



CATTEWATER  
HARBOUR  
COMMISSIONERS

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# PORT OF PLYMOUTH AIR QUALITY STRATEGY

[www.plymouthport.org.uk](http://www.plymouthport.org.uk)

LAT 50° 21.5' N LONG 4° 07.0' W VHF Channel 14/16



# CONTENTS

2	Introduction
3	Cattewater Harbour – An Overview
5	Why are we doing this now?
7	Plymouth As A Whole – What's Happening?
9	Our Current Initiatives
11	Monitoring
12	Air Quality Action Plan
13	A Collaborative Approach
17	In Partnership With



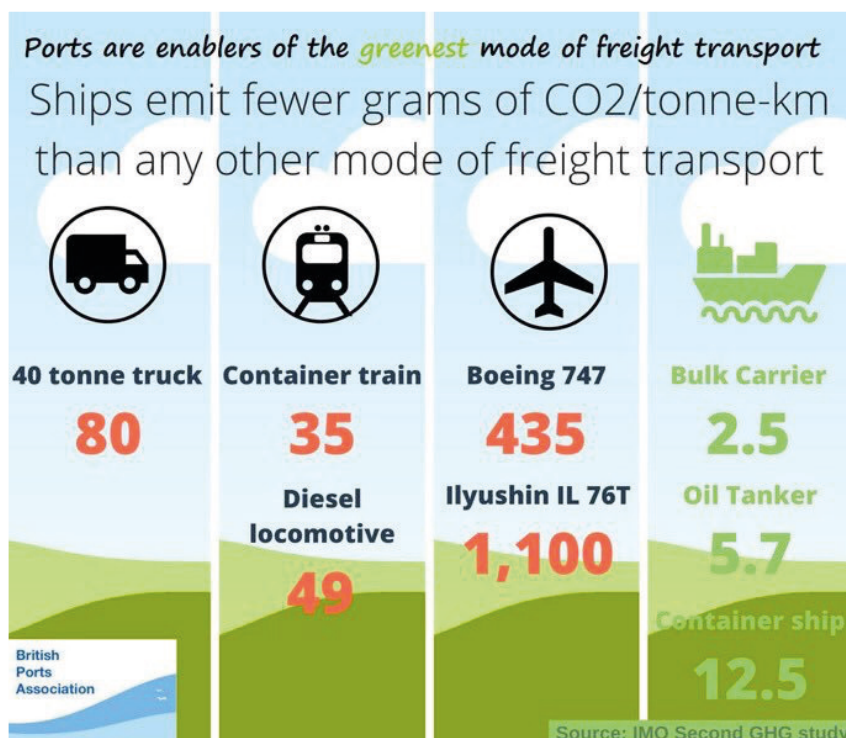


# INTRODUCTION

The Port of Plymouth is dedicated to helping improve the air quality throughout the city. In general, air quality across the country has been steadily improving in recent years, and this trend is predicted to continue. Port operators contribute to this reduction of harmful emissions in Plymouth by adopting appropriate working practices. This document will outline the current initiatives, as well as the plans to help drive down current emissions created within the port.

Plymouth City has an Air Quality Management Area (AQMA) to help monitor and then improve air quality around the city. The Port does not fall within this area, but as a responsible and environmentally friendly business we believe that we should do our best to reduce the emissions caused by our operations.

Shipping is often seen as a large cause of pollution but in reality it is one of the greenest methods of freight transport thanks to strict rules on the fuel sulphur content and the use of technology such as scrubbers which wash the emissions from the machinery.



**Did you know that shipping is one of the greenest modes of transporting freight?**

Infographic from  
Twitter @BritishPorts

Cattewater Harbour Commissioners exist by an Act of Parliament as the navigation and conservancy authority for the Cattewater Harbour, as well as the civil pilotage authority for the Port of Plymouth.

Through our partners at the commercial wharves, the port handles over 2 million tonnes of cargo per year, in addition to regular Brittany Ferries services to Roscoff and Santander, and cruise ship visits landing at Millbay Docks and the Barbican. Plymouth Pilotage Service saw 997 shipping moves in 2018, consisting of ferries, tankers, coasters and specialist vessels in and out of Cattedown, Corporation and Victoria Wharves, and Millbay Docks. These figures clearly demonstrate the thriving nature of the port.

