FORTH PORTS LIMITED

Port of Tilbury

Air Quality: Statement of Intent

FORTH PORTS LIMITED

Technical Note

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Client Signoff

Client	Forth Ports
Project	Tilbury – Port Air Quality Strategy – Statement of Intent
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1. Statement of Intent

1.1 Introduction

Forth Ports owns and operates seven commercial ports in the Firths of Forth and Tay in Scotland, as well as the Port of Tilbury (PoT) on the River Thames in Thurrock, Essex. The company is scheduled to open the new Tilbury2 facility in 2020.

The Department for Environment, Food and Rural Affairs (DEFRA) published a Clean Air Strategy in January 2019, requiring larger English ports (those handling cargo volumes in excess of 1 million tonnes per annum) to produce a Port Air Quality Strategy (PAQS). The Port of London Authority (PLA) meets this criterion and is working with terminal operators within its jurisdiction as a Statutory Harbour Authority to coordinate activities and produce the necessary documentation for an updated Air Quality Strategy[1].

Operations at the current and planned facilities at PoT are in excess of the threshold of 1 million tonnes of cargo handled per annum. As a responsible Harbour Authority in its own right, PoT is working with the PLA on air quality; the Statement of Intent and PAQS will therefore be submitted as part of the overarching Strategy coordinated by the PLA.

The senior management of Forth Ports has committed to preparing the Statement of Intent and PAQS for PoT with a view to understanding the air quality effects of their operations and to minimising adverse effects, within the confines of technological and commercial considerations and within the port's sphere of influence.

This Statement of Intent outlines the steps that Forth Ports expects to take to prepare an PAQS for their operations at the combined PoT by 11 July 2020.

1.2 Existing Environment Policy

Forth Ports is accredited to the international ISO 50001:2018 standard due to its adoption of an effective Energy Management System. As part of this accreditation, Forth Ports has an established Energy Policy[2] which states the commitment for long term and sustainable reductions in energy consumption and ensuring capital investment considers energy efficiency in the design and procurement process. The ISO 50001:2018 standard primarily aims to reduce emissions of CO_2 and its equivalents, however measures to improve energy efficiency and reductions in fossil fuel also contribute to reductions in emissions of local air quality pollutants.

Forth Ports has additionally stated its commitment to be an environmentally responsible operator in its Environment and Sustainability Policy. The most recent version, 2018[3] states that:

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/815665/port-air-quality-strategies.pdf
[2] https://www.forthports.co.uk/wp-content/uploads/2018/04/Energy-Policy-Statement-Signed-2018.pdf
[3] Port of Tilbury Environmental and Sustainability Policy, 2018 - https://www.forthports.co.uk/forth-ports-group/environment/

"The land and estuaries that we manage are valuable natural assets socially, economically and environmentally. Being a responsible company, we continue to review our operations to ensure that we minimise our impact on the environment and operate efficiently. In doing so, we assist the UK and Scottish Governments in their ambitious targets to reduce emissions and work towards limiting human induced climate change, while at the same time being a modern and essential part of the global supply chain.

We manage environmental risks and our performance through our environmental management systems. A significant proportion of our business retains the ISO14001 environmental management standard, including the Port of Tilbury, London Container Terminal and the Marine Division (including Forth and Tay Navigation Service, Pilotage and Forth Estuary Towage)."

The overarching policies applied to broad environmental and sustainability considerations equally apply to managing the effect of port operations on local air quality.

2. Development of the Port Air Quality Strategy

A PAQS is a 'live document' which should be regularly updated as sector-wide technological innovations and advances occur and as mitigation measures are identified and adopted within the PoT wider supply-chain as a result of new policy or legislation, For the purposes of this Statement of Intent, a draft outline of how the PoT PAQS will be initially developed is described below.

2.1 Sources of Pollution and Scope of the PAQs

Emissions from ports are typically classified into the sub groups identified in **Error! Reference source not found.**. The emissions have been further segregated into Scope 1 (Fuel Combustion from port assets) and Scope 3 (third party and indirect emissions) to give an appreciation of the level of influence Forth Ports has over the emissions. For information, Scope 2 emissions relate to use of purchased electrical energy, which are discounted from this study as they are free from air quality emissions at the point of use.

