

PLYMOUTH WHITE PAPERS

Issue 2: Marine
April 2019

An initiative by Luke Pollard MP



Pennon

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DESIGNED TO CHALLENGE, PROVOKE AND INSPIRE

The Plymouth White Papers are an initiative by Luke Pollard MP. They are designed to provoke, inspire and challenge. The hope is that each set of white papers will contribute to the energy, direction and passion around Plymouth, our economy and campaigning. These white paper submissions have been written by people across Plymouth. They have been free to voice their own opinions and these are their own words. The white papers are designed to be political and challenge established thinking but they're not designed to be party political.

Plymouth is at the forefront of the marine debate. The campaign to designate Plymouth Sound as the UK's first National Marine Park is really motoring with new investment being made in our marine engineering. This second edition of my white paper series seeks to discuss how we develop even further and faster.

BRITAIN'S OCEAN CITY

**LUKE POLLARD, LABOUR AND CO-OPERATIVE
MEMBER OF PARLIAMENT FOR PLYMOUTH
SUTTON AND DEVONPORT AND SHADOW
MINISTER FOR FISHING, FLOODING AND WATER.**



Plymouth is world class in so many things marine. From the Marine Biological Association to Plymouth Marine Laboratories, the National Marine Aquarium to Princess Yachts and M-Subs. But there is one thing we are better at than all of that and that is not telling people how good we are. Plymouth hides its light under a bushel and then hides the bushel far too often. But things are changing.

The first edition of the Plymouth White Papers focused on 'ambition' for our city. The contributors forwarded ideas ranging from improving our transport links to banning all-male panels to address gender diversity. The first edition was well-received, and I hope that the second edition focussing on all things marine will be equally warmly welcomed.

As a city we have a good story to tell about marine. Our heritage and legacy as a maritime city, our continuing expertise supporting the Royal Navy and our impressive scientific and academic centres of excellence mean we are ideally suited to capitalise and grow as a city on the up.

Since Blue Planet II was aired public awareness of our marine environment has increased hugely and this is very welcome. Growing up as a kid in the Westcountry I remember swimming in the sea and dodging floating poos or sanitary towels flushed into the sea from raw sewerage outfalls. Thanks to billions of pounds of investment by South West Water, who sponsor this set of essays, we now have clean beaches and better-quality water, but the same phenomenon of flushing away our problems continues – this time with plastics.

Plastic bottles, crisp packets or carrier bags are easier to spot and perhaps clean up, but it is the nano-plastics that are causing real and genuine damage to our marine environment and wildlife. Plymouth is at the forefront of the science around plastic pollution but we need to also be at the forefront of efforts to reduce and eliminate wasteful single use plastics, changing behaviour and perceptions as well as cutting down and clearing up humanity's harmful impact on our oceans.

Though there are big challenges for us as a city and as a planet, I remain hopeful that Plymouth can do more and gain the recognition we deserve for the work we currently do. To achieve that we need to be louder and prouder about the things we are good at and we need to be clearer and more relentless about the areas we need help in.

The campaign I started with partners to designate Plymouth Sound as the UK's first National Marine Park seeks to communicate our expertise and incredible coastal waters in plain English, promoting what we have and directing attention towards our strongest selling point as a city: our connection with the sea. Plymouth is Britain's Ocean City. This isn't just smart branding, it is a challenge to today's generation and those who follow to innovate, inquire and investigate our seas and coastal waters, protecting them, using them sustainably and building new connections between land and sea, people and the environment.

As someone born in Plymouth and who lives in Plymouth, it is a real privilege to stand up for our city in Parliament. As the recently appointed Shadow Minister for Fishing, Flooding, Water and Coastal Communities I feel an extra responsibility to be bolder and louder in my work advocating for better science, better understanding and a deeper connection with our marine environment. I am proud to be a Janner and I hope from reading these contributions, whether you are a Janner by birth, or an adopted one, you too can be proud of the expertise and experience we have in Plymouth when it comes to all things marine.

“Plymouth is Britain's Ocean City. This isn't just smart branding, it is a challenge to today's generation and those who follow to innovate, inquire and investigate our seas and coastal waters, protecting them, using them sustainably and building new connections between land and sea, people and the environment.”

Luke Pollard is the Labour and Co-operative Member of Parliament for Plymouth Sutton and Devonport and Shadow Minister for Fishing, Flooding and Water.

CARING FOR OUR COASTLINE

CHRIS LOUGHLIN IS THE CHIEF EXECUTIVE OF PENNON GROUP



Plymouth and the South West's marine environment has been transformed over the past thirty years. In the past it was common for untreated sewage to be put straight into the sea. Heavy investment by South West Water and our deployment of new technology has radically improved the situation – beaches meet stringent new standards and our bathing waters are now among the cleanest in Europe. While water companies are not responsible for the quality of bathing water, we play a key role in protecting it.

Prior to 1989, decades of underinvestment meant that untreated sewage was routinely discharged into our coastal waters from around 40% of our region's homes. Following the privatisation of the water sector, South West Water was able to raise capital in a way the public sector couldn't, enabling our £2.3 billion 'Clean Sweep' programme to close crude sewage outfalls. This was the largest environmental programme of its kind in Europe. Clean Sweep's work in Plymouth was completed in 1998, but investment to make further improvements has continued.

As everyone in our region knows, our coastline is one of our principal attractions, and many of the eight million visitors that Devon and Cornwall receive every year come to enjoy our fantastic beaches and bathing waters. Tourism provides around 4,000 jobs in Britain's Ocean City and tens of thousands in the wider region. It is hard to imagine the tourist industry thriving as it does today without clean bathing waters.

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In recent years, South West Water has made significant upgrades to our wastewater infrastructure across Plymouth to further improve water quality in Plymouth Sound and protect bathing water quality at Plymouth Hoe East and West beaches, both of which have been rated excellent every year since tougher new standards were introduced in 2015.

South West Water has installed new storm water overflows across the city, preventing surface water from overloading the sewerage network, and freeing up capacity in networks serving Cattedown and Stonehouse. New ultraviolet disinfection technology has been installed on the storm water overflow at our Plymouth Central Wastewater Treatment Works, cleaning wastewater before it goes into the environment. This is the largest UV treatment plant of its type for intermittent stormwater overflow discharges in the UK.

The health of our oceans is in focus like never before – the BBC's Blue Planet has brought forward massive public concern about plastics entering our seas and environment. Our 'Love Your Loo' campaign has for years encouraged our customers to stop flushing away items like wet wipes, cotton buds, cleansing pads, and sanitary products. These items cause blocked sewers and sewer flooding, but they also contain plastic – flushing them away is a form of plastic pollution, running the risk of them entering the environment.

When I joined the company in 2006, one of the key objectives was to improve South West Water's overall social and environmental responsibility. I am proud that South West Water founded the multi-award-winning Upstream Thinking partnership, where farmers and landowners are provided with expertise help to reduce the use of pesticides, restore peatland, and improve slurry storage. The quality of the water that flows off the uplands and into our rivers and, eventually, our seas, is therefore improved. All of this reduces costs for water company customers and reduces the impact of water treatment on the environment.

In the decades ahead, we will need to keep up investment to protect and improve Plymouth's marine environment – we are expecting to invest £9 billion across the region by 2050. In addition to tackling newly understood issues such as micro-plastics, we have a responsibility to enable the city's growth, ensuring there is sufficient water and wastewater capacity for the thousands of new homes and businesses planned in the coming years. A key part of this investment is our new £60m state-of-the-art Mayflower Water Treatment Works, which will come online this year. As set out in our latest business plan, this investment will be made while keeping bills lower in 2025 than they were in 2010, and offering customers a £20million shareholding and a greater say in the business.

Looking to the future, we support Luke Pollard's campaign for the UK's first National Marine Park to be created in the waters off Plymouth. This would recognise the huge importance that the sea has to the city, provide protection for wildlife and the environment, connect people with the ocean, and potentially provide a valuable boost to tourism. Britain's Ocean City is the perfect location for the first National Marine Park – with an unrivalled heritage linked to the sea.

Our company is an integral part of daily life in Plymouth – providing a service that is vital to life, and has a key role in the health of the city’s marine environment. The city and this region is our home as well as our business, and we are committed to making it an even better place to live and work.

