The Beach Clean Project

2021 Marine Litter Report

The Clean Earth Trust

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RBC is proud to be working alongside The Clean Earth Trust (CET) to develop the island's first annual report on marine litter.

CET is one of a collection of over 100 partners from around the world supported by RBC's Tech for Nature programme - a global multi-year commitment to support new ideas, technologies, and partnerships to address our most complex environmental challenges.

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Acknowledgements

Thanks goes to **The Beach Clean Project Team** who volunteer their time every week to make our community clean-ups happen, as well as contribute to research and development of the project.

Special thanks to the regular weekly volunteer crew who come out in force, in all weather, and to every volunteer, organisation and school that has supported us during 2021.

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The Clean Earth Trust

Trustee Foreword

It's an exciting moment for CET to be releasing our first report on Guernsey's marine litter.

We live in changing times and the pace of change is only set to accelerate. At CET we aim to provide leadership and support to the local community, in breaking down complex issues regarding human impact on the environment, into small solvable components.

The data collected from Guernsey's beaches over the course 2021 shines light on the sources of the pollution within our marine environment and provides insight to where we, together with the community and government, should focus resources for the most impact. We look forward to building on the report as we continue into the 2nd year of data collection and beyond.

Thanks goes to the members of the CET team and volunteers who have contributed to this project and to RBC for their financial support.

Laura Bampton & Andrew Munro

Trustees

The Clean Earth Trust

Introduction

In 2020, the world hit a crossover, where human-made mass exceeded the living biomass on Earth.[1] Driven by enhanced consumption and urban development, the imbalance between man and nature hit another major turning point. Then last year, COP26 came and went, bearing the echoes of former years, and former warnings – that we are due to exceed global warming of 1.5°C, and are on track to reach 3.2°C of warming this century[2] unless major changes in the way we consume, particularly fossil fuels, are made.

With elevated levels of consumption, we can expect elevated levels of waste and the planet is crying out for a more respectful, regenerative and resourceful way for humans to live alongside nature. Simply, waste is destroying our ecosystem, from polluting the highest mountains and the deepest waters,[3] to killing wildlife[4] and even infiltrating human blood.[5]

Through weather systems, incineration, run-off and failing infrastructure, most waste ends up touching the ocean in some way, causing damage and further weakening marine ecosystems' resilience to the growing pressures of climate change and degradation caused by human behaviour.

Currently, there is a 1.6 million square kilometre "garbage patch" floating in the Pacific Ocean three times the size of France[6] and future predictions tell a staggering story about the effect of waste on wildlife. For example, by 2050, 99% of all seabird species will be eating plastic.[7]

The Clean Earth Trust

In Guernsey, we are not exempt from marine litter or plastic pollution and, whilst the island benefits from an established and committed community of regular beach cleaners, little data has been recorded to date.

Becoming a partner of RBC's Tech for Nature programme and joining their international community of organisations tackling environmental issues has been a turning point in our operations as a charity. The funding has supported long-term collection of marine litter and data along our coastline.

The citizen science surveys on marine litter completed throughout 2021 highlights where the overspill of our consumerist lifestyles are impacting our marine environment and collectively, what we can do about it.

Whilst we wait with hope for the details of United Nations Plastic Treaty, due to be released in 2024, we must keep moving forward with proactive solutions to tackle plastic pollution.

From this initial base, we want this report to highlight the scale of the issue and enable the island's government to make better decisions regarding policy and legislation to protect our marine environment and its inhabitants.

Helen Quin

Former Head of Operations

The Clean Earth Trust

Key Takeouts

- 122 surveys were submitted to CET throughout 2021
- 48,924 pieces of marine litter were collected, weighing more than two tonnes
- One piece of litter was found for approximately every metre of Guernsey's coastline
- Over 2,000 hours of volunteer time was spent beach cleaning, at a value of £17,771.06
- 76% of the marine litter found was plastic
- The food and drink industry contributed the most litter out of any sector
- 16,185 single-use plastic items were found and could have been greatly reduced if Guernsey adopted a single-use plastics ban
- 7,275 cigarette butts were collected, equating to a missed potential of £509,250.00 in littering fines
- 4 out of the Top 5 items found were plastic: plastic pieces, cigarette butts, food wrappers and polystyrene pieces
- The 5th most commonly found item was broken glass, creating increased sharps hazard on our local beaches
- The largest trackable source of waste is public littering at 39%
- 47% of litter is un-sourced
- There are multiple solutions at the individual, community and governmental level to tackle marine litter/plastic pollution
- Plastic pollution is only going to get worse and rapidly so over the next 10-15 years - mitigation at source is the most impactful change we can make

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Contents

OUR ICON WILL ALWAYS TAKE YOU BACK TO THE CONTENTS PAGE

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Marine Litter: A Global Problem

Reaching from the shoreline to the deepest seas, marine litter is an environmental problem of global scale which is adversely impacting human health, the economy and wildlife - over 600 species of marine organisms are reported to encounter marine litter, most of which is plastic.[8]

Every minute the equivalent of a rubbish truck of plastic enters our oceans.[9]

The impacts of marine litter and plastic pollution are so significant, it is reducing our natural ecosystems' ability to adapt to the increasing pressures of climate change, affecting millions of people's livelihoods, food security and social well-being.[10]

What Is Marine Litter?

As defined by the United Nations Environment Programme (UNEP), marine litter is "any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Marine litter consists of items that have been made or used by people and deliberately discarded into the sea or rivers or on beaches; brought indirectly to the sea with rivers, sewage, storm water or winds; accidentally lost, including material lost at sea in bad weather (fishing gear, cargo); or deliberately left by people on beaches and shores."[3] Marine litter is referred to as '**a waste that nobody owns and nobody takes responsibility for**'[11] and is largely due to market failure on land, with producers/manufacturers not held responsible for the lifecycle of the products and packaging they sell.[12]

Why The Focus On Plastic?

A plastic bag is now the deepest known piece of plastic rubbish, found at a depth of 10,975m, inside the Mariana Trench.[13]

Since the first studies of marine litter in the 1960s, research and public interest has grown.[15] Many studies have found that marine litter consists primarily of plastic – roughly 85%![3]

UNEP shared that over 400 million tonnes of plastic is produced every year, a figure due to double by 2040. Of this, 12% is incinerated and only 9% is recycled.[9] The remaining 79% accumulates in landfill sites or the natural environment, which goes on to breakdown and leach toxic chemicals into the environment.

Over the last 70 years, the rate of plastic production has grown faster than any other material. During this time, the industry has predominantly shifted away from durable plastics to single-use.[16] Between 1999 and 2019, overall market share of single-use polyethylene terephthalate (PET) has increased from 17% to 41%. In some countries, the change has been even sharper – in India it grew from 8% to 48%.[17]

Recycling has not kept pace with plastic production and is an inadequate solution to combatting plastic waste.[18] With the amount of plastic on the planet predicted to be greater in mass than all land animals and marine creatures combined,[1] it cannot and should not be left to individuals to tackle the problem from the ground up.[19]

It's estimated that there are up to 199million tonnes of plastic in our oceans[14]

At the UN Environment Assembly in March 2022, the Heads of State, Ministers of Environment and other representatives from UN Member States, announced by 2024 the UN will have an international legally binding agreement in place to end plastic pollution. The UN Plastic Treaty is expected to address the full lifecycle of plastics, the design of reusable and recyclable products and materials, and the need for enhanced international collaboration.[20]

Local Marine Litter

Guernsey is not immune to marine litter or plastic pollution. For more than six years, a committed and growing group of beach cleaners, also known as "Wombles",[21] have been working tirelessly to clean-up our shores. The "Found on the Beach in Guernsey (Beachcombers)" Facebook group was established in 2016 and has over 4,500 members who share their finds daily. Since the group's inception, its founder Sam Reoch has been influential in launching the Womble scheme,[22] lobbying for additional infrastructure to stop waste overrunning from events, sharing health and safety guidance on beach cleaning and encouraging first responders to cargo spills and hazardous beach pollution events.

Local beach cleaner, Richard Lord and other members of the Facebook Group have collected plastic bottles, most of them, originating from Belgium, Brazil, China, Dominican Republic, Egypt, Estonia, France, Germany, Ghana, Haiti, India, Indonesia, Ireland, Italy, South Korea, Malaysia, Morocco, The Netherlands, Nigeria, Poland, Portugal, Russia, Saudi Arabia, Senegal, Singapore, Sri Lanka, South Africa, Spain, Taiwan, Turkey, United Arab Emirates, UK, and the USA.[23] Richard also discovered one of the seven tracking devices released during the UK G7 Summit, demonstrating the tidal movement and reach of marine litter. His observations from collecting litter on local beaches suggest one considerable source is merchant ships as they pass through the English Channel shipping lanes.[24] There is, however, no quantitative data to support this yet.

Whilst beach cleaning is a popular activity for individuals, families, schools, youth groups and corporates in Guernsey, there has been very little data recorded to date.

"Every year the GSPCA help a wide variety of animals injured by human waste and behaviour, as well as those that we were too late to help and sadly found deceased. Last year we supported over 2,500 sick and injured wild animals, with human impact the number one cause. Gulls caught up in fishing lines, plastic pieces and twine within bird nests, and puffins and guillemots covered in oil, are just a few examples of the cases we receive. We have a stunning island here in Guernsey and many of us treasure our beaches and wildlife however, we can all do more to reduce our environmental damage, especially by stopping waste entering our ecosystems"

Steve Byrne

CEO, GSPCA

The Beach Clean Project

The **Beach Clean Project (BCP)** is a **CET** initiative which launched in January 2021. Following the charity's previous years of beach cleaning events, the team wanted to start developing a deeper understanding of marine litter in Guernsey, its sources, possible solutions and recognise the efforts of local volunteers already tackling this problem.

Utilising the power of citizen science to collect data on marine litter across the Bailiwick, throughout 2021 the **CET** team held regular weekly community clean-ups, and a series of larger scale beach cleaning events, recording every item that was found. Our aim was to clean-up every beach on Guernsey's coast however, due to adverse weather and the COVID-19 pandemic, it wasn't possible to survey every bay – Petit Port was excluded from the sample of bays surveyed because we couldn't gain access.