The oil terminal at Cattedown Wharf contributed to 59% of the total cargo transported through the port in 2018/19, with clay and cement at Victoria and Corporation Wharves also largely contributing to the total volume.

## NUMBER OF VESSELS

**2018 - 2019**

**997**

**2019 - 2020**

**900**

**DIFFERENCE**

**-97**

## TOTAL CARGO THROUGHOUT (TONNES)

**APRIL 2018 - MARCH 2019**

**2,364,352**

**APRIL 2019 - MARCH 2020**

**22,62852**

**DIFFERENCE**

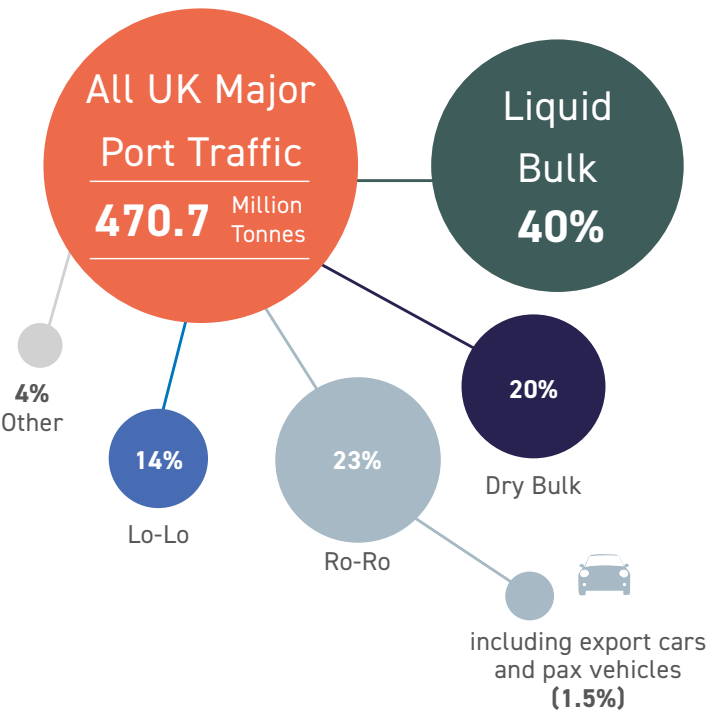
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CATTEWATER HARBOUR | AN OVERVIEW