Chris Loughlin is the Chief Executive of Pennon Group – owners of South West Water and Viridor, the largest UK-owned recycling and waste company. South West Water are responsible for providing drinking water and wastewater services to around 2.2 million people in Devon, Cornwall, Bournemouth, and parts of Somerset and Dorset. The company is one of the biggest employers in the South West.

WHAT PLYMOUTH HAS TO GAIN FROM A NATIONAL MARINE PARK

**AMANDA LUMLEY, EXECUTIVE DIRECTOR,
DESTINATION PLYMOUTH LTD**



Plymouth has been a major port since the early 15th Century and its heritage is firmly rooted in the sea. Scott, Darwin, Cook, Drake and the Mayflower pilgrims all embarked on their global explorations from Plymouth and it remains, to this day, committed to its strong naval and maritime heritage. As Britain's Ocean City, it is strategically located at the entrance to the safe waters of the English Channel and the wild Atlantic- a portal to a global network of distribution and trade. Plymouth Sound has been recognised over the centuries as an ideal location and safe harbour and, in more recent times, as a place for recreation and enjoyment for the millions of visitors who arrive annually. This is not just a 21st century phenomenon - in the Victorian Era it was fashionable to leave London for the clearer air and the waters of the south west. The current day Tinside Lido and foreshore architecture is a reminder of how popular Plymouth was as a tourism destination at the beginning of the century.

In 2008, the city's first DMO (destination management organisation), Destination Plymouth, was formed, and in 2011 the city launched its first 'Visitor Plan'- a ten-year strategy to increase the numbers of tourists visiting the city to stimulate economic activity and create jobs. In 2013, a new brand concept was developed – 'Britain's Ocean City', explicitly focusing on our maritime strengths, our heritage, culture and authentic commitment to the sea.

Seven years on from the development of the first visitor strategy, Plymouth can demonstrate significant progress against its visitor targets, hitting over 5.1 million visitors in 2016 with a spend of £327 million, supporting 7% of employment locally.

As we head into the Mayflower 400 commemoration year in 2020, it is fitting that we should start to consider refreshing our visitor strategy up to 2030.

Therefore, now is a perfect time to also consider Plymouth's potential as a 'National Marine Park' and how this may affect our decision-making, the choices we make and the way we grow our destination sustainably over the next ten years.

Marine parks are not a new phenomenon. In fact, there are hundreds of them globally.

Plymouth University's Marine & Coastal Policy Research Unit (MarCoPol) defines marine parks as ocean and coastal spaces defined by local knowledge to recognise their special importance for community wellbeing, with the intention of encouraging greater prosperity and responsible enjoyment, deepening knowledge, appreciation and respect. The management of these blue spaces focuses on nurturing greater community involvement in caring for and safeguarding their long-term health and integrity.

Most marine parks are designated by governments, and organised like 'watery' national parks. Many of the parks have designated boundary areas that require fishing and commercial permits to protect their ecosystems, while at the same time going to great lengths to try to make their unique environment as accessible and as visitor friendly as possible.

Marine Protected Areas (MPAs) are protected areas of seas, oceans estuaries or large lakes. As of 2016, there were 13,650 globally. MPAs tend to restrict human activities for conservation of natural or cultural resources. Plymouth Sound and the Tamar valley are already designated as Marine Protected Areas.

“For Plymouth this seems like a great opportunity to take a really close look at our ‘Ocean City’ credentials and review our goals”

Many of the marine parks across the world try to ensure that the local community, businesses and visitors can benefit from the protection that a marine park status brings. This approach could be highly successful for Plymouth, however, if we wish to ensure that as a destination we are sustainable, then it is crucial that the benefits of the marine national park work for everyone in balance. In fact, the United Nations World Tourism Organisation (UNWTO) defines sustainable tourism as: “Tourism that

takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities.”

So, what could this mean to Plymouth if we are to take the next steps towards becoming the first National Marine Park in the UK?

As with land-based national parks, well-managed tourism is very important and certainly in the UK many people are attracted to protected areas to see unique species, geography or ecosystems in their native environment. Great examples of highly attractive national parks include, on our very own doorstep, Dartmoor and Exmoor and, further afield, the Lake District, Northumberland and the Scottish Highlands. All these areas are characterised by their unique and very distinctive identities.

The way in which these destinations are branded and promoted is arguably what attracts visitors, as well as delivering the authentic experience that the brand promises.

Therefore, as Britain's Ocean City, the primary task for Plymouth will be to define a long-term vision, and to identify what specifically is distinctive about the place as a national marine park. For visitors, local communities and businesses there will be one question – 'how is it different to what we have already?'

Having marine park status can help protect our natural coastal landscape and seascape, giving opportunities to further develop recreational activities such as boat trips, sailing, walking and even just sitting and admiring the view! Plymouth has a wealth of these natural assets, as well as a pedigree heritage second to none. A major part of moving towards marine park status will be to develop these authentic natural assets into experiences that visitors can more easily access. In today's digital world, 'packaging' these experiences, making them appealing and easily bookable, will encourage more visits to the city across wider ranging and more diverse audiences.

It is key that we have a detailed understanding of the product we are 'packaging', based on thorough and reliable research, and evidence exploring our current visitor perceptions – the reasons that they visit and the reasons they don't. Recent surveys show that visitor perceptions of Plymouth as a major heritage destination and waterfront city are very strong, but we are not perceived as a cultural destination, nor as a place for outdoor activities, and if we wish to be recognised for this then the experience we offer must be world class. The tourism sector is an increasingly competitive environment.

Knowing our own strengths in relation to a marine park and building on them, while differentiating ourselves from our competitors, could provide a uniqueness that the marine park will enhance in a significant way. Ultimately the destination needs to work in balance for visitors, local communities, the business sector and the environment.

For visitors, we need to provide a great experience both on and off the water with authentic attractions, inspirational tours and world-class service in our hotels, restaurants and service sector. Great examples of existing businesses that have embraced this approach include Plymouth Boat Trips, Le Vignoble, Mountbatten Water Sports and Plymouth Gin; however, there is still much scope for development across the wider city area.

For people in the local community, having a marine park can offer a valuable resource to learn more about the delicate marine environment and how it is managed, teaching them to understand the world around them and to benefit both physically and mentally from the naturally therapeutic properties of the sea.

Marine parks in many locations also offer the chance to protect important cultural and heritage sites. Examples in Plymouth include The Breakwater, Fort Bovisand, Scylla - the first man made reef, and Drake's Island as well as the multiple shipwrecks invisible to naked eyes to name a few. Members of our local community can also become more involved in caring for the marine park through volunteering, environmental monitoring programs or acting as guides and 'ambassadors' to the many thousands of visitors who want to experience the park at its best. The 'Plymouth Plan for Plastic' is a great example of how the community is starting to engage with an urgent need to preserve and protect our marine environment. Beach cleans, education programmes, and active lobbying to

encourage zero tolerance of single-use plastics is rapidly taking effect. Safeguarding the building blocks of the park, its species and its habitats, will also safeguard opportunities for our children and grandchildren to use, enjoy and benefit from the sea.

Many of our local businesses already benefit from the natural marine resources of Plymouth Sound however, their needs are diverse and demanding. The National Marine Park will need to continue to provide the flexibility of a working port, naval base and major fishing fleet, while offering increasing access to the water and coastline for leisure activities including diving, sailing, paddle boarding and sightseeing on the many tour boats and water taxis.

The ecosystem itself is finely balanced and requires careful nurturing if it is to survive the exposure that a National Marine Park could bring. There are many examples globally of marine parks where the balance has been significantly impacted and 'over tourism' has become not just a threat to the ecology but to the wider community it serves. Recent examples of the effects of 'over tourism' in marine areas include the Great Barrier Reef in Australia and Ras Mohammed National Park in the Red Sea in Egypt. They are now being closely monitored and each park has taken significant measures to reduce the negative impact of tourism in the short-term while the eco system re-stabilises. Damage caused by diving, boat anchorage, feeding and general water pollution can have a significant impact on the delicate marine environment. As tempting as it is for businesses to encourage more and more visits, there is no doubt that if not carefully managed, this will ultimately destroy the very thing that attracts visitors in the first place.