Table 1 – Emission Sources from Port Operations

Classification	Emission Source	PoT Responsibility	Impact Scale (Local/Regional/National)
Land-side	Support Equipment (lifting, ground support vehicles)	Scope 1 - Direct	Local
	On-site power and heat generation (eg. for offices)	Scope 1 – Direct	Local
	Private Vehicles (staff)	Scope 3 – No influence	Local / Regional
	Heavy Goods Vehicles	Scope 3 – No influence	Local / Regional
Water-side	Harbour Craft	Scope 1 – No influence	Local
	International Vessels	Scope 3 – No influence	Local / Regional
	UK Short Sea Shipping Vessels	Scope 3 – No influence	Local / Regional
	Vessels at Berth	Scope 3 – No influence	Local

For land-side emissions, Forth Ports has direct influence upon plant use and purchase, along with fuel use of support equipment and on-site power generation. No influence or emission controls are directly applied to hauliers with regards to their choice of vehicle.

For water-side emissions, Forth Ports operates two work boats which are used infrequently for minor tasks when needed such as the removal of floating debris and minor maintenance jobs. When required, support tugs/pilots are booked by the shipping agent or tenant operator from PLA Harbour Authority licensed suppliers. Forth Ports does not have any influence upon the type of vessel that visits the port or how it operates while at berth.

As such, the PoT PAQS will consider land-side emissions from fixed and mobile combustion plant, with emissions from ships falling outside the PAQS remit due to their separate need for compliance with international standards, Thames-wide measures and PLA objectives.

2.2 Consultation

Forth Ports has existing and established routes for stakeholder consultation on air quality matters. This includes externally with Environmental Health Officers at Thurrock Council and other local authorities in the vicinity. Forth Ports is also an active participant in air quality and PAQS implementation workshops organised by the PLA and the DfT.

A significant recent consultation exercise was undertaken with regulators and local authorities as part of the Tilbury2 Environmental Impact Assessment (EIA) and subsequent Development Consent Order (DCO) examination process for the project.

In addition, Forth Ports engages internally with its own procurement teams to ensure that energy efficiency and air quality are part of the decision making process in capital renewal and it engages on a regular basis with tenant operators, shipping agents and hauliers regarding operational procedures and best practices.

As Forth Ports actively consults stakeholders on air quality matters already, and because air quality conditions in the area are well understood, no specific, new consultation process with local authorities or external stakeholders is proposed as part of the PAQS.