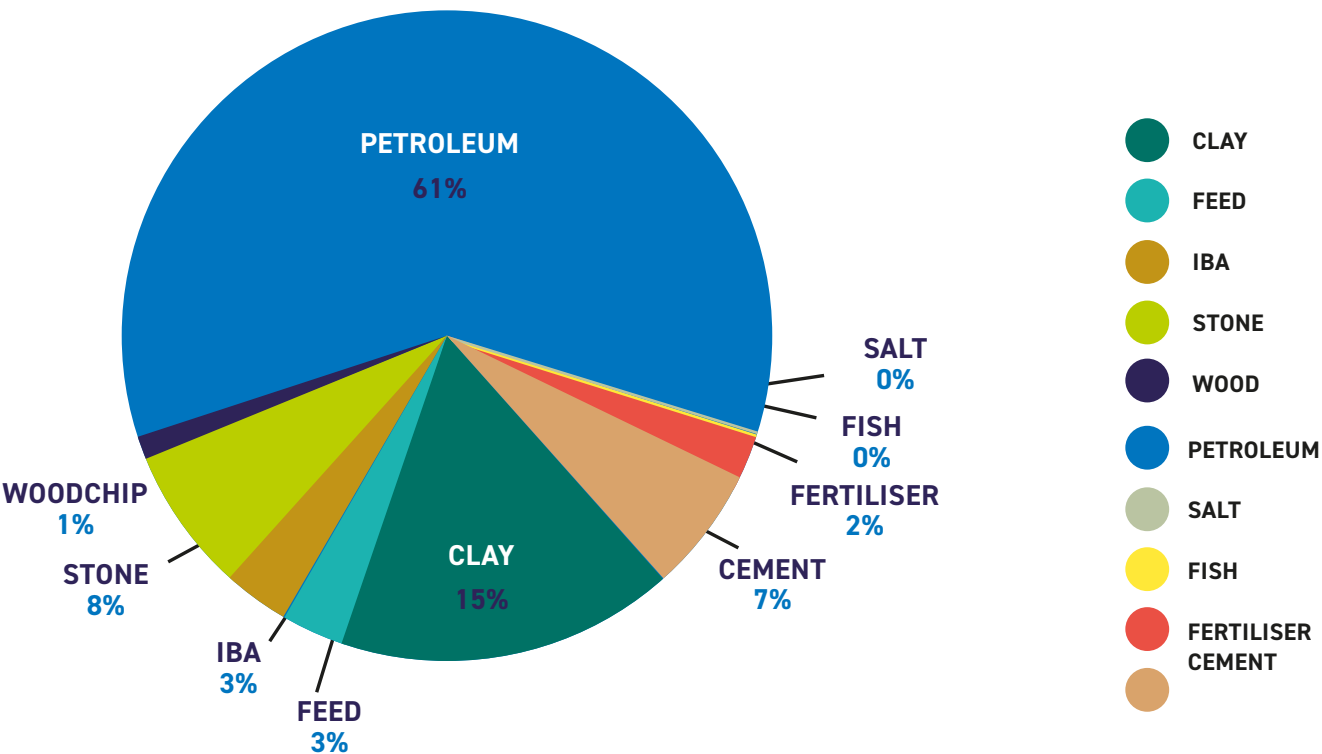
The oil terminal at Cattedown Wharf contributed to 59% of the total cargo transported through the port in 2018/19, with clay and cement at Victoria and Corporation Wharves also contributing to the total tonnage of cargo handled.

We acknowledge that, as a busy commercial port, our daily operations can produce harmful emissions. However, we already have strategies in place to mitigate the impacts of our operations, and will continue to develop these strategies in the future to ensure they are as effective as possible.

See page 9 for details on our current strategies.



The chart below shows the Cargo handled within the Cattewater 2018/2019



# WHY ARE WE DOING THIS NOW?

Air quality has been identified as one of the highest risks to human health in the United Kingdom. Although air quality has been improving in recent years, emissions of NO<sub>2</sub> from international maritime shipping are projected to increase to the same level as land-based sources, potentially as soon as 2020.

At a time where environmental pressures have never been higher, Cattewater Harbour Commissioners want to publish our current strategies and future ideas to monitor and then reduce our output of harmful emissions in Plymouth.

The Department for Transport has asked all large ports handling over 1m tonnes of cargo per year to produce a Port Air Quality Strategy. The Cattewater Harbour Commissioners are committed to producing this report to outline our current efforts and intended strategies to reduce our impact on the city's air quality.

The Clean Air Strategy is a national policy that applies to all major ports, with the aim of introducing plans to reduce emissions across the ports and associated waterways. Ports Air Quality Strategies will be public facing documents, after a period of consultation and being sent to the Department for Transport (DfT) for approval. This document will be regularly reviewed and will be resubmitted to the DfT every 3 years, in order to assess the effectiveness of the plan.





# IMO 2020

**Taking bold action to clean up  
shipping emissions by reducing sulphur**

## + HEALTH & ENVIRONMENT – THE FACTS



- More than **570,000** premature deaths avoided (2020-2025)
- **68%** overall reduction in shipping's negative effect on human health through air pollution



### Significant reductions in:

- stroke
- asthma
- cardiovascular disease
- lung cancer
- pulmonary disease



Cutting sulphur emissions helps prevent acid rain, which means:

- **less** harm to crops, forests and aquatic species
- **tackling** ocean acidification



### WHERE?

- Health benefits felt globally
- Strongest in coastal communities
- Major impact in vulnerable areas: Asia-Pacific, Africa and Latin America



### HOW?

- 0.50%** reduced from 3.50%  
– significantly less sulphur permitted in ships' fuel
- 77%** drop in overall SOx emissions from ships (2020-2025)