Items found were logged on a survey form which followed the **Marine Conservation Society's (MCS)** structure to identify and categorise items.[25] The form was subsequently adjusted to reflect commonly found local items and from May 2021, was made accessible online so beach cleaners and groups outside of the organisation could also share their finds.

Not only will the BCP help keep the Bailiwick's beaches clean but through data insights and tracking marine litter year on year, it will provide on-going recommendations for individuals, the community and especially the government, on how this pollution can be mitigated. By having quantitative data, we can also join and contribute to the global conversation about marine pollution.

We hope that more local beach cleaners engage with the online survey and that the project can be expanded into Alderney, Sark and Herm so that data from the whole of the Bailiwick is represented.

Why Citizen Science?

As the identification, quantification, and sampling of marine litter does not require professional scientific input, citizen science has become a popular and impactful strategy for NGOs to deliver global research and understanding of the marine litter problem.[26]

Citizen science projects are powered by volunteer time and offer a low-cost method of collecting large volumes of data with broad reach, as well as helping raise awareness of marine litter and leading positive change within the community through engagement in the activity.

Whilst we need governments and businesses to make huge systemic changes to tackle plastic pollution, gaining community support around local environmental issues is critical in making change happen at scale, especially in enabling the success of the solutions on offer.[7, 28]

Citizen science projects are more easily scaled than working alone and often get results quicker than national governments and big businesses.[7]

2021 SURVEY RESULTS

Clean Ups

A total of 122 marine litter surveys were submitted throughout 2021. Whilst most of the data was collected via CET organised beach cleans, the survey form was made public in May 2021, allowing youth groups, Duke of Edinburgh (DOE) participants and individual beach cleaners to submit data independently.

If every volunteer hour was paid for their hours, the year's clean-ups would have cost £17,771.06 in salaries (based on local minimum wage)[29] – not considering the operational costs to manage and co-ordinate the project. We know that this is just a part of the entire community's efforts to clean-up our coast, and thousands of volunteer hours go unaccounted for each year. The States of Guernsey (SOG) also have a dedicated team that clean our coastal zones, however, the time spent, salaried value and waste composition is not publicly available.

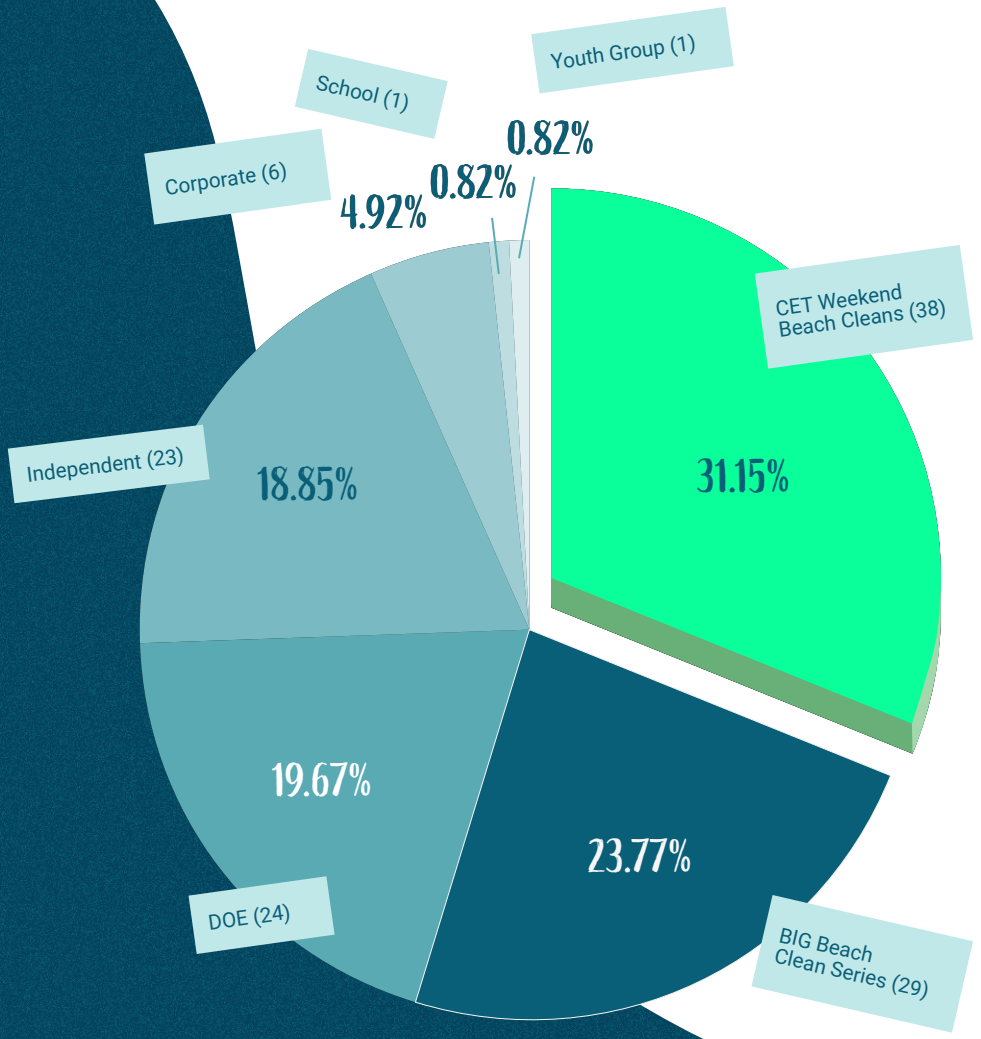


FIGURE 1: THE NUMBER OF MARINE LITTER SURVEYS SUBMITTED BY GROUP

48,924 pieces of marine litter collected, weighing over 2 tonnes

A total of 48,924 individual items of marine litter were collected, sorted and identified throughout the year - an average of 401 pieces per clean-up. The most frequently found items were broken plastic pieces. These pieces range in size and are unrecognisable parts of a larger whole, making it difficult to attribute to a particular item or category.

As the most littered item on the planet, it is no surprise to see cigarette butts in the top five. Both cigarettes and plastic food wrappers are directly dropped by the public, on land. Together these would have a value of £783,440 in littering fines, if litter laws were actively enforced.

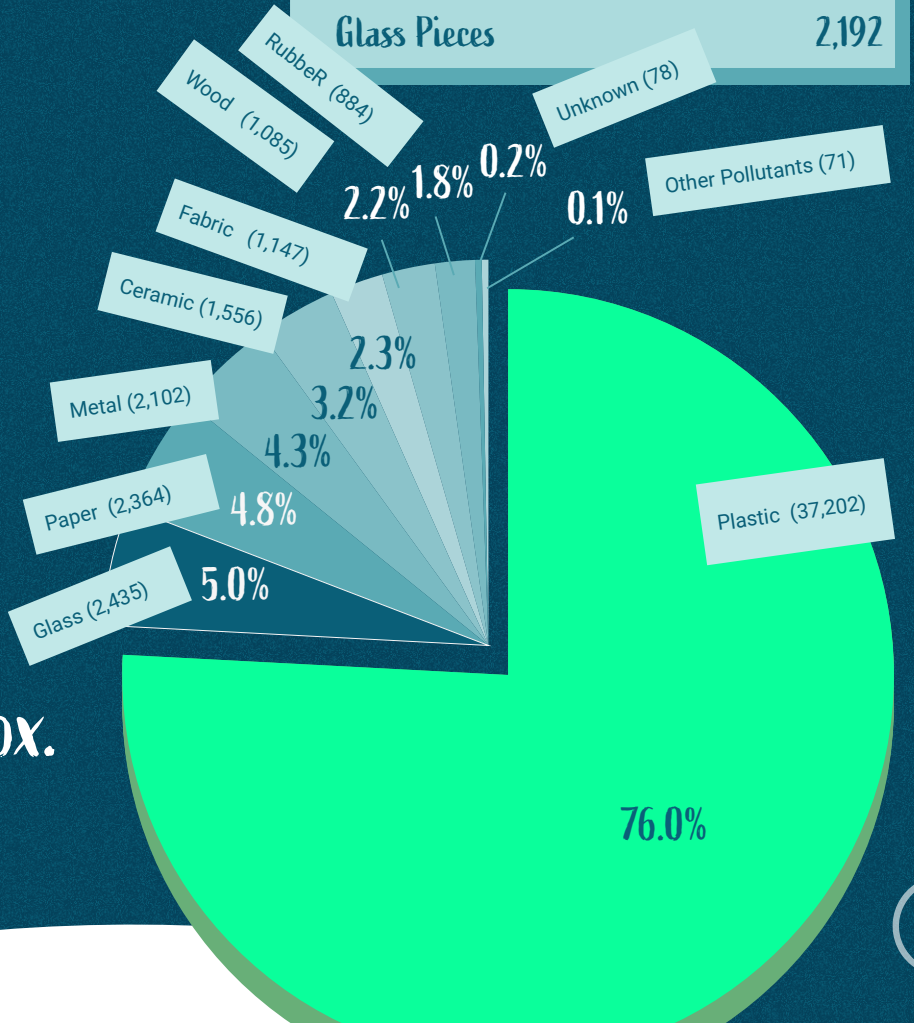
With Guernsey's circumference roughly reaching 48km (48,000m), approximately one item was found for every metre. A UK study found that 85% of 1000 residents and tourists said they would not visit a beach with more than two litter items per metre.[26]

1 piece of litter was found for approx. every metre of Guernsey's coastline

FIGURE 2: THE TOP 5 ITEMS LITTER FOUND →

TOP 5 Items	
Broken Plastic Pieces	10,106
Cigarette Butts	7,275
Plastic Food Wrappers	3,917
Polystyrene Pieces	3,509
Glass Pieces	2,192

FIGURE 3: THE SPLIT OF TOTAL ITEMS FOUND BY MATERIAL ↓



Plastics (76.0%)

76% of items found on Guernsey beaches were plastic

FIGURE 4: THE SPLIT OF PLASTIC ITEMS

33% of plastic items found were single-use

Globally, plastic accounts for at least 85% of global marine litter[3] and is the most commonly recorded material in British beach cleans.[26] From the data collected locally throughout 2021, plastic made up 76% of the local marine litter found, following UK and global trends.