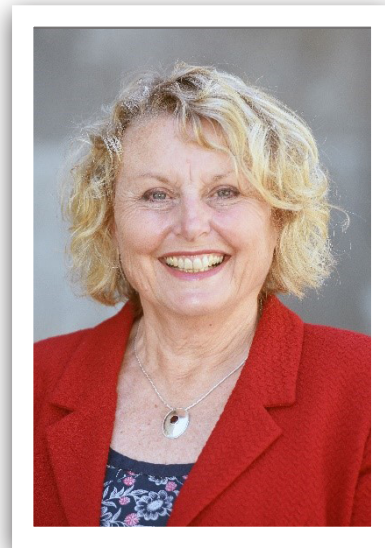
Despite the complexity, challenges and questions which arise from the process of becoming a National Marine Park, there is no doubt that many regions globally, have benefitted significantly from this status. For Plymouth this seems like a great opportunity to take a really close look at our 'Ocean City' credentials and review our goals. This will enable us to put into place long term plans, align support to achieve them and then make a firm promise to deliver them.

With over 25 years' experience in destination management and marketing Amanda is Executive Director for Destination Plymouth Ltd. the formally recognised destination management organisation for Plymouth. She is the Vice President of the Tourism Management Institute, Member of the Tourism Society and a Fellow of the Chartered Institute of Marketing.

PLYMOUTH SOUND: A MARINE PARK IN WAITING

SUE DANN, LABOUR PLYMOUTH CITY COUNCILLOR FOR SUTTON AND MOUNT GOULD, CABINET MEMBER FOR ENVIRONMENT AND STREET SCENE.

Plymouth Sound is the backdrop to Plymouth. It is the beautiful natural environment on the edge of an urban city. It is the framework for how our city functions – a working dock, a shipyard, a harbour, a port, a fish market, a marine research centre and tourist destination. A place where nature and people co-habit. It is the UK's first ever marine park in waiting.



Plymouth Sound is a special environment that deserves special recognition. The Sound boasts a rich cultural heritage that is intimately tied to the sea with its diverse abundance of marine life, a proud naval heritage and long history of maritime exploration and research. It balances commercial interests, defence, travel, recreation and conservation, rendering it a one-of-a-kind area of international marine importance.

Throughout Plymouth Sound and its associated estuaries there is evidence of human habitation from prehistory through to the modern period. Plymouth's maritime heritage of exploration and discovery is rich and varied – the endeavors of Sir Francis Drake and the pilgrims are just two examples.

Plymouth Sound's legacy as a globally recognised centre of excellence for marine science has been shaped by its three research institutes that produce internationally renowned work: Plymouth University, Plymouth Marine Laboratory and the Marine Biological Association Science. These institutions conduct world-leading research that provides evidence-based environmental solutions to societal challenges and promote the stewardship of the seas with far-reaching impacts for marine science.

A number of overlapping designations that recognise its significant contribution to marine conservation rightfully protect Plymouth Sound's biodiversity. This marine life is not only important in its own right but also deliver natural services on which communities rely. This includes supporting food production, providing flood protection, removing CO² from the atmosphere, and recreational, health and wellbeing benefits.

The Sound is home to the largest naval base in Western Europe, and one of three operating bases in the UK. HMNB Devonport has been supporting the Royal Navy since 1691. Covering over 650 acres, Devonport has 15 dry docks, four miles of waterfront, 25 tidal berths and five basins. It harbours Britain's amphibious ships, survey vessels and half her

frigates, plus the training hub of the front-line Fleet, FOST, and the Royal Navy's Amphibious Centre of Excellence at RM Tamar.

The waters of Plymouth Sound are also widely used by commercial enterprises — Plymouth's marine sector employs over 13,000 people. Many businesses, as varied as those testing autonomous vehicles to those producing luxury yachts, are integrally linked to the waters of the Sound. Plymouth is also home to a nationally significant fishing port, with a major fish market. The fishing fleet based in Plymouth is a fundamental part of its economy and character.

As we look at what Plymouth Sound will come to represent in the future, it is increasingly important that more recognition be awarded to the significant role the marine environment plays in our lives. Such recognition must account for all the elements that make up and interact with the marine environment.

But Plymouth Sound's current designations do not take a holistic view of the special features of the marine environment and therefore something new is needed, a new designation – a National Marine Park.

The blend of the natural environment, cultural heritage, military, commercial and recreational uses within Plymouth Sound provides the perfect opportunity to pilot and develop a new national designation for the marine environment that will work for all sectors, the natural environment and the people that access it.

One of the biggest impacts that the National Marine Park can make is providing a connection for Plymouth residents, citizens and visitors to the waterfront and the rivers that flow into the Marine Park. As a Plymouth City Councillor in a ward with waterfront access, Sutton and Mount Gould, I have been part of a project at Teats Hill which links up local residents and communities with the park and the waterfront in an effort to improve their lives. Research shows that access to water can have a positive effect on health and well-being. There are children in deprived wards of Plymouth who have tragically never seen the sea, but a National Marine Park might offer them a chance to grow more connected to the sea and become marine citizens and environmentalists.

“Research shows that access to water can have a positive effect on health and well-being. There are children in deprived wards of Plymouth who have tragically never seen the sea, but a National Marine Park might offer them a chance to grow more connected to the sea and become marine citizens and environmentalists.”

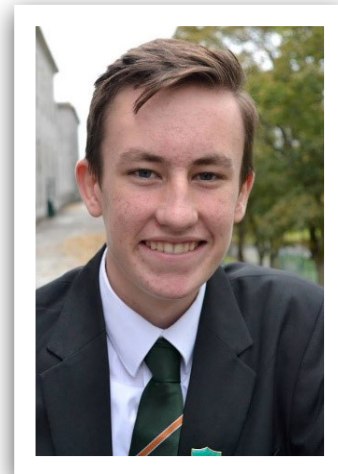
A National Marine Park (NMP) for Plymouth Sound will highlight all the special features and uses of the site and emphasise how these can not only coexist but thrive. More work must be done to fully develop the new NMP designation, but the case for Plymouth Sound

to be the first one is strong. Plymouth has always been a pioneering city and it is only fitting that this is its next chapter.

Sue Dann is a Plymouth City Councillor for Sutton and Mount Gould and is Cabinet Member for Environment and Street Scene.

GENERATION GREEN

SAM CADE, MEMBER OF YOUTH PARLIAMENT FOR PLYMOUTH 2018



The preservation of our marine environments is one of the biggest issues we face in the modern era — especially for a coastal city like Plymouth. Having lived in Plymouth for most of my life, the mix of a thriving city and the stunning marine environment, makes it incomparable to any other location in the UK. It is our responsibility as residents of this unique area, to ensure it can be experienced for decades after us. In the age of information technology, the current generation of young people, my generation, is at the forefront of the fight against the degradation of our special coastal and marine environments.

The marine environment in Plymouth is a truly valuable resource that should, and is, cherished by all. It brings tourism, business, sporting events and jobs to an area that may otherwise be overlooked. Our marine environment has attracted spectacular events such as the ‘America’s Cup’ in 2011 and world class research facilities such as those at Plymouth University and the National Marine Aquarium. For young people in this city, these services provide us with a place that is truly unique to grow up and live in — from a world class, marine-based research university, to activities organised by the Aquarium, that not only entertain but educate us about the environment surrounding us. The marine environment in Plymouth is a staple of the community and, in my opinion, is the largest and most treasured property of our city, which is why we need to act to ensure it is not lost to poor, modern day environmental practices.

“I have not met a single young person in our city that is not concerned about the future of our environment and we need to turn this sense of concern into action.”

I have not met a single young person in our city that is not concerned about the future of our environment and we need to turn this sense of concern into action. We’ve grown up with science telling us that the actions of previous generations and the way we treat our world today will lead to the ultimate destruction of our marine environments. But we are more informed than ever on the ways we can right these wrongs, and more willing than ever to do so.

Having been the Member of Youth Parliament for Plymouth, I've had a chance to meet many inspirational young people that want to act to curb the deterioration of our environment. In fact, at our recent Annual Conference of over 300 MYPs, there was unprecedented support to change the way we act as a young generation in order to protect the world we will grow up in and inherit. As well as this, the Plymouth Youth Cabinet, which comprises 11-18 years olds from all over the city, has given its support to the new 'Plymouth Plastics Pledge' alongside Plymouth City Council and many other organisations across the city.

This has involved taking part in litter picks and submitting written pledges on how we plan to change our actions in order to benefit the environment. It is evident that young people, now more than ever, are willing to engage in helping with the upkeep of the environment,

The young generation is passionate about preventing the degradation and destruction of the world they live in from the carelessness and naivety of previous generations. I think that we can solve the issue of declining marine health, not only in Plymouth, but across the world, if we make an effort to match the passion and drive of most young people when it comes to the preservation of the marine world.