### WHEN?

- From **1 January 2020**

**#IMOSulphurLimit**

**#BreatheLife**

**#BeatAirPollution**

(Sources: University of Delaware study, February 2018: "Health Impacts Associated with Delay of MARPOL Global Sulphur Standards" presented by Finland to IMO, August 2016)





# PLYMOUTH AS A WHOLE

## WHAT'S HAPPENING?

### MARITIME EMISSION CONTROL AREA'S

The International Maritime Organisation (IMO) and UK Government are working to improve air quality on a national and international scale. As a result of MARPOL Annex VI, several Emission Control Areas have been established across the globe with stricter control measures on sulphur or other airborne emissions from ships. Plymouth lies within the English Channel Sulphur Emission Control Area (SECA), as shown below.



This means ships transiting through the English Channel, and into ports in this area, must burn fuel with a sulphur content lower than 0.1%. A study into shipping air quality by Plymouth Marine Laboratory has indicated that approximately 95% of ships in the Plymouth area are compliant with this sulphur limit. Where ships cannot switch to the low sulphur fuel, they are required to use other methods, such as scrubbers, to achieve the same effect.

Further consultation is being carried out by the UK Government to widen this SECA around the whole of the UK. The exact form the new SECA will take has not yet been confirmed.

# PLYMOUTH AS A WHOLE

## WHAT'S HAPPENING?

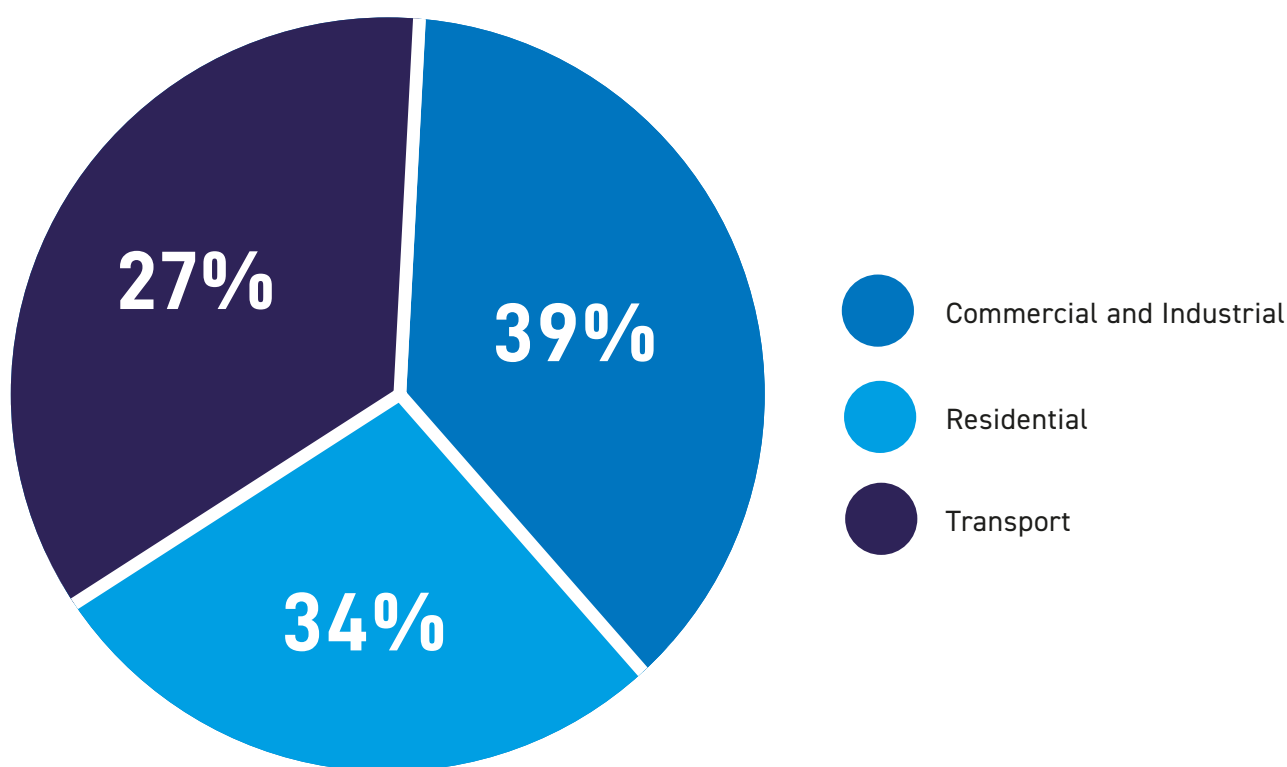
### PLYMOUTH CITY COUNCIL

We asked for input from PCC but due to the busy period and the ongoing pandemic no response was received. [www.plymouth.gov.uk/environmentandpollution/airquality](http://www.plymouth.gov.uk/environmentandpollution/airquality)

Is a link to PCC air quality reports and action plans. It is great to see PCC adding echarging points on the barbican Landing stage to support the Cattewater ferry operators.

Plymouth City Council undertake air quality monitoring at 2 sites in Plymouth, both close to major road transport routes. In general, the overall results are promising and demonstrate that when compared to other cities, Plymouth has low emissions and relatively good air quality.

As shown by the pie chart below, emission sources around the city are reasonably evenly split between commercial, residential and transport (as measured by the city council). This shows that commercial strategies to reduce emissions are effective, bringing their output down in line with residential emissions.



**SOURCE** - Plymouth City Council

# OUR CURRENT INITIATIVES

As a Statutory Harbour Authority, we acknowledge that port operations sometimes have a negative impact on local air quality. However, the harbour, in collaboration with our commercial partners, already have strategies in place to improve air quality in the Cattewater. Our commercial partners strategies help with the overall air quality in the port and can be seen on page 13. The harbour authorities strategies include:

