



**SURFERS  
AGAINST  
SEWAGE**

# MARINE LITTER REPORT



**2014 - 2020 VISION**

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World Animal Protection is active in more than 50 countries. From their offices around the world, they work with local partners, animal welfare organisations, businesses and governments. They help people to find practical ways to prevent animal suffering worldwide. They collaborate with national governments and they have formal relationships with international bodies including the Food and Agriculture Organization, the United Nations Environment Programme, the Council of Europe and the World Organisation for Animal Health (OIE). They seek national and international policy change to improve the lives of millions of animals, because animal protection is a fundamental part of a sustainable future.

## PREFACE

Marine litter is an environmental problem on a global scale adversely impacting human health, the economy and wildlife. It contaminates our oceans from the poles to the equator, and from sea surface and shoreline to the deep sea. It is hazardous to seafarers and beach users, has substantial economic consequences through lost production time and clean up costs for relevant local authorities. Perhaps most widely documented are encounters with wildlife, which can result in direct harm and death. Well over 600 species of marine organisms are reported to encounter marine litter and the majority of these encounters are with plastic items.

Frustratingly the issue of marine litter is a problem that can be solved. The majority of the items that become marine litter are single-use disposable items including packaging and sewage related debris. Such items can bring considerable societal benefits, for example in terms of food security and reducing transport related carbon emissions, however these advantages can be realised without the need for release of litter to the oceans. Hence the long term solutions lie in recognising that if designed, used and disposed of appropriately, then end-of-life items that currently accumulate in waste management facilities and as litter in the natural environment can be used as a resource for production of new products. Working toward a circular economy of this kind will help reduce our reliance on non-renewable resources and simultaneously reduce the quantity of waste requiring disposal.

This report by Surfers Against Sewage considers the environmental, social and economic problems caused by marine litter, drawing together peer-reviewed scientific literature, and reports by major government and non-governmental organisations. The report identifies key drivers for change. Reducing marine litter is a challenge requiring positive actions across society from the public, industry and policy makers. Raising awareness about issues relating to marine litter is therefore of key importance.

Richard Thompson

Professor of Marine Biology, Plymouth University, UK



# EXECUTIVE SUMMARY

- Surfers Against Sewage is calling for a 50% reduction in UK beach litter by 2020.
- The amount of litter found on UK beaches has consistently risen for the last 20 years.<sup>1</sup>
- In parts of the ocean there is now more plastic than plankton.<sup>2</sup>
- Approx. 8 million individual pieces of marine litter enter the sea every day.<sup>3</sup>
- 1 million sea birds and 100,000 marine mammals die annually from ingestion of and entanglement in marine litter.<sup>4</sup>
- Local Authorities in the UK spend approximately £18 million each year removing beach litter, which represents a 37% increase in cost over the past 10 years.<sup>5</sup>
- The Marine Strategy Framework Directive (MSFD) offers EU Member States the opportunity to take coordinated and effective action to significantly reduce levels of marine litter by 2020.
- The UK Government has been criticized in its approach to addressing marine litter in the European Commission Technical Assessment of the MSFD Obligation for the United Kingdom,<sup>6</sup> which highlighted a poor level of implementation, inter-country coordination, lack of understanding of the overall environmental aims and the adoption of weak and un-measurable targets.
- The MSFD requires EU Member States to agree a new programme of environmental measures to tackle marine litter by 2015 to implement from 2016. Monitoring and evaluation of progress will take place in 2018.



- This report presents new strategies and measures across government, industry and the public that could be explored and implemented to surpass the UK's current Marine Strategy Framework Directive targets with an aim to reduce beach litter by 50%.
- Surfers Against Sewage is calling for radical measures including:

## Personal Behavioral Changes

- Refusing single-use plastics.
- Increasing community beach clean activities.
- Encouraging communities to take legal action against irresponsible landowners.

## Industry

- Introducing extended producer responsibility.
- Introducing container deposit schemes.
- Removing plastic components from all sanitary products.

## Legislation

- Banning smoking on beaches.
- Introducing prominent environmental health warnings on single-use packaging.
- Banning balloon releases.
- Enforcing fines for littering at beaches.
- Surfers Against Sewage aims to inspire and mobilise 25,000 beach clean volunteers annually by 2020.
- From 2015, data from Surfers Against Sewage beach cleans will be submitted to the Department of the Environment, Food & Rural Affairs to contribute to the monitoring, evaluation and progress in delivering cleaner and safer beaches by 2020.

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**1 INTRODUCTION** Take a stroll along any beach in Britain and you are likely to come across marine litter – plastic bottles, pieces of fishing net, food wrappers, the odd shoe. . . . Look closer, amongst the sand and seaweed, and you'll begin to see the nature and scale of the problem – a multitude of tiny, persistent seaside souvenirs from today's disposable society. Surfers Against Sewage (SAS) believes that the scale of the problem has now reached crisis level and, with the publication of this timely report, is calling for a 50% reduction in marine litter on UK beaches by 2020. The catalyst for SAS's ambitious target is the Marine Strategy Framework Directive (MSFD)<sup>7</sup>, Europe's current key piece of legislation supporting the protection and sustainable use of the marine environment. Over the next five-year period (2015 – 2020), SAS will collaborate with government, charities, scientists, industry, communities and individuals to work towards this radical target. Surfers Against Sewage's Marine Litter Report explores the scale of the marine litter crisis, suggests innovative solutions and sets out an action plan of new measures aimed at every section of society to tackle the marine litter crisis in ever more effective ways and at a much faster pace.

## 1.1 THE MARINE STRATEGY FRAMEWORK DIRECTIVE

What is marine litter?

The Marine Strategy Framework Directive defines marine litter as:

*"..any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment"*

The Marine Strategy Framework Directive (MSFD) is the European Union's (EU) current legislative tool to help protect Europe's marine environment. As the most significant piece of EU legislation relating to the marine environment, the MSFD has helped inform and shape this report. It sets out specific targets and timeframes to tackle marine debris and specifically calls for actions and measures to control and monitor levels of marine litter. The Directive specifically requires EU member states to monitor and address the growing marine litter crisis with effective measures to ensure the marine environment achieves or maintain Good Environmental Status (GES) in their waters by 2020. Member States have already undertaken preliminary assessments of the current state of their seas & coastlines, and have agreed an initial approach to delivering Good Environmental Status. In relation to marine litter, GES should mean that it does not cause harm to the environment by 2020.

However, disappointingly the UK Government has been criticized in its approach to addressing marine litter in the European Commission Technical Assessment of

the MSFD Obligation for the United Kingdom,<sup>6</sup> which highlighted a poor level of implementation, inter-country coordination, lack of understanding of the overall environmental aims and the adoption of weak and un-measurable targets.

Surfers Against Sewage believes that the UK urgently needs to do more to tackle marine litter and that the MSFD offers an unprecedented opportunity for collaboration, coordination and action on the issue over the next five years. The appetite amongst coastal communities, business leaders and organisations seeking stronger and more ambitious leadership on solutions seems to be at all-time high.

Moving forward, EU Member States have to agree a new programme of environmental measures by 2015 and implement them from 2016. The publication of this timely Surfers Against Sewage report is aimed at directly and positively influencing the selection of measures, presenting potential new solutions, supporting effective monitoring & evaluation of targets and helping coordinate initiatives that bring together communities, industry and government to deliver positive environmental change for UK beaches. We believe that the UK Government must seize this vital opportunity to strengthen the UK's ambitions for the protection of waves, oceans and beaches nationwide. More detailed information on the MSFD and other important pieces of legislation, conventions and international treaties to prevent marine litter can be found later in this report.

## 2 THE MARINE LITTER CRISIS

### 2.1 THE FUNDAMENTAL CAUSE OF MARINE LITTER

The Marlin Baltic Marine Litter Report refers to marine litter as ‘a waste that nobody owns and nobody takes responsibility for’.<sup>8</sup> This attitude has to change from the top down and from the bottom up.

Marine litter is, fundamentally, a problem created by our modern lifestyle; by the type and quality of products we demand or that industry imposes on us, by the scale of our consumerism, and by society’s attitude towards resources, waste and the environment.

The magnitude of the problem is daunting. But, because marine litter is the result of the way we choose to live, it is also an issue that can be addressed through making better choices. Raising awareness of the true environmental, social and economic costs of marine litter will be key in bringing about the societal, industrial and political change needed to tackle marine litter.

Industry has a crucial role to play in reducing the amount of litter entering our seas. Where prosperity is measured in terms of profit margins, wider ethical responsibilities are all too often lost in the drive to increase revenue. Weak legislation and inadequate enforcement have only served to make an existing problem worse. For too long we have heard the argument that industry is simply giving consumers what they demand. But this excuse to justify everything from the manufacture of questionable products to defending unnecessary layers of packaging is not acceptable. Much of what we consume today is unnecessary – a luxury that the environment can no longer afford. Everything we consume and then discard contains finite natural resources taken from the ground, the air, the ocean and our forests that cannot always be replaced. As waste it then pollutes the natural world. It is now time for businesses at each stage in the production

process, from inception to end of life, to be held to account for their impacts on the environment. They must engineer out waste and close the loop on litter.

“Everything manufactured comes with a cost that exceeds its price.”

**Yvon Chouinard, The Responsible Company & Founder of Patagonia**<sup>9</sup>



## 2.2 THE SCALE OF THE PROBLEM

### 2.2.1 THE PROBLEM ON A GLOBAL SCALE

Marine litter is ubiquitous. Debris circulates around the globe, transported away from areas of human activity to end up, stranded, on deserted equatorial islands and uninhabited polar shores. Every stretch of coast in every ocean is affected. It floats as dense patches on the sea surface, drifts suspended within the water column and accumulates in layers on the seabed. There are an estimated 46,000 pieces of marine litter floating on every square mile of ocean.<sup>10</sup> Whilst the infamous Great Pacific Garbage Patch, discovered in 1997 by Captain Charles J. Moore,<sup>11</sup> is known by many as the area where ocean currents converge and 'deposit' billions of pieces of plastic. There are in fact 5 great oceanic garbage patches around the globe, including one in the North Atlantic,<sup>12</sup> the closest to the UK. Powerful ocean currents sweep across thousands of miles of ocean transporting plastics and other marine debris along with them until they reach the ocean gyre, where they can remain trapped. Shockingly, Captain Moore noted there is more plastic than plankton in the Pacific Gyre.<sup>2</sup> Finally, we must not forget that litter frequently drifts below the sea surface, suspended within the water column and, eventually sinking, accumulates in layers on the seabed.

Marine litter is an ever-increasing problem that threatens wildlife, livelihoods and human health. The precise extent of the problem, either in terms of inputs or impacts, is difficult to quantify, but it is widely accepted that, despite decades of legislation and initiatives, the problem is worsening. The reasons for this are complex though inextricably linked to the growth in human population and our insatiable demand for plastic-based products.

The significance of plastic cannot be underestimated. Whilst marine litter is not a new phenomenon, in the past the debris consisted of natural occurring materials, which broke down rapidly on entering the sea. Container packaging, for example, was typically wood, glass or metal based, whilst fishing gear was made from cotton fibres or sisal, though this all changed with the wide spread application of plastics in the 1930's. But today, the majority of marine litter entering the sea is synthetic, and so instead of biodegrading, they fragment, persist and accumulate over time. It's a frightening fact, but every piece of plastic that has ever been produced, is still in the environment today with the exception of the plastics we've incinerated.

**Factoid** - 70% of marine litter sinks to the seabed, 15% continues to drift within the water column and 15% ends up on beaches.<sup>13</sup>

**Factoid** – the human population is growing by 80 million people a year (1.14%).<sup>14</sup>



**Factoid** - Annual input of global marine litter into the sea 6.4 million tonnes.<sup>15</sup>

**Factoid** - Approx. 8 million individual pieces of marine litter enter the sea every day.<sup>16</sup>

**Factoid** - A plastic bottle, discarded on a beach today, could persist in the marine environment for 450 years.<sup>17</sup>

**Factoid** - Microscopic plastic particles occur in the pelagic and sedimentary habitats at concentrations of 150-2,400 per m<sup>3</sup>.<sup>16</sup>

## 2.2.2 THE SCALE OF THE PROBLEM ON UK BEACHES

The issue of marine litter is felt particularly strongly in the UK. As a developed nation on a small, densely populated island, with an average of 265 people per km<sup>2</sup><sup>18</sup> we generate vast amounts of litter, which often end up on our coasts. The situation is made worse by our geographical location; the English Channel is home to the world's busiest shipping lane, whilst our proximity to the industrialised nations of Northern Europe mean that significant quantities of litter, produced elsewhere, wash up on our shores. In addition, litter discarded thousands of kilometres away from different continents, is transported across the Atlantic on the Gulf Stream and accumulates on the western coasts of Britain.