It feels necessary as a young person to discuss how technology has influenced the way we think about or act around marine environments, in particular social media. I believe that the rise of social media platforms has not only bolstered the call to protect our environment but allowed us to take huge strides in engaging a wide range of people to gain more awareness and take part in environmental social action projects.

For example, organisations like 'Surfers Against Sewage' and 'Plymouth Environmental Action' have been able to reach a large audience through social media platforms, and spread their message, encouraging a wide range of people to take part in events such as beach cleans and recycling drives.

This is the future of environmental activism and Plymouth organisations are leading the way. Social media, whatever you might think about it, has the exclusive ability to captivate and engage people from all walks of life, which is exactly what is needed in the fight to protect our marine environments.

As most of us know, the majority of young people use at least one social media platform daily.

In order to pass on the message of environmental sustainability and protection from one generation to another, and to get more young people physically involved in environmental activism, it is of paramount importance that social media be used to fuel the passion that young people have not only for the city of Plymouth, but for all of our environments across the world.

There is one factor in our society that allows us to change perceptions and opinions of the young people who hold the key to the future of our marine environments - that factor is education.

Having been through the education system from primary school to currently studying for my A-levels, it has become clear to me that the best way to raise awareness about the importance of our marine environment is in Plymouth through our school and college system. Many may disagree with me and say that young people have far more important things to learn about than the environment, but I would argue that this is not true – the environment is not just an abstract thing we can live without. The marine environment is something that cities, businesses and whole industries thrive off and rely on – we cannot simply disregard it as something we can do without. If there is one message that you must take away from this article, it is this: young people of today are a vital part of sustaining the environment for the future and the passion and drive they show gives me hope that the future of marine life and industry in Plymouth will not disappear.

Sam Cade is the Member of Youth Parliament for Plymouth 2018 and is a Yr13 student at Devonport High School for Boys. Sam has previously campaigned to lower the voting age to 16 and introduce a Curriculum for Life in schools.

PLYMOUTH'S AFFAIRS OF THE SEA

**NICOLA BRIDGE, HEAD OF CONSERVATION
EDUCATION, NATIONAL MARINE AQUARIUM (NMA)**

One of my favourite descriptions of Plymouth was written in the late 17th century by the travel writer Celia Fiennes (an amazing woman for her time — travel wasn't really a known pastime, especially not for a single woman) she wrote 'The streets are good and clean. There are a great many though some are but narrow. They are mostly inhabited by seamen and those which have affairs of the sea'. 'Affairs of the sea', what an emotive description! And what I love about 21st century Plymouth, is that the city and its inhabitants are still having affairs of the sea to this day. Innovations in ocean science, engineering and technology are a city speciality along with naval and maritime industries, an impressive fish market, world class aquarium and a myriad of other recreational, business and social connections to the sea. Plymouth's long-standing link to our ocean deserves celebration, but importantly we need to learn and adapt quickly to ensure a protected and healthy future for our ocean, which will ultimately protect humankind.



Going back to Celia's comments, I certainly fit the picture of someone whose work and life revolve around the sea; from childhood it has been my passion. I'm lucky enough to have gained inspiration to write this piece, by getting up from my desk and taking a wander to the Plymouth Sound exhibit located here in the National Marine Aquarium (NMA), where I have worked for the past 12 years. Watching the creatures going about their daily business and gazing out across the sea to the breakwater and beyond, really cements the NMA as one of the gems of Britain's Ocean City and helps to put pen to paper.

The NMA has roots in Plymouth that go back much further than the day our doors opened to the public in May 1998. The NMA was the brainchild of a dedicated group of scientists based at the world renowned Marine Biological Association (MBA) on the Hoe. Many Plymothians remember visiting the small but perfectly formed MBA Public Aquarium, at one time for the princely fee of 6p per person (or 2p after 2pm on Wednesdays and Saturdays), to view the wonders of the waters around Plymouth. This was a time when snorkelling and diving equipment weren't readily available to ordinary people, so the tanks and their inhabitants provided a window into a new underwater world that many had never seen before. The MBA mission in short was, and still is, to promote the investigation and to disseminate knowledge of the seas and marine life.

As the NMA has evolved, grown and shaped itself into the largest aquarium in the UK dedicated to conservation of the marine environment, it has kept this mission at its heart. But to ensure that it remains a progressive charity, it has taken on a new and exciting ambition that speaks to Plymothians and outside visitors alike. Our charitable mission is 'connecting us with our oceans to promote pro-ocean behaviour'. We see this as a vital mission because put simply, the ocean sustains all life on earth. Everything we consume, from air to water and food – can come from or be transported by the ocean. The ocean is one body of water that covers 70% of our planet and shapes the features of the land we live on. The ocean supports a huge diversity of life and ecosystems. It makes our planet habitable by driving climate and weather patterns, absorbing CO₂, producing oxygen, regulating the water cycle and other huge ecosystem services. But widescale, global unsustainable practices are hurting the ocean. We seem to have forgotten that our lives, wherever we live, depend on the health of the ocean.

Those who understand the ocean's influence on us and our influence on the ocean are said

“At a time where so much has changed for good and bad it finally feels as though we are on the tip of a great change in public attitude towards the ocean, evidenced by the huge appetite from businesses and communities in Plymouth to do their bit to reduce plastics entering the ocean”

to be 'ocean literate'. The concept of ocean literacy was developed by educators and scientists in the USA 16 years ago. Europe and the UK grasped this concept and from 2013, ocean literacy in the UK has been driven from a collective (including the NMA and MBA) based in Plymouth. A recent collaboration between the NMA and MBA to write a teacher resource on ocean literacy for commonwealth countries has been downloaded across the world over 32,000 times. The resource is for teachers and helps them to place marine examples into their teaching

of subjects across the entire school curriculum. A real cause for concern is that students across Britain may go through their whole school life without once learning about the ocean and how we are inextricably linked to it. Consultation with teachers has shown us that they are very keen to teach their students about the ocean, but there are many barriers to this including personal knowledge, preparation time and the drive for results in Maths and English. A way that the NMA has attempted to redress this balance over the years is by supporting a Schools Programme that uses exciting, hands on activities to deliver Maths, Geography, Art, Science and other curriculum subjects with a marine twist, thereby driving ocean literacy in the pupils and teachers that we work with. We are proud to say that every school in Plymouth works with us, as well as thousands of other schools in the southwest and further afield. Our evaluation results show that teachers rate our programme extremely highly for its ability to deliver the curriculum and engage the students. Student feedback shows that learners feel empowered to investigate the marine environment further for themselves.

Due to the success of this programme we have expanded our efforts to take our Schools Programme to Newcastle and Cardiff, delivering hands-on sessions in school classrooms. This includes a virtual reality experience that brings the ocean and NMA exhibits to life in 360 degrees. If you're reading this as someone who doesn't live near Plymouth, you may be near one of our outreach hubs or a BIAZA (British and Irish Association of Zoos and Aquariums) collection. I am the Chair of the BIAZA Conservation Education Committee and as such, ensure that the environmental education delivered in BIAZA accredited collections around the Britain is as well thought out and evaluated as we deliver here in Plymouth.

But as mentioned, the NMA mission is 'connecting us with our oceans', with our ultimate vision being a world supporting healthy oceans for the benefit and enjoyment of all. We feel that ocean literacy is a step towards individuals taking action to protect the ocean, but just having knowledge about the ocean doesn't necessarily lead to pro-ocean behaviour. There are now swathes of research that show that spending time in nature and feeling connected to nature may be another way to motivate environmentally friendly behaviours. We need to go further than just telling people about the importance of our oceans and the problems they face. We need to help people to connect and engage with the sea around us, or in other words 'conservation through engagement'. Conservation through engagement puts individuals and communities at the heart of marine environmental issues, linking people with their oceans and motivating them to take action.