Plastic can account for up to 100% of floating litter in some areas, and studies have demonstrated that densities of 1 item per m^2 are often reached on beaches – excluding very high concentrations caused by typhoons or flooding events, where the number can be higher.[15]

Single-use plastics (SUPs) are defined as products which are used once, or for a short period of time, before being thrown away.[30] We have highlighted these items in green. In total 16,185 SUP items were collected – 33% of all items found and 43% of all plastic items found.

Of the 354 shotgun cartridges found, 250 were in a single beach clean from Portinfer to Baie des Pêqueries.

The total amount of plastic found demonstrates that our beaches are subject to microplastic (less than 5mm) and possibly nanoplastic (1 to 1000 nm) pollution. Items need to be removed as soon as possible from the environment, in their complete form, before having time to break into smaller pieces which are hard, if not impossible, to monitor and remove. Due to their size and difficulty to find, plastic pieces within the 0-2.5cm category will likely be considerably under reported.

Glass (5.0%)

857 broken pieces of glass were found at La Fontanelle in a single beach clean – the most for any beach clean. Much like when identifying pieces of plastic, visibility bias will cause small pieces of glass to be under reported.

The most significant impact of glass is when it breaks and causes a sharps risk to wildlife and people using the beach.

Broken pieces made up 97.5% of the glass items found

Glass Items	2,435	
Pieces	2,374	97.5%
Whole Bottles	59	2.4%
Light Bulbs	2	0.1%

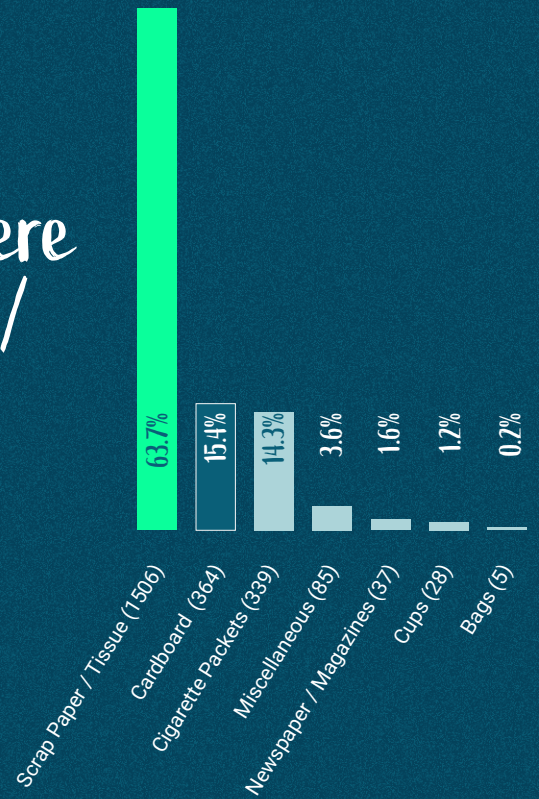
FIGURE 5: THE SPLIT OF GLASS ITEMS

Paper (4.8%)

Whilst some of paper and cardboard will biodegrade with little detrimental impact to the environment, several items, such as newspapers, magazines, paper cups and cigarette packets include dyes, inks, bleaching agents and plastic coating which can leach into water and affect how they biodegrade which disrupts the ecosystem.

4.8% of all items found were made of paper/ cardboard

FIGURE 6: THE SPLIT OF PAPER ITEMS →



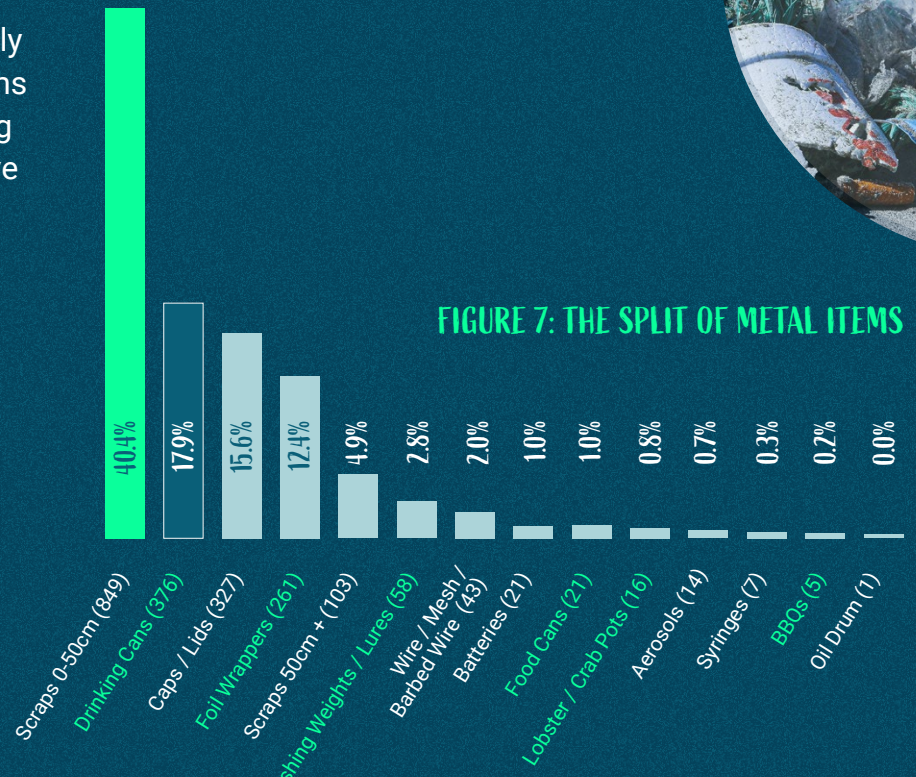
Metals (4.3%)

Metal items made up 4.3% of all the items found. Of these, much like plastics, the most identifiable items are related to the food and beverage industry. These items are highlighted in green and make up 35% of the metal items found.

Although not generally single use and more easily recyclable, like plastics, metal pollution will result in gradual leaching of unwanted compounds into the external environment, especially when damaged and/or in contact with water. Some metal items are more likely to travel along the seabed, physically damaging habitats such as rock pools and kelp forests. Items which have weathered produce sharp edges which are also a hazard for humans and wildlife.

Of the metal items found, 45% were unidentifiable

FIGURE 7: THE SPLIT OF METAL ITEMS



Ceramic (3.2%)

Older ceramics and construction materials may contain, or be coated in, some toxic compounds and heavy metals, such as lead, which can leach into sediment.

Of the ceramic items found, 93.3% were broken pieces

Ceramic Items	1556	
Pieces	1,452	90.0%
Construction Material	75	7.5%
Miscellaneous	29	2.4%

FIGURE 8: THE SPLIT OF CERAMIC ITEMS

Pollutants (0.1%)

Of the pollutant items found 67 were dog faeces and 4 pieces were paraffin wax (which is made up of petroleum, coal and oil shale). Local legislation on leaving dog poo in the environment is rarely enforced despite the health and safety concerns for humans, livestock and other wildlife from the spread of parasites and bacteria. From our surveys alone, £6,700 - £67,000 was missed in potential fines.

Fabric (2.3%)

Fabric items break down into scraps relatively quickly when exposed to the elements and can become hard to find or identify the smaller they get. Fabric items often contain synthetic plastic materials, such as polyester, acrylic or polyamide, and through their breakdown shed tiny microfibres which marine animals can mistake for food, and which eventually work their way up the food chain.[31]

The extent of microfibre pollution is impossible to calculate because the particles are so tiny. For context, it's estimated that up to 17 million microfibres could be released by an average full washing machine cycle! Despite their detrimental impact, only two thirds of us are aware that our clothing is often made of plastic.[3]

Two thirds of UK clothing is made of synthetic plastic materials[31]

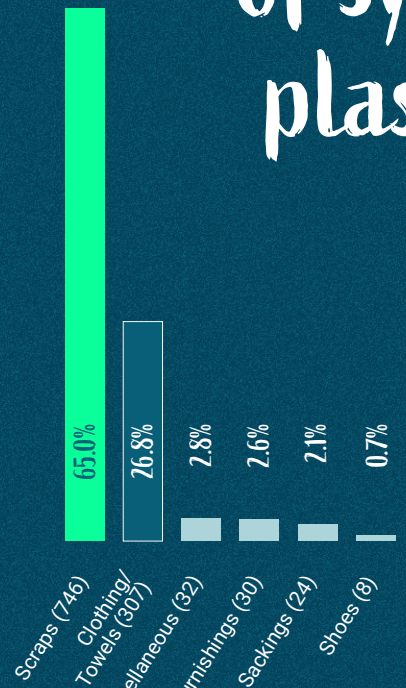


FIGURE 9: THE SPLIT OF FABRIC ITEMS

Wood (2.2%)

Of the wood items found, the majority were organic and not a major concern in terms of impact as they naturally biodegrade. However, pallets and wood containing nails pose considerable threats to beach users, wildlife, habitats and seafarers, by way of damage to watercraft. Crates and pallets are sometimes protectively coated to prevent pests, causing contamination from chemical treatments, as well as fungicides and the glues used to bind plywood layers.

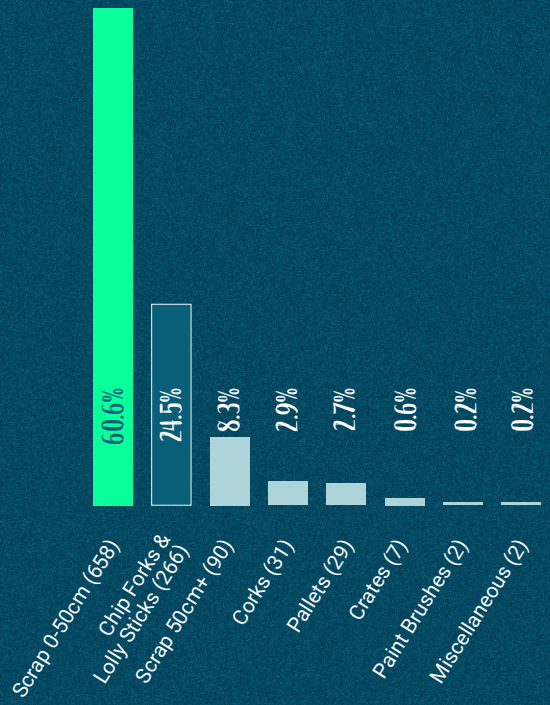


FIGURE 10: THE SPLIT OF WOOD ITEMS

Rubber (1.8%)

The most commonly found rubber item was tyres used for crab and lobster pots, where tyres are ripped into strips and wrapped around metal traps. They often become loose during rough tides or degrade with general wear and tear, requiring consistent monitoring and management Varying lengths were found washed up, demonstrating weathering and breakdown. Rubber is a natural material however can sometimes be mixed with synthetic elements, to produce items such as PVC.