**Factoid** - Over the past 15 years the amount of litter washing up on UK beaches has almost doubled.<sup>19</sup>

**Factoid** - Plastic litter on beaches has increased 140% since 1994.<sup>20</sup>

**Factoid** - 2,309 items for every km of beaches surveyed.<sup>21</sup> This equates to 41,146,380 pieces of marine litter along the UK's mainland coast of 17,820km.

Image: Greg Martin



## 2.3 SOURCES OF MARINE LITTER

Central to the difficulty in assessing just how much marine litter is entering the environment is determining where it comes from. Marine litter originates from a multitude of land and sea based sources. Beach and coastal users, of course, discard litter, but other land based sources include inland or coastal landfills (and the wind borne or riverine transport of waste away from these sites) as well as domestic, industrial and agricultural litter transported from sources along rivers to the sea. Debris, known as Sewage Related Debris (SRD), is also contained within untreated sewage deposited at the coast via sewage outfalls or from any one of the estimated 31,000 sewer overflows that are located around the UK.

Sea-based sources of litter predominantly derive from merchant shipping (the transportation of people and cargo), fishing vessels and pleasure craft, military and research vessels, the offshore industry (energy and mining) as well as fish farm installations.

Image: Andy Hughes

**Factoid** – Globally 80% of marine litter originates from land based sources.<sup>16</sup>

**Factoid** - Approx. 58% of marine litter is attributed to shoreline and recreational activities.<sup>22</sup>

**Factoid** - 10% of global marine litter is discarded fishing gear, which continues to catch fish, birds, dolphins - a phenomenon known as ghost fishing.<sup>23</sup>

# SOURCES OF MARINE LITTER



- 1 SEWAGE RELATED DEBRIS
- 2 LITTER DROPPED IN TOWNS AND CITIES
- 3 POORLY MANAGED BINS AND LANDFILL SITES NEAR THE COAST
- 4 LOST FISHING EQUIPMENT
- 5 SHIPPING MATERIALS LOST OVERBOARD
- 6 POORLY MANAGED INDUSTRIES
- 7 LITTER DROPPED AT THE BEACH

## 2.4 TYPES OF MARINE LITTER

From fridges to fishing nets, caps to cotton bud sticks, balloons to bottles, wrapping and strapping there is a bewildering array of litter in the marine environment. There are various ways to categorise marine litter, though typically it is classified into the following:

- Cardboard & paper – including cups, bags & cartons.
- Glass – including bottles, light bulbs, fluorescent globes & fragments.
- Metal – including drink cans, tins, aerosol cans, foil wrapping & disposable BBQs.
- Plastics – moulded, foamed, fishing nets, ropes, buoys, monofilament line, cigarette butts, lighter, drinks bottles, food packaging, micro-plastic particles & plastic nurdles.
- Processed timber – including pallets, crates & chipboard/hard board.
- Rubber – including tyres, balloons & gloves.
- Sewage Related Debris – including cotton bud sticks, nappies, condoms & other sanitary products.
- Textiles & clothing – including shoes, clothing & furnishings.

For the past 20 years the Marine Conservation Society Beachwatch surveys have helped provide an insight into the types of marine litter that wash up on our beaches, showing the prevalence of fragments of plastic, fishing net and glass, caps and lids, cigarette butts, and plastic bottles on UK shores.

**Factoid** – on the 10th January 1992, 28,800 plastic animals (7200 red beavers, 7200 green frogs, 7200 blue turtles, 7200 yellow ducks) were lost overboard in the North Pacific from the Greek owned, Taiwanese operated Ever Laurel ship. Over 20 years later they are still washing up in Alaska to Australia and even landed in the UK after drifting through the North West passage as early as 2003.<sup>24</sup>

**Factoid** - Nurdles – also known as Mermaids' Tears, are plastic pellets, typically 5mm in diameter. They are a raw material in plastics manufacturing and enter the sea when spilled. They are found by the thousand on beaches and floating at the sea's surface.

**Factoid** - Cigarettes - 4.5 trillion cigarette butts enter the environment every year.<sup>25</sup> Inevitably a proportion will be discarded or end up on our beaches where they leach toxic chemicals into the environment and partially breakdown into tiny plastic fibres which are then ingested by marine animals causing, blockages, starvation and inflammation. Filters are comprised of cellulose acetate (not paper). Concentrated within discarded filters are deposits of tars and chemicals such as cadmium, lead and arsenic, which leach toxic chemicals out into the surrounding seawater; or directly into any organism who ingests them. One cigarette filter has enough toxins to kill water fleas in 8 litres of water.<sup>26</sup>

# THE USUAL SUSPECTS

litter items found at SAS beach clean events around the UK



**PLASTIC BAG**  
FRAGMENTS IN  
100-300 YEARS  
depending on thickness and  
size, but will remain at large in  
the environment indefinitely



**FISHING LINE**  
FRAGMENT IN 100-1,000  
YEARS  
depending on size and  
environmental factors, but will  
remain at large in the  
environment indefinitely



**PLASTIC NURDLES**  
AKA Mermaids' Tears  
FRAGMENTS IN  
100 YEARS  
but will remain at large in  
the environment indefinitely



**CIGARETTE BUTTS**  
FRAGMENTS IN 12 YEARS  
butts are made from the  
cellulose acetate, and like  
plastics they will fragment but  
remain at large in the  
environment indefinitely



**CRISP & SWEET  
WRAPPERS**  
FRAGMENTS IN  
100-300 YEARS  
but will remain at large in  
the environment indefinitely



**COTTON BUD STICKS**  
FRAGMENT IN  
150 YEARS  
but will remain at large in  
the environment indefinitely



**PLASTIC BOTTLES**  
AKA Mermaids' tears  
FRAGMENTS IN  
450-1,000 YEARS  
depending on size, but  
will remain at large in the  
environment indefinitely



**DRINK CANS**  
RUSTS AWAY BETWEEN  
200-400 YEARS

Plastic and polystyrene will fragment into smaller and smaller pieces but these resilient materials will remain in the environment as no organisms have evolved to utilize plastic as food source.

## 2.5 MARINE LITTER – WHAT'S THE PROBLEM?

As well as being an obvious eyesore, marine litter has a very real cost to the environment, society and the economy.

### 2.5.1 THE ENVIRONMENTAL COST

The impact of marine litter on the natural environment is devastating and indiscriminate, affecting both the living organisms themselves and the habitats in which they live. Marine animals, from fish to dolphins, seabirds to seals, can become entangled in discarded fishing gear or cargo strapping, dying from their injuries, suffocating, drowning or starving. They eat marine litter, mistaking plastic debris for food items - floating plastic bags for jellyfish, plastic nurdles for fish eggs - which chokes them & blocks their digestive system, leading to starvation and death. Fishing line is used as nesting material for seabirds; chicks are ensnared and never fledge. Plastic sheeting smothers the sea floor preventing photosynthesis and the movement of animals, gases and nutrients, while larger solid items, dragged along by currents, scour fragile benthic habitats, destroying the plants and animals in their path. Marine litter also acts as a vector for invasive species; floating debris transports 'alien' organisms around the world, introducing new species into places where they outcompete or predate native organisms.<sup>27</sup>

Surfers Against Sewage is working with World Animal Protection on the growing threat of ghost gear, an issue that truly haunts the World's oceans. Over the coming year, World Animal Protection will be assessing the scale of this issue and driving forward solutions through its Sea Change campaign, working with communities and industry, to safeguard the lives of hundreds of thousands of marine mammals and birds.

## 2.5.2 TOXIC PLASTICS

Perhaps even more alarmingly, the effects are not just physical. Plastics contain chemical additives, which when ingested, are introduced into the marine food web. These synthetic substances, such as phthalates and parabens, do not readily break down, and the toxins then biomagnify as they are transferred up the food chain as one species eats another. Contaminants also leach out of debris, dispersing in the water column and accumulating in sediments. In addition, plastic debris attracts and concentrates other marine pollutants such as polychlorinated biphenyls (PCBs), Dichlorodiphenyldichloroethylene (DDE) and nonylphenols,<sup>29 30</sup> allowing these substances to be added to the food chain when the debris is eaten.

### Chemical Factoids

- Due to its stability in fat, DDE is rarely excreted from the body, and body levels tend to increase throughout life. The major exception is the excretion of DDE in breast milk, which delivers a substantial portion of the mother's DDE burden to the young animal or child.<sup>31</sup>
- Phthalates - used in cosmetics, soaps, shampoos, nail polish, and skin moisturisers. They are also used to make plastics more flexible. They can be absorbed through the skin and accumulate in the fat tissue of mammals. They are classified as toxic to reproduction and carcinogenic.<sup>32</sup>
- Endocrine disruptors. Almost all plastic products release chemicals, which act as endocrine disruptors. This means that, if ingested, these chemicals can alter the function of the endocrine system and lead to reproductive abnormalities, birth defects and impaired development in wildlife and humans.<sup>33</sup>

## 2.5.3 FISHING'S PHANTOM MENACE: GHOST FISHING GEAR

World Animal Protection's Sea Change campaign aims to save one million marine animals from the massive pain and distress caused by 'ghost gear' – abandoned fishing gear that turns oceans into death traps for sea animals.

### 2.5.3.1 THE UK'S GHOST FISHING GEAR PROBLEM

Over 640,000 tonnes of fishing gear are left in oceans globally each year. That's almost 2000 tonnes every single day.<sup>34</sup>

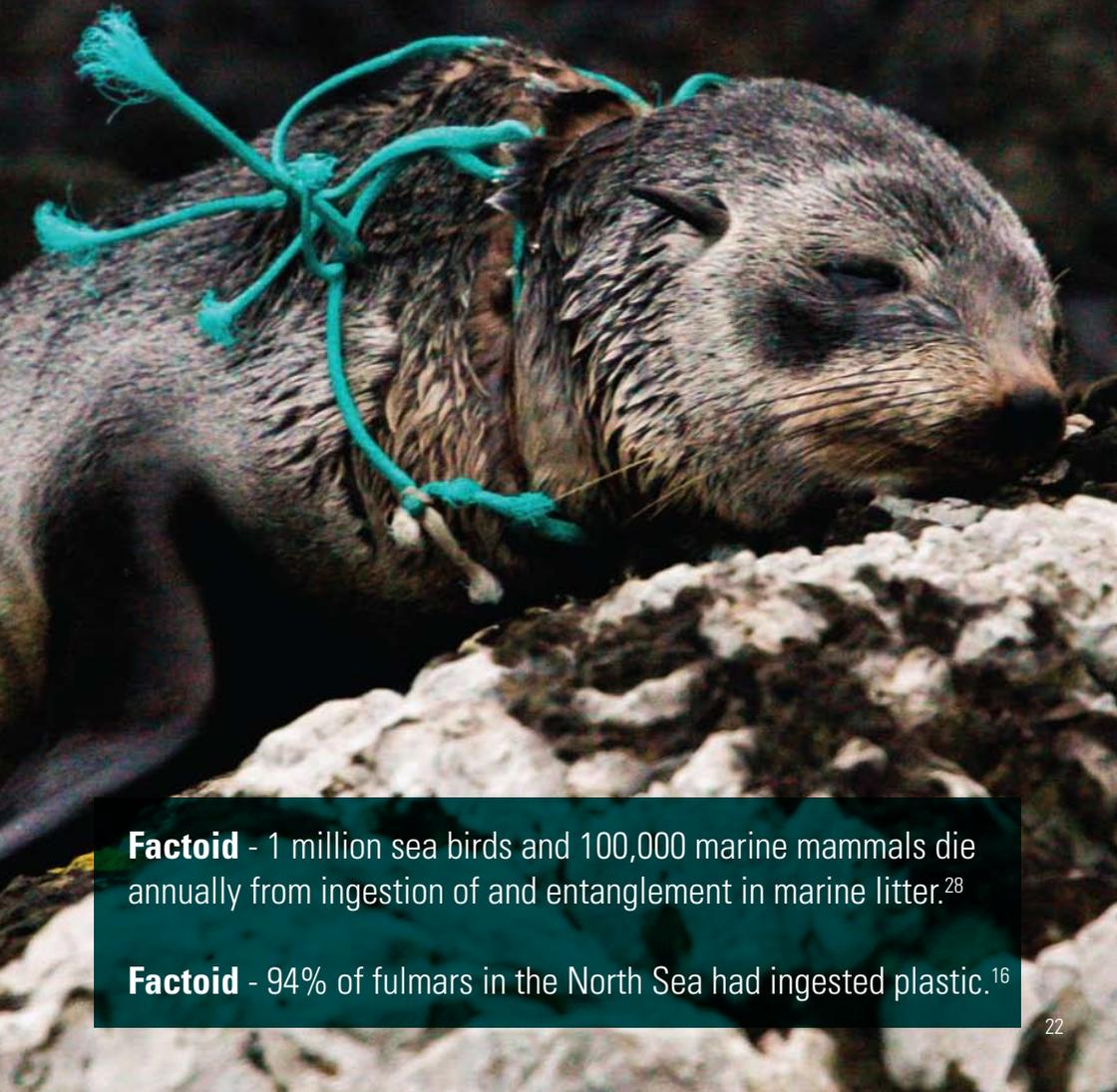
World Animal Protection's new campaign, Sea Change, hopes to protect more than 8,000 marine species that live and breed around the coasts of the British Isles from the devastating impact of this 'ghost' gear.<sup>34</sup> This includes some of the UK's best-loved species, such as whales, dolphins, porpoises, seals, seabirds and turtles.