Although I'm not from Plymouth originally, I am so proud to live here with the community of Devonport as my adopted seaside home. There is a strong argument that the people of Plymouth are some of the most connected to the oceans in the country and perhaps even the world. We should be leading the way and providing an example of how a city can be bursting with ocean literate, ocean connected citizens. Luke Pollard's vision of a National Marine Park is precisely the type of progressive attitude towards the ocean that I would expect from a Plymothian and could be the catalyst for our city to really embrace the ocean that it sits next to. A Marine Park on our doorstep has the potential to create connectedness to the sea and provide better access to the water for Plymothians and visitors alike. Research shows that in many cases, someone's connectedness to nature can change based on their experience with nature — people feel more connected to nature (and are more concerned about nature) after they've been exposure to nature. We need to capitalise on this.

To protect our ocean a broad public must spend time on, in or under the waves or simply just sitting and looking at the sea. I am still sadly astounded to speak to children from Plymouth who have never seen the sea before! This is totally converse to the fantastic students in the Plymouth City Youth Council who specifically requested the NMA to help them create a list of recommendations for PCC to work on the reduction of single use plastics. These students picked plastic as an issue that they felt very strongly about and wanted PCC to take action in its Chambers and across business and homes across the city. Everyone should have access to the ocean, especially in Britain's Ocean City, but at the moment this is not the case — a Marine Park could be the catalyst for PCC and perhaps national government to ensure that citizens of the UK are encouraged and assisted to go to the coast.

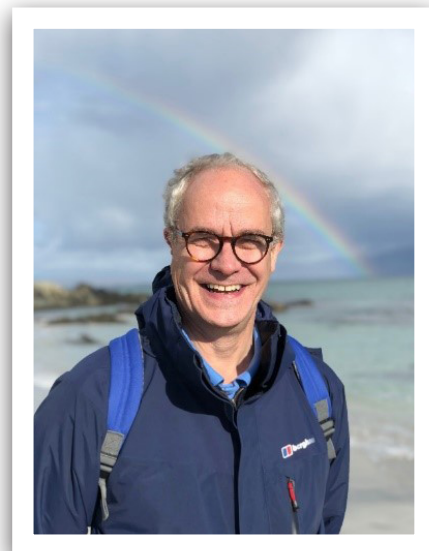
In conclusion, during my time at the NMA my role as Head of Discovery and Learning has grown and changed along with the growth and change in how we all view the ocean. One could be full of doom and gloom about the future of our oceans, but I am full of optimism or #OceanOptimism if you like your hashtags. At a time where so much has changed for good and bad it finally feels as though we are on the tip of a great change in public attitude towards the ocean, evidenced by the huge appetite from businesses and communities in Plymouth to do their bit to reduce plastics entering the ocean. The NMA can evidence fully subscribed volunteer beach cleans, our customers have rightly pressured us into removing plastic items for sale in our shop and my team report that our visitors are immensely keen to learn how they can help the ocean. The truly exciting thing is that as individuals we have the capacity to help the ocean. Simply by reducing the amount of single use plastic we use, walking instead of driving for short journeys, turning lights off, choosing sustainable seafood; basically 'thinking ocean' when going about our daily routines, could be the biggest collective action that will protect the ocean for the future. The NMA and Plymouth can be at the heart of promoting these actions.

And if you ever need inspiration for why, do what Celia Fiennes did, journey to the sea. But if you're lucky enough to live in Plymouth, you might just need to walk a few steps from your front door.

Nicola is a Conservation Biologist with over 12 years of experience in both formal and informal environmental education and science communication, specifically linked to the marine environment. As well as working at the NMA, Nicola is also integrated into the community of Plymouth as a Trustee for Millfields Inspired, a Governor at Courtlands Special School and the Chair of Members of the Connect Multi Academy Trust. As of October 2018, she has also taken on the role of President of EMSEA (European Marine Science Educators Association) and will use her skill set to drive Ocean Literacy across Plymouth and further afield in the UK and Europe.

THE CASE FOR MARINE PARKS

MARTIN ATTRILL, PROFESSOR OF MARINE ECOLOGY, UNIVERSITY OF PLYMOUTH
CHARLES CLOVER, EXECUTIVE DIRECTOR, BLUE MARINE FOUNDATION



The United Kingdom has 17,820 kilometres of coastline but no marine parks. Marine parks are an idea that could help the British public to engage with and to better understand and enjoy its diverse marine landscapes. Concern about the degradation of the oceans is rising and the perception is that we need to care for this public asset to the same degree that we do for the terrestrial realm. There have been national parks for 70 years on land, where they are popular and appreciated. Creating appropriately large parks in the sea would demonstrate, in a way the public already supports, that Britain cares for its marine environment as much as it does its countryside. It would express a similar ambition for the Blue Belt in its own waters as Britain has in its Overseas Territories.

At a time of raised public awareness of marine ecology there is a danger that there is a negative “Blue Planet II effect” going on: surveys show that the public thinks that all the interesting and beautiful marine life is somewhere else, not in the UK. Yet transgender fish and pile-ups of crabs seen in Blue Planet II are things that can be seen in our waters, too. Whales, dolphins, sharks, sunfish and seahorses thrive in British waters too.

Unlike the dry, science-based marine conservation designations previous governments have created, marine parks would – in the resonant language of the 1949 National Parks Act – “conserve and enhance the natural beauty” of certain areas and “promote opportunities for the understanding and enjoyment of the special qualities of those areas by the public”. These famous definitions speak down the years and to the human heart, not just to conservation professionals. Why should they not apply to the sea?

In 1949, few people had scuba-dived or snorkelled or wind-surfed in UK waters but now thousands do and even those who prefer to keep their feet dry want to know that the seabed and the creatures and habitats below the waves that they see on TV or on film are not being depleted and that the many conflicting uses of the sea are under benign management. We need to manage the sea more like the land, not only to practice nature conservation and heritage protection but to increase social inclusion. While national parks on land struggle to involve all social classes, our beaches are more socially diverse places. The health benefits of getting people in, on or under the sea are well documented.

There is also a potential economic uplift that comes with park designation, for which there are precedents. The Jurassic Coast World Heritage Site brings £111 million per year into the Dorset and Devon economy. Commercial fishing is a tiny industry compared with tourism and marine recreation, both of which are capable of far greater expansion. Over a third of England's protected

— name — status food is produced in terrestrial national parks, including Wensleydale Cheese and Herdwick lamb. There are marketing opportunities in coastal areas too, like those being exploited by the "Reserve Seafood" label in Lyme Bay, itself one of many potential marine parks around the coast. Other sites were considered at a national conference on marine parks held in Plymouth on June 6 2018, among them the coast of Northumberland, north Devon, East Anglia and the Solent.

“ We need to manage the sea more like the land, not only to practice nature conservation and heritage protection but to increase social inclusion. While national parks on land struggle to involve all social classes, our beaches are more socially diverse places. The health benefits of getting people in, on or under the sea are well documented.”

That conference agreed, overwhelmingly, that Plymouth Sound and its environs were the natural home for the UK's first marine park, for the following reasons:

The city of Plymouth has one of the most enviable maritime locations in the UK. Set between two estuaries and with Dartmoor National Park to the North, the city looks out over one of the UK's largest and most beautiful natural harbours and out to the English Channel and the Atlantic Ocean. Plymouth has been a gateway to the world for over 2000 years. Its combination of extraordinary rich and clear waters and long, unparalleled maritime history has led to the name "Britain's Ocean City."

Yet as a maritime city, Plymouth is disconnected from the sea. In many deprived communities there are children that have never visited the water. A marine park in

Plymouth has the opportunity to make the environment better than the sum of the parts, in a way that resonates with the public. Plymouth Sound's assets are peerless in marine conservation terms: its surrounding waters are the most highly designated in the UK: there is the Tamar Valley AONB, SSSIs, SPAs, a European Marine Site and Marine Conservation Zones. Within a stone's throw from the city can be found dolphins, sunfish, seagrass beds, corals and seafans and at beaches within the city you can turn over stones teeming with marine life. Special animals in Plymouth waters include the migratory shad and smelt and the tropical-looking red bandfish. All of this life and clean water is directly accessible to a city of 250,000 people. All of these assets could be better communicated to, and enjoyed by, the public. The waters around Plymouth also provide unparalleled recreational, health, wellbeing and educational opportunities. Plymouth is the SCUBA diving capital of the UK, with enthusiasts from across the country descending on the city to dive in its clear, biodiverse waters and explore some of the 2000 wrecks that have been identified within the approaches to Plymouth.

