



AIR QUALITY STRATEGY FOR THE TIDAL THAMES

UPDATE – JUNE 2020

INTRODUCTION	P3
CONTEXT	P3
HIGHLIGHTS	P3
CIRCUMSTANCE AT THE TIME OF REVIEW – COVID-19	P4
STAKEHOLDERS	P4
REGULATORS	P5
MARINE BUSINESSES AND ASSET OWNERS	P5
RIPARIAN BOROUGHES	P5
TECHNOLOGY PROVIDERS	P5
NGOs AND PUBLIC INTEREST GROUPS	P5
WORK SO FAR	P6
CURRENT AQS	P6
INCENTIVES	P6
TRIAL AND RESEARCH	P6
MONITORING AND EVIDENCE BASE	P6
THE PLA'S OWN ACTIVITIES	P7
DEVELOPMENT OF TARGETS	P8
CURRENT TARGETS	P8
NEW TARGETS	P8
ONGOING AND FUTURE ACTIONS	P10
PORT WIDE ACTIONS /PLA ACTIONS	P12

Introduction

We published the Air Quality Strategy (AQS) for the tidal Thames in May 2018. In the last two years we have made strong progress across many of the 19 actions in the strategy. Now, to reflect that progress and the rapid evolution in regulation and others influences, we are updating the strategy. This first update reports the advances we have made and the new actions we plan to take. The original AQS was founded on stakeholder dialogue and we are inviting customer and stakeholder feedback on the proposed new actions.

Context

Since the PLA published the first Air Quality Strategy for the Tidal Thames (AQS) in 2018 a lot has changed. Regulation, policy and guidance have been updated, major construction projects and most recently the COVID-19 pandemic have changed behaviours and use of the river.

Many of the actions within the first strategy have been delivered and more started. This 2020 strategy refresh features: more specific actions for the PLA as an organisation in relation to its own emissions; a revision of the reduction targets to reflect the legal requirements on the different sectors; and updates the progress reporting that reflects action on the river and in the capital.

The 2018 AQS was based on research and evidence. It was the product of extensive consultation and published concurrently with the emission inventory, this means that the actions in it have not been reflected in any current or future trends predicted by the final emission inventory report.

Work since 2018 has enable the PLA to establish a much better knowledge on river emissions and ways to reduce them for all stakeholders. This has been achieved through extensive data gathering and research all along and within the estuary.

The PLA has sought to drive improvements through the actions that were planned within the Air Quality Strategy 2018, but at the time were not able to quantify the extent to which these actions could affect the total emissions of the port and river. Two years on, with many actions already completed in what was a five-year plan, the inventory and supplemental dispersion model allows a much more targeted approach to tackle air pollution. A growing stakeholder group, including port and vessel operators, technology providers, riparian boroughs, Greater London Authority (GLA), Department for Transport (DfT), Transport for London (TfL), Maritime and Coastguard Agency (MCA), Environment Agency (EA) and Canal and River Trust (CRT), with a clear understanding of the need, complexity and commitment of the PLA to achieve the strategy is also reflected

in the shared goals and actions of this revised strategy. This document is therefore an update which builds on, and should be read alongside, the existing strategy in order to meet the guidance of the UK Government. A full detailed review of the strategy will be undertaken when the full five year ends in 2022.

Circumstances at the time of review – COVID-19

The current situation with COVID-19 leaves the PLA with a significant amount of uncertainty for new or revised actions. These are either being affected by: constraints in terms of reduced activity on the river to monitor for good evidence to target the action; or the financial certainty to commit to delivering action. There is uncertainty too with partnership organisations and the impact the current situation has, or will have, on their ability to deliver and implement actions with the PLA.

This does not change the PLA's commitment to reducing the emissions to air from its own activities and the port.

There have been a number of key regulatory or policy changes since the publication of the Air Quality Strategy for the Tidal Thames in May 2018.