## **CYCLE TO WORK SCHEME**

All employees are eligible for the cycle to work scheme, where the company financially assists employees to purchase a bike. This reduces the volume of vehicles on the roads and encourages cycling, thus reducing the emissions caused by commuting.

## **BUILDING REFURBISHMENT**

The harbour office at No. 2, The Barbican has recently undergone major renovations to reduce the carbon footprint of the building. This includes the addition of LED lighting, insulation and electronic timers all helping to reduce our emissions.

## **MONITORING**

We will continue to monitor air quality in the Cattewater, ensuring where necessary steps are taken to reduce emissions and particulars to improve the overall air quality in our port. We have engaged with Plymouth University with data management.

## **PILOT BOAT REPLACEMENT**

As a result of the emissions study on Pilot Vessel Maker, we have purchased a brand-new pilot vessel from UK builder Goodchild Marine boasting an improved fuel efficiency of 40% along with a reduced emissions output. Maker will undergo a substantial refit to improve her fuel efficiency and exhaust systems. The new vessel 'Stamford' is already operating in the port.

## **USE OF SCRUBBERS**

No vessel with open loop scrubbers are permitted into Cattewater Harbour. A small number of vessels are fitted with scrubbers, we ensure they stop the discharge once entering the Port.

## **CLOSED LOOP SYSTEMS**

When entering port limits the Cattewater Harbour Master requires all vessels to operate their scrubbers in closed loop mode retaining wash water onboard. The IMO has no sufficient evidence to suggest open loop systems pose a risk to ecosystems or water quality, but this is being monitored closely.

## **ECOPORTS**

Cattewater Harbour is a member of EcoPorts, the main environmental initiative of the European port sector, a base for sharing environmental best practice.



# OUR FUTURE | PLANS

Future plans include the investment into the use of a small electric vehicle to be used by staff when working in and around the city, as well as greater working collaboration with stakeholders involved in clean propulsion. Financial incentives to stakeholders offering less emissions will be reviewed.

## **COMMIT TO LONG TERM AIR QUALITY MONITORING**

Invest in technology to enable air pollution monitoring in the Cattewater to continue.

## **INVESTIGATE THE REPLACEMENT OF MARINE ASSETS**

We will commit to reviewing our Marine Assets at the end of their working life, and where possible, replace with newer, low emission models where practical. We will also monitor the development of hybrid engine technology on small marine craft and assess its feasibility for our own assets.