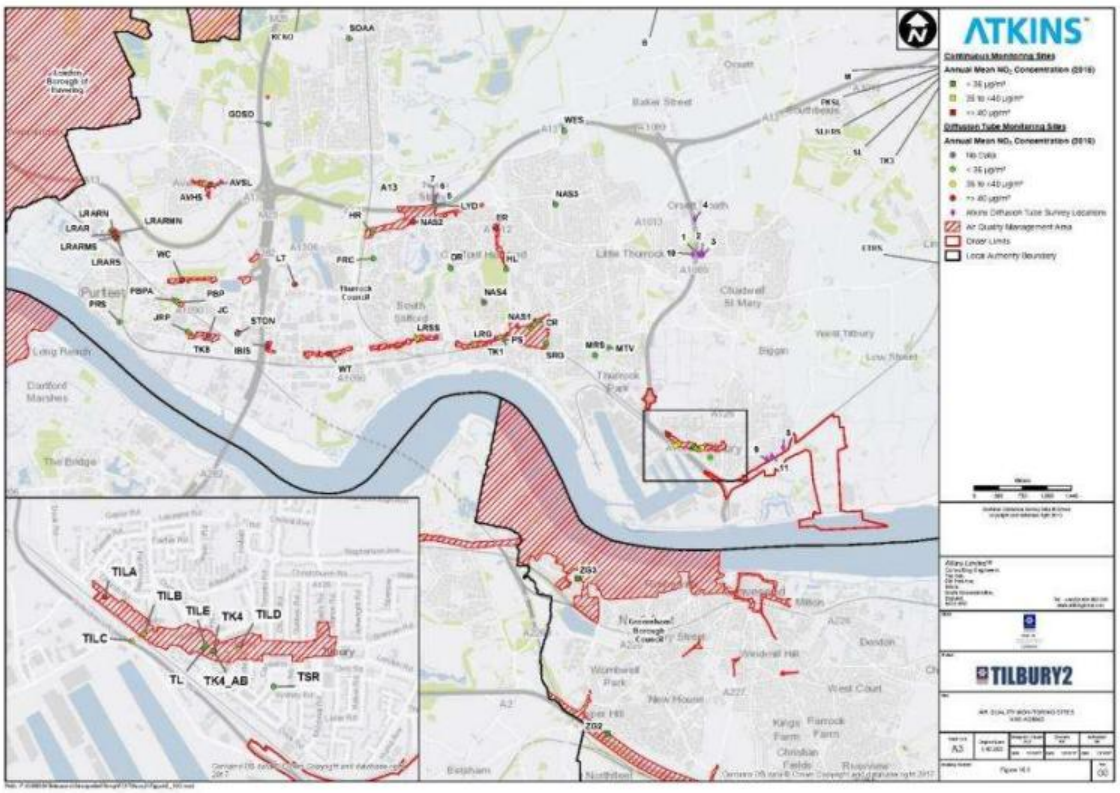
Consultation with PLA will be conducted to ensure that the PAQS for the full Harbour Authority area are aligned with that prepared for PoT and that the Tilbury-specific approach is realistic in what can be achieved in given timescales.

2.3 Summary of Baseline Conditions

The PAQS will include a summary of baseline air quality conditions in the vicinity of PoT. This will include a description of air quality management area designations in Thurrock and neighbouring local authorities, a summary of monitoring data collected by local authorities under the Local Air Quality Management (LAQM) regime and comment on any observable year on-year-trends.

A similar task was undertaken as part of the 2017 Tilbury2 EIA. Figure 1 is provided as an example of the visual output that will be provided in the PAQS to show the position of the port and its proximity to local authority monitoring and Air Quality Management Area (AQMA) designations and the wider affected road network. This information will be updated to reflect the full extent of PoT operations and any changes since submission of the EIA for Tilbury2.

Figure 1 – Position of AQMA Designations and Air Quality Monitoring



2.4 Development of a Port Emissions Inventory

Emission inventories for the local air pollutants, oxides of nitrogen (NO_X), sulphur dioxide (SO_2) and fine particulate matter (PM_{10}) for the main Forth Ports facilities were produced in 2017. The inventory was undertaken for vessels at berth and port specific activities calculated from fuel use statistics. These show that the mass pollutant emissions from port activity is generally an order of magnitude less than that from calling vessels whilst at berth.

Emissions from road transport are anticipated to improve without intervention from Harbour Authorities and port operators in the region, due to the adoption of measures set out in DEFRA's Clean Air Strategy 2019 by freight and haulage operators. In addition, the tougher vehicle emission standards set out as part of the London Ultra Low Emission Zone, effective from October 2020, are likely to have an impact on the quality of haulier fleet vehicles visiting Tilbury as many will continue their journey into the Greater London Area.

An inventory of third-party road vehicle emissions, which are outside the control of Forth Ports, is not expected to be compiled as part of PoT's PAQS.

The Port Inventory will be updated periodically to enable progress to be evaluated. Any future emissions inventories will include the additional emissions from new operations at the Tilbury2 site, anticipated to be operational from April 2020. This will present an increase from 2016 baseline levels and will increase as the port approaches full operational capacity. Prior to the next AQ report, consideration will be given to how the additional emissions from Tilbury2 will be dealt with to ensure consistency of approach.