Animals share waters with the UK fishing fleet – the sixth largest in the European Union, with 6,406 vessels at the end of 2012. The commercial fishing vessels operating in the UK accidentally or even deliberately discard fishing nets and lines, which build up in the sea or wash up on our beaches.

Recent beach clean-up data has revealed that almost 13 per cent of the litter collected on 254 beaches across the UK in 2013 was fishing-related, making it one of the top ten causes of marine litter.<sup>35</sup>

Although the full extent of the ghost gear problem in UK waters is largely unknown right now, it is clear that a significant amount of marine animals are continuing to suffer from entanglement in ghost fishing gear.

**Factoid** - 'Ghost' gear is the term used for abandoned, lost or discarded fishing gear (ALDFG) that can continue to catch fish and other wildlife for years. Monofilament line is almost invisible and cannot be detected by sight or echolocation. Along with trawl net, it is extremely tough; once an animal is caught, even one with the strength of a whale, it cannot break free.



**Factoid** - 1 million sea birds and 100,000 marine mammals die annually from ingestion of and entanglement in marine litter.<sup>28</sup>

**Factoid** - 94% of fulmars in the North Sea had ingested plastic.<sup>16</sup>

### 2.5.3.2

## SPECIES SNAPSHOT: HOW DOES GHOST GEAR HARM ANIMALS?

### Seals

Seals tangled up in ghost gear usually have a ring of rope, fishing net or monofilament line forming a collar around the neck or a flipper, which they can't remove. The loop effectively tightens like a noose as the seal grows or, if it is fully grown, the loop cuts into the tissues and becomes firmly embedded in skin, muscle and fat.

A fur seal entangled in a submerged and anchored net, which prevents it from surfacing to breathe, will experience intense distress, panic and suffering before drowning after several minutes.

### Cetaceans

Whales, dolphins and porpoises of all sizes can become entangled in and killed by fishing gear, floating rope and ghost nets.

Coastal species of cetaceans appear particularly vulnerable as their habitats are affected by human activities – notably, fisheries.<sup>36</sup>

A whale entangled in a long rope may face chronic and increasingly intense pain and distress (over months, or even years), as a result of the line cutting into its body compromising feeding and movement.

### Turtles

The Leatherback turtle is the most common species of turtle found in British waters and its global status is critically endangered. Although there is limited research into turtle entanglement, studies into by-catch (where unintended animals are caught up in commercial fishing gear) concluded this poses a widespread threat to marine turtles.<sup>37 38 39</sup> Rope entanglement occurs predominantly between July and October, on the north, west and south-west coasts of the UK, when the turtles migrate to our waters to feast on jellyfish.<sup>40</sup>

### Seabirds

Some seabirds, such as Gannets, which collect all their nesting material at sea, are known for collecting marine debris for nesting material and becoming entangled, resulting in tragic consequences. These birds may not be able to dive, nest or fly and may suffer from incisions into their limbs by rope, line or plastic, potentially leading to infection or eventual amputation.

A study on Grassholm Island into Northern Gannets found that mortality rates due to entanglement were high and 75% of entanglements were young nestlings.<sup>41</sup>

### 2.5.3.3 HOW MUCH GHOST GEAR IS IN THE SEA?

Despite fishing net and line washing up on shores, showing up in animals' stomachs during post-mortems and fouling the propellers of boats, it's extremely difficult to say exactly how much ghost gear is in the sea.

Anecdotal survey data from boats around the British Isles suggests that floating gear can be seen on a daily basis.

But the nets snagged on wrecks and rocks, buried half in the sand on the sea bed or drifting below the surface remain invisible to marine users, pose a deadly threat to animals.

Studies on ghost gear in some UK fisheries have concluded that gear loss is a very frequent occurrence, with tens of kilometres of nets lost annually even by small fleets, which when you consider the UK fleet has a total of 6,406 vessels, this is an alarming figure.

In the hake fishery in the English Channel and Western Approaches, 12 vessels on average lost around five nets per year each measuring a total length of 12km. Around 50 per cent were recovered.<sup>42</sup>

In the tangle net fishery off the southern tip of Cornwall it was found that 18 vessels lost 263 nets per year. This amounted to a total length of 24km; only around one third of nets were recovered. The 26 vessels operating on the wreck fishery lost sections of nets on every trip, due to snagging, in 884 incidents.<sup>43</sup>

Beyond the animal welfare impact of ghost fishing gear, there are significant costs to the local fishing industry and councils.

#### What are the Economic Costs?

**The cost implications on the fishing industry of ghost gear include:**

- Repairing damage to fishing gear and the vessel
- Replacement of lost gear
- Reduced and/or contaminated catch
- Loss of earnings due to reduced fishing time

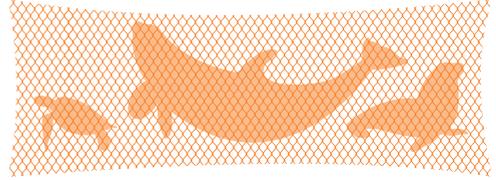
On top of this, vessel disentanglement and rescue costs are high. In 2008, there were 286 rescues of vessels with fouled propellers in UK waters, costing between £830,000 and £2,189,000. There are additional clean-up costs to UK councils, who spend £18 million each year removing beach litter (2010 estimate).<sup>5</sup>

# Join us in making a Sea Change

Beneath the ocean's surface lies a deep problem...



Every year, 640,000 tonnes of ghost fishing gear is lost or discarded in our oceans.



Nets, lines and traps become floating death traps, entangling our marine animals.



Combined, it weighs more than the RMS Titanic.

136,000

136,000 seals and whales are trapped every year.



World Animal Protection commits to saving 1 million marine animals by 2018 through the Sea Change campaign.

► [worldanimalprotection.org](http://worldanimalprotection.org)

## 2.5.3.4 WHAT IS WORLD ANIMAL PROTECTION DOING?

By bringing together governments, businesses and fishing organisations to work on shared solutions, they hope to protect sea life and move towards a future free from the ghost fishing gear threat.

With their Sea Change campaign, the global charity is working in three key ways to protect animals from ghost fishing gear. They are:

- Bringing together partners to stop gear being abandoned
- Supporting new ways to remove ghost gear from the seas
- Helping to replicate successful local sea animal rescue efforts

### **Working with the Public**

World Animal Protection believes the public are vital in highlighting the scale of the problem and harnessing our collective power to bring about change.

From beach cleans to diving for litter, anyone who loves the ocean can act now to start saving animals from the devastating effects of ghost fishing gear.

Over the coming months, the public will also be able to exercise their power as consumers by helping us to ensure that supermarkets and other fish suppliers are obtaining their products from responsible sources.

**To find out how you can get involved, visit** [www.worldanimalprotection.org.uk/seachange](http://www.worldanimalprotection.org.uk/seachange)

### **Engaging with the UK Government**

World Animal Protection has a proud track-record of working with the UK Government to bring about positive change for animals. The charity believes that alongside the public and fishing industry, the UK Government has a pivotal role to play in solving the ghost gear problem, by encouraging responsible fishing practices and working with partners to measure the extent of the problem in UK waters.

### **Talking with the Fishing Industry**

Seafood companies and supermarkets hold the power to make sure change happens throughout the fishing supply chain. World Animal Protection wants companies to take responsibility for their supply chains and ensure that they source food from fisheries demonstrating best practice for gear disposal.

Companies will be able to show their support for changing the tide of this problem by sponsoring positive industry initiatives such as gear marking trials, net recycling schemes and marine litter collection programmes.

### Global Ghost Gear Initiative

As part of the Sea Change campaign, World Animal Protection is founding the Global Ghost Gear Initiative (GGGI), a cross-sectoral alliance uniting people with the expertise, power and influence to understand and solve the problem of ghost fishing gear at a global scale. By forging this collaboration, they will save the lives of millions of marine animals, and create safer, cleaner oceans.

The Global Ghost Gear Initiative aims to unite people with the expertise, influence and power to tackle the problem at scale. Together they will develop solutions for ghost-gear-free seas by:

- Sharing data, intelligence and resources to understand the scale of the problem and its causes, impacts and trends
- Expanding and replicating solution projects in areas where ghost gear is a major problem
- Spotlighting the problem and catalysing efforts to create global, sustainable change

### What Next?

You can find out more about how to get involved in the Sea Change campaign by visiting the website: [www.worldanimalprotection.org.uk](http://www.worldanimalprotection.org.uk) and following World Animal Protection on their social media channels.