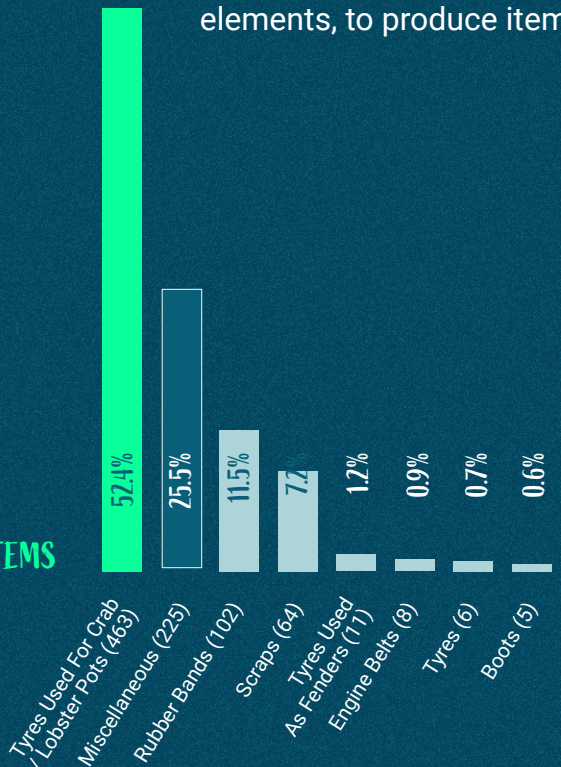


FIGURE 11: THE SPLIT OF RUBBER ITEMS

Food & Drink

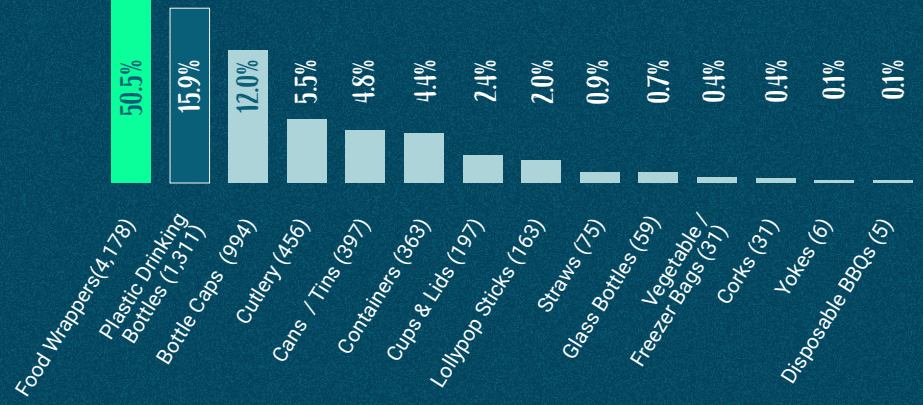
Food and drink related items made up **17%** of all items found, and this was the single most contributing industry. This figure demonstrates the impact supply chains have on the environment, damaging the very source of our food and industry's profits.

Grandes Rocques was the most prolific beach for food wrappers, with 367 found in one clean-up. Plastic food wrappers can take **100-300 years** to break down but will remain at large in the environment indefinitely, like many other plastic items.[8]

17% of all items found were related to food and drink

Plastic water bottles can take between 450-1,000 years to break down depending on size, but will remain at large in the environment as microplastics indefinitely[8]

FIGURE 12: THE SPLIT OF FOOD AND DRINK RELATED ITEMS



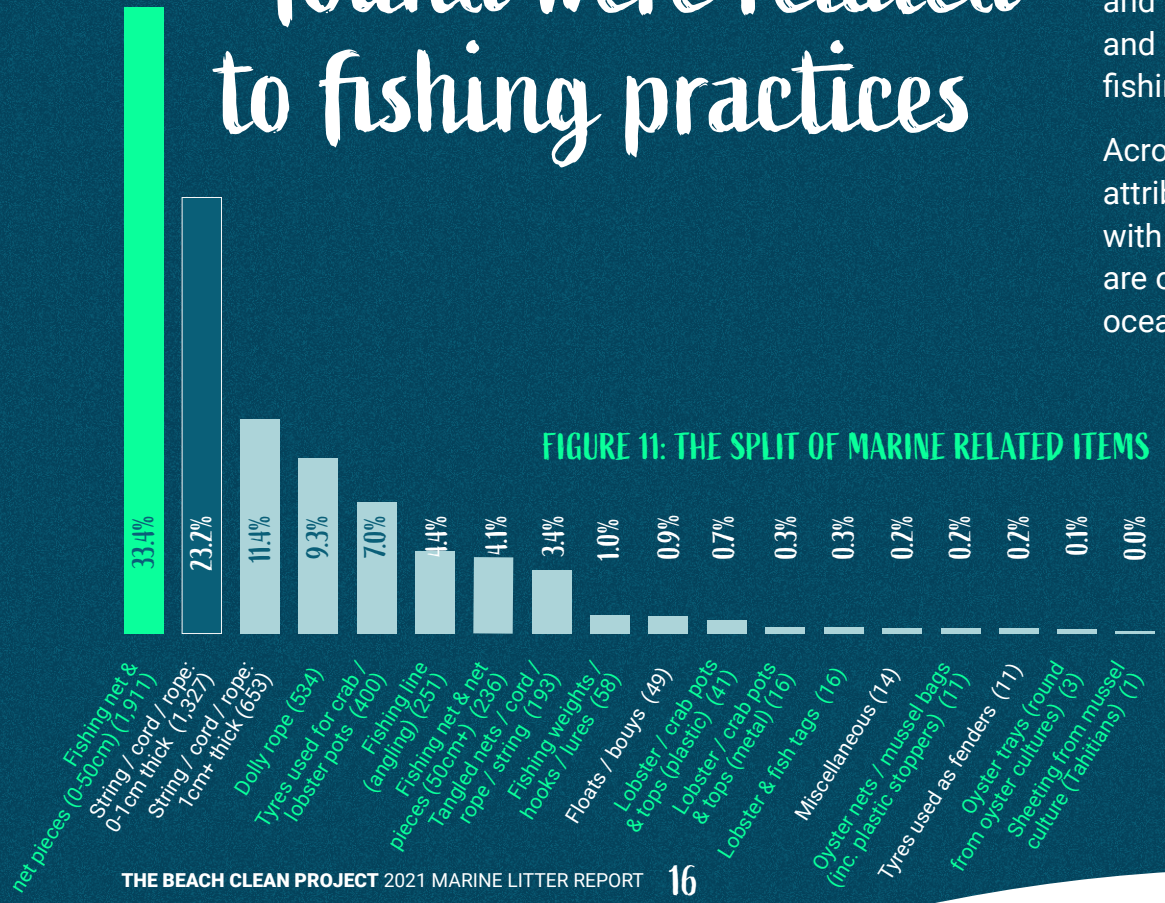
Marine

7.6% of all items found were related to fishing practices

Whilst an estimated **640,000 tonnes** of lost or discarded fishing gear entering our oceans each year,[6] in the UK, it accounts for only **8.6%** of the items found at beach cleans.[8] Beyond the ecological and animal welfare impact of lost fishing gear, there are significant costs to local fishing industries such as repair and replacement of gear, reduced and/or contaminated catch and loss of earnings due to reduced fishing time, from lost fishing gear.[8]

Across our surveys, **12%** of all items are marine related, with items attributed specifically to fishing making up **7.6%** - closely in line with the UK. These items are highlighted in green. As these items are often lost or discarded at sea, many will remain within the ocean rather than being washed up onto beaches.[6]

FIGURE 11: THE SPLIT OF MARINE RELATED ITEMS



Smoking

Cigarette butts have the potential to kill-off 50% of all life within one litre of water[35]

Commonly made from cellulose acetate, cigarette butts can take roughly 10 years to biodegrade. A survey by Keep Britain Tidy found that less than half of smokers know that cigarettes contain plastic, whilst one in ten don't consider them to be litter.[33]

Cigarette ends have been found in the guts of whales, dolphins, turtles, and sea birds. When ingested, they lead to inflammation of the digestive system, blockages in the gut and leaching of toxic chemicals into the bloodstream, any of which can be fatal.[34]

Harmful chemicals including arsenic, lead and nicotine are found in cigarette butts and go on to pollute waterways and the ocean. The leachate is toxic to both saltwater and freshwater species, demonstrating a mortality rate of 50% for both species from a dilution of 1 cigarette butt per litre of water.[35]

Cigarette butts are the most littered item across the globe, with roughly 4.5 trillion discarded every year.[32]