In 2018:

- May – The Mayor of London published his Environment Strategy under the London Plan.
- December – The Department for Environment, Food & Rural Affairs (Defra) published the Clean Air Strategy, requiring port air quality strategies.
- September – The Marine Environment Protection Committee (MEPC) arranged actions to deliver the Greenhouse Gas (GHG) Strategy by the International Maritime Organization (IMO).

In 2019:

- January – The DfT produced the Maritime 2050 Navigating the future document.
- May – MEPC approved the acceleration of the IMO's GHG Strategy.
- July – The DfT published the Clean Maritime Plan.
- June – The UK Government legislated to update its Green House Gas reduction target to Net-Zero by 2050.

The UK Government has also been progressing the EU exit negotiations, as well as setting legislation in the place of EU regulations. The key stakeholders are described here.

Stakeholders

The PLA identified a number of stakeholders throughout the consultation period for the 2018 AQS, many of whom have continued to be fully engaged and committed to the delivery of the strategy actions over the last two years. A number of other stakeholders have made themselves known to the PLA since the publication of the strategy and during implementation of a number of actions.

Regulators

The PLA was already in discussions with the MCA and the DfT during the first strategy; these conversations have continued and have been very constructive, in particular the plans to decarbonise the inland and domestic fleet. The PLA is committed to continuing these discussions and finding appropriate solutions.

Similarly, discussions with the GLA regarding the continuation of the marine industry's use of fossil fuels within London in the future were started prior to the publication of the 2018 strategy and these are continuing, with great transitional opportunities already being delivered including the Clean Air Thames project to help the direction of travel.

Marine businesses and asset owners

Primarily the marine businesses who were previously engaged were the inland vessel operators and shipping companies that had also assisted in the completion of the port wide emission inventory. Asset owners such as London River Services (the river delivery arm of Transport for London) have also been actively involved.

Riparian boroughs

A number of the riparian boroughs provided comments to the 2018 consultation that were taken forward to in the final action plan. Further technical consultation with the boroughs that balances air quality with the benefits of increased use of the river has led to a handbook to the use of the river for developers and planners that will be published in the summer of 2020.

technology providers

The previous consultation reached a limited amount of technology and fuel providers on the basis of an initial discussion, but in 2019 when the PLA convened the very well attended and received Greening Inland Shipping Conference technology providers, financiers, operators and regulators were actively sought to join the event, and particularly for technology providers to demonstrate their innovative solutions.

NGOs and public interest groups

A number of Non-Governmental Organisations (NGOs) were invited to comment on the 2018 strategy but most of the responses were from the public and principally regarding an individual planning application at that time, rather than the content of the strategy.

Since the publication of the strategy the focus on geographically specific issues has remained the context of many public engagements and that has prompted amendment of actions within the strategy to investigate and respond to these concerns. The findings of one significant action that reflects this approach has been published recently.

Since the publication the PLA has interacted with a number of NGOs on the topic of shipping emissions including Environmental Defence Fund (EDF).

Work so far

Current AQS

A number of actions to reduce emissions to air from maritime sources have been delivered in the two years since publication of the AQS in 2018. The actions focus on encouraging improvement in environmental performance, establishing appropriate evidence, and supporting green technology development and implementation.

Incentives

In 2017 in what was a first for a UK Port, the PLA established a green tariff scheme (Action 2, link), where international vessels calling at the Port of London can qualify for a discount on their conservancy charges of 10%, if they score 30 or above on the Environmental Ship Index. From 2020, the discount is doubled for vessels scoring 50 or above to further encourage vessels visiting the Port of London to be environmentally friendly.

Trial and research

The PLA has been publishing handbooks and guidance for inland operators to encourage best practice (Action 3- 5). Feasibility studies and exhaust monitoring have also been undertaken to evaluate both the environmental and cost benefits of alternative fuels, retrofitting green technologies and shore-side power (Action 11-14, 17). Furthermore, to share knowledge and minimise duplication of effort on testing various green technologies, the PLA has set up a discussion group (Action 8), launched a web-based portal (Action 9), and published case study of the trials on the PLA's website.