The improvements that will be brought in at a national level regarding road and rail emissions, through the implementation of tighter limits on pollutant concentrations in exhausts, and the associated replacement of road vehicle and rail locomotive fleets, will contribute to air quality improvements at all receptors in the long term.

Mandatory energy efficiency requirements for ships are set under the Energy Efficiency Design Index (EEDI), embedded in the MARPOL regulations. The specific ship-class fuel efficiency targets are for an initial 10% reduction in CO_2 from 2011 levels to be achieved in 2015, 20% by 2020 and 30% by 2025. Although aimed at reducing CO_2 emissions, this is expected to have an associated benefit for other air pollutants due to a reduction in fuel use; consequently, we would anticipate an improvement on air quality in the vicinity of ports.

2.5 Development of Short, Medium and Long-Term Mitigation Measures

Forth Ports is committed to continuing to apply mitigation measures to reduce emissions of air quality pollutants from its direct activities. Future measures are designed in line with those suggested by the PLA Harbour Authority and are cognisant of the medium and long-term goals set by DEFRA, DfT and the UK Government.

Existing policies to reduce emissions and improve fuel efficiency at PoT include:

- Use of a vehicle booking system for HGVs using the London Container Terminal areas of the Port;
- Operation in line with the port's ISO 50001 accreditation, which incorporates fuel efficiency considerations when considering new and replacement plant;
- Utilisation of the internal road network at peak periods rather than significant queuing on the public road network; and
- Transition to plant leasing rather than purchase with a target length of 3-5 years, which ensures that the majority of equipment is fuel efficient, maintained in relation to the manufacturers' guidelines and meets modern emission standards.

The Operational Management Plan (OMP) for Tilbury2 is a certified DCO document and its air quality measures include:

- To reduce and limit airborne emissions from mobile plant operations;
- To work towards continual improvement methods to improve air quality; and
- To ensure all operations and facilities of the CMAT are built to the highest standards and are fitted with the latest technology to reduce emissions from operations.

These and other measures are included in Tables 2 and 3.

Forth Ports is committed to being a responsible operator and will consider the effectiveness, practicality and commercial viability of all suggested measures. Forth Ports is an active member of the port industry's Environment and Sustainability Committee, where ports share examples of improvements and actions that have or have not worked on a range of topics, this presents valuable learning opportunities for all ports.

The next sections of this statement set out the measures that are deemed appropriate for the short and medium term at PoT. This includes measures included in the PLA PAQS, which are appropriate and relevant to operations at PoT, and measures specific to PoT.

2.5.1 PLA Air Quality Strategy Actions and Applicability to PoT Operations

Water- and land-side mitigation measures are suggested in line with the PLA PAQS. Those which are appropriate for adoption at PoT are suggested in **Error! Reference source not found.** and 3

Table 2 – Suggested PLA Mitigation Measures Relevant to PoT Operations

Action	Identified organisations	Land and/or water based	PoT involvement
PLA Action 1 – Appropriate standards for emissions To consider how to encourage the use of appropriate standards via incentives for vessel emissions to sir with which to set future improvements for inland waterway vessels in the future.	MCA & DfT, with PLA support	Water	Consulted Stakeholder
PLA Action 2 – Review and Improve the Green Tariff Continue to review and improve the discounts and standards within the green tariff to encourage voluntary reduction of emissions beyond what is legally prescribed. Consult in 2018 on a scheme that could be applied for the inland vessels in London.	PLA	Water	Not directly a measure applied by PoT, however all ships visiting will be covered by the PLA Green Tariff.
PLA ACTION 3 – Encourage freight service on the river TfL, GLA and PLA to engage in order to ensure that Construction Logistics documentation actively encourages the use and development of freight services on the river, reducing the need to move freight by road and contributing to TfL's plans to reduce peak time freight movements on the road by 10%.	TfL, GLA and PLA	Water	Consulted Stakeholder and encourage the business through port operations
PLA ACTION 4 – Guidance for developers To develop guidance by engaging with the riparian boroughs and GLA, ECC & KCC for planners and developers to encourage the use of the river, while enabling best practice and improvements in air quality.	TfL, GLA, PLA, riparian boroughs and County Councils	Land and Water	Consulted stakeholder and user of the guidance