## **GREEN TARIFFS**

Investigate Green Tariffs to assess whether a financial incentive will convince ships to adopt more environmentally friendly strategies when navigating and berthing in the Port of Plymouth.

## **ELECTRIC VEHICLES**

Explore the purchase of an electric vehicle for daily company operations, to reduce the amount of emissions produced on cross-city journeys.

## **EMISSION OFFSETTING**

Where we cannot directly reduce or eliminate our emissions, we will invest in projects to help offset emissions such as the Mayflower Forest Project.

## **ENGAGE WITH WHARVES**

Continue to work with our commercial wharf operators and other key stakeholders to develop stronger environmental policies and strategies to tackle air quality around the port.

## **MONITOR THE ENVIRONMENTAL SHIP INDEX**

We will monitor the ESI rating of ships using the port, to ensure we are aware of our emission output.

# MONITORING | ACTION CONTROL

In order to enhance the available data, Cattewater Harbour Commissioners have purchased an AQMESH Air Monitor as part of our ongoing commitment to improve air quality. The system will monitor the air quality and emissions in the Cattewater, to establish if our strategies are effective.

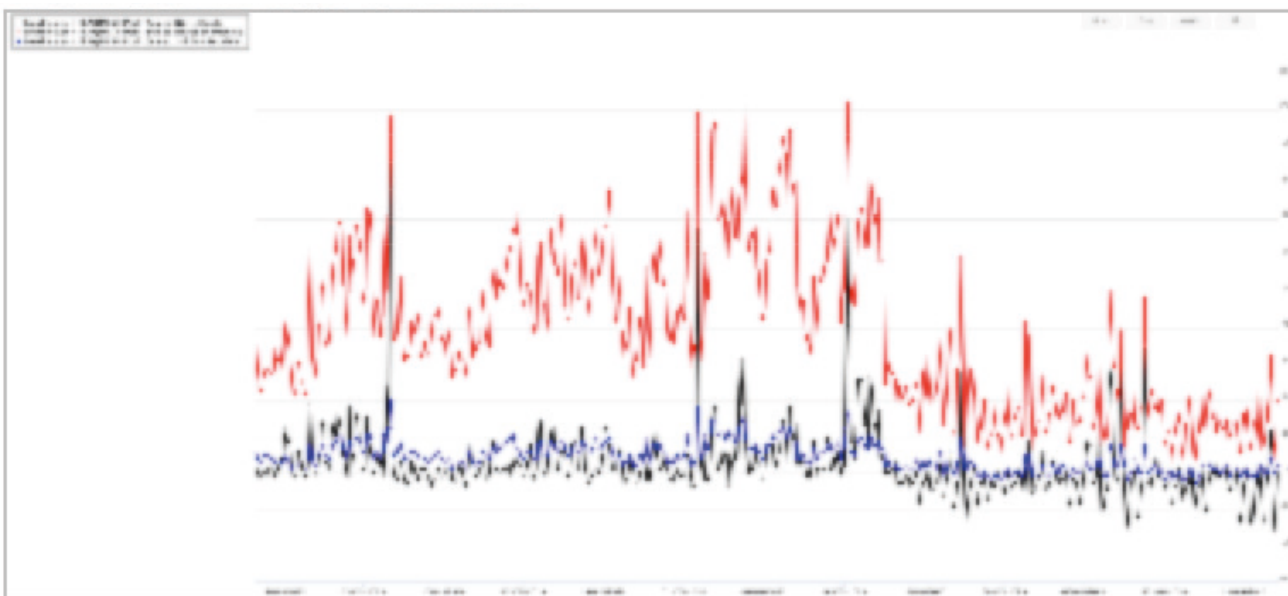
The AQMESH system will monitor the main gaseous emissions and particulates most commonly caused by shipping (NO; NO<sub>2</sub>; SO<sub>2</sub>; O<sub>3</sub>; PM<sub>10</sub>; PM<sub>2.5</sub>; PM<sub>1</sub>). Due to the lack of baseline data, we will be producing our own baseline for a period of 12 months to enable further analysis and comparisons to take place in the future. Data will be reviewed periodically to assess whether our strategies are effective at reducing the emissions output, both short, medium and long term.