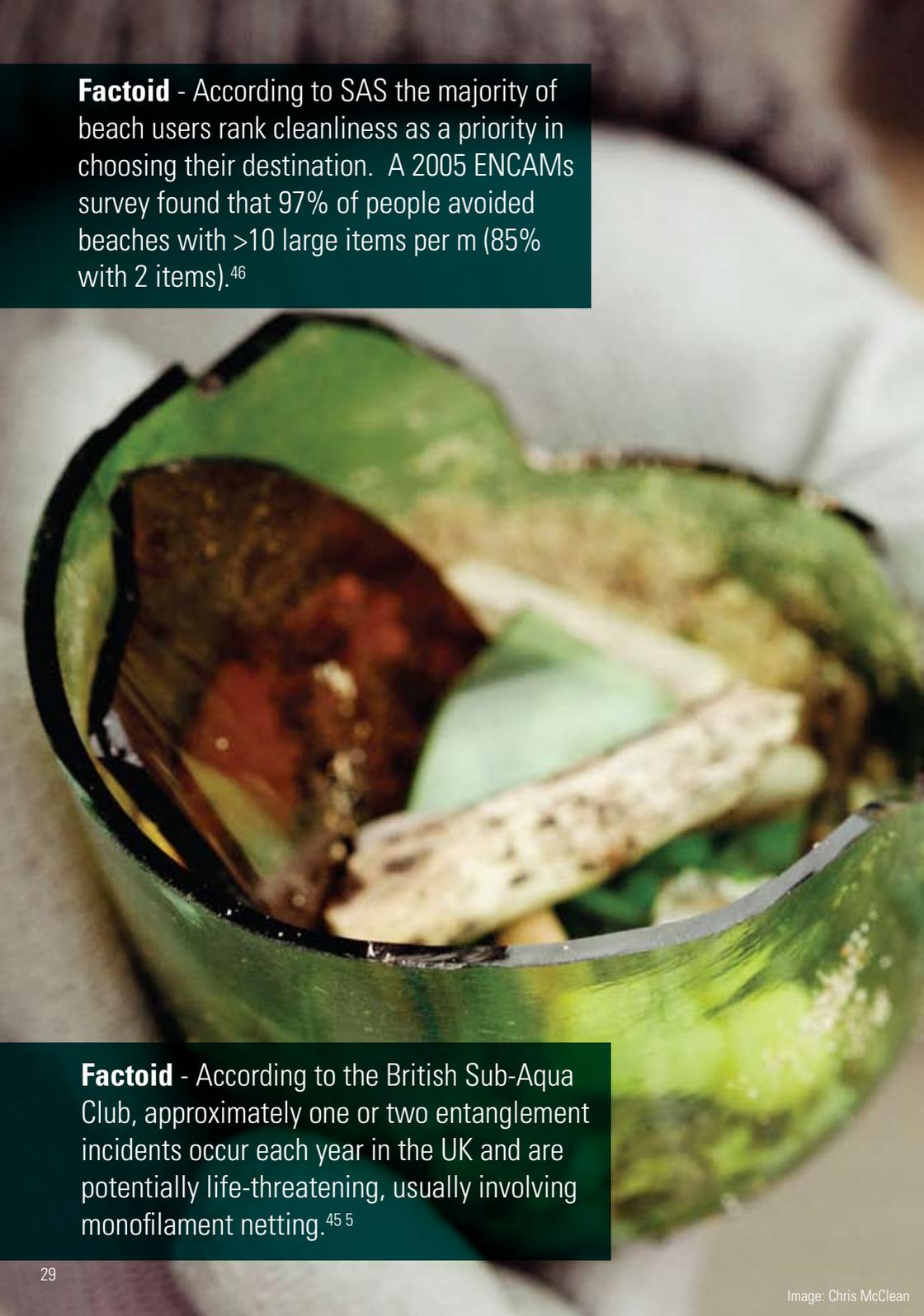
Image: Andy Hughes

## 2.5.4 THE COST TO SOCIETY AND HUMAN HEALTH

Marine litter can have a direct impact on human health and safety, though most incidents relating to public health remain unrecorded.<sup>44</sup> Beaches are a natural playground and attract visitors who are unaware of the potential hazards lurking underfoot. Beach users can be injured by stepping on shards of brittle plastic, metal and glass, and risk possible infection through contact with hypodermic needles, sanitary products or medical waste. Surfers, divers, swimmers can find themselves caught up in discarded fishing net and lines whilst, out at sea, users of pleasure and commercial craft that strike or become entangled in debris may find their lives endangered should their vessels become incapacitated or sink.

In addition, there is an intangible cost to society through the impact of marine litter on quality of life, recreational opportunities and aesthetic value. Beaches are a free amenity, unique in that they are enjoyed by young and old alike, locals and tourists, thrill seekers and for those in search of tranquillity. But their value is bound up in their naturalness and people cease to visit dirty beaches. As one of the few places where people can still connect with nature; the cost of degraded beaches on future physical health and wellbeing should be matter of current concern.





**Factoid** - According to SAS the majority of beach users rank cleanliness as a priority in choosing their destination. A 2005 ENCAMS survey found that 97% of people avoided beaches with >10 large items per m (85% with 2 items).<sup>46</sup>

**Factoid** - According to the British Sub-Aqua Club, approximately one or two entanglement incidents occur each year in the UK and are potentially life-threatening, usually involving monofilament netting.<sup>45 5</sup>

## 2.5.5 THE FINANCIAL COST

Whilst comprehensive data on the economic impacts of marine litter is limited, the global implications are understood to be substantial in terms of beach cleaning, loss of tourism revenue, and the direct and indirect costs associated with damaged vessels and loss in production time. Furthermore, marine litter may have significant economic consequences even for those whose livelihoods or leisure pursuits do not depend on the sea.

In the UK, the potential economic impact of marine litter on seaside resorts provides the driver behind Local Authority spend on beach cleansing, and it is suggested that minimising reputational damage is a more powerful incentive than adhering to current legislation.<sup>5</sup> The economic viability of many coastal settlements depends on maintaining their reputation as a clean and safe destination for holiday-makers. It is unclear how continuing cuts to local government will affect beach cleaning, but given tourist day visits to coastal communities are estimated to be worth £5.48 billion annually in Great Britain,<sup>47</sup> leaving beaches to accumulate waste could have a significant negative impact on these local economies.

Ironically, mechanical beach cleaning can have an adverse impact on the environment; important components of the coastal ecosystems, including seaweed and marine invertebrates, are removed from the food chain whilst, in other countries, the disturbance causes turtles to abandon nesting.

At sea, the financial impacts of marine litter are felt particularly strongly by the shipping and fishing industries. Large items, such as fridges, present a serious navigational hazard, whilst debris damages fishing gear and contaminates nets, propellers are fouled, and engines are damaged as items clog up water intake valves. Costs arise directly through repairing damage caused through collision and entanglement, and indirectly through loss of production time, impacts on fish stocks and increased insurance premiums. These costs are then often passed onto consumers.

## DDE



PLASTIC MARINE LITTER CAN RELEASE TOXINS, POLLUTING THE SURROUNDING SEAWATER - AS WELL AS ADSORBING AND CONCENTRATING ADDITIONAL CHEMICALS FROM THE ENVIRONMENT ONTO THEIR SURFACES.

STUDIES HAVE SHOWN HOW THE CHEMICALS FOUND ON RECOVERED PLASTIC MARINE LITTER AROUND THE WORLD CAN BIOACCUMULATE IN FOOD WEBS.

## PCBs

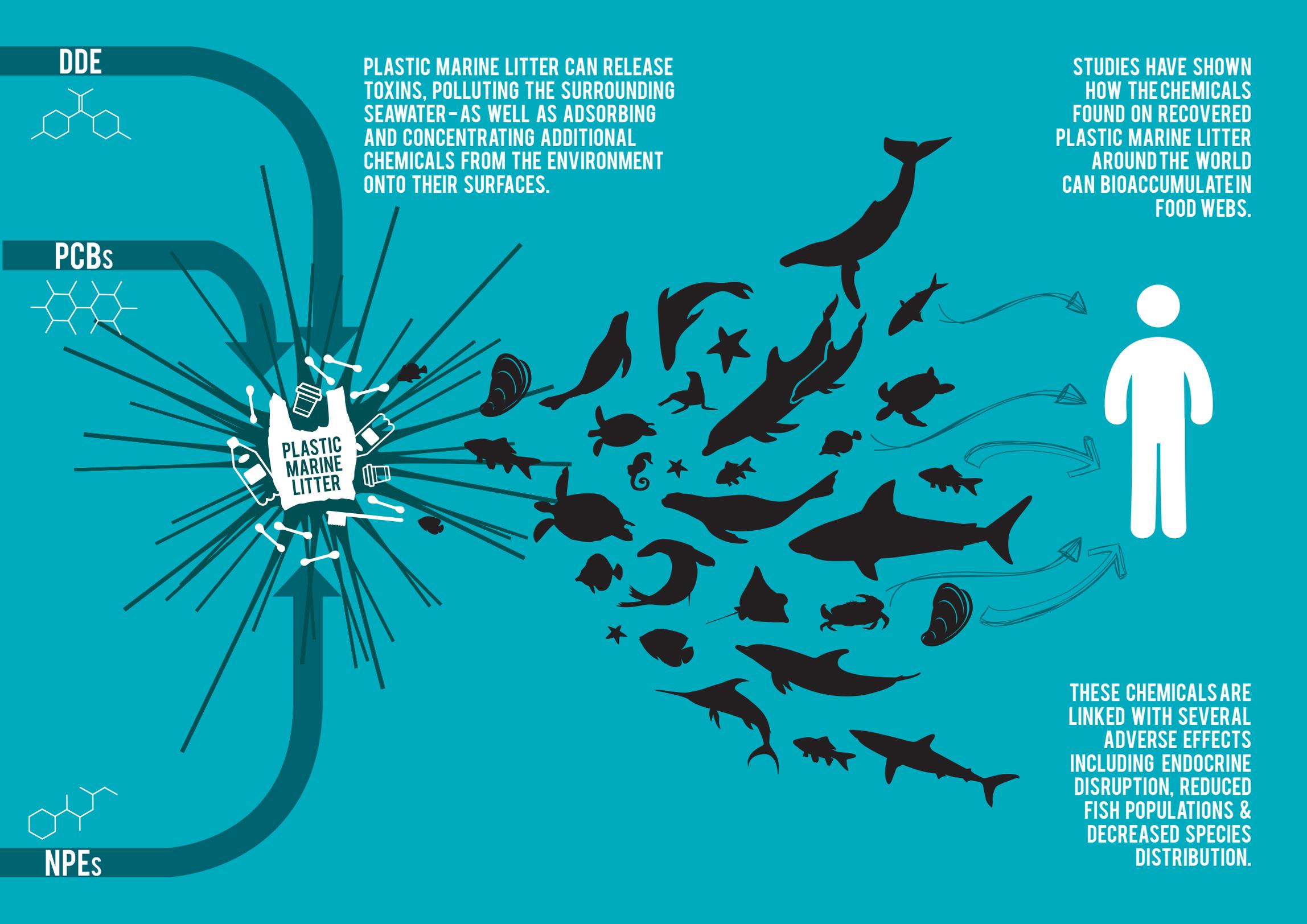


PLASTIC MARINE LITTER



THESE CHEMICALS ARE LINKED WITH SEVERAL ADVERSE EFFECTS INCLUDING ENDOCRINE DISRUPTION, REDUCED FISH POPULATIONS & DECREASED SPECIES DISTRIBUTION.

## NPEs



A person wearing a dark long-sleeved shirt and dark trousers with a yellow waistband is using a black and silver beach litter picker. The person is standing on a sandy beach, and the background shows a blue sky with white clouds. The litter picker is positioned vertically, with its head resting on the sand.

**Factoid** - Local Authorities in the UK spend approximately £18 million each year removing beach litter, which represents a 37% increase in cost over the past 10 years.<sup>5</sup>

**Factoid** - Scottish fishing vessels survey – 86% restricted catch due to marine litter, 82% had catch contaminated 95% snagged gear on debris in water.<sup>5</sup>

**Factoid** - Estimated cost of marine litter to Scottish fishing fleet £11.7 and £13 million on average pa (5% of total revenue for affected fisheries).<sup>5</sup>

**Factoid** - Marine litter costs UK harbours an average of £8,034.37 pa though large ports this will be considerably higher. <sup>5</sup>

**Factoid** - 70% of ports and marinas in the UK have reported users experiencing incidents involving litter. <sup>5</sup>

**Factoid** - Populations of commercial fish stocks are declining because of bioaccumulation of litter related toxins. <sup>48</sup>

## THE COST TO ECOSYSTEM SERVICES

Ecosystem Services is a term used to describe the range of benefits provided by nature that make human life not only possible but also pleasurable. It is relatively simple to put a price tag on some of these but for other, more complex or intangible services this becomes difficult and, perhaps, not even appropriate. After all, how would you begin to value a perfect surf? The application of Ecosystem Services and research into valuing processes and products is in its infancy. However, SAS strongly suspects that the presence of marine litter is significantly compromising a range of Ecosystem Services.