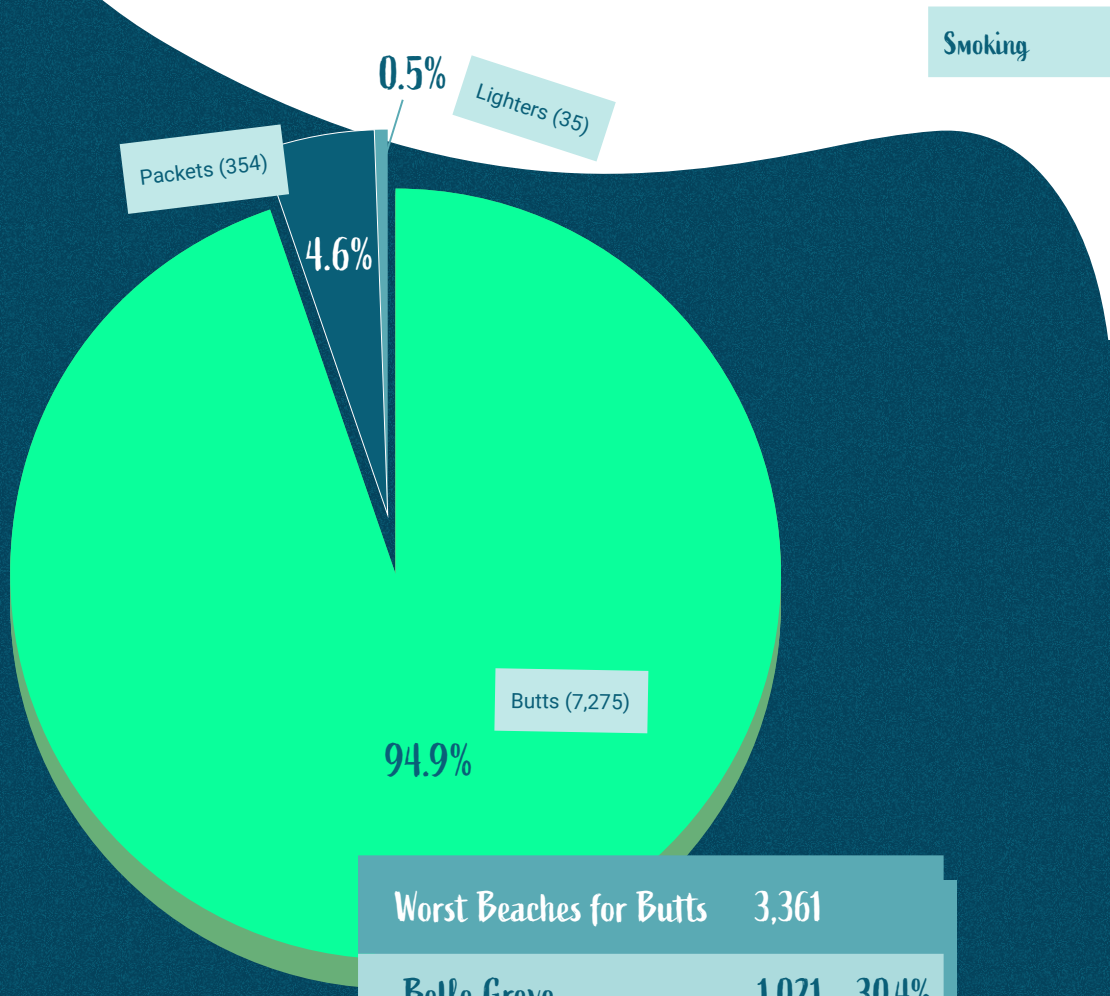


FIGURE 14: THE SPLIT OF SMOKING RELATED ITEMS ↑

FIGURE 15: TOP 5 WORST BEACHES FOR BUTTS →

Worst Beaches for Butts	3,361	
Belle Greve	1,021	30.4%
Pembroke	919	27.3%
Rousse	729	21.7%
Vazon (Vistas to Fort Hommet only)	381	11.3%
Grandes Rocques	311	9.3%

Sanitary

Whilst our wastewater in Guernsey remains untreated before it enters the ocean, Guernsey Water have screens to collect debris that has been flushed. In 2019, 81 tonnes of material from the island's wastewater was removed from the Belle Greve Wastewater Centre, consisting mainly of plastic items such as wet wipes.[36]

Of the items found, wet wipes remain the highest contributing sanitary pollution however, with the wastewater screening in place we can confidently allocate the source of these, and the other items, as public littering.

Of all the sanitary items found, wet wipes were the most common

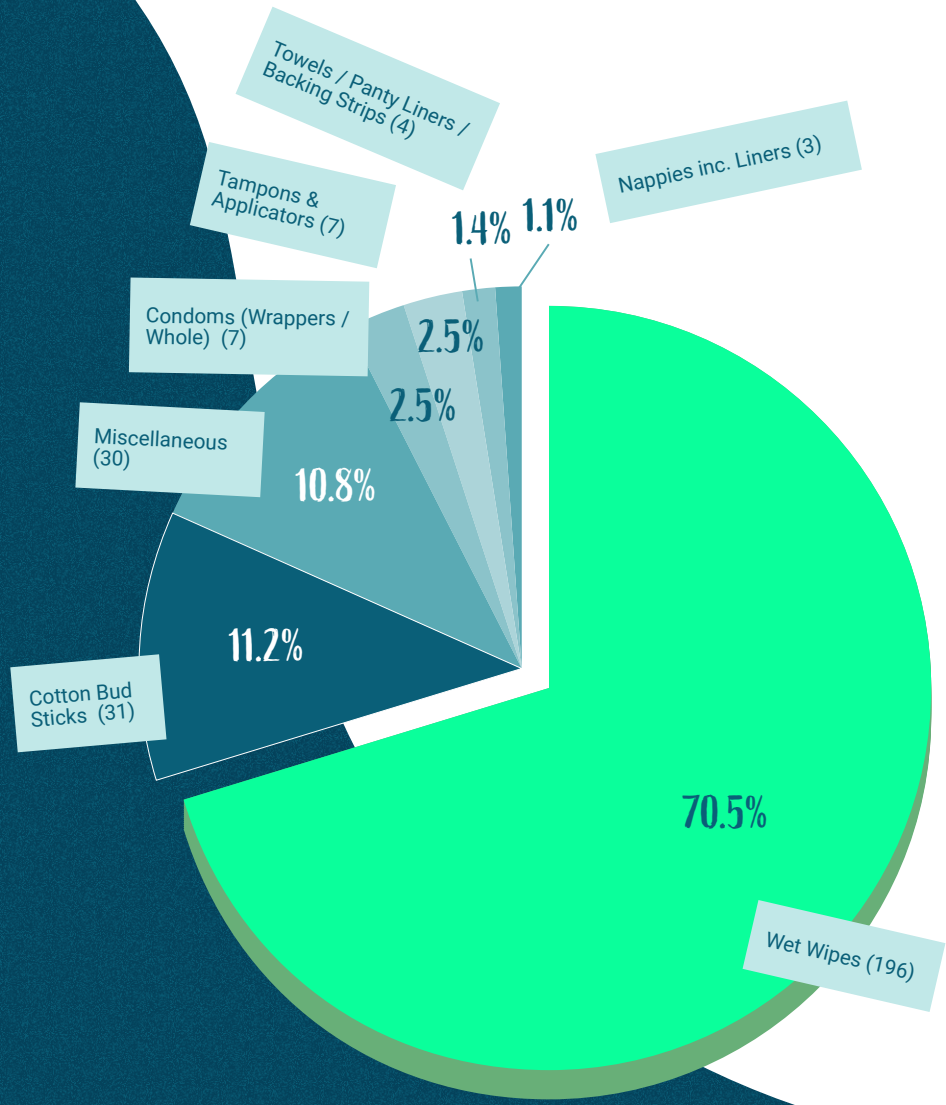


FIGURE 16: THE SPLIT OF SANITARY RELATED ITEMS

Medical

Only 0.1% of all items found were PPE

The COVID-19 pandemic has dramatically increased the use of plastic PPE.[37] In 2020, it was reported that the UK public was throwing away **53million masks per day**.[38] Whilst reports do reflect an increase in PPE at clean-ups[34] it is not in ratio with the increase in production or waste statistics.

Whilst it is a new item infiltrating our marine environment, PPE only made up **0.1%** of the total items of marine litter we found, which is significantly lower than the **2.5%** identified in recent UK based clean-ups.[34] PPE litter in Guernsey is far less prevalent than other items that have been prolific for over a decade, such as SUPs or food and drink related items.

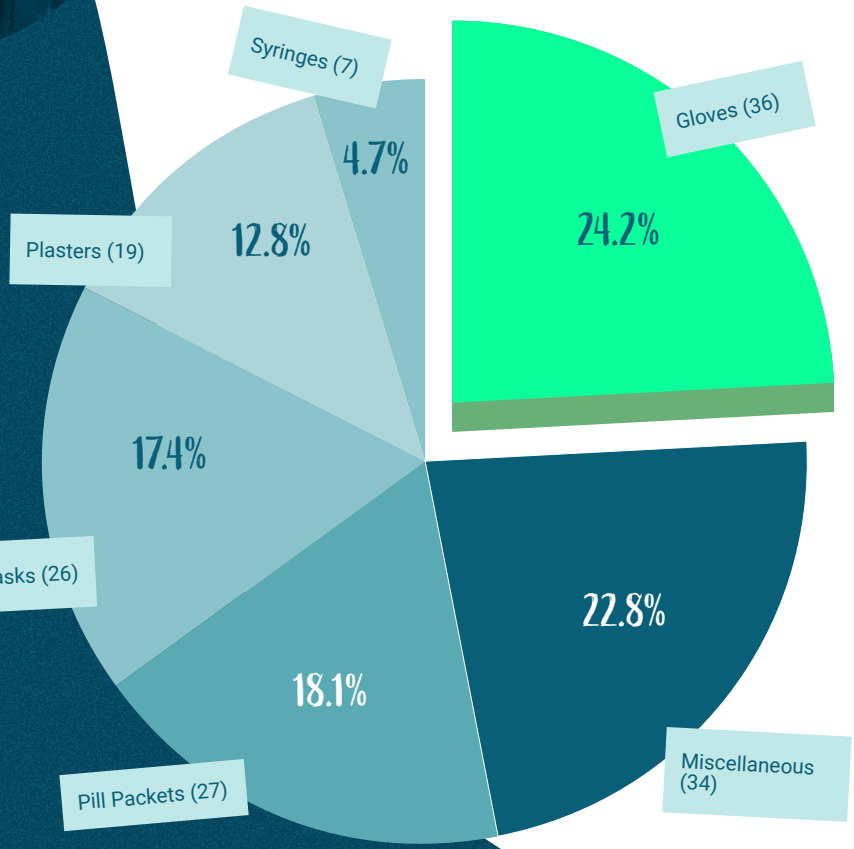


FIGURE 17: THE SPLIT OF MEDICAL RELATED ITEMS

Sources of Marine Litter

Surveying marine litter and understanding its composition provides vital information in identifying its source.
Most commonly, these sources are split between land and ocean-based, depending on where the litter entered the sea. Whilst marine litter can travel long distances before being stranded, some items can be attributed to certain sources, providing valuable information to inform the development of reduction strategies.[26]

Land-Based Sources

Globally, most traceable items originate from land, specifically public littering.[26] However, land-based sources are broad, including recreational use of the coast, industry and harbours, unprotected landfills and dumps located near the coast, sewage overflows and outlets, overflowing public bins and refuse points, lost property and extreme events. To make the task of identifying source even more challenging, marine litter can also be transported to the sea from further inland by rivers and other industrial discharges and run-offs, as well as the wind.[15]

Ocean-Based Sources

Ocean-based sources of marine litter include commercial shipping, ferries and liners, both commercial and recreational fishing vessels, military and research fleets, pleasure boats and offshore installations such as platforms, rigs and aquaculture sites. Alongside these sources, factors such as ocean current patterns, buoyancy, climate and tides, the proximity to urban, industrial and recreational areas, shipping lanes and fishing grounds all influence the types and distribution of litter in the ocean, and therefore what's found on our beaches.[15, 26]

Local Sources

Using guidance from MCS[39] we can estimate that the items surveyed across Guernsey beaches were likely from the following sources. However, as outlined in the sections above, it is difficult to trace the exact source or whether these sources of marine litter are by accidental or intentional means.