Initially monitoring will take place from the Harbours storage compound at Breakwater Hill, which is near our main wharves at Cattedown and Victoria. The system will be fitted with a wind sensor to enable us to differentiate between emissions from the port and emissions from other sources, such as the city centre and the major transport links.

## PORT AIR QUALITY STRATEGY - NOV 2020 REVISION

### Breakwater Hill AQMESH Data

Graph below shows NO, NO<sub>2</sub>, SO<sub>2</sub> data for the period January - April 2020, also shows the key drop when the UK lockdown was implemented.



# AIR QUALITY | ACTION PLAN

AREA	GOALS	TIME SCALES
<b>Shipping and Marine Assets</b>	<ul style="list-style-type: none"> <li>Investigate the replacement of Pilot Vessel Maker to switch to a model with lower emissions where practical.</li> <li>Review the effectiveness of Green Tariffs for shipping.</li> <li>Monitor the development of Hybrid technology in harbour craft to assess whether it is a suitable alternative to standard marine diesel engines.</li> </ul>	Complete  Ongoing Ongoing
<b>Port Infrastructure</b>	<ul style="list-style-type: none"> <li>Continue to work with Wharf Operators to implement new strategies to reduce emissions and improve air quality.</li> <li>Carry out a review into the costs and benefits of installing shore power for ships, and providing alternative fuels such as LNG, to help reduce the volume of emissions produced by ships when at the berth.</li> </ul>	Ongoing Ongoing
<b>Monitoring and Management</b>	<ul style="list-style-type: none"> <li>Continue to Monitor Air Quality in the Cattewater, to establish a baseline and set reduction targets.</li> <li>Financially invest in monitoring equipment and its maintenance to enable Air Quality Monitoring to continue in the Cattewater.</li> <li>Investigate the benefits and effectiveness of reimbursing staff for using public transport, to cut down on vehicle emissions.</li> <li>Continue to offer the Cycle to Work scheme to staff.</li> </ul>	Ongoing On Hold Complete  Ongoing



# COLLABORATIVE | APPROACH

In order to make a significant difference to the local air quality, all organisations around the port must work together to achieve the goals. As a responsible local business, we take our environmental responsibilities very seriously. Our partners have committed to supporting this strategy as outlined below:

## MINISTRY OF DEFENCE

Cattewater Harbour is based within the wider Dockyard Port of Plymouth. As the civilian pilotage authority for the port, we work closely with the Queens Harbour Master and his staff. Although exempt from air quality regulations, Navy policy is to comply as far as practically possible. Research is ongoing into new hybrid port vessels, and new environmental policies are being developed.

## VICTORIA WHARF GROUP

Victoria Wharf have invested in a new dust suppression unit, and have upgraded to covers on the conveyor systems all increasing the containment of dust from bulk cargoes.

The recently purchased loading shovels have been fitted with Diesel particulate filters.

Victoria Wharf have committed to reduce emissions by:

- Using water mist to dampen down dust and particulates produced during cargo discharge.
- Washdown on access ramp to stop dust and particulates leaving the wharf.
- Investing in electric vehicles and plant/machinery, including electric conveyor belt systems used in cargo offloading.
- All diesel machinery fitted with particulate filters.
- Company moving to Hybrid and Electric vehicles.
- Hauliers not permitted to sit idle with engines running.
- Carrying out Ecological Monitoring.
- Investing in alternative energy schemes.
- Investigating the provision of shore power.
- Replacing all end of life existing lighting with an LED alternative, installing Light/Movement sensors as appropriate.

# COLLABORATIVE | APPROACH

## CATTEDOWN WHARVES

Cattedown Wharves Ltd is committed to making sure we minimise the impact our port operations have on the environment and continuously reviewing our processes to achieve a sustainable future.