In June 2019, an initiative led by the Cross River Partnership and in partnership with the PLA and the City of London Corporation, was awarded a £500,000 grant from the Mayor's Air Quality Fund for the Clean Air Thames project (Action 7 & 10). The project is aimed to reduce emissions of pollutants in London by retrofitting existing vessels.

The PLA has also commissioned E4tech to develop an inland shipping emission reduction roadmap to help operators and other stakeholders to identify barriers and to understand the technology direction in reaching current and potential future emission targets.

Monitoring and evidence base

Monitoring of emissions to air is necessary to understand the current air quality impact of river activities and enables subsequent tracking of progress. The PLA has completed an emission dispersion modelling of the Thames as a whole to determine how pollutants move once they've been produced on the river and to identify emission hotspots (Action 16). In collaboration with the Corporation of London, diffuse monitoring on a transect from the river to the nearest pathway has been undertaken to explore dispersion of emissions from different sources (Action 15). In conjunction with the transect monitoring, the PLA has also

extended the diffusion monitoring to river wide to evaluate and establish findings from the dispersion modelling.

From May 2019, the PLA has also installed an ambient monitoring network at Greenwich Ship Tier to assess the impacts of cruise vessels on local air quality (Action 18). The summary of the analysis of calibrated results collected between May to September 2019 is now publicly available.

The PLA's own activities

The PLA has been calculating its carbon emissions since 2014 and this has identified the two major contributors are vessel diesel and pilot taxis. To reduce the emission of carbon and air pollutants, the PLA has purchased a hybrid vessel *Leader* as a pilot cutter, another first in the UK. Charging points have been installed at Royal Terrace Pier to facilitate recharging when the vessel is on the standby between jobs. The vessel has been in service since late 2019 and principally operates using electricity rather than diesel. To further reduce the PLA emissions, part of the pilot taxi mileage has been completed with a new fleet of hybrid vehicles instead of diesel vehicles since earlier this year.

Various drop-in greener fuels have also been on trial on one of the PLA's vessels to identify the environmental benefits and any unintended consequences, either operational or technical. Depending on the results of the trials and following an assessment of this, together with cost and supply, the most suitable fuels will be adopted. In 2020, the PLA has successfully applied to be part of the Clean Air Thames project to retrofitting vessels and one of the PLA vessels – *Driftwood II* - will be fitted with Selective Catalytic Reduction to reduce sulphur dioxide (SO₂) emission and the use of biofuel to reduce particulate matter (PM) and nitrogen oxide (NO_x) emissions.

Last year, the UK Government committed to achieving Net Zero by 2050. As a result, the PLA has commenced a Net Zero Programme for both the organisation (Net Zero PLA) and the port (Net Zero Port) to achieve Net Zero by 2050. This requires the PLA to cut carbon emissions as much as possible and offset any carbon emissions that cannot be eliminated. As part of the Net Zero PLA Programme, the PLA has been working on developing strategies for renewable energy, carbon offset, vehicle and vessel upgrade/replacement to reduce and offset carbon emissions.

Development of targets

Current targets

Targets were adopted after consultation with stakeholders and were set at a level to encourage improvements, but not overreaching the regulatory levels to the degree that they are unachievable. The percentage reductions are based on the 2016 emission inventory for the tidal Thames.

2026	2031	2041	Overarching
PM – 20% reduction	PM – 40% reduction	PM – 50% reduction	Reduction in CO ₂
NO _x – 20% reduction	NO _x – 40% reduction	NO _x – 50% reduction	Reduction in all other emissions produced on the Thames

Table 1: Targets set by the Air Quality Strategy 2018

New targets

The PLA's AQS targets have been reviewed to reflect the targets set out by the Clean Air Strategy published by Defra in 2019, Clean Maritime Plan published by the DfT outlining the pathway to zero emission shipping by 2050, and the Climate Change Act 2008 (as amended) to ensure that the net UK carbon account for the year 2050 is at least 100% lower than the 1990 baseline. The targets are set for 2026, 2031, and 2051 to reflect the revision timeframe of the emissions inventory (revised at five-year intervals).