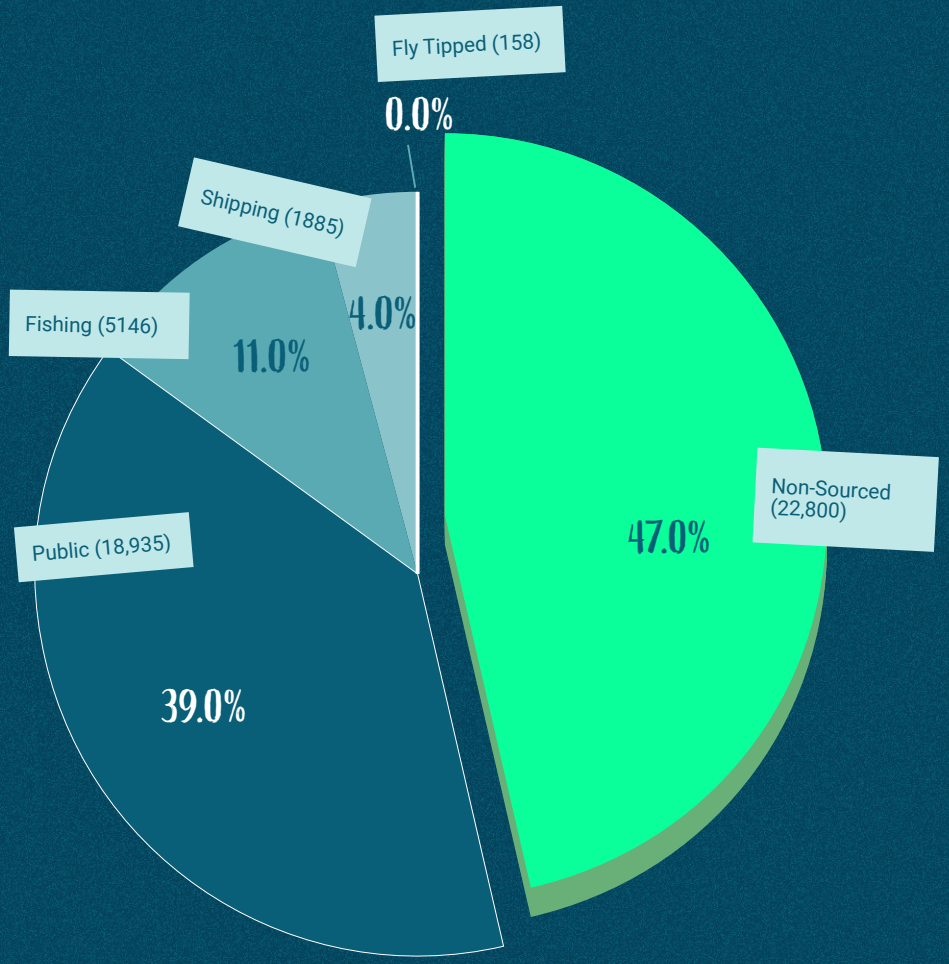


FIGURE 18: ESTIMATE SOURCES OF LOCAL MARINE LITTER

Fossil-Fuelled Plastic Pollution

Whilst these sources illustrate the routes in which an item finds its way into the ocean, the single-largest source of marine litter are the producers themselves, particularly the producers of plastic.

Reports have detailed that 99% of plastics are produced from chemicals sourced from fossil fuels. With fossil fuel production highly localised to specific areas, plastic production is also concentrated in the same regions, and it is no surprise that not only are fossil fuels and plastic made from the same materials, but they are also made by the same companies.[40]

The link between plastic production and fossil fuels isn't often made or discussed. However, if trends in oil consumption and plastic production continue as expected, plastics will account for 20% of total oil consumption by 2050.[41]

Impact

Research on marine litter has found the effects are far reaching, from contaminating our oceans and straining already stressed ecosystems, to having hazardous consequences for wildlife, seafarers, beach users and coastal communities, alongside considerable financial implications.[8]

There are many ways in which marine litter impacts the environment, and some of these have been touched upon in the previous sections of this report. As the most found item, here we look more deeply at the effects of plastic pollution.

Ecosystem & Wildlife Threats

Plastic pollution alters marine ecosystems, which play a major role in sequestering carbon – the more damage caused, the harder it is for these systems to both offset and remain resilient to climate change.[3]

Although many plastics are persistent, they are not immune to degradation. When they do break down they transfer microplastics, synthetic and cellulosic microfibres, toxic chemicals, metals and micropollutants into waters and sediments which works its way up the food chain.[34]

Ultraviolet (UV) radiation plays an important role in plastic degradation. As UV light is absorbed rapidly by water, plastics do generally take longer to degrade at sea than on land. However, the rate of degradation also depends heavily on the ambient temperature as well as polymer type, additives and fillers. Some beach litter items become embrittled and reduce to small particles by very slight pressure.[15]

Plastic found in the environment causes lethal and sub-lethal effects in mammals, birds and fish, as well as invertebrates such as plankton and corals. Entanglement, starvation, drowning, laceration of internal tissues, smothering and deprivation of oxygen and light, physiological stress, and toxicological harm are just some of the effects felt by wildlife.[3, 42]

Abandoned fishing gear accounts for 86% of the large plastics within the Great Pacific Garbage Patch and has detrimental impact on wildlife. Specifically designed for the purpose of trapping and killing marine life, each year “ghost” fishing nets kill over 100,000 whales, dolphins, seals, and turtles.[43]

Worryingly, research has only just started to touch the surface of how contamination of marine organisms causes harm to ecosystems and human health. The consequences of invasive non-native species, which spread vast distances through the colonisation of floating debris, is another major unknown.[15]

Human Health Hazards

Although incidents remain relatively under-recorded, 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.[8]

Micro and nanoplastics can enter the human body through ingestion, inhalation and even absorption via the skin which go on to accumulate in organs, including the placenta. Human uptake of microplastics via seafood poses serious threats to coastal and indigenous communities whose main food source is from the sea.[3]

The chemical additives of plastics also pose their own risk, some of which have been associated with serious health problems such as hormone-related cancers, infertility and neurodevelopment disorders like ADHD and autism. [19] When plastics and microplastics end up in the environment, they can also attract micro-organisms, such as harmful bacteria (pathogens) which may increase the risk of infection if they enter the body.[44]

There is growing concern around the harms of plastic on our health, and in 2021 research declared that plastic particles have found their way into the human bloodstream.[5] However, despite these concerns, research into plastic's impact on human health remains inconclusive and underfunded in comparison to the industry's growth.[19]

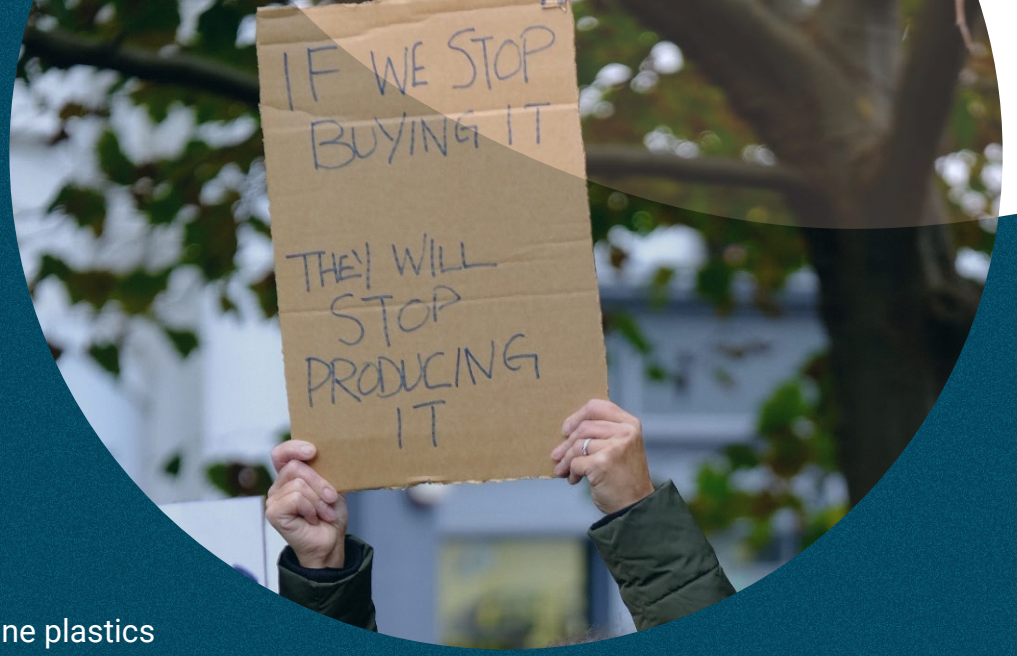
Socio-economic implications

Comprehensive data on the economic impacts of marine litter is limited, however the global implications are understood to be substantial. Economic and social consequences through ecosystem contamination result in loss of livelihood within coastal communities, as well as time and clean-up costs for local authorities.[8] In the UK it's estimated that local authorities spend £15 million annually on cleaning up beaches.[26]

Habitat alterations can affect local food production and damage coastal structures, leading to wide-reaching and unpredictable consequences including loss of resilience to extreme events and climate change in coastal communities.[3]

Furthermore, general costs to maintain beaches, loss of tourism revenue, and the direct and indirect costs associated with damaged vessels and loss in production time are also factors to consider.[26, 34]

Solutions



So, what can we do?