Action	Identified organisations	Land and/or water based	PoT involvement
PLA ACTION 5 – Publish best practice guidance for inland fleet operators PLA to engage with operators to encourage best practice by developing operator guidance for inland fleet using lessons learnt from international shipping and existing practices.	PLA, TfL and operators	Inland water	Consulted Stakeholder
PLA ACTION 6 – Installation of green technology Encourage the installation of green technology including shore power on sites developed along the Thames through the river works licensing regime.	PLA	Land	Yes Consideration has been given to the switchover to electrical power for vessels and shore power where cost effective, demand led and technologically feasible
PLA ACTION 8 – Host an environmental technology EXPO PLA to convene an exhibition with operators and manufacturers. The event will enable discussion and encourage practical ideas, relevant to for the inland fleet.	All stakeholders	Land and water	*Attended by Forth Ports in 2018*
PLA ACTION 9 – Lessons learnt from vessel technology Using developments in vessel technology the PLA will work in partnership with other river operators on a project to analyse the costs and benefits of different technological solutions and their applicability to different vessels across the Thames. This could also include a trial on an appropriate vessel or consideration during vessel procurement. Other operators' trials may also help inform choices made in the future, such as those listed in Actions 10 & 11.	PLA	Water	*Not to date. Any benefits identified by the lessons learned from this PLA will be considered, where this could be applied to PoT equipment*

Action	Identified organisations	Land and/or water based	PoT involvement
PLA ACTION 13 – Shore-side power feasibility study Undertake a detailed feasibility into the potential of installing shore-side power at a site in London. This should encompass the amount of electricity needed for the type of vessels, scope for the installation of the physical connection, the capacity of the electricity supply grid to meet demand, an analysis of which vessels now and in the future would have capability to connect to the power supply, and an overall evaluation of the costs and environmental benefits of the scheme.	PLA, GLA and relevant riparian boroughs	Land	Consulted Stakeholder Shore Power was considered for Tilbury2 but was considered ineffective due to the limited number of current vessels which can use this system. Shore power will be considered when a larger proportion of vessels can connect, if it can be found to be cost effective. In addition, provision is dependent on availability of sufficient network capacity.
PLA ACTION 14 – Feasibility study for the use of LNG, CNG and other potential alternative fuels Carry out a feasibility study on the consequence of using Liquefied Natural Gas and Compressed Natural Gas (CNG) and other potential alternative fuels to improve air quality without compromising safety, increases in greenhouse gases and necessary requirements for infrastructure and investment.	PLA with UK LNG support	Water	Consulted Stakeholder
PLA ACTION 18 – Ambient monitoring for marine emissions To install an ambient monitoring network along the river in appropriate positions to indicate changes in marine emissions in light of the results from Action 16.	PLA	Water	Will be covered by PLA measures
PLA ACTION 19 – Update Port Wide Inventory To update the Port Wide Inventory to take into account changes in emissions and trade on the river prior to the revision of the Air Quality Strategy for the Tidal Thames in 2021-2022.	PLA	Land and water	Indirectly PoT vessels will be modelled as part of PLA modelling

Table 3 – Mitigation Measures Suggested or already implemented by PoT

Action	Identified organisations	Land and/or water based	PoT involvement
General Measure – Encourage the use of Rail Freight Both PoT and Tilbury2 have access to rail freight options. Make operators aware of benefits of using rail freight. Support efforts to lobby government to restore the Rail Freight Subsidy.	PoT	Land	Indirectly
Provision of Shore Power Infrastructure at Tilbury2 PoTLL will provide the infrastructure to ensure that shore power can be accommodated at the Tilbury2 site in the future, should the vessel profile change, there is appropriate electricity network capacity off site and it becomes cost effective to do so	PoT	Water / Land interface	Indirectly
General Measure – Investigate the feasibility of replacing support vehicles with electric/hybrid equivalents PoT is undertaking a review of replacing support vehicles with electric or hybrid replacements. This will be conducted on a rolling basis when existing vehicles in the fleet are due for replacement, depending on their tasks and the ability of the vehicles to complete the required tasks.	PoT	Land	Direct Involvement
General Measure – Transition to low emission vehicles and combustion plant (including water and space heating for offices) A requirement will be placed on the Port's plant suppliers, who maintain the plant, to ensure that when plant is replaced the latest low emission engines are made available. This commitment will be included in lease arrangements. The port has already invested in retro-fit technologies to improve boiler and engine efficiency, where significant improvements can be made.	PoT	Land	Direct Involvement