The reduction targets relative to 2016 baseline for particulate matter (PM), nitrogen oxide (NO_x), carbon dioxide (CO₂), and sulphur dioxide (SO₂) that will be adopted in the updated AQS are listed in Table 2. The port wide targets are the overall reduction targets on the River Thames between Teddington and Southend. Based on the vessel type, the targets is separated into two main categories:

- Shipping (includes Container Ship, RoRo-cargo/Vehicle, General Dry Cargo, Oil tanker, Chemical/LNG/LPG tankers, Bulk carrier, Cruise ship, Non Merchant, and Reefer)
- Inland (includes Passenger, Tug/Supply, Fishing and other miscellaneous vessels).

Each category has a different set of targets to meet.

For the PLA, the carbon equivalent emission (CO_{2,e}) covers the entire PLA operation, which includes emissions from vessels, vehicles, business mileage, plant, heating, water, and waste. Meanwhile, the emissions of PM and NO_x from the PLA only includes emissions from vessels, vehicles, business mileages, and plant.

	2023	2026	2031	2041	2051
Port wide (shipping + inland)		PM – 20%	PM – 40%	PM – 50%	PM – 78%
		NO _x –20%	NO – 40%	NO _x – 50%	NO _x – 77%
			CO ₂ – 6%	CO ₂ – 40%	CO ₂ – 68%
			SO ₂ – 2016 level		SO ₂ – 64%
Shipping (Container Ship, RoRo-cargo/Vehicle, General Dry Cargo, Oil tanker, Chemical/LNG/LPG tankers, Bulk carrier, Cruise ship, Non Merchant, and Reefer)		PM – 20%	PM – 40%	PM – 50%	PM – 70%
		NO _x –20%	NO – 40%	NO _x – 50%	NO _x – 70%
			CO ₂ – 2016 level	CO ₂ – 30%	CO ₂ – 60%
			SO ₂ – 2016 level		SO ₂ – 60%
Inland (Passenger, Tug/Supply, Fishing and other miscellaneous vessels)		PM – 20%	PM – 40%	PM – 50%	PM – 95%
		NO _x –20%	NO – 40%	NO _x – 50%	NO _x – 95%
			CO ₂ – 25%	CO ₂ – 75%	CO ₂ – 95%
			SO ₂ – 2016 level		SO ₂ –
PLA		PM – 30%	PM – 40%	PM – 60%	PM – 90%
		NO _x –30%	NO _x –40%	NO _x –60%	NO _x –90%
	CO _{2,e} A – 15%				CO _{2,e} – net zero

Table 2: Targets in the updated Air Quality Strategy

A: The PLA's CO_{2,e} reduction target is relative to the 2014 baseline.

Ongoing and future actions

Short Term: 2020-2023; Medium term: 2023-2030; Long term: 2030-2050

Port wide actions

Actions that are specific for the "Shipping" category

Actions that are specific for the "Inland" category

Incentive

- **International shipping (Short – Medium term)**

Action 2: Review and improve the Green Tariff for international vessels.

- **Inland shipping (Short – Medium term)**

Action 2: An environmental inland shipping award scheme is being developed to encourage actions towards Net Zero emissions and improve environmental performance.

- **River Ultra Low Emission Zone (Medium term)**

New Action – Action 2b: A river based Ultra Low Emission Zone (RULEZ) will be established in partnership with GLA and TfL to better control emissions from inland vessels.

Trials & Research

- **Knowledge Hub inland vessels (Short – Medium term)**

Action 4 to 9: Continue to share knowledge and experiences to operators and stakeholders through workshops, publications and online portal.

- **Demonstrator project (Short – Medium term)**

Action 10: Retro fitting fleets as part of the Clean Air Thames project.

New Action – Action 6b: Develop and define a demonstrator plan based on the emission reduction roadmap to accelerate trials and de-risk investment by the inland operators.