### To do this we:

- Have a comprehensive environmental policy
- Have a programme in place to replace all lighting with low energy LED lights
- Ensure that vehicles are not left sitting idle with engines running. Visiting drivers switch engines off whilst being loaded, Plant Machinery is switched off when not in use.
- Encourage staff to move towards eco friendlier options like start/stop engines and Hybrid vehicles when purchasing vehicles
- Have a Cycle to Work scheme in place
- We are committed to review our plant machinery to ensure we run them as environmentally friendly as possible. When the time comes to purchase new plant machinery, the impact on the environment will be considered and where possible, electric vehicles will be sought.
- We are committed to maintaining our diesel run vehicles in good condition so that they run efficiently and where possible, diesel particulate filters are fitted.
- We are discussing solar panels being fitted where possible to do so, as part of the James Fisher Group
- Work with customers in the shipping and haulage industries to promote environmentally friendly operations
- Have a recycling programme in place to reduce the amount of waste created across the site
- Ensure we have competent and trained staff in Environmental Management to assist us in promoting a sustainable future going forward.



# COLLABORATIVE | APPROACH

## **ABP Millbay**

Although outside Cattewater's statutory harbour limits, ABP Millbay are responsible for hosting many cruise ships and the regular Brittany Ferry services to Roscoff and Santander which are all served by the Pilotage Service. Although they are not required to, ABP Millbay will be producing their own air quality plan demonstrating their commitments to improve air quality in the port. Creating this plan before it is required clearly demonstrates ABP's commitment to reducing emissions and improving air quality.

## **MARITIME AND COASTGUARD AGENCY**

The Maritime and Coastguard Agency is an executive agency sponsored by the Department for Transport and is responsible for ship surveying and certification for British flagged vessels. They are also responsible for UK Port State Control Inspections. These inspections are carried out to ensure that ships in UK ports are compliant with national and international legislation, including emission limits. The MCA inspectors in Plymouth assist us by ensuring shipping is compliant with all legislation, such as the SECA sulphur fuel limit, which prevents these emissions entering the air, thus improving air quality. We have a strong relationship with the local Marine Office and will work closely with them in their work to control emissions from shipping.

## **MARINE MANAGEMENT ORGANISATION**

The MMO are working to support the maritime industry in reducing air pollution through new legislation and policies. SW-AIR-1, a new policy for air pollution, has recently finished a period of consultation and we look forward to seeing the final published policy.

## **PLYMOUTH CITY COUNCIL**

Plymouth City Council (PCC) are working to improve air quality across the whole of Plymouth. After their own investigations, PCC have determined that the port does not pose a serious risk to air quality in the city, and as such does not fall within the air quality management area nor does PCC monitoring take place nearby.



# COLLABORATIVE | APPROACH

## PLYMOUTH BOAT TRIPS & MOUNT BATTEN FERRY

Plymouth Boat Trips and Voyager Marine and partners have successfully launched e-Voyager, the UK's first, sea-going, electric ferry. The zero emissions vessel is now undergoing rigorous running trials, before carrying passengers on Plymouth Boat Trips' ferry routes from April 2021.



A vessel from the Mount Batten Ferry service fleet has had her engine replaced with a new electronic drive propulsion system and solar charging capability.

Copper, the smaller of the Mount Batten Ferry business' fleet, has undergone her transformation to electric power over the last few months as the service has been closed to passengers due to the ongoing pandemic.



The Mount Batten Ferry usually runs daily, all year round between The Barbican and Mount Batten.

This is an excellent environmental addition to the Cattewater, and a further boost to reducing emissions from water transport in the Port.

## FUTURE ENERGY

To continue to work collaboratively with Neptune Park to investigate the further potential of the use of Marine Heat Pumps in The Cattewater.

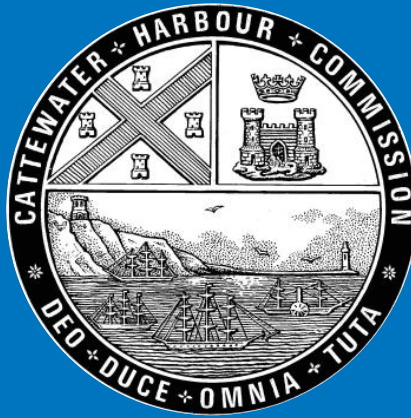


WRITTEN IN PARTNERSHIP WITH:









# CATTEWATER HARBOUR COMMISSIONERS

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Cattewater Harbour Commissioners



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