Action	Identified organisations	Land and/or water based	PoT involvement
Commitments within the Operational Management Plan (OMP) for Tilbury2 A range of mitigations were proposed as part of the Tilbury2 EIA, which include: • To reduce and limit airborne emissions from mobile plant operations; • To work towards continual improvement methods to improve air quality; and • To ensure all operations and facilities of the CMAT are built to the highest standards and are fitted with the latest technology to reduce emissions. Specific to operations at the Tilbury 2 Ro-Ro terminal, emissions will be mitigated by ensuring that: • Only required numbers of plant will be utilised on operations; • Engines will not be left idling for extended periods when not in use; • Any customer vehicles arriving to load will ensure their engines are switched off whilst being loaded; and	PoT	Land	Direct Involvement
Maintenance of fixed and mobile combustion plant Equipment and vehicles will be maintained according to manufacturers' recommendations.	PoT	Land	Direct Involvement
Commitment to provide electrical charging points for operatives In recognition of current Government policy regarding electric vehicles, PoT do provide some electric charging points for port equipment, it is currently examining electric vehicle charging points within the site for its employees.	PoT	Land	Direct Involvement

2.6 Air Quality Monitoring

Thurrock Council maintains an air quality monitoring network as part of its LAQM obligations, within and in the vicinity of designated AQMAs in the Tilbury area. Forth Ports intends on using this data to understand air quality conditions in the area near its Tilbury facilities and to understand year on year trends. Air pollution within AQMAs, even when designated near to a port, is influenced by background pollution levels, interannual variation in meteorological conditions and non-port related activities, primarily road transport. As such, monitoring at sensitive receptor locations cannot be used as an arbiter of success or failure of mitigation measures implemented at PoT.

2.7 Monitoring Effectiveness of the PAQS and Targets

The aim of the PAQS is to minimise emissions from port activities where possible and practical within the limits of technological and commercial considerations and the port's sphere of influence.

Given that PoT (comprising the existing port and the consented Tilbury2 facility) cannot be treated in isolation from other operators within the wider PLA Harbour Authority area, the intention is to support PLA in its goals across the estuary. As such, the emissions inventory of the activities under Forth Ports' direct control will be revised and used as a marker of performance as and when necessary.

Performance will be monitored relative to the intensity of work undertaken (e.g. as a proportion of cargo tonnage), due to the expectation of continued growth in line with national policy for a modal shift to transport of goods by vessels and rail as opposed to long-distance road haulage. Specific and relevant targets will be proposed as part of the PAQS.

An inventory of the Tilbury2 site will be provided when the existing Tilbury inventory is updated. This emissions inventory will be considered proportionally against the level of activity.

The inventory will be accompanied by a list of measures adopted by PoT in the intervening period, those which are planned, are aspirational and those that require technological advancement or wider uptake to enable feasibility of adoption.

As vessel emissions are included in the PLA's PAQS inventory, emissions from these sources will not be included in the PoT inventory, to avoid the potential for double-counting.

3. Statement of Commitment

The senior management of Forth Ports has committed to preparing the Statement of Intent and PAQS for PoT with a view to understanding the air quality effects of their operations and to minimising adverse effects, within the confines of technological and commercial considerations. The commitment is made as both an individual operator and as a constituent part of the wider PLA jurisdiction.

This commitment is undersigned by Dr. Derek McGlashan holding the position of Group Health, Safety and Environment Manager.

Date: 23rd December 2019