One of the major challenges in addressing the marine plastics problem is the diverse nature of plastic products, and the many routes of entry into marine systems.[15] A range of solutions and collective action across individuals, organisations and government is needed to tackle the problem.

Prevention starts with stopping production

Ban Single Use Plastics

SUPs continue to be in heavy circulation, supporting our growing consumerist and convenience driven culture. However, despite their apparent stress on infrastructure, and more concerningly our ecosystems and health, very few governments have put legislation in place to stop or reduce their use.

The EU approached the issue through the **Single-Use Plastics Directive**, which was required to be given the force of law in all EU countries by 3 July 2021.[30]

With a ban on single use plastics, 16,185 pieces of the litter found on Guernsey's beaches could have been avoided

The Directive aims to prevent and reduce the impact of SUPs on the environment and promote the transition to a circular economy by introducing an EU-wide ban on SUP products including:

- Cotton bud sticks
- Cutlery, plates, straws and stirrers
- Balloons and sticks for balloons
- Food containers
- Cups for beverages
- Beverage containers
- Cigarette butts
- Plastic bags
- Packets and wrappers
- Wet wipes and sanitary items

The Directive also requires reductions in the consumption of other plastic items including drinking cups and their covers and lids, and containers of prepared food for immediate consumption.

Amongst other measures is a collection target for plastic bottles of 90% by 2029 and a requirement that such bottles must include at least 25% recycled plastic by 2025 and 30% by 2030.[30]

Although the UK approved the Single-Use Plastics Directive, whilst a member of the EU, only Scotland has so far legislated to implement it.

To date, the UK have only banned straws, stirrers and cotton buds so far. However, in November 2021 the Government announced plans to phase-out single-use plastic plates, cutlery, balloon sticks, expanded and extruded polystyrene cups and food and beverage containers - all yet to be actioned! Further consultation is planned to address plastics such as wet wipes, tobacco filters, sachets, and other single-use cups.[45]

Whilst Guernsey will benefit from EU and UK legislation on SUPs when implemented, via some of its supply chains, neither will be directly applicable to the island. To ensure that all SUP sources are addressed, and unnecessary plastic waste is mitigated locally, we are calling for the States of Guernsey (SOG) to introduce a ban on single-use plastics.

Deposit Return Scheme

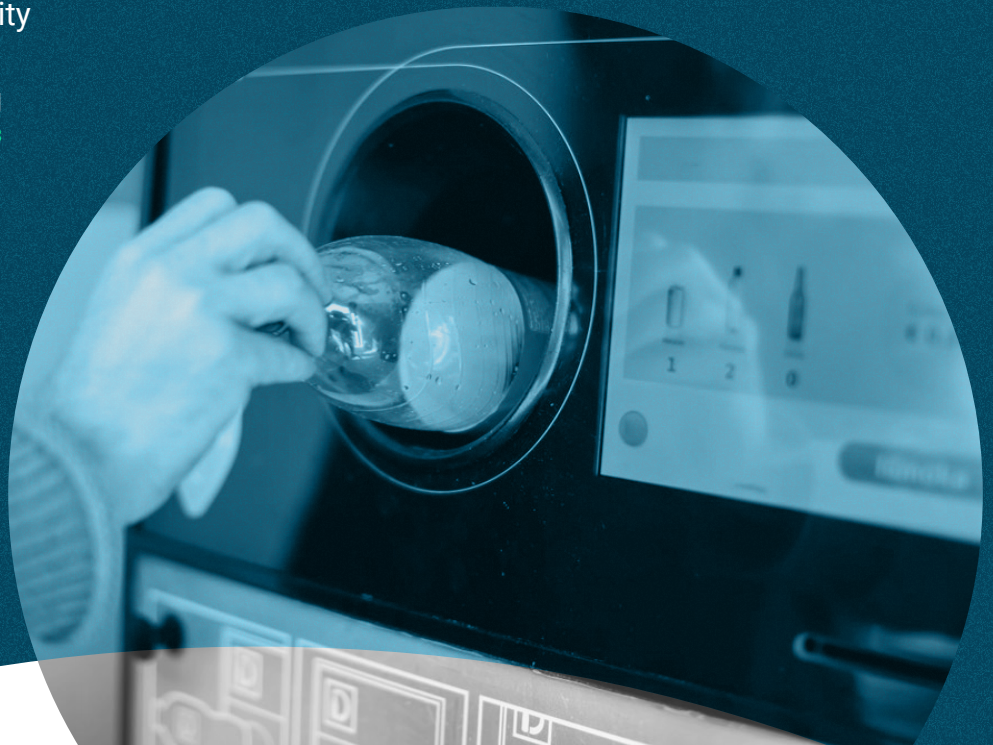
Most recycled plastic is downcycled into something less useful than before and is usually only recycled once before heading to incineration, landfill, or the ocean. With plastic production set to double by 2040[9] and recycling systems failing to keep up with demand,[18] we need to focus on solutions to stop plastic waste at source.

A Deposit Return System (DRS) is proving to be a successful option in many jurisdictions. A DRS charges the consumer a small deposit on a drinks container, which is refunded in full when the empty container is returned – either over the counter or through a reverse vending machine.[17] Within this circular model, high-quality plastic can be recycled and re-used more easily, reducing the number of new containers made from virgin material. Recycling rates of over 90% are common in well-designed and all-in DRS.[33]

Moving towards a more circular economy, where resources are kept in use for as long as possible and waste is minimised is a priority for the UK Government, with DRS forming part of their proposals.[46] The scheme looks to include Polyethylene Terephthalate (PET) plastic bottles, glass bottles, and steel and aluminium cans, and would address 52% of marine litter produced by the 12 most polluting brands across the UK.[33]

In the EU, no member states have met the targets within the Single Use Plastics Directive,[30] which sets a 77% separate collection target for plastic bottles by 2025, going up to 90% by 2029, without the use of a DRS.[17]

We want to see SOG push back on food and beverage suppliers and services and implement a local DRS system to cut out unnecessary packaging waste within the island and actively contribute to lowering the globe's plastic production rates.



Extended Producer Responsibility

To mitigate waste, and therefore marine litter, we must first understand its true origin - the producer. Currently, producers only pay for around 10% of the costs of disposing of their products in the UK.[3]

The UK Government is considering the introduction of an Extended Producer Responsibility (EPR) scheme in 2023 that will see producers take responsibility for 100% of the costs of managing, recycling, and disposal of their packaging waste, with higher fees being levied if packaging is harder to reuse or recycle.[47]

For Guernsey, where waste management is limited due to logistical, cost and scale constraints and exportation is the only option for recycling, SOG's waste and recycling service, as well as the public, are shouldering the costs, due to supplier dictation.

Understanding how the EPR will trickle down to affect Guernsey through UK supply chains is uncertain and requires further investigation in terms of application and impact. However, we cannot wait for the UK's lead and need to apply pressure on the main producers of waste here in Guernsey and apply push responsibility back up the supply chain. There are also local businesses that a model like this could be applied to now, for example, food and beverage outlets, local producers and retailers, who all choose their own packaging options.

Businesses must be held accountable for their environmental impact. Our government has the responsibility, and the power, to introduce new legislative tools and policies to address these issues.

Polystyrene Recycling

In 2019, **Guernsey Waste and Recycling** stopped recycling polystyrene,[48] and so to better assess this impact, this waste material was recorded separately in our surveys. A recent research report on Guernsey's waste and recycling approach was conducted, highlighting the public desire for polystyrene recycling to be reinstated on island.[49]

To capture the polystyrene items not covered by a single-use plastics ban, we are asking for polystyrene recycling to be reinstated so there is less desire to fly-tip this packaging item.

Plastic-free Coastal Kiosks, Cafes & Restaurants

Whilst legislative changes take time to implement, we are calling for beach-side kiosks, café, shops and restaurants to replace SUPs with home/locally compostable or re-useable alternatives. This extends to alternative materials for beach toys.

Not only would this link into the business's corporate social responsibility, but also respond to the public's desire to see a reduction in SUPs, and demonstrate Guernsey's commitment to achieving the **UN's Sustainable Development Goals** as outlined in the **SOG Climate Change Policy and Action Plan.**[50]

Expand Refill Schemes

Alongside the **28 businesses** signed up to Refill,[51] Guernsey Water introduced the first Refill Station at the Liberation Monument in July 2021 and now have additional stations at KGV, St Saviour's Reservoir and Cobo kiosk. Temporary taps are regularly put in place by Guernsey Water to support sporting activities along the coast.

2,305 plastic drinking bottles, bottle pieces and bottle tops were found in 2021

Smoke Free Beaches

Many jurisdictions around the world have recognised the threats to the marine ecosystem posed by cigarette butts and have responded by banning smoking on their shores. These jurisdictions include Canada, Australia, Mexico, Japan, Hawaii, Puerto Rica, California, Maine, Massachusetts and New York.

We propose the **SOG** make amendments to **The Smoking (Prohibition in Public Places and Workplaces) (Guernsey) Law, 2005**, extending the legislation to include a smoking ban on the shore* in Guernsey, including in all car parks where any part of the parking area lies within the shore and in all areas in or adjacent to establishments on the shore selling food or drink.