Mitigation

- **Energy Infrastructure (Long term)**

New Action – Action 6c: Investigate energy infrastructure that links to the demonstrator project.

- **Port call optimisation (Medium - Long term)**

New Action: Investigate port call optimisation, which will enable better timing during port call and shorten the duration at berth.

Monitoring and Evidence Base

- **Ambient monitoring (Short – Medium term)**

Action 18: River wide ambient monitoring of emissions.

Action 18a: Maintain the ambient monitoring network at Greenwich Ship Tier.

- **Diffusion Tube Monitoring Nitrogen Oxide, NO_x & Ozone, O₃ (Short – Medium term)**

Action 15: The diffusion tube monitoring has been extended to monitor river wide emission of NO_x.

New Action – Action 15b: Additional O₃ diffusion tube monitoring will soon be included.

- **Port wide emission inventory (Short – Medium term)**

Action 19: Update the port wide inventory to take account of any changes in emission due to advance in technologies and/or implementation of new regulations and trade on the river.

New Action – Action 19b: The emission from vehicles and equipment (Non-Road Mobile Machinery – NRMM) will now also be included to reflect the overall impact of port operations.

The PLA's own activity

Trials & Research

- **Retrofit (Short – Medium term)**

Action 10: Trial on post-combustion reduction technologies to reduce emission of air pollutants from existing vessels.

- **Alternative fuels (Short – Medium term)**

Action 14: Trial on greener fuels to identify the environmental benefits and any unintentional consequences.

- **Black Carbon (BC) exposure analysis (Short term)**

New Action: Investigate and eliminate the cause of BC emission peaks

Mitigation

- **PLA's fleet (Medium – Long term)**

New Action: Switch from marine diesel to greener fuels.

New Action: Retrofit existing vessels

New Action: Replace old vessels with low/zero emission vessels.

- **Net-Zero PLA commitments (Medium – Long term)**

New Action: To cut carbon emissions as much as possible by developing and implementing the vehicle and vessel upgrade/replacement strategies and to offset any carbon emission that cannot be eliminated by developing and implementing the renewable energy and carbon offset strategies.

Port wide Actions

Short-medium term
 Medium term
 Medium-long term
 Long term

Action		Status
1	Appropriate standards for emission	✓
2	Review and improve the Green Tariff - for international vessels - for inland vessels	>>
2b	Develop River Ultra Low Emission Zone	New!
3	Encourage freight service on the river	✓
4	Guidance for developers	>>
5	Publish best practice guidance for inland fleet operators	>>
6	Installation of green technology	>>
6b	Develop a demonstration project	New!
6c	Investigate Energy Infrastructure	New!
7	Identify and secure support for R&D	New!
8	Host an environmental technology EXPO	✓
9	Lessons learnt from vessel technology	>>
10	Retrofitting fleets	>>
11	NO _x abatement	✓
12	Cost Benefit Investigation into abatement	✓
13	Shore-side power feasibility study	✓
14	Feasibility study for the use of LNG, CNG and other potential alternative fuels	>>
15	Diffusion monitoring of river emissions of NO _x	>>
15b	Diffusion monitoring of river emissions of O ₃	New!
16	To carry out modelling of river emission dispersion	✓
17	Exhaust monitoring	>>
18	Ambient monitoring of river emissions	>>
18a	Ambient monitoring at Greenwich Ship Tier	>>
19	Update Port Wide Inventory	>>
New!	Investigate port call optimisation	New!

PLA Actions

Retrofit trial
Alternative fuels trial
Black carbon exposure analysis
PLA's fleet review & upgrade
New-Zero PLA commitments

SUSTAINABLE DEVELOPMENT GOALS

The PLA's work in this area contributes to the following UN Sustainable Development Goals:



CUSTODIANS OF THE
TIDAL THAMES

PROTECT | IMPROVE | PROMOTE

www.pla.co.uk
[@LondonPortAuth](https://twitter.com/LondonPortAuth)
www.youtube.com/portoflondon
01474-562200