responsibility' for the retrieval of lost and discarded fishing gear in the AFZ. It highlighted that Australian fishers are required to report ghost nets as a navigational hazard, and this information is added to marine chart updates, but there does not appear to be anybody responsible for ghost net removal.⁶² It noted that there can be a long lag time between the reporting of ghost net sightings, and collection and removal. This lag time results in the net sinking or drifting to another location, rendering the report useless. The lack

58 Mr Stephen Oxley, Department of the Environment, *Committee Hansard*, 26 February 2016, p. 12.

59 Department of the Environment, *Submission 18*, p. 4.

60 Dr Jennifer Lavers, *Committee Hansard*, p. 8.

61 CSIRO, *Submission 7*, Appendix 3, 'Input to Department of Environment Threat Abatement Plan', p. 22.

62 Northern Territory Seafood Council, *Submission 63*, p. 4.

of timely response also renders the practice of updating marine charts useless, as the nets' locations are no longer accurate.⁶³

5.53 The Northern Territory Seafood Council noted favourably the work undertaken by organisations such as GhostNets Australia but highlighted that there is little coordination between non-government organisations. It also stated that these organisations operate with little funding certainty, or a plan for managing the issue at a regional level.⁶⁴

5.54 NELA also commented that coordination of relevant Commonwealth agencies to retrieve and dispose of ghost nets was 'ineffective'. It considered that this matter should be 'resolved as a matter of urgency'.⁶⁵

Need for regional cooperation

5.55 As the majority of ghost nets found in the north of Australia have been identified as originating from regional countries, the Australian Government has designated regional cooperation as a key mitigation strategy.

5.56 The Department of the Environment informed the committee that it supported project work undertaken by GhostNets Australia, and the CSIRO in conjunction with the National Oceanic and Atmospheric Administration (US) and the Indonesian Ministry for Marine Affairs and Fisheries. The intention of this project is to reduce the incidence of derelict fishing gear in the Arafura Sea and through engagement with local fishers, port authorities, local communities and stakeholders. The project is designed to identify the reasons for fishing gear loss, and potential mitigation strategies.⁶⁶ Dr Hardesty added that work is being undertaken with overseas neighbours to look at fisheries related gear and when, how and why fisheries are losing their gear. Issues will then be able to be addressed.⁶⁷

5.57 The Department of the Environment also provides overseas development aid to support the Coral Triangle Initiative for Coral Reefs, Fisheries and Food Security. This includes \$70,000 for the development of a pilot fisheries management strategy for the Arafura Sea. The aim of the project is to assist small scale commercial fishers in managing the loss of fishing gear, and prevent the eventual movement of ghost nets into Australian waters.⁶⁸

63 Northern Territory Seafood Council, *Submission 63*, p. 4.

64 Northern Territory Seafood Council, *Submission 63*, p. 4.

65 National Environmental Law Association, *Submission 132*, p. 17.

66 Department of the Environment, *Submission 18*, p. 5

67 Dr Britta Denise Hardesty, CSIRO, *Committee Hansard*, 26 February 2016, p. 7.

68 Department of the Environment, *Submission 18*, p. 5

5.58 The need for enhanced regional cooperation and the prevention of fishing gear loss at the source was also supported by NELA. It submitted that there 'is a need for technical support to help Indonesian fishermen aggregate location data on derelict nets'. In addition, it submitted that the Australian government should also provide aid through low interest loan programs for fishing gear labelling, and inventory and reporting systems.⁶⁹

Committee view

5.59 The committee accepts that though clean-up activities are an important strategy in removing existing pollution, and raising public awareness, they alone cannot reduce the threat of marine plastic. It was consistently highlighted throughout the inquiry that the rate of plastic pollution entering the marine environment far outstrips any clean-up activity, and that source reduction should be the focus of research, policy and investment.

5.60 The committee also notes that the processes currently utilised in the identification, retrieval and disposal of ALDFG are complex, and involve multiple agencies across both Commonwealth and state and territory governments. Additionally, non-government organisations such as GhostNets Australia play a significant role in clean-up activities. The need for a review of such processes was emphasised by a number of witnesses, as it would provide an opportunity for the identification of areas for improvement and role clarification.

5.61 The evidence indicated that the need for cooperation and coordination is not only required domestically, but regionally. There are a number of opportunities for Australia to demonstrate regional leadership on this issue, and to further develop relationships with regional governments and communities.

69 National Environmental Law Association, *Submission 132*, p. 18.