Above the high water mark the coastal fringe has a rich built heritage reflecting Plymouth's intimacy with the sea from the Stone Age to the global turmoil of the 20th century. The city has been the departure point for explorers such as Captain Cook, Charles Darwin, Francis Chichester and Robert Falcon Scott and adventurers such as Francis Drake. Napoleon was a prisoner aboard ship in the Sound before he was taken to St Helena.

The naval port remains the largest in Europe, existing in relative harmony with a high conservation value environment. Plymouth still depends on the sea economically with 12 per cent of its jobs coming from maritime industries. Plymouth is one of the two largest fishing ports in England (with Brixham along the coast). The city hosts pioneering marine companies, such as Babcock, Princess Yachts, MSubs, Sonardyne and Thales who work in partnership with one of the world's largest clusters of marine scientists and engineers found at Plymouth University, Plymouth Marine Laboratories and the Marine Biological Association.

A marine park would engage these powerful voices in the pursuit of a common goal; the sustainable management of the sea and the public enjoyment and celebration of the natural beauty and cultural heritage of one of the most extraordinary parts of Britain – above and below the water line. It would be an example for others to emulate.

Martin is a Professor of Marine Ecology at the University of Plymouth with over 30 years' experience of working on marine biodiversity and how humans impact marine ecosystems. For the last 10 years his research has focused more on the conservation management of our seas, particularly how we can protect the oceans while still providing sustainable livelihoods for people dependent on them.

Charles is the Executive Director of Blue Marine Foundation. As an environment journalist with 30 years' experience, Charles has covered virtually every issue that arises out of man's treatment of nature. It was his powerful and revealing book *The End of The Line* and the award-winning documentary film that it inspired which brought the problems of overfishing and the impact it is having on life in the oceans into public focus. He was a columnist for the Sunday Times and Environment Editor of The Daily Telegraph for 20 years.

WE CAN ALL BE CITIZENS OF THE SEA

PAM BUCHAM, MARINE SOCIAL SCIENCE RESEARCHER, LABOUR PLYMOUTH CITY COUNCILLOR FOR HONICKNOWLE WARD



We Plymothians have not only breath taking moorlands on our doorstep, but we are the home of some of the most stunning and accessible coastline in the UK. Around our city, the huge number of marine and coastal environmental designations preserve a rich diversity of wildlife. Plymouth has an historic and cultural connection to the sea through our navy, maritime heritage, our world class marine research, and thriving recreation and tourism industries. Even the geography around us is shaped through large and unusual estuarine networks. It was this combination of culture, countryside and coast that brought me to Plymouth, Britain's Ocean City.

But not everybody in Plymouth feels as connected to the sea as I do. Marine organisations whose goal is to connect people with the sea often talk about meeting children, right up to secondary school, who have never visited the sea before. As a city Councillor, I represent one of the wards where these children come from. My ward, Honicknowle, is one of the more deprived wards in the city and like other deprived areas along the west of Plymouth it has an historic connection with the sea through the navy and maritime industry. Despite running along the A38 to the Tamar Estuary and the tidal Ernesettle Creek, some residents' access to the marine environment is restricted by insufficient transport and insufficient means. Resentment can also build as new developments and investment at the waterfront and city centre, such as Royal William Yard, Oceans Gate, and Drake's Circus, don't benefit those in the north of the city who may rarely visit the centre.

Marine citizenship

Last year, Blue Planet II took the nation by storm and was followed by a succession of campaigns and policies that seek to address marine plastic pollution. This was a crucial development for the marine environment, and this new public concern looks like it is leading to people and industries changing how they use and dispose of plastic. But this is just one problem. Now is not the time to sit back and congratulate ourselves on a job well done.

Our marine environment is in crisis. We are losing marine species at an alarming rate. Climate change and ocean acidification are the biggest drivers of this loss, with pollution and overfishing adding more pressure. These are all human-made problems and require human-made solutions. And we all have a responsibility to act to reduce these impacts.

I was so drawn to understanding why some people choose to change their lifestyle, campaign, or participate in activities to clean up the coast, when so many don't, that

“The marine environment is in crisis. We are losing marine species at an alarming rate. Climate change and ocean acidification are the biggest drivers of this loss, with pollution and overfishing adding even more pressure. These are all human-made problems and require human-made solutions.”

I'm halfway through a doctoral research degree investigating it. Those of us who feel a sense of duty towards the marine environment and recognise its value for human wellbeing, and indeed, survival can call ourselves “marine citizens”. Most people feel some sense of responsibility as citizens, whether this means following highway rules, paying taxes, voting or encouraging others to vote, volunteering on local committees, or campaigning on issues important to them. Those performing marine citizenship are extending this sense of responsibility to incorporate the marine (and often other) environments.

There are already some theories about why people act as

environmental citizens. They might have strong attachment to the place they live, the countryside or the sea, which makes them want to protect or preserve it. They might have strong values of universalism, believing that humans are just one part of a global system that includes the environment and other living things, not just people. They may have a strong cultural identity that binds them to a particular environment — they feel it is a part of who they are. They may feel an emotional connection to the sea that gives a sense of wellbeing and even love. They may have learnt about the harm humans do to the natural world and feel compelled to make changes and redress the balance. Individual members of the public have both a legal right to be involved in marine environmental planning and, if we want our children and future generations to enjoy the same opportunities that we do, a moral responsibility to support the sustainable use of the sea.

My research is specifically focused on marine citizenship and I'm taking an open-minded approach to uncover the different ways people become active marine citizens. Through the support of a number of marine groups, I'm listening to people's stories about how they became marine citizens. I hope to find that there are lots of different ways that different people can become aware of their influence on the sea and willing to make changes where they can, or campaign for changes that they can't achieve alone. I take the approach that

ultimately, everybody from business leaders and MPs, to teachers and shop workers, are all individuals capable of choosing to do what's best for the marine environment within the scope of their own work and lives. We can all choose to make a difference. As a policy-maker, councillor, and scientific researcher, I believe that we should be empowering people to make changes and connect with the sea.

Marine policy

There are many barriers for individuals trying to do their bit for the sea - not least the high cost of environmentally-friendly alternatives (putting them out of reach for many struggling families), lack of transport choices to easily get to the sea, living in a throw-away society, and a lack of knowledge about how to make better choices for the environment. Good marine policies can and do work to help overcome these barriers. The Government's 25-year environment plan is creating a pathway of policy development geared towards a sustainably managed environment. For the marine environment the plan commits to sustainable fishing, and to:

"Achieve good environmental status of our seas while allowing marine industries to thrive, and complete our ecologically coherent network of well-managed marine protected areas (MPAs)."

This is an ambitious aspiration that requires an open conversation between marine industries, environmental organisations, scientists, policy-makers and the public. Many groups and coastal partnerships are working hard to create trust and cooperation, and for years this has been the goal of integrated coastal zone management. But there remain administrative obstacles, prejudice, fear, failure to listen to one another, and blind unwillingness to change, all of which is preventing effective and sustainable management of our shared marine environment.

"What if we could take a city like Plymouth, situated in a stunning natural harbour, surrounded by marine biodiversity, and home to fishing, water sports, tourism, shipping and the navy, and bring it together as one to celebrate and promote a deep connection with the sea and sustainability in our waters?"

What if we could take a city like Plymouth, located in a stunning natural harbour, surrounded by marine biodiversity, and home to fishing, water sports, tourism, shipping and the navy, and bring it all together to celebrate and promote a deep connection with the sea and sustainability in our waters?

The first National Marine Park

Plymouth has everything required to pioneer a novel way of engaging with the sea. A national marine park can

be an umbrella under which using the sea sits alongside protecting it. It can be a way to achieve a coherence in our relationship with the sea, working together as a community.

For this to work, we need to create a strong sense of marine citizenship in the people of Plymouth, whatever their line of work, and whether they live within walking distance of the sea or up near the moors. It's not fair to expect people to drop everything and suddenly care about the sea. But it's also not fair for people to be excluded from this source of beauty, enjoyment, employment and wellbeing. Appropriate institutional support is needed to create opportunity and accessibility for people to participate in this forward-looking project.

As I learn more about what has inspired others to create positive change in the marine environment, I hope that together we can apply these findings by creating opportunities for experience and education, nurturing our shared cultural connection to the sea; to *our* sea. This is a journey Plymouth can take together.