Table 1: Ecosystem Services Impacted

Type of Ecosystem Service	Example of Ecosystem Service	Potential Impact on Service by Marine Litter
<p><b>Supporting services:</b> The services that are necessary for the production of all other ecosystem services</p>	Soil formation, photosynthesis, primary production, nutrient cycling and water cycling	Plastic sheeting on seabed reduces nutrient cycling and gas exchange between water column and sea bed and can block sunlight restricting photosynthesis.
<p><b>Provisioning services:</b> The products obtained from ecosystems</p>	Food, fibre, fuel, genetic resources, biochemicals, natural medicines, pharmaceuticals, ornamental resources and fresh water	Ghost gear continuing to indiscriminately catch marine organisms. Contamination of resources. Potential loss of new pharmaceuticals.
<p><b>Regulating services:</b> The benefits obtained from the regulation of ecosystem processes,</p>	Air quality regulation, climate regulation, water regulation, erosion regulation, water purification, disease regulation, pest regulation, pollination, natural hazard regulation;	Transportation and distribution of aliens, bacteria and viruses. Exacerbate erosion with the potential for larger marine litter items colliding with the coast during storm activity. Collision and entanglement risk with vessels.
<p><b>Cultural services:</b> The non-material benefits people obtain from ecosystems</p>	Spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences – thereby taking account of landscape values	Beach users and recreational water users experience can be diminished by the presence of significant levels of beach litter. Glass, metals and shards of rigid plastics can pose a danger to beach users. Entanglement with ghost gear could cause distress, and in extreme events, death for recreational water users.

## 3 TACKLING MARINE LITTER

### 3.1 LEGISLATION

#### MARINE LITTER – THERE SHOULD BE A LAW AGAINST IT!

Given how much debris is already in circulation, it may come as a surprise to know that there is, in fact, already a variety of international treaties, European Union (EU) Directives and UK national laws in place, that can be used to address certain components of the problem both on land and at sea. The EU Marine Strategy Framework Directive is however currently the strongest and potentially the most effective legal tool that can help reduce levels of marine litter.

#### 3.1.1 THE MARINE STRATEGY FRAMEWORK DIRECTIVE

The Marine Strategy Framework Directive (MSFD) was formally adopted in July 2008, and takes an ecosystems based approach to manage human activity on the coast as sustainably as possible. The MSFD requires all EU Member States to achieve Good Environmental Status (GES) in their marine waters by 2020. In relation to marine litter, GES should mean that it does not cause harm to the environment by 2020.

Within the MSFD the UK's marine territory is divided into 2 discrete areas, the Celtic Sea, and the Greater North Sea. The UK must produce a marine strategy for both these regions in conjunction with the neighbouring EU countries within the same region. These individual marine strategies must outline how the region will protect and, where needed, enhance the marine ecosystem.

The marine strategies must contain:

- A robust baseline of the environmental status of that Member State's marine environment.
- A definition Good Environmental Status for their territorial waters.
- Targets and indicators that can be used to determine whether a Member State is successfully achieving GES.
- A monitoring programme to measure how the member state is achieving GES.
- A programme of measures and actions developed to deliver GES for that member state.

A blurred background of people on a beach. In the foreground, a white plastic bottle with a red cap and a white plastic bag are lying on the sand.

**Factoid** - it is an offence to drop litter on beaches under the Environmental Protection Act (EPA).<sup>59</sup>

**Factoid** - The European Union contains the world's largest maritime territory.<sup>49</sup>

Even though the MSFD was adopted in 2008, it is widely accepted that the majority of Member States, including the UK have yet to produce a robust dataset that can be used to monitor and measure GES against. As previously mentioned in this report; the European Commission Technical Assessment of the MSFD Obligation for the United Kingdom was damning of the UK's targets and lack of baseline data. "Conclusion on adequacy: the environmental targets and associated indicators are considered as partially adequate. The targets lack ambition; there is no target associated with litter in the sea itself."

The EU's definition of Good Environmental Status (GES) is based around 11 descriptors.<sup>50</sup>

1. Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2. Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3. Populations of commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.



4. All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5. Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.
6. Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7. Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8. Concentrations of contaminants are at levels not giving rise to pollution effects.
9. Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.
10. Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
11. Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

The measures and actions agreed in 2015 must be implemented from 2016. In 2018 there will be a review and update of the marine strategies, the targets, the monitoring programme and the measures and actions adopted. Good Environmental Status must be achieved no later than 2020 or the UK will be in breach of the MSFD and exposed to potentially significant fines from the European Commission.

Beyond 2020 there will be a continuous requirement for maintaining or achieving GES. The standards that GES are set against will be reviewed as better data and monitoring becomes available. Surfers Against Sewage will continue to support the MSFD to ensure the UK's coastal waters are as healthy as possible.

There are many other pieces of relevant legislation, conventions and treaties that can be used to restrict litter from entering the marine environment and summaries of these can be found in the appendix. Though legislation has an important role to play in tackling marine litter, effective enforcement, particularly at sea, is inherently difficult.

In 2015 the UK Government must develop a programme of measures and actions intended to reach or maintain GES. Activities implemented through the MSFD may include measures and actions covered in other pieces of legislation, and legally binding international conventions and treaties

### 3.1.2 BEACH OWNERSHIP IN THE UK

In the UK, the land (or beach) above the mean high water (MHW) mark usually belongs to whoever owns the adjoining land. Some beaches are privately owned by individual landlords or organisations (including the National Trust and MOD though the majority belong to Local Authorities (LAs)). Land owners may choose to lease their beach(es) to third parties and it is not unusual for LAs, for example, to both lease in and lease out beach assets.

The area in between MHW and Mean Low Water (MLW) is known as the foreshore, approximately 55% of which is owned by the Crown and managed by The Crown Estate. Other owners of the foreshore include the Duchies of Cornwall and Lancaster, Local Authorities, RSPB, National Trust, MoD and some is in the ownership of private individuals.

The seabed below MLW and extending out to the 12 mile limit (12nm) is owned by the Crown, though small areas of seabed are owned by harbour authorities and Local Authorities.

### 3.1.3 BEACH MANAGEMENT IN THE UK

Where land-owners lease out beaches to third parties, beach management responsibilities, including those relating to beach cleansing, are usually agreed under contract on a site-by-site basis. However, most commonly, it falls to the land-owner to remove debris from their beach.



## 3.2 SOLVING MARINE LITTER – WHOSE RESPONSIBILITY IS IT?

Given the growing environmental, social and economic impacts of marine litter, current attempts to deal with the problem are failing at a global scale. For effective change to take place there must be a radical change in personal, political and corporate attitude.

Marine litter can no longer be regarded as a waste nobody wants, but rather as a resource that none of us can afford to throw away.

As individuals and as a community, surfers and other recreational beach and water users must act to reduce marine litter. After all, we are the ones who see and feel the impacts first hand.



### 3.3 CURRENT EXAMPLES OF BEST PRACTISE FROM THE UK, EUROPE AND AROUND THE GLOBE.

Marine litter is not a problem that can be easily solved. Even if no additional litter entered the sea today, the problems of yesterday's debris will still be washing ashore in hundreds of years' time. However that doesn't mean that it should be accepted. There are a growing number of very effective national charities, environmental groups and local community networks working on the marine litter issue, from lobbying at the highest level of government and industry to organising reactive beach clean events after storms deposit another tideline of trash on the beach. There is also growing collaboration and communication between these groups to deliver more effective solutions, as it is fast becoming clear that together we will be more effective in the face of the marine litter crisis.

Table 2: Best Examples of Anti-Marine Litter Initiatives from Around the Globe

Marine Litter Initiative	Lead Organisation	Description of Activities	Website & Contact
Fishing For Litter	KIMO	<p>KIMO's Fishing for Litter is an imaginative yet simple initiative that aims to reduce marine litter by involving one of the key stakeholders, the fishing industry. KIMO directly provides fishing boats with large bags to deposit marine sourced litter. When full, these bags are deposited safely on the quayside to then be collected for disposal. This reduces the volume of debris washing up on our beaches and also reduces the amount of time fishermen spend untangling their nets.</p> <p>The project covers three areas, the South West of England, Scotland &amp; Northern Ireland.</p>	<a href="http://www.kimointernational.org/FishingforLitter.aspx">www.kimointernational.org/FishingforLitter.aspx</a>
Sea Change & the Global Ghost Gear Initiative	World Animal Protection	World Animal Protection's Sea Change campaign aims to save one million marine animals from the massive pain and distress caused by 'ghost gear' – abandoned fishing gear that turns oceans into death traps for sea animals.	<a href="http://www.worldanimalprotection.org.uk">www.worldanimalprotection.org.uk</a>
The Big Tidy Up	Keep Britain Tidy	Bringing communities together to care for public spaces. Since 2008, The Big Tidy Up has mobilised more than half a million people in more than 25,000 groups to collect nearly 120,000 bags of rubbish	<a href="http://www.keepbritaintidy.org/bigtidyup/539">www.keepbritaintidy.org/bigtidyup/539</a>
The Green Blue	The Royal Yachting Association & The British Marine Federation	Raises awareness about marine litter and sustainability issues amongst the recreational boating community. Provides education, solutions and toolkits for the community to take action.	<a href="http://www.thegreenblue.org.uk">www.thegreenblue.org.uk</a>

Table 2 Cont: Best Examples of Anti Marine Litter Initiatives from Around the Globe

Marine Litter Initiative	Lead Organisation	Description of Activities	Website & Contact
Break The Bag Habit	Keep Britain Tidy, Thames 21, Campaign To Protect Rural England, Surfers Against Sewage, Marine Conservation Society & Greener Upon Thames.	Plastic bags are one of the most prevalent items of litter found on UK beaches. Break The Bag Habit is a coalition of environmental groups working towards the introduction of a levy for all single use bags in England to reduce this impact on the environment.	<a href="http://www.BreakTheBagHabit.org.uk">www.BreakTheBagHabit.org.uk</a>
Beach Watch Initiative	Marine Conservation Society	Beach Watch is the Marine Conservation Society's annual national beach clean activity and marine litter survey. It has collected data since its launch in 1993 and is the primary source of UK national and regional marine litter trend data. It is one of the largest national beach clean & survey initiatives in the UK.	<a href="http://www.mcsuk.org">www.mcsuk.org</a>
Adopt a Beach	Marine Conservation Society	Communities, businesses, schools and individuals adopting local beaches and providing regular beach cleans and surveying.	<a href="http://www.mcsuk.org">www.mcsuk.org</a>
Rame Peninsula Beach Care	N/A	A community group set up to organize regular beach cleans at a small Cornish beach whilst also educating the community about the impacts of litter and the solutions needed to make a difference.	<a href="http://www.facebook.com/PeninsulaBeachCare/info">www.facebook.com/PeninsulaBeachCare/info</a>
Devon Waste Education Project		Devon Waste Education Project is an excellent example of educating the next wave of consumers and arming children with the knowledge and capacity to influence waste management matters in their own homes.	<a href="http://dev-resourcefutures.poweredbyproctors.co.uk/content/devon-waste-education">dev-resourcefutures.poweredbyproctors.co.uk/content/devon-waste-education</a>
Think Before You Flush  Bag It and Bin It!	Water UK, Water Companies, Marine Conservation Society, Surfers Against Sewage	Think Before You Flush and Bag It & Bin It are campaigns promoted by a number of organisations to prevent sewage related debris from entering the marine environment. The aim of these campaigns is to change the public's behavior around using the toilet to dispose of sanitary items, which all too often end up on UK beaches. It is also used to call on manufacturers to use more sustainable and biodegradable components in their products.	<a href="http://www.water.org.uk">www.water.org.uk</a>  <a href="http://www.sas.org.uk">www.sas.org.uk</a>  <a href="http://www.mcsuk.org">www.mcsuk.org</a>

Table 2 Cont: Best Examples of Anti Marine Litter Initiatives from Around the Globe