If actively enforced, fines for littered cigarette butts would have generated £509,250

FOOTNOTE *shore is defined as, "every part of a beach and so much of the surface and subjacent strata (however composed) of land as is situate within a distance, measured horizontally, of 'one hundred and fifty feet from the line of high water at equinoctial spring tides and is not at a level in excess of twenty feet above sea level at high water at equinoctial spring tides." [55]

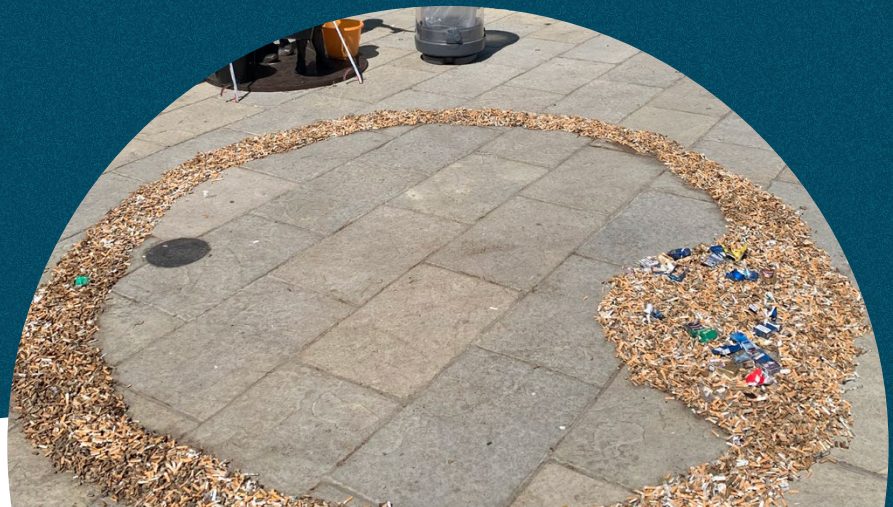
Enforce Littering Fines

Locally, convictions for littering constitute a fine of **£70**, for fly tipping a fine up to **£5000** or a prison sentence of up to three months, and between **£100** to **£1000** for not picking up your dog's poo.

Despite our findings that littering is a regular occurrence within our community, **only six refuse and litter offences were recorded in 2018**[52] and just one in 2019.[53]

In the UK, under the **Clean Neighbourhoods Act 2005**,[54] employees of parish councils and other persons (including their employees) authorised by a parish council can issue fixed penalties for littering.

We are calling for the active enforcement of all littering related fines, whether this be through police action, dedicated wardens and/or authorised parish representatives.



Fishing Gear Responsibility

While the introduction of synthetic fibres in fishing and aquaculture gear represented an important technological advance specifically for its persistence in the marine environment, accidental and deliberate gear losses have become a major source of ocean plastic pollution.[6]

We are calling for tighter regulation to control the loss of valuable commercial fishing nets and pots to protect the marine environment and its inhabitants, as well as a push for use of plastic-free alternative materials used in fishing operations.

Glass Free Beaches

Guernsey's white sandy beaches are a popular part of local life and a strong tourism attraction with beach picnics, BBQs and music events taking place regularly through the summer months - alcohol consumption is an element of these activities. Despite SOG guidelines for beach BBQs,[55] where glassware isn't allowed for groups larger than 50, these rules around beach use are not actively enforced. There are no restrictions or guidelines for smaller groups.

Broken glass was in the Top 5 items found on our beaches and can cause considerable hazard to children and wildlife. We are calling for glass free beaches and active fine enforcement.

Ban Balloon Releases

A simple solution to eradicating balloons and their strings ending up in the environment is to ban balloon releases. Whether this be as an individual piece of legislation or included within the single-use plastics ban.

Conclusion

Research on marine litter is growing and broad with the true impact of its effects on ecosystems, wildlife and human health incomplete and underfunded despite the worrying and significant implications.

From global and local research, the story remains the same. We understand where marine litter and plastic pollution is coming from, and ultimately why it's happening, yet are failing to act with enough impact to make meaningful change.

At the current rate of plastic production, and until the world shifts away from fossil fuels, the future is looking bleak for our environment, specifically our oceans.

It's a big problem and therefore needs big change. Individual level solutions are not enough to tackle the size and scale of the problem and it's irresponsible of government bodies to leave it to the community to clean-up and shoulder the costs – financially, environmentally and with our health.

There are short, medium and long-term solutions available – we just need to act. Act independently, innovatively, and proactively as an island to combat marine litter and plastic pollution. We don't need to wait for the UK.

We need to impose our own bans on single-use plastics, create alternative and regenerative operations within key industries, ensure environmental impact considerations lead in all planning and development decisions, and have more proactive engagement and change from local business and corporates who have larger, more scalable impact.

We look forward to the response from the community, businesses, and government, and building on the marine litter report to monitor the impacts of pollution on our irreplaceable marine environment.

Next Steps

Project Development

As we continue into the 2nd year of data collection, we want to develop this report* to bring additional insight into local marine litter and its effects. We would like to see the project expand across the Bailiwick to reach Herm, Sark and Alderney.

Year 2

- Continued monitoring consistent with 2021
- Generate more community engagement through external sources / partners
- Release local marine litter and beach cleaning guides,

  to help standardise approach to external surveys and identification
- Explore additional data trends such as sources, weather and site-specific elements
- Trial litter picker lending scheme through coastal businesses / cafes to help make beach cleaning more accessible
- Test infrastructure assessment and microplastic sampling

Year 3

- Consolidate trends from years 1 and 2 to guide survey development
- Roll out microplastics survey
- Continue generating community engagement through external sources / partners
- Introduce infrastructure assessments as part of clean-ups to expand and link understanding of local causes of litter
- Expand litter picker lending scheme across more sites, coastal and inland

Year 4

- Monitor specific beaches as case studies based on three-year trends
- Year two of microplastics surveying
- Continue generating community engagement through external sources / partners

Year 5

- Amend survey structure in line with key trends and areas that require further monitoring
- Consolidate micro plastics findings
- Continue generating community engagement through external sources / partners

*plans subject to change year-on-year based on findings, funding and engagement levels

How Can You Get Involved?

Join a Beach Clean

We hold a community beach clean every weekend, as well as a series of BIG Clean-ups including **The BIG Channel Islands Beach Clean** (every February), **The BIG Herm Beach Clean** (every October) and the **BIG Boxing Day Beach Clean** – there's lots of opportunities to join us throughout the year. Our clean-ups are led by a team of passionate ocean protectors, who will kit you out, keep you safe and help motivate you on those wet and windy days! We have a growing community of regular volunteers who come along, so you'll be surrounded by like-minded individuals who all care about our island's natural environment. **CET** is also a **Bailiwick Social Prescribing** accredited charity.

Corporate Clean-Ups

Group clean-ups are a great opportunity for team building, supporting CSR / ESG objectives and giving back to your community - especially our local wildlife! Organisations can either sponsor a weekend community clean-up or set-up a time and date which is exclusive to employees and their friends / families.

Run on a suggested donation basis, we'll provide:

- pre-activity organisation and risk assessment
- a member of staff to lead the activity (safeguarding certified and first aid qualified)
- kit for adults and children including litter pickers, buckets, gloves, first aid kit, sharps bin, etc.
- organise the processing and disposal of waste collected
- share the activity on social media, both during and after, to support your CSR comms
- provide you with a report of what you found coastal and inland

Clean-ups last between 2-3 hours and involve surveying what is collected. Donations go directly towards the ongoing operations of CET.

BAILIWICK SOCIAL PRESCRIBING

Submit Your Finds

With the lack of protective policies against plastic pollution and no enforcement of littering fines, we know it's an improbable task to keep our beaches and marine environment entirely free of litter. But we can be proactive and contribute to building a stronger picture of this waste and its impact so we can encourage our policy makers to take steps in the right direction. We need data to do so, and we need your help to collect it.

Perhaps you are already a regular beach cleaner or Womble? When you're out and about cleaning up our coastline, please log your finds via our online form linked here.

Duke of Edinburgh Volunteering

Whether you're working on your bronze, silver or gold award, you could beach clean and log your hours with The Clean Earth Trust as part of your Duke of Edinburgh volunteering. We have two ways for you to take part, either attend our weekend clean-ups or do a clean-up at your own time / location and log what you find via our online form. All data collected will go towards our marine litter report.

Join our Litter Picking Lending Scheme

Our litter picker lending scheme provides free access to litter picking equipment for use by individuals, families, schools and groups. We have litter pickers at the Guille-Alles Library, Priaulx Library and several kiosks already around the island.

Taking a lending approach to equipment reduces the need to purchase new and makes the activity easier, safer and accessible to everyone. If you are involved in a kiosk, cafe or community centre and would like to join the scheme as a host location supporting local clean-ups, please get in touch.

Adopt a Patch

Do you always clean up a certain patch or is there an area of the island you care about the most?

Whether it be your walk to work, the area around your school or the road outside your house, by taking accountability for patches across the island, we can work together to keep our island litter free. We have an online form open to the public, so we can start profiling land-based litter and problem patches.

Speak Up

Guernsey's government is yet to prioritise climate change and the continuing threats to our environment. Creating a healthy, sustainable future for our island and planet, needs everyone to act and share their voice on environmental concerns. Campaigns at a community level are known to get better results, so write to your Deputies and demand action be taken to address marine pollution!

Refuse Single-Use

To tackle the plastic problem individuals, communities and businesses need to reduce single-use. Cut-out carrier bags, bottled water, cutlery, straws and coffee cups and replace them with reusable alternatives. Give feedback to the retailer, café or restaurant, as well as our government.

Take the 30-Day Challenge

The 30-Day Sustainability Challenge is an annual event where individuals, families, schools, groups and businesses are challenged to lower their impact on the environment by making a sustainable switch every day for a whole month – such as eradicating single-use plastics, lowering emissions and finding ways to repair, re-use and re-purpose.

Making switches to the way you live and consume may seem like a drop in the ocean, but every individual action creates a ripple and when multiplied, creates a wave. To take part in the challenge, sign-up via hello@cleanearthtrust.org

"It's only one straw" – said 8 billion people!

Youth Engagement Programme

Alongside school and youth group beach cleans, we are looking to roll-out a Youth Engagement Programme which will deliver workshops and assemblies regarding marine litter and other concerns regarding climate and environmental degradation caused by human impact. We want to rally our younger community through community engagement and roll out a Youth Climate Committee.

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About Us

The Clean Earth Trust is a local Guernsey based charity helping limit human impact on the environment. Established in 2018 by Andrew Munro, the Trust was formed following the success of its **#pickitupguernsey** campaign through which it won, and was nominated for, several community awards.

Since its inception the team have launched a number of initiatives to raise awareness of the growing challenges that face our natural world. We focus on community led and data driven projects that create meaningful and measurable impact, alongside campaigns that highlight important local environmental issues.

In addition to our projects and campaigns, we run outreach programmes with schools, youth organisations and corporate groups.

The Clean Earth Trust

Limiting Human Impact On The Environment

www.cleanearthtrust.org

Guernsey registered charity CH 592

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The Clean Earth Trust