There will be roles for all to play and challenges along the way to:

- Create infrastructure and opportunities to enable access to the sea for all – like a direct bus service to the sea, an ocean park and ride;
- Facilitate wealth and wellbeing from the sea to be felt across the city – people away from the city centre should be able to see the sea working for them too;
- Provide accurate, useful, and accessible information about how to help – use our great network of volunteering and environmental groups;
- Develop ocean literacy – knowing about the sea is an important part of making choices that are good for it;
- Involve residents in citizen science – when the public joins in, large amounts of data can be collected and they feel part of the scientific process;
- Support businesses to modify their activities to be more sustainable – initiatives like Plastic Free Plymouth help businesses make good choices;
- Embrace modern technology to facilitate sustainable recreation and marine experiences – an iCoast app for the Plymouth National Marine Park that shows you where the no-go areas are, where is great to snorkel, what time the tides are, where to park and where the toilets are;

“This is a journey Plymouth can take together.”

“It’s not fair to expect people to drop everything and suddenly care about the sea. But it’s also not fair for people to be excluded from this source of beauty, enjoyment, employment and wellbeing.”

- Perform marine environmental audits on local policy-making and events – as hosts of national events like the British Fireworks Championships, we can be leaders in reducing environmental impact;
- Support offering of sustainable products by invoking local pride – initiatives like a local, high quality, sustainably caught fish accreditation, and the Plymouth re-useable one-cup and water bottle;
- Nurture marine citizenship culture through participatory programmes at the community level, recognising the whole city as a coastal community.

A National Marine Park in Plymouth, designed to reach across the city and ensure that everybody in Plymouth has an equal opportunity to access the sea, could enable rights and responsibilities for everybody in the city.

Together we can lead the way in creating a 21st century relationship with the sea. One of mutual value and respect, not just about what we can take from the sea, but about what it freely gives us and what we can give it in return.

Pam is a researcher in the developing field of marine social science, investigating how people engage with the sea. She is also a Labour Party Plymouth City Councillor for Honicknowle Ward.

HIDDEN TREASURES OF PLYMOUTH'S PAST

DR. ANTONY FIRTH, DIRECTOR, FJORDR

Too often, the way we deal with the marine environment is to split it into different parts: boundaries are drawn between land and sea; people and nature are set in opposition to each other; the past is overlooked as we set targets for the future. The plan to establish a National Marine Park for Plymouth Sound is exciting because it integrates all of these things.

Plymouth Sound, its estuaries and the surrounding sea area are drenched in human history. Twenty years ago, I helped put together "Tamar Estuaries Historic Environment: a review of marine and coastal archaeology", which sought to bring together the story of Plymouth Sound over millennia. Indeed, there were people in Plymouth Sound long before the coast took on its familiar shape. Remains found in Plymouth's limestone caves stretch the human story back to Palaeolithic times, well before the northern ice sheets caused the sea to retreat far into the English Channel. When the climate improved and Britain was recolonised, the sea would have still been many miles distant from Plymouth and the Sound would have been a river valley. Large quantities of flint artefacts have been found on the high ground overlooking Plymouth Sound from this time – the Mesolithic – revealing the richness of this environment for its inhabitants, even before it became coastal. Archaeological investigations suggest that significant prehistoric remains are yet to be discovered underwater and in the coastal zone in Plymouth Sound.

Towards the end of the Mesolithic period around 6000 years ago, Plymouth Sound became increasingly 'marine'. This was a complex process and it has not stopped: sea-level rise and other processes associated with climate change – including human activity – will be a key consideration for the National Marine Park. But people were already shaping their environment in prehistory and this has certainly affected how Plymouth Sound is formed today, both above and below the water. The introduction of farming in the Neolithic and of metalworking in the Bronze Age are likely to have affected the supply of sediments into the rivers feeding into Plymouth Sound. The effects of items and substances placed by people in the water – even well away from the sea – will be another key concern for the National Marine Park. Plymouth Sound also illustrates another long-standing human process – people have built upon and extended the shoreline from the Medieval period onwards, if not earlier. Many parts of Plymouth are built on areas that were once sea, and all manner of structures – quays, wharves, jetties and Plymouth Breakwater itself – have changed the coastline and adjacent waters. We must bear in mind that Plymouth Sound is an environment whose character has been created by human activity as well as by natural processes over many centuries. The extent of human intervention in the coastal and



marine environment presents challenges, but it also furthers our understanding of what future changes are likely to work best, as well as contributing to the richness of Plymouth Sound's cultural heritage.

Plymouth Sound's character, shaped by the action and interaction of natural and human factors, matches the definition of 'landscape' in the European Landscape Convention 2000. It also corresponds to the way in which important landscapes such as National Parks and Areas of Outstanding Natural Beauty have long been protected in UK law. Even though the proposed National Marine Park will be non-statutory, it presents an opportunity to think about and manage our coasts and seas in terms of both natural and human factors, many of which have taken effect over long periods of time. Managing the natural and cultural heritage of marine areas together would be a novel and welcome step in the UK, contrasting the separation that exists at present. Laws that apply to nature conservation in English waters largely operate in isolation from those that conserve heritage sites – they are administered by different public authorities and have separate approaches to monitoring, research and public access. There are strengths and weaknesses on both sides, and lots of practical benefits should be possible from greater integration. Although the National Marine Park would not remove the separation in legal and administrative terms, it could do a great deal to encourage more joined-up work. Above all, the National Marine Park has the potential to care for and present the coastal and marine environment

as the public see it, as a single environment.

“The underwater component is just one aspect of Plymouth's maritime heritage that the National Marine Park could bring light to”

Of course, the importance of the marine environment to people over the centuries is not limited to the way in which they have shaped Plymouth Sound itself. As soon as

there was navigable water within Plymouth Sound – river, estuary and open sea – people would have used vessels to get around and make use of its resources. Direct evidence for early watercraft is quite rare, but we can conclude that people were using boats in Plymouth Sound from the Mesolithic onwards. Later in prehistory, evidence from imported artefacts, the location of monuments, waterfront sites and occasional boat remains all point to the sea as being an important means of contact, transport and communication. Such maritime connections would have been local, of course, from the coast of south Devon and Cornwall, between the various settlements around Plymouth Sound, and inland along rivers such as the Tamar, Tavy, Plym and Lynher. Even in prehistory, however, the sea would also have enabled long-distance communications, to other parts of Britain and Ireland, along the length of the Atlantic seaboard to the Mediterranean, and up to the North Sea and Baltic. Plymouth has been an Ocean City from the earliest of times.

The evidence of maritime connectivity still exists on the seabed in the form of numerous wrecks from various periods of history, some of which are designated as protected wrecks. A further advantage of the National Marine Park is that it doesn't need to concern itself only with the few wrecks that have legal protection. Plymouth has played a major role in advances over recent decades to safeguard historic wrecks and make them more

accessible to the public, especially through the SHIPS Project; the National Marine Park will provide an excellent framework for developing Plymouth's shipwreck heritage even further.

The underwater component is one aspect of Plymouth's maritime heritage that the National Marine Park could bring light to. It should also bring attention to maritime connections on land – buildings, monuments, documents, paintings, photographs, traditions, oral histories and so on. Recognising Plymouth Sound as a National Marine Park will help to overcome some of the boundaries that exist between maritime heritage on land and at sea by highlighting its maritime cultural heritage. There are opportunities to increase the connections between historic features onshore and the marine landscape, and to boost the heritage component of marine recreation so that Plymouth is more than just a backdrop to people enjoying the water. The need for a more integrated approach to maritime heritage across disciplines and environments was a key finding of recent work on the social and economic benefits of marine and maritime cultural heritage; the National Marine Park is perfectly placed to put such an approach into practice.