Marine Litter Initiative	Lead Organisation	Description of Activities	Website & Contact
<p>The Great Nurdle Hunt</p> <p>Mermaid's Tears</p> <p>British Plastics Federation - Operation Clean Sweep</p>	<p>British Plastic Federation</p> <p>The Great Nurdle Hunt</p> <p>Surfers Against Sewage</p>	<p>Nurdles are small plastic pellets about the size of a lentil. Countless billion are used each year to make nearly all our plastic products but many end up washing up on our shores.</p> <p>The coalitions mission vision is that all companies handling nurdles sign the 'Operation Clean Sweep' pledge to help achieve zero nurdle loss from factories, transport and other routes from which they end up in the ocean.</p>	<p><a href="http://www.nurdlehunt.org.uk">www.nurdlehunt.org.uk</a></p> <p><a href="http://www.bpf.co.uk/sustainability/operation_Clean_Sweep.aspx">www.bpf.co.uk/sustainability/operation_Clean_Sweep.aspx</a></p> <p><a href="http://www.sas.org.uk/campaign/mermaids-tears/">www.sas.org.uk/campaign/mermaids-tears/</a></p>
<p>Rise Above Plastics</p>	<p>Surfrider Foundation International</p>	<p>This initiative aims to reduce the impacts of plastics in the marine environment by raising awareness about the dangers of plastic pollution and by advocating for a reduction of single-use plastics and the recycling of all plastics.</p>	<p><a href="http://www.surfrider.org">www.surfrider.org</a></p>
<p>Global Wave Coalition</p>	<p>Surfers Against Sewage, Save The Waves Coalition, Surfrider Foundation International, WildCoast</p>	<p>This international coalition holds a bi-annual conference to discuss and debate initiatives, tactics, legislation and progress in protecting waves, oceans and beaches internationally. One of the key themes is marine litter and its impact on coastlines.</p>	<p><a href="http://www.globalwaveconference.com/agenda/">www.globalwaveconference.com/agenda/</a></p>
<p>UNEP - Global Initiative on Marine Litter</p>	<p>United Nations</p>	<p>UNEP's Global Initiative:</p> <ul style="list-style-type: none"> <li>• monitoring systems of marine litter;</li> <li>• the management of abandoned and lost fishing gear;</li> <li>• reception facilities for marine garbage and waste;</li> <li>• the development of economic instruments to better control the problem;</li> <li>• addressing the tourist and diving sectors and industries;</li> <li>• cooperation with global and regional beach clean up campaigns;</li> <li>• the development of outreach and educational material.</li> </ul>	<p><a href="http://www.unep.org/regionalseas/marinelitter/initiatives/unepglobal/default.asp">www.unep.org/regionalseas/marinelitter/initiatives/unepglobal/default.asp</a></p>
<p>Courtauld Commitment</p> <p>Recycle Now</p>	<p>WRAP</p>	<p>WRAP works with a wide range of partners, from major UK businesses, trade bodies and local authorities through to individuals looking for practical advice on preventing waste, increasing recycling rates, saving resources, improving design, reducing packaging and many other areas.</p>	<p><a href="http://www.wrap.org.uk">www.wrap.org.uk</a></p>

Table 2 Cont: Best Examples of Anti Marine Litter Initiatives from Around the Globe

Marine Litter Initiative	Lead Organisation	Description of Activities	Website & Contact
Dive Against Debris	Project AWARE	Dive Against Debris project for scuba divers, based around the citizen science programme developed by Project AWARE. Whilst it is still in its infancy, the project aims to provide critical information on underwater marine litter. Scuba divers can record the litter on the Dive Against Debris database and collect this litter and are uniquely positioned to do so.	<a href="http://www.projectaware.org/diveagainstdebris">www.projectaware.org/diveagainstdebris</a>
Neptune's Army of Rubbish Cleaners (NARC)		Neptune's Army of Rubbish Cleaners have been operates a similar programme around the Pembrokeshire since 2005 and have undertake over 100 underwater cleans.	<a href="http://www.narc-cc.org.uk">www.narc-cc.org.uk</a>
The Big Spring Beach Clean Barefoot Wine Beach Rescue Project The Autumn Beach Clean Series	Surfers Against Sewage	Three of the UK's largest community beach clean projects of the year, mobilizing thousands of volunteers at hundreds of beaches across England, Scotland, Wales and Northern Ireland. These take place in March, August & October each year.	<a href="http://www.sas.org.uk">www.sas.org.uk</a>
Initiatives Océanes	The Surfrider Foundation Europe	Surfrider Foundation Europe's most emblematic event, Ocean Initiatives are both an awareness campaign to highlight the problem of marine litter and a (beaches / coastlines/ seabed) clean-up operation.	<a href="http://www.initiativesoceanes.org">www.initiativesoceanes.org</a>
2 Minute Beach Clean	N/A	The 2 Minute Beach Clean is a new concept to encourage beach users to undertake a 2 minute beach clean every time they are at the beach and upload images of their litter haul on Instagram and Twitter with the hashtag #2minutebeachclean	<a href="http://www.beachclean.net">www.beachclean.net</a>

**SAS is calling for a 50% reduction in marine litter found on beaches by 2020 and already has a number of live campaigns, which, with your help, can make a real difference in helping deliver this. You can find out detailed information on each of the campaigns by visiting the SAS website ( [www.sas.org.uk](http://www.sas.org.uk) ) – and get involved!**

## 3.4 RECOMMENDED ACTIONS AND MEASURES

Surfers Against Sewage is a powerful vehicle for environment & social change, connecting and educating individuals and building informed, powerful and effective coastal communities living in harmony with their coastline. Over recent years, SAS has developed a nationwide network of over 50 Regional Reps leading engaged communities, who in turn help mobilise over 7,500 beach clean volunteers annually and inspire over 100,000 regular supporters who care passionately about waves, oceans and beaches. We are also forging new relationships, links and collaborations with other leading environmental groups at a local, national and international level to deliver increased coordination and action to tackle coastal litter. Together, we engage business, government and society with the issues that need attention – marine litter is top of the agenda. We acknowledge the enormity of the task ahead and the ambitious targets we have set for ourselves. We need to find new ways to change public behaviour, influence policy makers, and hold industry to account.

Surfers Against Sewage is calling for a 50% reduction in UK beach & coastal litter by 2020, based on 2014 levels. Over the next five year period (2015 – 2020), SAS will work with government, NGO's, scientists, industry, communities and individuals, via campaigns, education, events and environmental activities, to work towards delivering this ambitious target.

This is how we intend to do it;

### 3.4.1 PROMOTING PERSONAL RESPONSIBILITY AND ACTION

Surfers Against Sewage believes it is vital that the public understands the environmental, social and economic costs associated with marine litter. We want individuals and society to take ownership of the problem of marine litter and, as consumers, make informed decisions about what we buy. The 4 R's are a mantra we need society to embrace; Refuse, Reduce, Re-use and Recycle. Individual actions are the easiest to implement as we control them. Here is a list of our recommended actions and measures:

## How can an individual make a difference?

There are individuals out there who question what one person can do. What difference can an individual's action make when the scale of the problem appears so daunting. Well, taken in isolation, a single individual's anti-litter actions might not stem the flow of litter to our beaches. But we don't exist in isolation so we can all help turn the tide. We all know the well used Newton quote from his 3rd law of motion "To every action there is always an equal and opposite reaction." So exactly what are the actions and reactions we are looking for, and from whom? The answers to this are laid out in detail in Malcolm Gladwell's international bestseller "The Tipping Point".<sup>51</sup> The book details how to transform an emerging concept, like reducing beach litter by 50%, from the fringes and cement it into mainstream thinking.

Surfers Against Sewage will often refer to surfers as marine indicator species, but the media and the general public often view surfers as cool trendsetters. And this can be used to help carry a more positive message around the actions communities and the wider society need to adopt to reach our ambitious goals.

Whilst only a fraction of the UK population surf, many people aspire to live the surfer's lifestyle as closely as they can. Vehicles, clothing, language, associated activities, if it's connected to surfing, there are huge numbers of people keen adopt it to emulate the lifestyle. Hence surfing being a marketeers' dream, and here in lies the key. This is how a relatively small group of dedicated individuals can influence the masses, people they may never have met or ever meet.

Surfers also possess another key ingredient to help support an emerging trend into a mainstream change in society. Surfing brings together a diverse cross section of society and fuses different subcultures, which might not ordinarily mix. Doctors and lawyers sit in the line up next to builders, students and the unemployed. This is incredibly practical as a concept to propagate strong ideas, in this case anti-littering actions and measures, transecting normal social boundaries and like a boulder dropped in a pond, the waves of change can travel with unparalleled speeds and effectiveness.

Within the UK's surfing communities there are all the individual characters required to breathe life into sustainability, ensuring it is accepted and adopted as an established behaviour within the mainstream.

- The Innovator – the hard core, environmentally-minded, surfer living their life in rhythm with the next swell and best tides. They will spend a lot of time on the beach and have the chance to inspire many.
- The Connector– This is where the 'connector' steps in. The 'connector' will translate the 'innovator's' ideas into a more acceptable form for the public. Delivering the lifestyle approach in a more accessible & palatable form. 'Connectors' know people, a lot of people. And just as importantly, they know how to promote an idea. This is where the concept starts to gain traction. There are a lot of surfers who fall into the 'connector' category.

- Then there are the ‘early majority’, the general public on the edge of the surfing world. To borrow some of surfing coolness these people will adopt the anti-littering message pioneered by the Innovators and Connectors, giving momentum in the mainstream. These anti-litter measures and actions are now reaching their tipping points.
- Finally the ‘late majority’ come on board and the concept is cemented in mainstream consciousness.

This is the pathway that SAS’s anti-littering, sustainable choice and marine litter campaigns message needs to follow through communities if we are to reach our of 50% reduction in beach litter. You might recognise yourself as one of the above. It’s likely you are a connector adopting and promoting marine litter actions, and attending SAS beach cleans. It may sometimes feel like surfers are a small minority, incapable of influencing change but read the following powerful quotes from The Tipping Point.<sup>51</sup>

Surfers are very well placed to do some pushing here. This report is packed full of information to be shared and measures and actions to be adopted.

*“What must underlie successful epidemics, in the end, is a bedrock belief that change is possible, that people can radically transform their behaviour or beliefs in the face of the right kind of impetus.”*

*“We are actually powerfully influenced by our surroundings, our immediate context, and the personalities of those around us.”*

*“With the slightest push, in just the right place - it can be tipped.”*

## Individual & community action

**i. Community Beach Cleans:** We will support the roll out of year round beach clean events as the impacts of marine litter are felt year round. By supporting out of season beach cleans, marine litter will remain on the agenda regardless of season. Community beach cleans play a vital part in tackling beach litter directly & educating communities on preventing beach litter at source. Our vision is to build a strong network of coastal communities, lead organisers and organisations to mobilise 25,000 volunteers & deliver at least 1,000 beach cleans annually by 2020. SAS beach litter targets & results will contribute to and be reviewed against the European Marine Strategy Framework Directive.



Image: Tim Boydell

**ii. Take Your Trash Home:** We believe that beach users are responsible for any waste they generate, and call on members of the public to take all their litter home when visiting rural beaches. Inadequately managed bins at beaches can lead to increased levels of marine litter. The typical curbside recycling facilities around the UK are best placed to ensure maximum levels of litter are recycled. However, at resort beaches we are calling on beach operators to ensure they provide prominent and appropriate recycling facilities across their site. These recycling facilities and additional bins must be managed to ensure the litter never enters the marine environment.

**iii. Litter Abatement Orders:** We will support individuals in the use of Litter Abatement Orders. Under the Environmental Protection Act (EPA), individuals fed up with persistently littered beaches can document the problem and complain to the landowner. If no action is taken to get the area cleaned, a Litter Abatement Order can be sought through the Magistrates' Court.

**iv. Littering Penalties:** We will campaign for Parish Councils to take up their new powers of enforcement to tackle marine litter. Cuts to unitary, county and district local authorities mean there are less and less Enforcement Officers available to administer fixed penalty notices to people who drop litter. However, under the Clean Neighbourhoods Act 2005,<sup>52</sup> employees of parish councils and other persons (including their employees) authorised by a parish council can now issue fixed penalties for littering. We believe that if Parish Council uses these new powers it would help address local litter problems on beaches, raise awareness that littering is an offence and act as a deterrent to would be offenders.



Image: Andy Hughes

**v. Education Programme:** We will continue to grow our Seas For Life schools education programme covering the latest campaigns on water quality, marine litter, climate change, toxic chemicals, shipping and coastal wave protection. It also addresses the concept of citizenship and how students can have a positive impact on the marine environment to contribute to safeguarding fisheries, oceans, waves and beaches, and other coastal assets.

**vi. Refuse Single-use:** Our calls for a commitment from individuals, communities and businesses reduce their dependence on plastic! We are calling for them to avoid single-use plastic items like carrier bags, bottled water, disposable plastic cutlery; single use coffee cups and replace them with reusable alternatives. In particular we ask that people stop buying bottle water in the UK, and use tap water instead.

## 3.4.2 CORPORATE & INDUSTRY RESPONSIBILITY AND ACTION

Wherever possible, SAS believes in working with industry and businesses to tackle marine litter. Surfers Against Sewage has a strong track record of working with business and achieving win-win successes for both industry and the environment. Here's a list of our recommended actions and measures:

**i. Extended Producer Responsibility:**

The Return to Offender campaign will be expanding to call for an Extended Producer/Distributor Responsibility (EPDR) programme to be introduced for all products manufactured and sold in the UK. Rather than 'flog it-forget it' attitude, this product stewardship approach will require producer responsibility for the full lifecycle of their product and packaging, a cradle-to-cradle approach.

**ii. Environmental Protection Labelling:**

We are calling for labelling on single-use plastic packaging to include additional environmental impact warnings of littering, alongside more prominent messaging encouraging proper disposal and recycling. New, impactful icons should be introduced to simply convey this environmental message for single-use plastic packaging, to mirror current, well-known successful health & safety, and environmental labelling on various toxic products. Statements such as "This Packaging Can Kill Or Seriously Harm Wildlife" & "This Packaging Can Seriously

Damage Your Environment" should be added to current & developing recycling and disposal information.

**iii. Container-deposit legislation:**

Bottles and other containers are found in vast numbers at UK beach cleans, and on coastlines around the world. We are calling for new legislation that requires collection of a monetary deposit on soft drink, juice, milk, water, alcoholic beverage and/or other re-useable or recyclable packaging at the point of sale.

**iv. Container & Caps:**

We are calling for mandatory non-detachable lids/caps for all single-use bottles and containers by 2020, to minimise littering and maximize recyclability. Plastic bottle caps and lids are the second most common litter items found on the beach. We want to stop cap and lid litter at UK beaches. Caps and lids can be manufactured to ensure they remain connected to the bottle, which is then reused, recycled or disposed of responsibly.



Image: Andy Hughes

**v. Beach Recycling & Waste:** At resort & popular beaches we are calling on beach operators to ensure they provide prominent and appropriate recycling facilities across their site. These recycling facilities and additional bins must be managed to ensure the litter never enters the marine environment.

**vi. Single-Use Items:** We are calling for seaside cafes and restaurants to replace plastic single-use cutlery and bottles with compostable or re-useable alternatives.

**vii. Think Before You Flush:** We are calling for a ban on plastic/non-biodegradable components in sanitary items, face scrubs and other cosmetic products. This would include plastic micro-beads in products and plastic cotton bud sticks.

**v.iii. Fishing Waste:** Together with the World Animal Protection we will work with the fishing industry and government to develop better monitoring and regulation to eliminate equipment that is unfit for purpose, with particular focus on nets and tagging of equipment. We believe that working constructively with the fishing industry is the best way to tackle this significant and hazardous source of marine litter.



### 3.4.3 POLITICAL AND BUSINESS RESPONSIBILITY AND ACTION

Finally, SAS believes that policy makers and statutory bodies have an essential role to play in tackling marine litter. Where solutions cannot be found by working with industry, new legislation must be introduced to hold business to account. Both central and local governments have statutory duties regarding the environment and they also have powers to introduce new legislative tools and policies to address issues of particular concern. Here's a list of our recommended actions and measures.

- i. **National Marine Litter Strategy:** We are calling for the government to produce a National (Marine) Litter Strategy for England.
- ii. **Hazardous Plastics:** We are calling for the government to support more research into the toxicity of marine plastics and reclassify them as a hazardous waste.
- iii. **Container-deposit legislation:** Bottles and other containers are found in vast numbers at UK beach cleans, and on coastlines around the world. We are calling for new legislation that requires collection of a monetary deposit on soft drink, juice, milk, water, alcoholic beverage and/or other re-useable or recyclable packaging at the point of sale.
- iv. **Smoking Zones & Bans:** Cigarette waste is a huge contributor to the marine litter crisis. Unfortunately, cigarette butts all too often find their way to the coastline through drains, or are stubbed out directly in the sand. We are calling for local authorities to ban smoking on beaches chronically affected by cigarette butt litter, or create specific beach smoking zones with litter control measures and drainage screens to minimise cigarette waste washed from the local area.
- v. **Nurdles:** We are calling for the mandatory requirement for factories using plastic raw materials (including nurdles) to adopt Operation Clean Sweep (or a similar protocol) to prevent losses into the marine environment.
- vi. **Shipping:** We are calling for new legislation to require maritime couriers to mitigate for any losses at sea by recovering at least the same amount of marine litter from the marine environment as that lost by the original operational error.
- vii. **Fishing Legislation:** We are calling for tighter regulation to control the loss of valuable commercial fishing nets and pots to protect the marine environment and reduce beach litter. Fishing equipment accounts for approximately 13% of recorded beach litter.
- viii. **Balloon Releases:** We are calling for legislation banning balloon releases.
- ix. **Marine Litter on the Curriculum:** We are calling for marine litter to be discussed in schools and incorporated into the National Curriculum.

## 4 SAS MARINE LITTER CAMPAIGNS

### 4.1 RETURN TO OFFENDER

Our award-winning marine litter campaign has sent thousands of items of identifiable marine litter found on UK beaches back to the manufacturers challenging them on their sustainability credentials and recycling policies. You're not only an environmentalist, you're a consumer, and so these big companies will listen to what you have to say. With your help this campaign can continue to make a real difference to what we find on our beaches by sending beach litter back to where it was made, calling into question how industry is addressing the marine litter crisis.

Moving forward, the Return To Offender campaign will be calling for the introduction of a wide reaching Extended Producer/Distributor Responsibility (EPDR) programme for all products manufactured and sold in the UK. This programme would require companies to develop active product stewardship strategies to better protect the environment from litter whilst also ensuring greater sustainability and efficiency within the manufacturing process, and improving recycling rates.



Image: Andy Hughes



### Get involved!

1. Keep an eye out for identifiable marine litter items whenever you are at the beach.
2. Download your own SAS Return To Offender campaign letters from the SAS website and fill in the spaces with the details of where you found the beach litter.
3. Download the Offender Freepost Address for the manufacturer that makes your beach litter and post it off.

## 4.2 UNIDENTIFIED FLOATING OBJECTS

The Unidentified Floating Objects (UFO) campaign aims to identify regularly occurring, persistent, non-sourced items of marine litter prevalent on UK beaches. Once the industry or manufacturer is identified, SAS will approach the industry in search of a sustainable solution. If this solution is not adopted and the litter continues to enter the environment, SAS will request a prosecution by the relevant industry regulator.



Image: Andy Hughes

### Get involved!

1. If you witness a UFO on your beach, and if it's safe to do so, 'capture it' and send it to SAS's Area 51 gallery by post or email.
2. Search the SAS online UFO gallery to help us identify 'alien beach invaders'.

## 4.3 BREAK-THE BAG HABIT

Surfers Against Sewage has joined forces with the Campaign to Protect Rural England (CPRE), Keep Britain Tidy and the Marine Conservation Society (MCS) calling on the Government to reduce litter and waste by requiring retailers to introduce a small levy on all single-use bags in England (levies have already been successfully introduced in Northern Ireland (2013) and Wales (2011)). Together we launched the Break the Bag Habit campaign and have recently celebrated the inclusion of the single-use bag charge in the Queen's speech (2014). However, there is still work to be done to address the exemptions for small retailers and paper bags.

Image: Martin Brent



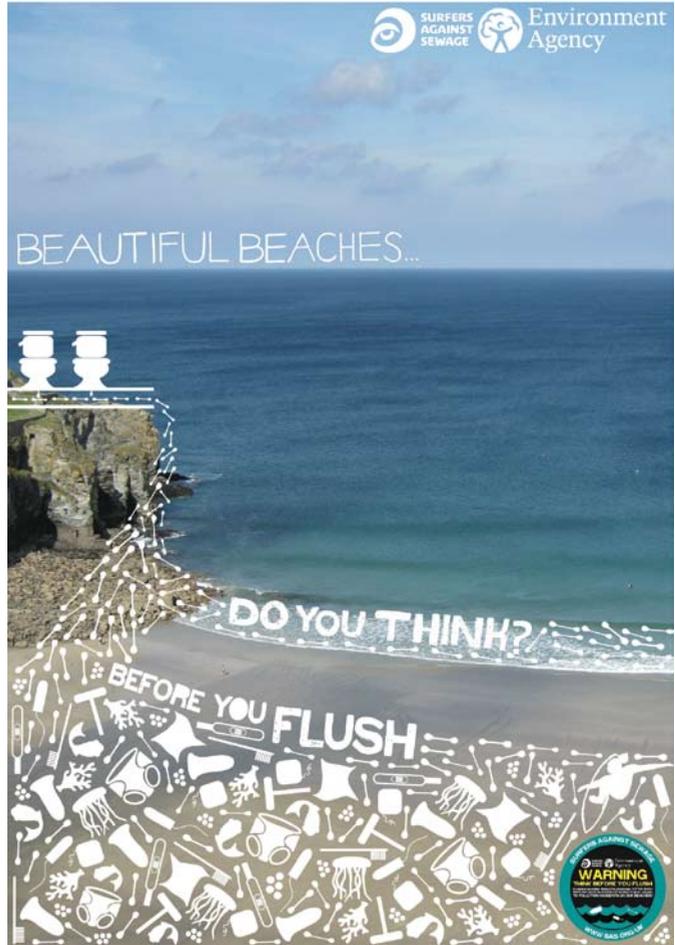
TAKE THE PLEDGE TO STOP USING SINGLE USE BAGS AT: [WWW.BREAKTHEBAGHABIT.ORG.UK](http://WWW.BREAKTHEBAGHABIT.ORG.UK) #BREAKTHEBAGHABIT

### Get involved!

1. Sign the Break the Bag Habit pledge site, committing to kick your single-use bag habit!  
[www.breakthebaghabit.org](http://www.breakthebaghabit.org).
2. Contact your local MP and ask them to support SAS's and the Environmental Audit Committee's recommendation for a universal levy on single-use bags.
3. Make sure you break the habit and invest in reusable textile bags.

## 4.4 THINK BEFORE YOU FLUSH

Think Before You Flush is an SAS initiative, raising public awareness about the problem that sanitary products cause in the sewage system and marine environment if they are flushed down the toilet. Items such as sanitary towels, tampons, condoms, nappies, baby wipes and cotton bud sticks block sewage screens, pumps and pipes within sewerage system, reducing the flow and effectiveness. This can result in sewage discharges onto our beaches and into our rivers through combined sewer overflows (CSOs), or even into our homes and gardens as the system overloads. The campaign encourages us all to make small changes in our bathroom behaviour to better protect our beaches from associated raw sewage discharges and unsightly sanitary waste washing up on our beaches.



### Get involved!

1. Never use the toilet to dispose of sanitary products.
2. Switch from tampons and sanitary towels to Mooncups – better for the environment and better for you.
3. Contact us for Think Before You Flush stickers to put up in your place of work.

## 4.5 MERMAIDS' TEARS

Mermaids' Tears, also known as nurdles, are used in the manufacturing of plastic products and are found by the thousand on almost every beach SAS visits. After an SAS investigation, we identified a route from plastic factories to the beach, via storm drains, and confronted the British Plastics Federation (BPF) about the issue, challenging them to take action. To their credit, the BPF reacted positively and took our challenge to a major international plastic conference. As a result new industry guidance, Operation Clean Sweep, has been adopted which will help reduce numbers of nurdles on our beaches.



Image: Andy Hughes

### Get involved!

1. If you know which factories may be releasing the nurdles on your beach, get in touch so we can ensure they follow industry guidance.

## 4.6 NO BUTTS ON THE BEACH

No Butts on the Beach addresses the problem of cigarette butts on beaches. As with all SAS campaigns, we try to provide a positive, sustainable solution to help people dispose of cigarette butts responsibly - the butt bin! SAS is also calling for local authorities to ban smoking on beaches that are chronically affected by cigarette butt litter, or create specific beach smoking zones with litter control measures and drainage screens to minimise cigarette waste washed from the local area.