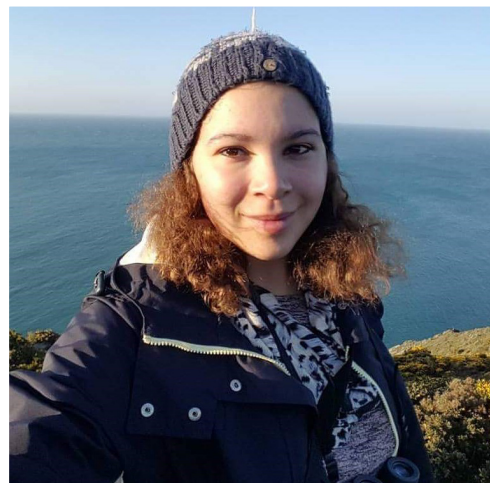
Fishing provides an example of the way in which maritime heritage could become more joined-up within the framework of the National Marine Park in Plymouth Sound. It is one of the longest-established maritime activities in Plymouth, Plymouth Sound and surrounding waters. The past and continued presence of fishing can be seen at many points around Plymouth Sound, in vessels, harbours and buildings. The wrecks of fishing boats beneath the waves mark the dangers and tragedies facing fishing communities. Fishing is also a source of archaeological information, from artefacts found in fishing nets to 'snags' that might point to the existence of a historic wreck or aircraft. Speaking with fishermen about the history of their industry and about what they discover enriches our understanding of the historic environment. It also provides an opportunity to gather information on how patterns of fishing activity and catches may have changed, which might help to ensure sustainability in future. Thinking about fishing's history and what remains on the seabed might also help to identify practical measures to reduce impacts from fishing gear on wrecks, which can be costly in terms of damaged or lost gear and potentially destabilising for underwater cultural heritage. Wrecks often act as artificial reefs and provide habitats for a wide range of marine species including juveniles. Reducing the impact of fishing gear could have nature conservation benefits and promote stocks, whilst maintaining interest for divers.

The National Marine Park will encourage us to think practically about the marine environment as a place with a long history, in which people and nature need to get along better for the future. This is a new way of dealing with the sea and there are so many ways it could help sustain an environment that so many of us depend upon and treasure.

Antony is a marine archaeologist and Director of Fjodr, a heritage consultancy based in south west England. Antony has worked extensively on the marine and maritime heritage of Plymouth and was the lead author of Tamar Estuaries Historic Environment: a review of coastal and marine archaeology published in 1998. Much of Antony's current work addresses the development of marine policy and management, focussing on the importance of cultural heritage within the marine environment.

PLANET PROTECTORS

OLETA FORDE, FOUNDER, PLYMOUTH BEACH CLEAN



Just for a moment I want you to picture a coastal scene in your head. Maybe a sandy beach, a rocky barnacle covered foreshore, or a harbour filled with boats moored up. Imagine you are looking out at sea, feeling the soft breeze surround you. Your gaze searches the horizon as you stare out taking in the wonder of the ocean in front of you, hearing the waves crashing rhythmically on the shore.

You start to recognise the sound of seabirds calling as they circle in the sky above you. You faintly hear the chatter from others around you. Now you turn and start to walk parallel to the ocean feeling the sand or the hard pavement beneath your feet. As you walk you smell the fresh salty air and carefully step to the side of any large rocks. You spot a patch of seaweed in front of you and carefully bend down and have a look to see if there is anything exciting hiding in it.

Now I would like to pause this scene and ask if in the last few moments you pictured anything else I hadn't mentioned. Maybe you thought of a family spread out on a blanket having a picnic, or a child chasing their dog on the beach, or even a few palm trees in your imaginary paradise. What you may not have imagined was a plastic bottle rolling along the coast, the seaweed being tangled in fishing wire or the seabirds swooping down to pick at the overflowing bins.

Unfortunately, this is the scene I often witness when escaping to the coasts of Plymouth in search of my local coastal paradise. Here in Plymouth we have a stunning postcard-perfect view of the ocean but only if you look out. If you look down on our shores you will notice they are littered with things left by beach goers or washed in with the tides.

As an environmental scientist, marine conservationist, marine educator and general ocean lover I am constantly spreading awareness about the impact on our ocean and the life it holds. Although we call our home planet Earth it is most definitely a Blue Planet with over 70% of the surface covered by water. The ocean sustains an abundance of life, which is under threat due to the ways in which humans interact with the ocean. To reduce our impact on this great resource we need to look closely at our individual and collective actions and start to take responsibility for their consequences.

One of the biggest threats to our ocean is marine pollution with most of the problem coming from land. In today's world, it is almost impossible to head to a coastal environment and not find one single piece of debris. You can learn devastating facts about the number of seabirds and sea mammals killed every year by pollution. Or discover there are rubber ducks that have been floating in the ocean since a spillage in 1992, who are likely to be more abundant than Great White Sharks.

Over the last couple of years, I have been inspired by beach clean projects across the globe and have made it a personal mission to collect rubbish every time I visit the coast. It started out as collecting anything on my walk, then collecting at least one full bag and then collecting all the rubbish from the entire beach! Very quickly it became a regular occurrence for me to spend my free days searching the shores for plastic and other waste. It wasn't until a few months ago that, with the support of those around me, I became the founder of the new community group Plymouth Beach Clean Volunteers. The group is open to anyone with an interest in the marine world and wants to become a Beach Clean Volunteer for the coasts of Plymouth, Britain's Ocean City.

I define a Beach Clean Volunteer as a dedicated individual who volunteers their free time to clean beaches, a person who spends their time protecting the marine environment, and a person who

saves our ocean and the life it holds. Since Plymouth Beach Clean Volunteers was set up in February 2018 we have completed over 30 beach cleans with the help of almost 300 Beach Clean Volunteers. Only a handful of whom had ever picked up beach litter before attending our events.

“The best advice in life is to take nothing but rubbish, leave nothing but footprints”

Plymouth Beach Clean Volunteers has had a thrilling journey since the beginning. Our very first Beach Clean event took place on Mount Batten Beach during the snow storm in March last year. Typically, the items we collect are recyclables (plastic bottles, cans, paper, cardboard), fishing gear and non-recyclable avoidable waste (i.e. straws, plastic cotton bud/lollipop sticks, cigarette ends). Occasionally, however, on beach cleans I have come across some bizarre objects at low tide on the coast. I once found a huge broomstick lying in a rockpool, another time a bicycle that had clearly spent a long time in the salty water, and even found an 11-year-old Vimto drinks can. On a 'paddle and pick' clean up, almost 20 water sample pots from a university student's project were found floating in the harbour. I was able to return them to their rightful owner urging them to be more careful. In the south west it is not uncommon, although strange, to find LEGO pieces in the seaweed. On beach cleans I have collected little LEGO army soldiers and even marine themed LEGO, all of which accidentally entered the Ocean over 20 years ago!

Plymouth is Britain's Ocean City — this year Plymouth became the UK's first coastal city to receive “plastic-free” status, and every day it is striving towards becoming a more environmentally friendly city.

We've made great progress caring for the marine environment but are still a long way from perfect.

Plymouth Sound

The marine biodiversity of Plymouth Sound depends on a healthy ocean and it is down to the people of Plymouth to work together to tackle the problem of marine pollution.

I will always do whatever it takes to help reduce and prevent damage to our ocean from beach litter, even if it means jumping into the cold sea (which I have done many times). However, I would much prefer if there would be no need to rescue rubbish in the first place. If Plymouth wants to protect, preserve and develop our marine environment we need to change our actions and make a difference to our ocean now. There are little things we can all do in our everyday lives to help the ocean, I call them the "Simple Planet Saving Changes" and these are my top 5:

1. Get into the habit of carrying the basics for waste free lifestyles; cotton tote bags, metal/glass water bottle, your own non-disposable straws/cutlery.
2. Learn what can and cannot be recycled in your area.
3. At the end of each day/week/month look back and identify your use of single-use objects, items which could have been avoided and the waste you have produced. Challenge yourself to think of more environmentally friendly alternatives to these problems.
4. Spread the message of the importance of changing our actions.
5. Stay positive! If everyone can start to make little changes repeatedly soon we will make a huge difference.

Please do think about what other steps you are going to take to support Plymouth's journey to restoring its natural beautiful coast.

Oleta is a 2016 graduate of Plymouth University and holds a degree in Environmental Science. She is the founder of Plymouth Beach Clean Volunteers and regularly encourages others to join her in cleaning up the coasts of Plymouth, Britain's Ocean City.

PLYMOUTH WHITE PAPERS

The Plymouth White Papers are an initiative by Luke Pollard MP. They are designed to provoke, inspire and challenge. The hope is that each set of white papers will contribute to the energy, direction and passion around Plymouth, our economy and campaigning.

These white paper submissions have been written by people across Plymouth. They have been free to voice their own opinions and these are their own words. The white papers are designed to be political and challenge established thinking but they're not designed to be party political.

Want to get involved with a future white paper? Get in touch:

Luke Pollard MP

Labour and Co-operative Member of Parliament for Plymouth Sutton and Devonport

luke.pollard.mp@parliament.uk

01752 717255

#LukeMP

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