### Get involved!

1. Don't smoke on beaches – if you have to then use a butt bin.
2. If you find a beach which is significantly littered by cigarette butts, report it to SAS & we will work with the relevant beach owner to tackle the issue.

## 4.7 COMMUNITY BEACH CLEANS

Surfers Against Sewage aims to build engaged communities to protect UK beaches and waves from marine litter. Community beach cleans play a vital part in tackling beach litter directly & educating individuals and communities on preventing beach litter at source. Our vision is to build a strong network of coastal communities, lead organisers and organisations to mobilise 25,000 volunteers & deliver 1,000 beach cleans annually by 2020.

Image: Tim Boydell



### Get involved!

1. Become a lead volunteer and run your own beach clean (see SAS website for guidance).
2. Look out for SAS beach clean events and join in.
3. Encourage friends, family and work colleagues to come along to beach clean events.
4. Pick up litter you find on beaches whenever you enjoy the coastline!

## 4.8 MARINE LITTER: MONITORING & EVALUATION

We will undertake monitoring & reporting of marine litter as part of our ongoing and expanding community beach clean operations up to 2020, feeding in collected data to the Marine Strategy Framework Directive. Marine litter will be categorised, documented and reported on as part of our annual report and membership communications. Our additional monitoring will help SAS and regulators make more targeted decisions about future measures and actions to tackle the marine litter crisis.



Image: Tim Boydell

### Get involved!

- Join us at a community beach clean to document the scale & impact of marine litter.
- Volunteer with us to process and record vital marine litter data.
- Document marine litter at your local beach and report your findings to SAS.

## 5 CONCLUSION

Tackling this marine litter crisis; if not us, who? If not now, when?

This report introduces marine litter as a ubiquitous problem; retracing the journey marine litter items take back from beaches and seabeds, through the hands of consumers, to the industries that manufacture the products, packaging and materials destined to be lost at sea.

Understanding the fundamental causes of marine litter is vital to ensure the measures and actions are effectively targeted at the most appropriate stakeholders. The true scale of the marine litter crisis is often daunting. Internationally, an astounding 46,000 pieces of marine litter are estimated to be floating on every square mile of ocean<sup>22</sup> and the 5 great ocean garbage patches now contain more plastic than plankton.<sup>2</sup> Closer to home, the UK's geography exacerbates the problem as it sits directly in the path of huge oceanic currents and prevailing winds that drive marine litter towards our shores from thousands of miles of open ocean. However, before we act we must all understand and accept the scale of the problem. The impacts reach from the deepest oceanic environment right into our own communities. Communicating the scale of the issue and the threats it presents is essential to motivate all stakeholders to take the necessary actions needed to deliver our vision of reducing beach litter by 50% by 2020.

This report is filled with fast and easy to adopt solutions for everyone. For example; smoking bans on beaches, warnings relating to environmental impacts of packaging and

tightening the discharge consents for the UK's network of 31,000 combined sewer overflows. These examples highlight how all sectors; the public, local and national Government and industries need to work towards a collective goal of reducing marine litter.

Surfers Against Sewage is not the only voice amongst NGOs calling for dramatic and urgent action to tackle marine litter. World Animal Protection, Keep Britain Tidy, the Marine Conservation Society, the Campaign to Protect Rural England and Seas At Risk are just a few examples of national organisations that have ambitious and impactful litter reduction campaigns. Local organisations including Firth of Forth's Great Nurdle Hunt and South Cornwall's Rame Peninsula Beach Care are also great examples of effective community groups championing their local marine environments. But the time has come for all sectors; charities, Government, industry, academia and the public to work towards the challenging but achievable goals set within this report. The benefits for the UK environment, coastal communities, the economy, ecosystem services and natural capital balance sheets are significant. But there are also direct and tangible benefits for the economy, communities, businesses and Governments.

To answer the question, if not us, who? There is nobody else. Action needs to be collective and inclusive. Together we can take the appropriate actions and measures needed to make a difference. So if not now, when? It is said there is an immeasurable distance between late and too late. It is not too late to act, the opportunity and need has never been greater than now.

The Marine Strategy Framework Directive is calling for European Member States to achieve Good Environmental Status (GES) in their waters by 2020. Measures and action to achieve GES need to be agreed by 2015, implemented in 2016 and will be reviewed in 2018. The UK's proposed strategy for tackling marine litter and achieving GES has been severely criticized by the European Commission. Without taking the necessary steps now to achieve GES we leave the UK exposed to fines and the need for even more drastic litter reduction measures between 2018-2020. However, if the country acts now, leading with ambitious and effective measures, striving to achieve a 50% reduction in beach litter by 2020, the UK will reap the greatest rewards for the environment, for coastal communities, the public and the economy.



If not us, who? If not now, when?

The answers to these questions are laid bare on every beach around the UK. We urgently need collectively take action to tackle this marine litter crisis.

## 6 ACRONYMS USED THROUGHOUT THIS REPORT:

BPF	British Plastics Federation	mm	Millimetre
CEFAS	Centre for Environment, Fisheries and Aquaculture Science	MOD	Ministry of Defence
CPRE	Campaign to Protect Rural England	MP	Member of Parliament
CSO	Combined Sewer Overflow	MSFD	Marine Strategy Framework Directive
DDE	Dichlorodiphenyldichloroethylene	NGO	Non-governmental Organisation
DEFRA	Department for Environment, Food and Rural Affairs	NM	Nautical Mile
EC	European Council	OSPAR	Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
EEC	European Economic Community	Pa	Per annum
EPA	Environmental Protection Act	PCBs	Polychlorinated Biphenyls
EPDR	Extended Producer/ Distributor Responsibility	RSPB	Royal Society for the Protection of Birds
EU	European Union	SAS	Surfers Against Sewage
GES	Good Environmental Status	SRD	Sewage Related Debris
KIMO	Kommunenes Internasjonale Miljøorganisasjon "Local Authorities International Environmental Organisation"	UFO	Unidentified Floating Object
km	Kilometre	UK	United Kingdom
LAAs	Local Authorities	UNCLOS	United Nations Convention on the Law of the Sea
m	Metre	UNEP	United Nations Environment Programme
MARPOL	International Convention for the Prevention of Pollution from Ships	UNESCO	United Nations Educational, Scientific and Cultural Organisation
MCS	Marine Conservation Society		
MHW	Mean High Water		
MLW	Mean Low Water		

## 7 GLOSSARY

Algal Bloom	Rapid increase or accumulation in algae population
Benthic Ecosystem	Ecosystem located within the lowest region of a water body (includes the water body bed)
Biomagnification	Sequence of processes in an ecosystem by which higher concentrations of a particular chemical, such as the pesticide DDT, are reached in organisms higher up the food chain
Dichlorodiphenyldichloroethylene	Fat soluble chemical compound, formed by the loss of hydrogen chloride from DDT
Eutrophication	Ecosystem response to addition of substances often resulting in excessive plant growth
Ghost Gear	Abandoned, lost or discarded fishing gear (ALDFG), which continues to catch marine animals and birds
Gyre	Large system of rotating ocean currents
Hydrographical Conditions	Hydrographical conditions are characterized by the physical parameters of seawater: temperature, salinity, depth, currents, waves, turbulence, turbidity
Monofilament	Type of fishing line – single filament
Non-indigenous Species	Species introduced to a locale
Nonylphenols	Group of related organic compounds. Used in manufacturing antioxidants, lubricating oil, detergents, emulsifiers and solubilises
Nurdles/ mermaids tears	Small pellets used in preproduction of plastic products
Parabens	Used to prevent the growth of microbes in cosmetics products and can be absorbed through skin, blood and the digestive system
Phthalates	Phthalates are a group of chemicals used to soften and increase the flexibility of plastic and vinyl
Physiographic	Physical geography
Polychlorinated Biphenyls	Synthetic organic compound
Sewage Related Debris	Items carried by sewer systems

## 8 APPENDIX

National and international treaties, conventions and legislation that can be used to support the measures and actions forwarded in this report:

### International legislation

#### United Nations Convention on the Law of the Sea (1982) (UNCLOS)<sup>53</sup>

UNCLOS, also known as the Law of the Sea Convention or the Law of the Sea treaty, is an international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), and came into force in 1994. UNCLOS is designed to govern the management of marine resources and their conservation for future generations, with provisions that cover territorial sea limits, management of living marine resources, protection of the marine environment, economic and commercial activities and marine research. Regarding marine debris, this is addressed by Part XII of the Convention (Articles 192-237) which outlines duties to prevent, reduce and control pollution from land and sea based sources (KIMO). UNCLOS has not been signed or ratified by all nations, including the USA.

#### The MARPOL Convention<sup>54</sup>

MARPOL 73/78/97 is the International Convention for the Prevention of Pollution from Ships (1973) as modified by the Protocol of 1978. It is one of the most important international marine environmental conventions in terms of reducing pollution at sea. Annex V of the convention prohibits the disposal of plastics from sea and as of 2013, 152 states, representing over 99% of the world's shipping tonnage, are parties to the convention.<sup>55</sup> The Convention also contains various requirements and protocols for ships and harbours regarding the provision of facilities to reduce marine litter.

#### The London Convention & London Protocol<sup>56</sup>

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) or "London Convention" was one of the earliest global conventions to protect the marine environment from human activities and came into force in 1975. Its underlying objective was to promote the control of marine pollution and to take practicable steps to prevent pollution by dumping of wastes and other matter at sea from ships, aircraft, and offshore structures. This differs from MARPOL which concerns daily operational activity undertaken by shipping. The Convention was modernised in 1996 by the "London Protocol". Its particular relevance to marine litter relates to the prohibition of dumping all 'black list' items at sea, which includes plastics. The protocol has been enforceable since 2006 and ratified internationally by 45 Parties.

#### The OSPAR Convention<sup>57</sup>

The OSPAR Convention is the current legal instrument leading international cooperation on the protection of the marine environment in the North-East Atlantic and its resources. Work under the Convention is managed by the OSPAR Commission, which is made up of representatives of the Governments of 15 Contracting Parties and the European Commission, representing the European Union (including the UK). It has an invaluable function in the assessment and monitoring of marine litter.

## European legislation

### EC Urban Waste Water Treatment Directive (91/271/EEC and 98/15/EC)<sup>58</sup>

Concerns the collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors. Its aims to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of:

- Mixture of waste water.
- Waste water from certain industrial sectors.
- Domestic waste water.

This directive is particularly relevant for Sewage Related Debris, and recommends minimum screening requirements for both waste water treatment works and sewerage systems.

The Urban Waste Water Treatment Directive (full title Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment) is a European Union directive concerning the treatment of sewage and discharge of sewage and waste water effluent into the environment. The directive was adopted on 21 May 1991. Its stated objective is “to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors”.

## National legislation

### Environmental Protection Act (EPA), 1990<sup>59</sup>

The Environmental Protection Act 1990 (EPA 1990) imposes duties under section 89(1) and (2) on certain landowners and occupiers (referred to throughout as ‘duty bodies’ and described in detail at section 3.2) to keep specified land clear of litter and refuse. Whether people chose to ignore it, or are simply unaware, dropping litter is in fact an offence under S.87 of the EPA 1990 on all types of land, including that covered by water. Fixed penalty notices may be issued to people dropping litter on beaches or alternatively, people may be prosecuted and fined up to £2,500. Local authorities, private beach operators and the Duchy authorities are responsible for keeping amenity beaches under their management or ownership generally clear of litter between 1 May and 30 September. Section 89 of the Environmental Protection Act 1990 places a legal responsibility (a ‘duty’) on certain organisations to ensure that land, as far as is practicable, is kept clear of litter. Section 91 of the EPA 1990 goes on to state that a person who is fed up with a long-standing litter problem can use a Litter Abatement Order against those organisations listed under Section 89 (the ‘duty bodies’) if they are failing in their duty to keep that land clean.

### The Marine & Coastal Access Act 2009<sup>60</sup>

The vision for the Act is to deliver ‘clean, healthy, safe, productive and biologically diverse oceans and seas’, which is delivered through improving management, increasing protection of the marine environment and improving recreational access to England’s coasts.

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